

DOOSAN ENERBILITY CO., LTD.
(Formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.)
AND SUBSIDIARIES

Consolidated Financial Statements

December 31, 2022 and 2021

(With Independent Auditors' Report Thereon)

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Independent Auditors' Report

Based on a report originally issued in Korean

To the Shareholders and Board of Directors of
Doosan Enerbility Co., Ltd. (formerly, Doosan Heavy Industries & Construction Co., Ltd.):

Opinion

We have audited the consolidated financial statements of Doosan Enerbility Co., Ltd. and its subsidiaries ("the Group"), which comprise the consolidated statements of financial position as of December 31, 2022 and 2021, the consolidated statements of profit or loss and comprehensive income or loss, changes in equity and cash flows for the years then ended, and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2022 and 2021, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("K-IFRS").

Basis for Opinion

We conducted our audits in accordance with Korean Standards on Auditing ("KSAs"). Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Republic of Korea, and we have fulfilled our 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.

Key Audit Matters

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

1) Uncertainty in estimated total contract cost

As described in the note 3 to the consolidated financial statements, the Group estimates percentage-of-completion of performance obligation satisfied over time by using the input method and recognizes revenue over time depending on the progress.

Determining the percentage-of-completion is influenced by the estimated total contract cost and the adequacy of the cumulative input cost and the total contract cost estimate is based on management's accounting estimates and judgements, so uncertain exists. Therefore, as there is a risk of overstatement of revenue due to an error in judgment or intent, we have identified the uncertainty in estimated total contract cost as a key audit matter.

The following audit procedures were performed regarding uncertainty in estimated total contract cost.

- Evaluation and testing of internal controls related to the determination and modification of estimated total contract cost

- For major projects completed during the current year, performed retrospective review by comparing the actual cost incurred during the current year and construction cost estimated at the end of the prior year
- Inquiries and inspection of documents for projects with significant changes in estimated total contract cost
- Comparison of estimated total contract cost with those of other similar projects
- Inquiries and analytical review of changes in the percentage-of-completion for each reporting period
- For major projects, inquiries and inspection of documents if there were significant differences between the progress rate in the respective monthly progress reports received from customers and the percentage-of-completion calculated based on cost
- Performed site visits for on-going construction sites and sites which have equipment under construction

2) Impairment of goodwill

As described in the note 2 to the consolidated financial statements, the Group conducts an annual impairment test for goodwill and compares the carrying amount of each cash generating unit to which goodwill is allocated with the recoverable amount which is measured as the value in use using discounted cash projection flow to determine whether it is impaired or not.

In calculating the value in use, significant judgments by management and uncertainties are involved in forecasting future cash flows and estimating key assumptions (growth rate, discount rate, etc.). Therefore we identified the impairment of goodwill as a key audit matter.

The following audit procedures were performed regarding impairment of goodwill.

- Evaluation and testing of internal controls related to impairment test for goodwill
- Evaluate the eligibility and independence of management experts involved in value in use estimation
- Inquiries and assessment of the valuation model applied by the Group
- Verifying the mathematical accuracy of the valuation model applied to the estimation of the value in use of the goodwill
- Understanding of the future cash flows and agreeing whether the estimated future cash flow agrees to business plan approved by the Group's management
- Testing the appropriateness of major assumptions (discount rate, growth rate, etc.) applied in the valuation model by comparing to benchmark of peer industry and historical financial information of cash generating unit
- Evaluation of the sensitivity analysis results for the discount rate and permanent growth rate presented by the Group to assess the impact of changes in major assumptions on the impairment assessment

Other Matter

The procedures and practices utilized in the Republic of Korea to audit such consolidated financial statements may differ from those generally accepted and applied in other countries.



Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with K-IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group'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 Group or to cease operations, or has no realistic alternative but to do so.

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

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' 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 KSAs 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 consolidated financial statements.

As part of an audit in accordance with KSAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated 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 Group'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 Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, then we are required to draw attention in our auditors' report to the related disclosures in the consolidated 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 auditors' report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.



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

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and 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 consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditors' 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 auditors' report is Hyun Joong Kim.

KPMG Samjong Accounting Corp.

Seoul, Korea
March 21, 2023

This report is effective as of March 21, 2023, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

DOOSAN ENERBILITY CO., LTD.
(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES
Consolidated Statements of Financial Position
As of December 31, 2022 and 2021

<i>(In won)</i>	Note	2022	2021
Assets			
Cash and cash equivalents	4,5,10	₩ 1,395,837,596,356	1,908,603,989,132
Short-term financial instruments	4,5,10,34	105,780,374,651	519,150,027,683
Short-term investments in securities	4,6,10	23,775,906,989	197,197,204,569
Trade receivables, net	4,7,10,26,35	1,619,606,553,120	921,080,464,985
Due from customers for contract work, net	7,26,35	1,156,934,174,443	1,632,887,643,517
Other receivables, net	4,7,10,35	208,081,476,274	207,625,154,622
Prepayments, net	7,26	609,869,214,936	499,609,555,547
Prepaid expenses, net		118,613,409,154	129,779,489,360
Short-term loans, net	4,7,10,35	73,900,528,476	62,126,808,865
Derivative financial assets	4,9,10	72,485,060,186	30,275,102,551
Firm commitment assets	9	54,927,582,112	45,877,394,613
Inventories, net	8,26,34	2,459,025,995,764	1,788,420,159,139
Assets held for sale	37	4,684,773,518	319,607,727,615
Other current assets, net	4,7,10,14	195,371,082,511	155,383,385,780
Total current assets		8,098,893,728,490	8,417,624,107,978
Long-term financial instruments	4,5,10	31,513,699,275	29,271,959,777
Long-term investments in securities	4,6,10,34	321,093,597,491	301,709,821,939
Investments in associates and joint ventures	11,34	355,954,924,015	582,045,106,081
Due from customers for contract work, net	7,26	102,739,503,644	102,739,503,644
Long-term loans, net	4,7,10,35	41,235,869,325	44,703,080,573
Property, plant and equipment, net	12,14,34,37	5,022,147,617,428	5,436,969,444,692
Intangible assets, net	13,34,39	7,772,723,576,214	8,015,980,133,418
Investment properties, net	14,15	274,446,280,278	72,920,331,892
Derivative financial assets	4,9,10	18,057,362,857	8,683,481,005
Firm commitment assets	9	40,539,228,724	20,892,251,073
Guarantee deposits, net	4,7,10,35	334,333,042,824	363,655,647,884
Deferred tax assets	31	416,706,171,660	232,791,073,638
Defined benefit asset, net	17	14,400,518,959	-
Other non-current assets, net	4,7,10,14	204,996,678,737	90,559,685,047
Total non-current assets		14,950,888,071,431	15,302,921,520,663
Total assets		₩ 23,049,781,799,921	23,720,545,628,641

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.
(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES
Consolidated Statements of Financial Position, Continued
As of December 31, 2022 and 2021

<i>(In won)</i>	Note	2022	2021
Liabilities			
Trade payables	4,10,35	₩ 2,518,709,955,521	1,880,747,776,315
Short-term borrowings	4,10,16,33,34,35,36	1,433,571,969,401	3,908,482,953,731
Other payables	4,10,35	263,751,374,574	399,635,790,173
Advance received	26	49,454,651,620	64,196,097,441
Due to customers for contract work	26,35	1,734,717,867,012	1,455,693,415,375
Withholdings		29,728,488,184	30,295,770,427
Accrued expenses	4,10	585,783,617,640	411,290,713,603
Current Income tax liabilities	31	62,254,573,267	36,231,843,804
Current portion of long-term debt	4,10,16,33,34,36	771,005,503,541	938,862,829,868
Derivative financial liabilities	9,10	74,833,353,086	211,671,916,451
Firm commitment liabilities	9	16,710,336,818	10,120,811,188
Provisions	19,26,33	319,218,544,700	320,457,896,603
Current lease liabilities	4,10,14,36	76,193,144,764	64,880,159,213
Sales and lease back liabilities	18,36	27,499,428,692	-
Liabilities held for sale	37	-	273,469,051,609
Other current liabilities	4,10	96,022,725,232	119,728,515,182
Total current liabilities		8,059,455,534,052	10,125,765,540,983
Bonds	4,10,16,33,34,36	356,347,784,913	848,257,259,234
Long-term borrowings	4,10,16,33,34,36	2,350,867,610,263	1,516,918,542,299
Long-term other payables	4,10	11,278,271,449	14,522,398,927
Defined benefit liabilities, net	17	452,352,771,950	540,496,543,264
Deposits received	4,10	317,890,642,911	330,443,720,443
Derivative financial liabilities	9,10	41,217,731,602	37,802,056,172
Firm commitment liabilities	9	6,307,158,879	5,651,863,540
Deferred tax liabilities	31	502,157,754,739	462,047,648,049
Provisions	19,26,33	380,357,585,584	312,515,735,320
Non-current lease liabilities	4,10,14,36	317,700,599,789	316,307,158,369
Non-current sales and lease back liabilities	18,36	49,848,395,281	-
Other non-current liabilities	4,10	123,709,674,640	402,221,517,320
Total non-current liabilities		4,910,035,982,000	4,787,184,442,937
Total liabilities		₩ 12,969,491,516,052	14,912,949,983,920

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.
(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES
Consolidated Statements of Financial Position, Continued
As of December 31, 2022 and 2021

<i>(In won)</i>	Note	2022	2021
Equity			
Capital stock	20 ₩	3,256,061,215,000	2,675,624,980,000
Capital surplus	20,21	2,870,068,226,942	1,865,083,188,183
Other components of equity	22	45,676,122,284	46,159,352,713
	9,10,12,17,2		
Accumulated other comprehensive income	3	882,653,386,161	731,324,738,126
Retained earnings	24	58,813,720,119	773,234,887,563
Equity attributable to owners of the controlling company		<u>7,113,272,670,506</u>	<u>6,091,427,146,585</u>
Non-controlling interests	1	<u>2,967,017,613,363</u>	<u>2,716,168,498,136</u>
Total equity		<u>10,080,290,283,869</u>	<u>8,807,595,644,721</u>
Total liabilities and equity	₩	<u>23,049,781,799,921</u>	<u>23,720,545,628,641</u>

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.
(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES
Consolidated Statements of Profit or Loss
For the years ended December 31, 2022 and 2021

<i>(In won)</i>	Note	2022	2021
Continuing operations			
Sales	25,26,35	₩ 15,421,058,082,388	10,990,890,215,857
Cost of sales	8,27,35	12,865,180,742,482	9,157,134,165,228
Gross profit		2,555,877,339,906	1,833,756,050,629
Selling and administrative expenses	10,27,28,35	1,449,756,471,669	964,392,551,948
Operating profit	25	1,106,120,868,237	869,363,498,681
Finance income and expenses		(477,602,183,965)	(279,995,778,898)
Finance income	10,29	747,016,336,410	691,480,829,958
Finance expenses	10,29	1,224,618,520,375	971,476,608,856
Other non-operating income and expenses		(584,511,751,885)	(45,511,580,122)
Other non-operating income	10,30	158,643,957,813	65,803,436,702
Other non-operating expenses	10,30	743,155,709,698	111,315,016,824
Share of profit (loss) of equity method investees	11	(230,486,284,587)	20,071,234,689
Profit (loss) before income tax		(186,479,352,200)	563,927,374,350
Income tax expense	31	146,997,419,221	94,565,550,051
Profit (loss) from continuing operations		(333,476,771,421)	469,361,824,299
Discontinued operations			
Profit (loss) from discontinued operations, net of tax	38	(119,673,094,128)	176,459,322,331
Profit (loss) for the year	25	₩ (453,149,865,549)	645,821,146,630
Profit (loss) attributable to:			
Owners of the Company		₩ (772,492,598,021)	495,274,322,486
Non-controlling interests	1	319,342,732,472	150,546,824,144
Earnings (loss) per share			
Basic earnings (loss) per share	32	(1,249)	1,090
Continuing operations		(1,056)	596
Discontinued operations		(193)	494
Diluted earnings (loss) per share	32	(1,249)	1,070
Continuing operations		(1,056)	585
Discontinued operations		(193)	485

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.
(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES
Consolidated Statements of Comprehensive Income or Loss
For the years ended December 31, 2022 and 2021

<i>(In won)</i>	Note	2022	2021
Profit (loss) for the year	₩	(453,149,865,549)	645,821,146,630
Other comprehensive income		334,291,327,136	593,498,014,003
Items that will not be reclassified subsequently to profit or loss			
Remeasurements of the defined benefit liabilities	17,30	87,030,282,952	102,200,007,170
Gain (loss) on change in fair value of fair value through other comprehensive income ("FVOCI") financial assets	6,10,30	(3,521,253,520)	13,300,846,390
Profit on revaluation of assets	12,30	16,774,763,747	188,224,889,507
Items that are or may be reclassified subsequently to profit or loss		234,007,533,957	289,772,270,936
Effective portion of changes in fair value of cash flow hedges	9,10,30	5,109,493,430	9,910,627,146
Equity adjustments in equity method investees	11	(2,174,793,785)	(678,448,210)
Gain on translation of foreign operations		231,072,834,312	280,540,092,000
Total comprehensive income (loss) for the year	₩	(118,858,538,413)	1,239,319,160,633
Total comprehensive income (loss) attributable to:			
Owners of the Company	₩	(554,489,591,594)	819,845,893,324
Non-controlling interests		435,631,053,181	419,473,267,309

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.

(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES

Consolidated Statements of Changes in Equity

For the years ended December 31, 2022 and 2021

(In won)		Capital stock	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings (Accumulated deficit)	Non-controlling interests	Total Equity
Balance at January 1, 2021	₩	1,937,707,325,000	2,662,214,482,750	47,907,323,727	587,157,416,427	(2,046,600,548,095)	3,918,110,681,176	7,106,496,680,985
Total comprehensive income (loss):								
Profit for the year		-	-	-	-	495,274,322,486	150,546,824,144	645,821,146,630
Remeasurements of defined benefit liabilities		-	-	-	-	74,159,780,989	28,040,226,181	102,200,007,170
Loss on change in fair value of FVOCI financial assets		-	-	-	3,601,490,198	8,684,271,763	1,015,084,429	13,300,846,390
Effective portion of changes in fair value of cash flow hedges		-	-	-	9,650,810,954	-	259,816,192	9,910,627,146
Equity adjustments in equity method investees		-	-	-	(678,467,205)	-	18,995	(678,448,210)
Loss on translation of foreign operations		-	-	-	55,367,588,444	-	225,172,503,556	280,540,092,000
Profit (loss) on revaluation of assets		-	-	-	59,992,384,467	113,793,711,228	14,438,793,812	188,224,889,507
Subtotal		-	-	-	127,933,806,858	691,912,086,466	419,473,267,309	1,239,319,160,633
Transactions with owners of the Company:								
Issuance of ordinary shares		239,219,780,000	359,337,177,143	-	-	-	-	598,556,957,143
Disposition of deficit		-	(2,127,923,349,192)	-	-	2,127,923,349,192	-	-
Acquisition of treasury stock		-	-	(1,982,779,910)	-	-	-	(1,982,779,910)
Stock option		-	283,741,579	(283,741,579)	-	-	-	-
Exercise of stock warrants		81,700,690,000	111,977,939,313	-	-	-	-	193,678,629,313
Spin-off and merger		416,997,185,000	940,278,255,430	614,558,287	-	-	(1,357,889,998,717)	-
Additional acquisition of investments in subsidiaries		-	541,868,475	-	-	-	(1,251,031,475)	(709,163,000)
Dividends of subsidiaries		-	-	-	-	-	(720,000,000)	(720,000,000)
Stock option of subsidiaries		-	96,007,812	(96,007,812)	-	-	-	-
Transaction of treasury stock of subsidiaries		-	-	-	-	-	(1,092,040,558)	(1,092,040,558)
Exercise of stock warrants of subsidiaries		-	(138,555,998,206)	-	-	-	372,501,632,562	233,945,634,356
Redemption of redeemable convertible preference shares of subsidiaries		-	-	-	-	-	(15,001,913,230)	(15,001,913,230)
Changes in the scope of consolidation		-	-	-	16,233,514,841	-	(614,362,956,492)	(598,129,441,651)
Others		-	56,833,063,079	-	-	-	(3,599,142,439)	53,233,920,640
Balance at December 31, 2021	₩	<u>2,675,624,980,000</u>	<u>1,865,083,188,183</u>	<u>46,159,352,713</u>	<u>731,324,738,126</u>	<u>773,234,887,563</u>	<u>2,716,168,498,136</u>	<u>8,807,595,644,721</u>

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.

(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES

Consolidated Statements of Changes in Equity, Continued

For the years ended December 31, 2022 and 2021

<i>(In won)</i>		Capital stock	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings (Accumulated deficit)	Non-controlling interests	Total Equity
Balance at January 1, 2022	₩	2,675,624,980,000	1,865,083,188,183	46,159,352,713	731,324,738,126	773,234,887,563	2,716,168,498,136	8,807,595,644,721
Total comprehensive income (loss):								
Profit (loss) for the year		-	-	-	-	(772,492,598,021)	319,342,732,472	(453,149,865,549)
Remeasurements of defined benefit liabilities		-	-	-	-	33,716,076,437	53,314,206,515	87,030,282,952
Profit on change in fair value of FVOCI financial assets		-	-	-	(4,141,289,018)	283,637,909	336,397,589	(3,521,253,520)
Effective portion of changes in fair value of cash flow hedges		-	-	-	5,079,074,193	-	30,419,237	5,109,493,430
Equity adjustments in equity method investees		-	-	-	(2,174,793,785)	-	-	(2,174,793,785)
Gain on translation of foreign operations		-	-	-	168,512,676,321	-	62,560,157,991	231,072,834,312
Profit on revaluation of assets		-	-	-	16,134,751,424	592,872,946	47,139,377	16,774,763,747
Subtotal		-	-	-	183,410,419,135	(737,900,010,729)	435,631,053,181	(118,858,538,413)
Transactions with owners of the Company:								
Issuance of ordinary shares		414,364,500,000	722,579,110,040	-	-	-	-	1,136,943,610,040
Stock option		-	716,821,025	(716,821,025)	-	-	-	-
Exercise of stock warrants		166,071,735,000	277,622,498,847	-	-	-	-	443,694,233,847
Additional acquisition of investments in subsidiaries		-	4,068,028,434	-	-	-	(100,018,242,002)	(95,950,213,568)
Dividends of subsidiaries		-	-	-	-	-	(88,311,378,600)	(88,311,378,600)
Stock option of subsidiaries		-	-	233,590,596	-	-	262,198,951	495,789,547
Transaction of treasury stock of subsidiaries		-	6,782,749	-	-	-	(1,573,015,480)	(1,566,232,731)
Changes in the scope of consolidation		-	-	-	(32,074,851,473)	23,478,843,285	4,877,340,749	(3,718,667,439)
Others		-	(8,202,336)	-	(6,919,627)	-	(18,841,572)	(33,963,535)
Balance at December 31, 2022	₩	<u>3,256,061,215,000</u>	<u>2,870,068,226,942</u>	<u>45,676,122,284</u>	<u>882,653,386,161</u>	<u>58,813,720,119</u>	<u>2,967,017,613,363</u>	<u>10,080,290,283,869</u>

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.

(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES

Consolidated Statements of Cash Flows

For the years ended December 31, 2022 and 2021

(In won)	Note	2022	2021
Cash flows from operating activities			
Cash generated from operations:	36 ₩	1,182,171,879,662	1,538,046,527,599
Profit (loss) for the year		(453,149,865,549)	645,821,146,630
Adjustments		2,382,037,519,974	1,385,423,735,763
Changes in operating assets and liabilities		(746,715,774,763)	(493,198,354,794)
Interest received		18,012,504,260	27,122,588,036
Interest paid		(279,737,590,179)	(369,169,312,901)
Dividends received		4,337,224,618	2,152,957,046
Income tax paid		(299,706,296,979)	(170,436,557,453)
Net cash provided by operating activities		625,077,721,382	1,027,716,202,327
Cash flows from investing activities			
Cash inflows from investing activities:			
Decrease in short-term financial instruments		787,559,761,929	399,508,662,781
Proceeds from disposal of short-term investments in securities		162,136,362,721	446,720,965,453
Collection of short-term loans		57,292,223,906	83,385,969,336
Decrease in long-term financial instruments		1,744,125,221	103,493,846,775
Proceeds from disposal of long-term investments in securities		17,988,145,450	15,461,740,051
Collection of long-term loans		4,862,488,140	57,467,636,506
Proceeds from disposal of investments in associates and joint ventures		-	18,342,758,666
Proceeds from disposal of investments in subsidiaries		95,429,428,992	-
Proceeds from disposal of property, plant and equipment		10,853,678,723	35,398,079,250
Proceeds from disposal of intangible assets		1,460,086,431	1,766,811,066
Proceeds from disposal of investment properties		15,400,000,000	38,081,395,037
Proceeds from disposal of assets held for sales		64,357,012,271	12,691,144,592
Decrease in lease receivables		2,455,823,349	2,635,009,067
Others		48,231,089,974	44,140,818,126
Subtotal		1,269,770,227,107	1,259,094,836,706
Cash outflows for investing activities:			
Increase in short-term financial instruments		(406,815,325,379)	(675,915,664,397)
Acquisition of short-term investments in securities		-	(42,493,575,583)
Increase in short-term loans		(80,443,893,936)	(58,791,485,797)
Increase in long-term financial instruments		(6,274,641,920)	(106,615,025,549)
Acquisition of long-term investments in securities		(14,491,296,543)	(57,551,493,121)
Increase in long-term loans		(14,038,083,146)	(183,800,802,243)
Acquisition of investments in associates and joint ventures		(54,426,218,200)	(7,155,385,000)
Acquisition of investments in subsidiaries		(77,292,421,359)	(662,871,110,211)
Disposition of investments in subsidiaries		-	(234,873,065,642)
Acquisition of property, plant and equipment		(348,704,095,585)	(284,708,398,491)
Acquisition of intangible assets		(196,006,727,977)	(203,251,495,873)
Acquisition of investment properties		-	(802,067,668)
Decrease in derivative financial liabilities		(142,140,077,479)	-
Others		(267,996,630)	(5,953,182,847)
Subtotal		(1,340,900,778,154)	(2,524,782,752,422)
Net cash used in investing activities		(71,130,551,047)	(1,265,687,915,716)

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.

(formerly, DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO., LTD.) AND SUBSIDIARIES

Consolidated Statements of Cash Flows, Continued

For the years ended December 31, 2022 and 2021

(In won)	Note	2022	2021
Cash flows from financing activities			
Cash inflows from financing activities:			
Increase in current portion of long-term debt	₩	2,492,380,000	-
Proceeds from asset-backed borrowings		-	112,904,468,504
Issuance of bonds		367,157,100,000	682,177,186,667
Proceeds from long-term borrowings		2,566,375,645,776	1,328,115,019,899
Increase in long-term rent deposit		-	43,400,000,000
Issuance of ordinary shares		1,147,789,665,000	-
Exercise of stock warrants		443,883,380,246	193,823,570,755
Exercise of stock warrants of subsidiaries		-	233,410,839,550
Lease liabilities in a sales and leaseback		26,397,769,349	-
Others		-	55,097,491,840
Subtotal		<u>4,554,095,940,371</u>	<u>2,648,928,577,215</u>
Cash outflows for financing activities:			
Decrease in short-term borrowings, net		(2,368,288,469,195)	(655,321,354,867)
Repayment of current portion of long-term debt		(917,842,655,936)	(2,112,830,031,071)
Repayment of asset-backed borrowings		-	(47,752,891,312)
Repayment of long-term borrowings		(1,669,034,786,204)	(18,048,139,288)
Redemption of bond		(398,972,247,300)	-
Payment of lease liabilities		(79,506,468,359)	(86,420,051,384)
Payment of lease liabilities in a sales and leaseback		(55,198,209,756)	(7,977,606,952)
Acquisition of treasury stock		-	(1,982,779,910)
Expense of ordinary shares issuance		(11,671,319,540)	(7,034,742,146)
Additional acquisition of investments in subsidiaries		(95,950,213,568)	(709,163,000)
Payment of dividends in subsidiaries		(88,311,378,600)	(720,000,000)
Redemption of redeemable convertible preference shares of subsidiaries		-	(15,001,913,230)
Acquisition of treasury stock in subsidiaries		(1,654,175,566)	(1,101,427,547)
Others		(118,648,966)	(2,458,537,203)
Subtotal		<u>(5,686,548,572,990)</u>	<u>(2,957,358,637,910)</u>
Net cash used in financing activities		<u>(1,132,452,632,619)</u>	<u>(308,430,060,695)</u>
Effect of movements in exchange rates on cash held		65,739,069,508	135,726,395,437
Classified to assets held for sale	37	-	(17,515,652,789)
Net decrease in cash and cash equivalents		(512,766,392,776)	(428,191,031,436)
Cash and cash equivalents at January 1		<u>1,908,603,989,132</u>	<u>2,336,795,020,568</u>
Cash and cash equivalents at December 31	₩	<u><u>1,395,837,596,356</u></u>	<u><u>1,908,603,989,132</u></u>

See accompanying notes to the consolidated financial statements.

DOOSAN ENERBILITY CO., LTD.
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1. Reporting entity

(1) The controlling company

Doosan Enerbility Co., Ltd. (the "Company") was incorporated on September 20, 1962, with its headquarters in Changwon, Korea. The Company engages in the manufacturing of a range of power generation equipment including boilers, turbines and generators, in engineering, procurement and construction of, thermal power plants and in general construction, seawater desalination and etc.

The Company was listed on the Korea Exchange on October 25, 2000 and its major stockholder as of December 31, 2022 is Doosan Corp (holding 30.51% equity ownership). The Company changed its name from Doosan Heavy Industries & Construction Co., Ltd. to Doosan Enerbility Co., Ltd. on March 29, 2022.

(2) Consolidated subsidiaries

Details of consolidated subsidiaries as of December 31, 2022 and 2021 are as follows:

Company	Key operating activities	Location	Ownership(%)(*1)		Closing date(*2)
			2022	2021	
Doosan Enerbility Vietnam Co., Ltd. (*8)	Manufacturing of machinery & equipment	Vietnam	100.00	100.00	December 31
Doosan HF Controls Corp.	Manufacturing	USA	100.00	100.00	"
Doosan HF Controls Asia Co., Ltd.	Manufacturing	Korea	100.00	100.00	"
PT. Doosan Heavy Industries Indonesia	Manufacturing	Indonesia	83.64	83.64	"
Doosan Heavy Industries Malaysia Sdn. Bhd	Dormant	Malaysia	100.00	100.00	"
Doosan Enerbility Japan Corp.(*8)	Sales	Japan	100.00	100.00	"
Doosan Water UK Ltd.(*8)	Engineering & Services	UK	100.00	100.00	"
Doosan Power Systems India Private Ltd.	Engineering & Services	India	100.00	100.00	March 31
Doosan Heavy Industries Muscat LLC	Manufacturing	Oman	70.00	70.00	December 31
Doosan Power Systems Arabia Company Limited	Manufacturing & Services	Saudi Arabia	51.00	51.00	"
Azul Torre Construction Corporation(*3)	Manufacturing	Philippines	40.00	40.00	"
Doosan Enerbility America Holdings Inc.(*8)	Holdings Company	USA	100.00	100.00	"
Doosan Enerbility America LLC(*8)	Sales	USA	100.00	100.00	"
Doosan ATS America, LLC	Engineering & Services	USA	100.00	100.00	"
Doosan Power Service America, LLC	Engineering & Services	USA	100.00	100.00	"
Doosan Turbomachinery Services Holding, Inc.	Holdings Company	USA	100.00	100.00	"
Doosan Turbomachinery Services Inc.	Manufacturing	USA	100.00	100.00	"
Doosan GridTech Inc.	Software & System engineering	USA	100.00	100.00	"
Doosan GridTech LLC	Software & System engineering	USA	100.00	100.00	"
Doosan GridTech CA LLC	Software & System engineering	USA	100.00	100.00	"
Doosan GridTech EPC LLC	Software & System engineering	USA	100.00	100.00	"
Doosan GridTech C&I LLC	Software & System engineering	USA	100.00	100.00	"
Continuity Energy LLC	Software & System engineering	USA	100.00	100.00	"
Doosan Skoda Power s.r.o	Manufacturing	Czech	100.00	100.00	"
Skoda Power Private Ltd.	Engineering	India	100.00	100.00	March 31
DPS UK Pension Company Ltd.(*9)	Professional services	UK	100.00	-	December 31

DOOSAN ENERBILITY CO., LTD.
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Notes to the Consolidated Financial Statements, Continued
For the years ended December 31, 2022 and 2021

1. Reporting entity, Continued

Company	Key operating activities	Location	Ownership(%)(*1)		Closing date(*2)
			2022	2021	
Doosan Power Systems Pension Trustee Co., Ltd.	Professional services	UK	100.00	100.00	"
Doosan Power Systems Overseas Investments Ltd.(*6)	Holdings Company	UK	-	100.00	"
Doosan Babcock Ltd.(*6)	Engineering & Services	UK	-	100.00	"
Doosan Power Systems Americas LLC(*6)	Engineering & Services, Sales	USA	-	100.00	"
Doosan Lentjes GmbH	Engineering & Services	Germany	100.00	100.00	"
Doosan Power Systems S.A.	Holdings Company	Luxembourg	100.00	100.00	"
Doosan Babcock Energy Services (Overseas) Ltd.(*6)	Engineering & Services	UK	-	100.00	"
Doosan Babcock Energy Polska S.A.(*6)	Engineering & Services	Poland	-	98.91	"
Doosan Babcock Energy Germany GmbH(*6)	Engineering & Services	Germany	-	100.00	"
Doosan Lentjes Czech s.r.o	Professional services	Czech	100.00	100.00	"
Doosan Babcock General Maintenance Services LLC(*6)	Professional services	UAE	-	49.00	"
Doosan Babcock W.L.L(*6)	Professional services	Qatar	-	49.00	"
Osung Power O&M Co., Ltd.	Engineering & Services	Korea	100.00	100.00	"
Doosan Ukudu Power, LLC	Engineering & Services	USA	100.00	100.00	"
KDPP 5 th Co., Ltd.(*4)	Asset Securitization	Korea	-	-	"
Doosan Mecatec Co., Ltd. and the subsidiaries (*6)	Manufacturing	Korea and others	-	100.00	"
Doosan Cuvex Co., Ltd. (*10)	Operation of resort and golf club	Korea	100.00	56.60	"
Doosan Bobcat Inc. and the subsidiaries	Manufacturing and sales of construction equipment	Korea and others	51.07	51.05	"
Doosan Fuel Cell Co., Ltd. (*5)	Manufacturing	Korea	30.33	30.33	"
D20 Capital, LLC and the subsidiaries	Financial investment	USA	100.00	100.00	"
Doosan Property Co., Ltd. (*7)	Real estate development	Korea	-	27.01	"

(*1) The ownership percentage represents the ownership interest held by the Company (the parent) in each respective subsidiary.

(*2) Where the reporting date of subsidiaries is not consistent with that of the Company based on local laws, adjustments have been made to conform to the Company's reporting date for preparation of consolidated financial statements.

(*3) Although the Company's ownership interest in the investee is less than 50%, it is classified as a consolidated subsidiary since the Company is considered to have the majority voting rights in the equity's board of directors, and others.

(*4) In 2021, the Group assessed that it has control over the special purpose entity as the entity's activities are substantively governed by the Group and included as subsidiaries. In 2022, the control has been lost due to borrowings repayment.

(*5) Although the Company's ownership interest in the investee is less than 50%, the Company assessed that it has control over the investee based on its holdings relative to the size and dispersion of ownership interests held by other equity holders and the voting patterns in previous shareholders' meetings.

(*6) Disposed in 2022.

