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

Financial statements
for the years ended December 31, 2019 and 2018
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, 2019 and 2018, and the statements of income(loss), statements of comprehensive income(loss), 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, 2019 and 2018 and its financial performance and its cash flows for the years then ended in accordance with Korean International Financial Reporting Standards (KIFRS).

Basis for opinion

We conducted our audits 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 audits 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.

Material uncertainty related to going concern

Without qualifying our opinion, we draw attention to Note 35 to the financial statements, which indicates that the Company incurred operating loss of ₩21,676 million and a net loss of ₩55,097 million during the year ended December 31, 2019.
As of that date the Company's current liabilities exceeded its current assets by ₩239,941 million. These conditions, along with other matters as set forth in Note 35, indicate the existence of a material uncertainty that may cast significant doubt about the Company's ability to continue as a going concern. Our opinion is not modified in respect of this matter.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. For each matter below, our description of how our audit addressed the matter is provided in that context.

(A). Valuation allowance for work-in-process

As described in Note 7, the loss on valuation of work-in-process recognized in the financial statements in 2019 was ₩21,835 million, and the total amount of work-in-process at the end of 2019 was ₩138,917 million, which is equivalent to 16.8% of the total assets. In order to assess the valuation allowance, the Company's management estimated the losses caused by delays in delivery schedules due to prospective costs and a financial crisis of the client. As there exists uncertainty in the management’s assessment and thereby has significant impact on the Company financial statements, the adequacy of the evaluation of work-in-process has been identified as key audit matter.

The major audit procedures we performed in relation to the key audit matter are as follows:

- Evaluate the appropriateness of the Company’s accounting policies and measurement methods for valuation provisions of work-in-process based on the understanding of the nature of business
- Conduct retrospective review by sampling the work-in-process sold during the current year and comparing the actual costs incurred during the current year and the expected costs of the previous year
- Analyze the delivery date of the contract and the expected delivery date as of December 31, 2019 and inquire for the contracts of which the contractual delivery date has passed and examine relevant documents.
- Visit and inspect the site of major work-in-process where the production has stopped due to the fiscal deterioration of the client

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 KIFRS, 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.

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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.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

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

Ernst & Young Han Young

March 17, 2020

This audit report is effective as of March 17, 2020, 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 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, 2019 and 2018

“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 Officer
HSD Engine Co., Ltd.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of financial position
as of December 31, 2019 and 2018
(Korean won)

	Notes		2019		2018
Assets					
Current assets					
Cash and cash equivalents	4,10	₩	20,359,389,093	₩	58,972,160,607
Short-term financial instruments	4,5,10		20,316,129,965		26,657,599,156
Short-term loans	4,10		255,158,401		7,216,320,882
Trade and other receivables. net	4,6,10,22,33		77,058,790,898		20,225,354,672
Contract assets	22,24		12,605,297		1,151,004,882
Current tax assets	29		186,223,933		137,836,172
Derivatives assets	4,9,10		4,126,031,811		1,367,726,454
Firm commitment assets	9		11,089,296,827		11,602,647,863
Inventories, net	7,32		230,929,162,106		152,749,415,441
Other current assets			14,735,748,631		7,894,821,469
Total current assets		₩	**379,068,536,962**	₩	**287,974,887,598**
Non-current assets					
Long-term financial instruments	4,5,10	₩	1,606,000,000	₩	406,000,000
Long-term investment securities	8,10		1,112,887,907		72,048,000
Investment in subsidiaries and associates	11,32		6,925,526,575		21,433,592,840
Long-term loans	4,10		7,305,356,623		547,612,608
Long-term other receivables	4,6,10		547,743,465		2,013,318,650
Property, plant and equipment, net	12,32		408,675,311,270		422,122,234,554
Right-of-use assets	13		2,065,838,751		-
Intangible assets	14		4,945,322,545		6,063,367,299
Derivatives assets	4,9,10		196,791,795		154,967,366
Firm commitment assets	9		1,165,170,543		3,488,302,252
Deferred tax assets	29		9,286,838,175		4,506,127,609
Other non current assets			2,673,827,013		4,102,664,769
Total non-current assets			446,506,614,662		464,910,235,947
Total assets		₩	**825,575,151,624**	₩	**752,885,123,545**
Liabilities					
Current liabilities					
Trade payables and other payables	10,33	₩	147,559,765,517	₩	80,766,982,368
Contract liabilities	22,24		2,456,488,802		4,553,461,968
Short-term borrowings	4,10,15,31,32,33		77,900,000,000		40,000,000,000
Current portion of long-term borrowings	4,10,15		43,352,423,584		-
Current portion of bonds	4,10,15,32		84,501,855,057		135,685,364,724
Current portion of convertible bond	4,15,32		47,166,581,137		45,271,346,572
Advances from customers	22,32		173,270,234,183		148,267,040,482
Derivatives liabilities	9,10		10,314,593,670		11,624,650,168
Firm commitment liabilities	9		3,692,822,944		2,645,878,629
Current portion of provisions	17		12,268,430,707		5,896,373,865
Other current liabilities	14,33		16,525,956,757		14,120,660,538
Total current liabilities		₩	619,009,152,358	₩	488,831,759,314
Non-current liabilities					
Long-term other payables	10,33		2,771,370,185		3,871,925,543
Defined benefit plan liabilities	16		8,735,449,954		5,772,857,161
Derivatives liabilities	9,10		-		3,134,353,991
Firm commitment liabilities	9		735,857,235		1,200,484,866
Provisions	17		4,914,643,595		5,085,425,706
Other non-current liabilities	14		3,699,818,445		2,914,557,581
Total non-current liabilities			20,857,139,414		21,979,604,848
Total liabilities		₩	**639,866,291,772**	₩	**510,811,364,162**
Equity					
Issued capital	1,18	₩	32,947,142,000	₩	32,947,142,000
Capital surplus	18		174,628,267,422		174,628,267,422
Other components of equity	19		(54,788,960,036)		(54,788,960,036)
Other accumulated comprehensive income	12,20		69,849,715,510		70,622,037,972
Retained earnings (accumulated deficits)	21		(36,927,305,044)		18,665,272,025
Total equity		₩	**185,708,859,852**	₩	**242,073,759,383**
Total liabilities and equity		₩	**825,575,151,624**	₩	**752,885,123,545**

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

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of income(loss)
for the years ended December 31, 2019 and 2018
(Korean won)

	Notes		2019		2018
Sales	22,23,24,33	₩	673,324,747,303	₩	509,321,424,662
Cost of sales	25,33		663,498,616,284		510,031,725,292
Selling and administrative expenses	25,26		31,502,150,063		35,830,636,566
Operating profit (loss)			**(21,676,019,044)**		**(36,540,937,196)**
Finance income	10,27		68,923,562,651		57,565,959,931
Finance costs	10,27		85,849,815,651		63,503,966,705
Other income	28,33		319,012,341		13,260,843,156
Other expenses	28,33		6,681,026,030		1,119,035,959
Impairment losses on subsidiary investment stock			14,508,066,265		-
Net loss for the year before tax			**(59,472,351,998)**		**(30,337,136,773)**
Income tax benefit (expense)	29		4,375,782,107		9,855,154,224
Net loss	21		**55,096,569,891**		**20,481,982,549**
Loss per share:	30				
Basic loss per share	30	₩	(1,673)	₩	(423)
Diluted loss per share	30		(1,673)		(423)

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

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of comprehensive income(loss)
for the years ended December 31, 2019 and 2018

(Korean won in thousands)

	Notes		2019		2018
Net loss		₩	55,096,569,891	₩	20,481,982,549
Other comprehensive income	20		(1,268,329,640)		(8,859,642,731)
Items that are not reclassified to profit or loss in the subsequent period					
-Remeasurement of net defined benefit liability	16		(593,457,813)		(399,990,555)
-Revaluation surplus	12, 20	-	674,871,827		0
-Valuation loss on equity instruments designated at fair value through 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		-		(8,459,652,176)
Total comprehensive income(loss)		₩	(56,364,899,531)	₩ -	29,341,625,280

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, 2019 and 2018

(Korean won)

	Issued capital	Capital surplus	Other components of equity	Other accumulated comprehensive income	Retained earnings (accumulated deficits)	Total
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 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**
as of Jan 1, 2019	**₩ 32,947,142,000**	**₩ 174,628,267,422**	**₩ (54,788,960,036)**	**₩ 70,622,037,972**	**₩ 18,665,272,025**	**₩ 242,073,759,383**
Total comprehensive income:						
-Net loss	-	-	-	-	(55,096,569,891)	(55,096,569,891)
-Remeasurement of net defined benefit liability	-	-	-	-	(593,457,813)	(593,457,813)
-Reevaluation of land	-	-	-	(674,871,827)	-	(674,871,827)
-Disposal of re-valued land	-	-	-	(97,450,635)	97,450,635	-
as of Dec 31, 2019	**₩ 32,947,142,000**	**₩ 174,628,267,422**	**₩ (54,788,960,036)**	**₩ 69,849,715,510**	**₩ (36,927,305,044)**	**₩ 185,708,859,852**

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, 2019 and 2018
(Korean won)

		2019		2018
Ⅰ. Net cash provided by (used in) operating activities:	₩	**(64,661,316,176)**	₩	**18,750,576,231**
1. Cash flows from operating activities:		(52,206,039,726)		25,058,744,118
(1) Net loss		(55,096,569,891)		(20,481,982,549)
(2) Adjustments		22,746,142,469		15,941,178,194
(3) Changes in operating assets and liabilities		(19,855,612,304)		29,599,548,473
2. Interest received:		1,539,671,398		983,726,455
3. Interest paid:		(13,946,560,087)		(15,930,966,440)
4. Dividends received:		-		8,462,456,000
5. Income tax refunded (paid):		(48,387,761)		176,616,098
Ⅱ. Net cash provided by (used in) investing activities:		**(697,781,806)**		**(14,725,636,836)**
1.Cash flows from investing activities:		9,770,646,563		5,502,458,375
(1) Decrease in short-term financial instruments		6,341,469,191		-
(2) Decrease in short-term loans		341,942,481		653,062,420
(3) Disposal of investment in associates		-		3,454,000,000
(4) Disposal of property, plant equipment		2,419,889,437		20,850,502
(5) Disposal of intangible assets		592,545,454		1,374,545,453
(6) Decrease in long-term loans		74,800,000		-
2.Cash out-flows from investing activities:		(10,468,428,369)		(20,228,095,211)
(1) Increase in short-term financial instruments		-		15,200,021,156
(2) Increase in long-term financial instruments		2,200,000,000		400,000,000
(3) Increase in long-term loans		70,000,000		90,000,000
(4) Acqusition of property, plant and equipment		7,933,728,369		2,422,430,993
(5) Acqusition of intangible assets		264,700,000		2,115,643,062
Ⅲ. Net cash provided by (used in) financing activities:		**26,971,226,980**		**(15,424,738,331)**
1.Cash flows from financing activities:		261,433,721,912		104,598,761,710
(1) Proceeds from short-term borrowings		124,300,000,000		53,800,000,000
(2) Issuance of current portion of bonds		87,133,721,912		5,984,880,000
(3) Issuance of convertible bonds		-		44,813,881,710
(4) Issuance of liquid liabilities		50,000,000,000		-
2.Cash out-flows from financing activities:		(234,462,494,932)		(120,023,500,041)
(1) Repayments of short-term borrowings		96,000,000,000		-
(2) Repayments of current portion of long-term borrowings		6,400,000,000		30,000,000,000
(3) Repayments of current portion of bonds		130,000,000,000		89,993,266,981
(4) Acquisition of treasury stock		-		30,233,060
(5) Repayments of lease liabilities		2,062,494,932		-
Ⅳ. Changes in cash and cash equivalents from net foreign exchange difference		(224,900,512)		(78,957,146)
Ⅴ. Net decrease in cash and cash equivalents		**(38,612,771,514)**		**(11,478,756,082)**
Ⅵ. Cash and cash equivalents at January 1		**58,972,160,607**		**70,450,916,689**
Ⅶ. Cash and cash equivalents at December 31	₩	**20,359,389,093**	₩	**58,972,160,607**

