



DOOSAN CORPORATION AND ITS SUBSIDIARIES

Consolidated Financial Statements

For the Years Ended December 31, 2023 and 2022

With the independent auditor's report

Doosan Corp.

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Independent auditor's report
(English Translation of a Report Originally Issued in Korean)

The Shareholders and Board of Directors
Doosan Corporation

Opinion

We have audited the consolidated financial statements of Doosan Corporation (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2023 and 2022, and the consolidated statements of profit or loss, consolidated statements of comprehensive income or loss, consolidated statements of changes in equity and consolidated statements of cash flows for each of the two years in the period ended December 31, 2023, and the notes to the consolidated financial statements, including material accounting policy 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, 2023 and 2022, and its consolidated financial performance and its consolidated cash flows for each of the two years in the period ended December 31, 2023 in accordance with International Financial Reporting Standards as adopted by the Republic of Korea ("KIFRS").

We have audited the Group's internal control over financial reporting ("ICFR") as of December 31, 2023 based on the Conceptual Framework for Design and Operation of ICFR established by the Operating Committee of ICFR in Korea, in accordance with Korean Standards on Auditing ("KSA"), and our report dated March 20, 2024 expressed an unqualified opinion thereon.

Basis for opinion

We conducted our audit in accordance with KSA. Our responsibilities under those standards are further described in the Auditor's 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 the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

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. For each matter below, our description of how our audit addressed the matter is provided in that context.

(1) Uncertainty in estimating total contract cost

As described in Note 2-(8) to the consolidated financial statements, the Group recognizes revenue from contracts with customers when control over the goods or services is transferred to the customer. In this regard, the Group measures percentage of completion using the input method in relation to the performance obligation fulfilled over a period of time and recognizes revenue over time depending on the percentage of completion measured. Such accounting policy on revenue recognition applies significantly to Doosan Enerbility Co., Ltd. and its subsidiaries, which are component of the Group.

The estimated total contract costs and cumulative input costs have influence on the measurement of percentage of completion, and management's judgement is required in estimating the total contract costs. Therefore, revenue from contracts with customers is exposed to the risk of overstatement resulting from errors in judgment or intentional mistake, and regarding the risk described above, we have identified the uncertainty in estimating total contract costs of Doosan Enerbility Co., Ltd. and its subsidiaries as a key audit matter.

The main audit procedures we performed for this key audit matter with the involvement of the component auditors are as follows.

- We evaluated the appropriateness of design and effectiveness of operation of internal control procedures related to the determination and modification of estimated total contract costs.
- We conducted a retrospective analysis on a sample of significant projects which have been completed during the current period by comparing the actual costs incurred during the current period and the costs estimated at the end of the prior period.
- We made inquiry about projects with significant changes in the estimated total contract costs and inspected documents related thereto.
- We made inquiry and conducted analysis on the cause of changes in the percentage of completion of construction.
- We compared the percentage of completion by stage (stated in monthly progress report) and cost-based percentage of completion for major projects, and when significant difference is identified, made inquiry and conducted inspections on documents related thereto.
- We inspected materials under development and sites with project in progress.
- We compared the estimated total contract cost in the settlement data for major projects with the estimated total contract cost data of the department in charge.

(2) Goodwill impairment testing

As described in Note 13 to the consolidated financial statements, the Group conducted an impairment testing on a cash-generating unit ("CGU") or a group of CGUs to which the goodwill of Doosan Enerbility Co., Ltd. and its subsidiaries is allocated as of December 31, 2023. In order to determine the recoverable amount of a CGU or a group of CGUs, the Group estimated either the value in use or the fair value less costs of disposal, based on the future cash flows estimated on the basis of future financial budgets.

As of December 31, 2023, the carrying amount of goodwill of Doosan Enerbility Co., Ltd. and its subsidiaries is ₩4,656,539 million, accounting for 16.5% of total assets. In addition, the recoverable amount may vary depending on the estimated future cash flow, applicable discount rate and comparable companies selected, all of which are inputs requiring management's judgement, and accordingly have a significant impact on the consolidated financial statements of the Group. Therefore, we have identified the estimation of the recoverable amounts of a CGU (or a group of CGUs) to which the goodwill of Doosan Enerbility Co., Ltd. and its subsidiaries are allocated as a key audit matter.

The main audit procedures we performed for this key audit matter with the involvement of the component auditors are as follows.

- We obtained understanding of and assessed internal control related to goodwill impairment testing.
- We assessed the qualification and independence of specialists hired by management who participated in estimating the value in use.
- We made inquiry and conducted inspection on valuation models applied by the Group.
- We assessed the mathematical accuracy of valuation models applied to the estimation of the value in use of goodwill.
- We verified whether the estimated future cash flows are consistent with business plans reported to and approved by management.
- We evaluated inputs utilized such as applicable discount rate and growth rate by comparing them with external benchmarks used by comparable entities in the same industry and past financial information of CGUs (or groups of CGUs).
- We conducted a sensitivity analysis on the discount rate and perpetual growth rate applied by the Group in order to evaluate the effect of changes in major assumptions on the impairment test results.

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 KIFRS, 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.

Auditor's 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 auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with KSA 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 KSA, 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.
- 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, we are required to draw attention in our auditor's 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 auditor's 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 to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

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

The engagement partner on the audit resulting in this independent auditor's report is Jee hoon Kim.



March 20, 2024

This audit report is effective as of March 20, 2024, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the date of the independent auditor's report to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.

Doosan Corporation and its subsidiaries

Consolidated financial statements
for each of the two years in the period ended December 31, 2023

“The accompanying consolidated financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Group.”

Hong Sung Moon
Chief Executive Officer
Doosan Corporation

Doosan Corporation and its subsidiaries
Consolidated statements of financial position
as of December 31, 2023 and 2022
(Korean won)

	Notes	2023	2022
Assets			
Current assets:			
Cash and cash equivalents	4,5,10,35	₩ 3,539,166,947,066	₩ 2,074,186,431,748
Short-term financial instruments	4,5,10,33	231,536,505,252	160,916,144,934
Short-term investment securities	4,6,10,33	86,236,777,668	33,347,906,989
Trade receivables	4,7,10,34	1,665,733,239,617	1,895,477,518,134
Other receivables	4,7,10,34	542,910,135,873	332,336,150,780
Due from customers for contract work	4,25	1,491,170,128,484	1,177,231,442,816
Current derivative assets	4,9,10	21,332,488,441	77,099,865,917
Current firm commitment assets	9	37,426,844,236	54,959,871,522
Inventories	8,33	2,927,119,508,674	2,756,671,475,081
Assets held for sale	37	54,755,404,840	4,684,773,519
Other current assets		848,939,778,048	959,403,803,396
Total current assets		11,446,327,758,199	9,526,315,384,836
Non-current assets:			
Long-term financial instruments	4,5,10,33	47,890,823,343	42,975,238,910
Long-term investment securities	4,6,10,33	257,501,470,746	459,348,913,297
Investments in associates and joint ventures	11,33	404,522,346,700	431,385,152,841
Property, plant and equipment	12,16,33	6,509,435,168,360	6,273,316,148,740
Intangible assets	13	8,031,701,169,958	7,890,852,550,074
Investment properties	14,16	390,711,413,419	458,919,181,837
Long-term trade receivables	4,7,10,34	128,391,885	-
Long-term other receivables	4,7,10,34	227,156,542,618	136,753,784,735
Long-term due from customers for contract work	4,25	-	105,935,277,325
Non-current derivative assets	4,9,10	17,103,572,237	18,057,362,857
Non-current firm commitment assets	9	25,848,796,296	40,539,228,724
Deferred tax assets	30	533,321,489,958	445,453,458,195
Deposits	4,10	268,721,840,354	388,989,192,676
Net defined benefit asset	17	10,383,480,707	14,508,413,601
Other non-current assets		116,054,386,805	82,003,334,563
Total non-current assets		16,840,480,893,386	16,789,037,238,375
Total assets		₩ 28,286,808,651,585	₩ 26,315,352,623,211

(Continued)

Doosan Corporation and its subsidiaries
Consolidated statements of financial position
as of December 31, 2023 and 2022 (cont'd)
(Korean won)

	Notes	2023	2022
Liabilities			
Current liabilities:			
Trade payables	4,10,34	₩ 2,694,052,387,089	₩ 2,692,983,817,753
Other payables	4,10,34	1,181,047,445,668	911,509,611,142
Due to customers for contract work	25	2,300,384,523,479	1,738,401,827,087
Short-term borrowings	4,10,15,32,33	1,717,485,526,824	1,862,739,580,080
Current portion of bonds	4,10,15,32,33	484,048,108,522	717,884,940,866
Current portion of long-term borrowings	4,10,15,32,33	1,680,071,093,286	229,800,840,095
Current portion of long-term asset-backed loans	4,10,15,32,33	106,765,847,055	91,731,243,911
Current derivative liabilities	4,9,10	57,437,914,821	75,362,726,315
Current firm commitment liabilities	9	11,661,258,589	16,710,336,818
Current tax liabilities	30	96,684,791,229	166,929,545,726
Current provisions	18,25	260,890,614,580	324,263,249,547
Current lease liabilities	4,10,16	160,779,929,145	169,890,201,358
Other current liabilities		687,542,721,452	480,277,465,729
Total current liabilities		11,438,852,161,739	9,478,485,386,427
Non-current liabilities:			
Bonds	4,10,15,32,33	626,630,070,084	533,982,293,586
Long-term borrowings	4,10,15,32,33	2,308,651,666,459	3,207,531,330,134
Long-term asset-backed loans	4,10,15,32,33	75,929,973,639	113,352,929,033
Net defined benefit liabilities	17	508,456,849,611	471,756,337,739
Long-term other liabilities	4,10	372,356,071,462	378,497,342,647
Non-current derivative liabilities	4,9,10	48,180,853,324	41,217,731,602
Non-current firm commitment liabilities	9	13,447,734,190	6,307,158,879
Non-current provisions	18,25	411,733,920,356	407,111,783,104
Deferred tax liabilities	30	418,991,195,255	499,652,968,049
Non-current lease liabilities	4,10,16	646,639,480,535	686,564,825,542
Other non-current liabilities		210,200,129,224	193,076,770,412
Total non-current liabilities		5,641,217,944,139	6,539,051,470,727
Total liabilities		17,080,070,105,878	16,017,536,857,154
Equity			
Equity attributable to owners of the parent:			
Share capital	1,19	123,738,105,000	123,738,105,000
Capital surplus	19,20	1,881,154,919,337	1,604,659,761,919
Other components of equity	21	(1,188,372,746,261)	(1,194,103,960,888)
Accumulated other comprehensive income	6,9,22	599,632,484,936	586,987,276,977
Retained earnings	23	207,969,718,905	669,450,909,854
		1,624,122,481,917	1,790,732,092,862
Non-controlling interests	-	9,582,616,063,790	8,507,083,673,195
Total equity		11,206,738,545,707	10,297,815,766,057
Total liabilities and equity		₩ 28,286,808,651,585	₩ 26,315,352,623,211

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

Doosan Corporation and its subsidiaries
Consolidated statements of profit or loss
for each of the two years in the period ended December 31, 2023

(Korean won)

	Notes	2023	2022
Sales	3,24,25,34	₩ 19,130,129,881,903	₩ 16,995,760,103,010
Cost of sales	26,34	15,885,060,614,965	14,157,713,085,775
Gross profit		3,245,069,266,938	2,838,047,017,235
Selling and administrative expenses	26,27	1,808,807,062,487	1,712,018,290,813
Operating profit		1,436,262,204,451	1,126,028,726,422
Finance income	10,28	663,565,481,839	808,125,993,148
Finance expenses	10,28	1,064,183,515,166	1,379,467,521,129
Other non-operating income	10,29	84,862,907,463	169,238,974,296
Other non-operating expenses	10,29	627,284,969,470	666,589,743,487
Share of profit (loss) of associates and joint ventures accounted for using the equity method	11	(42,248,280,121)	(343,240,353,961)
Profit (loss) before income tax expenses		450,973,828,996	(285,903,924,711)
Income tax expenses	30	178,900,185,064	211,331,877,835
Profit (loss) from continuing operations		272,073,643,932	(497,235,802,546)
Profit (loss) from discontinued operations	36	-	(83,932,915,238)
Profit (loss) for the year		₩ 272,073,643,932	₩ (581,168,717,784)
Profit (loss) for the year attributable to:			
Equity holders of the parent		₩ (388,278,803,854)	₩ (696,398,841,488)
Non-controlling interests		660,352,447,786	115,230,123,704
Losses per share attributable to the equity holders of the parent	31		
Basic losses per ordinary share			
from continuing operations		₩ (21,823)	₩ (37,159)
Basic losses per ordinary share		₩ (21,823)	₩ (39,132)
Diluted losses per ordinary share			
from continuing operations		₩ (21,823)	₩ (37,159)
Diluted losses per ordinary share		₩ (21,823)	₩ (39,132)
Basic losses per old-type preferred share			
from continuing operations		₩ (21,773)	₩ (37,112)
Basic losses per old-type preferred share		₩ (21,773)	₩ (39,082)
Diluted losses per old-type preferred share			
from continuing operations		₩ (21,773)	₩ (37,112)
Diluted losses per old-type preferred share		₩ (21,773)	₩ (39,082)

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

Doosan Corporation and its subsidiaries
Consolidated statements of comprehensive income or loss
for each of the two years in the period ended December 31, 2023

(Korean won)

	Notes	2023	2022
Profit (loss) for the year		₩ 272,073,643,932	₩ (581,168,717,784)
Other comprehensive income	22		
Items not to be subsequently reclassified to profit or loss			
Remeasurements of net defined benefit liabilities	17	(103,225,279,171)	91,579,833,333
Land revaluation surplus	12	(10,793,384,457)	15,965,100,922
Gain (loss) on valuation of financial assets (designated) at fair value through other comprehensive income	6	(1,427,736,576)	(16,735,136,906)
Items to be subsequently reclassified to profit or loss			
Gain on valuation of derivatives designated as cash flow hedges	9	(16,104,366,078)	9,495,367,916
Gain on foreign operations translation		156,319,327,018	237,023,153,010
Equity changes in equity method	11	385,653,057	(5,231,379,462)
Total other comprehensive income		25,154,213,793	332,096,938,813
Total comprehensive income (loss) for the year		₩ 297,227,857,725	₩ (249,071,778,971)
Total comprehensive income (loss) attributable to:			
Equity holders of the parent		₩ (413,063,641,990)	₩ (618,600,108,039)
Non-controlling interests		710,291,499,715	369,528,329,068

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

Doosan Corporation and its subsidiaries
Consolidated statements of changes in equity
for each of the two years in the period ended December 31, 2023
(Korean won)