(*7) The entity was additionally acquired in 2022, and was reclassified to a subsidiary from an associate. Subsequently, the entity was absorbed and merged with Doosan Cuvex Co., Ltd. and ceased to exist.

(*8) The business name of Doosan Heavy Industries Vietnam Co., Ltd., Doosan Heavy Industries Japan Corp., Doosan Enpure Ltd., Doosan Heavy Industries America Holdings Inc., and Doosan Heavy Industries America LLC changed, respectively, in 2022.

(*9) Newly established in 2022.

(*10) Additionally acquired in 2022.

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Notes to the Consolidated Financial Statements, Continued
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1. Reporting entity, Continued

(3) Summarized financial information of major subsidiaries

Summarized financial information of subsidiaries as of and for the year ended December 31, 2022 is as follows:

(In millions of won)

Company		Assets	Liabilities	Sales	Net profit (loss)	Total comprehensive income (loss)
Doosan Enerbility Vietnam Co., Ltd.	₩	619,054	201,354	543,328	129,715	129,715
Doosan HF Controls Corp.		29,209	5,904	12,684	522	522
PT. Doosan Heavy Industries Indonesia		73,185	152,045	103,126	(1,150)	(1,150)
Doosan Enerbility Japan Corp.		10,858	7,559	1,603	102	102
Doosan Water UK Ltd.		28,378	66,736	2,375	(38,938)	(38,938)
Doosan Power Systems India Private Ltd.		612,229	837,614	309,684	(127,645)	(127,584)
Doosan Heavy Industries Muscat LLC		12,288	34,379	7,471	3,066	3,066
Doosan Power Systems Arabia Company Limited		30,411	18,707	19,459	2,785	2,785
Doosan Enerbility America Holdings Inc.		167,607	45	-	678	678
Doosan Turbomachinery Services Inc.		75,996	48,312	73,284	4,856	4,856
Doosan Enerbility America LLC		11,775	3,000	2,358	247	247
Doosan GridTech Inc.		47,930	77,535	28,273	(20,037)	(20,037)
Doosan GridTech EPC, LLC		11,903	9,568	7,840	(1,541)	(1,541)
Doosan Skoda Power s.r.o		540,494	121,051	228,718	29,615	32,966
Doosan Lentjes GmbH		243,126	231,110	215,687	(13,306)	7,823
Doosan Power Systems S.A		773,223	430,850	-	(2,912)	140
Doosan Cuvex Co., Ltd.		478,362	107,742	69,780	10,083	11,898
Doosan Bobcat Inc. and the subsidiaries		9,248,386	4,223,999	8,621,912	644,056	600,781
Doosan Fuel Cell Co., Ltd.		1,026,930	503,865	312,149	3,864	5,063
D20 Capital, LLC and the subsidiaries		66,277	3,181	8,213	(3,841)	(8,213)

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Notes to the Consolidated Financial Statements, Continued
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1. Reporting entity, Continued

(4) Changes in the scope of consolidation

Changes in the scope of consolidation for the year ended December 31, 2022 are as follows:

Company	Description	Reason
Doosan Bobcat Chile Compact SpA.	Excluded from consolidation	Disposal
Doosan Property Co., Ltd. (*)	Newly included in consolidation	Acquisition of shares
DPS UK Pension Company Ltd	Newly included in consolidation	Establishment of new corporation
Doosan Mecatec Co., Ltd. and the subsidiaries	Excluded from consolidation	Disposal
Doosan Babcock Ltd.	Excluded from consolidation	Disposal
Doosan Babcock Energy Services (Overseas) Ltd.	Excluded from consolidation	Disposal
Doosan Babcock Energy Polska S.A.	Excluded from consolidation	Disposal
Doosan Babcock Energy Germany GmbH	Excluded from consolidation	Disposal
Doosan Babcock General Maintenance Services LLC	Excluded from consolidation	Disposal
Doosan Babcock W.L.L	Excluded from consolidation	Disposal
Doosan Power Systems Overseas Investments Ltd.	Excluded from consolidation	Disposal
Doosan Power Systems Americas LLC	Excluded from consolidation	Disposal
KDPP 5th Co., Ltd.	Excluded from consolidation	Repayment of borrowings

(*) Absorbed and merged with Doosan Cuvex Co., Ltd. in 2022.

(5) Significant non-controlling interests

Financial information of subsidiaries attributable to significant non-controlling interests as of December 31, 2022 is as follows:

(In millions of won)

Company	Net profit attributable to non-controlling interests	Cumulative non-controlling interests	Dividends allocated to non-controlling interests
Doosan Bobcat Inc. and its subsidiaries ₩	315,095	2,564,977	(88,311)
Doosan Fuel Cell Co., Ltd.	(1,004)	416,239	-

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1. Reporting entity, Continued

(6) Cash flow information for subsidiaries with significant non-controlling interests

Cash flow information for subsidiaries with significant non-controlling interests for the year ended December 31, 2022 is as follows:

(In millions of won)

		2022	
		Doosan Bobcat Inc. and its subsidiaries	Doosan Fuel Cell Co., Ltd.
I.	Net cash flows from operating activities	₩ 717,695	(257,660)
II.	Net cash flows from investing activities	(124,988)	92,678
III.	Net cash flows from financing activities	(892,013)	190,837
IV.	Effect of movements in exchange rates on cash held	46,551	(11)
V.	Net increase (decrease) in cash and cash equivalents	(252,755)	25,844
VI.	Cash and cash equivalents at January 1	951,760	6,013
VII.	Cash and cash equivalents at December 31	₩ 699,005	31,857

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Notes to the Consolidated Financial Statements, Continued
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2. Significant accounting policies and basis of preparation

(1) Basis of consolidated financial statements

The Group has prepared the consolidated financial statements in accordance with K-IFRS.

The significant accounting principles as applied in the consolidated financial statements as of and for the year ended December 31, 2022 correspond to those pertaining to the annual consolidated financial statements as of and for the year ended December 31, 2021, except for the effects associated with the introduction of the Standard or Interpretation as described below.

The accompanying consolidated financial statements have been prepared on the historical cost basis, except for certain properties/non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given in exchange for assets.

1) Changes in accounting standards effective from January 1, 2022 are as follows:

- *Onerous Contracts : Costs of Fulfilling a Contract – Amendments to K-IFRS No. 1037* : the amendments clarify the direct costs include both the incremental costs and an allocation of other costs directly related to fulfilling contracts when assessing whether the contract is onerous

- *Reference to the Conceptual Framework – Amendments to K-IFRS No. 1103 'Business Combinations'*: the amendments update a reference of definition of assets and liabilities to be recognized in a business combination and add an exception for the recognition of liabilities and contingent liabilities

- *Property, Plant and Equipment: Proceeds before Intended Use – Amendments to K-IFRS No. 1016* : the amendments clarify the accounting treatment for any proceeds from selling items produced while the Group is preparing the asset for its intended use, and the costs of producing those items

- *Annual improvements to K-IFRS 2018-2020*

- *K-IFRS No. 1109 'Financial Instruments'*: The amendments clarify Fees related to the 10% test for derecognition of financial liabilities
- *K-IFRS No. 1101 'First time Adoption of Korean International Financial Reporting Standards'* : The amendment permits a subsidiary that elects to apply paragraph D16(a) of K-IFRS No. 1101 (Subsidiaries that are first-time adopters) to measure cumulative translation differences using the amounts reported by the parent, based on the parent's date of transition to K-IFRS
- *K-IFRS No. 1116 'Leases'*: The amendment to illustrative example regarding the reimbursement of leasehold improvements by the lessor is made, in order to resolve any potential confusion regarding the treatment of lease incentives that might arise because of how lease incentives are illustrated in that example

The Group believes that these amendments have no significant impact on the Group's consolidated financial statements.

2. Significant accounting policies and basis of preparation, Continued

2) New and revised K-IFRSs in issue, but not yet effective:

- Classification of Liabilities as Current or Non-current (*K-IFRS No. 1001 'Presentation of Financial Statements'*): the amendments clarify that liabilities are classified as either current or non-current, depending on the substantive rights that exist at the end of the reporting period. Also, the amendments provide guidance on how to apply the concept of materiality to accounting policy disclosures
- Definition of Accounting Estimates (*K-IFRS No. 1008 'Accounting policies, changes in accounting estimates and errors'*): the amendments define accounting estimates and clarify how to distinguish them from changes in accounting policies
- Deferred Tax related to Assets and Liabilities arising from a Single Transaction (*K-IFRS No. 1012 'Income Taxes'*): the amendments include an additional condition to the exemption to initial recognition of an asset or liability that a transaction does not give rise to equal taxable and deductible temporary differences at the time of the transaction
- New Standard (*K-IFRS No. 1117 'Insurance Contract'*): the standard estimates future cash flows of an insurance contract and measures insurance liabilities using discount rates applied with assumptions and risks at the measurement date

The Group anticipates that the application of the enactment and amendments will not have a significant impact on the Group's consolidated financial statements.

(2) Basis of consolidation

The consolidated financial statements comprise the financial statements of the Company and its subsidiaries as of December 31, 2022. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee if and only if the Group has:

- power over the investee (i.e. existing rights that give it the current ability to direct the relevant activities of the investee);
- exposure or rights to variable returns from its involvement with the investee; and
- the ability to use its power over the investee to affect its returns.

When the Group has less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- the contractual arrangement with the other vote holders of the investee;
- rights arising from other contractual arrangements; and
- the Group's voting rights and potential voting rights.

The Group re-assesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the statement of profit or loss and the statement of comprehensive income from the date the Group gains control until the date the Group ceases to control the subsidiary.

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2. Significant accounting policies and basis of preparation, Continued

Profit or loss and each component of other comprehensive income (OCI) or loss are attributed to the equity holders of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If the Group loses control over a subsidiary, the Group:

- derecognizes the assets (including goodwill) and liabilities of the subsidiary;
- derecognizes the carrying amount of any non-controlling interests;
- derecognizes the cumulative translation differences recorded in equity;
- recognizes the fair value of the consideration received;
- recognizes the fair value of any investment retained;
- recognizes any surplus or deficit in profit or loss; and
- reclassifies the parent's share of components previously recognized in OCI to profit or loss or retained earnings, as appropriate, as would be required if the Group had directly disposed of the related assets or liabilities.

(3) Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence and is neither a subsidiary nor an investment in a joint venture. The Group generally holds, directly or indirectly through subsidiaries, between 20% and 50% of the voting power of the entity. A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The Group's investments in its associate and joint venture accounted for using the equity method. Under the equity method, the investment in an associate or a joint venture is initially recognized at cost. Goodwill relating to the associate or joint venture is included in the carrying amount of the investment and is presented after deducting accumulated impairment losses.

After acquisition, the Group's share of the profit or loss and other comprehensive income or loss of the associates and jointly controlled entities are recognized as profit or loss and other comprehensive income or loss and the Group's share of the changes in retained earnings of the associates and joint ventures are recognized as retained earnings. When the Group's share of losses of an associate and joint ventures exceeds the Group's interest in those entities (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognizing its share of further losses.

Unrealized gains from transactions between the Group and its associates and joint ventures are eliminated up to the interests in those entities. Unrealized losses are also eliminated unless evidence of impairment in assets transferred is provided.

When necessary, the Group may revise associates' and joint ventures' financial statements, to apply consistent accounting policies as the Group, prior to applying the equity method of accounting for its investments in the associates and joint ventures.

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For overseas investees whose financial statements are prepared in foreign currencies, the equity method of accounting is applied after assets and liabilities are translated in accordance with the accounting treatments for the translation of the financial statements of overseas' subsidiaries for consolidated financial statements. The Group's proportionate share of the difference between assets net of liabilities and equity after translating into Korean Won is accounted for as "increase (decrease) in equity adjustments in equity method investments" included in accumulated other comprehensive income (loss).

(4) Foreign currency translation

1) Functional currency and presentation currency

The Group's financial statements are presented in the currency of the primary economic environment in which it operates (its functional currency). The functional currency of the Group and the presentation currency for the consolidated financial statements of the Group are Korean won.

2) Transactions and balances

Transactions in currencies other than the entity's functional currency are recognized at the rates of exchange prevailing at the dates of the transactions. Foreign currency gain (loss) from settlements of foreign currency transactions or translation of monetary items denominated in foreign currencies is recognized in profit or loss whereas the gain (loss) from qualified cash flow hedge and net investment hedge for foreign operations is deferred as an equity item.

3) Group companies

For the purpose of presenting consolidated financial statements, ① the assets and liabilities of the Group's foreign operations with different functional currencies are translated into presentation currency of the Group using exchange rates prevailing at the end of the reporting period. ② Income and expense items are translated using the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which the exchange rates at the dates of the transactions are used. ③ Exchange differences, if any, are recognized in other comprehensive income or loss and accumulated in equity (attributed to non-controlling interests as appropriate).

Exchange differences from the net investment in the foreign operation, and borrowings and other foreign currency instruments designated as hedging instrument for the net investment in the foreign operation are recognized in other comprehensive income or loss. On the disposal of a foreign operation resulting in loss of control, all of the accumulated exchange differences in respect of that operation are reclassified to profit or loss. Goodwill and fair value adjustments arising from the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate.

(5) Cash and cash equivalents

Cash and cash equivalents include cash on hand, demand deposits, short-term, highly liquid investments with maturities (or date of redemption) of three months or less upon acquisition. Bank overdraft is classified as short-term borrowings on the consolidated statements of financial position.

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2. Significant accounting policies and basis of preparation, Continued

(6) Non-derivative financial assets

1) Initial recognition and measurement

Trade and other receivables, and debt investment are initially recognized when they are originated. Other financial assets and financial liabilities are recognized when the Group becomes a party to the contractual provisions of the instruments.

A financial asset and financial liability (unless it is a trade receivable - trade without a significant financing component that is initially measured at the transaction price) are initially measured at fair value plus, for an item not at fair value through profit or loss ("FVTPL"), transaction costs that are directly attributable to its acquisition.

2) Classification and subsequent measurement

On initial recognition, a financial asset is classified as measured at: amortized cost; FVOCI - debt investment; FVOCI - equity investment; or FVTPL. The classification of financial assets is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. In case of changing its business model, all affected financial asset are reclassified on the first day of the first reporting period after the change in the business model.

A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL:

- it is held within a business model whose objective is to hold assets to collect contractual cash flow; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

A debt investment is measured at FVOCI if it meets both of the following conditions and is not designated as at FVTPL:

- it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

On initial recognition of an equity investment that is not held for trading, the Group may irrevocably elect to present subsequent changes in the investment's fair value in other comprehensive income. This election is made on an investment-by-investment basis and irrevocable election can be made at initial recognition.

All financial assets not classified as measured at amortized cost or FVOCI as described above are measured at FVTPL. This includes all derivative financial assets. On initial recognition, the Group may irrevocably designate a financial asset that otherwise meets the requirements to be measured at amortized cost or at FVOCI as at FVTPL if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

2. Significant accounting policies and basis of preparation, Continued

The Group makes an assessment of the objective of the business model in which, financial assets is held at a portfolio level because this best reflects the way the business is managed, and information is provided to management. The information considered includes:

- the stated policies and objectives for the portfolio and the operation of those policies in practice;
- how the performance of the business model and the financial assets held within that business model are evaluated and reported to the entity's key management personnel;
- the risks that affect the performance of the business model (and the financial assets held within that business model) and, in particular, the way in which those risks are managed;
- how managers of the business are compensated (e.g. whether the compensation is based on the fair value of the assets managed or on the contractual cash flows collected); and
- the frequency, volume and timing of sales of financial assets in prior periods, the reason for those sales and expectation about future sales activity for financial asset.

Transfers of financial assets to third parties in transactions that do not qualify for derecognition are not considered sales for this purpose, consistent with the Group's continuing recognition of the assets.

Portfolio of financial assets that meet the definition of trading or which performance is evaluated on a fair value basis is measured at FVTPL.

For the purposes of this assessment, 'principal' is defined as the fair value of the financial assets on initial recognition. 'Interest' is defined as consideration for the time value of money and for the credit risk associated with the principal amount outstanding during a particular period of time and for other basic lending risks and costs (e.g. liquidity risk and administrative costs), as well as a profit margin.

In assessing whether the contractual cash flows are solely payments of principal and interest, the Group considers the contractual terms of the instrument. This includes assessing whether the financial asset contains a contractual term that could change the timing or amount of contractual cash flows such that it would not meet this condition.

In making this assessment, the Group considers:

- contingent events that would change the amount or timing of cash flows;
- terms that may adjust the contractual coupon rate, including variable-rate features;
- prepayment and extension features; and
- terms that limit the Group's claim to cash flows from specified assets (e.g. non-recourse features).

A prepayment feature is consistent with the solely payments of principal and interest criterion if the prepayment amount substantially represents unpaid amounts of principal and interest on the principal amount outstanding, which may include reasonable additional compensation for early termination of the contract.

Additionally, for a financial asset acquired at a discount or premium to its contractual par value, a feature that permits or requires prepayment at an amount that substantially represents the contractual par value plus accrued (but unpaid) contractual interest (which may also include reasonable additional compensation for early termination) is treated as consistent with this criterion if the fair value of the prepayment feature is insignificant at initial recognition.

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2. Significant accounting policies and basis of preparation, Continued

The following accounting policies apply to subsequent measurements of financial assets.

Classification	Subsequent measurement
Financial assets at FVTPL	These assets are subsequently measured at fair value. Net gains and losses, including any interest or dividend income, are recognized in profit or loss.
Financial assets at amortized cost	These assets are subsequently measured at amortized cost using the effective Interest method. The amortized cost is reduced by impairment losses. Interest income, foreign exchange gains and losses and impairment are recognized in profit or loss. Any gain or loss on derecognition is recognized in profit or loss.
Debt investments at FVOCI	These assets are subsequently measured at fair value. Interest income calculated using the effective interest method, foreign exchange gains and losses and impairment are recognized in profit or loss. Other net gains and losses are recognized in OCI. On derecognition, gains and losses accumulated in OCI are reclassified to profit or loss.
Equity investments at FVOCI	These assets are subsequently measured at fair value. Dividends are recognized as income in profit or loss unless the dividend clearly represents a recovery of part of the cost of the investment. Other net gains and losses are recognized in OCI and are never reclassified to profit or loss.

3) De-recognition

The Group derecognizes a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred or in which the Group neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset.

The Group enters into transactions whereby it transfers assets recognized in its consolidated statements of financial position but retain either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

4) Offsetting between financial assets and financial liabilities

Financial assets and financial liabilities are offset and the net amount is presented in the consolidated statement of financial position only when the Group currently has a legally enforceable right to offset the recognized amounts, and there is the intention to settle on a net basis or to realize the asset and settle the liability simultaneously.

(7) Impairment of financial assets

1) Recognition of impairment on financial assets

The Group recognizes loss allowances for expected credit losses ("ECLs") on:

- financial assets measured at amortized costs;
- debt securities measured at FVOCI; and
- contract assets defined by K-IFRS No. 1115.

2. Significant accounting policies and basis of preparation, Continued

The Group's impairment losses are likely to be recognized a lifetime ECLs based on the extent of increase in credit risk since inception except for below asset to be recognized loss allowances measured on 12-month.

- credit risk of debt instruments is low at the end of reporting date
- credit risk has not increased significantly since the initial recognition of debt investment (lifetime ECLs: ECLs that resulted from all possible default events over the expected life of a financial instrument)

The Group adopted an accounting policy to recognize loss allowances at an amount equal to lifetime ECLs for trade receivables and contract assets.

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition and estimating expected credit loss. The Group considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort.

Lifetime ECLs are resulted from all possible default events over the expected life of a financial instrument. And 12-month ECLs are resulted from possible default events within the 12 months (or a shorter period if the expected life of the instrument is less than 12 months) after the reporting date.

The longest period to consider when measuring ECLs is the longest term for which the Group is exposed to credit risk.

2) Measurement of expected credit loss

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Group expects to receive). ECLs are discounted at the effective interest rate of financial instrument.

3) Credit-impaired financial instrument

A debt instrument carried at amortized cost and FVOCI is assessed at the end of each reporting period to determine whether there is objective evidence that it is impaired. A financial asset is impaired if objective evidence indicates that the loss event had a negative effect on the estimated future cash flows of that asset that can be estimated reliably.

Objective evidence that a financial asset is impaired includes:

- significant financial difficulty of the issuer or borrower;
- a breach of contract, such as default or delinquency in interest or principal payments;
- the lender, for economic or legal reasons relating to the borrower's financial difficulty, granting to the borrower a concession that the lender would not otherwise consider;
- it becomes probable that the borrower will enter bankruptcy or other financial reorganization; or
- the disappearance of an active market for that financial asset because of financial difficulties.

4) Presentation of credit loss allowance on financial position

For loss allowance on financial assets measured at amortized cost is deducted from the carrying amount of the respective assets, while loss allowance on debt instruments at FVOCI is recognized in OCI.

2. Significant accounting policies and basis of preparation, Continued

5) De-recognition

The Group derecognizes a financial asset when it has no reasonable expectations of recovering the contractual cash flows on a financial asset in its entirety or a portion thereof. The Group assess whether there are reasonable expectations of recovering the contractual cash flows from customers and individually assess the timing and amount of write-off. The Group does not expect that such write-off will be recovered but they may be subject to collection activity according to the Group's past due collection process.

(8) Trade receivables

Trade receivables are amounts owed by customer for products and services provided in the ordinary course of business. Receivables expected to be collected within one year are classified as current assets. Otherwise, they are classified as non-current assets. Trade receivables are initially measured at fair value except that they do not contain a significant financing component in accordance with K-IFRS No. 1115 'Revenue from contracts with customers' and are presented as net of allowance for doubtful accounts, estimated on an individual basis based on past bad debt experience.

(9) Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories includes fixed and variable manufacturing overhead costs which are systematically allocated to inventories by appropriate methods based on each category of inventory. The cost of inventories is determined by the specific identification method for finished goods, work-in-process and materials in transit, and moving average method for all other inventories.

The Group periodically reviews changes in net realizable value of inventories (current replacement cost for raw materials) due to damage, obsolescence, decline in selling prices and others and recognizes loss on inventory valuation. Loss on inventory valuation is charged to cost of sales when it is ordinary and to other non-operating expense when it is extraordinary. When the circumstances that previously caused inventories to be written down below cost no longer exist and the new market value of inventories subsequently recovers, the valuation loss is reversed to the extent of the original valuation loss and the reversal is deducted from cost of sales.

(10) Property, plant and equipment

Property, plant and equipment is stated at cost less subsequent accumulated depreciation and accumulated impairment losses. After initial recognition, the land is stated as fair value at revaluation date less accumulated impairment loss. The revaluation is performed periodically to ensure that carrying value of the asset does not differ materially from its fair value at the end of reporting period. When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment. The cost of an item of property, plant and equipment includes expenditure that is directly attributable to the acquisition of the asset including the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs are capitalized only if it is highly probable that future economic benefits associated with the assets will flow into the Group.

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Depreciation of property, plant and equipment is calculated to the cost of each asset less residual value using the straight-line method over the estimated useful lives of the assets as follows:

	Useful lives
Buildings	7~40 years
Structures	5~40 years
Machinery	3~20 years
Others	3~15 years
Right-of-use asset	Lease term

If a part of a property, plant and equipment has significant cost in relation to the total cost of property, plant and equipment, it is depreciated separately.

The Group reviews the depreciation method, the estimated useful lives and residual values of property, plant and equipment at the end of each annual reporting period. If expectations differ from previous estimates, the changes are accounted for as a change in an accounting estimate.

When there is an indicator for impairment, and the carrying amount of property, plant and equipment is higher than the recoverable amount, the carrying amount is adjusted to the recoverable amount and the difference is recognized as an impairment loss. Meanwhile, when the recoverable amount subsequently exceeds the carrying amount of the impaired asset, the excess is recorded as a reversal of impairment loss to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation, if no impairment loss had been recognized. Upon derecognition of a property, plant and equipment, the difference between the net disposals proceed and carrying amount of the item is recognized in other non-operating income (expense).

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

(11) Intangible assets

Intangible assets are initially measured at cost and are carried at cost less accumulated amortization and accumulated impairment losses. Subsequent expenditure on an intangible asset is capitalized only when it is probable that the expected future economic benefits that are attributable to the asset will increase.

Intangible assets other than goodwill and intangibles with indefinite useful lives are amortized on a straight-line basis over their estimated useful lives from the date that they are available for use. The estimated useful lives of the intangible assets are as follows:

	Useful lives
Industrial property rights	5~10 years
Development costs	5~20 years
Others	1~20 years

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2. Significant accounting policies and basis of preparation, Continued

Goodwill acquired in business combination is the consideration paid in excess of the fair value of the group's interest in the identifiable net assets of the subsidiary acquired at the acquisition date, and the goodwill resulting from the acquisition of the subsidiary is included in the intangible asset. The goodwill is not amortized, is annually tested for impairment and is the cost less accumulated impairment losses. Reversal of an impairment loss for goodwill is prohibited. The goodwill is distributed to the cash-generating unit for the purpose of impairment testing, and the distribution is made to the identified cash-generating unit or group of cash-generating units that are expected to benefit from the business combination in which the goodwill occurs, and it is determined by the sales segment.

Expenditures relating to development activities are capitalized when the result of the development is for the development of new products or substantial improvement of functions of existing products; there is technical and commercial feasibility of completing the development; and the Group has the ability to measure reliably the expenditure attributable to the development. Capitalized development cost include expenditure on materials, salaries, wages and other employment-related costs of personnel directly engaged in generating assets and related overhead cost which is systematically allocated. Capitalized development costs are presented at the acquisition cost less accumulated amortization and accumulated impairment losses. Capitalized development costs are amortized using the straight-line method over the estimated useful life and amortization expenses are included in cost of goods manufactured and amortization in selling and administrative expenses. The expenditure on research and development which does not meet conditions noted above is recognized as an expense when it is incurred.

The estimated useful life and amortization method for intangible assets with finite useful lives are reviewed at the end of each reporting period and for the assets which have been assessed as having indefinite useful life, that assessment is revisited each period, with the effect of any changes in estimate being accounted for as a change in accounting estimate.

However, useful lives of other intangible assets, which are determined to be indefinite since there is no foreseeable limit to the period over which the assets are expected to generate net cash inflows for the Group, are not amortized but tested for impairment once a year.

(12) Investment property

Investment properties are properties held to earn rentals and/or for capital appreciation. Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, the book value of investment property is presented at the cost less accumulated depreciation and accumulated impairment. Subsequent costs are included in the asset's carrying amount or recognized as a separate asset, as appropriate, only when it is probable that future economic benefits arising from the asset will flow in and the cost can be measured reliably. The carrying amount of the portion replaced by subsequent expenditure is derecognized. Meanwhile, costs incurred in connection with routine repairs and maintenance are recognized in profit or loss as incurred.

While land is not depreciated, building is depreciated using the straight-line method over the useful lives between 8 and 50 years.

The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for as a change in accounting estimate.

2. Significant accounting policies and basis of preparation, Continued

(13) Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale. Financial assets, inventories that are manufactured in short-term or produced by other method, and assets available for their intended use or sales at the time of acquisition are not eligible for qualifying assets.

Where funds are borrowed specifically, costs eligible for capitalization are the actual costs incurred less any income earned on the temporary investment of such borrowings. Where funds are part of a general pool, the eligible amount is determined by applying a capitalization rate to the expenditure on that asset. The capitalization rate will be the weighted average of the borrowing costs (excluding special purposed borrowing in order to acquire qualifying assets) applicable to the general pool. The borrowing costs eligible for capitalization cannot exceed actual amount of borrowing costs incurred for the reporting period.

(14) Impairment of non-financial assets

The carrying amounts of the Group's non-financial assets other than contract assets recognized for revenue arising from contracts with a customer, assets recognized for the costs to obtain or fulfill a contract with a customer, employee benefits, inventories, deferred tax assets, and non-current assets held for sale are reviewed at the end of the reporting period to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill and intangible assets that have indefinite useful lives or that are not yet available for use, irrespective of whether there is any indication of impairment, are tested for impairment annually by comparing their recoverable amounts to their carrying amounts.

The Group estimates the recoverable amount of an individual asset, and if it is impossible to measure the individual recoverable amount of an asset, the Group estimates the recoverable amount of cash-generating unit ("CGU"). A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. The value in use is estimated by applying a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU for which estimated future cash flows have not been adjusted, to the estimated future cash flows expected to be generated by the asset or CGU.

An impairment loss is recognized in profit or loss to the extent the carrying amount of the asset exceeds its recoverable amount.

Goodwill acquired in a business combination is allocated to each CGU that is expected to benefit from the synergy arising from the business acquired. Any impairment identified at the CGU level will first reduce the carrying amount of goodwill and then be used to reduce the carrying amount of the other assets in the CGU on a pro rata basis. Except for impairment losses in respect of goodwill which are never reversed, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

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2. Significant accounting policies and basis of preparation, Continued

(15) Non-derivative financial liabilities

The Group classifies non-derivative financial liabilities into financial liabilities at FVTPL or other financial liabilities in accordance with the substance of the contractual arrangement and the definitions of financial liabilities. The Group recognizes financial liabilities in the consolidated statement of financial position when the Group becomes a party to the contractual provisions of the financial liability.

1) Financial liabilities at FVTPL

Financial liabilities at FVTPL include financial liabilities held for trading or designated as such upon initial recognition. Subsequent to initial recognition, financial liabilities at FVTPL are measured at fair value, and changes therein are recognized in profit or loss. Upon initial recognition, any directly attributable transaction costs are recognized in profit or loss as incurred.

2) Financial liabilities at amortized cost

Non-derivative financial liabilities other than financial liabilities at FVTPL are classified as financial liabilities at amortized cost. At the date of initial recognition, financial liabilities at amortized cost are measured at fair value less any directly attributable transaction costs. Subsequent to initial recognition, financial liabilities at amortized cost are measured at amortized cost using the effective interest rate method.

3) Derecognition of financial liability

The Group derecognizes financial liability when its contractual obligations are discharged, cancelled or expired. The Group also derecognizes a financial liability, when its terms are modified and the cash flows of the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized a fair value.

On derecognition of a financial liability, the difference between the carrying amount extinguished and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

(16) Borrowings

Borrowings are measured initially at fair value, net of transaction costs and subsequently at amortized cost using the effective interest methods, with interest expense being recognized on an effective yield basis. The difference between the amount received and the redemption amount is amortized using the effective interest method and recognized in profit or loss. Borrowings are classified as non-current liabilities when the Group has an unconditional right to defer settlement of the liability for at least twelve months after the end of the reporting period. Otherwise, borrowings are classified as current liabilities.

(17) Compound financial instrument

Compound financial instruments issued by the Group are classified as a financial liability or an equity instrument in accordance with the substance of the contractual arrangement. The conversion right of convertible bonds and stock warranties embedded in compound financial instrument issued by the Group which can, at the option of the holder, be converted into a fixed number of equity instruments in the Group, is classified as equity.

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The liability component of a convertible bonds and bonds with stock warranties is recognized at the fair value of a similar liability on initial recognition and is measured at amortized cost by applying the effective interest methods until it is extinguished. The equity component is measured by deducting the fair value of the liability component from the fair value of the compound financial instrument as a whole on initial recognition. Any tax effect is also reflected, and such instrument is not subsequently remeasured.

The conversion right that is an embedded derivative is recognized at the market value of a similar derivative or at the fair value derived from an appropriate valuation model. Subsequent changes in fair value of the conversion right are recognized in profit or loss.

Transaction costs related to a compound financial instrument are allocated to the liability and equity components in proportion to the allocation of proceeds.

(18) Financial guarantee contracts

The Group has financial guarantee contract liabilities, which are obligations to pay specific amounts for indemnifying creditors' loss on insolvency of specific debtors according to initial or revised contract provisions of liabilities on the payment date. Financial guarantee contract liabilities are initially measured at their fair value less the direct transaction cost relating to the issuance. Subsequently, financial guarantee contract liabilities are measured at the higher of the amount of the loss allowance determined in accordance with K-IFRS No. 1109 'Financial instruments', and the amount initially recognized less the cumulative amortizations recognized in accordance with the K-IFRS No. 1115.