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

1. General

HSD Engine Co., Ltd. (the “Company”) was incorporated on December 30, 1999 and 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	72,389	0.22
Ko, Young Youl (CEO)	10,000	0.03
Treasury stock	7,502	0.02
Others	18,801,384	57.07
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.
However, for investments in subsidiaries and associates owned even before first adopting IFRS, the cost method was applied using KIFRS 1101 as deemed cost at the date of transition to IFRS.
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

All other liabilities are classified 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 and non-financial assets such as investment property at fair value as of the end of the reporting period. 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	3.12.19
Quantitative disclosures of fair value measurement hierarchy	10
Property, plant and equipment under revaluation model	12
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2.3.3 Foreign currencies

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

(1) Transactions and balances

In preparing the financial statements, the Company records transactions made in currencies other than the functional currency by applying the exchange rate of the transaction date. 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. However, conversion differences arising from items for net investment hedges of foreign operations are reflected directly in equity up to the point of disposal of the net investment and in profit or loss at the time of disposal. The related corporate tax effects are treated equally as capital items.
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

The transaction date for determining the exchange rate to be applied to the initial recognition of the related assets, costs and revenues (or parts of it) is the date the company first recognises a non-monetary asset or non-monetary liability by prepaying or winning the consideration. In the event of multiple pre-payments or selection of competitors, the company determines the transaction date due to advance payment of the consideration or acquisition of the competitor.

(2) Conversion of foreign operations

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 income(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.

2.3.3 Foreign currencies (cont'd)

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.

2.3.4 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 is stated at fair value, net of accumulated impairment losses recognized after revaluation. The revaluation is performed periodically to ensure that the carrying amount of the asset does not differ materially from its fair value at the end of the reporting period.

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 statement of comprehensive income (loss), 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(loss) 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

At inception of a contract, the Company assesses whether the contract is or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The Company applies a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. The Company recognizes lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying assets.

(1) Right-of-use assets

The Company recognises right-of-use assets at the commencement date of the lease (i.e., the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognised, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. Right-of-use assets are depreciated on a straight-line basis over the shorter of the lease term and the estimated useful lives of the assets as follows:

	Useful lives (years)
Buildings	1 ~ 4
Vehicles	1 ~ 3

If ownership of the leased asset transfers to the Company at the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset. The right-of-use assets are also subject to impairment. Refer to the accounting policies in section 2.3.8 Impairment of non-financial assets.

(2) Lease liabilities

At the commencement date of the lease, the Company recognises lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Company and payments of penalties for terminating the lease, if the lease term reflects the Company exercising the option to terminate. Variable lease payments that do not depend on an index or a rate are recognised as expenses (unless they are incurred to produce inventories) in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, the Company uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments (e.g., changes to future payments resulting from a change in an index or rate used to determine such lease payments) or a change in the assessment of an option to purchase the underlying asset.

The Company’s lease liabilities are included in Interest-bearing loans and borrowings (see Note 13(2).

2.3.5 Leases (cont'd)

(3) Short-term leases and Leases of low-value assets

The Company applies the short-term lease recognition exemption to its short-term leases of machinery and equipment (i.e., those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option). It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered to be low value. Lease payments on short-term leases and leases of low value assets are recognised as expense on a straight-line basis over the lease term.

Company as a lessor
Leases in which the Company does not transfer substantially all the risks and rewards incidental to ownership of an asset are classified as operating leases. Rental income arising is accounted for on a straight-line basis over the lease terms and is included in revenue in the statement of income (loss) due to its operating nature. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised over the lease term on the same basis as rental income. Contingent rents are recognized as revenue in the period in which they are earned.

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 comprehensive income (loss) 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 comprehensive income (loss) 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 completion 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 c
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 comprehensive income (loss) 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 statement of comprehensive income (loss) 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:

Subsidiary Investment Stocks
The Company conducts impairment tests on subsidiaries' investment stocks on December 31 of each year and when any signs of impairment occur.

Tangible assets
The Company conducts impairment tests on tangible assets by individual assets or by cash-generating units on December 31 of each year and when circumstances indicate that the tangible assets may be impaired.

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 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.

(1) 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.

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

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.

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 fair value through profit or loss*

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 income(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.

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 income(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.

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

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 income(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 group of similar financial assets) is primarily derecognized (i.e., removed from the Company's 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.
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.

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

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.

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.

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

(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 income(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 income(loss).

This category generally applies to interest-bearing loans and borrowings. For more information, refer to Note 15.

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 income(loss).

(3) Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the 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

(1) 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 comprehensive income(loss) 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 comprehensive income(loss) 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.

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 comprehensive income(loss).

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.

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

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 comprehensive income(loss). On disposal of the foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to the statement of comprehensive income(loss).

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.

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 Company's 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 Company's 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 for the purpose of 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 comprehensive income (loss).

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(loss).

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.

(1) 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 comprehensive income(loss) 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 30).

(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 income(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 comprehensive income(loss).

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.

(1) Identifying performance obligations

The Company is engaged 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.

(2) 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.

(3) 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.

(4) Consideration payable to a customer

Consideration payable to a customer includes cash amounts that the Company pays, or expects to 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 consideration payable to a customer is accounted for as a reduction of the revenue unless the payment to the customer is in exchange for a distinct good or service that the customer transfers to the Company.

(5) Significant financing component

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.

(6) 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.

2.3.18 Revenue from contracts with customers (cont'd)

(7) Contract balance

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.

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).

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

(1) 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 comprehensive income(loss). 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.

(2) 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 recovered.

Deferred 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 adjustment is either treated as a reduction in goodwill (as long as it does not exceed goodwill) if it was incurred during the measurement period or recognized in profit or loss.

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 Application of revised standards

The Company applied KIFRS 1116 for the first time. The nature and effect of the changes as a result of adoption of these new accounting standards are described below.

Several other amendments and interpretations apply for the first time in 2019, but do not have an impact on the financial statements of the Company. The Company has not early adopted any standards, interpretations or amendments that have been issued but are not yet effective.

KIFRS 1116 Leases

KIFRS 1116 supersedes 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. The standard sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to recognize most leases on the balance sheet.

Lessor accounting under KIFRS 1116 is substantially unchanged from KIFRS 1017. Lessors will continue to classify leases as either operating or finance leases using similar principles as in KIFRS 1017. Therefore, KIFRS 1116 does not have an impact for leases where the Company is the lessor.

2.4.1 Application of revised standards - KIFRS 1116 Leases (cont'd)

The Company adopted KIFRS 1116 using the modified retrospective method of adoption, with the date of initial application of January 1, 2019. The Company elected to use the transition practical expedient to not reassess whether a contract is, or contains, a lease at January 1, 2019. Instead, the Company applied the standard only to contracts that were previously identified as leases applying KIFRS 1017 and KIFRS 2104 at the date of initial application. The Company also elected to use the recognition exemptions for lease contracts that, at the commencement date, have a lease term of 12 months or less and do not contain a purchase option (short-term leases), and lease contracts for which the underlying asset is of low value (low-value assets).

Impact on the statement of financial position (increase/(decrease)) is as follows (Korean won in thousands):

		Increase(Decrease)
Assets		
Right-of-use assets	₩	3,896,184
Advance payment		(4,076)
Total assets	₩	3,892,108
Liabilities		
Lease liabilities	₩	3,892,108
Total liabilities	₩	3,892,108

(1) Effects of KIFRS 1116 for the first time

The Company has lease contracts for various items of plant, vehicles and other equipment. Before the adoption of KIFRS 1116, the Company classified each of its leases (as lessee) at the inception date as either a finance lease or an operating lease. A lease that transferred substantially all the risks and rewards incidental to ownership to the Company was classified as a finance lease and the other was classified as an operating lease. In the case of finance leases, the lesser of the present value of the minimum lease payments and the fair value of the leased assets measured at the lease date is recognized as finance lease assets and finance lease liabilities, respectively, at the commencement of the lease term. Minimum lease payment for each reporting period is classified as finance cost and lease obligation repayment. Operating lease payments were recognized as an operating expense in the statement of income(loss) on a straight-line basis over the lease term. Prepaid or unpaid lease payments were recognized as advance payments and other payables, respectively.
Upon adoption of KIFRS 1116, the Company applied a single recognition and measurement approach for all leases except for short-term leases and leases of low-value asset. The standard provides specific transition requirements and practical expedients, which have been applied by the Company.

Leases previously classified as finance leases
The Company did not change the initial carrying amounts of recognised assets and liabilities at the date of initial application for leases previously classified as finance leases (i.e., the right-of-use assets and lease liabilities equal the lease assets and liabilities recognised under KIFRS 1017). The requirements of KIFRS 1116 were applied to these leases from 1 January 2019.

Leases previously classified as operating leases
The Company recognized right-of-use assets and lease liabilities for those leases previously classified as operating leases, except for short-term leases and leases of low-value assets. In most leases, the right-of-use assets were recognized based on the amount equal to the lease liabilities, adjusted for any related prepaid and accrued lease payments previously recognized. Lease liabilities were recognized based on the present value of the remaining lease payments, discounted using the incremental borrowing rate at the date of initial application.

2.4.1 Application of revised standards - KIFRS 1116 Leases (cont'd)

The Company also applied the available practical expedients wherein it:

- Used a single discount rate to a portfolio of leases with reasonably similar characteristics
- Relied on its assessment of whether leases are onerous immediately before the date of initial application
- Applied the short-term leases exemptions to leases with lease term that ends within 12 months of the date of initial application
- Excluded the initial direct costs from the measurement of the right-of-use asset at the date of initial application
- Used hindsight in determining the lease term where the contract contained options to extend or terminate the lease

The lease liabilities as of 1 January 2019 can be reconciled to the operating lease commitments as of 31 December 2018, as follows(Korean one in thousands):

		Amount
Operating lease commitments as of December 31, 2018	₩	4,168,120
The incremental borrowing rate as of January 1, 2019		5.48% .~ .6.08%
Discounted operating lease commitments as of January 1,2019		3,896,184
Less:		
Advanced payment		(4,076)
Lease liabilities as of January 1, 2019	₩	3,892,108

(2) Summary of new accounting policies

The new accounting policy of the Company upon adoption of KIFRS 1116 (see note 2.10), has been applied from the date of initial application.

Right-of-use assets

The Company recognises right-of-use assets at the commencement date of the lease (i.e., the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognised, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. If the Company does not reasonably expect the ownership of the leased asset to transfer to the Company at the end of the lease term, right-of-use assets are depreciated on a straight-line basis over the shorter of the lease term and the estimated useful lives of the assets. The right-of-use assets are also subject to impairment.

Lease liabilities

At the commencement date of the lease, the Company recognises lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Company and payments of penalties for terminating the lease, if the lease term reflects the Company exercising the option to terminate. Variable lease payments that do not depend on an index or a rate are recognised as expenses (unless they are incurred to produce inventories) in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, the Company uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments (e.g., changes to future payments resulting from a change in an index or rate used to determine such lease payments) or a change in the assessment of an option to purchase the underlying asset.