	Share capital	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings	Non-controlling interests	Total
As of January 1, 2022	₩ 123,738,105,000	₩ 1,237,398,733,162	₩ (1,196,429,122,967)	₩ 530,156,333,574	₩ 1,383,279,055,697	₩ 6,331,975,597,779	₩ 8,410,118,702,245
Total comprehensive income (loss):							
Profit (loss) for the year	-	-	-	-	(696,398,841,488)	115,230,123,704	(581,168,717,784)
Remeasurements of net defined benefit liabilities	-	-	-	-	14,762,708,413	76,817,124,920	91,579,833,333
Land revaluation surplus	-	-	-	3,909,210,237	404,933,992	11,650,966,693	15,965,100,922
Gain (Loss) on valuation of financial assets (designated) at fair value through other comprehensive income	-	-	-	(14,613,917,090)	519,505,802	(2,640,825,618)	(16,735,136,916)
Gain on valuation of derivatives designated as hedges	-	-	-	7,147,334,652	-	2,348,033,264	9,495,367,916
Gain on foreign operations translation	-	-	-	67,311,676,703	-	169,711,476,307	237,023,153,010
Negative equity changes in equity method	-	-	-	(1,642,819,260)	-	(3,588,560,202)	(5,231,379,462)
Subtotal				62,111,585,242	(680,711,693,281)	369,528,328,068	(249,071,778,971)
Transactions with shareholders directly reflected in shareholders' equity and others:							
Cancellation of stock options	-	579,290,167	(579,290,167)	-	-	-	-
Shared-based payment transaction	-	-	3,062,910,345	-	(35,772,341,000)	192,360,336	3,255,270,681
Payment of dividends	-	-	-	-	-	(89,260,367,300)	(125,032,706,300)
Paid-in capital increase of subsidiaries	-	54,930,856,708	-	-	-	891,925,743,794	946,886,600,502
Stock options of subsidiaries	-	158,458,099	(158,458,099)	-	-	-	-
Exercise of stock warrants of subsidiaries	-	35,310,741,422	-	-	-	-	-
Acquisition of treasury stocks in subsidiaries	-	195,675,906,414	-	-	-	443,694,233,847	479,004,975,269
Disposal of investment in subsidiaries	-	14,527,679,214	-	-	-	(1,566,232,730)	(1,566,232,730)
Changes in scope of consolidation	-	66,078,096,733	-	(5,280,641,839)	2,655,888,438	371,801,609,502	567,477,515,916
Changes in share ratio of other equity changes	-	387,261,028,757	2,325,162,079	(5,280,641,839)	(33,116,452,562)	1,895,579,746,348	2,136,768,842,783
Subtotal	₩ 123,738,105,000	₩ 1,604,693,761,919	₩ (1,194,103,960,886)	₩ 586,987,276,977	₩ 689,450,909,654	₩ 8,507,083,673,195	₩ 10,297,815,786,057
As of December 31, 2022							

Doosan Corporation and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2023 and 2022 (cont'd)
(Korean won)

	Share capital	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings	Non-controlling interests	Total
As of January 1, 2023	₩ 123,738,105,000	₩ 1,604,659,761,919	₩ (1,194,103,960,868)	₩ 586,987,276,977	₩ 669,450,909,854	₩ 8,507,063,673,195	₩ 10,297,815,766,057
Total comprehensive income (loss):							
Profit (loss) for the year	-	-	-	-	(388,278,803,854)	660,352,447,786	272,073,643,932
Remeasurements of net defined benefit liabilities	-	-	-	-	(38,912,923,851)	(64,312,355,320)	(103,225,279,171)
Land revaluation surplus	-	-	-	(2,402,692,831)	346,532,019	(8,737,223,645)	(10,793,384,457)
Gain (Loss) on valuation of financial assets (designated) at fair value through OCI	-	-	-	(1,627,460,545)	46,825,982	-	(1,427,736,576)
Gain (Loss) on valuation of derivatives designated	-	-	-	(6,846,774,409)	-	(9,257,591,669)	(16,104,366,078)
Gain on foreign operations translation	-	-	-	22,031,643,849	-	134,287,683,169	156,319,327,018
Negative equity changes in equity method	-	-	-	1,490,491,895	-	452,350,501	385,653,057
Subtotal				₩ 12,645,207,959	₩ (428,355,559,043)	₩ 712,938,208,809	₩ 297,227,857,725
Transactions with shareholders directly reflected in shareholders' equity and others:							
Cancellation of stock options	-	256,329,948	(256,329,948)	-	-	-	-
Shared-based payment transaction	-	-	5,930,375,480	-	(35,772,341,000)	5,135,206,198	11,065,581,678
Payment of dividends	-	-	-	-	-	-	(83,007,510,800)
Payment of dividends of subsidiaries	-	-	-	-	-	-	139,437,352,596
Paid-in capital increase of subsidiaries	-	276,378,945,204	-	-	-	-	(5,662,878,324)
Exercise of stock warrants of subsidiaries	-	5,662,878,324	-	-	-	-	24,540,468,871
Exercise of convertible bonds of subsidiaries	-	-	-	-	-	-	(2,649,491,396)
Acquisition of treasury stocks in subsidiaries	-	135,617,336	-	-	-	-	286,524,967,265
Disposal of investment in subsidiaries	-	(5,987,873,041)	-	-	-	-	(1,723,932,624)
Changes in share ratio of other equity adjustments	-	49,259,647	57,169,095	-	2,646,709,094	-	362,594,181,786
Subtotal		₩ 276,495,157,419	₩ 5,731,214,627	₩ 599,632,484,936	₩ (33,125,631,906)	₩ 362,594,181,786	₩ 611,694,921,925
As of December 31, 2023	₩ 123,738,105,000	₩ 1,881,154,919,337	₩ (1,185,372,746,281)	₩ 599,632,484,936	₩ 207,969,718,905	₩ 9,562,616,063,790	₩ 11,206,738,545,707

Doosan Corporation and its subsidiaries
Consolidated statements of cash flows
for each of the two years in the period ended December 31, 2023
(Korean won)

	Notes	2023	2022
Cash flows from operating activities			
Cash generated from operating activities:	35		
Profit (loss) for the year	₩	272,073,643,932	₩ (581,168,717,784)
Adjustments		2,054,155,371,411	2,705,166,226,202
Changes in operating assets and liabilities		432,670,189,371	(683,021,266,093)
		2,758,899,204,714	1,440,976,242,325
Interest received		73,595,019,979	42,347,640,558
Interest paid		(487,934,912,504)	(372,981,192,097)
Dividends received		12,512,840,892	12,032,027,756
Income tax paid		(448,363,874,025)	(589,191,251,573)
Net cash flows provided by operating activities		1,908,708,279,056	533,183,466,969
Cash flows from investing activities			
Cash inflows from investing activities:			
Decrease in short-term financial instruments		168,027,977,693	1,311,561,995,497
Disposal of short-term investment securities		29,814,224,991	195,068,316,200
Decrease in short-term loans		30,954,709,532	57,417,223,906
Decrease in long-term financial instruments		1,563,480,246	2,041,277,135
Disposal of long-term investment securities		5,123,875,549	81,834,988,136
Decrease in long-term loans		3,056,732,979	5,591,418,915
Disposal of investments in subsidiaries		16,832,203,629	108,898,468,968
Disposal of investments in associates and joint ventures		3,875,310,720	-
Disposal of property, plant and equipment		12,499,614,608	34,730,587,986
Disposal of intangible assets		8,972,354,038	5,445,997,068
Disposal of investment properties		71,604,000	15,400,000,000
Net cash flows from business transfer	-		27,045,768,342
Disposal of assets held for sale		3,679,796,824	59,939,399,834
Other investing activities		6,547,225,423	12,586,568,688
		291,019,110,232	1,917,562,010,675
Cash outflows from investing activities:			
Increase in short-term financial instruments		237,063,072,699	434,925,421,270
Acquisition of short-term investment securities		-	32,660,410,414
Increase in short-term loans		102,645,951,871	81,466,893,705
Increase in long-term financial instruments		8,356,447,208	6,474,641,920
Acquisition of long-term investment securities		19,837,301,410	82,434,731,611
Increase in long-term loans		165,589,624,258	13,562,757,265
Acquisition of investment in subsidiaries	-		413,052,210,489
Acquisition of investments in associates and joint ventures		31,995,760,000	60,489,217,188
Acquisition of property, plant and equipment		583,899,771,832	700,009,377,312
Acquisition of intangible assets		239,372,491,121	241,675,072,635
Acquisition of investment properties		1,103,760,000	1,050,000,000
Decrease in derivative liabilities		6,157,155,946	142,140,077,479
Other investing activities		1,300,828,308	(1,460,102,958)
		(1,397,322,164,653)	(2,208,480,708,330)
Net cash flows used in investing activities		(1,106,303,054,421)	(290,918,697,655)

(Continued)

Doosan Corporation and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2023 and 2022 (cont'd)
(Korean won)

Cash flows from financing activities	Notes	2023	2022	
Cash inflows from financing activities:				
Increase in asset-backed loans	₩	69,610,523,760	₩	206,002,950,000
Issuance of bonds		601,895,161,152		479,218,732,177
Increase in long-term borrowings		1,134,828,771,672		3,341,660,494,018
Increase in lease liabilities in a sales and leaseback		8,245,093,574		26,397,769,349
Cash inflows from capital transactions among consolidated entities		688,016,985,745		2,001,849,780,037
		2,502,596,535,903		6,055,129,725,581
Cash outflows from financing activities:				
Net decrease in short-term borrowings		141,560,516,527		2,793,627,513,230
Decrease in asset-backed loans		92,164,120,000		133,342,886,154
Repayment of bonds		729,676,095,890		1,169,171,339,783
Repayment of long-term borrowings		606,119,155,760		2,112,247,322,259
Repayment of finance lease liabilities		149,125,797,819		135,039,085,344
Repayment of sale and leaseback liabilities		24,890,841,210		55,198,209,756
Payment of dividends		35,772,341,000		35,772,341,000
Payment of dividends of subsidiaries		83,007,510,800		89,260,367,300
Cash outflows from capital transactions among consolidated entities		2,573,652,385		13,388,892,876
Other financing activities		1,441,567,842		118,648,965
		(1,866,331,599,233)		(6,537,166,606,667)
Net cash flows provided by (used in) financing activities		636,264,936,670		(482,036,881,086)
Effects of exchange rate changes on cash and cash equivalents		26,310,354,013		78,853,941,437
Net Increase (decrease) in cash and cash equivalents		1,464,980,515,318		(160,918,170,335)
Cash and cash equivalents, beginning of the year		2,074,186,431,748		2,235,104,602,083
Cash and cash equivalents, end of the year	₩	3,539,166,947,066	₩	2,074,186,431,748

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

Doosan Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2023 and 2022

1. General

1.1 The Parent company information

Doosan Corporation (the “Company”) was incorporated on December 18, 1933, under the name of Sohwa-Kirin Beer, Ltd. to manufacture and sell beer. The Company has changed its name to Dongyang Beer, Ltd. in February 1948 and again to OB Beer, Ltd. in February 1996 and finally to Doosan Corporation on September 1, 1998. The consolidated financial statements of the Company and its subsidiaries (collectively referred to as the “Group”) have been prepared based on Korean International Financial Reporting Standards (“KIFRS”) 1110 *Consolidated Financial Statements*.

Since June 1973, the Company’s shares have been listed in the Korea Exchange. After several capital issues, the Company’s share capital as of December 31, 2023 is ₩123,738 million, including ₩24,447 million of preferred shares.

The Company’s ordinary shares as of December 31, 2023 are owned as follows:

	Number of ordinary shares owned	Ownership percentage (%)
Related parties	6,587,589	39.87
Treasury stocks	3,000,866	18.16
Others	6,935,380	41.97
	16,523,835	100.00

In addition, 31.89% of preferred shares are owned by the largest shareholder and others and 55.59% of preferred shares are owned by others.

1.2 Consolidated subsidiaries information

Details of the subsidiaries as of December 31, 2023 and 2022 are as follows:

Subsidiary	Type of business	Location	Ownership ratio of the Group (%) (*1)		Ownership ratio of non-controlling interests (%) (*1)		Financial closing date (*2)
			2023	2022	2023	2022	
Oricom Inc.	Advertising	Korea	62.83	62.83	37.17	37.17	December 31
Hancomm Inc.	Advertising	Korea	100.00	100.00	37.17	37.17	December 31
Doosan Bears Inc.	Sports	Korea	100.00	100.00	-	-	December 31
Doosan Digital Innovation America LLC	IT services	USA	100.00	100.00	-	-	December 31
Doosan Information & Communications Beijing Co., Ltd.	IT services	China	100.00	100.00	-	-	December 31
Doosan Digital Innovation Europe Limited	IT services	UK	100.00	100.00	-	-	December 31
Doosan Business Research Institute	Education and training	Korea	100.00	100.00	-	-	December 31
Doosan Logistics Solution Co., Ltd.	Development and sale of logistics automation facilities	Korea	100.00	100.00	-	-	December 31
Doosan Portfolio Holdings Co., Ltd. (formerly Doosan Investment Co., Ltd.) (*3)	Holding company	Korea	100.00	100.00	-	-	December 31
Doosan Tesna Inc. (*5)	Testing and engineering of semiconductor manufacturing	Korea	38.86	30.78	61.14	69.22	December 31
Doosan Investment Co., Ltd.	Financial investment	Korea	100	-	-	-	December 31
Doosan Shanghai Chemical Materials Co., Ltd.	Sales of Copper Clad Laminates	China	100.00	100.00	-	-	December 31
Doosan Electro-Materials Singapore Pte Ltd.	Sales of Copper Clad Laminates	Singapore	100.00	100.00	-	-	December 31
Doosan (Hong Kong) Ltd.	Sales of Copper Clad Laminates	China	100.00	100.00	-	-	December 31
Doosan Electro-Materials (Shen Zhen) Limited	Sales of Copper Clad Laminates	China	100.00	100.00	-	-	December 31
Doosan Electro-Materials (Changshu) Co., Ltd.	Manufacturing and sales of Copper Clad Laminates	China	100.00	100.00	-	-	December 31
Doosan Electro-Materials America, LLC	Marketing	USA	100.00	100.00	-	-	December 31
Doosan Electro-Materials Vietnam Company Limited	Manufacturing of Copper Clad Laminates	Vietnam	100.00	100.00	-	-	December 31
HyAxiom, Inc.(formerly, Doosan Fuel Cell America, Inc.	Manufacturing	USA	100.00	100.00	-	-	December 31

Doosan Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2023 and 2022

1.2 Consolidated subsidiaries information (cont'd)

Subsidiary	Type of business	Location	Ownership ratio of the Group (%) (*1)		Ownership ratio of non-controlling interests (%) (*1)		Financial closing date
			2023	2022	2023	2022	
Doosan Energy Solutions America, Inc.,	Electric power generation and sales	USA	100.00	100.00	-	-	December 31
DESA Service, LLC	Electric power generation and sales	USA	100.00	100.00	-	-	December 31
Doosan H2 Innovation Co., Ltd.	R&D of fuel cells and systems for power generation	Korea	100.00	100.00	-	-	December 31
HyAxiom Motors Co., Ltd.	Manufacturing and sales of eco-friendly commercial vehicles	Korea	100.00	100	-	-	December 31
Doosan Robotics Inc.	Manufacturing industrial robots	Korea	68.19	90.91	31.81	9.09	December 31
Doosan Robotics Americas, LLC	Manufacturing and sales	USA	100.00	100.00	31.81	9.09	December 31
Doosan Mobility Innovation Inc	Manufacturing of hydrogen fuel cell power pack	Korea	100.00	100.00	-	-	December 31
Doosan Mobility Innovation (Shenzhen) Co. Ltd.	Wholesale and retail	China	100.00	100.00	-	-	December 31
Doosan Second Real Estate Securitization Specialty Ltd. (*4)	Specialized in securitization	Korea	-	-	-	-	December 31
D-Pay 3rd Co., Ltd. (*4)	Specialized in securitization	Korea	-	-	-	-	December 31
NewstarBears Co., Ltd. (*4)	Specialized in securitization	Korea	-	-	-	-	December 31
Doosan Enerbility Co., Ltd. (*5)	Manufacturing of turbine and other engine	Korea	30.40	30.51	69.60	69.49	December 31
Doosan Enerbility Vietnam Co., Ltd.	Manufacturing of machine and other engine	Vietnam	100.00	100.00	69.60	69.49	December 31
Doosan HF Controls Corp.	Manufacturing	USA	100.00	100.00	69.60	69.49	December 31
Doosan HF Controls Asia Co., Ltd.	Manufacturing	Korea	100.00	100.00	69.60	69.49	December 31
PT. Doosan Heavy Industries Indonesia	Manufacturing	Indonesia	83.64	83.64	74.58	74.49	December 31
Doosan Heavy Industries Malaysia Sdn. Bhd.	Dormant corporation	Malaysia	100.00	100.00	69.60	69.49	December 31
Doosan Enerbility Japan Corp.	Wholesale and retail	Japan	100.00	100.00	69.60	69.49	December 31
Doosan Water UK Ltd.	Engineering and service	UK	100.00	100.00	69.60	69.49	December 31
Doosan Power Systems India Private Ltd.	Engineering and service	India	100.00	100.00	69.60	69.49	March 31
Doosan Heavy Industries Muscat LLC	Manufacturing	Oman	70.00	70.00	78.72	78.65	December 31
Doosan Power Systems Arabia Company Limited	Manufacturing service	Saudi Arabia	51.00	51.00	84.50	84.44	December 31
Azul Torre Construction Corporation (*5)	Manufacturing	Philippines	40.00	40.00	87.84	87.80	December 31
Doosan Enerbility America Holdings Inc.	Holding company	USA	100.00	100.00	69.60	69.49	December 31
Doosan Enerbility America LLC	Wholesale and retail	USA	100.00	100.00	69.60	69.49	December 31
Doosan ATS America, LLC	Engineering and services	USA	100.00	100.00	69.60	69.49	December 31
Doosan Power Service America, LLC	Engineering and services	USA	100.00	100.00	69.60	69.49	December 31
Doosan Turbomachinery Services Holding, Inc.	Holding company	USA	100.00	100.00	69.60	69.49	December 31
Doosan Turbomachinery Services Inc.	Manufacturing	USA	100.00	100.00	69.60	69.49	December 31
Doosan GridTech Inc.	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Doosan GridTech LLC	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Doosan GridTech CA LLC	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Doosan GridTech EPC LLC	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Doosan GridTech C&I LLC	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Continuity Energy LLC	Software and systems engineering	USA	100.00	100.00	69.60	69.49	December 31
Doosan Skoda Power s.r.o	Manufacturing	Czech	100.00	100.00	69.60	69.49	December 31
Skoda Power Private Ltd.	Engineering	India	100.00	100.00	69.60	69.49	March 31
DPS UK Pension Company Ltd.	Specialized services	UK	100.00	100.00	69.60	69.49	December 31
Doosan Power Systems Pension Trustee Co., Ltd.	Specialized services	UK	100.00	100.00	69.60	69.49	December 31
Doosan Lentjes GmbH	Engineering and services	Germany	100.00	100.00	69.60	69.49	December 31
Doosan Power Systems S.A.	Holding company	Luxembourg	100.00	100.00	69.60	69.49	December 31
Doosan Lentjes Czech s.r.o	Specialized services	Czech	100.00	100.00	69.60	69.49	December 31
Osung Power O&M Co., Ltd.	Engineering and services	Korea	100.00	100.00	69.60	69.49	December 31