(19) Employee benefits liability

The Group operates various types of benefit plans, and generally makes contributions calculated based on periodic actuarial calculations to separately administered funds such as qualifying insurance companies or trust funds.

A defined contribution plan is a post-employment benefit plan, under which the Group pays fixed contribution to a separately administered fund. The Group does not assume any legal or constructive obligation to pay the additional contribution even if the fund does not hold sufficient assets to pay benefits, relating to employee's service in the current and prior periods, in full. The contribution is recognized as pension benefit at the date of payment. If the contribution already paid exceeds the contribution due for services rendered prior to the end of the reporting period, the Group recognizes such excess as an asset (prepaid expense) to the extent that the prepayment will lead to a reduction in future payments or a cash refund.

Defined benefit plans are post-employment benefit plans other than defined contribution plans. Generally, under the defined benefit plan, amounts to be paid as retirement benefits are determined by reference to a formula usually based on employees' earnings, years of service, ages and other considerations. The retirement benefit obligation recognized in the consolidated statements of financial position represents the present value of the defined benefit obligation, less fair value of plan assets and adjustment for unrecognized past service cost. The defined benefit obligation is calculated by an independent actuary using the projected unit credit method. The present value of the defined benefit obligation is denominated in the same currency in which the benefits are expected to be paid, and calculated at the discount rate which is the yield at the reporting date on high quality corporate bonds that have maturity dates approximating the terms of the Group's obligation.

2. Significant accounting policies and basis of preparation, Continued

Actuarial gain or loss from changes in actuarial assumptions or differences between actuarial assumptions and actual results is recognized in other comprehensive income or loss, which is immediately reflected in retained earnings. Past service cost is directly recognized in profit or loss in the period the plan amendment or curtailment occurs.

(20) Provision

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. A provision is measured using the present value of the cash flows estimated to settle the present obligation when the effect of the time value of money is material.

At the end of each reporting period, the remaining provision balance is reviewed and assessed to determine if the current best estimate is being recognized. The increase in provision due to passage of time is recognized as interest expense. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period. When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably. In this case, any income arising from the third-party reimbursement is netted off against the related expense to be recognized in the consolidated statements of profit or loss from the recognition of provisions.

(21) Leases

The Group determines whether the contract is a lease or includes a lease at the time of the agreement. If the contract requires a transfer of control over the use of the identified asset for a certain period of time in exchange for consideration, the contract will either be a lease or include a lease. When determining whether a contract transfers control of the use of the identified asset, the Group uses the definition of a lease in K-IFRS No. 1116.

1) Lessee

At the commencement or effective date of the contract that includes the lease element, the Group allocates the consideration of the contract to each lease element based on its relative stand-alone price. However, the Group applies a practical expedient that does not separate the non-lease component for a real estate lease and accounts for the non-lease component related to the lease element as a single lease element.

The Group recognizes right-of-use assets and lease liabilities at the commencement date of the lease. Right-of-use assets are initially measured at cost, and the costs shall comprise the amount of the initial measurement of the lease liability, the initial direct costs incurred by the lessee, any lease payments made at or before the commencement date (less any lease incentives received) and an estimate of costs to be incurred by the lessee in dismantling and removing the underlying asset, or restoring the underlying asset or the site on which it is located.

2. Significant accounting policies and basis of preparation, Continued

Right-of-use assets are subsequently depreciated on a straight-line basis from the commencement of the lease to the end of the lease term. However, if the ownership of the license asset is transferred at the end of the lease term or the exercise price of the purchase option is reflected in the cost of the license asset, the right-of-use assets shall be depreciated until the end of the useful life of the underlying asset on the same basis as the depreciation of the property, plant and equipment. Also, right-of-use assets may be adjusted as a result of a reduction in impairment losses or a remeasurement of lease liabilities.

Lease liabilities are initially measured at the present value of the lease payments not paid as of the commencement of the lease. Lease is discounted at the intrinsic interest rate of the lease, but if the intrinsic interest rate is not readily calculated, the lease is discounted at the Group's incremental borrowing rate. Generally, the Group uses the incremental borrowing rate as the discount rate. Lease liabilities are amortized in accordance with the effective interest method. When remeasurement of a lease liability, the relevant right-of-use asset is adjusted and the remeasurement amount is recognized in profit or loss if the carrying amount of the right-of-use asset is reduced to nil.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, including in-substance fixed payments
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable under a residual value guarantee; and
- the exercise price under a purchase option that the Company is reasonably certain to exercise, lease payments in an optional renewal period if the Company is reasonably certain to exercise an extension option, and penalties for early termination of a unless the Company is reasonably certain not to terminate early.

As practical expedient, the Group does not recognize right-of-use assets and lease liabilities for short-term leases with a lease term of less than 12 months and low-value assets. The Group shall recognize the lease charges relating to these leases as expenses in accordance with the straight-line method over the lease term.

2) Lessor

The accounting policies applied during comparative periods by the Group as a lessor are not different from those in K-IFRS No. 1116. As a lessor, the Group determines whether the lease is a finance lease or an operating lease at the inception of the lease. To classify each lease, the Group generally determines whether the lease transfers most of the risks and rewards of ownership of the underlying asset. If most of the risks and rewards of ownership of the underlying asset are transferred to the lessee, the lease is classified as a finance lease, otherwise the lease is classified as an operating lease.

(22) Derivative financial instruments and hedge accounting

Derivatives are initially recognized at fair value at the date the derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is generally recognized as profit or loss when it is incurred. However, the effective portion of changes in the fair value of derivatives that are designated and qualified as cash flow hedges is recognized in other comprehensive income or loss. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss.

2. Significant accounting policies and basis of preparation, Continued

1) Hedge accounting

The Group operates fair value hedges to avoid the risk of fair value change, which is incurred from specific risk on assets, liabilities and firm contracts, and cash flow hedges to avoid the risk of future cash flow change, which is incurred from specific risk on expecting contracts.

At the inception of the hedge relationship, the Group documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the Group assesses whether there is an economic relationship between the hedged item and the hedging instrument.

The Group assumes that the interest rate benchmark on which the hedged cash flows and/or hedged risk are based, or the interest rate benchmark on which the cash flows of the hedging instrument are based, is not altered as a result of the interest rate benchmark reform when uncertainty arises in assessment of the economic relationship between the hedged item and the hedging instrument.

To determine whether the hedged cash flows are expected to occur, the Group shall assume that the interest rate benchmark on which the hedged cash flows are based is not altered as a result of the interest rate benchmark reform. To determine for relationship once designated as cash flow hedging accounting whether discontinued cash flow hedging accounting is expected to occur, the Group shall assume that the interest rate benchmark on which the hedged cash flows are based is not altered as a result of the interest rate benchmark reform.

The Group has applied the reliefs in relation to the following hedge accounting, provided under the Phase 2 amendments.

- when the uncertainty arising from the report is no longer present;
- when hedging relationship is discontinued

When modification related with hedged item and/or hedging instrument is made and uncertainty no longer arises on the interest rate benchmark which the hedged cash flows and/or hedged risk are based, or the interest rate benchmark which the cash flows of the hedging instrument are based, the Group changes the official designation of hedging relationship documented in the past to reflect the changes required by the interest rate benchmark reform.

The Group will amend the documentation to reflect the changes to the hedged risk, hedged item and/or hedging instrument as result of the interest rate reform until the end of the reporting period. These amendments of hedge documentation would not require discontinuing the hedging relationships.

When modification on the financial assets or liabilities designated as a hedging relationship or additional modification on designation of hedging relationship are made as a result of interest rate benchmark reform, the Group shall determine whether hedging accounting is no longer applicable and if the hedging accounting continues to be applied, the Group changes the official designation of hedging relationship documented in the past to reflect the changes required by the interest rate benchmark reform.

When modification of hedged item is made on hedging document to reflect the changes required by the interest rate benchmark reform, the amount accumulated in the cash flow hedge reserve shall be deemed to be based on the alternative benchmark rate.

2. Significant accounting policies and basis of preparation, Continued

For a discontinued hedging relationship, when the interest rate benchmark on which the hedged future cash flows had been based is changed as required by interest rate benchmark reform, for the purpose to determine whether the hedged future cash flows are expected occur, the amount accumulated in the cash flow hedge reserve shall be deemed to be based on the alternative benchmark rate.

a) Fair value hedges

Changes in the fair value of derivatives that are designated and qualified as fair value hedges (or gain or loss on foreign currency translation, when a financial instrument, not derivative is designated as the hedging instrument) are recognized in profit or loss immediately, together with any changes in the fair value of the hedged asset or liability that are attributable to the hedged risk.

b) Cash flow hedges

The effective portion of change in the fair value of derivatives that are designated and qualify as cash flow hedges for decreasing risk incurred from change of future cash flow on forecast transaction is recognized in other comprehensive income or loss. Amounts previously recognized in other comprehensive income or loss and accumulated in equity are reclassified to profit or loss in the periods when the hedged item is recognized in profit or loss, or is reflected in the carrying amount of the associated asset or liability when the forecasted transaction occurs. Even when hedge accounting is discontinued due to the expiration, termination or exercise of hedging instrument, subsequent accounting treatment of amounts recognized in other comprehensive income or loss and accumulated in equity is the same. However, when hedge accounting is discontinued due to forecast transaction being no longer expected to occur, the gain or loss accumulated in equity is recognized immediately in profit or loss.

2) Separable embedded derivatives

Embedded derivatives are separated from the host contract and accounted for separately only if the following conditions have been met: (a) the economic characteristics and risks of the host contract and the embedded derivatives are not clearly and closely related to a separate instrument with the same terms as the embedded derivative that would meet the definition of a derivative, and (b) the hybrid (combined) securities is not measured at fair value through profit or loss. Changes in the fair value of separable embedded derivatives are recognized immediately in profit or loss.

3) Other derivative financial instruments

Derivative financial instruments other than the effective portion of derivative financial instruments that are designated as the hedging instruments are measured at fair value. Gain or loss arising from changes in fair value is recognized in profit or loss.

(23) Dividend

Dividend payable is recognized as liability when declaration of the dividend is approved in the shareholders' meeting.

2. Significant accounting policies and basis of preparation, Continued

(24) Issued capital

Common stocks are classified as equity, and the incremental costs directly arising from capital transactions, net of tax are deducted from equity. Preferred stocks are classified as equity only if the preferred stocks are not redeemable or redeemable solely upon the Group's decision, or the distribution of dividends is solely upon the Group's decision. Once a general meeting of shareholders meeting approves dividends, the Group recognizes the dividend liability accordingly. 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 Group's own equity instruments.

(25) Share-based payments

The Group measures the cost of share options granted to employees by reference to the estimated fair value at the date at which they are granted. The share-based payment expenses are recognized on a straight-line basis over the vesting period reflecting expected forfeiture rate. The Group determines the fair value of share option using the Black-Scholes option pricing model.

(26) Revenue from contracts with customers

1) Identify performance obligations

The Group is mainly engaged in the businesses of power generation facilities, industrial facilities, manufacturing of casting and forging products and comprehensive construction business. The Group identifies separate performance obligations in the contracts and determines whether each of the performance obligations is satisfied at a point of time or over time under K-IFRS No. 1115.

The Group identified as a separate performance obligation if the customer benefits from the good or service on its own or together with other readily available resources and the entity's promise to transfer the good or service separately is identifiable from other promises in the contract. In addition, the transaction price is allocated to each performance obligation in proportion to its stand-alone selling price and if the stand-alone selling price is not directly observable then the entity estimates the amount by using a suitable method.

2) Variable consideration (Right of return/ refund account & Consideration payable to a customer)

Under K-IFRS No. 1115, the Group estimated an amount of variable consideration depending on 'the expected value' that the Group expects to better predict the amount of consideration to which it will be entitled. Under K-IFRS No. 1115, the Group recognized the gross amount expected to be refunded to the customer as a contract liability (refund liability) when customers return the products.

2. Significant accounting policies and basis of preparation, Continued

Also, consideration payable to a customer includes cash amounts that the Group pays, or expects to pay, to the customer (or to other parties that purchase the entity's goods or services from the customer). Consideration payable to the customer also includes credit or other items that can be applied against amounts owed to an entity (or to other parties that purchase the entity's goods or services from the customer). In accordance with K-IFRS No. 1115, the Group shall account for consideration payable to a customer as a reduction of the transaction price and, therefore, of revenue unless the payment to the customer is in exchange for a distinct good or service that the customer transfers to the Group.

3) Contract cost capitalization

The Group capitalized costs incurred for obtaining construction contract. These costs for obtaining contract include costs that would not have been incurred if the contract were not entered into. In addition, under K-IFRS No. 1115, expenses which do not qualify for asset recognition are recognized as an expense when incurred. Accordingly, the Group has excluded such expenditures when calculating the percentage-of-completion to recognize revenue from construction contracts.

4) Significant financing component

Under K-IFRS No. 1115, in determining the transaction price, if the timing of payments agreed to by the parties to the contract (either explicitly or implicitly) provides the customer or the Group with a significant benefit of financing the transfer of goods or services to the customer, the Group recognizes revenue 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 (or as) they transfer to the customer (i.e. the cash selling price).

5) Obligations to perform over period of time

The Group manufactures and sells specialized power machinery which are built based on customer's orders designating the design elements. The Group recognizes revenue over time measuring the progress towards complete satisfaction of the performance obligation, only when the asset in its completed state has no alternative use to the Group and there is an enforceable right to payment for performance completed to date.

6) Measurement of the percentage-of-completion by using the input method

The Group contracts for EPC plant construction contracts and power generating service contracts including purchasing, manufacturing and installing boiler, turbine and others and generally proceeds over a long period of time. The Group recognizes revenue following percentage-of-completion method, judging whether the construction/service contracts are provided over period of time if it meets all of the following conditions:

- the customers simultaneously acquire and consume benefits that the Group provides
- the Group creates or enhances the value of the asset that customers control

However, to represent performance degree faithfully, the Group recognizes the amount equal to the cost of the goods to perform the obligation as revenue if it meets all of the following conditions:

- undistinguished goods when the contract initiates
- expected that the customer can control significantly before the service is provided related to the goods
- the cost of the goods transferred is more significant than the total cost expected to fully perform the obligation
- the Group is provided the goods from the third party
- not significantly involved in the design and production of the goods

2. Significant accounting policies and basis of preparation, Continued

7) Allocating the transaction price to performance obligations

The Group allocates the transaction price to each performance obligation on a relative stand-alone selling price basis. The Group uses adjusted market assessment approach to estimate the stand-alone selling price, however, for certain transactions, 'expected cost plus a margin approach' is used exceptionally.

8) Warranty obligation

The Group generally provide warranty contract with customers pursuant to the local laws and customs. Most of these warranties are assurance type of warranty and accrue provision based on reliable estimate under K-IFRS No. 1037, 'Provisions, Contingent Liabilities and Contingent Assets'.

However, if the Group provides extended warranty that is not assurance type of warranty under non-standardized contract, it is accrued as service type of warranty and separated to performance obligation requiring allocation of transaction price. Revenue is recognized over period of time.

(27) Due from (to) customers for contract work

When contract costs incurred to date plus recognized profits less recognized losses exceed progress billing, the surplus is shown as amounts due from customers for contract work. For contracts where progress billings exceed contract costs incurred to date plus recognized profits less recognized losses, the surplus is shown as the amounts due to customers for contract work. Amounts received before the related work is performed are included in the separate statement of financial position, as a liability, as advances received. Amounts billed for work performed but not yet paid by the customer are included in the consolidated statement of financial position under trade receivables.

(28) Government grants

Government grants are recognized only when there is reasonable assurance that the grant will be received and the Group will comply with the conditions associated with the grant.

The benefits of government loans at an interest rate lower than the market interest rate are treated as government grants, and the government grants are measured as the difference between the fair value of the government loans calculated based on the market interest rate and the consideration received.

Asset-related government grants are deducted when determining the carrying amount of assets and presented in the statements of financial position. The government grants are recognized in profit or loss over the useful life of the related assets by reducing depreciation expenses.

Revenue-related government grants are recognized as revenue over the period based on a systematic basis in order to respond to expenses intended to be compensated. Government grants received for immediate financial assistance provided to the Company without compensation for expenses or losses already incurred or related costs in the future are recognized in profit or loss during the period in which the right to receive them is incurred.

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2. Significant accounting policies and basis of preparation, Continued

(29) Taxes and deferred tax

Income tax expense is composed of current and deferred tax. Current and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or loss or directly in equity, in which case, the current and deferred tax are also recognized in other comprehensive income or loss or directly in equity, respectively.

Income tax (current tax) expense is the sum of corporate tax for each fiscal year and tax added to corporate tax under corporate income tax law and other applicable laws. Additional income taxes or tax refunds for the prior periods are included in income tax expense for the current period when recognized. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statements and the corresponding tax bases used in the computation of taxable income. Deferred tax assets and liabilities are not recognized if the temporary difference arises from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable income nor the accounting income.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries, joint ventures and associates except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent that it is probable that there will be sufficient taxable income against which to utilize the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable income will be available to allow all or part of the asset to be recovered.

(30) Assets held for sale

Non-current assets and disposal groups are classified as assets held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the non-current asset (or disposal group) is available for immediate sale in its present condition. Non-current assets (and disposal groups) classified as held for sale are measured at the lower of their previous carrying amount and fair value less costs to sell before the assets (and disposal groups) are initially classified as held for sale. If the fair value less costs to sell of the non-current assets held for sale (and disposal groups) decrease, impairment loss is recognized immediately in profit or loss. A gain should be recognized for any subsequent increase in fair value less costs to sell of an asset, but not in excess of the cumulative impairment loss previously recognized.

Non-current assets that are classified as assets held for sale or are part of disposal groups are no longer depreciated or amortized.

2. Significant accounting policies and basis of preparation, Continued

(31) Operating segments

Operating segments are reported on the same basis as the financial information that is reported to the management of the Group. The management of the Group is responsible for the allocation of resources and assessment of performance for the operating segments.

(32) Greenhouse gas emission right

In connection with Enforcement of Allocation and Trading of Greenhouse Gas Emissions Allowances, the Group applies the following accounting policies for greenhouse gas emissions rights and obligations.

1) Greenhouse gas emissions rights

Greenhouse gas emissions rights consist of the allowances received free of charge from the government and the ones purchased. The allowances received free of charge from the government are measured and recognized at zero, and emissions rights purchased are recognized at acquisition cost by including expenditures arising directly from the acquisition and any other costs incurred during normal course of the acquisition.

Greenhouse gas emissions rights are held by the Group to fulfill the legal obligation and recorded as intangible assets. To the extent that the portion to be submitted to the government within one year from the end of reporting period, the greenhouse gas emissions rights are classified as current assets. Greenhouse gas emissions rights recorded as intangible assets are initially measured at cost and substantially remeasured at cost less accumulated impairment losses.

Greenhouse gas emissions rights with the intention to sell within a short period are classified as current assets and measured at fair value, and changes in fair value are recognized in profit or loss for the year. Greenhouse gas emissions rights are derecognized on submission to the government or when no future economic benefits are expected from its use or disposal.

2) Greenhouse gas emissions obligations

Greenhouse gas emissions obligations are the Group's present legal obligation to submit the greenhouse gas emissions allowances to the government and measured as the sum of the carrying amount of the allocated rights and best estimate of expenditure required to settle the obligation at the end of the reporting period for any excess emission. The Group derecognizes the emission obligations when the Group submits the emissions rights to the government.

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3. Significant accounting estimates and assumptions

The estimates and underlying assumptions are reviewed on an ongoing basis. The estimates and underlying assumptions are based on historical experiences and other factors including expectation on possible future events. Actual results may differ from these estimates. The following are critical assumptions and key sources of estimation uncertainty at the end of reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of the Group's assets and liabilities within the next financial year.

(1) Recognition of revenue

The Group recognizes revenue over time using the input method in relation to its performance obligation over time. Revenue is recognized as work progresses in the ratio of actual costs incurred to estimated total costs. The percentage of completion basis according to the input method requires the Group to estimate the ratio of actual costs incurred to total estimated costs. Any changes in the early stages of long-term projects in the scope and costs of project implementation in the construction period, and in construction plans may have a significant effect on the amount of revenue recognized.

(2) Impairment of goodwill

Goodwill is tested for impairment annually and when circumstances indicate that the carrying value may be impaired. Recoverable amount of cash generating unit ("CGU") is calculated based on the value in use and fair value, this calculation requires the use of accounting estimates.

(3) Defined benefit liability

The Group operates a defined benefit plan. Defined benefit liability is calculated by annual actuarial valuations as of the reporting date. In order to perform the actuarial valuations, assumptions for discount rates, future salary increases and others are required to be estimated.

(4) Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, and if it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and if a reliable estimate can be made of the amount of the obligation. In accordance with the relevant laws and practices, the estimated amounts may change to prescribe for additional provisions to be recognized in future periods.

(5) Deferred tax

Recognition and measurement of deferred tax assets and liabilities require judgment of the Group's management. Especially, the recognition of deferred tax asset and the scope of recognition are influenced by assumptions about future circumstances and judgment of management.

(6) Impairment of non-financial assets

The Group is assessing whether there is any indication that an asset may be impaired at the end of each reporting period. The Group estimates the recoverable amount of an asset when such indication exists or when an impairment test for an asset is required each year. Recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use. The recoverable amount is determined for individual assets. However, if an asset does not generate cash inflows that are largely independent of those from other assets, the recoverable amount is determined for the CGU to which the asset belongs. The asset is impaired if its carrying amount exceeds its recoverable amount and the carrying amount of the asset is reduced to its recoverable amount.

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4. Financial risk management

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

Financial risk management activities are performed by the treasury department in accordance with the risk management policies. In addition, the Group enters into derivative contracts to hedge against certain risks. The Group is trying to minimize the effect of financial risks by reorganizing financial risk management policy and monitoring financial risks regularly.

(1) Market risk

1) Foreign currency risk

The Group's exposure to the risk of changes in foreign currency exchange rates relates primarily to the Group's operating activities and net investments in foreign subsidiaries. The Group's objective of foreign currency risk management is to minimize uncertainty and volatility arising from fluctuations in foreign currency exchange rates. Foreign currency risk is managed in accordance with the Group's policy on foreign currencies, and currency trading for speculative purposes is prohibited.

The Group's basis for foreign currency management is to reduce income/loss volatility. The Group 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 Group's monetary assets and liabilities denominated in foreign currencies, which represents the maximum exposure to foreign currency risk as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		USD	EUR	JPY	GBP	Others(*1)
Financial assets	₩	1,459,420	93,989	7,001	174,902	226,787
Financial liabilities		1,874,796	296,648	32,002	76,826	234,488
Net assets (liabilities)	₩	(415,376)	(202,659)	(25,001)	98,076	(7,701)

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

(In millions of won)

		2021				
		USD	EUR	JPY	GBP	Others(*1)
Financial assets	₩	1,250,580	149,330	6,869	120,232	780,612
Financial liabilities		1,462,346	554,678	40,280	119,319	562,434
Net assets (liabilities)	₩	(211,766)	(405,348)	(33,411)	913	218,178

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

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4. Financial risk management, Continued

A sensitivity analysis on the Group's income before tax for the period, assuming a 10% increase and decrease in currency exchange rates, as of December 31, 2022 and 2021 are as follows:

(In millions of won)		2022		2021	
		10% increase	10% decrease	10% increase	10% decrease
Income before tax impact	₩	(55,266)	55,266	(43,143)	43,143

The above-mentioned sensitivity analysis is based on monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency as of December 31, 2022 and 2021.

2) Interest rate risk

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 Group is exposed to interest rate risk mainly due to its borrowing or deposit 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 Group minimizes external borrowings using internal funds, reduces borrowings with high interest rates, maintains an appropriate balance between borrowings with floating interest rate and fixed-interest rate and improves system for short-term and long-term borrowings. The Group manages its interest rate risk preemptively through regular monitoring and adjustments to the changing domestic and overseas markets conditions and nature of its interest rates.

Floating rate financial assets and liabilities exposed to interest rate risk as of December 31, 2022 and 2021 are as follows:

(In millions of won)		2022	2021
Financial assets	₩	174,294	205,871
Financial liabilities		1,991,486	2,790,318
Net liabilities	₩	(1,817,192)	(2,584,447)

A sensitivity analysis on the Group's income before tax for the period, assuming a 1% increase and decrease in interest rates, as of December 31, 2022 and 2021 are as follows:

(In millions of won)		2022		2021	
		1% increase	1% decrease	1% increase	1% decrease
Income before tax impact	₩	(18,172)	18,172	(25,844)	25,844

3) Price risk

The Group is exposed to equity price risks arising from its listed equity investments among financial instruments. The Group periodically measures the risk as the fair value or future cash flows of equity investments may fluctuate due to the changes in market prices. Significant investments in the Group's portfolio are individually managed, and acquisition and disposal are approved by the Board of Directors.

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4. Financial risk management, Continued

(2) Credit risk

The Group is exposed to credit risk that a counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. Credit risk arises from trade and other receivables, debt instruments, beneficiary certificates, deposits in financial institutions, derivative financial instruments and financial guarantee contracts.

The Group enters into transactions with customers having met a certain level of credit quality and maintains policies and procedures on financial assets to manage such risks. The credit quality of a new customer is assessed based on publicly announced financial information and the information provided by credit rating agencies. Such assessment is used as a basis for determining a customer's credit limit. Furthermore, collaterals and credit guarantees are obtained as security, if necessary. In addition, the Group periodically reassesses the credit quality of customers by auditing credit limits and adjusts the amount covered by collaterals when deemed necessary. The Group also monitors whether the collection of financial assets have been impaired to take relevant actions.

The carrying amount of financial assets represents the Group's maximum exposure. The maximum exposure to credit risk as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	2021
Cash and cash equivalents	₩	1,395,838	1,908,604
Short and long- term financial instruments		137,294	548,422
Trade receivables and other receivables		2,121,153	1,309,625
Deposits		334,333	363,656
Short and long- term investment in securities (excluding equity securities)		206,440	396,796
Derivative financial assets		90,542	38,959
Total	₩	<u>4,285,600</u>	<u>4,566,062</u>

In addition to the above, the maximum amount to be paid for the principal debtor related to financial guarantee contract is described in Note 33.

The Group's receivables' aging analysis as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		Receivables assessed for impairment individually or on a collective basis				
		Before maturity	0-3 months	3-6 months	6-12 months	More than 12 months
Trade receivables	₩	1,236,148	151,022	86,768	37,419	285,229
Loans and other receivables		851,950	47,233	25,335	24,138	112,831
Accrued income		26,523	8,970	-	-	16,720
Lease receivables		2,281	-	-	-	-
Total	₩	<u>2,116,902</u>	<u>207,225</u>	<u>112,103</u>	<u>61,557</u>	<u>414,780</u>

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4. Financial risk management, Continued

(In millions of won)

		2021					
		Receivables assessed for impairment individually or on a collective basis					
		Before maturity	0-3 months	3-6 months	6-12 months	More than 12 months	Total
Trade receivables	₩	649,268	83,856	29,791	36,245	335,618	1,134,778
Loans and other receivables		763,557	22,727	10,631	26,353	141,731	964,999
Accrued income		11,905	-	-	-	16,718	28,623
Lease receivables		5,522	-	-	-	-	5,522
Total	₩	1,430,252	106,583	40,422	62,598	494,067	2,133,922

ECLs are measured as the present value of all cash shortfalls. If the Group does not have reasonable and supportable information that is available without overwhelming cost or effort to measure ECLs on an individual instrument basis, the Group can group financial instruments on the basis of shared credit risk characteristics.

(3) Liquidity risk

The Group is exposed to liquidity risk, which is the risk that it will encounter difficulties in fulfilling the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset.

The Group manages liquidity risk by matching the duration of financial assets and liabilities through estimating future cash flows from its operating, investing and financing activities, and securing moderate levels of liquidity in advance.

A summary of expected maturity for the Group's financial liabilities, etc. as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		Nominal cash flows according to contract				
	Book value	Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Principal on non-derivative financial liabilities (*1)	₩ 9,097,542	9,186,911	5,237,329	1,817,971	934,795	1,196,816
Interest on non-derivative financial liabilities	-	685,039	213,389	134,383	241,298	95,969
Derivative financial liabilities	116,051	123,014	78,670	23,043	19,901	1,400
Guarantee contract(*2)	-	409,265	409,265	-	-	-
Total	₩ 9,213,593	10,404,229	5,938,653	1,975,397	1,195,994	1,294,185

(*1) This includes provision for payment guarantees in the amount of ₩54,855 million.

(*2) Maximum exposure associated with the guarantee contracts is the maximum amounts of the obligation(See Note 33).

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4. Financial risk management, Continued

(In millions of won)

		2021					
		Book value	Nominal cash flows according to contract				
			Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Principal on non-derivative financial liabilities (*1)	₩	10,606,974	10,979,816	7,727,110	1,044,844	2,047,618	160,244
Interest on non-derivative financial liabilities		-	326,279	176,160	65,125	84,695	299
Derivative financial liabilities		249,474	256,246	215,444	18,853	20,618	1,331
Guarantee contract(*2)		-	403,870	403,870	-	-	-
Total	₩	10,856,448	11,966,211	8,522,584	1,128,822	2,152,931	161,874

(*1) This includes provision for payment guarantees in the amount of ₩54,855 million.

(*2) Maximum exposure associated with the guarantee contracts is the maximum amounts of the obligation.

The contractual amounts of financial liabilities in the above tables are calculated based on non-discounted cash flows (including estimated interest expense) and differ from its book values.

(4) Capital risk

The objective of the Group's capital risk management is to secure its ability to provide earnings to its shareholders and interested parties and sustain optimal capital structure to reduce the cost of capital. In order to sustain optimal capital structure, the Group uses a debt-to-equity ratio similar to other entities in the industry. Debt-to-equity ratio is calculated by dividing total liabilities by total equity.

Debt-to-equity ratios as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Total liabilities (A)	₩ 12,969,492	14,912,950
Total equity (B)	10,080,290	8,807,596
Debt-to-equity ratio (A/B)	128.66%	169.32%

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5. Restricted financial assets

Details of restricted financial assets as of December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>	2022	2021	Restrictions
Cash and cash equivalents	₩ -	6,188	Establishment of pledge related to financial loan and others
Short-term financial instruments	105,537	494,952	Establishment of pledge related to financial loan, Shared growth fund, Government R&D projects(*1), Price Return Swap ("PRS") deposit(*2), and others
Long-term financial instruments	29,863	26,422	Establishment of pledge related to financial loan, Deposits for maintenance of checking accounts, restricted cash related to government bidding, and others
Total	₩ 135,400	527,562	

(*1) The amounts are restricted in use and may only be used for specific national R&D projects.

(*2) Deposit amount for the PRS contract that exchanges the profit from the changes in the stock price of Doosan Bobcat Inc..

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6. Investments in securities

(1) Investments in securities as of December 31, 2022 and 2021 are as follows:

(In millions of won)

Description		2022	2021
Short-term investments in securities	Financial assets as measured at FVTPL	₩ 23,776	197,197
Long-term investments in securities(*1)	Financial assets as measured at FVOCI	11,100	15,517
	Financial assets as measured at FVTPL	309,994	286,193
	Subtotal	321,094	301,710
	Total	₩ 344,870	498,907

(*1) A portion of long-term investments in securities have been pledged as collateral for developers' project financing and others as of December 31, 2022 (See Note 34).