2.4.1 Application of revised standards - KIFRS 1116 Leases (cont'd)

Short-term leases and Leases of low-value assets
The Company applies the 'short-term lease' recognition exemptions on leases of machinery and facilities(i.e. leases term under 12 months from the commencement date and without an option to purchase). Also the Company applies the 'lease of low-value assets' recognition exemptions on leases(e.g. office equipment) for which the underlying asset is of low value. The Company recognizes lease payments on short-term leases and leases of low-value assets on accrual basis.

Determining the lease term of contracts with renewal and termination options
The Company determines the lease term as the non-cancellable term of the lease, together with any periods covered by an option to extend the lease if it is reasonably certain to be exercised, or any periods covered by an option to terminate the lease, if it is reasonably certain not to be exercised. The Company did not include the renewal period as part of the lease term for leases of vehicles as the Company has an accounting policy that restricts the lease term of less than three years for leased vehicles.

(3) Amount recognized in financial statement and profit or loss statement

The carrying amount of the Company's Right-of-use assets and Lease liabilities and the amount of changes during the reporting period are as follows (Korean one in thousands):

	Right-of-use assets			Lease Liabilities
	Building	Vehicles	Total	
Beginning Balance	₩ -	₩ -	₩ -	₩ -
Effects of Changes in Accounting Standards	3,613,581	282,603	3,896,184	3,892,108
Acquisition	129,902	24,297	154,199	101,980
Depreciation	(1,840,612)	(113,471)	(1,954,083)	-
Interest expense	-	-	-	179,289
Disposal	(30,461)	-	(30,461)	-
Payment	-	-	-	(2,062,495)
Ending Balance	₩ 1,872,410	₩ 193.429	₩ 2,065,839	₩ 2,110,882

The Company recognized the rental fee of ₩460,588 thousand and ₩47,311 thousand for short-term and Leases of low-value assets during the current term.

KIFRS 2123 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 *Income Taxes*. It 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 determines whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments and uses the approach that better predicts the resolution of the uncertainty. The Company applies significant judgement in identifying uncertainties over income tax treatments. Since the Company operates in a complex multinational environment, it assessed whether the Interpretation had an impact on its financial statements.

2.4.1 Application of revised standards - KIFRS 2123 Uncertainty over Income Tax Treatment (cont'd)

Upon adoption of the Interpretation, the Company considered whether it has any uncertain tax positions, particularly those relating to transfer pricing. The Company's and the subsidiaries' tax filings in different jurisdictions include deductions related to transfer pricing and the taxation authorities may challenge those tax treatments. The Company determined, based on its tax compliance and transfer pricing study, that it is probable that its tax treatments (including those for the subsidiaries) will be accepted by the taxation authorities. The Interpretation did not have an impact on the financial statements of the Company.

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 an 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. These amendments had no impact on the financial statements of the Company.

Amendments to KIFRS 1019: Plan Amendment, Curtailment or Settlement

The amendments to KIFRS 1019 address the accounting when a plan amendment, curtailment or settlement occurs during a reporting period. The amendments specify that when a plan amendment, curtailment or settlement occurs during the annual reporting period, an entity is required to determine the current service cost for the remainder of the period after the plan amendment, curtailment or settlement, using the actuarial assumptions used to remeasure the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event. An entity is also required to determine the net interest for the remainder of the period after the plan amendment, curtailment or settlement using the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event, and the discount rate used to remeasure that net defined benefit liability (asset). The amendments had no impact on the financial statements of the Company as it did not have any plan amendments, curtailments, or settlements during the period.

Amendments to KIFRS 1028: Long-term interests in associates and joint ventures

The amendments clarify that an entity applies KIFRS 1109 to long-term interests in an associate or joint venture to which the equity method is not applied but that, in substance, form part of the net investment in the associate or joint venture (long-term interests). This clarification is relevant because it implies that the expected credit loss model in KIFRS 1109 applies to such long-term interests. The amendments also clarified that, in applying KIFRS 1109, an entity does not take account of any losses of the associate or joint venture, or any impairment losses on the net investment, recognized as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 *Investments in Associates and Joint Ventures*. The amendments are retrospectively applied from the fiscal year beginning on or after January1, 2019, and can be early adopted. These amendments had no impact on the financial statements as the Company does not have long-term interests in its associate and joint venture.

Annual Improvements 2015-2017 Cycle

KIFRS 1103 Business Combination

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 and disclosure required. These amendments had no impact on the financial statements of the Company as there is no transaction where joint control is obtained.

KIFRS 1111 Joint Arrangements

An entity 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 and disclosure required. These amendments had no impact on the financial statements of the Company as there is no transaction where joint control is obtained.

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 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 financial statements.

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 financial statements are disclosed below.

Amendments to KIFRS 1003: *Definition of a Business*
In October 2018, the KASB issued amendments to the definition of a business in KIFRS 1003 *Business Combinations* to help entities determine whether an acquired set of activities and assets is a business or not. They clarify the minimum requirements for a business, remove the assessment of whether market participants are capable of replacing any missing elements, add guidance to help entities assess whether an acquired process is substantive, narrow the definitions of a business and of outputs, and introduce an optional fair value concentration test. New illustrative examples were provided along with the amendments.

Since the amendments apply prospectively to transactions or other events that occur on or after the date of first application, the Company will not be affected by these amendments on the date of transition.

Amendments to KIFRS 1001 and KIFRS 1008: *Definition of Material*
In October 2018, the IASB issued amendments to KIFRS 1001 *Presentation of Financial Statements* and KIFRS 1008 *Accounting Policies, Changes in Accounting Estimates and Errors* to align the definition of 'material' across the standards and to clarify certain aspects of the definition. The new definition states that, 'Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.'

The amendments to the definition of material is not expected to have a significant impact on the Company's 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 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 16).

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 The Company based its assumptions and estimates on parameters available when the 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.

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, 2019, the carrying amount of capitalized development costs was ₩1,067 million (December 31, 2018: ₩1,627 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, 2019 and 2018, is as follows (Korean won in thousands):

	2019				
	USD	EUR	CNY	Others (*1)	Total
Assets	₩ 80,288,138	₩ 104,647	₩ 7,164,104	₩ 355,687	₩ 87,912,576
Liabilities	(1,725,387)	(12,247,494)	(174,449)	(6,283,735)	(20,431,065)
Net assets (liabilities)	₩ 78,562,751	₩ (12,142,847)	₩ 6,989,655	₩ (5,928,048)	₩ 67,481,511

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

	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.

Net foreign currency translation loss for the years ended December 31, 2019 and 2018 is ₩1,245,718 thousand and ₩134,060 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, 2019 and 2018, is as follows (Korean won in thousands):

	2019		2018	
	10% increase	10% decrease	10% increase	10% decrease
Income before tax	₩ 6,748,151	₩ (6,748,151)	₩ 5,233,416	₩ (5,233,416)

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, 2019 and 2018.

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, 2019 and 2018, is as follows (Korean won in thousands):

	2019	2018
Assets	₩ 30,230,974	₩ 58,831,079
Liabilities	(39,300,000)	(25,000,000)
Net assets (liabilities)	₩ (9,069,026)	₩ 33,831,079

A sensitivity analysis on the Company's income before tax assuming 1% increase and decrease in interest rates for the years ended December 31, 2019 and 2018, is as follows (Korean won in thousands):

	2019		2018	
	1% increase	1% decrease	1% increase	1% decrease
Income before tax	₩ (90,690)	₩ 90,690	₩ 338,311	₩ (338,311)

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, 2019 and 2018, are as follows (Korean won in thousands):

		2019		2018
Loans and receivables:				
Cash and cash equivalents	₩	20,359,989	₩	58,972,161
Financial instruments		21,922,130		27,063,599
Trade and other receivables		77,058,791		20,225,355
Long-term and short-term loans		7,560,515		7,763,933
Long-term other receivables		547,743		2,013,319
Derivative assets		4,322,824		1,522,694
	₩	132,771,392	₩	117,561,061

In addition to the above financial assets, the maximum guaranteed amount of credit guarantees (see Note 32) 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.

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. (Korean won in thousands):

	December 31, 2019						
	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	-	-	-	0.12%	0.31%	57.44%	-
Book Value	₩ 4,243,617	₩ 62,405,150	₩ 13,432,628	₩ 488,144	₩ 402,174	₩ 387,236	₩ 81,358,949
Loss provision	4,243,617	1,747	391	586	1,233	222,432	4,470,006

	January 1, 2019						
	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

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 and is currently set as ₩4,243,617 thousand as of December 31, 2019 (₩4,139,164 thousand as of December 31, 2018). A group 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, 2019 and 2018, which have matured, are as follows (Korean won in thousand):

	2019					
	Book value	Nominal cash flows according to the contract				
		Total	Less than 1 year	1 year-2 years	2 years -5 years	More than 5 years
Financial liabilities(*1)	₩ 403,251,995	₩ 401,831,136	₩ 399,059,766	₩ 2,771,370	₩ -	₩ -
Interest expense	-	4,400,661	4,400,661	-	-	-
	₩ 403,251,995	₩ 406,231,797	₩ 403,460,427	₩ 2,771,370	₩ -	₩ -

	2018					
	Book value	Nominal cash flows according to the contract				
		Total	Less than 1 year	1 year-2 years	2 years -5 years	More than 5 years
Financial liabilities(*1)	₩ 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	₩ -	₩ -

(*1) The convertible bond assumed early repayment claim

The above-mentioned financial liabilities are the undiscounted contractual principal, which differs from the carrying amount of the financial liabilities in the statement of financial position and includes interest on the financial liabilities to be paid in the future. Apart from the above-mentioned non-derivative liabilities, the maximum amounts of guarantee by the Company as of December 31, 2019, in the financial guarantee contract are explained in Note 32.

(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, 2019 and 2018, are as follows (Korean won in thousand):

	2019	2018
Total liabilities	₩ 639,866,292	₩ 510,811,364
Total equity	185,708,860	242,073,759
Debt-to-equity ratio	344,55%	211.01%

4. Financial risk management (cont'd)

(5) Changes in liabilities from financial activities

	Beginning			Cash flow
	Jan. 1	Effects of changes in accounting policies (*1)	Beginning Balance	
Short-term borrowings	₩ 40,000,000	₩ -	₩ 40,000,000	₩ 28,300,000
Asset backed Loans("ABL")	-	-	-	43,600,000
Current portion of bond	135,685,365	-	135,685,365	(41,400,000)
Current portion of convertible bonds	45,271,347	-	45,271,347	-
Lease liabilities	-	3,892,108	3,892,108	(2,062,495)
	₩ 220,956,712	₩ 3,892,108	₩ 224,848,820	₩ 28,437,505

	Non-cash changes			Dec. 31
	Amortization of present value	Increase (*2)	Others	
Short-term borrowings	₩ -	₩ -	₩ 9,600,000	₩ 77,900,000
Asset backed Loans("ABL")	(247,576)	-	-	43,352,424
Current portion of bond	(183,510)	-	(9,600,000)	84,501,855
Current portion of convertible bonds	1,895,234-	-	-	47,166,581
Lease liabilities	179,289	101,980	-	2,110,882
	₩ 1,643,437	₩ 101,980	₩ -	₩ 255,031,742

(*1) The effect of initial adoption of KIFRS 1116 (Lease) is non-cash changes in entirety.
(*2) This is the acquisition of a new lease.