Doosan Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2023 and 2022

1.2 Consolidated subsidiaries information (cont'd)

Subsidiary	Type of business	Location	Ownership ratio of the Group (%) (*1)		Ownership ratio of non-controlling interests (%) (*1)		Financial closing date (*2)
			2023	2022	2023	2022	
Doosan Ukudu Power, LLC	Engineering and services	USA	100.00	100.00	69.60	69.49	December 31
Doosan Recycle Solutions	Manufacturing	Korea	100.00	-	69.60	-	December 31
Doosan GeoSolution Co., Ltd	Professional, scientific and technical services industries	Korea	100.00	-	69.60	-	December 31
Doosan Cuvex Co., Ltd.	Golf and condominium	Korea	100.00	100.00	69.60	69.49	December 31
Doosan Bobcat Inc. (*5)	Holding company	Korea	46.11	51.07	85.98	84.42	December 31
Doosan Bobcat North America Inc.(formerly, Clark Equipment Co.) (*3)	Manufacturing and sales of construction equipment and others	USA	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Canada Ltd.(formerly, Bobcat Equipment Ltd.) (*3)	Sales of construction equipment and others	Canada	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat EMEA s.r.o.	Manufacturing and sales of construction equipment and others	Czech	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Bensheim GmbH.(formerly, Bobcat Bensheim GmbH.) (*3)	Sales of construction equipment and others	Germany	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Holdings France S.A.S.(formerly, Doosan Holdings France S.A.S.) (*3)	Holding company	France	100.00	100.00	85.98	84.42	December 31
CJSC Doosan International Russia	Sales of construction equipment and others	Russia	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat UK Ltd.(formerly, Doosan International UK Ltd.) (*3)	Sales of construction equipment and others	UK	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat South Africa (PTY) Ltd.(formerly, Doosan International South Africa Pty Ltd.) (*3)	Sales of construction equipment and others	Republic of South Africa	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat France S.A.S.(formerly, Bobcat France S.A.S.) (*3)	Manufacturing of construction equipment and others	France	100.00	100.00	85.98	84.42	December 31
Geith International Ltd.	Sales of construction equipment and others	Ireland	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Belgium BV(formerly, Doosan Industrial Vehicle Europe N.V.) (*3)	Sales of forklifts and others	Belgium	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat UK Northampton Ltd.(formerly, Doosan Industrial Vehicle U.K. Ltd.) (*3)	Sales of forklifts and others	UK	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Germany GmbH(formerly, Doosan Logistics Europe GmbH) (*3)	Manufacturing and sales of forklifts and others	Germany	100.00	100.00	85.98	84.42	December 31
Rushlift Ltd.	Sales and lease of forklifts	UK	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Singapore Pte. Ltd.	Holding company	Singapore	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat China Co., Ltd.	Manufacturing and sales of construction equipment and others	China	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat India Private Ltd.	Manufacturing and sales of construction equipment and others	India	100.00	100.00	85.98	84.42	March 31
Doosan Bobcat Japan(formerly, Bobcat Corp.) (*3)	Sales of construction equipment and others	Japan	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Mexico S.A. de C.V.	Other services	Mexico	100.00	100.00	85.98	84.42	December 31
Doosan Industrial Vehicle Co., Ltd. (*6)	Manufacturing and sales of forklifts and others	Korea	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat China Yantai Co., Ltd.(formerly, Doosan Industrial Vehicle China Co., Ltd.) (*3)	Manufacturing and sales of forklifts and others	China	100.00	100.00	85.98	84.42	December 31
Doosan Bobcat Mexico Monterrey, S. de R.L. de C.V.	Other services	Mexico	100.00	-	85.98	-	December 31
Doosan Bobcat Korea Co., Ltd. (*6)	Sales of construction equipment and others	Korea	100.00	100.00	85.98	84.42	December 31
Doosan Fuel Cell Co., Ltd. (*5)	Manufacturing	Korea	30.33	30.33	90.78	90.75	December 31
D20 Capital, LLC	Financial investment	USA	100.00	100.00	69.60	69.49	December 31
D20 Capital FUND I, L.P.	Financial investment	USA	100.00	100.00	69.60	69.49	December 31

(*1) The ownership interests held by the Group represents the aggregated total of ownership interests directly held by each entity within the Group. The ownership interests held by non-controlling interests represents the proportion of ownership interests that is not attributable, directly or indirectly, to the entities within the Group and it may differ from the aggregated total, less the effective ownership interests held by the Group.

(*2) Where the financial closing date of a subsidiary determined pursuant to the local laws are not consistent with that of the Company, adjustments for preparation of the consolidated financial statements have been made to conform to the Company's financial closing date.

1.2 Consolidated subsidiaries information (cont'd)

(*3) The subsidiary changed its name during the year ended December 31, 2023.

(*4) Although the Group does not own the equity of the special-purpose company, the Group gets profits from its operation according to the agreement, with structured investment. As the Group has control to decide its operational activity, it also influences the profits significantly.

(*5) Potential voting rights held by the Group on the above subsidiaries for assessing whether or not it controls the subsidiaries are less than 50%, but the Group concluded that the Group has de facto control over the subsidiaries.

(*6) After the reporting period, Doosan Bobcat Korea Co., Ltd. was merged with Doosan Industrial Vehicle Co., Ltd., and after that, Doosan Industrial Vehicle Co., Ltd. changed its name to Doosan Bobcat Korea Co., Ltd.

1.2.1 Changes in the scope of consolidation

Changes in the scope of consolidation for the year ended December 31, 2023 are as follows:

Subsidiary	Change	Description
Genesis Forklift Trucks Limited	Excluded	Liquidation
Doosan Materials Handling UK Ltd.	Excluded	Liquidation
Rushlift Holdings Ltd.	Excluded	Liquidation
Doosan Investment Co., Ltd.	Included	Newly established
Doosan Recycle Solutions	Included	Newly established
Doosan Bobcat Mexico Monterrey, S. de R.L. de C.V.	Included	Newly established
Doosan GeoSolution Co., Ltd	Included	Newly established
Doosan Industrial Vehicle America Corp.	Excluded	Merger
Doosan Equipment South East, LLC.	Excluded	Liquidation
Doosan Bobcat Global Collaboration Center, Inc.	Excluded	Liquidation

Doosan Corporation and its subsidiaries
Notes to the consolidated financial statements
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1.3 Condensed financial information of the Group's significant consolidated subsidiaries

Condensed financial information of the Group's significant subsidiaries as of and for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023				
	Assets	Liabilities	Sales	Profit (loss) for the year	Total comprehensive income (loss)
Oricom Inc.	₩ 170,433	₩ 78,253	₩ 139,008	₩ 8,269	₩ 10,359
Doosan Tesna Inc.	781,373	359,478	338,652	49,077	68,757
Doosan Electro-Materials (Changshu) Co., Ltd.	140,634	71,477	171,744	7,134	7,134
HyAxiom, Inc.	500,874	674,078	74,521	(99,789)	(99,810)
Doosan Robotics Inc.	459,917	17,750	55,053	(15,238)	(15,507)
Doosan Enerbility Co., Ltd.	13,684,509	7,759,760	6,651,862	(104,179)	(213,424)
Doosan Enerbility Vietnam Co., Ltd.	570,061	234,854	499,459	39,650	39,650
PT. Doosan Heavy Industries Indonesia	44,046	129,894	195,286	(6,085)	(6,085)
Doosan Power Systems India Private Ltd.	466,918	778,961	190,726	(74,960)	(73,560)
Doosan Power Systems S.A. and its subsidiaries(*1)	979,525	708,832	398,602	(73,393)	(76,214)
Doosan Cuvex Co., Ltd.	481,261	111,298	57,506	31,791	31,791
Doosan Bobcat Inc. and its subsidiaries(*1)	10,371,754	4,416,941	9,758,907	921,479	1,011,581
Doosan Fuel Cell Co., Ltd.	1,070,843	558,191	260,886	(8,500)	(10,478)

(*1) Consolidated financial information of the intermediate parent company.

	2022				
	Assets	Liabilities	Sales	Profit (loss) for the year	Total comprehensive income (loss)
Doosan Tesna Inc.	₩ 767,017	₩ 457,183	₩ 199,950	₩ 38,640	₩ 36,942
Doosan Electro-Materials (Changshu) Co., Ltd.	156,908	88,742	188,319	5,498	5,498
HyAxiom, Inc.	335,810	409,143	200,565	(115,557)	(115,685)
Doosan Enerbility Co., Ltd.	13,189,540	7,075,909	5,284,439	(1,211,843)	(1,168,590)
Doosan Enerbility Vietnam Co., Ltd.	619,054	201,354	543,328	129,715	129,715
Doosan Power Systems India Private Ltd.	612,229	837,614	309,684	(127,645)	(127,584)
Doosan Power Systems S.A. and its subsidiaries	976,004	828,347	449,667	(104,811)	(102,766)
Doosan Cuvex Co., Ltd.	478,362	107,742	69,780	10,083	11,898
Doosan Bobcat Inc. and its subsidiaries(*1)	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

(*1) Consolidated financial information of the intermediate parent company.

Doosan Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2023 and 2022

1.4 Cash flows information

A summarized cash flows information of subsidiaries that non-controlling interests are significant to the Group (or intermediate parent) for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	
	Doosan Enerbility Co., Ltd. and its subsidiaries	Doosan Bobcat Inc. and its subsidiaries
Cash flows from operating activities	₩ 774,309	₩ 1,296,324
Cash flows from investing activities	(563,540)	(253,088)
Cash flows from financing activities	298,328	(351,264)
Effect of exchange rate changes on cash and cash equivalents	14,226	9,054
Net increase in cash and cash equivalent	523,323	701,026
Cash and cash equivalents, as of January 1	696,833	699,005
Cash and cash equivalents, as of December 31	₩ 1,220,156	₩ 1,400,031

Above financial information is based on consolidated financial information of intermediate controlling company. However, financial information of Doosan Enerbility Co., Ltd. and its subsidiaries does not include financial information of Doosan Bobcat Inc. and its subsidiaries.

	2022	
	Doosan Enerbility Co., Ltd. and its subsidiaries	Doosan Bobcat Inc. and its subsidiaries
Cash flows from operating activities	₩ (92,617)	₩ 717,695
Cash flows from investing activities	53,857	(124,988)
Cash flows from financing activities	(240,440)	(892,013)
Effect of exchange rate changes on cash and cash equivalents	19,189	46,551
Net decrease in cash and cash equivalent	(260,011)	(252,755)
Cash and cash equivalents, as of January 1	956,844	951,760
Cash and cash equivalents, as of December 31	₩ 696,833	₩ 699,005

Above financial information is based on consolidated financial information of intermediate controlling company. However, financial information of Doosan Enerbility Co., Ltd. and its subsidiaries does not include financial information of Doosan Bobcat Inc. and its subsidiaries.

1.5 Financial information attributable to non-controlling interests

The ownership interests held by non-controlling interests and details of financial position, result of operation and dividends vested in non-controlling interests by each of the major subsidiaries as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	
	Doosan Enerbility Co., Ltd. and its subsidiaries	Doosan Bobcat Inc. and its subsidiaries
Ownership interests held by non-controlling interests (%)	69.6%	86.0%
Cumulative non-controlling interests	₩ 3,934,399	₩ 5,113,508
Net income vested in non-controlling interests	(114,574)	749,275
Dividends paid to non-controlling interests (*1)	-	(79,961)

(*1) Except for above subsidiaries, Oricom Inc. and Doosan Tesna Inc. paid dividends of ₩1,265 million and ₩1,874 million, respectively, that are attributable to non-controlling interests.

Above financial information vested in non-controlling interests is based on consolidated financial information of intermediate controlling company. However, financial information of Doosan Enerbility Co., Ltd. and its subsidiaries does not include financial information of Doosan Bobcat Inc. and its subsidiaries.

	2022	
	Doosan Enerbility Co., Ltd. and its subsidiaries	Doosan Bobcat Inc. and its subsidiaries
Ownership interests held by non-controlling interests (%)	69.5%	84.4%
Cumulative non-controlling interests	₩ 3,721,495	₩ 4,425,411
Net income vested in non-controlling interests	(391,616)	543,712
Dividends paid to non-controlling interests (*1)	-	88,311

(*1) Except for above subsidiaries, Oricom Inc. paid dividends of ₩949 million vested in non-controlling interests.

Above financial information vested in non-controlling interests is based on consolidated financial information of intermediate controlling company. However, financial information of Doosan Enerbility Co., Ltd. and its subsidiaries does not include financial information of Doosan Bobcat Inc. and its subsidiaries.

2. Summary of significant accounting policies

2.1 Basis of preparation

The Group prepares statutory financial statements in Korean in accordance with KIFRS enacted by *the Act on External Audit of Stock Companies*. The accompanying consolidated financial statements have been translated into English from Korean financial statements. In the event of any differences in interpreting the financial statements or the independent auditor's report thereon, Korean version, which is used for regulatory reporting purposes, shall prevail.

Significant accounting policies applied in the preparation of the consolidated financial statements are described below. Significant accounting policies applied in the preparation of the consolidated financial statements for the year ended December 31, 2023 are the same as those adopted in the preparation of the consolidated financial statements for the year ended December 31, 2022, except for the effects related to the adoption of the standards or interpretations described below.

The accompanying consolidated financial statements have been prepared on the historical cost basis, except for certain 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.

2.1.1 New and amended standards and interpretations

The Group applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2023.