(2) Details of the Group's investments in securities as of December 31, 2022 and 2021 are as follows:

(In millions of won)

Description			2022	2021
Financial assets as measured at FVOCI	Non-marketable equity securities	AI Asilah Desalination Company and others	₩ 11,100	15,517
Financial assets as measured at FVTPL	Marketable equity securities	NuScale Power LLC and others	73,537	10,196
	Non-marketable equity securities	Greenize, Inc and others	53,793	76,398
	Investment in guarantee cooperative	Construction Guarantee Cooperative and others	118,624	122,561
	Beneficiary certificates	Korea EXIM Bank – Public Carbon Fund and others	14,679	171,330
	Debt securities	Valuegrowth Co., Ltd. and others	73,137	102,905
		Subtotal	333,770	483,390
	Total		₩ 344,870	498,907

(3) Changes in financial assets as measured at fair value for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		January 1	Acquisition	Disposal	Gain or loss on valuation	December 31
Financial assets as measured at FVOCI	₩	15,517	810	(646)	(5,396)	11,100
Financial assets as measured at FVTPL		483,390	24,166	(178,496)	13,657	333,770
Total	₩	498,907	24,976	(179,142)	8,261	344,870

(*1) Includes changes in the scope of consolidation

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6. Investments in securities, Continued

(In millions of won)

		2021				
		January 1	Acquisition	Disposal	Gain or loss on valuation	Others(*1)
Financial assets as measured at FVOCI	₩	163,522	1,932	(275,914)	16,686	109,291
Financial assets as measured at FVTPL		917,714	97,880	(182,381)	11,947	(361,770)
Total	₩	1,081,236	99,812	(458,295)	28,633	(252,479)
						498,907

(*1) Includes changes in the scope of consolidation

7. Trade and other receivables

(1) Trade and other receivables as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			2021		
		Gross	Allowance for doubtful accounts	Book value	Gross	Allowance for doubtful accounts	Book value
Current assets:							
Trade receivables	₩	1,796,586	(176,979)	1,619,607	1,134,764	(213,684)	921,080
Lease receivables		2,281	-	2,281	2,239	-	2,239
Other receivables		265,549	(57,468)	208,081	288,351	(80,726)	207,625
Accrued income		52,213	(12,588)	39,625	28,623	(12,588)	16,035
Short-term loans		145,246	(71,345)	73,901	136,927	(74,800)	62,127
Subtotal		2,261,875	(318,380)	1,943,495	1,590,904	(381,798)	1,209,106
Non-current assets:							
Lease receivables		-	-	-	2,281	-	2,281
Long-term other receivables		157,577	(21,155)	136,422	54,677	(1,142)	53,535
Long-term loans		493,024	(451,788)	41,236	483,492	(438,789)	44,703
Subtotal		650,601	(472,943)	177,658	540,450	(439,931)	100,519
Total	₩	2,912,476	(791,323)	2,121,153	2,131,354	(821,729)	1,309,625

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7. Trade and other receivables, Continued

(2) Changes in allowance for doubtful accounts for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
	January 1	Provision for (reversal of) allowance	Write-off of uncollectible amounts	Changes in the scope of consolidation	Changes in foreign currency translation and others	December 31
Trade and other receivables:						
Trade receivables	₩ 213,684	(3,111)	(40,001)	(6,247)	12,654	176,979
Other receivables	81,868	2,071	(6,252)	(232)	1,168	78,623
Accrued income	12,588	74	-	-	(74)	12,588
Short and long-term loans	513,589	17,564	-	-	(8,020)	523,133
Subtotal	821,729	16,598	(46,253)	(6,479)	5,728	791,323
Others:						
Due from customers for contract work	59,570	11,977	-	-	5,564	77,111
Deposits	2,800	-	-	-	-	2,800
Subtotal	62,370	11,977	-	-	5,564	79,911
Total	₩ 884,099	28,575	(46,253)	(6,479)	11,292	871,234

(In millions of won)

		2021				
	January 1	Provision for (reversal of) allowance	Write-off of uncollectible amounts	Changes in the scope of consolidation	Changes in foreign currency translation and others	December 31
Trade and other receivables:						
Trade receivables	₩ 1,184,524	13,302	(2,085)	(1,002,362)	20,305	213,684
Other receivables	207,035	7,096	(12,883)	(115,871)	(3,509)	81,868
Accrued income	73,915	529	(10,528)	(51,328)	-	12,588
Short and long-term loans	1,274,811	40,030	(165,921)	(616,507)	(18,824)	513,589
Subtotal	2,740,285	60,957	(191,417)	(1,786,068)	(2,028)	821,729
Others:						
Due from customers for contract work	82,701	(307)	-	(18,947)	(3,877)	59,570
Deposits	2,753	1,016	(408)	(571)	10	2,800
Prepayments	1,061	-	(109)	(952)	-	-
Subtotal	86,515	709	(517)	(20,470)	(3,867)	62,370
Total	₩ 2,826,800	61,666	(191,934)	(1,806,538)	(5,895)	884,099

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8. Inventories

Inventories as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			2021		
		Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Finished goods	₩	656,075	(39,275)	616,800	431,346	(31,870)	399,476
Merchandise		320,807	(10,268)	310,539	179,013	(11,199)	167,814
Semi-finished goods		14,942	-	14,942	22,178	-	22,178
Work-in-process		357,769	(25,955)	331,814	319,917	(23,170)	296,747
Raw materials		922,735	(28,799)	893,936	602,708	(28,527)	574,181
Supplies		26,213	(2,621)	23,592	26,136	(2,509)	23,627
Materials-in-transit		267,403	-	267,403	304,397	-	304,397
Total	₩	<u>2,565,944</u>	<u>(106,918)</u>	<u>2,459,026</u>	<u>1,885,695</u>	<u>(97,275)</u>	<u>1,788,420</u>

As of December 31, 2022, certain inventories have been pledged as collateral for the Group's debts (See Note 34).

Losses on inventory valuation recognized within the cost of sales amounted to ₩11,740 million and ₩15,079 million for the years ended December 31, 2022 and 2021, respectively.

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9. Derivatives

(1) Overview of the derivatives of the Group is as follows:

	Category	Summary
Fair value hedge	Forward exchange	Avoiding the risk of exchange rate fluctuations for foreign currency contracts that meet the requirements of the firm commitment
	Borrowing denominated in foreign currencies	Designating borrowings denominated in foreign currencies as hedging instruments to hedge the fair value change of firm commitments
Cash flow hedge	Currency forward exchange	Avoiding the cash flow risk due to fluctuations in the exchange rate of the expected foreign currency collection and the expected foreign currency expenditure related to the purchasing of foreign materials
	Currency rate swap ("CRS")	Contracts that pay a fixed rate of local currency and receive a fixed rate of foreign currency on the future interest and principal payment date in order to avoid the cash flow risk due to fluctuations in exchange rates
	Interest rate swap ("IRS")	Contracts that pay a fixed rate and receive a variable rate on the future interest payment date in order to avoid the risk of cash flow fluctuations due to fluctuations in interest rates
Trading	Currency forward exchange	Contracts that concluded a currency forward exchange contract to avoid the risk of future cash flow fluctuations, but did not apply hedging accounting
	Currency rate swap	Contracts that pay a fixed rate of local currency and receive a fixed rate of foreign currency on the future interest and principal payment date in order to avoid the cash flow risk due to fluctuations in exchange rate, but did not apply hedging accounting.
	PRS	Derivative contracts for the purpose of trading that settles the difference in the stock price between the time of sales and time of settlement

The Group classified derivatives as non-current assets (liabilities) if their remaining maturity exceeds 12 months from the end of the reporting period to the contract maturity date, and current assets (liabilities) if they are within 12 months. When cash flow hedging is applied, the ineffective portion is recognized in profits (losses).

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9. Derivatives, Continued

(2) Details of valuation of derivatives as of December 31, 2022 and 2021 are as follows:

(In millions of won, in thousands of foreign currency)

				2022			
Buy		Sell		Derivative financial assets (liabilities)	Gain (loss) on valuation of derivative financial instruments	Accumulated other comprehensive income (loss) (*1)	Firm commitment assets (liabilities) (*2)
Currency	Amounts	Currency	Amounts				
Forward exchange:							
KRW	2,467,931	USD	2,009,370 ₩	(43,132)	(14,051)	3,588	82,850
KRW	65,379	EUR	47,060	1,209	1,243	200	(1,819)
KRW	67,650	JPY	5,822,910	7,715	2,249	1,067	(13,432)
KRW	344,402	Others		16,888	15,949	1,353	(9,771)
USD	547,345	KRW	690,472	(4,914)	(8,740)	4,000	12,425
EUR	165,430	KRW	227,151	(2,852)	(3,673)	823	530
JPY	8,733,654	KRW	97,035	(8,684)	519	(7,323)	502
Others		KRW	103,363	(4,721)	(2,415)	(3,535)	1,339
GBP and others		EUR and others		7,995	5,186	4,873	(175)
CRS				21,295	19,782	508	-
IRS				691	-	691	-
PRS(*3)				(16,999)	(16,999)	-	-
	Subtotal			(25,509)	(950)	6,245	72,449
Tax effect				-	-	(292)	-
Adjustments for consolidation				-	-	15,306	-
	Total		₩	(25,509)	(950)	21,259	72,449

(*1) In consideration of the amounts adjusted in sales and cost of sales, the effective portion of changes in fair value of cash flow hedges amounting to ₩21,259 million, net of tax, was recognized in accumulated other comprehensive income or loss.

(*2) In consideration of the amounts adjusted in sales, firm commitments assets of ₩95,467 million and firm commitment liabilities of ₩23,018 million were recognized in the consolidated statement of financial position by applying a fair value hedge accounting.

(*3) The Group has entered into PRS contract that exchanges the profit from the changes in the stock price of Doosan Bobcat Inc..

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9. Derivatives, Continued

(In millions of won, in thousands of foreign currency)

				2021					
Buy		Sell		Derivative financial assets (liabilities)	Gain (loss) on valuation of derivative financial instruments	Accumulated other comprehensive income (loss) (*1)	Firm commitment assets (liabilities) (*2)		
Currency	Amounts	Currency	Amounts						
Forward exchange:									
KRW	2,093,011	USD	1,845,091 ₩	(94,934)	(125,891)	(813)	56,760		
KRW	225,045	EUR	164,330	2,103	1,689	74	(1,061)		
KRW	127,630	JPY	11,211,370	9,055	1,906	375	(4,352)		
KRW	213,437	Others		(4,956)	(4,772)	(246)	2,175		
USD	366,101	KRW	423,902	10,639	15,698	3,561	(2,296)		
EUR	259,550	KRW	354,471	(1,401)	(1,213)	1,112	(17)		
JPY	13,533,707	KRW	165,237	(22,108)	(1,042)	(6,057)	117		
Others		KRW	79,971	1,495	246	1,307	(117)		
GBP and others		EUR and others		(16,795)	46,428	1,561	(261)		
Short and long-term borrowings denominated in foreign currencies(*3)									
KRW	-	USD	-	-	-	-	49		
CRS				13,355	31,772	(332)	-		
PRS(*4)				(106,968)	(106,968)	-	-		
Subtotal				(210,515)	(142,147)	542	50,997		
Tax effect				-	-	301	-		
Adjustments for consolidation				-	-	15,337	-		
Total				₩ (210,515)	(142,147)	16,180	50,997		

(*1) In consideration of the amounts adjusted in sales and cost of sales, the effective portion of changes in fair value of cash flow hedges amounting to ₩16,180 million, net of tax, was recognized in accumulated other comprehensive income or loss.

(*2) In consideration of the amounts adjusted in sales, firm commitments assets of ₩66,770 million and firm commitment liabilities of ₩15,773 million were recognized in the consolidated statement of financial position by applying a fair value hedge accounting.

(*3) The Group designated its short and long-term borrowings denominated in foreign currencies as hedging instruments to hedge the fair value change of firm commitments.

(*4) The Group has entered into PRS contract that exchanges the profit from the changes in the stock price of Doosan Bobcat Inc..

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10. Financial instruments

(1) Financial assets as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022					
		Financial assets as measured at amortized cost	Financial assets as measured at FVOCI	Financial assets as measured at FVTPL	Other financial assets(*1)	Carrying amounts	Fair value
Cash and cash equivalents	₩	1,395,838	-	-	-	1,395,838	1,395,838
Short and long-term financial instruments		137,294	-	-	-	137,294	137,294
Short and long-term investment in securities		-	11,100	333,770	-	344,870	344,870
Derivative financial assets		-	-	44,557	45,985	90,542	90,542
Trade and other receivables		2,057,885	63,268	-	-	2,121,153	2,121,153
Deposits		334,333	-	-	-	334,333	334,333
Total	₩	3,925,350	74,368	378,327	45,985	4,424,030	4,424,030

(*1) Other financial assets included derivatives as hedged item.

(In millions of won)

		2021					
		Financial assets as measured at amortized cost	Financial assets as measured at FVOCI	Financial assets as measured at FVTPL	Other financial assets(*1)	Carrying amounts	Fair value
Cash and cash equivalents	₩	1,908,604	-	-	-	1,908,604	1,908,604
Short and long-term financial instruments		548,422	-	-	-	548,422	548,422
Short and long-term investment in securities		-	15,517	483,390	-	498,907	498,907
Derivative financial assets		-	-	17,280	21,679	38,959	38,959
Trade and other receivables		1,289,129	20,496	-	-	1,309,625	1,309,625
Deposits		363,656	-	-	-	363,656	363,656
Total	₩	4,109,811	36,013	500,670	21,679	4,668,173	4,668,173

(*1) Other financial assets included derivatives as hedged item.

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10. Financial instruments, Continued

(2) Financial liabilities as of December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)		2022				
		Financial liabilities as measured at amortized cost	Financial liabilities as measured at FVTPL	Other financial liabilities(*1)	Carrying amounts	Fair value
Trade and other payables	₩	2,793,740	-	-	2,793,740	2,793,740
Borrowings and bonds		4,911,793	-	-	4,911,793	4,911,793
Derivative financial liabilities		-	17,376	98,675	116,051	116,051
Financial guarantee liabilities		-	-	180	180	180
Lease liabilities		393,894	-	-	393,894	393,894
Sales and lease back liabilities		77,347	-	-	77,347	77,347
Others		760,590	-	-	760,590	760,590
Total	₩	8,937,364	17,376	98,855	9,053,595	9,053,595

(*1) Other financial liabilities include derivatives as hedged item and others.

(In millions of won)

(In millions of won)

		2021				
		Financial liabilities as measured at amortized cost	Financial liabilities as measured at FVTPL	Other financial liabilities(*1)	Carrying amounts	Fair value
Trade and other payables	₩	2,294,906	-	-	2,294,906	2,294,906
Borrowings and bonds		7,212,522	-	-	7,212,522	7,212,522
Derivative financial liabilities		-	122,009	127,465	249,474	249,474
Financial guarantee liabilities		-	-	4,019	4,019	4,019
Lease liabilities		381,187	-	-	381,187	381,187
Others		915,543	-	-	915,543	915,543
Total	₩	10,804,158	122,009	131,484	11,057,651	11,057,651

(*1) Other financial liabilities include derivatives as hedged item and others.

(3) Fair value hierarchy of financial instruments

As of December 31, 2022, the Group uses the following hierarchy for determining and disclosing the fair value of financial instruments:

Level 1: Quoted (unadjusted) 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 consolidated statements of financial position. These instruments are included in level 1. Instruments included in level 1 primarily comprise listed equity investments classified as trading securities.

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 to fair value an instrument are observable, the instrument is included in level 2.

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If one or more of the significant inputs are not based on observable market data, the instrument is included in level 3.

Specific valuation techniques used to value financial instruments include:

- quoted or dealer price of similar instruments.
- the fair value of forward foreign exchange contracts determined by using forward exchange rates at the reporting date, with the resulting value discounted to present value.
- other financial techniques such as discounted cash flow analysis.

The level of fair value measurements of financial instruments as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			
		Level 1	Level 2	Level 3	Total
Financial assets measured at fair value:					
Measured at FVOCI	₩	-	63,268	11,100	74,368
Measured at FVTPL		73,537	44,959	259,831	378,327
Others		-	45,985	-	45,985
Total	₩	<u>73,537</u>	<u>154,212</u>	<u>270,931</u>	<u>498,680</u>
Financial liabilities measured at fair value:					
Measured at FVTPL	₩	-	17,376	-	17,376
Others		-	98,675	180	98,855
Total	₩	<u>-</u>	<u>116,051</u>	<u>180</u>	<u>116,231</u>

(In millions of won)

		2021			
		Level 1	Level 2	Level 3	Total
Financial assets measured at fair value:					
Measured at FVOCI	₩	-	20,496	15,517	36,013
Measured at FVTPL		10,196	217,657	272,817	500,670
Others		-	21,679	-	21,679
Total	₩	<u>10,196</u>	<u>259,832</u>	<u>288,334</u>	<u>558,362</u>
Financial liabilities measured at fair value:					
Measured at FVTPL	₩	-	122,009	-	122,009
Others		-	127,465	4,019	131,484
Total	₩	<u>-</u>	<u>249,474</u>	<u>4,019</u>	<u>253,493</u>

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Assumptions used for the measurement of financial assets at fair value based on level 3 valuation techniques as of December 31, 2022 are as follows:

	Valuation techniques	Discount rate	Note
Gyeonggi East-West Beltway Co.	Dividend discount model	10.38%	Expected dividend cash flow for each financial period
Korea EXIM Bank - Public Carbon Fund	Estimated sales price valuation method	-	Expected sales price
Construction Guarantee Cooperative	Estimated sales price valuation method	-	Expected sales price
Machinery Financial Cooperative	Estimated sales price valuation method	-	Expected sales price
Engineering Guarantee Insurance	Estimated sales price valuation method	-	Expected sales price
Construction Industry Guarantee	Estimated sales price valuation method	-	Expected sales price
Gyeongnam GNTech Creative Economy Innovation Fund	Net asset value assessment	-	Fair value of net asset
Emerald Technology Ventures	Estimated sales price valuation method	-	Return rate on investment
AI Asilah Desalination Company	Net asset value assessment	-	Fair value of net asset
Valuegrowth Co., Ltd.	Dividend discount model	9.52%	Expected dividend cash flow for each financial period
Others	Estimated sales price valuation method, etc.	-	Expected sales price and others

Changes in financial assets included in level 3 of the fair value hierarchy for the years ended December 31, 2022 and 2021 are summarized as follows and there is no transfer between levels of the fair value.

(In millions of won)

		2022						
		January 1	Acquisition	Disposal	Reclassified category(*1)	Profit (loss) for the year	Other comprehensive income (loss)	December 31
Financial assets as measured at								
FVOCI	₩	15,517	810	(646)	-	-	(5,396)	11,100
Financial assets as measured at								
FVTPL		272,817	23,659	(9,737)	(35,692)	3,609	-	259,831
Total	₩	288,334	24,469	(10,383)	(35,692)	3,609	(5,396)	270,931

(*1) Reclassified from level 3 to level1 because the financial instruments were converted to be traded in active market in 2022.

(*2) It includes amounts due to consolidation scope changes and assets held for sale.

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10. Financial instruments, Continued

(In millions of won)

		2021					
		January 1	Acquisition	Disposal	Profit (loss) for the year	Other comprehensive income (loss)	December 31
Financial assets as measured at FVOCI	₩	4,821	1,932	(13,947)	-	16,686	15,517
Financial assets as measured at FVTPL		223,367	55,851	(1,514)	26,809	-	272,817
Total	₩	228,188	57,783	(15,461)	26,809	16,686	288,334

(*1) It includes amounts due to consolidation scope changes and assets held for sale.

(4) Gain or loss by categories of financial instruments

1) Gain or loss by categories of financial instruments for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022					
		Gain or loss					Other comprehensive income(*2)
		Interest income (expense)	Dividend income	Gain or loss on valuation (*1)	Impairment loss on financial instruments	Gain or loss on disposal	Gain or loss on financial guarantee
Financial assets:							
Measured at amortized cost	₩	18,964	-	-	(19,201)	(136)	-
Measured at FVOCI		-	-	-	-	(4,952)	(5,396)
Measured at FVTPL		250	3,811	14,452	-	3,007	-
Total	₩	19,214	3,811	14,452	(19,201)	(2,081)	(5,396)
Financial liabilities:							
Measured at amortized cost	₩	(260,038)	-	-	-	(26,038)	(1,801)
Others		-	-	-	-	-	(1,817)
Total	₩	(260,038)	-	-	-	(26,038)	(3,618)

(*1) The amounts in gain or loss on valuation exclude the gain or loss related with foreign exchange and derivatives.

(*2) The amounts in other comprehensive income exclude deferred tax effect.

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(In millions of won)

(In millions of won)		2021							
		Gain or loss						Other comprehensive income(*2,3)	
		Interest income (expense)	Dividend income	Gain or loss on valuation (*1)	Impairment loss on financial instruments	Gain or loss on disposal	Gain or loss on financial guarantee		
Financial assets:									
Measured at									
amortized cost		₩	3,519	-	-	(10,928)	(987)	5	-
Measured at									
FVOCI			6,514	-	-	-	(4,943)	-	16,686
Measured at									
FVTPL			1,930	1,602	5,103	-	3,865	-	-
Total		₩	11,963	1,602	5,103	(10,928)	(2,065)	5	16,686
Financial liabilities:									
Measured at									
amortized cost		₩	(282,860)	-	-	-	3,860	(322)	-
Others			(322)	-	-	-	-	(9,317)	-
Total		₩	(283,182)	-	-	-	3,860	(9,639)	-

(*1) The amounts in gain or loss on valuation exclude the gain or loss related with foreign exchange and derivatives.

(*2) The amounts in other comprehensive income exclude deferred tax effect.

(*3) In 2021, it includes the amounts reclassified to retained earnings.

Gains or losses on translation or transaction of foreign currencies arising from foreign currency transactions except for derivative financial instruments have been mostly incurred from financial assets and liabilities measured at amortized cost.

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10. Financial instruments, Continued

- 2) Details of gains and losses on valuation and settlement of derivative financial instruments for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022		
		Gain or loss on valuation	Gain or loss on settlement	Other comprehensive income (*1)
Derivatives measured at FVTPL	₩	14,007	17,226	-
Derivatives for fair value hedge		25,437	(40)	-
Derivatives for cash flow hedge		(40,394)	21,403	5,703
Total	₩	(950)	38,589	5,703

(*1) The amounts in other comprehensive income exclude deferred tax effect.

(In millions of won)

		2021		
		Gain or loss on valuation	Gain or loss on settlement	Other comprehensive income (*1)
Derivatives measured at FVTPL	₩	(75,353)	223,232	-
Derivatives for fair value hedge		(132,350)	(139)	-
Derivatives for cash flow hedge		67,443	(53,617)	5,153
Total	₩	(140,260)	169,476	5,153

(*1) The amounts in other comprehensive income exclude deferred tax effect.

Above gains or losses on financial instruments for the years ended December 31, 2022 and 2021 include selling and administrative expenses, finance income and expenses, other non-operating income and expenses and other comprehensive income or loss from each financial instrument.

- (5) Financial assets and financial liabilities subject to an enforceable master netting arrangement or similar agreement as of December 31, 2022 are as follows:

(In millions of won)

		Eligible for legal right to offset		
		Total assets (liabilities)	Offset amounts	Amounts after offset
Derivative financial assets	₩	86,613	(32,277)	54,336
Derivative financial liabilities		(124,593)	32,277	(92,316)

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11. Investments in associates and joint ventures

(1) Details of share of investment in associates and joint ventures as of December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)			Acquisition cost		Book value	
	Countries	Percentage of ownership (%)	2022	2021	2022	2021
Associates:						
Samcheok Blue Power Co., Ltd.(*1,2)	KOREA	9.00	₩ 43,568	43,568	31,876	34,764
Daejung Offshore Wind Power Co., Ltd.	KOREA	26.65	3,196	3,196	2,419	2,482
Hychangwon Co., Ltd.(*1,4,8)	KOREA	25.74	7,000	5,000	7,013	4,995
Tuwaik Casting & Forging Company(*2,5)	SAUDI ARABIA	15.00	43,926	-	44,674	-
ReCarbon, Inc.(*3)	USA	-	-	8,151	-	7,870
Multi-asset ESG Marine Wind Power Private Equity Fund 1 st (*5)	KOREA	65.00	8,500	-	8,494	-
Doosan Property Co., Ltd. (*9)	KOREA	-	-	53,216	-	75,684
Doosan Engineering & Construction Co., Ltd. (*7)	KOREA	46.35	317,666	317,666	173,702	317,666
Daesan Green Energy Co., Ltd.(*2,6)	KOREA	10.00	3,630	3,630	2,476	2,883
Prestolite Asia Ltd.	KOREA	32.31	2,787	2,787	3,141	2,882
Ainstein AI, Inc(*2)	USA	9.09	2,360	2,360	2,355	2,291
StructionSite Inc.(*11)	USA	-	-	7,007	-	10,528
BUNDANG DOOSAN TOWER REIT Co., Ltd (*2,10)	KOREA	18.60	42,089	-	41,355	-
Subtotal			474,722	446,581	317,505	462,045
Joint ventures:						
The Zenith Holdings Ltd.	KOREA	31.75	120,000	120,000	-	120,000
The Weve Holdings Ltd. (*10)	KOREA	46.50	119,584	-	38,450	-
Subtotal			239,584	120,000	38,450	120,000
Total			₩ 714,306	566,581	355,955	582,045

(*1) The Group's investments in the investee have been pledged as collateral for the company's project financing and contract of completion guarantee (See Note 34).

(*2) Although the Group's ownership interest in the investee is less than 20%, the investee is classified as an associate considering the exercise of voting rights in the board of directors.

(*3) During 2022, excluded from associates due to sales of Doosan Mecatec Co., Ltd.

(*4) Additionally acquired in 2022.

(*5) Newly acquired in 2022.

(*6) The Group's investments in the investee have been pledged as collateral for the investee's borrowings (See Note 34).

(*7) The Group's investments in the investee have been pledged as collateral for the Group's borrowing (See Note 34).

(*8) The percentage of ownership is calculated after considering preferred stock. The entity is classified as an associate because the Group holds more than 20% of stock with voting right.

(*9) The entity was additionally acquired in 2022 and was reclassified to a subsidiary from an associate. Subsequently, the entity was absorbed and merged with Doosan Cuvex Co., Ltd. and ceased to exist.

(*10) Classified as a joint venture because Doosan Property Co., Ltd. is newly included in the scope of consolidation in 2022.

(*11) Disposed in 2022.

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(2) Changes in investment in associates and joint ventures for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022						
	January 1, 2022	Acquisition (disposal)	Share of profit (loss)(*1)	Increase (decrease) in equity of associates	Increase (decrease) in the scope of consolidation	Others(*3)	December 31, 2022
Associates:							
Samcheok Blue Power Co., Ltd.	₩ 34,764	-	(2,888)	-	-	-	31,876
Daejung Offshore Wind Power Co., Ltd.	2,482	-	(63)	-	-	-	2,419
Hychangwon Co., Ltd.(*2)	4,995	2,000	19	(1)	-	-	7,013
Tuwaiq Casting & Forging Company	-	43,926	78	670	-	-	44,674
ReCarbon, Inc.	7,870	-	(561)	686	(7,995)	-	-
Multi-asset ESG Marine Wind Power Private Equity Fund 1 st	-	8,500	(6)	-	-	-	8,494
Doosan Property Co., Ltd.	75,684	-	(1,518)	(29)	(74,137)	-	-
Doosan Engineering & Construction Co., Ltd. (*4)	317,666	-	(27,339)	-	-	(116,625)	173,702
Daesan Green Energy Co., Ltd.	2,883	-	(407)	-	-	-	2,476
Prestolite Asia Ltd.	2,882	-	259	-	-	-	3,141
Ainstein AI, Inc	2,291	-	(96)	-	-	160	2,355
StructionSite Inc.	10,528	(7,506)	(3,966)	-	-	944	-
BUNDANG DOOSAN TOWER REIT Co., Ltd	-	-	(734)	-	42,089	-	41,355
Subtotal	462,045	46,920	(37,222)	1,326	(40,043)	(115,521)	317,505
Joint ventures:							
The Zenith Holdings Ltd.	120,000	-	(120,000)	-	-	-	-
The Weve Holdings Ltd.	-	-	(77,728)	(3,406)	119,584	-	38,450
Subtotal	120,000	-	(197,728)	(3,406)	119,584	-	38,450
Total	₩ 582,045	46,920	(234,950)	(2,080)	79,541	(115,521)	355,955

(*1) Share of profit (loss) of equity method includes profit(loss) from discontinued operations.

(*2) Share of profit (loss) of equity method investees was calculated as a 41.18% share on common stock basis.

(*3) Others include impairment and changes in foreign currency translation.

(*4) Share of profit (loss) of equity method is calculated based on shareholder's agreement. The Group recognized an impairment loss (other non-operating expenses) of ₩116,625 million based on the impairment test for the year ended December 31, 2022 as the carrying amount exceeds the aggregate recoverable amount of Doosan Engineering & Construction Co., Ltd.. The recoverable amount of Doosan Engineering & Construction Co., Ltd. is valued based on fair value less cost to sell. Net asset value assessment was applied to calculate fair value.

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(In millions of won)

		2021					
		January 1, 2021	Acquisition (disposal)	Share of profit (loss)(*1)	Decrease in equity of associates	Increase (decrease) in the scope of consolidation Others(*2)	December 31, 2021
Associates:							
The HS-City Expressway	₩	3,081	-	(258)	-	- (2,823)	-
Samcheok Blue Power Co., Ltd.		38,086	-	(3,322)	-	-	34,764
Daejung Offshore Wind Power Co., Ltd.		2,771	-	(289)	-	-	2,482
Hychangwon Co., Ltd.(*3)		2,810	2,000	185	-	-	4,995
ReCarbon, Inc.		8,052	-	688	(870)	-	7,870
Doosan Property Co., Ltd.		52,361	-	23,323	-	-	75,684
Doosan Engineering & Construction Co., Ltd.		-	-	-	-	317,666	317,666
Shinbundang Railroad Co., Ltd.(*4)		-	-	-	-	-	-
Kyunggi Railroad Co., Ltd.(*4)		-	-	-	-	-	-
Neo Trans Co., Ltd.		21,883	-	4,314	-	(26,197)	-
New Seoul Railroad Co., Ltd.		6,826	-	(635)	-	(6,191)	-
KIAMCO Kyunggi Railway Investment Private property investment trust		-	-	-	-	-	-
Incheon Fucell Co., Ltd.		2,999	-	(331)	-	(2,668)	-
Bitgoel Eco Energy Co., Ltd.		-	3,480	-	-	(3,480)	-
Daesan Green Energy Co., Ltd.		-	-	(747)	-	3,630	2,883
Prestolite Asia Ltd.		-	-	95	-	2,787	2,882
Ainstein AI, Inc		2,176	-	(77)	-	- 192	2,291
StructionSite Inc.		4,760	1,697	3,297	-	- 774	10,528
Potenit Co., Ltd.		-	-	-	-	-	-
Subtotal		145,805	7,177	26,243	(870)	285,547 (1,857)	462,045
Joint ventures:							
Doosan Babcock Blackcat W.L.L		640	-	(331)	-	- (309)	-
The Zenith holdings Ltd.		-	120,000	-	-	-	120,000
Tianjin Lovol Doosan Engine Co., Ltd.		16,327	-	(1,929)	-	(15,480) 1,082	-
Others		202	-	1,448	-	(322) (1,328)	-
Subtotal		17,169	120,000	(812)	-	(15,802) (555)	120,000
Total	₩	162,974	127,177	25,431	(870)	269,745 (2,412)	582,045

(*1) Share of profit (loss) of equity method includes profit(loss) from discontinued operations.

(*2) Others include transfers to held for sale and changes in foreign currency translation.

(*3) Share of profit (loss) of equity method investees was calculated as a 37.04% share on common stock basis.

(*4) An additional ₩2,237 million was recognized for share of loss of equity method on long-term investment.