5. Restricted financial instruments

Details of restricted financial instruments as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018	Remarks
Short-term financial instruments	₩ 5,823,317	₩ 5,518,920	A pledge to KEB Hana Bank
	-	4,045,452	A pledge to Korea Hydro & Nuclear Power Co.,Ltd
	4,286,002	1,218,729	A pledge to NongHyup Bank
	-	5,874,497	A pledge to Kyongnam Bank
	10,206,811	10,000,000	A pledge to Korea Development Bank
Subtotal	20,316,130	26,657,598	
Long-term financial instruments	6,000	6,000	Guarantee deposits for checking account
	1,600,000	1,600,000	A pledge to Kyongnam Bank
Subtotal	1,606,000	1,606,000	
Long-term investment securities	1,000,118	-	A pledge to Kyongnam Bank
Total	₩ 22,922,248	₩ 26,763,599	

6. Trade and other receivables

Trade and other receivables as of December 31, 2019 and 2018, consist of the following (Korean won in thousand):

	2019				2018		
	Gross	Allowance for doubtful accounts	Value Discount	Book value	Gross	Allowance for doubtful accounts	Book value
Current:							
Trade receivables	₩ 79,439,373	₩ (2,855,083)	₩ (1250)	₩ 76,584,290	₩ 22,301,965	₩ (2,790,537)	₩ 19,511,428
Other receivables	1,919,576	(1,614,923)		304,653	1,696,563	(1,539,762)	156,801
Accrued income	102,495	-		102,495	353,543	-	353,543
Guarantee deposits	67,353	-		67,353	203,583	-	203,583
Sub total	81,528,797	(4,470,000)		77,058,791	24,555,654	(4,330,299)	20,225,355
Non-current							
Guarantee deposits	548,993	-	(1250)	547,743	2,013,319	-	2,013,319
Subtotal	548,993	-	(1250)	547,743	2,013,319	-	2,013,319
Total	₩ 82,077,790	₩ (4,470,000)	₩ (1250)	₩ 77,606,534	₩ 26,568,973	₩ (4,330,299)	₩ 22,238,674

Changes in allowance for doubtful accounts for the year ended December 31, 2019, are as follows (Korean won in thousands):

	Jan. 1	Charge for the year	Unused amounts reversed	Dec. 31
Trade receivables	₩ (2,790,537)	₩ (64,546)	₩ -	₩ (2,855,083)
Other receivables	(1,539,762)	(75,161)	-	(1,614,923)
	₩ (4,330,299)	₩ (139,707)	₩ -	₩ (4,470,000)

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 statements of income.

7. Inventories

Inventories as of December 31, 2019 and 2018, are summarized as follows (Korean won in thousands):

	2019			2018		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Work in progress	160,751,733	(21,835,099)	138,916,634	₩ 135,380,337	₩ (29,119,737)	₩ 106,260,600
Raw materials	109,387,891	(21,791,176)	87,596,715	65,820,982	(21,301,058)	44,519,924
Materials in transit	4,415,813	-	4,415,813	1,968,892	-	1,968,892
	274,555,437	(43,626,275)	230,929,162	₩ 203,170,211	₩ (50,420,795)	₩ 152,749,416

Losses on inventory valuation (reversal) recognized as cost of sales amounted to ₩6,794,520 thousand and ₩8,467,636 thousand for the years ended December 31, 2019 and 2018, respectively. A portion of inventories above are provided as collateral in relation to export growth and performance guarantee (Note 32- (2)).

8. Long-term investment securities

Long-term investment securities as of December 31, 2019 and 2018, are summarized as follows (Korean won in thousands):

	2019	2018
Financial assets at fair value through profit or loss		
Investment in capital of partnership:		
Korea Marine Equipment Association	₩ 20,000	₩ 20,000
Electronic Contractors' Financial Cooperative	52,047	52,047
Korea Facility Construction Credit Union	40,722	-
Equity securities in non-listed company		
Casco	1	1
Profitability securities		
Mirae Asset Global Dynamic Plus Securities Investment Trust NO.1(Bonds) A	1,000,118	-
	₩ 1,112,888	₩ 72,048

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, 2019 and 2018, are as follows (in foreign currencies and Korean won in thousands):

2019

	Buy		Sell				
Derivative instrument	Currency	Amount	Currency	Amount	Assets (liabilities)	Gains (losses)	Firm commitment
Foreign currency forwards	KRW	538,730,035	USD	472,392,224	₩ (5,997,748)	₩ 3,898,052	₩ 7,825,828
	EUR	8,278,000	KRW	10,892,424	(105,561)	(40,974)	116,357
	CHF	5,183,000	KRW	6,001,648	111,539	74,027	(116,397)
					₩ (5,991,770)	₩ 3,931,105	₩ 7,825,788

2018

	Buy		Sell				
Derivative instrument	Currency	Amount	Currency	Amount	Assets (liabilities)	Gains (losses)	Firm 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

10. Financial instruments

(1) Categories of financial assets as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Derivatives	Book value	Fair value
Cash and cash equivalents	₩ 20,359,389	₩ -	₩ -	₩ 20,359,389	₩ 20,359,389
Long and short-term financial instruments	21,922,130	-	-	21,922,130	21,922,130
Trade and other receivables	77.058,791	-	-	77,058,791	77,058,791
Derivative assets		-	4,322,824	4,322,824	4,322,824
Long and short-term loans	7,560,515	-		7,560,515	7,560,515
Long-term investment securities		1,112,888		1,112,888	1,112,888
Long-term other receivables	547,743			547,743	547,743
	₩ 127,448,568	₩ 1,112,888	₩ 4,322,824	₩ 132,884,280	₩ 132,884,280

	2018				
	Loans and receivables	AFS financial assets	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)

(2) Categories of financial liabilities as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019			
	Financial liabilities at amortized cost	Derivatives	Book value	Fair value
Trade and other payables	₩ 147,559,766	₩ -	₩ 147,559,766	₩ 147,559,766
Borrowings and bonds	252,920,860	-	252,920,860	252,920,860
Derivative liabilities		10,314,594	10,314,594	10,314,594
Long-term other payables	2,771,370	-	2,771,370	2,771,370
	₩ 403,251,996	₩ 10,314,594	₩ 413,566,590	₩ 413,566,590

	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

(3) Fair value measurements of financial instruments by fair value hierarchy levels as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ 1,000,118	₩ 112,770	₩ 1,112,888
Derivatives designated as hedging instruments	-	4,322,824	-	4,322,824
Subtotal				
Financial liabilities:	-	5,322,942	112,770	5,435,712
Derivatives designated as hedging instruments	-	(10,314,594)	-	(10,314,594)
	₩ -	₩ (4,991,652)	₩ 112,770	₩ (4,878,882)

	2018			
	Level 1	Level 2	Level 3	Total
Financial assets:				
AFS financial assets	₩ -	₩ -	₩ 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)

10. Financial instruments(cont'd)

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.

(4) 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.

(5) Comprehensive income for each category of financial instruments for the years ended December 31, 2019 and 2018 is as follows(Korean won in thousands):

	2019							
	Profit or loss							Other comprehensive income
	Interest	Dividend	Valuation	Impairment /Reversal	Disposal	Foreign exchange	Others	
Financial instruments:								
Financial assets at amortized cost	₩ 1,226,576	₩ -	₩ 118	₩ (139,707)	₩ (13,870)	₩ 3,149,240	₩ -	₩ -
	₩ 1,226,576	₩ -	₩ 118	₩ (139,707)	₩ (13,870)	₩ 3,149,240	₩ -	₩ -
Financial liabilities:								
Financial liabilities at amortized cost	₩ (17,470,394)	₩ -	₩ -	₩ -	₩ -	₩ (240,707)	₩ -	₩ -
Financial guarantee contracts	-	-	-	-	-	-	₩ 13,894	-
	₩ (17,470,394)	₩ -	₩ -	₩ -	₩ -	₩ (240,707)	₩ 13,894	₩ -

10. Financial instruments(cont'd)

	2018							
	Profit or loss							Other comprehensive income
	Interest	Dividend	Valuation	Impairment /Reversal	Disposal	Foreign exchange	Others	
Financial instruments:								
Loans and receivables	₩ 1,174,304	₩ -	₩ -	₩ (357,167)	₩ -	₩ 3,150,756	₩ -	₩ -
AFS financial assets	-	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	₩ -

Comprehensive income (loss) from financial instruments other than the above for the years ended December 31, 2019 and 2018, is as follows (Korean won in thousands):

	2019			2018		
	Profit or loss		Other comprehensive income	Profit or loss		Other comprehensive income
	Valuation	Disposal		Valuation	Disposal	
Derivatives	₩ (3,931,105)	(23,149,280)	₩ -	₩ (14,345,628)	₩ (11,080,838)	₩ -

11. Investments in associates and subsidiaries

Investments in subsidiaries and associates as of December 31, 2019 and 2018, consist of the following (Korean won in thousands):

	Country	Percentage	2019	2018
Subsidiaries:				
HSD Marine Industry (Dalian) Co., Ltd. ("HSDMI") (*1)	China	100.00	₩ 3,071,691	₩ 17,579,757
Doosan Engine PNG Co., Ltd. ("DEPNG")	Papua New Guinea	100.00	42	42
New Star HS Arc 1st Co., Ltd. (*2)	Korea	-	-	-
Subtotal			3,071,733	17,579,799
Associates:				
Dalian Samyoung Doosan Metal Product Co., Ltd.("DSDMP") (*3)	China	10.80	3,853,794	3,853,794
			₩ 6,925,527	₩ 21,433,593

(*1) (₩)14,508,066 thousand was recognized as an impairment loss for the years ended December 31, 2019.

(*2) Although the company does not own a significant stake in a liquidated company, considering the terms of the arrangement in which the structured entity was established, the company decided that it had control over the activities of the structured entity that could have the most significant impact on the special purpose company("SPC").

(*3) Although the Company's ownership in each of these companies is less than 20%, the investee is classified as an associate as the Company has significant influence over it company by exercising voting rights in the board of directors.

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

12. Property, plant and equipment

(1) Changes in property, plant and equipment for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019					
	Land	Buildings and structures	Machinery	Others	Construction-in-progress	Total
Jan. 1	₩ 259,350,576	115,190,681	45,088,631	1,298,560	1,193,787	422,122,235
Acquisition	27,957	105,337	1,616,736	2,909,628	3,329,381	7,989,039
Transfer (*1)	-	-	80,806	359,244	(1,193,787)	(753,737)
Revaluation	(1,098,199)	-	-	-	-	(1,098,199)
Disposal	(971,300)	(1,183,486)	(461,084)	(1,200)	-	(2,617,070)
Depreciation	-	(4,852,385)	(8,394,098)	(885,943)	-	(14,132,426)
Impairment loss	-	(193,034)	(2,641,497)	-	-	(2,834,531)
Dec. 31	₩ 257,309,034	109,067,113	35,289,494	3,680,289	3,329,381	408,675,311
Acquisition cost	165,159,014	172,663,086	-	48,194,502	3,329,381	571,096,400
Accumulated depreciation	-	(63,402,939)	(143,819,426)	(44,514,213)	-	(251,736,578)
Accumulated impairment loss	-	(193,034)	(2,641,497)	-	-	(2,834,531)
Revaluation surplus	92,150,020	-	-	-	-	92,150,020

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

(*2) The impairment test was conducted with the help of an independent valuation specialist for each individual asset to calculate the fair value of the process, and the impairment loss was reflected in the profit or loss of the current term as a cost item consistent with the function of the impaired asset.

	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

(*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 ₩165,366,881 thousand and ₩166,181,660 thousand as of December 31, 2019 and 2018, respectively.

Part of the land above is collateralized to Korea Development Bank in relation to the opening of an import credit (see Note 32-(2)).

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

(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, 2019, 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, 2019. Pacific is a member of Korea Association of Property Appraisers and comprises of certified professionals that have a significant amount of industry experience.