Amendments to KIFRS 1117 – Insurance Contracts

KIFRS 1117 Insurance Contracts is a comprehensive new accounting standard for insurance contracts covering recognition and measurement, presentation and disclosure. KIFRS 1117 replaces KIFRS 1104 *Insurance Contracts*. KIFRS 1117 applies to all types of insurance contracts (i.e., life, non-life, direct insurance and re-insurance), regardless of the type of entities that issue them as well as to certain guarantees and financial instruments with discretionary participation features; a few scope exceptions will apply. The overall objective of KIFRS 1117 is to provide a comprehensive accounting model for insurance contracts that is more useful and consistent for insurers, covering all relevant accounting aspects. KIFRS 1117 is based on a general model, supplemented by:

- a specific adaptation for contracts with direct participation features (the variable fee approach); and
- a simplified approach mainly for short-duration contracts (the premium allocation approach).

The new standard had no impact on the Group's consolidated financial statements.

Amendments to KIFRS 1008 – Definition of Accounting Estimates

The amendments to KIFRS 1008 clarify the distinction between changes in accounting estimates, changes in accounting policies and the correction of errors. They also clarify how entities use measurement techniques and inputs to develop accounting estimates. The amendments had no material impact on the Group's consolidated financial statements.

Amendments to KIFRS 1001 – Disclosure of Accounting Policies

The amendments to KIFRS 1001 Making Materiality Judgements provide guidance and examples to help entities apply materiality judgements to accounting policy disclosures. The amendments aim to help entities provide accounting policy disclosures that are more useful by replacing the requirement for entities to disclose their 'significant' accounting policies with a requirement to disclose their 'material' accounting policies and adding guidance on how entities apply the concept of materiality in making decisions about accounting policy disclosures. The amendments had no material impact on the Group's consolidated financial statements.

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

Amendments to KIFRS 1012 – *Deferred Tax related to Assets and Liabilities arising from a Single Transaction*

The amendments to KIFRS 1012 Income Tax narrow the scope of the initial recognition exception, so that it no longer applies to transactions that give rise to equal taxable and deductible temporary differences such as leases and decommissioning liabilities. The amendments had no material impact on the Group's consolidated financial statements.

Amendments to KIFRS 1012 – *International Tax Reform—Pillar Two Model Rules*

The amendments to KIFRS 1012 have been introduced in response to the OECD's BEPS Pillar Two Model Rules and include:

- a mandatory temporary exception to the recognition and disclosure of deferred taxes arising from the jurisdictional implementation of the Pillar Two Model Rules; and
- disclosure requirements for affected entities to help users of the financial statements better understand an entity's exposure to Pillar Two income taxes arising from that legislation, particularly before its effective date. Disclosure of the mandatory disclosure rules for deferred tax exceptions and the application of the exceptions will take effect immediately. The remaining disclosure requirements apply for the fiscal year beginning on or after January 1, 2023, but not for the interim period ending on or before December 31, 2023. The amendments had no material impact on the Group's consolidated financial statements. (see Note 39)

2.1.2 Standards issued but not yet effective

The new and amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below. The Group intends to adopt these new and amended standards and interpretations, if applicable, when they become effective.

Amendments to KIFRS 1116 – *Lease Liability in a Sale and Leaseback*

The amendments to KIFRS 1116 specify the requirements that a seller-lessee uses in measuring the lease liability arising in a sale and leaseback transaction, to ensure the seller-lessee does not recognize any amount of the gain or loss that relates to the right of use it retains.

The amendments are effective for annual reporting periods beginning on or after January 1, 2024 and must be applied retrospectively to sale and leaseback transactions entered into after the date of initial application of KIFRS 1116. Earlier application is permitted and that fact must be disclosed.

The Company is currently assessing the impact the amendments will have on current practice.

Amendments to KIFRS 1001 – *Classification of Liabilities as Current or Non-current*

The amendments to paragraphs 69 to 76 of KIFRS 1001 specify the requirements for classifying liabilities as current or non-current. The amendments clarify:

- what is meant by a right to defer settlement;
- that a right to defer must exist at the end of the reporting period;
- that classification is unaffected by the likelihood that an entity will exercise its deferral right; and
- that only if an embedded derivative in a convertible liability is itself an equity instrument would the terms of a liability not impact its classification.

In addition, a requirement has been introduced to require disclosure when a liability arising from a loan agreement is classified as non-current and the entity's right to defer settlement is contingent on compliance with future covenants within twelve months.

The amendments are effective for annual reporting periods beginning on or after January 1, 2024 and must be applied retrospectively. The Company is currently assessing the impact the amendments will have on current practice and whether existing loan agreements may require renegotiation.

Amendments to KIFRS 1007 and KIFRS 1107 – *Supplier Finance Arrangements*

The amendments to KIFRS 1007 Statement of Cash Flows and KIFRS 1107 Financial Instruments: Disclosures clarify the characteristics of supplier finance arrangements and require additional disclosure of such arrangements. The disclosure requirements in the amendments are intended to assist users of financial statements in understanding the effects of supplier finance arrangements on an entity's liabilities, cash flows and exposure to liquidity risk.

Amendments to KIFRS 1007 and KIFRS 1107 – *Supplier Finance Arrangements* (cont'd)

The amendments will be effective for annual reporting periods beginning on or after January 1, 2024. Early adoption is permitted but will need to be disclosed.

The Company is currently assessing the impact the amendments will have on current practice.

2.2 Basis of consolidation

The consolidated financial statements comprise the financial statements of the Group as of December 31, 2023. 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
- The Entity'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 period are included in the consolidated statement of comprehensive income from the date the Group gains control until the date the Group ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income (OCI) 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 interests of a subsidiary, without a loss of control, is accounted for as an equity transaction.

If the Group loses control over a subsidiary, it derecognizes the related assets (including goodwill), liabilities, non-controlling interest and other components of equity while any resultant gain or loss is recognized in profit or loss. Any investment is recognized at fair value.

2.3 Business combinations

Acquisitions of subsidiaries and businesses are accounted for using the acquisition method. The consideration transferred of a business combination is measured as the aggregate of assets transferred in exchange for control of the acquiree, the liabilities issued or borne by the Group, and the fair value of the shares issued at the acquisition date. Acquisition-related costs are recognized in profit or loss as incurred.

Acquired assets, liabilities and contingent liabilities that are identifiable at the acquisition date are recognized at fair value on the acquisition date except for the following:

- Deferred tax assets and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with KIFRS 1012 *Income Taxes* and KIFRS 1019 *Employee Benefits*, respectively.
- Liabilities or equity instruments related to share-based payment arrangements of the acquiree or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the acquiree are measured in accordance with KIFRS 1102 *Share-based Payment* at the acquisition date.
- Non-current assets (or disposal groups) classified as held for sale in accordance with KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations* are measured in accordance with KIFRS 1105.

Goodwill is measured as the excess of the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree and the fair value of the acquirer's previously held equity interest in the acquire (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of the consideration transferred, the amount of any non-controlling interests in the acquire and the fair value of the acquirer's previously held interest in the acquire (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interests that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement basis is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at fair value or, when applicable, on the basis specified in another KIFRS.

The transfer consideration of the Group as a result of the business combination includes the assets and liabilities from the contingent consideration arrangement and the contingent consideration is measured at the fair value at the acquisition date and is included as part of the consideration transferred. Changes in fair value after the acquisition date are adjusted retrospectively and adjusted in the corresponding goodwill if the conditions of the measurement period adjustments are met. Measurement Period Adjustments are adjustments that result from acquiring additional information about the facts and circumstances that existed at the acquisition date during the 'Adjustment Period' (which cannot exceed one year from the acquisition date).

Changes in fair value of contingent consideration that do not qualify for measurement period adjustments are accounted for in accordance with the classification of contingent consideration. Contingent consideration that is classified as equity is subsequently accounted for as equity if the settlement is not made at the reporting date. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with KIFRS 1039 *Financial Instruments: Recognition and Measurement* or KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*. If the gain or loss is recognized, it is recognized in profit or loss.

In a staged business combination, the Group remeasures the previously held equity interest in the acquiree to its fair value at the acquisition date and, if any, the result is recognized in profit or loss. Recognition of changes in the value of interests in the acquiree prior to the acquisition date to other comprehensive income is reclassified to profit or loss in the same manner as if the previously held equity interests were disposed of directly.

2.3 Business combinations (cont'd)

If the initial accounting for the business combination cannot be completed by the end of the reporting period in which the business combination occurs, the Group reports provisional amounts in the consolidated financial statements for items for which accounting is not completed. In the event that there is newly acquired information about facts and circumstances that existed at the acquisition date during the measurement period (see above) the Group would have had an effect on the measurement of the amount recognized at the acquisition date. Recognized provision is adjusted retrospectively or additional assets and liabilities are recognized.

2.4 Investment in associates and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but is not control or joint control over those policies.

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.

Except for the case where an investment in an associate or a joint venture is classified as a held for sale in accordance with KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations*, the profit or loss, are included in the consolidated financial statements by applying the equity method. In applying the equity method, investments in associates and joint ventures are carried at the acquisition cost less any impairment loss on the investments in associates and joint ventures, adjusted for changes in equity in net assets of associates and joint ventures consolidated financial statements. Losses of associates and joint ventures that exceed the interests of the Group in relation to the associates and joint ventures (including long-term investments that substantially form part of the net investment of the Group in the associates and joint ventures) are legally or constructively obligated, or are required to be paid on behalf of the joint venture.

The cost of acquisition over the fair value of identifiable assets, liabilities and contingent liabilities of associates and joint ventures at the acquisition date in excess of the Group's interest is recognized as goodwill. Goodwill is included in the carrying amount of the investment and subject to impairment testing as part of the investment. If the Group holds interests in the net fair value of identifiable assets, liabilities and contingent liabilities exceeding the cost of purchase after the impairment testing, such interests are recognized in profit or loss.

If the entity has retained some of the investment assets of existing associates and joint ventures even after it has lost significant influence over the associates and joint ventures, the fair value of the investment assets at the point of time when the significant influence is lost, are considered to be the fair value at the initial recognition of the financial asset in accordance with KIFRS 1039. The difference between the carrying amount of the investment and the fair value of the investment is recognized in profit or loss, including the gain or loss on disposal of the associate. In addition, the investor accounts for all amounts recognized as other comprehensive income in relation to the associate and the joint venture on the same basis as the accounting treatment in case the associate and the joint venture directly dispose of the related asset or liability. Therefore, when an associate is required to reclassify the gain or loss previously recognized in other comprehensive income to the profit or loss as a result of the disposal of the asset or liability, the investor may reclassification gains or losses on equity Reclassified to profit or loss (reclassification adjustment).

If the equity method of accounting for associates or joint ventures decreases, but the equity method is applied, if the gain or loss previously recognized in other comprehensive income is reclassified to profit or loss as a result of the disposal of the related asset or liability, The proportionate portion of the decrease in ownership interests is reclassified to profit or loss. In addition, KIFRS 1105 is applied when a portion of investments in associates or joint ventures meets the criteria for sale.

2.4 Investment in associates and joint ventures (cont'd)

The Group determines whether an impairment loss is recognized in respect of investments in associates and joint ventures in accordance with KIFRS 1039 *Financial Instruments: Recognition and Measurement*. If there is an indication of impairment, the total carrying amount of the associate and joint venture (including goodwill) is compared to the recoverable amount (the greater between fair value less costs to sell and value in use) in accordance with KIFRS 1036 *Asset Impairment*. The recognized impairment loss is not allocated to any assets (including goodwill) that are part of the carrying amount of associates and joint ventures. The reversal of impairment loss is recognized in accordance with KIFRS 1036 as the recoverable amount of the investment assets increases subsequently.

When an associate becomes a joint venture or, conversely, a joint venture becomes an associate, the Group continues to apply the equity method and does not remeasure residual equity.

When the Group transacts with an associate or a joint venture, the gain or loss on the transaction between the associate and the joint venture is recognized only to the extent of the equity interest in the associate and the joint venture, are recognized.

2.5 Investment in joint operation

A joint operation 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.

When an entity performs an activity under a joint operation, the entity recognizes, as a co-operative, its own interest in the joint operation as follows:

- Own assets. Include own shares of assets that are jointly owned.
- Own debt. Including own shares of jointly-generated debt.
- The own share of output from joint sales.
- The own share of the output of the joint sales.
- Own expenses. Include own share of the costs incurred jointly.

The Group accounts for assets, liabilities, income and expenses of its own interests in joint operation in accordance with the standards that apply to certain assets, liabilities, income and expenses.

If a joint operating entity, such as selling or investing in an asset in a joint operation, is deemed to perform a transaction with another party in the joint operation, the entity shall notify the other party. We are only aware of the limit on shareholding.

If the co-operative, the Group, conducts transactions such as joint sales and purchases of assets, the Group does not recognize its portion of the profit or loss until the assets are resold to a third party.

2.6 Goodwill

Goodwill resulting from an acquisition of a business is carried at cost as established at the date of acquisition of the business less accumulated impairment losses, if any.

For the purpose of impairment testing, goodwill is allocated to each of the cash generating units (CGUs) (or group of CGUs) that is expected to benefit from the synergies of the combination.

A CGU to which goodwill has been allocated is tested for impairment annually, or more frequently when there is indication that the unit may be impaired. If the recoverable amount of the CGU is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit on a pro rata basis based on the carrying amount of each asset in the unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

On disposal of the relevant CGU, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

The Group's accounting policies for goodwill arising on the acquisition of an associate are set out in Note 2.4.

2.7 Assets held for sale and discontinued operations

2.7.1 Assets held for sale

Non-current assets and disposal groups are classified as 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. Management must be committed to the sale, which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

If the Group commits a sale plan that results in a loss of control of the subsidiary, the Group will, if the Group has satisfied the conditions previously mentioned, regardless of whether the Group has a non-controlling interest in the former subsidiary after the sale, all assets and liabilities are classified as held for sale.

If the Group is committed to a sale of an investment in an associate or a joint venture, all or part of the investment in the associate or joint venture to be sold will be classified as held for sale if it meets the criteria for sale, and the Group ceases to apply the equity method for investments in associates or joint ventures related to the items classified as held for sale. The Group continues to apply the equity method of accounting for residual interests in investments in associates or joint ventures that are not classified as held for sale. However, if the Group loses its significant influence on associates or joint ventures due to the sale, the Group ceases to apply the equity method at the time of sale.

Unless the Group continues to apply the equity method to the Group's remaining retained shares in an associate or joint venture after the sale of an investment in an associate or a joint venture, the Group shall retain the remaining amount of the investment in the associate or joint venture *Corporate KIFRS 1109 Financial assets*.

Non-current assets (and disposal groups) classified as held for sale are measured at the lower between their previous carrying amount and fair value less costs to sell.

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

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

2.7.2 Assets scheduled for distribution to owners (or disposal groups)

The Group also applied the accounting policies related to the types, presentation and measurement of non-current assets (or disposal groups) classified as held for sale to non-current assets (or disposal groups) that are classified as scheduled for distribution to owners who exercise their qualifications as owners.

In addition, if all owners with the same kind of equity instruments are treated equally in distributing these non-cash assets to owners who exercise their qualifications as owners free of charge and the assets are ultimately not controlled by the same party or parties before and after the distribution, we recognize any dividend payable at the time of declaring the distribution (when approved in the shareholders' meeting). The dividend payable is measured at the fair value of the non-cash assets to be distributed at the end of each reporting period and at the settlement date, and the change in the carrying amount of the dividend payable is recognized in other capital items in the financial statement as an adjustment to the amount of the distribution.

In settling the dividend payable, the Group shall recognize any difference between the carrying amount of the non-cash assets distributed and the carrying amount of the dividend payable as profit or loss.

2.7.3 Discontinued operation

Disposal entity is a discontinued operation if:

- It is a separate main business line or business area.
- It is a part of a single plan to dispose of separate major business lines or business areas.
- It is a subsidiary acquired solely for sale.