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(3) The condensed financial information of the investees as of and for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		Total assets	Total liabilities	Sales	Net Profit (loss)	Total comprehensive income (loss)
Samcheok Blue Power Co., Ltd.	₩	3,515,861	2,885,218	-	(8,447)	(8,447)
Daejung Offshore Wind Power Co., Ltd.		5,342	2,014	-	(237)	(237)
Hychangwon Co., Ltd.		80,358	49,733	-	(1,344)	(1,344)
Tuwaiq Casting & Forging Company		338,073	42,217	-	(1,448)	(1,448)
Multi-asset ESG Marine Wind Power Private Equity Fund 1 st		15,063	6,100	-	(9)	(9)
Doosan Engineering & Construction Co., Ltd.		1,783,756	1,442,192	1,190,566	(210,444)	(210,444)
Daesan Green Energy Co., Ltd.		245,826	190,918	101,689	(6,641)	(6,641)
Prestolite Asia Ltd.		13,800	4,080	16,891	799	799
Ainstein AI, Inc		3,328	2,780	5,375	(1,177)	(1,054)
BUNDANG DOOSAN TOWER REIT Co., Ltd		671,559	524,366	27,319	3,606	3,606
The Zenith Holdings Ltd.		1,951,894	1,459,903	1,190,566	(223,370)	(223,370)
The Weve Holdings Ltd.		1,911,489	1,459,904	1,190,566	(223,371)	(223,371)

(In millions of won)

		2021				
		Total assets	Total liabilities	Sales	Net Profit (loss)	Total comprehensive income (loss)
The HS-City Expressway	₩	160,818	150,472	2,739	(945)	(945)
Samcheok Blue Power Co., Ltd.		2,301,783	1,620,752	-	(6,226)	(6,226)
Daejung Offshore Wind Power Co., Ltd.		5,335	1,769	-	(1,082)	(1,082)
Hychangwon Co., Ltd.		62,111	33,640	-	(1,521)	(1,521)
ReCarbon, Inc.		39,487	7,024	3,559	(6,159)	(6,159)
Doosan Property Co., Ltd.		154,409	5,074	1,366	47,135	47,029
Doosan Engineering & Construction Co., Ltd.		1,858,901	1,303,488	1,398,624	7,263	9,243
Daesan Green Energy Co., Ltd.		264,617	203,921	88,147	(3,310)	(3,310)
Prestolite Asia Ltd.		13,492	4,571	8,921	294	294
Ainstein AI, Inc		2,504	1,402	4,082	(846)	(846)
Doosan Babcock Blackcat W.L.L		17,963	17,254	16,459	(653)	(653)
The Zenith holdings Ltd.		1,958,319	1,312,620	-	-	-

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11. Investments in associates and joint ventures, Continued

(4) The following table provides a reconciliation of the summarized financial information of the associates and joint ventures to the carrying amount of its interest in the associates and joint ventures as of December 31 2022 and 2021:

(In millions of won)

Company	2022						
	Net asset (a)	Equity ownership (%) (b)	Equity interest in the investee (axb)	Adjustment amount			Book value
				Difference	Internal transaction	Others	
Associates:							
Samcheok Blue Power Co., Ltd. (*1)	₩ 31,460	9.00	2,831	38,268	(9,223)	-	31,876
Daejung Offshore Wind Power Co., Ltd.	3,328	26.65	887	1,532	-	-	2,419
Hychangwon Co., Ltd.(*2)	13,755	41.18	5,664	79	1,270	-	7,013
Tuwaiq Casting & Forging Company	295,856	15.00	44,378	-	296	-	44,674
Multi-asset ESG Marine Wind Power Private Equity Fund 1 st	8,963	65.00	5,826	2,668	-	-	8,494
Doosan Engineering & Construction Co., Ltd.	341,564	46.35	158,315	60,232	-	(44,845)	173,702
Daesan Green Energy Co., Ltd.	54,908	10.00	5,491	-	(3,015)	-	2,476
Prestolite Asia Ltd.	9,720	32.31	3,141	-	-	-	3,141
Ainstein AI, Inc	548	9.09	50	2,305	-	-	2,355
BUNDANG DOOSAN TOWER REIT Co., Ltd	147,193	18.60	27,378	14,936	(158)	(801)	41,355
Subtotal	907,295		253,961	120,020	(10,830)	(45,646)	317,505
Joint ventures:							
The Zenith Holdings Ltd.(*3)	43,936	31.75	13,950	18,991	-	(32,941)	-
The Weve Holdings Ltd. (*3)	28,905	46.50	13,440	18,518	-	6,492	38,450
Subtotal	72,841		27,390	37,509	-	(26,449)	38,450
Total	₩ 980,136		281,351	157,529	(10,830)	(72,095)	355,955

(*1) Includes net assets other than hybrid bonds with equity shares.

(*2) Includes net assets and equity ownership other than share on preferred stock.

(*3) Includes net assets other than goodwill and non-controlling interest of individual entities.

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11. Investments in associates and joint ventures, Continued

(In millions of won)

(In millions of won)

Company	2021							
	Net asset (a)	Equity ownership (%) (b)	Equity interest in the investee (axb)	Adjustment amount			Book value	
				Difference	Internal transaction	Others		
Associates:								
The HS-City Expressway	₩ 10,346	27.29	2,823	-	-	(2,823)	-	
Samcheok Blue Power Co., Ltd.(*1)	39,907	9.00	3,592	38,268	(7,096)	-	34,764	
Daejung Offshore Wind Power Co., Ltd.	3,566	26.65	950	1,532	-	-	2,482	
Hychangwon Co., Ltd.(*2)	11,601	37.04	4,297	-	698	-	4,995	
ReCarbon, Inc.	32,463	11.34	3,681	4,189	-	-	7,870	
Doosan Property Co., Ltd.	149,335	49.90	74,518	701	-	465	75,684	
Doosan Engineering & Construction Co., Ltd.	555,413	46.35	257,434	60,232	-	-	317,666	
Daesan Green Energy Co., Ltd.	60,696	10.00	6,070	-	(3,187)	-	2,883	
Prestolite Asia Ltd.	8,921	32.31	2,882	-	-	-	2,882	
Ainstein AI, Inc	1,102	9.09	100	2,191	-	-	2,291	
Subtotal	873,350		356,347	107,113	(9,585)	(2,358)	451,517	
Joint ventures:								
Doosan Babcock Blackcat W.L.L	709	49.00	347	-	-	(347)	-	
The Zenith holdings Ltd.(*3)	318,137	31.75	101,009	18,991	-	-	120,000	
Subtotal	318,846		101,356	18,991	-	(347)	120,000	
Total	₩ 1,192,196		457,703	126,104	(9,585)	(2,705)	571,517	

(*1) Includes net assets other than hybrid bonds with equity shares.

(*2) Includes net assets and equity ownership other than share on preferred stock.

(*3) Includes net assets other than goodwill and non-controlling interest of individual entities.

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12. Property, plant and equipment

(1) Changes in property, plant and equipment for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022						
	Land	Buildings and structures	Machinery	Others	Construction in progress	Right-of-use assets	Total
As of January 1, 2022	₩ 3,367,242	715,867	714,093	83,510	236,865	319,392	5,436,969
Acquisition/ capital expenditure	1	65,352	83,765	29,910	176,330	109,765	465,123
Transfer(*1)	(136,326)	(3,865)	11,235	6,910	(172,766)	(13,842)	(308,654)
Disposals(*2)	(1,442)	(1,281)	(8,330)	(3,863)	(2,199)	(16,901)	(34,016)
Depreciation	-	(51,763)	(159,351)	(26,725)	-	(71,323)	(309,162)
Impairment	(1,803)	(119)	(60)	(44)	(15,953)	-	(17,979)
Business combination	-	-	-	37	-	626	663
Changes in the scope of consolidation	(208,550)	(38,131)	(11,586)	(1,006)	(100)	(13,914)	(273,287)
Changes in foreign currency translation and others	690	19,104	27,886	834	12,405	1,572	62,491
As of December 31, 2022	₩ 3,019,812	705,164	657,652	89,563	234,582	315,375	5,022,148
- Acquisition cost	₩ 1,475,893	1,536,875	2,431,548	401,971	271,704	467,868	6,585,859
- Accumulated depreciation and impairment	-	(831,711)	(1,773,896)	(312,408)	(37,122)	(152,493)	(3,107,630)
- Revaluation surplus	1,543,919	-	-	-	-	-	1,543,919

(*1) For the year ended December 31, 2022, certain land, buildings, and construction in progress have been reclassified as investment property (See Note 15).

(*2) Includes the amount due to the contract cancelation of the right-of-use assets (See Note 14).

As of December 31, 2022, certain property, plant and equipment have been pledged as collateral for debts (See Note 34).

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12. Property, plant and equipment, Continued

(In millions of won)

	2021						
	Land	Buildings and structures	Machinery	Others	Construction in progress	Right-of-use assets	Total
As of January 1, 2021	₩ 3,944,572	964,609	736,666	144,161	158,402	209,397	6,157,807
Acquisition/ capital expenditure	10,176	23,936	47,062	31,342	173,453	309,456	595,425
Transfer(*1)	(29,656)	20,097	64,077	9,896	(127,565)	(40,312)	(103,463)
Disposals(*2)	(5,960)	(8,093)	(9,477)	(4,317)	(765)	(10,062)	(38,674)
Depreciation	-	(62,290)	(163,191)	(37,727)	-	(90,746)	(353,954)
Impairment	-	(15)	(1,378)	-	-	-	(1,393)
Revaluation	247,686	-	-	-	-	-	247,686
Changes in the scope of consolidation	(806,376)	(251,569)	21,920	(61,221)	26,824	(81,785)	(1,152,207)
Changes in foreign currency translation and others	6,800	29,192	18,414	1,376	6,516	23,444	85,742
As of December 31, 2021	₩ 3,367,242	715,867	714,093	83,510	236,865	319,392	5,436,969
- Acquisition cost	₩ 1,792,103	1,528,855	2,459,513	391,563	273,987	439,338	6,885,359
- Accumulated depreciation and impairment	-	(812,988)	(1,745,420)	(308,053)	(37,122)	(119,946)	(3,023,529)
- Revaluation surplus	1,575,139	-	-	-	-	-	1,575,139

(*1) As of December 31, 2021, includes land, buildings and others classified as assets held for sale (See Note 37).

(*2) Includes the amount due to the contract cancelation of the right-of-use assets (See Note 14).

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12. Property, plant and equipment, Continued

(2) Capitalized borrowing cost

Capitalized borrowing costs for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>	2022	2021
Capitalized borrowing costs	₩ 2,623	747
Interest rate of borrowing costs	3.73%~6.29%	3.42%~4.00%

(3) Depreciation

Details of depreciation on property, plant and equipment for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>	2022	2021
Cost of sales	₩ 248,102	222,013
Selling and administrative expenses	49,499	40,872
Research and development costs and others	5,248	4,974
Profit for the year from discontinued operation	6,313	86,095
Total	₩ 309,162	353,954

(4) Revaluation of land

The Group accounts for land using revaluation model; and if the land were accounted for using cost model, the carry amount of land would have been ₩ 1,475,893 million and ₩ 1,792,103 million as of December 31, 2022 and December 31, 2021, respectively. As of December 31, 2022, there is no significant difference compared to the fair value of land measured as of December 31, 2021.

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13. Intangible assets

(1) Changes in intangible assets for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)	2022					
		Goodwill	Industrial property rights	Development costs	Other intangible assets	Total
As of January 1, 2022	₩	5,254,319	1,186,614	1,091,799	483,248	8,015,980
Increase		-	5,147	183,849	31,907	220,903
Internal development		-	-	183,849	-	183,849
Individual acquisition		-	5,147	-	31,424	36,571
Business combination		-	-	-	483	483
Decrease		(1,435)	(1,252)	(89,082)	(71,213)	(162,982)
Amortization		-	(1,244)	(89,082)	(66,311)	(156,637)
Disposal		(1,435)	(8)	-	(4,902)	(6,345)
Transfer to other assets		-	-	788	12,666	13,454
Transfer to other expense		-	-	(2,292)	-	(2,292)
Changes in the scope of consolidation		(19,946)	-	-	(10,262)	(30,208)
Changes in foreign currency translation and others		134,942	55,755	7,155	6,554	204,406
Impairment loss		(421,440)	-	(34,922)	(30,175)	(486,537)
As of December 31, 2022	₩	4,946,440	1,246,264	1,157,295	422,725	7,772,724

As of December 31, 2022, certain intangible assets have been pledged as collateral for the Group's debts (See Note 34).

(In millions of won)

(In millions of won)	2021				
	Goodwill	Industrial property rights	Development costs	Other intangible assets	Total
As of January 1, 2021	₩ 4,434,677	1,125,182	1,128,127	212,302	6,900,288
Increase	1,410,645	1,453	225,661	373,310	2,011,069
Internal development	-	-	206,438	-	206,438
Individual acquisition	-	1,184	-	27,974	29,158
Business combination	1,410,645	269	19,223	345,336	1,775,473
Decrease	-	(1,340)	(109,467)	(67,506)	(178,313)
Amortization	-	(1,331)	(109,467)	(64,438)	(175,236)
Disposal	-	(9)	-	(3,068)	(3,077)
Transfer to assets held for sale	-	-	(2)	(3,274)	(3,276)
Transfer to other assets	-	532	(4,537)	12,135	8,130
Changes in the scope of consolidation	(785,945)	(3,634)	(130,602)	(51,897)	(972,078)
Changes in foreign currency translation and others	194,942	64,430	7,633	8,349	275,354
Impairment loss	-	(9)	(25,014)	(171)	(25,194)
As of December 31, 2021	₩ 5,254,319	1,186,614	1,091,799	483,248	8,015,980

The carrying amounts of intangible assets with indefinite useful lives including goodwill and others as of December 31, 2022 and 2021 amounted to ₩6,203,770 million and ₩6,472,615 million, respectively.

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13. Intangible assets, Continued

(2) Research and development costs

Research and development costs expensed as incurred for the years ended December 31, 2022 and 2021 amounted to ₩ 192,144 million and ₩134,646, respectively.

(3) Capitalized borrowing costs for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	2021
Capitalized borrowing costs	₩	22,907	26,863
Interest rate of borrowing costs		3.73%	3.42%~4.00%

(4) Details of amortization of intangible assets for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	2021
Cost of sales	₩	98,012	74,934
Selling and administrative expenses		56,571	49,237
Profit from discontinued operation		2,054	51,065
Total	₩	156,637	175,236

(5) Carrying amount of goodwill allocated to each CGU as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	CGU		2022	2021
Enerbility	Enerbility	₩	722,422	727,872
Doosan Bobcat Inc.	Doosan Bobcat Inc.		3,230,776	3,114,140
	Doosan Industrial Vehicle Co., Ltd.		331,684	329,309
Doosan Fuel Cell Co., Ltd.	Doosan Fuel Cell Co., Ltd. (*1)		661,558	1,082,998
		₩	4,946,440	5,254,319

(*1) The Group recognized impairment loss (other non-operating expenses) of ₩ 421,440 million as the book value of goodwill acquired from the business combination with Doosan Fuel Cell Co., Ltd. exceeded net fair value.

The recoverable amount of CGU is determined based on a value in use calculation or fair value less costs to sell, and major assumptions used as of December 31, 2022 are as follows:

	Enerbility	Doosan Bobcat Inc.	Doosan Industrial Vehicle Co., Ltd.	Doosan Fuel Cell Co., Ltd.
Valuation methods	Fair value less costs to sell	Value in use	Value in use	Fair value less costs to sell
Major assumptions and estimation methods	Estimated at the Company's share price	Forecast growth rate: 1.50% Discount rate: 10%	Forecast growth rate: 1.00% Discount rate: 9.30%	Estimated at Doosan Fuel Cell Co., Ltd.'s share price

A value in use is calculated using pre-tax cash flow projections based on financial budgets approved by senior management covering a five-year period. The management assessed the total profit in the budget based on past performances and market growth forecasts. Cash flows beyond the five-year period are extrapolated using forecast growth rates, which do not exceed the long-term average growth rate for the industry where the CGU operates in and which are consistent with estimations included in industry reports. The discount rate used is risk adjusted discount rate that reflects relevant risks specific to the related CGU.

Fair value less costs to sell is calculated by deducting the cost of disposal after adding a management right premium to the share price as of December 31, 2022, valuation date.

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13. Intangible assets, Continued

(6) Details of development costs as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	
	Description	Book value	Remaining amortization period(*1)
Enerbility	Large-sized Gas Turbine	₩ 655,072	-
	Gas Turbine 7F Retrofit	51,635	-
	Mid-sized Gas Turbine Development Phase1	661	6.58 years
	Mid-sized Gas Turbine Development Phase2	37,777	-
	8MW Offshore Wind Power	45,023	-
Doosan Bobcat Inc.	Compact product development (relating to new models and emission regulations)(*2)	45,993	-
	Compact product development (relating to new models and emission regulations)(*2)	94,836	3.21 years
	Portable Power product development (relating to new models and emission regulations)(*2)	4,213	-
	Portable Power product development (relating to new models and emission regulations)(*2)	11,258	3.07 years
	Forklift product development (relating to new models and emission regulations)(*2)	6,077	-
	Forklift product development (relating to new models and emission regulations)(*2)	10,652	3.55 years

(*1) Remaining amortization period is disclosed for assets which amortization has been initiated and disclosed as '-' for assets not yet amortized.

(*2) Some of the sub-projects that were amortized among the development costs were separately marked.

(In millions of won)

		2021	
	Description	Book value	Remaining amortization period(*1)
Enerbility	Large-sized Gas Turbine	₩ 598,663	-
	Gas Turbine 7F Retrofit	43,967	-
	Mid-sized Gas Turbine Development Phase1	761	7.58 years
	Mid-sized Gas Turbine Development Phase2	30,081	-
	8MW Offshore Wind Power	34,666	-
Doosan Bobcat Inc.	Compact product development (relating to new models and emission regulations)(*2)	38,795	-
	Compact product development (relating to new models and emission regulations)(*2)	93,725	3.42 years
	Portable Power product development (relating to new models and emission regulations)(*2)	1,885	-
	Portable Power product development (relating to new models and emission regulations)(*2)	14,710	3.83 years
	Forklift product development (relating to new models and emission regulations)(*2)	9,065	-
	Forklift product development (relating to new models and emission regulations)(*2)	8,730	4.17 years

(*1) Remaining amortization period is disclosed for assets which amortization has been initiated and disclosed as '-' for assets not yet amortized.

(*2) Some of the sub-projects that were amortized among the development costs were separately marked.

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13. Intangible assets, Continued

(7) Intangible assets for which an impairment loss has been recognized for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)		2022					
		Acquisition cost	Impairment loss		Accumulated amortization	Book value	Method used to assess recoverability
Description		Loss	Accumulated				
Enerbility	Development costs(*1)						
	Development of boiler-USC element technology	₩ 4,503	3,644	3,644	859	-	Value in use
	Development of boiler-USC element technology (I&C sector)	3,347	2,748	2,748	599	-	Value in use
	Development of large-scale freshwater element technology	2,731	2,731	2,731	-	-	Value in use
	Development ST-USC element technology	2,212	1,924	1,924	288	-	Value in use
	Others	32,136	23,875	23,875	8,261	-	Value in use
	Other intangible assets						
	Golf membership	14,424	5,097	8,766	-	5,658	Fair value
	Reclamation license and other	63,823	24,663	54,812	9,011	-	Value in use
	Subtotal	123,176	64,682	98,500	19,018	5,658	
Doosan Bobcat Inc.	Industrial rights						
	Forklift control method and others	12	-	9	3	-	Fair value
	Development costs						
	Medium Frame GenV and others	58,024	-	5,502	52,522	-	Fair value
	Other intangible assets						
	DS Platform(software) and others	4,257	413	3,130	1,127	-	Fair value
	Subtotal	62,293	413	8,641	53,652	-	
Doosan Fuel Cell Co., Ltd.	Good will(*2)						
	Good will	1,082,998	421,440	421,440	-	661,558	Fair value
Doosan Cuvex Co., Ltd.	Other intangible assets						
	Condominium membership	38	2	2	-	-	Fair value
	Total	₩ 1,268,505	486,537	528,583	72,670	667,216	

(*1) The carrying amount is recognized as an impairment loss, as the value in use decreased due to changes in industry environment.

(*2) The Group recognized impairment loss of ₩ 421,440 million because the book value of goodwill acquired from the business combination with Doosan Fuel Cell Co., Ltd. exceeded net fair value.

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13. Intangible assets, Continued

(In millions of won)

		2021					Method used to assess recoverability
Description		Acquisition cost	Impairment loss Loss	Accumulated	Accumulated amortization	Book value	
Enerbility	Development costs(*1)						
	3MW Class model	₩ 5,675	4,162	4,162	1,513	-	Value in use
	Wind Power up Solution (phase 1)	431	366	366	65	-	Value in use
	5.5MW Offshore Wind Power	19,009	19,009	19,009	-	-	Value in use
	Subtotal	25,115	23,537	23,537	1,578	-	
Doosan Infracore Co. Ltd. (*2)	Development costs						
	Development for DX12 Engine	3,943	1,220	1,220	1,803	-	Value in use
Doosan Bobcat Inc.	Industrial rights						
	Forklift control method and others	12	9	9	3	-	Fair value
	Development costs						
	Medium Frame GenV and others	5,163	257	5,163	-	-	Fair value
	Other intangible assets						
	DS Platform(software) and others	3,408	1,722	1,722	418	1,268	Fair value
	Subtotal	8,583	1,988	6,894	421	1,268	
	Total	₩ 37,641	26,745	31,651	3,802	1,268	

(*1) The carrying amount is recognized as an impairment loss, as the value in use decreased due to changes in industry environment.

(*2) Impairment loss is recognized as profit (loss) from discontinued operation.

(8) Reversal of impairment loss of intangible assets

Reversal of impairment loss of intangible assets for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

			2022	2021
Description	Assets		Reversal of impairment loss	Method used to assess recoverability
Enerbility	Other intangible assets	Golf membership	₩ -	Fair value
Doosan Infracore Co., Ltd. (*1)	Other intangible assets	Golf membership	-	Fair value
Doosan Cuvex Co., Ltd.	Other intangible assets	Condominium membership	-	Fair value
	Total		₩ -	1,551

(*1) Reversal of impairment loss is recognized as profit (loss) from discontinued operation in 2021.

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13. Intangible assets, Continued

(9) Items in the consolidated statements of profit or loss that included an impairment loss(reversal)

For the years ended December 31, 2022 and 2021, item in the consolidated statements of profit or loss for which the Group recognized an impairment loss(reversal) are as follows:

<i>(In millions of won)</i>		2022	2021
Other non-operating expenses	₩	486,537	25,525
Other non-operating income		-	(96)
Profit (loss) from discontinued operation		-	(235)
Total	₩	486,537	25,194

(10) Greenhouse gas emission permits and obligations

1) The emission permits that are received free of charge from the government as the 3rd planning period (from year 2021 to 2025) as of December 31, 2022 are as follows:

<i>(In tons (tCO₂-eq))</i>	2021	2022	2023	2024	2025	Total
Free emission permits	260,526	260,526	260,526	258,086	258,086	1,297,750

2) Changes in emission permits for the years ended December 31, 2022 and 2021 are as follows:

<i>(In tons (tCO₂-eq))</i>		2022					
		2021	2022	2023	2024	2025	Total
As of January 1, 2022		264,750	260,526	260,526	258,086	258,086	1,301,974
Succession of allowances							
received free of charge		210	210	210	208	208	1,046
Cancellation of free permits		(519)	-	-	-	-	(519)
Submission to the government		(200,301)	-	-	-	-	(200,301)
Sale		(22,000)	-	-	-	-	(22,000)
Carried forward		(42,140)	42,140	-	-	-	-
As of December 31, 2022		-	302,876	260,736	258,294	258,294	1,080,200

<i>(In tons (tCO₂-eq))</i>		2021					
		2020	2021	2022	2023	2024	Total
As of January 1, 2021		292,754	260,526	260,526	260,526	258,086	1,590,504
Cancellation of free permits		(4,211)	-	-	-	-	(4,211)
Submission to the government		(229,319)	-	-	-	-	(229,319)
Sale		(55,000)	-	-	-	-	(55,000)
Carried forward		(4,224)	4,224	-	-	-	-
As of December 31, 2021		-	264,750	260,526	260,526	258,086	1,301,974

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13. Intangible assets, Continued

As of Permit that are received free of charge from the government was measured at zero book value.

3) Details of emission permits held for short-term trading purpose for the year ended December 31, 2022 is as follows:

(In tons (tCO2-eq), in millions of won)

	<u>Quantity</u>	<u>Book value</u>
Beginning balance	- ₩	-
Acquisition	55,248	1,657
Ending balance	<u>55,248 ₩</u>	<u>1,657</u>

4) The estimate of greenhouse gas emissions as of December 31, 2022 was 245,000 tons (tCO2-eq) and no emission liabilities are recognized as it is not expected to exceed the free emission permits.

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14. Lease

(1) Changes in the right-of-use assets for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022				
		Land	Buildings & structures	Machinery	Other tangible assets	Total
As of January 1, 2022	₩	7,150	292,161	1,608	18,473	319,392
Acquisition		1,740	90,716	9,033	8,276	109,765
Business combination		-	530	-	96	626
Contract cancelation		(170)	(14,926)	(605)	(1,200)	(16,901)
Depreciation		(1,054)	(57,283)	(2,511)	(10,475)	(71,323)
Transfer(*1)		-	(13,842)	-	-	(13,842)
Changes in the scope of consolidation		-	(13,852)	-	(62)	(13,914)
Foreign currency differences and others		(15)	1,632	(188)	143	1,572
As of December 31, 2022	₩	7,651	285,136	7,337	15,251	315,375
- Acquisition cost	₩	8,863	405,059	10,356	43,590	467,868
- Accumulated depreciation		(1,212)	(119,923)	(3,019)	(28,339)	(152,493)

(*1) Reclassified from right-of-use assets to investment properties due to the change in sub-lease ratio of BUNDANG DOOSAN TOWER in 2022..

(In millions of won)

		2021				
		Land	Building & structures	Machinery	Other tangible asset	Total
As of January 1, 2021	₩	15,902	167,152	4,496	21,847	209,397
Acquisition		1,916	282,216	9,095	16,229	309,456
Business combination		147	15,618	-	408	16,173
Contract cancelation		-	(8,546)	(2)	(1,514)	(10,062)
Depreciation		(1,212)	(69,993)	(5,034)	(14,507)	(90,746)
Transfer to held for sale		-	(38,519)	-	(1,793)	(40,312)
Changes in scope of consolidation		(12,546)	(72,486)	(7,008)	(5,918)	(97,958)
Foreign currency differences and others		2,943	16,719	61	3,721	23,444
As of December 31, 2021	₩	7,150	292,161	1,608	18,473	319,392
- Acquisition cost	₩	8,241	384,391	3,331	43,375	439,338
- Accumulated depreciation		(1,091)	(92,230)	(1,723)	(24,902)	(119,946)

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14. Lease, Continued

(2) Changes in the lease liabilities for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	2021
As of January 1	₩	381,187	238,330
Payment of lease		(98,762)	(111,137)
Acquisition		109,720	369,061
Business combination		690	16,414
Contract cancellation		(16,869)	(11,319)
Interest expense		19,227	24,717
Transfer to held for sale		-	(41,813)
Changes in scope of consolidation		(14,212)	(119,811)
Foreign currency differences and others		12,913	16,745
As of December 31	₩	<u>393,894</u>	<u>381,187</u>

(3) The depreciation of right-of-use assets by type of accounts for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022	2021
Cost of sales	₩	32,322	33,868
Selling and administrative expenses		37,102	31,664
R&D costs and others		617	586
Profit from discontinued operation		1,282	24,628
Total	₩	<u>71,323</u>	<u>90,746</u>

(4) The maturity of lease receivables and liabilities as of December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)		2022				
		Contractual nominal cash flow				
		Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Lease receivables	₩	2,345	2,345	-	-	-
Lease liabilities		455,665	84,285	70,950	168,052	132,378

(In millions of won)

(In millions of won)		2021				
		Contractual nominal cash flow				
		Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Lease receivables	₩	5,522	2,456	3,066	-	-
Lease liabilities		447,736	70,051	40,497	188,638	148,550

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14. Lease, Continued

(5) Expenses incurred in short-term leases and low-value asset leases that are not included in the Group's right-of-use assets for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Cost of sales	₩	19,665	14,499
Selling and administrative expenses		3,850	5,336
R&D costs and others		2	5
Profit from discontinued operation		208	3,609
Total	₩	23,725	23,449

The Group, as an intermediate lessor, recognized a lease income amounted to ₩2,456 million and ₩2,726 million from the sub-lease of right-of-use assets for the years ended December 31, 2022 and 2021, respectively.

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15. Investment properties

(1) Changes in the investment property for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			
		Land	Construction in progress	Buildings (*1)	Total
As of January 1, 2022	₩	36,025	-	36,895	72,920
Transfers		129,853	37,837	39,435	207,125
Depreciation		-	-	(5,599)	(5,599)
As of December 31, 2022	₩	<u>165,878</u>	<u>37,837</u>	<u>70,731</u>	<u>274,446</u>
- Acquisition cost	₩	167,681	53,790	83,384	304,855
- Accumulated depreciation and impairment loss		(1,803)	(15,953)	(12,653)	(30,409)

(*1) Including amount reclassified from right-of-use assets to investment properties due to the change in sub-lease ratio of BUNDANG DOOSAN TOWER in 2022.

(In millions of won)

		2021		
		Land	Buildings (*1)	Total
As of January 1, 2021	₩	52,685	29,252	81,937
Acquisition/ capital expenditure		714	50,840	51,554
Disposal		(6,878)	(5,787)	(12,665)
Depreciation		-	(7,781)	(7,781)
Changes in scope of consolidation		(10,893)	(29,614)	(40,507)
Others		397	(15)	382
As of December 31, 2021	₩	<u>36,025</u>	<u>36,895</u>	<u>72,920</u>
- Acquisition cost	₩	36,025	40,799	76,824
- Accumulated depreciation and impairment loss		-	(3,904)	(3,904)

(*1) During 2021, the sub-lease amount among the assets recognized according to the Bundang Doosan Tower contract signed with BUNDANG DOOSAN TOWER REIT Co., Ltd. is recognized as investment property.

(2) Rental incomes from investment properties for the years ended December 31, 2022 and 2021 are ₩18,689 million and ₩9,130 million, respectively.

(3) As of December 31, 2022, the fair value of land and buildings included in the investment property has no significant difference from the carrying amount.

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16. Bonds and borrowings

(1) Borrowings

1) Short-term borrowings as of December 31, 2022 and 2021 are as follows:

(In millions of won)

Type of borrowings	Borrower(*1)	Lender	Annual interest rate (%) as of December 31, 2022	2022(*2)	2021
Denominated in KRW	Enerbility	Korea Development Bank ("KDB") and others	2.00~7.55	₩ 948,250	3,128,420
	Doosan Fuel Cell Co., Ltd.	Hana Bank and others	CD(3M) + 2.5 ~ Financial bond AA+(3M) + 3.25	64,000	-
Denominated in foreign currencies	Enerbility	Woori Bank and others	2.10~9.65	367,381	758,857
	Doosan Bobcat Inc.	Korea EXIM Bank and others	1.36~6.77	53,941	21,206
		Total		₩ 1,433,572	3,908,483

(*1) Includes the Company's overseas subsidiaries and their consolidated subsidiaries.

(*2) The Group's PP&E and others have been pledged as collateral for the above borrowings (See Notes 33 and 34).