(3) Fair value measurements of land by fair value hierarchy level as of December 31, 2019 and 2018, are as follows (Korean won in thousands)

	2019			2018		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 257,309,034	₩ -	₩ -	₩ 259,350,576

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).

(4) Changes in land for the year ended December 31, 2019 are as follows (Korean won in thousands):

January 1, 2019	Acquisition	Disposal	Revaluation		December 31, 2019
			OCI	NI	
₩ 259,350,576	₩ 27,957	₩ (971,300)	₩ (890,322)	₩ (207,867)	₩ 257,309,034

(5) Changes in revaluation surplus and classification by the asset for the year ended December 31, 2019 are as follows (Korean won in thousands):

January 1, 2019	Increase	Decrease	Disposal	December 31, 2019
₩ 93,168,916	₩ 6,293	₩ (896,625)	₩ (128,564)	₩ 92,150,020

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

(6) A classification of depreciation expenses for the years ended December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019	2018
Cost of sales	₩ 15,066,165	₩ 13,739,642
Selling and administrative expenses	828,767	46,043
Selling and administrative expenses -expenditure on research and development	191,578	208,994
	₩ 16,086,510	₩ 14,962,321

13. Lease

(1) The details of right-of-use assets as of December 31, 2019 are as follows (Korean won in thousands):

	Acquisition		Accumulated depreciation		Disposal		Book Value	
Building	₩	3,743,483	₩	(1,840,612)	₩	(30,461)	₩	1,872,410
Vehicle		306,900		(113,471)		-		193,429
	₩	4,050,383	₩	(1,954,083)	₩	(30,461)	₩	2,065,839

(2) The changes in lease liabilities during the current term are as follows (Korean won in thousands):

	Conversion Date		Acquisition		Interest expense		lease payment		Transfer to current portion		2019	
Current	₩	1,977,055	₩	36,259	₩	179,289	₩	(2,062,495)	₩	1,801,467	₩	1,931,575
Non-Current		1,915,053		65,721		-		-		-		179,307
	₩	3,892,108	₩	101,980	₩	179,289	₩	(2,062,495)	₩	(1,801,467)	₩	2,110,882

(3) The components of operating lease expenses by account component are as follows (Korean won in thousands):

	Short-term lease		Small lease	
Cost of sales	₩	133,913	₩	36,529
Selling and administrative expenses		326,675		10,782
	₩	460,588	₩	47,311

The Company have several lease agreements, including extension and termination options. These options are negotiated by management to provide flexibility in managing the leased asset portfolio and to meet our business needs. Management applies important judgement when deciding whether these extension and termination options are reasonably certain to be exercised (See Note 2.4.1).

Below are potential undiscounted future lease payments related to periods after the exercise date of the extension and termination options not included in the lease term.

	2019	
Extension options not expected to be exercised	₩	333,476
Termination options expected to be exercised		193,429
	₩	526,905

14. Intangible assets

(1) Changes in intangible assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019							
	Development costs		Software		Others		Total	
January 1	₩	1,626,696	₩	2,023,854	₩	2,412,817	₩	6,063,367
Acquisition		-		111,400		153,300		264,700
Transfer		-		753,737		-		753,737
Disposal		-		-		(603,389)		(603,389)
Amortization		(559,698)		(788,730)		(184,664)		(1,533,092)
Impairment loss		-		-		-		-
December 31	₩	1,066,998	₩	2,100,261	₩	1,778,064	₩	4,945,323
Acquisition cost	₩	25,022,729	₩	16,834,199	₩	2,894,038	₩	44,750,966
Accumulated amortization		(23,955,731)		(14,733,938)		(1,115,974)		(39,805,643)

14. Intangible assets (cont'd)

	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)

The carrying amount of membership with indefinite useful lives in other intangible assets item is ₩1,038,063 thousand and ₩1,488,153 thousand as of December 31, 2019 and 2018, respectively. Expenditure on research and development, which was recognized as expenses, amounted to ₩ 3,265,172 thousand and ₩ 4,063,604 thousand for the years ended December 31, 2019 and 2018, respectively.

(2) A classification of amortization expense for the years ended December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019	2018
Cost of sales	₩ 698,857	₩ 745,498
Selling and administrative expenses	714,236	406,067
Expenditure on research and development	120,000	120,000
	₩ 1,533,093	₩ 1,271,565

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

			Amount of impairment loss		Method of valuation
	Individual asset	Book value	Amount recognized in current period	Accumulated amount	of recoverable amount
Development costs	SCR Development	₩ 1,066,998	₩ -	₩ (21,808,122)	Value in use

As a reliable valuation of fair value of the development cost is impossible, the recoverable amount was measured based on value in use. The future cash flows of 2 years for the value in use measurement were estimated based on past business performance and future business plan of the Company. The discount rate for the value in use measurement was estimated by weighted average capital cost of 12.78% reflecting unique risk of the asset.

15. Borrowing and bonds

(1) Short-term borrowings (Korean won in thousands):

	Financial institutions	Interest rate (%)	December 31 2019	December 31, 2018
Short-term Borrowings in Korean Won	NH Bank	3M MOR+4.25	₩ 8,000,000	₩ 10,000,000
		3.60	12,000,000	-
	Kyongnam Bank	4.29	15,000,000	15,000,000
		4,77	15,000,000	-
	Korea Development Bank	3.28	4,300,000	-
	Korea Exim Bank	5.58	20,000,000	-
		5.65	-	5,000,000
		5.50	-	10,000,000
	Shinyoung Securities	6.30	1,000,000	-
	Korea Asset Investment & Securities Co.	6.30	2,600,000	-
-			₩ 77,900,000	₩ 40,000,000

(2) Bonds and borrowings as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	Maturity	Interest rate (%)	2019	2018
The 8th(*1)	Apr. 26, 2019	4.60	₩ -	₩ 130,000,000
The 10th(*1)	Dec. 18, 2019	5.60	-	6,000,000
The 11th	Jan. 14. 2020	5.60	5,000,000	-
The 12th	Apr. 24. 2020	6.00	80,000,000	-
			85,000,000	136,000,000
Less current portion			(84,501,855)	(135,685,365)
Less discount on bonds			(498,145)	(314,635)
			₩ -	₩ -

(*1) The maturity of the 8, 10th bond was fully paid during the current reporting period.

(3) Convertible bonds

	Interest rate (%)	2019	2018
The 9th	5.00	₩ 45,000,000	₩ 45,000,000
Bond premium		8,200,362	8,200,362
Less discount on bonds		(123,303)	(162,033)
Less adjustment of conversion rights		(5,910,478)	(7,766,982)
Less current portion(*1)		(47,166,581)	(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.

15. 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 and two ₩100 million books (total of ₩45 billion)
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) to ₩3,456 (Adjusted from ₩3,888 to ₩3,456 as of September 22, 2019)
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.
Conversion Rate	100% of the face value

15. Borrowing and bonds (cont'd)

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 host contract to be paid when exercising the early redemption right.

According to the replie sof the Financial Supervisory Service, the Company classifies the balance after the deduction of debentures from the initial book value of the convertible bond with the condition of discounting the exercise prices when the stock price falls, as capital.

(4) Asset backed Loans("ABL")

The SPC has been established for the Company to securitize the receivables to be recovered in the future during 2019. The Company transferred the receivables to be recovered to the SPC in the future, and the SPC performed asset securitization in the form of issuing securitized securities based on the transferred assets. The details of the increase and reduction of the ABL are as follows (Korean won in thousands):

	2019
Beginning balance	₩ -
Accrual	50,000,000
Repayment amount	6,400,000
Ending balance	43,600,000
Present value discount	(247,576)
Less current portion	(43,352,424)
	₩ -

(5) The details of the major arrangements related to the above liquidated debt are as follows.

	Interest rate (%)	Trust principal amount	Period
New Star HS Arc 1st Co., Ltd.	6.00	₩ 50,000,000	2019.04.25~2020.07.25

16. 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.

(1) Details of retirement benefit obligation as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Present value of defined benefit obligation	₩ 35,585,190	₩ 34,108,750
Fair value of plan assets	(26,849,740)	(28,335,893)
	₩ 8,735,450	₩ 5,772,857

(2) Expenses recognized in profit and loss for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Current service cost	₩ 3,742,566	₩ 3,910,302
Net interest expense (Interest expense – expected return on plan assets)	64,494	173,745
	₩ 3,807,060	₩ 4,084,047

(3) Classification of the expenses related to the retirement benefit obligation recognized in the statements of income(aoss) for the years ended December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019	2018
Cost of sales	₩ 2,657,658	₩ 2,779,302
Selling and administrative expenses	984,013	1,139,121
Selling and administrative expenses expenditure on research and development	165,389	165,624
	₩ 3,807,060	₩ 4,084,047

(4) Changes in defined benefit obligations for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Beginning balance	₩ 34,108,750	₩ 33,232,700
Current service cost	3,742,566	3,910,302
Transfer in		116,928
Transfer out		(537,530)
Interest expense	886,919	1,097,218
Remeasurements of defined benefit liabilities:	403,538	7,098
Changes in demographic assumptions		(649,486)
Changes in financial assumptions	1,013,993	520,410
Others	(610,455)	136,174
Benefit paid	(3,556,583)	(3,717,966)
Ending balance	₩ 35,585,190	₩ 34,108,750

16. Retirement benefit obligation (cont'd)

(5) Changes in plan assets for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Beginning balance	₩ 28,335,893	₩ 30,282,077
Expected return on plan assets	822,424	923,472
Remeasurements of plan assets	(379,388)	(520,594)
Contributions by employer directly to plan assets		-
Benefit paid	(1,929,189)	(2,320,717)
Transfer in		-
Transfer out		(28,345)
Ending balance	₩ 26,849,740	₩ 28,335,893

(6) Assumptions used for actuarial valuation as of December 31, 2019 and 2018 are as follows:

	December 31, 2019	December 31, 2018
Discount rate for defined benefit obligations	2.89%	3.23%
Expected rate of salary increase:		
Employee	2.00%	2.00%
Officer	2.00%	2.00%

(7) Details of plan assets as of December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Debt securities	₩ 4,121,445	₩ 124,798
Equity securities	2,899,970	4,360,072
Loans	620	99,466
Deposits	19,635,311	21,203,460
Others	192,394	2,548,097
	₩ 26,849,740	₩ 28,335,893

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

(8) The sensitivity analysis for the significant actuarial assumptions as of December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019		2018	
	Amount	Rate	Amount	Rate
Discount rate:				
1% increase	₩ (2,831,956)	(-)8.00%	₩ (2,662,828)	(-)7.81%
1% decrease	3,312,084	9.30%	3,117,111	9.14%
Salary increase rate:				
1% increase	3,380,135	9.50%	3,192,654	9.36%
1% decrease	(2,935,043)	(-)8.20%	(2,768,167)	(-)8.12%

16. Retirement benefit obligation (cont'd)

(9) Information about the maturity profile of the defined benefit obligation as of December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019			
	Less than 1year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Expected payment	₩ 1,873,209	₩ 1,953,648	₩ 6,026,998	₩ 17,483,861

	2018			
	Less than 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

17. Provisions

Changes in provisions for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019			2018		
	Warranty	Litigation	Total	Warranty	Litigation	Total
Beginning balance	₩ 9,205,925	1,775,875	10,981,800	₩ 10,121,944	₩ 755,040	₩ 10,876,984
Accrual	2,057,561	7,512,494	9,570,055	1,852,136	1,020,834	2,872,970
Reversal	(1,331,355)	(1,775,875)	(3,107,230)	(2,139,531)	-	(2,139,531)
Use	(1,771,105)	-	(1,771,105)	(2,567,739)	-	(2,567,739)
Others (*1)	1,509,555	-	1,509,555	1,939,116	-	1,939,116
Ending balance	₩ 9,670,581	7,512,494	17,183,075	₩ 9,205,925	₩ 1,775,875	₩ 10,981,800
Current	4,755,937	7,512,494	12,268,431	4,120,499	1,775,875	5,896,374
Non-current	4,914,644	-	4,914,644	5,085,426	-	5,085,426

(*1) Others are amounts settled by the technician based on the cause of defects repair.