The Group excludes the profit or loss from the results of the continuing operation and displays the profit or loss as a single amount in the income statement. Additional details of discontinued operations are disclosed in Note 36.

2.8 Revenue from contracts with customers

2.8.1 Identifying performance obligations

The Group mainly engages in business area, such as power generation facilities, industrial facilities, construction machinery, engines, manufacture of casting and forgings, and construction.

The Group identifies performance obligations that are distinct in the contract with the customer. Accordingly, a performance obligation, unit of revenue recognition, may be additionally identified in a single contract, or performance obligations in multiple contracts can be combined as a single performance obligation. The timing of the Group's revenue recognition may vary depending on whether each performance obligation identified is satisfied at a point in time or over time.

The Group identifies a performance obligation as a distinct performance obligation when the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer and the Group's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract, under the application of KIFRS 1115. Also, for performance obligations that are distinct, a transaction price is allocated based on stand-alone selling prices or, if they are not directly observable, estimated them and allocated to meet the allocation objective.

2.8.2 Performance obligations satisfied over time

The power and industry sector of the Group engage in manufacturing and selling power generation equipment ordered by the customer with design elements designated. The Group determines the contract as a construction contract, measures the progress the input method, and recognizes revenue based on the percentage-of-completion.

The Group recognizes revenue according to the percentage-of-completion only in case when it does not create an asset with an alternative use to the Group as it performs its performance obligations and has an enforceable right to payment for performance completed to date since it considers the control of the goods or services is transferred over time.

As a result of review on possibility of alternative use and right to payment by contracts, the Group recognizes revenue by applying the percentage-of-completion.

2.8.3 Measurement of progress using input method

The Group signs a contract for EPC plant construction and power generation service which contains purchasing, manufacturing, and installment of power generation related materials such as boilers and turbines and carry out construction work over a long period of time in general. The Group recognizes revenue on the basis of progress of the construction or power generation services measured by using an input method if it determines that a performance obligation under the construction or service contract is satisfied over time, when, and only when, one of the following criteria is met: i) the customer simultaneously receives and consumes the benefits provided to them as soon as the Group performs the obligation, or, ii) the Group creates or enhances an asset that the customer controls as soon as the Group performs the obligation to create or enhance the asset.

In addition, for the purpose of presenting the exact progress of service under the contract in revenue recognized, the Group recognizes revenue at the cost of goods used for settling the obligation, if i) all goods are identical upon the contract inception, ii) the customer is expected to have significant control over the goods before receiving services related to the goods, iii) the cost of goods transferred is significant compared to the total cost expected to incur in settling the obligation, iv) the Group procures the goods from the third parties, and v) there is no significant involvement of the Group in the design and production of the goods.

2.8.4 Variable consideration

The Group estimates variable consideration using the expected value method that better predicts to which it will be entitled from the customers and recognizes revenue in the amount of the transaction price that include variable consideration that is constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized until the expiry of return date. The Group recognizes a refund liability for the amount to which it does not expect to be entitled among the consideration received or expected to receive.

2.8.5 Allocation of the transaction price

The Group allocates the transaction price on the basis of the stand-alone selling price to the various performance obligations identified in a single contract. The Group uses the 'adjusted market assessment approach' to estimate the stand-alone selling price of each performance obligation and, in exceptional transactions, the 'expected cost plus a margin approach' to predict expected costs and add appropriate profit margins.

2.9 Due from or to customers for contract work

The amount of cumulative accrued costs plus profit recognized (or, less loss recognized) exceeding the progress billing is stated as due from customers for contract work and the amount of progress billing exceeding the cumulative accrued costs plus profit recognized (or, less loss recognized) is stated as due to customers for contract work. The amount received before the completion of relevant construction work is recognized as advances received in the consolidated financial statement. The amount that has been charged to the customer for the work carried out but has not been received is included in trade receivables in the consolidated financial statement.

2.10 Rental income

The Group's policy for recognition of revenue from operating leases is described in Note 2.11.

2.11 Leases

The Group determines whether the contract itself is a lease or the contract contains lease at the time of agreement, considering whether the contract exchange the control of the identified asset for a certain period of time with price of the contract.

The Group as a lessee

The Group applies a single method on every lease except short-term leases and leases of low-value assets. The Group recognizes lease liabilities that represent the obligation to pay the leases and right-of-use assets that represents right-of-use.

2.11.1 Right-of-use assets

The Group recognizes right-of-use assets on lease commencement date (the date when the underlying asset is usable). Right-of-use asset is measured as cost, and the Group applies cost model on subsequent measurement. To apply cost model, the Group deducts accumulated depreciation and accumulated loss of impairment and recognizes adjustments base on remeasurement of lease liabilities. The cost of the right-of-use assets includes the amount of the perceived lease liabilities, the initial direct cost, and the lease fee paid before or after the lease commencement date with received lease incentive deducted. The right-of-use assets are depreciated on a flat basis over a short period of time between the lease period and the estimated useful life of the assets.

If the ownership of the underlying asset is transferred to the Group at the end of the lease term or if the Group is expected to exercise the purchase option at the cost of the right-of-use assets, depreciation is calculated using the estimated useful life of the underlying asset of the asset.

The right-of-use assets are also subject to damage and the relevant accounting policy is described in Note 2.21.

2.11.2 Lease liabilities

On lease commencement date, the Group recognizes lease liabilities at the present value of the lease to be paid over the lease period. The lease fee consists of a fixed fee (including a substantial fixed fee, and the lease incentive to receive is deducted), a variable lease payment that varies according to the index or rate, and an amount expected to be paid according to the residual value guarantee. Lease fee also includes the amount to be borne to terminate the lease if the Group is fairly certain to exercise buying options, considering exercise cost of the buying options and termination options to lease term.

A variable lease that does not varies according to the index of rate (unless not from the production of inventories) is recognized during the period of time when an event or condition that causes a lease happens.

When the Group evaluates the present value of lease fee, it uses the incremental borrowing interest rate of the lease commencement date because it cannot easily calculate the internal rate of return of the lease. After the lease commencement date, the amount of lease liabilities increases to reflect interest and decreases to reflect the lease fee paid. In addition, the book values of the lease liabilities are remeasured if there is a change in the lease term, a change in the lease fee (for example, a change in the future lease due to a change in the index or rate used to calculate the lease fee), or a change in the option assessment to buy the underlying asset.

2.11.3 Short-term lease and Leases of low-value assets

The Group applies exemption rule for the recognition of short-term lease, which has a lease-term less than 12 months from the lease commencement date and do not include purchase options. In addition, the Group applies exemption rule for the recognition of leases of low-value assets on office equipment, etc., which is considered as low value assets. Lease fee of Short-term lease and leases of low-value of assets are recognized as cost based on straight-line method through the lease term.

The Group as lessor

The Group classifies leases that do not transfer most of the risks and compensation for the ownership of underlying assets as operating leases. Lease revenues are recognized based on straight-line method through the lease term and it can be classified as sales in the consolidated statements of profit or loss depending on the nature of the business.

2.12 Foreign currencies

The consolidated financial statements of the Group are presented in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each group entity are expressed in Korean won, which is the functional currency of the entity and the presentation currency for the consolidated financial statements.

In preparing the financial statements, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences are recognized in profit or loss in the period in which they arise, except for:

- Exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings.
- Exchange differences on transactions entered into in order to hedge certain foreign currency risks (see Note 2.26 below for hedging accounting policies)
- Exchange differences on monetary items forming part of the net investment in the foreign operation.

In order to prepare consolidated financial statements, the assets and liabilities of foreign operations included in the Group are presented using the exchange rates at the end of the reporting period. Unless the foreign currency exchange rate fluctuates significantly during the period and the exchange rate at the transaction date is not required to be used, the items of profit or loss are translated at the average exchange rate for the year. Foreign exchange differences arising from such differences are recognized in other comprehensive income and accumulated in equity (If appropriate, allocate to non-controlling interests).

When a foreign operation is disposed of (In other words, the disposal of the entire amount of the Group's foreign operations, the disposal of the subsidiary including its overseas operations, the partial disposal of the equity of the joint venture, or the partial disposal of the equity interest in an associate (If the equity interest is a financial asset that includes overseas business sites), the entire amount of foreign exchange differences related to the foreign operations attributable to the parent is reclassified to profit or loss. The cumulative exchange differences related to the foreign operations attributable to the non-controlling interests are eliminated but are not reclassified to profit or loss.

For certain dispositions that do not result in a loss of control over subsidiaries, including foreign operations, the proportionate share of the accumulated foreign exchange differences is reassigned to non-controlling interests and is not reclassified to profit or loss. For all other disposals (In other words, a decrease in ownership interests in an associate or joint venture of a group that does not result in significant influence or loss of joint control), the proportionate share of the accumulated foreign exchange differences is reclassified to profit or loss.

2.12 Foreign currencies (cont'd)

Fair value adjustments for goodwill and identifiable assets and liabilities arising from the acquisition of foreign operations are recognized in the income statement as assets and liabilities at the foreign operations and are translated at the exchange rates at the reporting date, the resulting foreign exchange difference is recognized as capital.

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

2.13 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 or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

2.14 Retirement benefit costs and termination benefits

The Group operates a defined benefit pension plan. The cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each reporting period. Remeasurement, comprising actuarial gains and losses, the effect of the changes to the asset ceiling (if applicable) and the return on plan assets are reflected immediately in the consolidated financial statement with a charge or credit recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss. Past service cost is recognized in profit or loss in the period of a plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset.

Defined benefit costs are composed of service cost (including current service cost, past service cost, as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

The Group presents the service cost and net interest expense (income) components in profit or loss, and the remeasurement component in other comprehensive income. Curtailment gains and losses are accounted for as past service costs.

The retirement benefit liabilities recognized in the consolidated financial statement represents the actual deficit or surplus in the Group's defined benefit plans. Any surplus resulting from this calculation is limited to the present value of any economic benefits available in the form of refunds from the plans or reductions in future contributions to the plans.

A liability for a termination benefit is recognized at the earlier of when the entity can no longer withdraw the offer of the termination benefit and when the entity recognizes any related restructuring costs.

Contributions to defined contribution retirement benefit plans are recognized as an expense when employees have rendered service entitling them to the contributions.

2.15 Share-based payment transactions of the Group

Equity-settled share-based payments to employees are measured at the fair value of the equity instruments at the grant date.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of equity instruments that will eventually vest. At the end of each reporting period, the Group revises its estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognized in profit or loss, such that the cumulative expense reflects the revised estimate, with a corresponding adjustment in other component of equity.

2.16 Taxation

Income tax expenses represent the sum of the tax currently payable and deferred tax.

2.16.1 Current tax

The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the consolidated statement of profit or loss and comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. 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.

2.16.2 Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized. Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit.

The Group can control the timing of the extinguishment of the temporary difference and the additions to the subsidiary, the investment in the associate and the interest in the joint venture, unless it is probable that the temporary difference will not cease in the foreseeable future deferred tax liabilities are recognized for temporary differences. Deferred tax assets arising from temporary differences arising from these investments and investments are highly probable to be taxable enough to enable the benefits of the temporary difference and are likely to expire in the foreseeable future recognize only if high.

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 profits will be available to allow all or part of the asset to be recovered.

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. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred income tax assets and liabilities are recognized when the Group has a legally enforceable right to offset current tax assets and current tax liabilities and are subject to the same taxation entities as the taxable entity are intended to settle the liabilities at the same time as they are expected to be settled at the reporting date, if the Group intends to settle the current tax liabilities and assets on a net basis, deferred tax liabilities are settled or deferred tax assets are recovered only offset.

2.16.3 Current and deferred taxes for the year

Current and deferred taxes are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity. Where current tax or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

2.17 Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received.

The benefit of a government loan at a below-market rate of interest is treated as a government grant, measured as the difference between proceeds received and the fair value of the loan based on prevailing market interest rates.

Government grants related to assets are presented in the consolidated financial statement by deducting the grant from the carrying amount of the asset. The related grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

Government grants related to income are recognized in profit or loss on a systematic basis over the periods in which the Group recognizes as expenses the related costs for which the grants are intended to compensate. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future-related costs are recognized in profit or loss in the period in which they become receivable.

2.18 Property, plant and equipment

Property, plant and equipment are stated at cost less subsequent accumulated depreciation and accumulated impairment losses, other than land, for which revaluation model is applied after initial recognition. The cost of an item of property, plant and equipment is directly attributable to their purchase or construction, which includes any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. It also includes the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs are recognized in carrying amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow to the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

The Group does not depreciate land. Depreciation expense is computed using the straight-line method based on the estimated useful lives of the assets as follows:

	<u>Estimated useful lives (in years)</u>
Buildings	4-50
Structures	2-40
Machinery	2-20
Other property, plant and equipment	1-20

If each part of an item of property, plant and equipment has a cost that is significant in relation to the total cost of the item, 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.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

2.19 Investment properties

Investment properties are properties held to earn rentals and/or for capital appreciation (including property under construction for such purposes). Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are stated at fair value, with any gains or losses arising on fair value fluctuation recognized in profit or loss.

Subsequent costs are recognized in carrying amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

An investment property is derecognized upon disposal or when the investment property is permanently withdrawn from use and no future economic benefits are expected from the disposal. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

2.20 Intangible assets

2.20.1 Intangible assets acquired separately

Intangible assets with finite useful lives that are acquired separately are carried at cost, less accumulated amortization and accumulated impairment losses. Amortization is recognized on a straight-line basis over their estimated useful lives. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with indefinite useful lives that are acquired separately are carried at cost less accumulated impairment losses.

2.20.2 Internally generated intangible assets - Research and development costs

Expenditure on research activities is recognized as an expense in the period in which it is incurred.

Expenditure arising from development (or from the development phase of an internal project) is recognized as an intangible asset if, and only if, the development project is designed to produce new or substantially improved products, and the Group can demonstrate the technical and economic feasibility and measure reliably the resources attributable to the intangible asset during its development.

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

2.20.3 Intangible assets acquired in a business combination

Intangible assets that are acquired in a business combination are recognized separately from goodwill and are initially recognized at their fair value at the acquisition date (which is regarded as their cost). Subsequent to initial recognition, intangible assets acquired in a business combination are reported at cost less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

2.20.4 Derecognition of intangible assets

An intangible asset is derecognized on disposal or when no future economic benefits are expected from its use. Gains or losses arising from derecognition of an intangible asset, measured as the difference between the net disposal proceeds and the carrying amount of the asset, are recognized in profit or loss when the asset is derecognized.

2.20.5 Amortization of intangible assets

Intangible assets other than memberships with indefinite useful lives are amortized using the straight-line method with acquiring cost, except for residual value, with the amortization beginning when the asset is available for use. The estimated useful lives of the assets are as follows:

	<u>Estimated useful lives (in years)</u>
Development costs	3-20
Industrial rights	5-10
Other intangible assets	2-20

2.21 Impairment of property, plant, equipment and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs.

Memberships with indefinite useful lives and intangible assets not yet available for use are tested for impairment at least annually, and whenever there is an indication that the asset may be impaired.

Recoverable amount is the higher of fair value less costs to sell and value in use. If the recoverable amount of an asset (or a CGU) is estimated to be less than its carrying amount, the carrying amount of the asset (or the CGU) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or a CGU) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or the CGU) in previous years. A reversal of an impairment loss is recognized immediately in profit or loss.

2.22 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories, except for those in transit, is measured under the weighted-average cost formula and consists of the purchase price, cost of conversion and other costs incurred in bringing the inventories to their present location and condition. Net realizable value represents the estimated selling price for inventories, less all estimated costs of completion and costs necessary to make the sale.

When inventories are sold, the carrying amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-down of inventories to net realizable value and all losses of inventories is recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

2.23 Provisions

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.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows (where the effect of the time value of money is material). The discount rate used is a pretax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Where discounting is used, the increase in the provision due to the passage is recognized in profit or loss as borrowing cost.

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.

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. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period.