2) Long-term borrowings as of December 31, 2022 and 2021 are as follows:

(In millions of won)

Type of Borrowings	Borrower(*1)	Lender	Annual interest rate (%) as of December 31, 2022	2022 (*2)	2021
Denominated in KRW	Enerbility	NH Investment& securities Co., Ltd. and others	1.10~6.72	₩ 1,272,714	528,026
	Doosan Bobcat Inc.	Nonghyup Bank and others	3.25~3M MOR +1.88	80,000	46,400
	Doosan Cuvex Co., Ltd.	Woori Bank	3.69	20,000	20,000
	Doosan Fuel Cell Co., Ltd.	Korea Development Bank	Industrial financial debentures (1yr) +1.47	30,000	-
Denominated in foreign currencies	Enerbility	Canadian Imperial Bank of Commerce	3.125~1 Month SOFR+2.625	6,589	37,974
	Doosan Bobcat Inc.	Institutional investors and banks in the United States and others	1.36~3 Month SOFR +2.50	1,174,452	1,358,742
		Subtotal		2,583,755	1,991,142
		Less: Current portion of long-term borrowings		(206,957)	(463,170)
		Less: Discount on long-term borrowings		(25,930)	(11,053)
		Total		₩ 2,350,868	1,516,919

(*1) Includes the Company's overseas subsidiaries and their consolidated subsidiaries.

(*2) The Group's PP&E and others have been pledged as collateral for the above borrowings (See Notes 33 and 34).

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16. Bonds and borrowings, Continued

(2) Bonds

1) Details of bonds as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	Annual interest rate (%) as of December 31, 2022		2022	2021
Public offering bonds (*1)	1.00~6.50	₩	685,190	1,141,950
Privately placed bonds (*1)	4.30~9.20		213,500	105,500
Convertible bonds	2.81~2.87		23,374	23,374
Bonds with stock warrants	-		-	14,607
Subtotal			922,064	1,285,431
Add: Redemption premium			1,604	2,370
Less: Warrants adjustment			-	(201)
Less: Conversion rights adjustment			(491)	(1,299)
Less: Current portion of long-term bonds			(564,048)	(426,389)
Less: Discount on bonds			(2,781)	(11,655)
Long-term bonds		₩	356,348	848,257

(*1) The ordinary shares of Doosan Bobcat Inc. and Doosan Fuel Cell Co., Ltd. have been pledged as collateral for public offering bonds in foreign currencies and privately placed bonds of the Company (See Notes 33 and 34).

2) Convertible bonds

Changes in the carrying amount of convertible bonds for year ended December 31, 2022 are as follows:

(In millions of won)

	January 1	Exercise / Amortization	December 31
Convertible bonds	₩ 23,374	-	23,374
Redemption premium	1,604	-	1,604
Discount on bond	(82)	51	(31)
Conversion rights adjustment	(1,299)	808	(491)
Book value	₩ 23,597	859	24,456
Consideration for conversion rights (other capital surplus)	₩ 760	-	760

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16. Bonds and borrowings, Continued

(a) 59th convertible bonds issued by the Company

Issue date(*2)	Maturity Date	Coupon rate	YTM	Exercise period	Exercise price (in won)	Face value	Issuance value(*1)	Book value
July 1, 2021	June 8, 2023	2.87%	4.82%	2021.06.08~2023.05.08	₩8,907/share	₩1,655 million	₩1,641 million	₩1,730 million

(*1) Discount on debentures is deducted from the face value of debentures.

(*2) Among the convertible bonds issued by Doosan Infracore Co., Ltd. on June 8, 2020, the bond has been succeeded to the Company from spin-off merger with Doosan Infracore Co., Ltd. on July 1, 2021.

① Early redemption

The early redemption right is exercisable as a whole or in part against the face value of convertible bonds at the interest payment date after June 8, 2022.

② Redemption at maturity

June 8, 2023, the maturity date of the bond, 106.2537% of the remaining bond principal is paid off in full.

③ Calculation of exercise price

The exercise price is adjusted when there is an increase in paid-in capital through issuance of shares at a price lower than the market price, bonus issue, stock dividends, or capitalization of reserves, before exercising the stock warrants, or when there is an issuance of stock purchase warrants or debt securities with warrants.

(b) 60th convertible bonds issued by the Company

Issue date(*2)	Maturity Date	Coupon rate	YTM	Exercise period	Exercise price (in won)	Face value	Issuance value(*1)	Book value
July 1, 2021	August 3, 2023	2.81%	4.96%	2021.08.03~2023.07.03	₩10,506/share	₩21,719 million	₩21,584 million	₩22,726 million

(*1) Discount on debentures is deducted from the face value of debentures.

(*2) Among the convertible bonds issued by Doosan Infracore Co., Ltd. on August 3, 2020, the bond has been succeeded to the Company from spin-off merger with Doosan Infracore Co., Ltd. on July 1, 2021.

① Early redemption

The early redemption right is exercisable as a whole or in part against the face value of convertible bonds at the interest payment date after August 3, 2022.

② Redemption at maturity

August 3, 2023, the maturity date of the bond, 106.9085% of the remaining bond principal is paid off in full.

③ Calculation of exercise price

The exercise price is adjusted when there is an increase in paid-in capital through issuance of shares at a price lower than the market price, bonus issue, stock dividends, or capitalization of reserves, before exercising the stock warrants, or when there is an issuance of stock purchase warrants or debt securities with warrants.

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16. Bonds and borrowings, Continued

3) Bond with stock warrants

Changes in the carrying amount of bonds with stock warrants for the year ended December 31, 2022 are as follows:

(In millions of won)

		January 1	Issuance / Redemption	Exercise / Amortization	December 31
Bond with stock warrants	₩	14,607	(13,991)	(616)	-
Redemption premium		766	(734)	(32)	-
Discount on bond		(19)	-	19	-
Warrants adjustment		(201)	-	201	-
Book value	₩	<u>15,153</u>	<u>(14,725)</u>	<u>(428)</u>	<u>-</u>
Consideration for stock warrants rights (other capital surplus)	₩	34,819	-	(34,819)	-

48th bond with stock warrants issued by the Company

Issue date	Maturity date	Coupon rate	YTM	Exercise period	Exercise price (in won)	Face value	Issuance value(*1)	Book value
May 4, 2017	May 4, 2022	1.00%	2.00%	From one month after date of issue to one month before maturity	₩ 14,450 /share	₩500,000 million	₩491,546 million	-

(*1) Discount on debentures is deducted from the face value of debentures.

① Early redemption

The early redemption right is exercisable as a whole or in part against the par value of bond with stock warrants at the interest payment date in 3 years after the date of issuance of bonds. Meanwhile, according to the exercise of the early redemption right, ₩484,957 million was repaid on May 4, 2020, and the remaining unexercised portion will be repaid on the maturity date.

② Redemption at maturity

The coupon rate for the bond is 1.00%. For bonds not converted until maturity, 105.2448% of the principal amount will be paid on May 4, 2022 with a yield to maturity rate of 2.00% compounded quarterly.

③ Calculation of exercise price

The exercise price is adjusted when there is an increase in paid-in capital through issuance of shares at a price lower than the market price, stock dividends, or capitalization of reserves, before exercising the stock warrants, or when there is an issuance of stock purchase warrants or debt securities with warrants.

④ Exercise of stock warrants

As of December 31, 2022, stock warrants were exercised in the amount pertaining to 98.93% of the principal amount of bond with stock warrants and 0.21% of the principal amount was substituted. The number of shares issued as a result of the exercise of the stock warrants was 33,985,191 shares.

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16. Bonds and borrowings, Continued

(3) Asset-backed borrowings

The Group transferred revenue from construction contracts to a special purpose vehicle, and the special purpose vehicle issued asset-backed securities backed by transferred assets. Asset-backed borrowings as of December 31, 2022 and 2021 are as follows:

(In millions of won)

Company	Lender	Discount rate (%)		2022	2021
The Company	KDB and others	-	₩	-	49,600
	Less: Current portion			-	(49,304)
	Less: Discounts			-	(296)
	Total		₩	-	-

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17. Defined benefit assets and liabilities

The Group operates defined benefit plans, and the cost of providing benefit under the defined benefit plans is determined using the projected unit credit method on actuarial valuation of the present value of its defined benefit obligations.

(1) Details of defined benefit assets and liabilities as of December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Present value of defined benefit obligations	₩	1,529,305	2,036,298
Fair value of plan assets(*1)		(1,091,353)	(1,495,801)
Defined benefit liabilities	₩	452,353	540,497
Defined benefit assets	₩	(14,401)	-

(*1) Include employer contributions of ₩575 million and ₩636 million to the National Pension Service as of December 31, 2022 and 2021, respectively.

(2) Expenses recognized in consolidated statements of income (loss) for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Current service cost	₩	68,995	82,392
Net interest cost		16,796	15,663
Past service cost (*1)		18,042	(11,799)
Total	₩	103,833	86,256

(*1) Changes in retirement benefit obligations due to the revision of the executive severance provision ₩18,042 million were recognized as past service costs in 2022.

(3) Classification of expenses related to the employee benefit liability for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Cost of sales	₩	59,979	57,627
Selling and administrative expenses		39,817	5,779
Research and development costs		2,818	1,600
Profit from discontinued operations		1,219	21,250
Total	₩	103,833	86,256

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17. Defined benefit assets and liabilities, Continued

(4) Changes in the present value of the defined benefit obligations for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
As of January 1	₩	2,036,298	2,331,212
Current service costs		68,995	82,392
Past service costs		18,042	(11,799)
Transfer from related parties		3,694	4,203
Transfer to related parties		(5,734)	(5,310)
Interests		51,934	43,436
Remeasurement loss (gain) in OCI:			
Actuarial changes arising from			
changes in demographic assumptions		(1,473)	(1,880)
Actuarial changes arising from changes			
in financial assumptions		(600,736)	(111,903)
Others		50,952	198
Changes in the scope of consolidation		(17,519)	(256,146)
Contributions by plan participants		1,480	2,965
Benefits paid		(98,713)	(171,949)
Others		22,085	130,879
As of December 31	₩	1,529,305	2,036,298

(5) Changes in the fair value of plan assets for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
As of January 1	₩	1,495,801	1,609,787
Expected return on plan assets		35,138	27,773
Transfer from related parties		3,070	2,819
Transfer to related parties		(9,392)	(2,531)
Remeasurement gain (loss) in OCI		(411,882)	35,030
Contributions by plan participants		20,328	29,380
Contributions by employer		54,010	54,440
Benefits paid		(76,228)	(139,251)
National Pension Service		(22)	(26)
Changes in the scope of consolidation		(19,819)	(205,114)
Others		349	83,494
As of December 31	₩	1,091,353	1,495,801

In relation to the defined benefit plans, the reasonable estimates of future employer contributions during the year 2023 amounts to ₩213,980 million. In addition, the actual return on plan assets for the years ended December 31, 2022 and 2021 amounts to ₩(376,744) million and ₩62,803 million, respectively.

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17. Defined benefit assets and liabilities, Continued

(6) The principal assumptions used in determining employee benefit obligation as of December 31, 2022 and 2021 are as follows:

	2022	2021
Discount rate	2.00%~7.44%	1.30%~6.80%
Future salary increase rate	0.80%~6.00%	0.80%~6.00%

(7) Components of plan assets as of December 31, 2022 and 2021 are as follows:

(In millions of won)	2022	2021
Equity investments	₩ 156,812	287,374
Government bonds	559,498	794,073
Trust funds and others	375,043	414,354
Total	₩ 1,091,353	1,495,801

(8) Details of a sensitivity analysis on the defined benefit obligation for changes in the significant assumptions as of December 31, 2022 are as follows:

(In millions of won)	Amount	Ratio
Discount rate:		
1% increase	₩ (137,873)	(9.02%)
1% decrease	199,535	13.05%
Future salary increases:		
1% increase	₩ 129,087	8.44%
1% decrease	(112,969)	(7.39%)

(9) The weighted average maturity of defined benefit obligations is approximately 11.03 years as of December 31, 2022.

(10) With regard to the defined contribution pension plans, the Group recognized expenses for the years ended December 31, 2022 and 2021 amounting to ₩45,550 million and ₩29,908 million, respectively.

18. Sale and leaseback liabilities

Sale and leaseback liabilities as of December 31, 2022 are as follows:

(In millions of won)

Company	Annual interest rate (%) as of December 31, 2022	December 31, 2022
Doosan Bobcat Inc.	3.59%	₩ 77,347
Less: Current portion		(27,499)
Total		₩ 49,848

The sale and leaseback liabilities were classified as other current liabilities and other non-current liabilities as of December 31, 2021 and Doosan Bobcat Inc. has been providing guarantee on the liabilities as of December 31, 2022.

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19. Provision

Changes in significant provisions for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)		2022							
		January 1	Arising during the year	Unused amounts reversed	Utilized	Others(*1)	December 31	Less: Current	Non-current
Provisions for warranties	₩	330,510	176,152	(1,289)	(96,520)	12,458	421,311	(123,096)	298,215
Provisions for construction losses		94,309	40,569	(29,905)	-	(5,400)	99,573	(64,037)	35,536
Others(*2)		208,155	43,725	(4,040)	(55,398)	(13,749)	178,693	(132,086)	46,607
Total	₩	632,974	260,446	(35,234)	(151,918)	(6,691)	699,577	(319,219)	380,358

(*1) Includes gain or loss arising from changes in foreign exchange rates and changes in the scope of consolidation.

(*2) As of December 31, 2022, it includes ₩54,855 million in provisions related to guarantee the return of membership fees and other considerations.

(In millions of won)

(In millions of won)		2021							
		January 1	Arising during the year	Unused amounts reversed	Utilized	Others(*1)	December 31	Less: Current	Non-current
Provisions for warranties	₩	462,995	179,385	(22,892)	(133,736)	(155,242)	330,510	(111,788)	218,722
Provisions for construction losses		129,950	20,918	(61,251)	-	4,692	94,309	(36,399)	57,910
Others(*2)		286,060	57,121	(83,452)	(45,032)	(6,542)	208,155	(172,271)	35,884
Total	₩	879,005	257,424	(167,595)	(178,768)	(157,092)	632,974	(320,458)	312,516

(*1) Includes gain or loss arising from changes in foreign exchange rates and changes in the scope of consolidation.

(*2) As of December 31, 2021, it includes ₩54,855 million in provisions related to guarantee the return of membership fees and other considerations.

The Group estimates expenses required to settle the Group's obligations on product warranties, refunds, maintenance and others based on the level of warranty period, historical experience and other considerations.

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20. Capital stock

The Company is authorized to issue 2,000,000,000 shares, with a par value of ₩5,000 per share and the number of ordinary shares issued as of December 31, 2022 and 2021 are 638,308,033 shares and 522,220,786 shares, respectively. The number of shares with limited voting rights under Korean Commercial Code as of December 31, 2022 and 2021 are 95,978 treasury shares.

On February 18, 2022, the Company issued ordinary shares of 82,872,900 shares through capital increase and issued ordinary shares of 33,214,347 shares by exercising of stock warrants.

Details in capital stock and Paid-in capital in excess of par value as of December 31, 2022 and 2021 are as follows:

(In millions of won except for share, In shares)

	Number of shares		Capital stock			Paid-in capital in excess of par value		
	Ordinary shares	Preference shares	Ordinary shares	Preference shares(*1)	Total	Ordinary shares	Preference shares	Total
December 31, 2022	638,308,033	- ₩	3,191,539	64,522	3,256,061	2,362,505	-	2,362,505
December 31, 2021	522,220,786	- ₩	2,611,103	64,522	2,675,625	1,234,457	-	1,234,457

(*1) Redeemable convertible preference shares were purchased and retired using voluntary reserves before prior year, and there is no reduction in capital stock.

21. Capital surplus

Capital surplus as of December 31, 2022 and 2021 are summarized as follows:

(In millions of won)

	2022	2021
Paid-in capital in excess of par value	₩ 2,362,505	1,234,457
Other capital surplus	507,563	630,626
Total	₩ 2,870,068	1,865,083

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22. Other components of equity

(1) Other components of equity as of December 31, 2022 and 2021 are summarized as follows:

<i>(In millions of won)</i>		2022	2021
Treasury stock	₩	(2,135)	(2,135)
Stock options		386	1,103
Others		47,425	47,191
Total	₩	45,676	46,159

(2) Treasury stocks as of December 31, 2022 and 2021 are as follows:

<i>(In millions of won except for share, In shares)</i>		2022		2021	
		Number of shares	Amount	Number of shares	Amount
Ordinary shares		95,978	₩ 2,135	95,978	₩ 2,135

(3) Stock option

The Company has granted stock options to its executives. The settlement method for stock options includes issuance of new shares, issuance of treasury shares or cash settlement. The type of settlement method chosen is determined based on the Board of Directors' decision at the time of exercise. These stock options require a vesting condition of a two-year continuous employment from the grant date.

1) The terms and conditions of stock options granted as of December 31, 2022 are summarized as follows:

<i>(In won, shares)</i>					Estimated fair value as of the grant date
Grant date	Number of shares to be issued	Exercise period	Exercise price		
Mar 29 2013	9,800	Mar 29 2016 ~ Mar 28 2023	₩ 44,900	₩	10,860
Mar 28 2014	20,800	Mar 28 2017 ~ Mar 27 2024	34,550		7,948
Mar 29 2013(*1)	4,765	Mar 29 2016 ~ Mar 28 2023	22,935		12,383
Mar 21 2014(*1)	5,851	Mar 21 2017 ~ Mar 20 2024	19,867		9,402
Total	41,216				

(*1) It has been succeeded from spin-off and merger with Doosan Infracore Co., Ltd. during 2021.

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22. Other components of equity, Continued

2) Change in the stock options for the year ended December 31, 2022 is summarized as follows:

(In shares)		Number of shares to be issued		
Grant date		January 1	Retired	December 31
Mar 30 2012		21,083	(21,083)	-
Mar 29 2013		29,657	(15,092)	14,565
Mar 21 2014		17,082	(11,231)	5,851
Mar 28 2014		29,600	(8,800)	20,800
Total		97,422	(56,206)	41,216

(In millions of won)		Valuation		
Grant date		January 1	Retired	December 31
Mar 30 2012	₩	362	(362)	-
Mar 29 2013		345	(180)	165
Mar 21 2014		161	(106)	55
Mar 28 2014		235	(69)	166
Total	₩	1,103	(717)	386

No compensation expenses are recognized for the years ended December 31, 2022 and 2021 and are expected to be recognized in the future periods.

3) The estimated fair value was calculated using the modified fair value method and assumptions applied to this method are summarized as follows:

Grant date	Risk free rate(*1)	Expected exercise period	Expected volatility	Expected dividend yield
Mar 29 2013	2.45%	3 years	35.98%	15.00%
Mar 28 2014	2.88%	3 years	34.72%	15.00%
Mar 29 2013(*2)	2.57%	6.5 years	54.12%	0.21%
Mar 21 2014(*2)	3.27%	6.5 years	42.29%	0.00%

(*1) Based on a treasury bond yield rate following by the expected exercise period.

(*2) It has been succeeded from spin-off and merger with Doosan Infracore Co., Ltd. during 2021.

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23. Accumulated other comprehensive income

(1) Accumulated other comprehensive income as of December 31, 2022 and 2021 are summarized as follows:

(In millions of won)

	2022	2021
Loss on valuation of FVOCI	₩ (14,287)	(10,146)
Gain on valuation of derivative financial instruments	21,259	16,180
Change in equity of equity method investments	(2,608)	71
Gain on revaluation of assets	1,105,038	1,112,411
Loss on translation of foreign operations	(226,749)	(387,191)
Total	₩ 882,653	731,325

(2) Details of income taxes on OCI items directly reflected in equity as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	
	Balance before tax	Tax effect
Loss on valuation of FVOCI	₩ (15,095)	808
Gain on valuation of derivative financial instruments	18,069	3,190
Change in equity of equity method investments	(2,517)	(91)
Gain (loss) on revaluation of assets	1,543,919	(438,881)
Loss on translation of foreign operations	(226,749)	-
Total	₩ 1,317,627	(434,974)

(In millions of won)

	2021	
	Balance before tax	Tax effect
Loss on valuation of FVOCI	₩ (9,363)	(783)
Gain on valuation of derivative financial instruments	11,755	4,425
Change in equity of equity method investments	162	(91)
Gain (loss) on revaluation of assets	1,575,139	(462,728)
Loss on translation of foreign operations	(387,191)	-
Total	₩ 1,190,502	(459,177)

24. Retained earnings

(1) Retained earnings as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Legal reserve	₩ 82,966	83,026
Voluntary reserve	43,396	43,396
Unappropriated retained earnings (Undisposed accumulated deficit)	(67,548)	646,813
Total	₩ 58,814	773,235

(2) There is no dividend for the years ended December 31, 2022 and 2021.

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25. Segment information

(1) The reportable segments of the Group and major products and services by segments are as follows:

Business segment	Main products and services
Enerbility	NSSS, BOP, Turbine, Seawater desalination plants and water treatment systems, Plants, Road constructing and others
Doosan Bobcat Inc. (*1)	Small construction machinery and equipment, and others
Doosan Fuel Cell Co., Ltd.(*2)	Manufacture and sale of fuel cell, renewable energy business, and others
Others	Operation of resort and golf club and others

(*1) Includes Doosan Industrial Vehicle Co., Ltd. and its subsidiaries acquired by Doosan Bobcat Inc. in 2021.

(*2) In 2021, the Group acquired control over Doosan Fuel Cell Co., Ltd. and has included in the Group's scope of consolidation.

(2) Summarized financial information by reportable segments for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			
		Sales	Intercompany sales	Net sales	Operating income (loss)
Enerbility	₩	7,605,461	(502,735)	7,102,726	167,236
Doosan Bobcat Inc.		8,621,912	(678)	8,621,234	1,071,607
Doosan Fuel Cell Co., Ltd.		312,149	-	312,149	7,222
Others		78,154	(14,869)	63,285	(1,176)
Subtotal		16,617,676	(518,282)	16,099,394	1,244,889
Attributed to:					
Discontinued operations		(678,763)	427	(678,336)	(1,059)
Consolidation adjustments		(517,855)	517,855	-	(137,709)
Attributed to:					
Continuing operations	₩	15,421,058	-	15,421,058	1,106,121

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25. Segment information, Continued

(In millions of won)

(In millions of won)		2021				
		Sales	Intercompany sales(*1)	Net sales	Operating income (loss)	Net Profit (loss)
Enerbility	₩	5,856,777	(255,487)	5,601,290	262,170	287,668
Doosan Infracore Co., Ltd.		2,708,747	(5,709)	2,703,038	239,653	(69,731)
Doosan Bobcat Inc.		5,816,200	(831)	5,815,369	595,338	385,889
Doosan Engineering & Construction Co., Ltd.		1,398,624	(6,717)	1,391,907	83,321	7,263
Doosan Fuel Cell Co., Ltd.		309,429	-	309,429	17,674	12,955
Others		95,641	(14,053)	81,588	29,339	26,560
Subtotal		16,185,418	(282,797)	15,902,621	1,227,495	650,604
Attributed to:						
Discontinued operations		(4,925,578)	13,847	(4,911,731)	(344,488)	37,916
Consolidation adjustments		(268,950)	268,950	-	(13,644)	(219,158)
Attributed to:						
Continuing operations	₩	10,990,890	-	10,990,890	869,363	469,362

(*1) Intercompany sales include adjustment to discontinued operations of business segments of Doosan Infracore Co., Ltd. and Doosan Engineering & Construction Co., Ltd..

(3) Summarized financial information on assets and liabilities by business segments as of December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022		2021	
		Assets	Liabilities	Assets	Liabilities
Enerbility	₩	15,901,517	9,383,327	17,642,568	11,149,879
Doosan Bobcat Inc.		9,248,386	4,223,999	8,580,899	4,259,634
Doosan Fuel Cell Co., Ltd.		1,026,930	503,865	698,855	180,667
Others		544,639	110,924	415,344	116,214
Subtotal		26,721,472	14,222,115	27,337,666	15,706,394
Consolidation adjustments		(3,671,690)	(1,252,623)	(3,617,120)	(793,444)
Total	₩	23,049,782	12,969,492	23,720,546	14,912,950

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26. Revenue

(1) Revenue for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)		2022	2021
Revenue from contracts with customers			
Sales of goods	₩	8,928,343	6,125,510
Construction contracts		6,296,117	4,651,657
Others		195,863	192,305
Subtotal		15,420,323	10,969,472
Others			
Rental and others		126,004	86,885
Hedging losses		(125,269)	(65,467)
Subtotal		735	21,418
Total	₩	15,421,058	10,990,890

(2) Revenue from contracts with customers for the years ended December 31, 2022 and 2021 are disaggregated as follows.

(In millions of won)		2022						
		Doosan				Subtotal	Discontinued	Total
		Enerbility	Doosan Bobcat Inc.	Fuel Cell Co., Ltd.	Others			
Primary geographical market								
Domestic	₩	2,726,359	379,336	312,149	54,912	3,472,756	(11,607)	3,461,149
Americas		397,661	6,392,769	-	-	6,790,430	(31,984)	6,758,446
Asia		2,134,517	197,545	-	-	2,332,062	(28,274)	2,303,788
Middle East		978,158	121,780	-	-	1,099,938	(91,251)	1,008,687
Europe		965,486	1,184,025	-	-	2,149,511	(500,208)	1,649,303
Others		15,833	238,129	-	-	253,962	(15,012)	238,950
Total	₩	7,218,014	8,513,584	312,149	54,912	16,098,659	(678,336)	15,420,323
Timing of revenue recognition								
At a point in time	₩	303,797	8,478,451	206,242	54,912	9,043,402	-	9,043,402
Over time		6,914,217	35,133	105,907	-	7,055,257	(678,336)	6,376,921
Total	₩	7,218,014	8,513,584	312,149	54,912	16,098,659	(678,336)	15,420,323

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26. Revenue, Continued

(In millions of won)

		2021								
		Doosan Engineering & Construction Co., Ltd.					Doosan Fuel Cell Co., Ltd.			
		Doosan Enerbility Co., Ltd.	Doosan Infracore Co., Ltd.	Doosan Bobcat Inc.	Doosan & Construction Co., Ltd.	Doosan Fuel Cell Co., Ltd.	Others	Subtotal	Discontinued	Total
Primary geographical market										
Domestic	₩	2,384,161	1,190,309	205,548	1,356,093	309,429	56,098	5,501,638	(2,556,142)	2,945,496
Americas		224,228	237,129	4,123,944	-	-	25,490	4,610,791	(269,603)	4,341,188
Asia		1,570,163	870,821	157,390	35,813	-	-	2,634,187	(953,613)	1,680,574
Middle East		462,243	-	93,709	-	-	-	555,952	(77,067)	478,885
Europe		960,432	404,779	1,016,346	-	-	-	2,381,557	(1,000,443)	1,381,114
Others		56,001	-	141,077	-	-	-	197,078	(54,863)	142,215
Total	₩	5,657,228	2,703,038	5,738,014	1,391,906	309,429	81,588	15,881,203	(4,911,731)	10,969,472
Timing of revenue recognition										
At a point in time	₩	205,882	2,594,996	5,700,666	13,124	236,396	81,588	8,832,652	(2,608,121)	6,224,531
Over time		5,451,346	108,042	37,348	1,378,782	73,033	-	7,048,551	(2,303,610)	4,744,941
Total	₩	5,657,228	2,703,038	5,738,014	1,391,906	309,429	81,588	15,881,203	(4,911,731)	10,969,472

(3) Contract balances

The following table provides information about receivables, contract assets and contract liabilities from contracts with customers as of December 31, 2022 and 2021.

(In millions of won)

	2022	2021
Receivables, which are included in 'trade and other receivables'	₩ 1,873,400	1,171,819
Contract assets	1,292,014	1,750,115
Contract liabilities	2,087,353	1,707,778

The contract assets primarily relate to the Group's rights to consideration for work completed but not billed at the reporting date. The contract assets are transferred to receivables when the rights become unconditional. The contract liabilities primarily relate to the advance consideration received from customers for construction, for which revenue is recognized over time.

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26. Revenue, Continued

(4) Changes in transaction price for construction contract allocated to the performance obligations satisfied over time for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022			
	Project name	January 1	Increase (Decrease)	Revenue recognized	December 31
Enerbility	Vung Ang II Power Project and others	₩ 15,479,029	5,438,164	6,914,217	14,002,976
Doosan Fuel Cell Co., Ltd.	Operational services on consignment	1,392,305	230,691	105,907	1,517,089
Doosan Bobcat Inc.	Extended warranty and others	206,241	140,146	35,133	311,254
	Subtotal	17,077,575	5,809,001	7,055,257	15,831,319
	Internal transaction	-	-	-	-
	Attributed to: Discontinued operations	(1,313,209)	634,873	(678,336)	-
	Total	₩ 15,764,366	6,443,874	6,376,921	15,831,319

(In millions of won)

		2021			
	Project name	January 1	Increase (Decrease)	Revenue recognized	December 31
Enerbility	Vung Ang II Power Project and others	₩ 14,023,501	6,906,874	5,451,346	15,479,029
Doosan Engineering & Construction Co., Ltd.	Bumil integrated district 3 and others	7,050,375	(5,669,260)	1,381,115	-
Doosan Fuel Cell Co., Ltd.	Operational services on consignment	-	1,465,338	73,033	1,392,305
Doosan Infracore Co., Ltd.	Extended warranty and others	27,286	80,756	108,042	-
Doosan Bobcat Inc.	Extended warranty and others	186,931	56,658	37,348	206,241
	Subtotal	21,288,093	2,840,366	7,050,884	17,077,575
	Internal transaction	(74,239)	71,906	(2,333)	-
	Attributed to: Discontinued operations	(8,390,597)	4,773,778	(2,303,610)	(1,313,209)
	Total	₩ 12,823,257	7,686,050	4,744,941	15,764,366

(5) The Group shall recognize as an asset for the incremental costs of obtaining a contract with a customer that is, agent fee if the Group expects to recover those costs.

(In millions of won)

	2022	2021
Incremental costs of obtaining a contract with a customer recognized as an asset	₩ 23,547	39,743
The amount of amortization recognized as cost of sales	24,356	12,699

An asset recognized in accordance with above shall be amortized on the same basis that revenue is recognized over time based on the percentage-of-completion of the specific contract concerned.

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26. Revenue, Continued

(6) The Group shall recognize an asset from the costs incurred to fulfill a contract if those costs relate directly to a contract or to an anticipated contract the Group can specifically identify. The Group believes that these costs generate or enhance resources of the Group that will be used in satisfying performance obligations in the future and are expected to be recovered.

(In millions of won)

	2022	2021
Costs incurred to fulfill a contract recognized as an asset	₩ 143,481	152,344
The amount of amortization recognized as cost of sales	92,614	28,125

An asset recognized in accordance with above shall be amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the asset relates.

(7) Changes in profit or loss in current and future reporting periods and the book value of due from (to) customers for contracts work (excluding foreign currency translation effect) resulting from provision for construction loss, changes in total contract revenue and in total estimated contract costs for construction contracts in progress as of December 31, 2022 are as follows:

(In millions of won)

	Provision for construction loss	Changes in total contract revenue	Changes in total contract cost	Effect on profit (loss) for the period	Effect on profit (loss) for the future	Changes in due from (to) customer for contract work
Enerbility	₩ 99,573	970,296	855,952	188,475	(74,131)	188,475

Impacts on current and future profit (loss) were calculated based on total contract revenue and costs which were estimated based on the current circumstances as of December 31, 2022. Those estimations may change in the future.

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26. Revenue, Continued

(8) As of December 31, 2022, details of contracts that the revenue was recognized based on the percentage-of-completion measured by input method, and whose contract revenue is more than 5% of sales of the year ended December 31, 2021 are as follows. There is no contract that the Group decided not to disclose due to the prohibition by related regulations or contracts.