18. Share capital and capital surplus

(1) Changes in share capital and capital surplus for the year ended December 31, 2019 are as follows (Korean won in thousands, except for number of shares):

	2019			
	Number of shares	Par value	Capital stock	Capital surplus
Beginning balance	32,947,142	₩ 1,000	₩ 32,947,142	₩ 174,081,655
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.

(2) Details of capital surplus as of December 31, 2019 and 2018 are as follows: (Korean won in thousands)

	2019	2018
Stock issue premium	₩ 174,081,655	₩ 174,081,655
Conversion right to pay	546,612	546,612
	₩ 174,628,267	₩ 174,628,267

19. Other capital components

(1) Other capital components as of December 31, 2019 and 2018 are summarized as follows (Korean won in thousands):

	2019	2018
Treasury stock	₩ (30,233)	₩ (30,233)
Loss of reducing equity	(55,380,205)	(55,380,205)
Share options	621,478	621,478
	₩ (54,788,960)	₩ (54,788,960)

(2) Share-based payment

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

The number of granted options as of December 31, 2019 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

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 3year Treasury bond yield rate.

Changes in share options for the year ended December 31, 2019 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	-	-	(16,200)	2,000
3rd	49,200	-	-	(49,200)	-
4th	12,500	-	-	(8,600)	3,900
	86,400	-	-	(80,500)	5,900

19. Other capital components(cont'd)

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

20. Accumulated other comprehensive income

Accumulated other comprehensive income as of December 31, 2019 and 2018 is as follows (Korean won in thousands):

	2019	2018
Revaluation surplus of land	₩ 69,849,716	₩ 70,622,038

21. Retained earnings (accumulated deficit)

(1) Retained earnings (accumulated deficit) as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Legal reserve	₩ 1,200,000	₩ 1,200,000
Voluntary reserve	2,700,000	2,700,000
Retained earnings (accumulated deficit) before appropriations(disposition)	(40,827,305)	14,765,272
Total	₩ (36,927,305)	₩ 18,665,272

Profit reserves, which are statutory reserves, are required to accumulate at least 10% of the profit dividends by money at each settlement period as profit reserves until 50% of the paid-in capital is reached in accordance with the provisions of the Commercial Law.

(2) Changes in retained earnings for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Beginning balance	₩ 18,665,272	₩ 4,387,912
Cumulative effect of changes in accounting policies	-	233,437,065
Changes due to split-off	-	(198,277,732)
Net loss	(55,096,570)	(20,481,982)
Remeasurements of defined benefit liabilities	(593,458)	(399,991)
Revaluation surplus of land	97,451	-
Ending balance	₩ (36,927,305)	₩ 18,665,272

21. Retained earnings (deficit) (cont'd)

(3) Separate statements of appropriation of retained earnings for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Unappropriated retained earnings		
Unappropriated retained earnings carried over from the prior year	₩ 14,765,272	₩ 487,912
Cumulative effect of changes in accounting policies	-	233,437,065
Changes due to spin-off	-	198,277,732)
Net loss	(55,096,570)	(20,481,982)
Remeasurements of defined benefit liabilities	(593,458)	(399,991)
Disposal of revaluated land	97,451	-
Subtotal	(40,827,305)	14,765,272
Transfer from voluntary reserves	-	-
Appropriations	-	-
Unappropriated retained earnings to be carried forward to subsequent year	₩ (40,827,305)	₩ 14,765,272

The statement of appropriation of retained earnings for the year ended December 31, 2019 is scheduled to be approved at General meeting to be held on March 25, 2020. The statement of appropriation of retained earnings was approved on General meeting on March 27, 2019.

22. Sales

(1) Details of sales for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019	2018
Sales of goods	₩ 666,183,615	₩ 486,729,440
Construction sales	5,746,200	20,368.388
Others	1,394,932	2,223,597
	₩ 673,324,747	₩ 509,321,425

(2) Details of trade receivables, advances from customers and contract assets and liabilities from contracts with customers as of December 31, 2019 are as follows (Korean won in thousands):

	2019	2018
Trade receivables	₩ 79,439,373	₩ 22,301,965
Contract assets	12,605	1,151,005
Advances from customers	173,270,234	148,267,040
Contract liabilities	2,456,489	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.

(3) Details of the Company's profit classified by the timing of revenue recognition for the year ended December 31, 2019 are as follows. (Korean won in thousands):

	2019	2018
Goods transferred at a point in time	₩ 667,578,547	₩ 488,953,037
Services transferred over time	5,746,200	20,368,388
	₩ 673,324,747	₩ 509,321,425

23. Segment information

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

(1) The following table provides sale information by geographical segment for the years ended December 31, 2019 and 2018 (Korean won in thousands):

	2019	2018
Domestic	₩ 457,566,369	₩ 368,414,775
Overseas	215,758,378	140,906,650
	₩ 673,324,747	₩ 509,321,425

(2) There is a single external customer who accounted for 10% or more of the Company's sales for the years ended December 31, 2019 and 2018 (Korean won in thousands):

	2019	2018
Samsung Heavy Industries Co., Ltd.	₩ 104,616,951	₩ 105,786,642
Daewoo Shipbuilding & Marine Engineering Co., Ltd.	284,492,879	158,416,915
	₩ 389,109,830	₩ 264,203,557

24. Construction contracts

(1) Details of construction contracts in progress for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019					
	Accumulated Revenue	Accumulated cost	Accumulated profit	Receivables	Due from customers for construction contracts	Contract Liabilities
Diesel engine	₩ 187,346,487	₩ 148,827,772	₩ 38,518,715	₩ 144,208	₩ 12,605	₩ 2,456,489

	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

(2) Major construction contract for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019					
Order	Description	Construction period	January 1	Increase (Decrease)	Sales	December 31
KHNP and 2 other companies	Singori No. 3 and No. 4 emergency generators, alternative AC power diesel engine and 5 others	2009-06-23 ~ 2022-09-30	34,266,085	2,831,589	(5,746,200)	31,351,474

	2018					
Order	Description	Construction period	January 1	Increase (Decrease)	Sales	December 31
KHNP and 6 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

(3) 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, 2019, 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	₩ 2,834,542	₩ (321,145)	₩ 3,109,781	₩ 45,906	₩ 3,109,781

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.

24. Construction contracts(cont'd)

(4) 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 thousands):

	Contract date	Expected date of completion	Percentage of completion	Due from customers for construction contracts: Total amount	Due from customers for construction contracts: Impairment losses	Receivables from construction contracts: Total Amount	Receivables from construction contracts: Allowance for doubtful accounts
Sinhanwool Unit 1 and 2 Emergency Generator	2012-01-26	2020-03-31	99.69%	₩ -	₩ -	₩ -	₩ -
Sin-Kori Units 5 and 6 AAC DG PJT	2018-10-10	2022-09-30	0.04%	₩ 12,605	₩ -	₩ -	₩ -
LPX #2 PJT	2015-11-04	2020-11-30	92.83%	₩ -	₩ -	₩ 144,208	₩ -

25. Expenses classified by nature

Expenses classified by nature for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Changes in inventories	₩ (78,179,747)	₩ 17,671,619
Purchase of raw materials	554,375,789	354,434,390
Salaries	54,160,125	58,909,746
Other employee benefits	13,018,689	14,365,511
Depreciation and amortization	17,619,602	15,266,244
Royalty usage expenses	51,731,345	26,564,878
Others	82,274,963	58,649,974
Cost of sales & Selling and Administrative Expenses	₩ 695,000,766	₩ 545,862,362

26. Selling and administrative expenses

Selling and administrative expenses for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Salaries	₩ 13,753,324	₩ 14,741,638
Other employee benefits	3,372,365	3,591,906
Severance Benefits	984,013	1,139,121
Commission expenses	5,304,639	7,514,339
Depreciation	127,950	46,043
Right-of-use assets Depreciation	700,817	-
Amortization	714,236	406,066
Advertising and marketing expenses	91,356	336,431
Rental expenses	474,647	1,157,903
Allowance for bad debt	64,546	303,294
Research and ordinary development costs	3,265,172	4,063,604
Royalty usage expenses	43,841	11,472
Others	2,605,244	2,518,820
	₩ 31,502,150	₩ 35,830,637

27. Financial income and expenses

Finance income and expenses for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Finance income:		
Interest income	₩ 1,226,576	₩ 1,174,304
Dividend income	-	8,462,456
Income from financial guarantee	13,894	16,670
Gain on foreign currency transaction	19,674,283	16,114,571
Gain on foreign currency translation	334,707	211,565
Gain on derivative transaction	7,150,163	1,726,877
Gain on valuation of derivatives	6,251,587	1,641,765
Gain on valuation of firm commitments	34,272,353	28,217,753
Total	68,923,563	57,565,961
Finance expenses:		
Interest expenses	17,470,394	16,829,084
Expense for financial guarantee	762,677	542,477
Loss on foreign currency transaction	15,520,032	13,296,100
Loss on foreign currency translation	1,580,424	345,625
Loss on derivative transaction	30,299,443	12,807,715
Loss on valuation of derivatives	10,182,692	15,987,393
Loss on valuation of firm commitments	10,034,154	3,695,573
Total	85,849,816	63,503,967
Net finance income(expenses)	₩ (16,926,253)	₩ (5,938,006)

28. Other non-operating income and expenses

Other non-operating income and expenses for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Other non-operating income:		
Rental income	₩ 56,646	₩ 147,562
Gain on disposal of property, plant and equipment	164,029	20,797
Gain on disposal of intangible assets	273	107,909
Long-term Investment & Securities valuation gains	118	-
Other income	97,946	12,984,575
Total	319,012	13,260,843
Other non-operating expenses:		
Loss on disposal of trade receivables	13,870	-
Loss on disposal of property, plant and equipment	361,210	111,992
Loss on disposal of intangible assets	11,116	102,831
Impairment loss on intangible assets	-	39,123
Impairment loss on Property, plant and equipment	2,834,531	-
Impairment loss on assets held for sale	-	659,192
Other allowance for doubtful accounts	75,161	53,873
Donations	35,236	5,088
Loss on revaluation of land	207,867	-
Other loss	3,142,035	146,937
Total	6,681,026	1,119,036
Net other non-operating income and expenses	₩ (6,362,014)	₩ 12,141,807

29. Income tax expense

(1) Details of income tax expense for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Changes in deferred tax assets (liabilities) related to temporary differencess	₩ (4,780,711)	₩ (9,808,343)
Deferred tax assets (liabilities) directly reflected in equity	404,929	(46,811)
Income tax expense (benefit)	₩ (4,375,782)	₩ (9,855,154)

(2) Changes in deferred tax assets and liabilities for the years ended December 31, 2019 and 2018 are as follows (Korean won in thousands):