2.24 Financial instruments

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

2.24.1 Financial assets

[Initial recognition and measurement]

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

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them.

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

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

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

[Subsequent measurement]

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

- Financial assets at amortized cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)
- Financial assets at fair value through profit or loss

2.24.1 Financial assets (cont'd)

Financial assets at amortized cost (debt instruments)

The Group measures financial assets at amortized cost if both of the following conditions are met:

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

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

Financial assets at fair value through OCI (debt instruments)

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

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

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

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

Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 *Financial Instruments: Presentation* and are not held for trading.

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

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

Financial assets at fair value through profit or loss

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

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

2.24.1 Financial assets (cont'd)

This category contains derivatives and listed equity instruments that do not make an irrevocable choice to account for changes in fair value in other comprehensive income. Dividends on listed equity instruments are recognized in profit or loss at the time the rights are established.

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

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

[Derecognition]

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

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

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

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

[Impairment of financial assets]

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

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

2.24.1 Financial assets (cont'd)

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

2.24.2 Financial liabilities

[Initial recognition and measurement]

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, financial liabilities as subsequently measured at amortized cost, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

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

[Subsequent measurement]

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

Financial liabilities at fair value through profit or loss

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

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

Gains or losses on liabilities held for trading are recognized in profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied.

Financial liabilities as subsequently measured at amortized cost

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

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR.

This category generally applies to interest-bearing loans and borrowings.

[Derecognition]

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

2.24.3 Offsetting of financial instruments

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

2.24.4 Financial guarantee liabilities

A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due in accordance with the terms of a debt instrument.

Financial guarantee liabilities are initially measured at their fair values and, if not designated as financial liabilities at fair value through profit or loss, or unless the transfer of a financial asset does not meet the derecognition criteria or the continuing involvement approach is applied are subsequently measured at the higher of:

- The amount loss allowances determined in accordance with KIFRS 1109 5.5, and
- The amount initially recognized, less cumulative amortization recognized in accordance with the KIFRS 1115

2.25 Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Group are recognized at the proceeds received, net of direct issue costs.

Repurchase of the Group's own equity instruments is recognized and deducted directly in 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.

2.26 Derivative financial instruments and hedge accounting

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

For the purpose of hedge accounting, hedges are classified as:

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

At the inception of a hedge relationship, the Group formally designates and documents the hedge relationship to which the Group wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge.

The documentation includes identification of the hedging instrument, the hedged item, the nature of the risk being hedged and how the Group will assess whether the hedging relationship meets the hedge effectiveness requirements (including the analysis of sources of hedge ineffectiveness and how the hedge ratio is determined). A hedging relationship qualifies for hedge accounting if it meets all of the following effectiveness requirements.

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

- There is 'an economic relationship' between the hedged item and the hedging instrument.
- The effect of credit risk does not 'dominate the value changes' that result from that economic relationship.
- The hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

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

Fair value hedges

The change in the fair value of a hedging derivative is recognized in the statements of profit or loss. However, any changes in the fair value of a hedging derivative of equity instrument that the Group elects to present in OCI are recognized in OCI. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in the statements of profit or loss.

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

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss.

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

Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statements of profit or loss. The cash flow hedge reserve is adjusted to the lower of the cumulative gain or loss on the hedging instrument and the cumulative change in fair value of the hedged item.

The Group uses forward currency contracts as hedges of its exposure to foreign currency risk in forecast transactions and firm commitments, as well as forward commodity contracts for its exposure to volatility in the commodity prices. The ineffective portion relating to forward contracts is recognized as finance income or finance expenses.

The amounts accumulated in OCI are accounted for, depending on the nature of the underlying hedged transaction. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability. This is not a reclassification adjustment and will not be recognized in OCI for the year. This also applies where the hedged forecast transaction of a non-financial asset or non-financial liability subsequently becomes a firm commitment for which fair value hedge accounting is applied.

For any other cash flow hedges, the amount accumulated in OCI is reclassified to profit or loss as a reclassification adjustment in the same period or periods during which the hedged cash flows affect profit or loss.

If cash flow hedge accounting is discontinued, the amount that has been accumulated in OCI must remain in accumulated OCI if the hedged future cash flows are still expected to occur. Otherwise, the amount will be immediately reclassified to profit or loss as a reclassification adjustment. After discontinuation, once the hedged cash flow occurs, any amount remaining in accumulated OCI must be accounted for depending on the nature of the underlying transaction as described above.

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

Hedges of a net investment in a foreign operation

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

2.27 Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purposes in these consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of KIFRS 1102 *Share-based Payment*, leasing transactions that are within the scope of KIFRS 1017 *Leases* and measurements that have some similarities to fair value but are not fair value, such as net realizable value in KIFRS 1002 *Inventories*, or value in use in KIFRS 1036 *Impairment of Assets*.

In addition, for financial reporting purposes, fair value measurements are categorized into Levels 1, 2 or 3 based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in their entirety, which are described in Note 10.

2.28 Greenhouse gas emissions allowances

The Group accounts for greenhouse gas emission allowances and emission liabilities arising under the *Act on the Allocation and Trading of Greenhouse-Gas Emissions Permits*. Details are described below.

2.28.1 Greenhouse gas emission allowances

Greenhouse gas emission allowances consist of those allocated free of charge by the government (“free allocation”) and those purchased for a fee. Free allocations shall be measured and recognized at nil (0), while emission allowances purchased are recognized at the acquisition cost including costs that are directly related to acquisition and incur in regular way. The Group classifies greenhouse gas emission allowances held for settling the obligation defined in relevant laws as intangible assets and states the allowances at cost recognized upon initial recognition less the accumulated impairment losses. The portion of allowances to be delivered to the government within one year from the end of the reporting period is classified as current assets.

Emission allowances held for short-term trading gains are classified as current assets and measured at fair value at the end of each reporting period, while changes in the fair value are recognized in profit or loss. Greenhouse gas emissions allowances are removed when they are no longer available for delivery to the government or sale and future economic benefits are no longer expected.

2.28.2 Emission liabilities

Emissions liabilities are the present obligation to deliver emissions allowances to the government, which are measured at the sum of the carrying amount of emission allowances held by the Group and the estimated expenditure required to settle the obligations for excess emissions. Emissions liabilities are removed when delivered to the government.

2.29 Approval of consolidated financial statements

The consolidated financial statements of the Group were approved by the Board of Directors on February 26, 2024 and will be finalized at the annual general meeting of shareholders on March 28, 2024.

2.30 Accounts reclassification in the prior year consolidated financial statements

The Group has reclassified some accounts in the prior year consolidated financial statements in accordance with the accounts of the current year consolidated financial statements for easier comparison. Such reclassification does not affect the net profit or net asset values reported as of December 31, 2022.

3. Significant accounting judgements and key sources of estimation uncertainties

In the application of the Group's accounting policies for the consolidated financial statements, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and future periods if the revision affects both current and future periods.

3.1 Revenue recognition

Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. The stage of completion of the contract is determined as reasonable estimation and is subject to change as related factors change.

3.2 Impairment of non-financial assets

Determining whether non-financial assets is impaired requires an estimation of the recoverable amount of the CGUs to which non-financial assets has been allocated. The value in use calculation requires the directors to estimate the future cash flows expected to arise from the CGU and a suitable discount rate in order to calculate the present value.

3.3 Defined benefit liabilities

The Group's defined benefit liabilities are determined based on the actuarial valuation carried out at the end of each annual reporting period. Actuarial assumptions are the Group's best estimates of the variables, such as discount rates, rates of expected future salary increases and mortality rates.

3.4 Provisions

The Group provides warranty for products when it recognizes the relevant revenue. The Group calculates the guaranteed provision as the best estimate that is deemed necessary to enhance future and current warranty obligations at the end of each reporting period. The Group continues to market new products using complex technologies, and depending on the local laws and practices, these accounting estimates may be changed to establish additional provisions in the future fiscal periods.

In addition, provisions for the expected cost of warranty obligations are recognized at the best estimate of the expenditure required to settle the Group's current and future obligations. Provisions are determined by the estimate based on past experience.

3.5 Revaluation model on land and fair value model on investment properties

As stated in Note 12 and Note 14, the Group uses evaluation technique, including inputs that are not based on observable market data to approximate revalued amount of land classified as property, plant and equipment and fair value of investment properties. The Group's management believes that the evaluation technique and assumptions that are used for valuation on land and investment properties are fair.

3.6 Deferred tax

Recognition and measurement of deferred tax assets and liabilities require the management's judgment, in particular, whether to recognize if the scope of deferred tax assets is affected by management's judgment and assumption in the future.

3.7 Special taxation for investment and facilitation of mutually beneficial cooperation

In accordance with the *Special Taxation for Investment and Facilitation of Mutually Beneficial Cooperation*, if a certain portion of taxable income of each fiscal year is not utilized for investment and salary increase purpose, the Group is obliged to pay additional income taxes calculated by the same Act. As a result, as the Group reflects the tax consequences for investment and promotion of collaborative cooperation when measuring the income tax in the same period, the income tax to be borne by the Group in the future may vary depending on the level of investment, wage increase and mutually-beneficial cooperation in each year.

3.8 Estimated useful lives of property, plant and equipment and intangible assets

Useful lives for depreciation and amortization are determined by the management's judgment.

3.9 Lease - Calculation of incremental borrowing rate

The Group cannot readily determine the interest rate implicit in the lease, therefore, it uses its incremental borrowing rate ("IBR") to measure lease liabilities. The IBR is the rate of interest that the Group would have to pay to borrow over a similar term, and with a similar security, the funds necessary to obtain an asset of a similar value to the right-of-use asset in a similar economic environment. The IBR therefore reflects what the Group 'would have to pay', which requires estimation when no observable rates are available (such as for subsidiaries that do not enter into financing transactions) or when they need to be adjusted to reflect the terms and conditions of the lease.

The Group estimates the IBR using observable inputs (such as market interest rates) when available and is required to make certain entity-specific estimates (such as the subsidiary's stand-alone credit rating).

3.10 Determining the lease term of contracts with renewal & termination options – Group as lessee

The Group determines the lease term as the non-cancellable term of the lease, together with any periods covered by an option to extend the lease if it is reasonably certain to be exercised, or any periods covered by an option to terminate the lease, if it is reasonably certain not to be exercised.

The Group has several lease contracts that include extension and termination options. The Group applies judgement in evaluating whether it is reasonably certain whether or not to exercise the option to renew or terminate the lease. That is, it considers all relevant factors that create an economic incentive for it to exercise either the renewal or termination. After the commencement date, the Group reassesses the lease term if there is a significant event or change in circumstances that is within its control and affects its ability to exercise or not to exercise the option to renew or to terminate (e.g., construction of significant leasehold improvements or significant customization to the leased asset).

3.11 Lease classification – Group as lessor

The Group has sub-lease contracts for right-of-use assets classified as investment properties. The Group has determined, based on an evaluation of the terms and conditions of the arrangements for most sub-leasing contracts, such as the lease term not constituting a major part of the economic life of the right-of-use assets and the present value of the minimum lease payments not amounting to substantially all of the fair value of the right-of-use assets, that it retains substantially all the risks and rewards incidental to ownership of these properties and accounts for the contracts as operating leases.

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3.12 Revenue recognition - Items deducted from sales

The Group deducts the promotions and incentives provided to customers from sales, and if the sales deduction items related to the generated sales are not settled, the amount is recognized based on the occurrence standard.

Unsettled amounts such as promotions and incentives are estimated based on accumulated experience at the time of sale, and the revenue of the Group is affected by the predicted sales deduction.

3.13 Fair value

When the fair values of financial instruments recorded in the consolidated financial statements cannot be measured based on quoted prices in active markets, their fair value is measured using valuation techniques including the discounted cash flow (“DCF”) model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgement is required in establishing fair values. Judgements include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions relating to these factors could affect the reported fair value of financial instruments.

3.14 Determination of consolidation

As of December 31, 2023, the Company holds 30.4% of voting rights of Doosan Enerbility Co., Ltd and 38.9% of voting rights of Doosan Tesna Inc. and Doosan Enerbility Co., Ltd holds 30.3% of voting rights of Doosan Fuel Cell Co., Ltd. Most of the remaining stakes are held by small shareholders of less than 1%. The management of the Group reassess whether it controls subsidiaries listed above for the first time (January 1, 2013) and at the end of each subsequent reporting period. The executives of the Group concluded that they have control over the absolute size of the voting rights of the Group and the relative size of other shareholding voting rights and the degree of shareholding of other voting rights holders.

4. Financial risk management

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

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

4.1 Market risk

4.1.1 Foreign currency risk

The Group’s exposure to the risk of changes in foreign exchange rates relates primarily to the Group’s operating activities (when revenue or expense is denominated in a foreign currency). The Group’s basis for foreign currency risk management is to reduce income/loss volatility. Foreign currency risk is managed by the Group’s policy on foreign currencies and foreign currency management for speculative purpose is strictly prohibited.

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 for the remaining exposure by using derivatives, such as currency forwards.

The carrying amount of the Group’s monetary assets and liabilities denominated in foreign currencies other than the Group’s functional currency as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	December 31, 2023					
	USD	EUR	JPY	GBP	Others	Total
Assets	₩ 1,880,416	₩ 179,289	₩ 14,146	₩ 98,280	₩ 621,522	₩ 2,793,653
Liabilities	(1,524,580)	(300,820)	(103,010)	(25,852)	(529,167)	(2,483,429)
	₩ 355,836	₩ (121,531)	₩ (88,864)	₩ 72,428	₩ 92,355	₩ 310,224

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4.1.1 Foreign currency risk (cont'd)

	December 31, 2022					
	USD	EUR	JPY	GBP	Others	Total
Assets	₩ 1,706,809	₩ 99,995	₩ 9,526	₩ 184,842	₩ 259,348	₩ 2,260,520
Liabilities	(2,070,484)	(303,362)	(77,769)	(77,594)	(235,790)	(2,764,999)
	₩ (363,675)	₩ (203,367)	₩ (68,243)	₩ 107,248	₩ 23,558	₩ (504,479)

A sensitivity analysis on the Group's profit before income tax expenses assuming a 10% increase and decrease in currency exchange rates for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	Impact on profit before income tax expenses	
	2023	2022
10% Increase	₩ 31,022	₩ (50,448)
10% Decrease	(31,022)	50,448

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, 2023 and 2022.

4.1.2 Interest rate risk

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

To manage its interest rate risk, the Group minimizes external borrowings using internal funds and reduces borrowings with high interest rates and maintains an appropriate balance between borrowings with floating interest rate and fixed-interest rate and short-term and long-term borrowings. The 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.

The carrying amount of the Group's financial assets and liabilities with floating interest rates exposed to interest rate risk as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Financial assets	₩ 669,574	₩ 420,768
Financial liabilities	(2,859,818)	(2,310,486)
	₩ (2,190,244)	₩ (1,889,718)

A sensitivity analysis on the Group's profit before income tax expenses assuming a 1% increase and decrease in interest rates for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	Impact on profit before income tax expenses	
	2023	2022
1% Increase	₩ (21,902)	₩ (18,897)
1% Decrease	21,902	18,897

4.1.3 Price risk

The Group is exposed to equity price risks arising from its listed equity investments. 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. Important investments in the Group's portfolio are individually managed, and acquisition and disposal are approved by the Board of Directors.

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4.2 Credit risk

Credit risk refers to risk of financial losses to the Group when the counterparty defaults on the obligations of the contract. Credit risk arises from trade and other receivables, financial assets which are not equity securities, deposits in financial institution, financial derivatives and guarantee limit, and others. As well as from the Group's normal transactions and investing activities. To manage credit risk, the Group evaluates the creditworthiness of each customer or counterparty considering the financial status, past experience and other factors. The Group establishes credit limit for each customer and counterparty.

The Group evaluates the creditworthiness using open financial information and information provided by credit rating institution when the Group contracts with new customers. The Group decides credit transaction limit and is provided with collateral and guarantee based on evaluation.