(In millions of won)

	Contract date	Due date / Delivery date(*1)	Percentage-of-completion (%)		Due from customers for contract work		Trade receivables (receivables from construction contract)	
					Gross amounts	Accumulated impairment losses	Gross amounts	Allowance for doubtful accounts
Saeul #1,2 main equipment construction (*2)	Mar-09-07	Dec-31-21	99.86	₩	-	-	-	-
Saeul #3,4 main equipment construction (*2)	Jun-12-15	May-28-25	86.27		93,157	717	-	-
Shinhanul #1,2 NSSS	Jul-31-09	Sep-30-23	97.55		-	-	-	-
UAE BNPP #1,2 T/G	Jun-30-10	Mar-01-22	95.48		-	-	-	-
UAE BNPP #1,2 NSSS	Jun-30-10	Jul-31-22	97.16		-	-	-	-
Saeul #3,4 NSSS (*2)	Aug-28-14	Mar-31-25	89.06		73,922	569	-	-
UAE BNPP #3,4 NSSS	Jun-30-10	Jun-30-24	96.93		20,018	154	-	-
UAE BNPP #3,4 T/G	Sep-27-11	Jun-30-24	93.01		506	4	-	-
Shinboryung #1, 2 Boiler	Oct-22-13	Feb-28-22	100		-	-	-	-
Vinh Tan 4 TPP	Feb-26-14	Oct-31-21	99.64		20,082	155	24,403	4,881
Gangneung Anin #1, 2 Boiler	Mar-31-15	Mar-15-23	93.57		-	-	-	-
Song Hau1	Apr-10-15	Mar-31-22	96.20		-	-	-	-
Goseong Hai #1, 2 Boiler	Dec-27-16	Aug-15-22	98.53		-	-	370	3
Vinh Tan 4 Extension	Mar-10-16	Aug-31-21	99.74		-	-	5,769	1,823
Nghi Son 2	Dec-24-14	Jul-10-22	98.56		-	-	26,928	-
Samcheok #1,2 EPC	Jul-24-18	Apr-30-24	81.98		99,544	766	-	-
Van Phong 1	Aug-26-19	Dec-25-23	79.22		-	-	12,345	95
Yanbu ph.3 MSF	Dec-04-12	Dec-31-22	99.72		-	-	-	-
Shoaiba RO Ph.4	Mar-29-17	Dec-03-21	96.14		58,532	451	17,820	137
Jawa #9,10	Mar-20-19	Feb-15-25	60.85		150,112	1,156	2,972	9
Suncheon Wangji 2	Apr-24-19	Jun-30-24	27.09		-	-	-	-
Yanbu 4 IWP	Jan-22-21	Nov-01-23	59.17		-	-	29,589	228
Dangjin 1st phase #1~4 storage tank	Jul-23-21	Dec-31-25	27.02		27,056	208	-	-
Vung Ang II Power Project	Oct-26-21	Oct-26-25	19.32		-	-	36,985	285
Tuwaig casting and forging project	Feb-10-22	Jan-15-25	12.82		-	-	32,430	250
Guam Ukudu CAPP	Dec-18-20	Oct-31-24	35.53		25,340	195	8,193	63
Shuaibah 3 IWP	Aug-19-22	May-20-25	4.02		-	-	9,488	73
El-Dabaa NPP	Nov-09-22	April-08-29	0.03		460	4	-	-
Jawaharpur	Dec-22-16	Jun-30-23	90.91		57,419	-	11,387	237
Obra C	Dec-22-16	Jun-30-23	83.53		23,027	-	19,939	127

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26. Revenue, Continued

(*1) Date being negotiated to extend contract period with respective contract party or due date/delivery date in contract.

(*2) In 2022, ShinGori #3,4 was renamed Saeul #1,2, and ShinGori #5,6 was renamed Saeul #3,4.

(9) Customers accounting for 10% or more of the Company's revenue for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Company group A	₩	1,655,292	1,356,216

27. Expenses classified by nature

Expenses (cost of sales, selling and administrative expenses) classified by nature for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Changes in inventories	₩	(693,092)	(451,276)
Purchases of raw materials and goods		8,683,252	6,052,749
Salaries		1,816,645	1,485,654
Depreciation and amortization		463,640	424,454
Others		4,044,492	2,609,946
Total	₩	14,314,937	10,121,527

28. Selling and administrative expenses

Selling and administrative expenses for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Salaries	₩	438,411	358,792
Post-Employment benefits		44,159	10,840
Employee welfare benefits		79,673	62,893
Travel		34,150	15,574
Training		18,707	7,353
Taxes and dues		18,470	15,974
Commissions		204,620	153,258
Sales commissions		32,471	18,869
Rents		13,665	6,420
Bad debt expenses		18,102	12,561
Transportation and warehousing		7,384	5,863
Depreciation		54,476	48,091
Amortization		56,571	46,725
Research		187,446	127,387
Expansion expenses of overseas market		13,160	10,986
Advertising		98,011	51,009
Warranty		24,225	1,422
Provision for loss compensation (reversal)		530	(62,225)
Others		105,525	72,601
Total	₩	1,449,756	964,393

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29. Finance income and expenses

(1) Finance income for the years ended December 31, 2022 and 2021 are summarized as follows:

<i>(In millions of won)</i>		2022	2021
Interest income	₩	19,214	11,963
Dividend income		3,811	1,602
Gain on foreign currency transaction		304,058	107,165
Gain on foreign currency translation		117,591	103,795
Gain on settlement of derivative financial instruments		139,537	245,675
Gain on valuation of derivative financial instruments		95,346	100,135
Gain on valuation of firm commitments		67,459	117,275
Others		-	3,871
Total	₩	<u>747,016</u>	<u>691,481</u>

(2) Finance expenses for the years ended December 31, 2022 and 2021 are summarized as follows:

<i>(In millions of won)</i>		2022	2021
Interest expenses	₩	260,038	282,860
Loss on foreign currency transaction		339,591	111,256
Loss on foreign currency translation		291,227	186,061
Loss on settlement of derivative financial instruments		100,948	76,199
Loss on valuation of derivative financial instruments		96,296	240,395
Loss on valuation of firm commitments		54,165	7,665
Loss on redemption of borrowings		10,331	-
Loss on redemption of bonds		15,707	-
Loss on financial guarantee		54,515	66,718
Others		1,801	323
Total	₩	<u>1,224,619</u>	<u>971,477</u>

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30. Other non-operating income and expenses

(1) Other non-operating income for the years ended December 31, 2022 and 2021 are summarized as follows:

<i>(In millions of won)</i>		2022	2021
Gain on disposal of property, plant and equipment	₩	3,507	1,682
Gain on disposal of assets held for sale		1,762	19
Reversal of impairment loss on property, plant and equipment		-	43
Reversal of impairment loss on intangible assets		-	96
Gain on disposal of non-current assets held for sale		18,524	21,383
Gain on disposal of short and long-term financial assets		4,978	-
Gain on valuation of short and long-term financial assets		24,126	21,845
Commissions income		1,912	1,714
Gain on disposal of investment in associates		4,754	49
Gain on business transfer		10,788	-
Miscellaneous gain and others		88,293	18,972
Total	₩	<u>158,644</u>	<u>65,803</u>

(2) Other non-operating expenses for the years ended December 31, 2022 and 2021 are summarized as follows:

<i>(In millions of won)</i>		2022	2021
Loss on disposal of trade receivables	₩	7,837	5,930
Loss on disposal of property, plant and equipment		3,913	1,537
Other bad debt expenses		12,815	2,560
Impairment loss of property, plant and equipment		17,979	1,435
Impairment loss of intangible assets		486,537	25,865
Impairment loss of assets held for sale		340	2,487
Loss on valuation of short and long-term investment in securities		7,641	31,168
Loss on disposal of assets held for sale		5,206	2,934
Donations		12,394	2,671
Impairment loss on investment in associates		116,625	-
Miscellaneous loss and others		71,869	34,728
Total	₩	<u>743,156</u>	<u>111,315</u>

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31. Income tax expense

(1) The component of income tax expense for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Current income tax expense	₩ 339,392	157,777
Adjustments in respect of current income tax of prior year	(12,711)	3,358
Tax effect of temporary difference	(143,805)	337,568
Total income tax expense	182,876	498,703
Current income tax related to items recognized in equity during the year	1,947	(3,745)
Deferred tax related to items recognized in equity during the year	(32,630)	(168,785)
Income tax benefit related to discontinued operation	10,310	(152,842)
Others	(15,506)	(78,765)
Income tax expense	₩ 146,997	94,566

(2) The component of income tax and deferred tax related to items recognized in equity for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Loss on revaluation of assets	₩ 23,849	(57,533)
Loss on valuation of FVOCI	1,591	(3,385)
Loss on valuation of derivative financial instruments	(1,155)	(3,065)
Remeasurements of defined benefit liabilities	(44,516)	(24,059)
Others	(10,452)	(84,488)
Total	₩ (30,683)	(172,530)

(3) Changes in deferred tax assets (liabilities) for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	
	January 1	Change
Provision for retirement and severance benefits	₩ 175,682	(39,879)
Allowance for doubtful accounts	300,664	9,304
Property, plant and equipment	(28,144)	(11,036)
Reserve for research and human resource	(25,015)	34,337
Intangible assets	(469,599)	(18,355)
Derivative financial instruments	29,865	(43,246)
Foreign currency denominated assets	3,870	7,667
Gain (loss) on revaluation of assets	(529,677)	8,760
Others	313,097	196,253
Total	₩ (229,257)	143,805

(In millions of won)

	2021	
	January 1	Change
Provision for retirement and severance benefits	₩ 226,113	(50,431)
Allowance for doubtful accounts	483,065	(182,401)
Property, plant and equipment	22,889	(51,033)
Reserve for research and human resource	-	(25,015)
Intangible assets	81,154	(550,753)
Derivative financial instruments	(9,983)	39,848
Foreign currency denominated assets	2,720	1,150
Gain (loss) on revaluation of assets	(684,349)	154,672
Others	(13,298)	326,395
Total	₩ 108,311	(337,568)

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31. Income tax expense, Continued

(4) The amount of deductible temporary differences for which no deferred tax asset is recognized in the statements of financial position as of December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Deductible temporary differences	₩	3,139,341	2,675,620
Deferred accumulated deficit		22,799	214,584
Deferred tax credit carried forward		52,095	35,173
Total	₩	<u>3,214,235</u>	<u>2,925,377</u>

The probability of deferred tax assets being realized depends on the Group's ability to generate taxable income in future years over which temporary differences are expected to reverse depending on the economic situation, industry forecast and other various factors. The Group periodically reviews such matters.

(5) Temporary differences related to investment in subsidiaries, associates and joint ventures which are not recognized as deferred tax asset (liability) as of December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Investment in subsidiaries	₩	(46,484)	(436,391)
Investment in associates or joint ventures		961,467	1,737,016
Total	₩	<u>914,983</u>	<u>1,300,625</u>

(6) Reconciliation of profit (loss) before income tax at the statutory tax rate to income tax expense at the effective income tax rate of the Group for the years ended December 31, 2022 and 2021 are as follows:

<i>(In millions of won)</i>		2022	2021
Profit (loss) before income tax	₩	(186,479)	563,927
Income tax expense (benefit) using the statutory tax rate		28,711	178,891
Adjustments:			
Permanent differences		52,355	(95,429)
Unrecognized deferred tax related to temporary differences		105,573	(26,546)
Tax credit		(34,921)	(9,491)
Others		(4,721)	47,141
Income tax expense	₩	<u>146,997</u>	<u>94,566</u>
Effective tax rate (Income tax benefit (expense)/ Profit (loss) before income tax)(*1)		-	16.77%

(*1) Effective tax rate for the year ended December 31, 2022 was not calculated due to loss before income tax.

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32. Earnings (loss) per share

(1) Basic earnings (loss) per share

Basic earnings (loss) per share attributable to the owners of the Company for the years ended December 31, 2022 and 2021 are as follows:

<i>(In won, except for share)</i>	2022	2021
Profit (loss) for the period attributable to the owners of the Company	₩ (772,492,598,021)	495,274,322,486
Profit (loss) from continuing operations	(652,819,503,893)	270,650,569,606
Profit (loss) from discontinued operations	(119,673,094,128)	224,623,752,880
Weighted-average number of ordinary shares at the end of period	618,313,654 shares	454,191,535 shares
Earnings (loss) per share:		
Basic earnings (loss) per share	₩ (1,249)	1,090
Continuing operations	₩ (1,056)	596
Discontinued operations	(193)	494

Weighted-average number of ordinary shares for the years ended December 31, 2022 and 2021 are as follows:

<i>(In shares)</i>	2022	2021
Issued ordinary shares at the beginning of the period(*1)	522,124,808	374,622,926
Acquisition of treasury stock	-	(37,072)
Disposition of treasury stock	-	300
Issuance of ordinary shares	71,974,546	35,915,737
Exercise of bonds with stock warrants	24,214,300	6,217,021
Issuance of ordinary shares related to spin-off and merger	-	37,472,623
Weighted-average number of ordinary shares at the end of period	618,313,654	454,191,535

(*1) The number of shares is net of treasury stocks.

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32. Earnings (loss) per share, Continued

(2) Diluted earnings (loss) per share

Diluted earnings (loss) per share attributable to the owners of the Company for the years ended December 31, 2022 and 2021 are as follows:

<i>(In won, except for share)</i>	2022	2021
Profit (loss) for the period before adjustment	₩ (772,492,598,021)	495,274,322,486
Adjustment	-	70,059,146
Profit (loss) for the period after adjustment	(772,492,598,021)	495,344,381,632
Profit (loss) from continuing operations	(652,819,503,893)	270,720,628,752
Profit (loss) from discontinued operations	(119,673,094,128)	224,623,752,880
Weighted-average number of ordinary shares at the end of the period after adjustment	618,313,654 shares	462,933,245 shares
Diluted earnings (loss) per share	₩ (1,249)	1,070
Continuing operations	₩ (1,056)	585
Discontinued operations	(193)	485

Weighted-average number of ordinary shares after adjustment for diluted earnings (loss) for the years ended December 31, 2022 and 2021 are as follows:

<i>(In shares)</i>	2022	2021
Weighted-average number of ordinary shares at the end of the period before adjustment	618,313,654	454,191,535
Adjustment: bonds with stock warrants	-	6,110,110
Adjustment: stock warrants	-	2,160,125
Adjustment: convertible bonds	-	471,475
Weighted-average number of ordinary shares at the end of the period after adjustment	618,313,654	462,933,245

Details of potential ordinary shares that are potentially dilutive but were not included in the calculation of earnings (loss) per share, as there were no dilutive effects for the years ended December 31, 2022 and 2021 are as follows:

<i>(In shares)</i>	2022	2021
Stock option (Mar 30, 2012)	-	21,083
Stock option (Mar 29, 2013)	14,565	29,657
Stock option (Mar 21, 2014)	5,851	17,082
Stock option (Mar 28, 2014)	20,800	29,600
Bonds with stock warrants	2,253,113	-
Total	2,294,329	97,422

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33. Commitments and contingencies

(1) Pledged check

As of December 31, 2022, 3 blank checks (regarding the ₩5,256 million funds replenishing requirement) have been provided as collateral to Gyeonggi East-West Beltway Co. in relation to Bongdam-Songsan Expressway construction project.

(2) Financial commitments

- 1) As of December 31, 2022, the Group has credit lines for borrowings, bank overdrafts and other financial needs from financial institutions up to ₩4,357,099 million and used ₩2,902,251 million, leaving unused credit lines amounting to ₩1,454,848 million.
- 2) As of December 31, 2022, the Company has entered into a capital supplement agreement with Woori Bank of ₩ 84,638 million, equivalent to the amount of loan provided to Doosan Mecatec Co., Ltd., according to the terms and conditions of the Doosan Mecatec Co., Ltd. stock purchase agreement.
- 3) As of December 31, 2022, the Company issued foreign currency-denominated bonds of USD 300,000 thousand. In accordance with the agreement for this bond, an early redemption clause exists for when the guarantor, KDB, is no longer controlled by Korean government. In addition, the Company has provided its 13,884,989 shares of Doosan Bobcat Inc. to lenders as collateral for the above bond. And if the total value of the shares provided is less than the collateral standard price, additional shares or deposits equivalent to the difference amounts should be provided.
- 4) As of December 31, 2022, the Company has provided 2,954,548 shares of Doosan Bobcat Inc. as collateral for long-term borrowings of ₩55,000 million from KDB and 2 other financial institutions. In relation to the borrowings, if the ratio does not meet the certain collateral limit predetermined in the agreement, additional shares or deposits must be provided as collateral. In addition, if the Company receives a long-term credit rating of BB0 or lower from two or more than two of the domestic credit rating agencies (Nice Investors Service Co., Ltd., Korea Investors Service, Inc. and Korea Ratings Corporation), it will trigger the financial institutions to collect the loans before the maturity.
- 5) As of December 31, 2022, the Company has provided 3,650,000 shares of Doosan Bobcat Inc. as collateral for borrowings of ₩100,000 million from SC Bank. In relation to the borrowings, if the ratio does not meet the certain collateral limit predetermined in the agreement, either shares or deposits equivalent to the difference amounts must be provided as collateral or some loans must be redeemed early.
- 6) As of December 31, 2022, the 59th and 60th convertible bonds of ₩23,374 million issued by the Company include a clause to maintain the credit rating at BB0 or higher and the covenant constitutes reasons for the financial institutions to collect the loans before the maturity, if otherwise.

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33. Commitments and contingencies, Continued

- 7) As of December 31, 2022, the Company has provided 5,500,000 shares of Doosan Bobcat Inc. and 20,780,229 shares of Doosan Fuel Cell Co., Ltd. as collateral for long-term borrowings of ₩500,000 million from NH Investment & Securities Co., Ltd. and others and 72nd privately placed bond of ₩100,000 million. In relation to the borrowings, if the ratio does not meet the certain collateral limit predetermined in the agreement, either shares or deposits equivalent to the difference amounts must be provided as collateral. In addition, if the Company receives a long-term credit rating of BB+ or lower or short-term credit rating of B+ or lower from one or more than one of the domestic credit rating agencies (Nice Investors Service Co., Ltd., Korea Investors Service, Inc. and Korea Ratings Corporation), an acceleration clause would be invoked for the immediate payment.
- 8) As of December 31, 2022, the 73rd public offering bond of ₩80,000 million and the 74th public offering bond of ₩80,000 million issued by the Company include the covenant requiring the Company to maintain a debt-to-equity ratio less than 700% and if the Company fails to meet the certain requirements, an acceleration clause would be invoked for immediate payment.
- 9) As of December 31, 2022, the Company has provided 4,800,000 shares of Doosan Bobcat Inc. as collateral for a loan facility of ₩80,000 million from Korea Securities Finance. According to the agreement, if the ratio does not meet the certain collateral limit predetermined in the agreement, either shares or deposits equivalent to the difference amounts must be provided as collateral or some loans must be redeemed early.
- 10) As of December 31, 2022, the Company has provided 600,000 shares of Doosan Bobcat Inc. as collateral for borrowings of ₩10,000 million from Shinhan Investment Corp. According to the borrowing covenant, if the ratio does not meet the certain collateral limit predetermined in the agreement, either shares or deposits equivalent to the difference amounts must be provided as collateral or some loans must be redeemed early.
- 11) As of December 31, 2022, the Company has provided 2,000,000 shares of Doosan Fuel Cell Co., Ltd. as collateral for loan facility of ₩50,000 million from SC Bank. According to the agreement, if the ratio does not meet the certain collateral limit predetermined in the agreement, either shares or deposits equivalent to the difference amounts must be provided as collateral or some loans must be redeemed early.
- 12) As of December 31, 2022, the Company has provided 11,100,000 shares of Doosan Bobcat Inc. as collateral for long-term borrowings of ₩250,000 million from KDB and 3 other financial institutions. In relation to the borrowings, if the ratio does not meet the certain collateral limit predetermined in the agreement, additional shares or deposits must be provided as collateral. In addition, in case the Company receives a long-term credit rating of BB0 or lower from two or more than two of the domestic credit rating agencies (Nice Investors Service Co., Ltd., Korea Investors Service, Inc. and Korea Ratings Corporation), it will trigger the financial institutions to collect the loans before the maturity.

(3) Pending litigations and others

As of December 31, 2022, the Group is involved in pending lawsuits as a defendant with total claims against the Group amounting to approximately ₩101,819 million and the outcome is currently unpredictable.

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33. Commitments and contingencies, Continued

(4) Technical contract

As of December 31, 2022, the Company has entered into 18 technical contracts with Mitsubishi Hitachi Power System, Ltd. and others, which have been effective from April 12, 2007 to September 4, 2035. For the years ended December 31, 2022 and 2021, royalty payments amounted to ₩ 21,831 million and ₩ 18,020 million, respectively.

(5) Guarantees of payment provided by third parties

As of December 31, 2022, payment guarantees by financial institutions amounting to ₩ 8,894,578 million are provided for the Group in connection with domestic and overseas construction projects and others.

(6) Guarantees of payment provided to the third parties

1) As of December 31, 2022, the Group provides payment guarantees and joint guarantees amounting to ₩279,943 million and ₩91,000 million, respectively, to subcontractors and customers for domestic and overseas business purposes.

2) As of December 31, 2022, the Company and Doosan Fuel Cell Co., Ltd., a subsidiary, have provided a guarantee of payments amounting to ₩16,987 million and ₩10,876 million, respectively, to Employee Stock Ownership Association for the purpose of member loan guarantee.

(7) Guarantees of payment and collateral provided to the related party

As of December 31, 2022, the Company provides payment guarantee amounted to ₩10,459 million to Doosan Engineering & Construction Co., Ltd., its associates.

(8) Other commitments and contingencies

1) As of December 31, 2022, the Company has entered into contracts to assume a liability (limit: ₩ 296,475 million) if it fails to complete construction of 3rd apartment units in Yangsan Deokgye, 5th apartment units in Yangsan Deokgye, Suncheon city development project, Dapsimni officetel development project and Suwon Mangpo knowledge industry center.

2) As of December 31, 2022, the Group entered into invest agreements with ZIGG CAPITAL I, L.P and other 8 funds, and the total remaining amounts of agreements are USD 1,869 thousand.

3) The Group signed a new lease contract with BUNDANG DOOSAN TOWER REIT Co., Ltd. for 5 years on January 8, 2021 in conjunction with Doosan Corp. and Hyundai Doosan Infracore Co., Ltd. (formerly, Doosan Infracore Co., Ltd.). As Hyundai Doosan Infracore Co., Ltd. withdrew from the lease agreement on December 31, 2022, the Company took over the related status and rights and obligations. In accordance with above contracts, the Group jointly has lease obligations. If certain condition of the lease contract is not met, the contract will be extended once for 5 years under the same conditions. In addition, the sublease of the real estate is jointly performed by the Group, Doosan Corp. and each party has the right to the rental income to the extent applicable excluding the self-lease and related expenses.

4) The Group accounts for the above-mentioned 3) joint lease contract as joint operation in which the parties jointly control the lease arrangement also have the right to assets and liabilities of the leased asset in accordance to K-IFRS No. 1111 'Joint Arrangements.' As of December 31, 2022, the Group's participating rate is 93.3%.

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33. Commitments and contingencies, Continued

- 5) Before prior year, the Company and financial investors, NuScale Korea and others, acquired preferred shares of NuScale Power LLC. As of December 31, 2022, the Company has provided a put option contract that could only be exercised under the certain conditions of non-compliance in relation to the preferred shares (USD 12,605 thousand) acquired by NuScale Korea and others.
- 6) As of December 31, 2022, the Company is an investor of Samcheok Blue Power Co., Ltd. which is responsible for the EPC construction project of Samcheok #1, 2 TPP, and obligated to make an additional investment of ₩77,740 million in September 2023 in accordance with the investor agreement. To fulfill this obligation, the Company agreed to deposit a certain percentage of the construction collection amount into Samcheok Blue Power Co., Ltd.'s account from November 2020 to June 2022. Meanwhile, the deposit has been refunded as of the end of December 31, 2022, because the Company granted a credit rating of BBB0 (Stable) by two or more credit rating agencies, and reason for exemption of the reserve obligation occurred.
- 7) Doosan Fuel Cell Co., Ltd., a subsidiary, has joint liability to pay the debt before the spin-off with Doosan Corp. and contingent tax liabilities may arise due to joint tax payment obligation.
- 8) Doosan Bobcat Inc., a subsidiary, has succeeded to the joint liability for financial and operating liabilities of Doosan Industrial Vehicle Co., Ltd. and Doosan Corp in relation to business combination with Doosan Industrial Vehicle Co., Ltd, and judged that the possibility of an outflow of resources is remote.
- 9) Clark Equipment Co., Doosan Bobcat EMEA s.r.o and others, subsidiaries of Doosan Bobcat Inc., have entered into a Supply Chain Financing agreement and recognized USD 50,054 thousand as trade payables.
- 10) Daesan Green Energy Co., Ltd., an associate of Doosan Fuel Cell Co., Ltd. which is a subsidiary, has entered into a loan agreement with financial institutions including KDB and others. In this regards, investors of Daesan Green Energy Co., Ltd. including Doosan Fuel Cell Co., Ltd. and other shareholders have entered into an investor agreement with the financial institutions. The agreement states that if net operating cash inflow of Daesan Green Energy Co. does not meet the risk-sharing level, each of them is obligated to replenish the insufficient amount according to their respective investment shares. Accordingly, if Doosan Fuel Cell Co., Ltd. is obligated to fulfill the settlement according to the settlement agreement signed by Daesan Green Energy Co., Ltd. with other investors, Doosan Fuel Cell Co., Ltd. should fulfill either one of the following methods : providing cash, executing subordinated loans, or not receiving its payment. In connection with the above supplemental funding agreement, ₩ 1,004 million of funds were loaned to Daesan Green Energy Co., Ltd. during the current period.
- 11) The Company compensates for the shortfall to the extent of the recoverable amount from Doosan Engineering & Construction Co., Ltd. stock (ownership 46.35%) if final distribution amount of the sales price of Doosan Engineering & Construction Co., Ltd. stock (ownership 53.65%) held by The Zenith holdings Ltd. has not met the investment capital of the investors (excluding 2018 QCP No. 13 Private Equity Joint venture, the representative PEF).

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34. Assets pledged as collateral

(1) Assets pledged as collateral related with debt

1) As of December 31, 2022, assets that have been pledged as collateral for the Group's borrowings and others are as follows:

(In millions of won)

Pledger	Collateralized asset	Collateralized amount	Amount of borrowings and others	Pledgee
Enerbility	Property, plant and equipment(*1)	₩ 1,248,389	948,972	KDB and others
	Shares of subsidiaries and equity shares(*1,2)	2,400,037	1,733,542	KDB and others
	Subtotal	3,648,426	2,682,514	
Doosan	Property, plant and equipment	95,604	64,510	Shinhan Bank and others
Bobcat Inc.	Inventories	224,557	16,267	WELLS FARGO BANK
	Equity shares	135	-	Machinery Financial Cooperative
	Subtotal	320,296	80,777	
Doosan CuveX Co., Ltd.	The rights to the benefits(*3)	24,152	20,000	Woori Bank
Doosan Fuel Cell Co., Ltd.	Property, plant and equipment	60,000	50,000	KDB
	Total	₩ 4,052,874	2,833,291	

(*1) As of December 31, 2022, in accordance with bond, borrowing, and borrowing covenant held by the Company, 42,489,537 shares of Doosan Bobcat Inc., a subsidiary of the Company, 22,780,229 shares of Doosan Fuel Cell Co., Ltd., a subsidiary of the Company, land and others are provided as collateral (See Note 33).

(*2) As of December 31, 2022, in relation to guarantee payment of the Company, 50,000,000 shares of Doosan Engineering & Construction Co., Ltd., an associate of the Company, are provided as collateral.

(*3) The rights to the benefits from real estate collateral trust related to property, plant and equipment.

2) Clark Equipment Co. ("CEC"), a subsidiary of Doosan Bobcat Inc., entered into a loan agreement to borrow USD 850,000 thousand and Credit line agreement of USD 595,000 thousand on April 20, 2022. The Group has provided the entire shares of CEC as collateral for borrowings, and Credit line agreement. Also, main property, plant and equipment, intangible assets and investment in subsidiaries of CEC have been provided as collateral. As of December 31, 2022, the relevant balance of borrowings is USD 893,625 thousand and the total collateral amount is USD 2,016,907 thousand.

3) Doosan Industrial Vehicle Co., Ltd. and its subsidiaries have provided property, plant and equipment and others as collateral for borrowings and credit line agreement, and related amount of the borrowings is USD 63,739 thousand as of December 31, 2022.

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34. Assets pledged as collateral, Continued

(2) Other Assets pledged as collateral

1) As of December 31, 2022, assets pledged as collateral on behalf of others are summarized as follows:

(In millions of won)

Pledger	Collateralized asset	Book value	Pledgee	Beneficiary
The company	Long-term investment securities and others (*1)	₩ 1,424	Kookmin Bank and others	Gyeonggi East-West Beltway Co.
Doosan Fuel Cell Co., Ltd.	Investments in associates	2,476	KDB	Daesan Green Energy Co., Ltd.
	Total	₩ 3,900		

(*1) As of December 31, 2022, among the long-term investments in securities of the Company, the shares of Gyeonggi East-West Beltway Co. have been provided as collateral for the project financing of the entity.

2) As of December 31, 2022, the Company has entered into a contract of completion guarantee regarding the Changwon hydrogen liquefaction plant and provided 1,400,000 shares of Hychangwon Co., Ltd. with the book value of ₩7,013 million as collateral for the project financing of the entity and established the right of pledge to Kyongnam Bank (PF syndicate).

3) As of December 31, 2022, the Company has entered into a contract of completion guarantee regarding the EPC construction project of Samcheok #1,2 TPP and provided 1,193,066 shares (the book value of ₩31,876 million) of Samcheok Blue Power Co., Ltd. as collateral for the project financing of the entity and established the right of pledge to KDB (PF syndicate).

4) As of December 31, 2022, the Company has signed the export bond insurance limit contract (₩459,000 million) with Korea Export Insurance Corporation and provided part of the land, buildings, and machinery of the Changwon Plant (Collateralized amount: ₩420,000 million) and all shares of Doosan Power Systems S.A. held by the Company (Collateralized amount: GBP 293 million) as collateral.

5) As of December 31, 2022, the Company has provided 3,400,000 shares of Doosan Bobcat Inc., equivalent to the amount of Doosan Mecatec Co., Ltd.'s loan (₩ 20,116 million), to Korea Development Bank as collateral in accordance with the terms of the Doosan Mecatec Co., Ltd. stock purchase agreement.

6) As of December 31, 2022, the Company has provided ₩ 8,043 million of deposits to Korea Securities Finance Corp. as collateral regarding supplement member loan for stock acquisition of Employee Stock Ownership Association.