	2019			
		Change		
	January 1	Profit or loss	Equity	December 31
Net foreign currency translation	₩ 32,443	₩ 269,021	₩ -	₩ 301,464
Depreciation	3,849,343	1,113,089	-	4,962,432
Allowance for doubtful accounts	2,067,538	(108,971)	-	1,958,567
Accrued income	(50,679)	60,754	-	10,075
inventory valuation	13,681,532	(2,281,074)	-	11,400,458
Currency forwards	3,203,187	(1,753,179)	-	1,450,008
Firm commitment assets	(2,721,190)	827,350	-	(1,893,840)
Investment assets	970,458	-	-	970,458
Other intangible assets	40,327	(39,528)	-	799
Accrued expenses	3,590,700	782,503	-	4,373,203
Unearned revenue	(147,089)	11,458	-	(135,631)
Provision for warranty	2,227,834	112,446	-	2,340,280
Contract liabilities	-	755	-	755
Cost for transfer DMI	97,834	-	-	97,834
Provision for defined pension liabilities	1,397,031	527,480	189,468	2,113,979
Gain on revaluation of land and buildings	(56,362,192)	81,417	215,460	(56,065,315)
Advance payment	14,940	1,153,312	-	1,168,252
Provision for litigation	429,762	1,388,262	-	1,818,024
Development costs	8,536,599	(1,052,977)	-	7,483,622
Convertible bond	(1,879,610)	449,274	-	(1,430,336)
Lease Asset	-	(499,933)	-	(499,933)
Lease liabilities	-	510,834	-	510,834
Others	1,983,178	3,826	-	1,987,004
Subtotal	(19,038,054)	1,556,119	404,928	(17,077,007)
Tax deficit carryforwards	23,544,178	2,819,667	-	26,363,845
Subtotal	23,544,178	2,819,667	-	26,363,845
Total	₩ 4,506,124	₩ 4,375,786	₩ 404,928	₩ 9,286,838

29. Income tax expense (cont'd)

	2018				
		Change			
	January 1	Profit or loss	Equity	Inc & Dec due to split off	Dec 31
Net foreign currency translation	₩ 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	(19,118,459)
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	₩ 4,306,128

(3) 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, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Deductible temporary differences:		
Donations in excess of tax limit	₩ 1,712,716	₩ 1,803,318
Unused tax deficit	339,984,438	313,217,587
Unused tax credit	417,932	1,073,387

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 excessed of tax limit	₩ -	₩ -	₩ -	₩ 1,712,716	₩ 1,712,716
Unused tax deficit	-	-	-	339,984,438	339,984,438
Unused tax credit	₩ 141,146	₩ 84,078	₩ 44,670	₩ 148,038	₩ 417,932

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.

29. Income tax expense (cont'd)

(4) Temporary differences associated with investments in subsidiaries and associates, which are not recognized as deferred tax assets, as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018	Description
Subsidiaries	₩ 9,266,004	₩ (5,242,062)	Timing of reversal can be controlled
Associates	(1,178,393)	(1,178,393)	Reversibility is not probable.
	₩ 8,087,611	₩ (6,420,455)	

(5) Deferred tax assets (liabilities) and income tax benefits (expenses) added to (deducted from) the equity as of December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019			2018		
	Before tax	Deferred tax assets (liabilities)	After tax	Before tax	Deferred tax assets (liabilities)	After tax
Remeasurements of defined benefit liabilities	(3,540,166)	856,720	(2,683,446)	₩ (2,757,240)	₩ 667,252	₩ (2,089,988)
Convertible right's cost	721,125	(174,512)	546,613	721,125	(174,512)	546,613
Revaluation surplus of land	92,150,020	(22,300,305)	69,849,715	93,168,916	(22,546,878)	70,622,038
	89,330,979	(21,618,097)	67,712,882	₩ 91,132,801	₩ (22,054,138)	₩ 69,078,663

(6) A reconciliation of income tax expense and accounting income before income tax expense for the years ended December 31, 2019 and 2018, is as follows (Korean won in thousands):

	2019	2018
Loss before income tax expense	₩ (59,472,352)	₩ (30,337,137)
Income tax expense at statutory income tax rate	(14,392,309)	(8,510,595)
Adjustments:	-	-
Additional payment of income tax	-	-
Non-temporary difference	(24,363)	(34,225)
Tax deduction	-	-
Temporary difference not recognized as deferred income tax	5,800,197	(2,183,693)
Others	4,240,693	(295,649)
Income tax expense (benefit)	₩ (4,375,782)	(9,855,154)
Effective tax rate	(*1)	(*1)

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

30. Earnings per share

(1) Basic earnings(losses) per share

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

	2019	2018
Net loss available to common shares	₩ (55,096,570)	₩ (20,481,983)
Weighted-average number of common shares outstanding (*)	32,939,640	48,465,622
Basic net loss per share	(1,673)	(423)

30. Earnings per share(cont'd)

(2) Details of the calculation of the weighted-average number of common shares as of December 31, 2019 are as follows:

2019				
Details	Period	Number of shares	Weighted	Drop number
Jan 1	2019.1.1 ~ 2018.12.31	32,947,142	365	8,994,569,766
acquisition of own shares	2019.1.1 ~ 2018.12.31	(7,502)	365	(2,048,046)
		32,939,640		8,992,521,720

* Weighted average number of common shares: 12,022,968,600÷ 365days = 32,939,640

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

2018				
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

(3) Diluted earnings per share

The Company does not compute diluted earnings per common share for the years ended December 31, 2019 and 2018, 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, 2019 and 2018.

Due to the antidilutive effect for the years ended December 31, 2019 and 2018, the Company is not considering share option, which could dilute the basic earnings per share in the future. (Number of shares)

	2019	2018
Stock option	5,900	86,400
Convertible Bond	13,020,833	9,940,357

31. Commitments and contingencies

(1) Notes and checks provided as collateral

As of December 31, 2019, the Company provide five blank notes (2018: 5) to Daewoo Shipbuilding & Marine Engineering Co. and four others in connection with the guarantee of the return of advanced payment and contract performance.

(2) Pending litigation

As of December 31, 2019, there is one pending lawsuit with total litigation value of ₩21,928 million, and the outcome of the lawsuit is not estimable. Also, there is one ongoing lawsuit regarding ordinary wages. The Company is unable to reasonably predict the outcome of the above litigation and is uncertain about the amount and timing of the outflow of resources. If the salary items previously not included in ordinary wages, such as regular bonuses, fall under ordinary wages, the Company may have to pay additional past wages in the future.

31. Commitments and contingencies (cont'd)

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

	Financial institution	Credit limit		Amounts exercised	
Trade-Finance Agreement	Korea Development Bank	KRW	4,300,000	KRW	4,300,000
	Kyong Nam Bank	KRW	30,000,000	KRW	30,000,000
	NH Bank	KRW	20,000,000	KRW	20,000,000
	The Export-Import Bank of Korea	KRW	20,000,000	KRW	20,000,000
Electronic loan facilities	Kookmin Bank	KRW	600,000	KRW	149,802
Issuance of letter of credit	Kyong Nam Bank	USD	10,000,000	USD	6,323,068
	KEB Hana Bank	USD	1,500,000	USD	671,996
Other guarantees in foreign currency	KEB Hana Bank	USD	4,935,981	USD	4,935,981
	Woori Bank	USD	3,168,000	USD	3,168,000
	NH Bank	USD	2,501,850	USD	2,501,850
	Kyong Nam Bank	USD	11,681,000	USD	11,505,521
	The Export-import Bank of Korea	USD	9,504,900	USD	9,504,900
	Seoul Guarantee Insurance	USD	19,328,867	USD	19,328,867
	Company	EUR	1,143,917	EUR	1,143,917
Other guarantees in Korean won	Woori Bank	KRW	450,183	KRW	450,183
	Seoul Guarantee Insurance Company	KRW	12,117,101	KRW	12,117,101

(4) 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 ₩ 51,731,345 thousand and ₩ 26,564,878 thousand for the years ended December 31, 2019 and 2018, respectively.

32. Guarantees and pledged assets

(1) Guarantees

Guarantees provided to the Company from third parties as of December 31, 2019, are as follows (in foreign currencies and Korean won in thousands):

Guarantee received from	Guaranteed amount (foreign currency)		Description of guarantee
KEB Hana Bank	USD	4,935,981	Fulfillment of a contract
Woori Bank	USD	3,168,000	Guarantee for advance receipts, defect and fulfillment of a contract
	KRW	450,184	
NH Bank	USD	2,501,850	Guarantee for advance receipts
Kyong Nam Bank	USD	11,505,521	Guarantee for advance receipts, defect and fulfillment of a contract
The export-import Bank of Korea	USD	9,504,900	Guarantee for advance receipts, fulfillment of a contract
Seoul Guarantee Insurance Company	USD	19,328,867	Guarantee for advance receipts, defect and fulfillment of a contract
	EUR	1,143,917	
	KRW	12,117,101	
subtotal	USD	50,945,119	Guarantee for advance receipts, defect and fulfillment of a contract
	EUR	1,143,91	
	KRW	12,567,284	

Guarantees provided by the Company as of December 31, 2019, are as follows (in foreign currencies and Korean won in thousands):

	Amount		Description of guarantee	Institution	Related party
HSDMI	USD	2,400,000	Guarantee for the Borrowings	The Export-Import Bank of Korea	Subsidiary
New Star HS Arc 1st Co., Ltd	KRW	65,000,000	A joint guarantee/ fund supplement	KB Securities Co., Ltd.	Subsidiary

(2) 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 Korean won in thousands):

	Financial institution	Pledged assets	Book value		Established amount		Amount of collateral	
Limited loan	Korea Development Bank	Land, Buildings	₩	6,159,191	₩	7,565,340	₩	4,300,000
12th Bond	Korea Real Estate Investment & Trust Co., Ltd	Land, Buildings, Machinery	₩	378,023,968	₩	96,000,000	₩	80,000,000
9th Convertible Bond	Korea Real Estate Investment & Trust Co., Ltd	Land, Buildings, Machinery	₩	378,023,968	₩	54,000,000	₩	45,000,000
Loans, L/C opening and foreign currency payment guarantee	Kyong Nam Bank	Land, Buildings, Machinery	₩	378,023,968	₩	59,750,737	₩	46,887,992
Loans and Payment Guarantees of Foreign currency	NH Bank.,	Land, Buildings, Machinery	₩	378,023,968	₩	24,000,000	₩	20,000,000
Import fund, export growth fund and export planet guarantee	Export-Import Bank of Korea	Inventories	₩	145,110,093	₩	62,500,000	₩	20.000,000

33. Related parties

(1) Related parties of the Company and their relationship with the Company as of December 31, 2019 and 201 are as follows:

< December 31, 2019>

Relationship	Related parties
controlling company.	Socius Well to Sea Investment No.1 Recovery Private Equity Fund
Subsidiary	HSDMI, DEPNG, New Star HS Arc 1st Co., Ltd
Associates	Dalian Samyoung Doosan Metal Product Co., Ltd. (DSDMP)
Other related parties(*1)	Inhwa Co., Ltd, Daeyeon Co., Ltd, Haedong Co., Ltd, Samhwan Co., Ltd, Bnp Co., Ltd

(*1) Inhwa holds a 59.86% ownership in Socius Well to Sea Investment No. 1., the controlling company.

<December 31, 2018>

As of June 5, 2018, as Doosan Heavy Industries Construction sold 42.66% of its holdings to Socius Well to Sea, the related party relation has been extinguished. The related party relations before the sale were as follows.

Relationship	Related parties
Controlling company	Socius Well to Sea Investment No.1 Recovery Private Equity Fund(*1)
Ultimate controlling company	Doosan Corporation (“DS”)
Intermediate controlling company	Doosan Heavy Industries Construction Co., Ltd. (“DHIC”)
	HSDMI, DEPNG
Associates	DSDMP, Doosan Cuvex Co., Ltd., DBC
Other related ultimate and intermediate controlling companies	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”)
Affiliates of large-scale conglomerate	Neo Holdings, Bigant
Other related parties(*2)	Inhwa Co., Ltd, Daeyeon Co., Ltd, Haedong Co., Ltd, Samhwan Co., Ltd, Bnp Co., Ltd

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

(*2) Inhwa holds a 59.86% ownership in Socius Well to Sea Investment No. 1., the controlling company.