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

The carrying amount for the financial assets exposed to credit risk as of December 31, 2023 and 2022 are as follows (Korean won in millions). The carrying amount indicates the maximum exposure to credit risk.

	December 31, 2023	December 31, 2022
Cash and cash equivalents	₩ 3,539,167	₩ 2,074,186
Short-term and long-term financial instruments	279,427	203,891
Trade and other receivables	2,435,928	2,364,567
Deposits	268,722	388,989
Short-term and long-term investment securities (Excluding equity securities):		
Financial assets at fair value through profit or loss	227,772	222,506
Derivative assets	38,436	95,157
	<u>₩ 6,789,452</u>	<u>₩ 5,349,296</u>

Apart from the above, in the case of contracts such as financial guarantees provided by the Group, the amount of guarantees to be paid by the Group at the request of the guarantee is the maximum amount exposed to the credit risk (see Note 32).

Details of trade receivables and due from customers for contract work exposed to credit risk, presented using forecast model, as of December 31, 2023 and 2022 are as follows (Korean won in millions):

		December 31, 2023								
		Trade receivables								
		Trade receivables assessed for impairment on a collective basis (*2)						Due from customers for contract work		
	Individually assessed trade receivables (*1)	Within due	Less than 3 months	3-6 months	6-12 months	More than 12 months	Total	(*1)	Total	
Book value	₩ 621,113	₩ 1,010,552	₩ 109,862	₩ 33,935	₩ 46,560	₩ 63,948	₩ 1,885,970	₩ 1,551,110	₩ 3,437,080	
Expected credit loss rate	30.08%	0.30%	1.07%	9.72%	12.47%	31.19%		3.86%		
Expected credit loss	₩ 186,853	₩ 3,032	₩ 1,178	₩ 3,297	₩ 5,806	₩ 19,943	₩ 220,109	₩ 59,940	₩ 280,049	

(*1) Trade receivables with indication of impairment that are individually identifiable, such as bankruptcy.

(*2) Trade receivables that are not individually significant and are classified into groups according to their similar characteristics.

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4.2 Credit risk (cont'd)

December 31, 2022										
Trade receivables										
	Individually assessed trade receivables (*1)	Trade receivables assessed for impairment on a collective basis (*2)					Total	Due from customers for contract work (*1)		Total
		Within due	Less than 3 months	3-6 months	6-12 months	More than 12 months				
Book value	₩ 606,285	₩ 1,308,222	₩ 93,182	₩ 52,459	₩ 15,622	₩ 18,195	₩ 2,093,965	₩ 1,360,337	₩ 3,454,302	
Expected credit loss rate	28.35%	0.75%	1.69%	2.15%	14.45%	65.02%		5.67%		
Expected credit loss	₩ 171,871	₩ 9,822	₩ 1,576	₩ 1,130	₩ 2,258	₩ 11,830	₩ 198,487	₩ 77,170	₩ 275,657	

(*1) Trade receivables with indication of impairment that are individually identifiable, such as bankruptcy.

(*2) Trade receivables that are not individually significant and are classified into group according to their similar characteristics.

Details of other receivables among the financial assets as of December 31, 2023 and 2022 are as follows (Korean won in millions):

December 31, 2023										
	Individually assessed other receivables	Other receivables assessed for impairment on a collective basis (*1)					Total			
		Within due	Less than 3 months	3-6 months	6-12 months	More than 12 months				
Loans and non-trade receivables	₩ 1,334,699	₩ 98,131	₩ 9,722	₩ 3	₩ -	₩ 53	₩ 1,442,608			
Accrued income	71,602	496	-	-	-	-	72,098			
	₩ 1,406,301	₩ 98,627	₩ 9,722	₩ 3	₩ -	₩ 53	₩ 1,514,706			

(*1) Trade receivables that are not individually significant and are classified into group according to their similar characteristics.

December 31, 2022										
	Individually assessed other receivables	Other receivables assessed for impairment on a collective basis (*1)					Total			
		Within due	Less than 3 months	3-6 months	6-12 months	More than 12 months				
Loans and non-trade receivables	₩ 987,151	₩ 27,203	₩ 8,556	₩ 19	₩ 4	₩ 173	₩ 1,023,106			
Accrued income	59,858	630	-	-	-	-	60,488			
Financial lease receivables	-	3,065	-	-	-	-	3,065			
	₩ 1,047,009	₩ 30,898	₩ 8,556	₩ 19	₩ 4	₩ 173	₩ 1,086,659			

(*1) Trade receivables that are not individually significant and are classified into group according to their similar characteristics.

As of December 31, 2023 and 2022, allowance for doubtful accounts on other receivables above amounts to ₩744,638 million and ₩616,694 million, respectively.

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4.3 Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty in meeting its financial liabilities' obligations related to its financing for its operation.

Based on the establishment of a regular funding plan, the Group prepares for the funding balance of its business activities, investment activities and financing activities for the maturity of financial assets and liabilities. The Group manages the liquidity risks that may occur in the future in advance by securing and maintaining required liquidity.

A summary of the Group's financial liabilities' maturity as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	December 31, 2023					
	Book value	Nominal cash flows according to contract				
		Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Principal of non-derivative financial liabilities	₩ 12,027,137	₩ 12,107,329	₩ 8,048,486	₩ 1,315,512	₩ 1,560,142	₩ 1,183,189
Interest from non-derivative financial liabilities	-	671,217	287,540	118,806	243,000	21,871
Derivative financial liabilities	105,619	90,327	64,213	28,777	(4,270)	1,607
Payment guarantee contract (*1)	-	871,514	871,514	-	-	-
	<u>₩ 12,132,756</u>	<u>₩ 13,740,387</u>	<u>₩ 9,271,753</u>	<u>₩ 1,463,095</u>	<u>₩ 1,798,872</u>	<u>₩ 1,206,667</u>

(*1) The payment guarantee contract is stated at the maximum amount the Group is obliged to pay upon the claim from guaranteed party (See Note 32).

	December 31, 2022					
	Book value	Nominal cash flows according to contract				
		Total	Less than 1 year	1-2 years	2-5 years	More than 5 years
Principal of non-derivative financial liabilities	₩ 11,596,287	₩ 11,773,931	₩ 6,704,641	₩ 2,313,384	₩ 1,444,146	₩ 1,311,760
Interest from non-derivative financial liabilities	-	798,246	313,386	147,016	241,875	95,969
Derivative financial liabilities	116,580	123,543	79,199	23,043	19,901	1,400
Payment guarantee contract (*1)	-	409,265	409,265	-	-	-
	<u>₩ 11,712,867</u>	<u>₩ 13,104,985</u>	<u>₩ 7,506,491</u>	<u>₩ 2,483,443</u>	<u>₩ 1,705,922</u>	<u>₩ 1,409,129</u>

(*1) The payment guarantee contract is stated at the maximum amount the Group is obliged to pay upon the claim from guaranteed party (See Note 32).

The above-mentioned maturity analysis is based on an undiscounted cash flow according to the contract, which differs from the carrying amount of liabilities presented in the consolidated financial statements. It also includes the interest expenses on financial liabilities to be paid in the future.

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4.4 Capital risk

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

The Group manages its capital structure through dividend payments to shareholders, returns capital to shareholders and issues new shares and sells its assets for debt reduction. Debt-to-equity ratio calculated as total liabilities divided by equity is used as an index to manage the Group's capital similar to overall industry practice.

Debt-to-equity ratios as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Total liabilities	₩ 17,080,070	₩ 16,017,537
Total equity	11,206,739	10,297,816
Debt-to-equity ratio	152.41%	155.54%

5. Restricted financial assets

Details of restricted financial assets as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022	Description
Cash and cash equivalents	₩ 31	₩ 1,815	Establishment of the right of pledge related financial credit and others
Short-term financial instruments	146,291	141,368	
Long-term financial instruments	45,425	41,324	National R&D (*1), shared growth fund, establishment of the right of pledge and others
	₩ 191,747	₩ 184,507	

(*1) Can only be used for the purpose of carrying out specific national R&D tasks.

In addition, regarding the securitization of accounts receivable of the Company which is explained in Note 15, the Company entrusted the deposit return receivables for the collection account (hereinafter referred to as the "collection account") opened to KOOKMIN BANK (hereinafter referred to as the "trustee") in order to receive payments related to the goods supply contract. The collection account cannot be paid without the request of the trustee, but if the parent company meets the conditions, such as withholding 1/3 of the payment in the division of beneficiary rights in the trust collection account managed by the trustee every month, the funds can be withdrawn twice a week. As of December 31, 2023 and 2022, the balance of the collection account is ₩13,120 million and ₩4,680 million respectively, in cash and cash equivalents in the consolidated statements of financial position.

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6. Short-term and long-term investment securities

Details of short-term and long-term investment securities as of December 31, 2023 and 2022 are as follows (Korean won in millions):

		December 31, 2023	December 31, 2022
Short-term Investment securities	Financial assets at fair value through profit or loss	₩ 86,237	₩ 33,348
Long-term Investment securities (*1)	Financial assets at fair value through OCI	27,220	30,689
	Financial assets at fair value through profit or loss	230,281	428,660
		<u>257,501</u>	<u>459,349</u>
		<u>₩ 343,738</u>	<u>₩ 492,697</u>

(*1) As of December 31, 2023, some of the long-term investment securities are provided as collateral for project financing (See Note 33).

Short-term and long-term investment securities as of December 31, 2023 and 2022 are as follows (Korean won in millions):

			December 31, 2023	December 31, 2022
Financial assets (designated) at fair value through OCI	Marketable equity securities	Preferred shares of Solus Advanced Materials Co., Ltd. and others	₩ 10,802	₩ 10,091
	Non-marketable equity securities	Whoop and others	16,418	20,598
			<u>₩ 27,220</u>	<u>₩ 30,689</u>
Financial assets at fair value through profit or loss	Marketable equity securities	NuScale Power LLC and others	21,415	73,537
	Non-marketable equity securities	Zigg Captial I , LP. & II LP. And others	67,331	165,965
	Contributions	Construction Guarantee and others	125,297	121,779
	Beneficiary certificates	Emerald Technology Ventures and others	20,660	24,230
	Debt securities	Valuegrowth Co.,Ltd. and others (*1)	81,815	76,497
			<u>₩ 316,518</u>	<u>₩ 462,008</u>
			<u>₩ 343,738</u>	<u>₩ 492,697</u>

(*1) Some of debt securities stated above are provided as collateral to Kodit 2021 the 1st Securitization Specialty Co., Ltd. and others as of December 31, 2023.

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6. Short-term and long-term investment securities (cont'd)

Changes in financial assets at fair value for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023					
	Beginning balance	Acquisition	Disposal	Valuation	Others (*1)	Ending balance
Financial assets at fair value through OCI	₩ 30,689	₩ 342	₩ (2,646)	₩ (1,994)	₩ 829	₩ 27,220
Financial assets at fair value through profit or loss	462,008	19,756	(33,248)	(127,543)	(4,455)	316,518
	<u>₩ 492,697</u>	<u>₩ 20,098</u>	<u>₩ (35,894)</u>	<u>₩ (129,537)</u>	<u>₩ (3,626)</u>	<u>₩ 343,738</u>

(*1) It includes exchange rate differences and others

	2022						
	Beginning balance	Acquisition	Disposal	Valuation	Reversal of impairment loss	Others (*1)	Ending balance
Financial assets at fair value through OCI	₩ 50,884	₩ 2,756	₩ (2,583)	₩ (22,966)	₩ -	₩ 2,598	₩ 30,689
Financial assets at fair value through profit or loss	654,781	122,824	(273,127)	(43,058)	19	569	462,008
	<u>₩ 705,665</u>	<u>₩ 125,580</u>	<u>₩ (275,710)</u>	<u>₩ (66,024)</u>	<u>₩ 19</u>	<u>₩ 3,167</u>	<u>₩ 492,697</u>

(*1) It includes changes in scope of consolidation and exchange rate differences.

7. Trade and other receivables

Details of trade and other receivables as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023		
	Gross amount	Provision for impairment	Book value
Current:			
Trade receivables	₩ 1,885,842	₩ (220,109)	₩ 1,665,733
Non-trade receivables	520,742	(84,726)	436,016
Accrued income	72,098	(13,397)	58,701
Short-term loans	195,701	(147,508)	48,193
Current portion of long-term financial lease receivables	-	-	-
	<u>₩ 2,674,383</u>	<u>₩ (465,740)</u>	<u>₩ 2,208,643</u>
Non-current:			
Trade receivables	₩ 128	₩ -	₩ 128
Non-trade receivables	88,365	(47,220)	41,145
Long-term loans	637,800	(451,788)	186,012
	<u>₩ 726,293</u>	<u>₩ (499,008)</u>	<u>₩ 227,285</u>

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7. Trade and other receivables (cont'd)

	2022				
	Beginning balance	Provision for impaired receivables (reversal)	Write off	Others (*1)	Ending balance
Current:					
Trade receivables	₩ 234,334	₩ (3,113)	₩ (40,421)	₩ 7,687	₩ 198,487
Non-trade receivables	82,656	(2,627)	(6,252)	(13,964)	59,813
Accrued income	12,588	74	-	(74)	12,588
Short-term loans	74,805	(3,308)	-	(147)	71,350
Non-current:					
Non-trade receivables	1,142	5,113	-	14,900	21,155
Long-term loans	438,789	20,872	-	(7,873)	451,788
	<u>₩ 844,314</u>	<u>₩ 17,011</u>	<u>₩ (46,673)</u>	<u>₩ 529</u>	<u>₩ 815,181</u>

(*1) Changes are caused by transfer to current, non-current, changes in scope of consolidation and foreign exchange difference and others.

Impairment loss (reversal of impairment loss) on impaired trade receivables is included in selling and administrative expenses in the consolidated statements of profit or loss, and that on receivables other than impaired trade receivables is included in other non-operating expenses (income).

8. Inventories

Inventories as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023			December 31, 2022		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Merchandises	₩ 205,344	₩ (18,729)	₩ 186,615	₩ 327,771	₩ (10,868)	₩ 316,903
Finished goods	1,108,767	(55,064)	1,053,703	734,675	(47,769)	686,906
Work in process	381,282	(22,961)	358,321	415,368	(25,958)	389,410
Raw materials	1,096,468	(44,286)	1,052,182	1,108,525	(44,839)	1,063,686
Materials in transit	246,091	-	246,091	271,351	-	271,351
Supplies	31,620	(3,149)	28,471	29,248	(2,682)	26,566
Others	1,737	-	1,737	1,849	-	1,849
	<u>₩ 3,071,309</u>	<u>₩ (144,189)</u>	<u>₩ 2,927,120</u>	<u>₩ 2,888,787</u>	<u>₩ (132,116)</u>	<u>₩ 2,756,671</u>

As of December 31, 2023, some of inventories are provided as collateral for debt of the Group and others (see Note 33).

The amount of (reversal of) write-down of inventories recognized for the years ended December 31, 2023 and 2022, respectively, amounts to ₩12,073 million and ₩16,057 million.