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35. Related party transactions

(1) The related parties of the Group and nature of their relationship with the Group as of December 31, 2022 are as follows:

- 1) As of December 31, 2022, the Group's ultimate parent company is Doosan Corp. (equity ownership: 30.51%).
- 2) As of December 31, 2022, the details of the Group's associates, joint ventures, and other related parties are as follows:

Control relationship	Related party
Associates and joint ventures(*2,7,8)	Samcheok Blue Power Co., Ltd., Daejung Offshore Wind Power Co., Ltd., Hychangwon Co., Ltd., Daesan Green Energy Co., Ltd., Prestolite Asia Ltd., Einstein AI, Inc., The Zenith holdings Ltd., Doosan Engineering & Construction Co., Ltd. and the subsidiaries, Tuwaiq Casting & Forging Company(*4), BUNDANG DOOSAN TOWER REIT Co., Ltd.(*9), The Weve Holdings Ltd.(*9), Multi-asset ESG Marine Wind Power Private Equity Fund 1 st (*4)
Other related parties	
Subsidiaries of the parent company(*1)	Oricom Inc., Hancom Co., Ltd., Doosan Bears Inc., Doosan Business Research Institute, Doosan Robotics Co., Ltd., Doosan Mobility Innovation Inc., Doosan Logistics Solutions Co., Ltd., Doosan Mobility Innovation (Shenzhen) Co., Ltd., Doosan Electro-Materials Singapore Pte Ltd., Doosan Hongkong Ltd., Doosan Electro-Materials (Shen Zhen) Limited., Doosan Shanghai Chemical Materials Co., Ltd., Doosan Electro-Materials (Changshu) Co., Ltd., Doosan Electro-Materials Vietnam Company Limited, Doosan 2nd Real Estate Securitization Specialty Co., Ltd., Doosan Digital Innovation America LLC., Doosan Digital Innovation China LLC(*10), Doosan Digital Innovation Europe Limited, Doosan Electro-Materials America, LLC, HyAxiom, Inc.(*3), Doosan Energy Solutions America, Inc., DESA Service, LLC, D pay 2nd Co., Ltd., Doosan H2 Innovation, Doosan Investment Co., Ltd.(*5), D-Pay 3 rd Co., Ltd.(*5), Doosan Tesna Inc.(*5), HyAxiom Motors Co., Ltd.(*5), NewstarBears Co., Ltd.(*5), Doosan Robotics America, LLC(*5) and others
Associates and joint ventures of the parent company	Protera SAS., Wise Fashion Co., Ltd., KDDI Korea Corporation, PT. SEGARA AKASA, Stathera IP Holding Inc., Sichuan Kelun-Doosan Biotechnology Company Limited, Mastern Professional Investment Type Private Security Investment Trust No.98, SiO2 Medical Products, Inc., Versogen Inc.(*5) and others
Others (*6)	Chung-Ang University, Chung-Ang University Hospital, Doosan Credit Union, Doosan Yonkang Foundation, Folletto Robotics Co.,Ltd.(*5), Won Sang Co., Ltd.(*5) and others

(*1) In 2022, Sunny Russel 8th Co., Ltd., was liquidated.

(*2) In 2022, The HS-City Expressway, Struction Site Inc., and Doosan Babcock W.L.L were disposed.

(*3) In 2022, The business name of the entity is changed from Doosan Fuel Cell America, Inc.to HyAxiom, Inc.

(*4) In 2022, Newly acquired.

(*5) In 2022, the entity is classified as other related party.

(*6) In 2022, THE PATH WITH YOU FOUNDATION has been excluded from scope of the other related party.

(*7) In 2022, ReCarbon Inc. has been excluded from the associates due to the disposal of Doosan Mecatec Co., Ltd.

(*8) Doosan Property Co., Ltd. was additionally acquired in 2022 and was reclassified to a subsidiary from an associate. Subsequently, Doosan Property Co., Ltd. was absorbed and merged with Doosan Cuvex Co., Ltd. and ceased to exist.

(*9) The entity is classified as an associate because Doosan Property Co., Ltd. is newly included in consolidation.

(*10) In 2022, The business name of the entity is changed from Doosan Information & Communications Beijing Co., Ltd. to Doosan Digital Innovation China LLC.

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35. Related party transactions, Continued

(2) Significant transactions with related parties

Significant transactions (excluding financial and investment) with related parties for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022						
	Sales and others			Purchases and others			
	Disposal of PP&E and intangible		Other revenue	Acquisition of PP&E and intangible			Acquisition of right-of- use assets
	Sales	assets		Purchase	assets	Other expense	
Parent:							
Doosan Corp.	₩ 10,768	-	4,183	82,813	837	83,114	92
Associates and joint ventures:							
Samcheok Blue Power Co., Ltd.	416,708	-	-	-	-	-	-
Hychangwon Co., Ltd.	53,696	-	-	-	-	-	-
Daesan Green Energy Co., Ltd.	14,523	-	-	-	-	43	-
Doosan Engineering & Construction Co., Ltd.	29,574	-	133	35	101	1,362	-
Tuwaig Casting & Forging Company	137,852	-	-	-	-	-	-
BUNDANG DOOSAN TOWER REIT Co., Ltd.	-	-	-	-	-	17,243	-
Others	821	-	-	-	-	-	-
Subtotal	653,174	-	133	35	101	18,648	-
Other related parties:							
Oricom Inc.	1,137	-	19	46	-	17,711	-
Doosan Bears Inc.	823	-	-	505	-	12,006	-
Doosan Digital Innovation America LLC	-	-	54	-	-	61,235	-
Doosan Business Research Institute	2,120	-	33	-	-	11,632	-
Chung-Ang University	-	-	-	841	-	7,838	-
Doosan Digital Innovation China LLC	-	-	-	-	-	1,485	-
Doosan Digital Innovation Europe Limited	-	-	65	-	-	20,950	-
HyAxiom, Inc.	45,482	-	2	160,645	-	-	-
Doosan H2 Innovation	46	5,558	-	-	-	-	-
Others	3,155	-	189	40	-	924	-
Subtotal	52,763	5,558	362	162,077	-	133,781	-
Total	₩ 716,705	5,558	4,678	244,925	938	235,543	92

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35. Related party transactions, Continued

(In millions of won)

	2021						
	Sales and others			Purchases and others			
	Disposal of			Acquisition			
	PP&E and			of PP&E and			
	Sales	intangible assets	Other revenue	Purchase	intangible assets	Other expense	Acquisition of right-of-use assets
Parent:							
Doosan Corp.	₩ 39,618	61	3,541	78,099	5,787	88,294	1,935
Associates and joint ventures:							
Doosan Property Co., Ltd.	10,091	-	4	-	-	-	-
Samcheok Blue Power Co., Ltd.	529,661	-	-	-	-	-	-
New Seoul Railroad Co., Ltd.(*1)	51,399	-	-	-	-	-	-
Incheon Fucell Co., Ltd.(*1)	46,544	-	-	-	-	-	-
Daesan Green Energy Co., Ltd.	10,875	-	-	-	-	32	-
Hychangwon Co., Ltd.	9,766	-	-	-	-	-	-
Others	54,946	-	-	1,445	-	1,263	-
Subtotal	713,282	-	4	1,445	-	1,295	-
Other related parties:							
Oricom Inc.	1,832	-	65	33	-	9,992	-
Doosan Bears Inc.	965	-	-	490	-	15,456	-
Doosan Digital Innovation America LLC	-	-	18	-	-	48,661	1,472
Doosan Business Research Institute	1,891	-	164	-	-	7,267	-
Chung-Ang University	-	-	-	-	-	5,924	-
Doosan Information & Communications Beijing Co., Ltd.	-	-	-	-	-	4,819	-
Doosan Digital Innovation Europe Limited	186	-	-	271	-	22,839	-
BUNDANG DOOSAN TOWER REIT Co., Ltd.	-	-	-	-	53,080	17,875	199,354
Doosan Fuel Cell America, Inc.	22,595	-	1	141,879	-	838	-
Others	2,803	-	300	5,130	48	2,293	-
Subtotal	30,272	-	548	147,803	53,128	135,964	200,826
Total	₩ 783,172	61	4,093	227,347	58,915	225,553	202,761

(*1) Excluded from the related parties during 2021 and the amounts represent transactions before the entities were excluded from the related parties.

Above transactions include amounts attributed to discontinued operations on the consolidated statements of profit or loss in 2022 and 2021.

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35. Related party transactions, Continued

(3) Significant balances related to the transactions with related parties

The outstanding receivables and payables arising from the transactions with related parties (excluding dividend and investment) as of December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022					
	Trade receivables	Receivables Loans receivables	Other receivables	Trade payables	Payables Other payables	Lease liabilities
Parent:						
Doosan Corp.	₩ 804	-	3,082	15,305	17,911	1,484
Associates and joint ventures:						
Hychangwon Co., Ltd.	4,070	-	-	-	9,313	-
Doosan Engineering & Construction Co., Ltd.	28,094	-	11,422	122	10,469	-
Daesan Green Energy Co., Ltd.	3,625	1,004	-	-	-	-
Samcheok Blue Power Co., Ltd.(*1)	-	-	99,581	-	-	-
Tuwaik Casting & Forging Company(*3)	32,430	-	-	-	201,223	-
BUNDANG DOOSAN TOWER REIT Co., Ltd.	-	-	20,215	-	-	175,181
Valuegrowth Co., Ltd.	50	-	-	-	-	-
Subtotal	68,269	1,004	131,218	122	221,005	175,181
Other related parties:						
Oricom Inc.	142	-	-	1,944	1,796	-
Doosan Digital Innovation Europe Limited	-	-	-	-	4,566	-
HyAxiom, Inc.(*2)	469	-	86,814	22,774	1,227	-
Others	544	-	4,975	849	3,115	1,355
Subtotal	1,155	-	91,789	25,567	10,704	1,355
Total	₩ 70,228	1,004	226,089	40,994	249,620	178,020

(*1) As of December 31, 2022, the Group has set an allowance for doubtful accounts of ₩766 million for receivables of Samcheok Blue Power Co., Ltd. and ₩951 million was recognized as reversal of allowance for doubtful accounts in 2022.

(*2) As of December 31, 2022, the Group has set an allowance for doubtful accounts of ₩6,255 million for receivables of HyAxiom, Inc. and ₩5,113 million was recognized as bad debt expenses in 2022.

(*3) As of December 31, 2022, the Group has set an allowance for doubtful accounts of ₩250 million for receivables of Tuwaik Casting & Forging Company and the same amount was recognized as bad debt expenses in 2022.

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35. Related party transactions, Continued

(In millions of won)

(in millions of won)

		2021						
		Receivables			Payables			
		Trade receivables	Loans receivables	Other receivables	Trade payables	Borrowings	Other payables	Lease liabilities
Parent:								
Doosan Corp.	₩	787	-	2,606	61,351	-	63,597	1,843
Associates and joint ventures:								
Doosan Property Co., Ltd.		-	-	-	-	-	42	-
Hychangwon Co., Ltd.		12,210	-	-	-	-	46,428	-
Doosan Engineering & Construction Co., Ltd.		5,895	-	11,133	122	-	20,332	-
Daesan Green Energy Co., Ltd.		3,625	-	-	-	-	4	-
Samcheok Blue Power Co., Ltd.(*1)		-	-	317,889	-	-	-	-
Subtotal		21,730	-	329,022	122	-	66,806	-
Other related parties:								
Oricom Inc.		140	-	51	-	-	4,839	-
Doosan Digital Innovation Europe Limited		104	-	-	230	-	13,375	-
BUNDANG DOOSAN TOWER REIT Co., Ltd.		-	-	17,499	-	-	-	161,693
Doosan Fuel Cell America, Inc.(*2)		79	-	80,379	4,827	-	4,988	-
Others		488	-	279	83	-	2,870	-
Subtotal		811	-	98,208	5,140	-	26,072	161,693
Total	₩	23,328	-	429,836	66,613	-	156,475	163,536

(*1) As of December 31, 2021, the Group has set an allowance for doubtful accounts of ₩1,717 million for receivables of Samcheok Blue Power Co., Ltd. and the same amount was recognized as bad debt expenses in 2021.

(*2) As of December 31, 2021, the Group has set an allowance for doubtful accounts of ₩1,142 million for receivables of Doosan Fuel Cell America, Inc. and the same amount was recognized as bad debt expenses in 2021.

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35. Related party transactions, Continued

(4) Financial transactions between the Group and related parties

Financial transactions (including investment) with related parties for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

(In millions of won)		2022								
		Loans		Borrowings			Investments		Dividend	
		Loans	Collection	Borrowings	Repayment	Repayment of lease	Increase (decrease) of capital	Investment	Income	Payout
Parent:										
Doosan Corp.	₩	-	-	-	-	681	252,375	-	-	152,691
Associates and joint ventures:										
Hychangwon Co., Ltd.		-	-	-	-	-	-	2,000	-	-
Tuwaig Casting & Forging Company		-	-	-	-	-	-	43,926	-	-
BUNDANG DOOSAN TOWER REIT Co., Ltd.		-	-	-	-	15,471	-	-	-	-
Multi-asset ESG Marine Wind Power Private Equity Fund 1 st		-	-	-	-	-	-	8,500	-	-
Daesan Green Energy Co., Ltd.		1,004	-	-	-	-	-	-	-	-
Subtotal		1,004	-	-	-	15,471	-	54,426	-	-
Other related parties:										
KDDI Korea Corporation		-	-	-	-	-	-	-	89	-
Doosan Digital Innovation America LLC		-	-	-	-	725	-	-	-	-
Oricom Inc.		-	-	-	-	-	-	-	-	7,495
Hancom Co., Ltd.		-	-	-	-	-	-	-	-	14,972
Subtotal		-	-	-	-	725	-	-	89	22,467
Total	₩	1,004	-	-	-	16,877	252,375	54,426	89	175,158

(In millions of won)

(In millions of won)		2021								
		Loans		Borrowings			Investments		Dividend	
		Loans	Collection	Borrowings	Repayment	Repayment of lease	Increase (decrease) of capital	Investment	Income	Payout
Parent:										
Doosan Corp.	₩	-	-	-	-	646	605,226	-	-	-
Associates and joint ventures:										
Hychangwon Co., Ltd.		-	-	-	-	-	-	2,000	-	-
The Zenith holdings Ltd.		-	-	-	-	-	-	120,000	-	-
Kyunggi Railroad Co., Ltd.(*1)		10,000	-	-	-	-	-	-	-	-
Bitgoel Eco Energy Co., Ltd.(*1)		-	-	-	-	-	-	3,458	-	-
StructionSite Inc.		-	-	-	-	-	-	1,697	-	-
Subtotal		10,000	-	-	-	-	-	127,155	-	-
Other related parties:										
BUNDANG DOOSAN TOWER REIT Co., Ltd.		-	-	-	-	21,058	-	-	-	-
Doosan Fuel Cell America, Inc.		-	-	-	23,750	-	-	-	-	-
Others		-	-	-	-	931	-	-	273	-
Subtotal		-	-	-	23,750	21,989	-	-	273	-
Total	₩	10,000	-	-	23,750	22,635	605,226	127,155	273	-

(*1) Excluded from the related parties during 2021 and the amounts represent transactions before the entities were excluded from the related parties.

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35. Related party transactions, Continued

(5) Guarantees of payment and collateral provided by and to the related party

The Group provides payment guarantees and collateral for certain related parties and receives payment guarantees and collateral from certain related parties as of December 31, 2022 (See Notes 33 and 34).

(6) Key management compensation

Key management personnel are standing directors who have authorities and responsibilities for planning, operation and control of the business of the Group. Compensation for key management personnel for the years ended December 31, 2022 and 2021 consists of following:

<i>(In millions of won)</i>		2022	2021
Short-term employee benefits	₩	36,922	28,565
Severance and retirement benefits (*1)		22,143	2,248
Share-based payments		2,472	-
Total	₩	61,537	30,813

(*1) Changes in retirement benefit obligations amounting to ₩18,042 million due to revision of defined benefit plan were recognized as severance and retirement benefits in 2022.

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36. Consolidated statements of cash flows

(1) Details of cash generated from operation for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Profit (loss) for the period:	₩ (453,150)	645,821
Adjustments:		
Interest expenses	266,410	369,819
Loss on foreign currency translation	291,973	217,698
Bad debt expenses	21,635	16,473
Other bad debt expenses	12,815	46,738
Loss on valuation of inventory	12,491	15,237
Loss on valuation of derivative financial instruments	110,963	251,845
Loss on valuation of firm commitments	54,208	7,665
Loss (gain) on equity method investments	230,695	(18,357)
Gain on disposal of investment in associates	(4,754)	(1,541)
Impairment loss on investment in associates	116,625	-
Depreciation	314,761	361,735
Amortization	156,637	175,236
Loss on disposal of property, plant and equipment	5,078	1,848
Impairment loss on property, plant and equipment	17,979	1,393
Impairment loss on intangible assets	486,537	25,194
Impairment loss on non-current asset held for sale	340	2,487
Severance and retirement benefits	103,632	86,256
Provision for warranty expenses	174,863	156,493
(Reversal of) Provision for construction warranties	10,664	(40,333)
(Reversal of) Provision for others	39,685	(26,331)
Loss on redemption of bonds	15,707	84
Loss on valuation of short and long-term investment securities	8,659	41,806
Income tax expense (benefit)	136,688	247,408
Interest income	(19,871)	(44,539)
Dividend income	(4,355)	(2,153)
Gain on foreign currency translation	(138,912)	(139,954)
Gain on valuation of derivatives financial instruments	(94,887)	(101,842)
Gain on valuation of firm commitments	(82,476)	(121,534)
Gain on disposal of property, plant and equipment	(3,539)	(8,634)
Gain on disposal of intangible assets	(1,762)	-
Gain on disposal of short and long-term investment securities	(4,978)	-
Gain on valuation of short and long-term investment securities	(24,350)	(31,789)
Loss(gain) on disposal of discontinued operation	140,716	(93,967)
Others	32,160	(9,017)
Subtotal	₩ 2,382,037	1,385,424

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36. Consolidated statements of cash flows, Continued

(In millions of won)

	2022	2021
Changes in operating assets and liabilities:		
Trade receivables	₩ (741,905)	(61,106)
Due from customers for contract work	194,358	(62,431)
Other receivables	(13,712)	89,115
Derivative financial assets and liabilities	(50,950)	16,762
Firm commitments assets and liabilities	(3,043)	36,535
Inventories	(639,786)	(427,953)
Other current assets	(109,228)	(230,352)
Other non-current assets	(35,712)	563
Trade payables	585,955	384,940
Due to customers for contract work	312,486	170,748
Other payables	57,994	878
Provision for warranty expenses	(96,520)	(133,736)
Provision for others	(55,398)	(45,032)
Other current liabilities	(33,575)	(51,096)
Other non-current liabilities	(22,358)	(67,506)
Severance payments paid	(97,233)	(168,984)
Plan assets	1,912	55,457
Subtotal	(746,715)	(493,198)
Cash generated from operations	₩ 1,182,172	1,538,047

(2) Significant non-cash transactions for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

	2022	2021
Transfer from construction-in-progress to other assets	₩ 172,766	127,565
Acquisition of right-of-use assets	109,765	309,456
Transfer to current portion of bonds, borrowing and others	743,258	1,639,346
Changes in other payables through acquisition of property, plant and equipment	41,963	536
Changes in other payables through acquisition of intangible assets	855	-
Transfer to assets and liabilities held for sale	3,057	51,572
Acquisition of investment in associates and joint ventures	-	437,666
Acquisition of investment properties	206,584	50,752
Write-off of trade and other receivables	46,253	191,934

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36. Consolidated statements of cash flows, Continued

(3) Change of liability in financing activities for the years ended December 31, 2022 and 2021 are summarized as follows:

(In millions of won)

(In millions of won)

				Non-cash changes			
	Balance at January 1, 2022	Cash flows from financing activities, net	Current portion of long-term debt	Changes in foreign currency translation	Changes in consolidation scope	Others	Balance at December 31, 2022
Short-term borrowings	₩ 3,908,483	(2,368,288)	344	(57,566)	(49,401)	-	1,433,572
Current portion of long-term debt	938,863	(915,350)	684,277	26,168	(9,998)	47,046	771,006
Current portion of financial lease liabilities	64,880	(38,979)	58,981	173	(4,716)	(4,146)	76,193
Current sale and leaseback liabilities	30,936	-	5,680	(9,117)	-	-	27,499
Bonds	848,257	(31,816)	(508,279)	31,531	-	16,655	356,348
Long-term borrowings	1,516,919	897,341	(176,342)	95,401	-	17,549	2,350,868
Non-current financial lease liabilities	316,307	(40,527)	(58,981)	12,740	(8,806)	96,968	317,701
Non-current sales and lease back liabilities	253,224	(28,800)	(5,680)	5,490	(174,386)	-	49,848
Total	₩ 7,877,869	(2,526,419)	-	104,820	(247,307)	174,072	5,383,035

(In millions of won)

(In millions of won)

				Non-cash changes			
	Balance at January 1, 2021	Cash flows from financing activities, net	Current portion of long-term debt	Changes in foreign currency translation	Changes in consolidation scope	Others	Balance at December 31, 2021
Short-term borrowings	₩ 5,368,579	(655,321)	-	54,012	(778,674)	(80,113)	3,908,483
Asset-backed borrowings	59,551	65,152	-	-	(126,163)	1,460	-
Current portion of long-term debt	1,590,801	(2,112,830)	1,568,775	72,411	(184,242)	3,948	938,863
Current portion of lease liabilities	66,466	(64,043)	70,571	1,034	(26,897)	17,749	64,880
Bonds	1,800,160	682,177	(530,807)	58,773	(1,184,489)	22,443	848,257
Long-term borrowings	1,183,035	1,310,067	(987,847)	45,534	(46,218)	12,348	1,516,919
Long-term asset-backed borrowings	49,103	-	(50,122)	-	-	1,019	-
Non-current lease liabilities	171,864	(22,377)	(70,570)	15,938	(76,500)	297,952	316,307
Sales and lease back liabilities	174,386	(7,978)	-	-	102,704	15,048	284,160
Total	₩ 10,463,945	(805,153)	-	247,702	(2,320,479)	291,854	7,877,869

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37. Assets and liabilities held for sale

- (1) On December 22, 2021, Doosan Bobcat Inc., a subsidiary, decided to sell its shares of Doosan Bobcat Chile Compact SpA ("DBCC"), wholly owned by Doosan Bobcat Singapore Pte. Ltd., in accordance with a resolution of the board of directors of Doosan Bobcat Singapore Pte. Ltd. Assets and liabilities related to DBCC. were classified as assets and liabilities held-for-sale as of December 31, 2021 and the transaction was completed on January 4, 2022. Meanwhile, in accordance with a resolution at the Board of Director's meeting on October 2021, the Company decided to sell Doosan Babcock Ltd. and its subsidiaries and the Group classified assets and liabilities of Doosan Babcock Ltd. and the subsidiaries ("DBL"), as assets and liabilities held-for-sale, as of December 31, 2021. The transaction was completed on September 25, 2022. The details of accounts classified as held for sale as of December 31, 2021 are as follows:

(In millions of won)		DBCC	DBL	Total
Assets held for sale				
Cash and cash equivalents	₩	4,516	13,000	17,516
Trade and other receivables		2,606	83,448	86,054
Due from customers for contract work		-	47,476	47,476
Inventories		4,538	740	5,278
Investments in associates and joint ventures		-	354	354
Property, plant and equipment		1,234	49,829	51,063
Intangible assets		-	3,276	3,276
Other assets		923	71,852	72,775
Total	₩	13,817	269,975	283,792
Liabilities held for sale				
Trade and other payables	₩	2,378	110,626	113,004
Due to customers for contract work		-	12,946	12,946
Bonds and borrowings		1,201	51,799	53,000
Lease liabilities		-	41,813	41,813
Provisions		-	14,264	14,264
Other liabilities		48	38,394	38,442
Total	₩	3,627	269,842	273,469

- (2) The Group's other assets held for sale as of December 31, 2022 and 2021 are as follows:

(In millions of won)		2022	2021
Investments in associates(*1)	₩	-	2,823
Property, plant and equipment (*2,3,4)		5,871	35,479
Subtotal		5,871	38,302
Accumulated impairment loss(*2,3,4)		(1,186)	(2,487)
Total	₩	4,685	35,815

(*1) In 2021, the Company classified the holding shares of The HS-City Expressway as assets held-for-sale. The transaction of sales has completed during 2022.

(*2) In 2021, the Company classified the construction equipment related with rental business as assets held-for-sale. During 2022, the sale of certain construction equipment has been completed.

(*3) In 2021, the Company classified land, buildings and others in Songlimdong, Incheon as assets held-for-sale. The transaction of sales has completed during 2022.

(*4) Doosan Bobcat Inc., a subsidiary, signed a contract to sell its operating rental assets on August 12, 2022, classifying the assets as assets held-for-sale. In November 2022, the company completed the sale of certain assets held-for-sale.

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38. Discontinued operations

(1) Summary of discontinued operations

- 1) On July 1, 2021, the investment division of Doosan Infracore Co., Ltd. was spun off and merged with the Company, and all business segments other than investment division of Doosan Infracore Co., Ltd. were sold to Hyundai Genuine Co., Ltd. on August 19, 2021.
- 2) On December 21, 2021, the Company transferred the management right of Doosan Engineering & Construction Co., Ltd., a subsidiary, to The Zenith holdings Ltd. and lost its control over Doosan Engineering & Construction Co., Ltd..
- 3) The Company decided to sell DBL, with a resolution of Board of Director's meeting held on October 2021. The transaction of sales has completed as of September 25, 2022.
- 4) The Company decided to sell Doosan Mecatec Co., Ltd., a subsidiary, with a resolution of Board of Director's meeting held on June 2022. The transaction of sales has completed as of September 15, 2022.

In this regard, the Group has reclassified the business division of Doosan Infracore Co., Ltd., Doosan Engineering & Construction Co., Ltd. and DBL as discontinued operation and restated the comparative consolidated financial statements as of December 31, 2021.

(2) Operational performance of discontinued operations of the Group for the years ended December 31, 2022 and 2021 are as follow:

(In millions of won)

	2022		
	DBL	Doosan Mecatec Co., Ltd.	Total
Sales	₩ 462,542	215,794	678,336
Cost of sales	418,180	197,224	615,404
Selling and administrative expenses	43,871	18,002	61,873
Operating profit	491	568	1,059
Other non-operating income and expenses	10,185	(511)	9,674
Income before income tax	10,676	57	10,733
Income tax expenses (benefit)	539	(10,849)	(10,310)
Profit (loss) from discontinued operation	10,137	10,906	21,043
Subtotal of disposal of discontinued operation	57,420	(198,136)	(140,716)
Total profit (loss) from discontinued operation	₩ 67,557	(187,230)	(119,673)
Profit (loss) from discontinued operation attributable to			
Owners of the Company	₩ 67,557	(187,230)	(119,673)
Non-controlling interests	-	-	-

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38. Discontinued operations, Continued

(In millions of won)

	2021				
	Doosan Infracore Co., Ltd.	Doosan Engineering & Construction Co., Ltd.	DBL	Doosan Mecatec Co., Ltd.	Total
Sales	₩ 2,703,038	1,391,907	524,066	292,720	4,911,731
Cost of sales	2,103,696	1,230,088	456,196	261,565	4,051,545
Selling and administrative expenses	359,623	78,474	54,965	22,636	515,698
Operating profit	239,719	83,345	12,905	8,519	344,488
Other non-operating income and expenses	(31,243)	(74,119)	(1,537)	(2,255)	(109,154)
Income before income tax	208,476	9,226	11,368	6,264	235,334
Income tax expenses (benefit)	277,223	556	(5,372)	843	273,250
Profit (loss) from discontinued operation	(68,747)	8,670	16,740	5,421	(37,916)
Gain on disposal of discontinued operation	48,426	45,541	-	-	93,967
Income tax benefit related with disposal of discontinued operation	(9,154)	(111,254)	-	-	(120,408)
Subtotal of disposal of discontinued operation	57,580	156,795	-	-	214,375
Total profit (loss) from discontinued operation	₩ (11,167)	165,465	16,740	5,421	176,459
Profit (loss) from discontinued operation attributable to:					
Owners of the Company	₩ 36,997	165,465	16,740	5,421	224,623
Non-controlling interests	(48,164)	-	-	-	(48,164)

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38. Discontinued operations, Continued

(3) The net cash flows incurred by discontinued operations of the Group for the years ended December 31, 2022 and 2021 are as follows:

(In millions of won)

		2022		
		DBL	Doosan Mecatec Co., Ltd.	Total
Net cash flows from operating activities	₩	(8,156)	(41,923)	(50,079)
Net cash flows from investing activities		(28,423)	10,925	(17,498)
Net cash flows from financing activities		41,616	3,725	45,341
Effect of exchange rate fluctuations on cash held		(794)	315	(479)
Net increase in cash and cash equivalents	₩	4,243	(26,958)	(22,715)

(In millions of won)

		2021				
		Doosan Infracore Co., Ltd.	Doosan Engineering & Construction Co., Ltd.	DBL	Doosan Mecatec Co., Ltd.	Total
Net cash flows from operating activities	₩	(168,758)	97,274	(4,276)	31,051	(44,709)
Net cash flows from investing activities		684,894	(102,958)	5,460	(12,548)	574,848
Net cash flows from financing activities		262,139	24,977	(6,998)	(9,888)	270,230
Effect of exchange rate fluctuations on cash held		89,373	2	8,369	(34)	97,710
Net increase in cash and cash equivalents	₩	867,648	19,295	2,555	8,581	898,079

39. Business combinations

(1) Summary of business combinations

According to the resolution of the board of directors on June 29, 2022, the Company additionally acquired a 50.1 % stake in Doosan Property Co., Ltd. from Doosan Corp. and Hancom Inc. on August 30, 2022. The major business activities of Doosan Property Co., Ltd. are real estate development and management, and the controlling company expects efficient investment return management and dividend collection as a result of the acquisition of the business. After the acquisition, the Group's share in Doosan Property Co., Ltd. is 100%. During the current period, Doosan Property Co., Ltd. was absorbed and merged with Doosan Cuvex Co., Ltd., a subsidiary, and ceased to exist.

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39. Business combinations, Continued

(2) Acquisition accounting

The amounts of assets and liabilities were measured at fair value at the acquisition-date. The consideration transferred and fair value of identifiable net assets are as follows:

<i>(In millions of won)</i>		<u>Doosan Property Co., Ltd.</u>
I. Consideration transferred		
Cash and cash equivalents	₩	79,208
Associates Investment securities (*1)		78,891
Subtotal		<u>158,099</u>
II. The amounts recognized as identifiable assets and liabilities		
Assets		
Cash and cash equivalents		1,915
Trade and other receivables		37
Investment in associates (*2)		161,673
Property, plant and equipment		663
Intangible assets		483
Other assets		4,965
Total assets		<u>169,736</u>
Liabilities		
Trade and other payables		271
Lease liabilities		690
Deferred tax liabilities		4,331
Other liabilities		3,143
Total liabilities		<u>8,435</u>
Fair value of total identifiable net assets		<u>161,301</u>
III. Fair value of total identifiable net assets attributed to owners of the Company		<u>161,301</u>
IV. Gain on bargain purchase (III-I)	₩	<u>3,202</u>

(*1) The fair value of the shares previously held by the Company at the acquisition date.

(*2) Includes ₩ 19,682 million in fair value increase of BUNDANG DOOSAN TOWER REIT Co., Ltd., which is investment in associates of Doosan Property Co., Ltd.

The sales and net loss for the period generated from Doosan Property Co., Ltd. after acquisition were ₩161 million and ₩1,610 million, respectively.

The sales and profit that would have been included in the consolidated statement of profit or loss, if Doosan Property Co., Ltd. was included in the consolidated financial statements from the beginning of the reporting period, are as follows:

<i>(In millions of won)</i>	<u>Before adjustments</u>	<u>Adjustments</u>	<u>After adjustments</u>
Sales	₩ 161	201	362
Profit (loss) for the period	(1,610)	(3,387)	(4,997)

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40. Termination of the financial structure improvement plan

The Company received financial support (approximately ₩3 trillion) from KDB and Korea EXIM Bank ("State-owned Banks") in the first half of 2020, in order to respond to short-term liquidity risks. In order to implement the financial structure improvement plan, the Company raised fund through issuance of ordinary shares on December 2020, sales on business segments other than investment division of Doosan Infracore Co., Ltd. in August 2021, and another issuance of ordinary shares in February 2022 to repay the debts of State-owned Banks. The Company fully repaid the borrowings from State-Owned Banks as of February 28, 2022 and the covenant related with the financial improvement plan has been terminated.

41. Effect of coronavirus disease-19 ("COVID-19")

The World Health Organization declared a global pandemic against COVID-19 on March 11, 2020 and the Group believes that the spread and persistence of COVID-19 will have a negative impact on the Group's business and financial environment. However, as of December 31, 2022, As the Group cannot reasonably estimate the effects of COVID-19, the effects are not reflected in the consolidated financial statements.

42. Approval of consolidated financial statements

The consolidated financial statements for 2022 were authorized for issue by the Board of Directors on February 9, 2023 and will get final approval during the shareholders' meeting on March 29, 2023.