Significant transactions with related parties for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

		2019			
		Sales		Purchases	
	Company name	Sales	Other incomes	Purchases	Other expenses
Parent company	Socius Well to Sea Investment	₩ -	₩ -	₩ -	₩ 2,250,000
Subsidiary	HSDMI	-	427,537	3,825,619	-
	New Star HS Arc 1st Co., Ltd	-	-	-	2,010,880
Other related parties	Inhwa Co., Ltd	959,518	-	21,302,246	-
		₩ 959,518	₩ 427,537	₩ 25,127,865	₩ 4,260,880

33. Related parties(cont'd)

		2018				
		Sales		Purchases		
	The related parties	Sales	Other incomes	Purchases	Acquisition of property, plant and equipment and intangible assets	Other expenses
Controlling company	Socius Well to Sea Investment	₩ -	₩ -	₩ -	₩ -	₩ 1,189,726
Ultimate controlling company	DS(*1)	753,068	394,305	2,658,583	142,000	650,017
Intermediate controlling company	DHIC(*1)	-	-	16,881,184	-	-
	HSDMI	-	233,930	4,928,929	-	-
Associates	Doosan Cuvex Co. Ltd. (*1)	-	2,285	492,804	-	-
Other related parties	Inhwa Co., Ltd	153,563	-	6,070,927	-	-
	Doosan E&C(*1)	-	-	68,442	149	-
	Others(*1)	-	-	24,583	-	505,679
		₩ 906,631	₩ 630,520	₩ 31,126,111	₩ 142,149	₩ 2,345,422

(*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.

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

		2019						
		Sales			Purchases			
	Related parties	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Convertible Bond	Borrowings
Controlling company	Socius Well to Sea	₩ -	₩ -	₩ -	₩ -	₩ 567,123	₩ 45,000,000	₩ -
Subsidiary	HSDMI	-	1,342,634	6,961,080	1,162,663	158,091	-	-
	New Star HS Arc 1st Co., Ltd	-	-	-	-	42,902	-	43,600,000
Other related parties	Inhwa Co., Ltd	73,359	-	-	1,079,628	-	-	-
		₩ 73,359	₩ 1,342,634	₩ 6,961,080	₩ 2,242,291	₩ 768,116	₩ 45,000,000	₩ 43,600,000

		2018					
		Sales			Purchases		
	Related parties	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Borrowings
Controlling company	Socius Well to Sea	₩ -	₩ -	₩ -	₩ -	₩ 567,123	₩ 45,000,000
Subsidiary	HSDMI	-	1,335,630	6,835,920	1,445,327	155,249	-
Other related parties	Inhwa Co., Ltd	-	-	-	-	-	-
		₩ -	₩ 1,335,630	₩ 6,835,920	₩ 1,445,327	₩ 722,372	₩ 45,000,000

33. Related parties(cont'd)

(3) Details of significant capital transactions, including equity transactions, with related parties for the year ended December 31, 2019, are as follows (Korean won in thousands):

	Related parties	Loan transaction		Equity transaction		Dividends	
		Loan	Withdraw	Capital expansion and investment	Paid in capital decrease	Revenue	Expenses
Subsidiary	New Star HS Arc 1st Co., Ltd	₩ 50,000,000	₩ 6,400,000	₩ -	₩ -	₩ -	₩ -

(4) As of the end of the current term, the Company provides payment guarantees for related parties (see Note 32-(1)).)

(5) 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, 2019 and 2018, is as follows (Korean won in thousands):

	2019	2018
Salaries	₩ 1,173,250	₩ 2,166,472
Pension benefits	106,988	175,882
	₩ 1,280,238	₩ 2,342,354

34. Statements of cash flows

(1) The adjustments and changes in operating assets and liabilities in the separate statements of cash flows for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands):

	2019	2018
Expenses not involving cash outflows:		
Interest expenses	₩ 17,470,394	₩ 16,829,084
Pension benefits	3,807,060	4,084,047
Loss on valuation of inventories	-	8,467,637
Depreciation	14,132,426	13,994,679
Right-of-use assets depreciation	1,954,083	-
Amortization	1,533,093	1,271,565
Bad debt expenses	64,546	303,294
Other allowance for doubtful accounts	75,161	53,873
Loss on foreign currency translation	1,580,426	345,625
Loss on valuation of derivatives	10,182,692	15,987,393
Loss on valuation of firm commitments	10,034,152	3,695,573
Impairment Losses on Subsidiary Investment Stock	14,508,066	-
Loss on disposal of property, plant and equipment	361,210	111,992
Loss on disposal of intangible assets	11,116	102,831
Impairment loss on property, plant and equipment	2,834,531	-
Impairment loss on intangible assets	-	39,123
Provision for defects	2,057,561	-
Impairment loss of assets held for sale	-	659,192
Loss from revaluation of land Others	207,867	-
Income not involving cash inflows:		
Interest income	(1,226,576)	(1,174,304)
Dividend income	-	(8,462,456)
Income tax profit	(4,375,782)	(9,855,154)
Reversal of loss on valuation of inventories	(6,794,520)	-
Reversal of provisions	(4,611,191)	(287,396)
Income on financial guarantee	(13,894)	(16,670)
Gain on foreign currency translation	(334,707)	(211,565)
Gain on Short-term financial asset	(118)	-
Gain on valuation of derivatives	(6,251,587)	(1,641,765)
Gain on valuation of firm commitments	(34,272,352)	(28,217,753)
Gain on disposal of property, plant and equipment	(164,029)	(20,797)
Gain on disposal of intangible assets	(273)	(107,909)
Rental sales	(23,213)	(8,963)
	₩ 22,746,142	₩ 15,941,176

34. Statements of cash flows (cont'd)

	2019	2018
Changes in operating assets and liabilities:		
Trade receivables	₩ (58,348,536)	₩ 10,392,578
Other receivables	(167,303)	(18,033)
Due from customers for construction contracts	1,138,400	300,136
Inventories	(71,385,226)	9,203,983
Other current assets	(6,745,419)	232,816
Long-term accounts receivable – other	1,464,686	1,814,476
Other non-current assets	1,324,042	(2,177,264)
Derivative instruments	(11,175,645)	16,861,218
Firm commitments	27,656,999	(6,825,464)
Trade payables	56,184,913	249,826
Other payables	8,229,839	1,916,250
Due to customers for construction contracts	(2,096,973)	(4,936,115)
Advance receipts	25,003,194	13,377,765
Other current liabilities	1,881,195	(13,196,730)
Long-term other payable	(1,279,863)	1,957,545
Other Non-current Liabilities	733,716	-
Payment of severance benefits	(1,627,394)	(1,397,248)
Transfer in	-	116,928
Transfer out	-	(509,185)
Provision	9,353,763	2,236,068
	₩ (19,855,612)	₩ 29,599,550

(2) Significant non-cash transactions for the years ended December 31, 2019 and 2018, are as follows (Korean won in thousands)

	2019	2018
Reclassification of construction-in-progress to property, plant and equipment	₩ 1,193,787	₩ 223,321
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	55,313	645,570
Revaluation of assets (after deduction of income tax)	(890,332)	1,129,697
Reclassification of long-term loans to current portion	(6,619,220)	7,295,250
Reclassification of long-term bonds payable to short-term bonds payable		130,000,000
Reclassification of long-term borrowings to short-term borrowings	50,000,000	-
Reclassification of provisions to current portion	635,437	(1,860,200)
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
Lease deposit resulting from acquisition of the right-of-use assets	56,295	-
Lease liabilities resulting from the acquisition of the right to use	3,994,088	-
Transfer of lease liabilities to current portion	1,931,575	-

35. Assumptions about going concern

The Company’s financial statements have been prepared under the assumption that the Company will continue to exist as a going concern, where assets and liabilities are recorded on the basis that the Company will be able to realize its assets and discharge its liabilities in the normal course of business.

However, the Company recognized operating loss of ₩21,676 million and a net loss of ₩55,097 million during the year ended December 31, 2019. As of December 31, 2019, the Company’s current liabilities exceeded its current assets by ₩239,941 million. These conditions indicate the existence of a material uncertainty that may cast significant doubt on the Company's ability to continue as a going concern.

The management expects to reduce current liabilities by financial activities such as repayment of short-term borrowings and extension of maturity, as well as by creating ordinary profits based on stable order volumes with enhanced improved profitability followed by improvement in operating cash flows.

If plans above are disrupted due to the changes in future events or circumstances and the Company is unable to continue to exist as a going concern, the Company may not realize its assets and discharge its liabilities in their carrying amounts in the normal course of business. The financial statements do not include the adjustments on the measurement, classification, and presentation of assets and liabilities and related profit and loss, which may incur as a result of the existence of uncertainty and concluding that going concern assumption is inappropriate.

Independent auditor's review report on internal control over financial reporting

Chief Executive Officer
HSD Engine Co., Ltd.

We have reviewed the accompanying management's report on the operations of the internal control over financial reporting (the "ICFR") of HSD Engine Co., Ltd. (the "Company") as of December 31, 2019. The Company's management is responsible for effective design and operations of its ICFR, including the reporting of its operations. Our responsibility is to review the management's ICFR report and issue a report based on our review. The management's report on the operations of the ICFR of the Company states, "Based on the assessment of the operations of the ICFR as of December 31, 2019, no material weakness, in any material respects, has been identified for the standpoint of the Best Practice Guideline for ICFR."

We conducted our review in accordance with the ICFR review standards established by the Korean Institute of Certified Public Accountants. These standards require that we plan and perform our review to obtain less assurance than an audit as to management's report on the operations of the ICFR. A review includes the procedures of obtaining an understanding of the ICFR, inquiring as to management's report on the operations of the ICFR and performing a review of related documentation within limited scope, if necessary.

A company's ICFR consists of an establishment of related policies and organization to ensure that it is designed to provide reliability in preparation of financial statements and financial reporting for external purposes in accordance with Korean International Financial Reporting Standards. However, because of its inherent limitations, the ICFR may not prevent or detect material misstatements of the financial statements. Also, projections of any assessment of the ICFR on future periods are subject to the risk that ICFR may become inadequate due to the changes in conditions, or that the degree of compliance with the policies or procedures may be significantly reduced.

Based on our review of management's report on the operations of the ICFR, nothing has come to our attention that causes us to believe that the management's report referred to above is not presented fairly, in all material respects.

We conducted our review of the ICFR in place as of December 31, 2019, and we did not review the ICFR subsequent to December 31, 2019. This report has been prepared for regulatory purposes pursuant to the *Act on External Audit of Stock Companies* in the Republic of Korea, and may not be appropriate for other purposes or for other users.

March 17, 2020

Ernst & Young Han Young

This report is annexed in relation to the audit of the financial statements as of December 31, 2019 and the review of internal control over financial reporting pursuant to Article 2-3 of the *Act on External Audit of Stock Companies* in the Republic of Korea.

Review report on internal control over financial reporting

HSD Engine Co., Ltd.

This report is annexed in relation to the audit of HSD Engine Co., Ltd.'s financial statements as of December 31, 2019 and the review of internal control over financial reporting pursuant to Article 8 of the Act on External Audit of Stock Companies of the Republic of Korea.

Attachments:
1. Independent auditor's review report on internal control over financial reporting
2. Management's assessment of internal control over financial reporting