9. Derivatives

9.1 Details of derivatives and hedge accounting

Derivative contracts	Purpose	Description
Currency forward contracts	Held for trading	The Group designated the currency forward contracts without hedge accounting as hedging instrument to hedge the cash flow risk
	Fair value hedge	The Group designated the currency forward contracts as hedging instrument to hedge the risk of exchange rate fluctuations for commitment
	Cash flow hedge	The Group designated the currency forward contracts as hedging instrument to hedge the cash flow risk arising from changes in foreign currency of forecast sales
Interest rate swap	Cash flow hedge	The Group designated the interest rate swap as hedging instrument to hedge the cash flow risk arising from changes in interest rate
Currency swap	Held for trading	The Group designated the currency swap without hedge accounting as hedging instrument to hedge the risk of cash flow fluctuations due to exchange rate fluctuations to pay a fixed interest rate and receive a fixed interest rate in foreign currency on the future interest payment date and principal payment date
	Cash flow hedge	The Group designated the currency swap as hedging instrument to hedge the future cash flow risk
Stock price swap	Held for trading	A derivative held for trading which settles the differences between the base sales price and the stock price upon settlement
Others	Held for trading	Changes in fair value are recognized in profit or loss

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9.2 Details of gain (loss) on valuation of derivatives

Details of gain (loss) on valuation of derivatives as of December 31, 2023 and 2022 are as follows (Korean won in millions, foreign currency in thousands):

		December 31, 2023						Accumulated	Firm
		Buy		Sell		Assets	Gain (loss)	other	commitment
	Currency	Amount	Currency	Amount	(liabilities)		comprehensive	assets	
							income (*1)	(liabilities) (*2)	
Currency forward contract	KRW	2,664,301	USD	2,118,389	₩ (36,647)	₩ (15,279)	₩ 5,475	₩ 43,276	
	KRW	203,110	EUR	144,558	(2,762)	(1,957)	(1,602)	625	
	KRW	157,907	JPY	15,871,930	6,879	3,041	(1,300)	(8,294)	
	KRW	129,703	Other foreign currencies		(5,100)	(6,232)	(562)	368	
	USD	892,550	KRW	1,137,891	(878)	782	542	2,107	
	EUR	393,798	KRW	564,972	(2,595)	2,653	(3,398)	(424)	
	JPY	28,771,532	KRW	291,788	(17,795)	(6,171)	(10,722)	518	
	Other foreign currencies		KRW	69,264	1,389	1,716	1,247	(9)	
	Other foreign currencies		Other foreign currencies		(734)	396	1,183	-	
Currency swap					1,136	3,525	211	-	
Interest rate swap					(504)	(555)	57	-	
Stock price swap (*3,4)									
					(9,572)	(9,572)	-	-	
					₩ (67,183)	₩ (27,653)	₩ (8,869)	₩ 38,167	

(*1) The amounts are gain (loss) on valuation of derivatives designated as cash flow hedges before income tax effect.

(*2) The Group recognizes ₩63,276 million and ₩25,109 million for firm commitment assets and liabilities, respectively, considering the amount adjusted for the current year sales in accordance with the application of fair value hedge accounting.

(*3) The Price Return Swap contract of Doosan Enerbility Co., Ltd., the Group's subsidiary, to exchange profits from changes in prices of shares of Doosan Bobcat Inc., has been settled

(*4) This is the fair value valuation gain or loss of over-the-counter derivatives contracts that receive the amount settled according to changes in the fair value of the subordinated equity instruments issued by Sosius-Well to Sea Investment Co., Ltd.

		December 31, 2022						Accumulated	Firm
		Buy		Sell		Assets	Gain (loss)	other	commitment
	Currency	Amount	Currency	Amount	(liabilities)		comprehensive	assets	
							income (*1)	(liabilities) (*2)	
Currency forward contract	KRW	2,542,472	USD	2,064,670	₩ (38,517)	₩ (14,051)	₩ 8,203	₩ 82,883	
	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	Other foreign currencies		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	11,419,654	KRW	123,786	(9,213)	(10)	(7,323)	502	
	Other foreign currencies		KRW	103,363	(4,721)	(2,415)	(3,535)	1,339	
	Other foreign currencies		Other foreign currencies		7,995	5,186	4,873	(175)	
Currency swap					21,295	19,782	508	-	
Interest rate swap					691	-	691	-	
Stock price swap (*3)					(16,999)	(16,999)	-	-	
					₩ (21,423)	₩ (1,479)	₩ 10,860	₩ 72,482	

(*1) The amounts are gain (loss) on valuation of derivatives designated as cash flow hedges before income tax effect.

(*2) The Group recognizes ₩95,499 million and ₩23,017 million for firm commitment assets and liabilities,

(*3) Doosan Enerbility Co., Ltd, the Group's subsidiary, signed the Price Return Swap contract to exchange profits from changes in prices of shares of Doosan Bobcat Inc.

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10. Financial instruments by category

Categories of financial instruments as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023					
	Financial assets at fair value through profit or loss	Financial assets (designated) at fair value through OCI	Other financial assets (*1)	Financial assets at amortized cost	Book value	Fair value
Cash and cash equivalents	₩ -	₩ -	₩ -	₩ 3,539,167	₩ 3,539,167	₩ 3,539,167
Short-term and long-term financial instruments	-	-	-	279,427	279,427	279,427
Short-term and long-term investment securities	316,518	27,220	-	-	343,738	343,738
Trade and other receivables	-	26,613	-	2,409,315	2,435,928	2,435,928
Derivative assets	4,673	-	33,763	-	38,436	38,436
Deposits	-	-	-	268,722	268,722	268,722
	<u>₩ 321,191</u>	<u>₩ 53,833</u>	<u>₩ 33,763</u>	<u>₩ 6,496,631</u>	<u>₩ 6,905,418</u>	<u>₩ 6,905,418</u>

	December 31, 2023					
	Financial liabilities at fair value through profit or loss	Other financial liabilities (*1)	Financial liabilities at amortized cost	Book value	Fair value	
Trade and other payables	₩ -	₩ -	₩ 4,220,135	₩ 4,220,135	₩ 4,220,135	
Borrowings, bonds and asset-backed loans	-	-	6,999,582	6,999,582	6,999,582	
Lease liabilities	-	-	711,150	711,150	711,150	
Sale and leaseback liabilities	-	-	96,269	96,269	96,269	
Derivative liabilities	17,442	88,177	-	105,619	105,619	
Financial guarantee liabilities	-	27,321	-	27,321	27,321	
	<u>₩ 17,442</u>	<u>₩ 115,498</u>	<u>₩ 12,027,136</u>	<u>₩ 12,160,076</u>	<u>₩ 12,160,076</u>	

(*1) Includes derivative assets designated as effective hedging instruments.

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10. Financial instruments by category (cont'd)

	December 31, 2022					
	Financial assets at fair value through profit or loss	Financial assets (designated) at fair value through OCI	Other financial assets (*1)	Financial assets at amortized cost	Book value	Fair value
Cash and cash equivalents	₩ -	₩ -	₩ -	₩ 2,074,186	₩ 2,074,186	₩ 2,074,186
Short-term and long-term financial instruments	-	-	-	203,891	203,891	203,891
Short-term and long-term investment securities	462,008	30,689	-	-	492,697	492,697
Trade and other receivables	-	63,268	-	2,301,299	2,364,567	2,364,567
Derivative assets	44,557	-	50,600	-	95,157	95,157
Deposits	-	-	-	388,989	388,989	388,989
	<u>₩ 506,565</u>	<u>₩ 93,957</u>	<u>₩ 50,600</u>	<u>₩ 4,968,365</u>	<u>₩ 5,619,487</u>	<u>₩ 5,619,487</u>

	December 31, 2022				
	Financial liabilities at fair value through profit or loss	Other financial liabilities (*1)	Financial liabilities at amortized cost	Book value	Fair value
Trade and other payables	₩ -	₩ -	₩ 3,982,810	₩ 3,982,810	₩ 3,982,810
Borrowings, bonds and asset-backed loans	-	-	6,757,023	6,757,023	6,757,023
Lease liabilities	-	-	749,137	749,137	749,137
Sale and leaseback liabilities	-	-	107,317	107,317	107,317
Derivative liabilities	17,376	99,204	-	116,580	116,580
Financial guarantee liabilities	-	180	-	180	180
	<u>₩ 17,376</u>	<u>₩ 99,384</u>	<u>₩ 11,596,287</u>	<u>₩ 11,713,047</u>	<u>₩ 11,713,047</u>

(*1) Includes derivative assets designated as effective hedging instruments.

Fair value measurements of financial instruments by fair value hierarchy levels as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through OCI	₩ 10,802	₩ 26,613	₩ 16,418	₩ 53,833
Financial assets at fair value through profit or loss	21,415	7,095	292,681	321,191
Other financial assets	-	33,763	-	33,763
	<u>₩ 32,217</u>	<u>₩ 67,471</u>	<u>₩ 309,099</u>	<u>₩ 408,787</u>
Financial liabilities:				
Financial liabilities at fair value through profit or loss	-	7,870	9,572	17,442
Other financial liabilities	-	88,177	27,321	115,498
	<u>₩ -</u>	<u>₩ 96,047</u>	<u>₩ 36,893</u>	<u>₩ 132,940</u>
	<u>₩ 32,217</u>	<u>₩ (28,576)</u>	<u>₩ 272,206</u>	<u>₩ 275,847</u>

10. Financial instruments by category (cont'd)

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through OCI	₩ 10,091	₩ 63,268	₩ 20,598	₩ 93,957
Financial assets at fair value through profit or loss	73,537	47,866	385,162	506,565
Other financial assets	-	50,600	-	50,600
	₩ 83,628	₩ 161,734	₩ 405,760	₩ 651,122
Financial liabilities:				
Financial liabilities at fair value through profit or loss	-	17,376	-	17,376
Other financial liabilities	-	99,204	180	99,384
	₩ -	₩ 116,580	₩ 180	₩ 116,760
	₩ 83,628	₩ 45,154	₩ 405,580	₩ 534,362

The above table does not include information for those financial instruments, which are not measured at fair value because the carrying amount approximates fair value.

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

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

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

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

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

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

Valuation technique	Observable inputs	Explanation of input parameters
Discounted cash flow method	Forward exchange rate	It is based on forward exchange rate, disclosed on the market that remaining year is the same till maturity of forward contracts. If the forward exchange rate is not disclosed on the market, it is calculated by using interpolation method.
	Discount rate	It is determined by using yield curve that is disclosed at the end of the reporting year.

10. Financial instruments by category (cont'd)

Assumptions used in the valuation of financial assets at fair value that have been categorized into Level 3 as of December 31, 2023 are as follows:

Financial assets	Valuation techniques	Discount rate	Major assumptions
Gyeonggi East-West Road Corporation Co., Ltd.	Dividend discount model	12.93%	Expected dividend cash flow for each financial period
Construction Guarantee	Expected selling price estimation method	-	Expected selling price
Machinery Financial Cooperative	Expected selling price estimation method	-	Expected selling price
Engineering Guarantee Insurance	Expected selling price estimation method	-	Expected selling price
Construction Industry Guarantee	Expected selling price estimation method	-	Expected selling price
Electric Contractors' Financial Cooperative	Expected selling price estimation method	-	Expected selling price
Information&Communication Financial Cooperative	Expected selling price estimation method	-	Expected selling price
Fire Guarantee	Expected selling price estimation method	-	Expected selling price
Gyeongnam-GNTECH Creative Economy Innovation Fund	Net asset value assessment	-	Net asset value
Emerald Technology Ventures	Expected selling price estimation method	-	Return rate on investment
AI Asilah Desalination Company	Net asset value assessment	-	Net asset value
Valuegrowth Co., Ltd.	Dividend discount model	7.20%	Expected dividend cash flow for each financial period
Others	Expected selling price estimation method and others	-	Expected selling price and others

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10. Financial instruments by category (cont'd)

In addition, changes in the carrying amount of financial assets at fair value through profit or loss and financial assets (designated) at fair value through OCI that have been categorized into Level 3 of fair value hierarchy for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023							
	January 1, 2023	Total comprehensive income (loss)		Buy	Sell	Reclassification of fair value hierarchy(*1)	Others(*2)	December 31, 2023
		Profit or loss	Other comprehensive income (loss)					
Financial assets at fair value through OCI	₩ 20,598	₩ -	₩ (766)	₩ 81	₩ (1,299)	₩ (2,744)	₩ 548	₩ 16,418
Financial assets at fair value through profit or loss	385,162	(97,652)	-	19,756	(14,093)	-	(492)	292,681
	<u>₩ 405,760</u>	<u>₩ (97,652)</u>	<u>₩ (766)</u>	<u>₩ 19,837</u>	<u>₩ (15,392)</u>	<u>₩ (2,744)</u>	<u>₩ 56</u>	<u>₩ 309,099</u>

(*1) During the year ended December 31, 2023, the above financial assets were converted into financial assets traded in the active market and reclassified from level 3 to level 1.

(*2) Others include transfers from investment in associates due to loss of significant influence; and the amounts of foreign exchange differences.

	2022							
	January 1, 2022	Total comprehensive income (loss)		Buy	Sell	Reclassification of fair value hierarchy(*1)	Others(*2)	December 31, 2022
		Profit or loss	Other comprehensive income (loss)					
Financial assets at fair value through OCI	₩ 24,666	₩ -	₩ (5,396)	₩ 810	₩ (646)	₩ -	₩ 1,164	₩ 20,598
Financial assets at fair value through profit or loss	444,208	(52,394)	-	29,146	(10,929)	(35,692)	10,823	385,162
	<u>₩ 468,874</u>	<u>₩ (52,394)</u>	<u>₩ (5,396)</u>	<u>₩ 29,956</u>	<u>₩ (11,575)</u>	<u>₩ (35,692)</u>	<u>₩ 11,987</u>	<u>₩ 405,760</u>

(*1) During the year ended December 31, 2022, the above financial assets were converted into financial assets traded in the active market and reclassified from level 3 to level 1.

(*2) Others include effect of changes in scope of consolidation and exchange rate differences.

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10. Financial instruments by category (cont'd)

Comprehensive income (loss) by categories of financial instruments for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023							
	Profit or loss							
	Interest	Dividend	Financial guarantee	Valuation gain/loss (except for derivatives)	Impairment and reversal		Disposal	Other comprehensive income (*1)
Bad debts expenses					Reversal of impairment			
Financial assets:								
Financial assets at amortized cost	₩ 103,420	₩ -	₩ -	₩ -	₩ (105,895)	₩ -	₩ (27)	₩ -
Financial assets (designated) at fair value through OCI	-	153	-	-	-	-	(10,906)	(1,994)
Financial assets at fair value through profit or loss	-	2,908	-	(127,543)	-	-	757	-
	<u>₩ 103,420</u>	<u>₩ 3,061</u>	<u>₩ -</u>	<u>₩ (127,543)</u>	<u>₩ (105,895)</u>	<u>₩ -</u>	<u>₩ (10,176)</u>	<u>₩ (1,994)</u>
Financial liabilities:								
Financial liabilities at amortized cost	₩ (411,367)	₩ -	₩ -	₩ -	₩ -	₩ -	₩ (2,277)	₩ -
Financial guarantee liabilities and others	-	-	(364)	-	-	-	-	-
	<u>₩ (411,367)</u>	<u>₩ -</u>	<u>₩ (364)</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ (2,277)</u>	<u>₩ -</u>

(*1) Other comprehensive income is before income tax effect.

	2022							
	Profit or loss (*1)							
	Interest	Dividend	Financial guarantee	Valuation gain/loss (except for derivatives)	Impairment and reversal		Disposal	Other comprehensive income (*2)
Bad debts expenses					Reversal of impairment			
Financial assets:								
Financial assets at amortized cost	₩ 33,464	₩ -	₩ -	₩ -	₩ (23,835)	₩ -	₩ (139)	₩ -
Financial assets (designated) at fair value through OCI	-	141	-	-	-	-	(4,961)	(22,966)
Financial assets at fair value through profit or loss	273	4,268	-	(43,058)	-	19	3,745	-
Other financial assets	3	-	-	-	-	-	-	-
	<u>₩ 33,740</u>	<u>₩ 4,409</u>	<u>₩ -</u>	<u>₩ (43,058)</u>	<u>₩ (23,835)</u>	<u>₩ 19</u>	<u>₩ (1,355)</u>	<u>₩ (22,966)</u>
Financial liabilities:								
Financial liabilities at amortized cost	₩ (371,202)	₩ -	₩ -	₩ -	₩ -	₩ -	₩ (27,222)	₩ -
Financial guarantee liabilities and others	-	-	(52,561)	-	-	-	-	-
	<u>₩ (371,202)</u>	<u>₩ -</u>	<u>₩ (52,561)</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ (27,222)</u>	<u>₩ -</u>

(*1) Profit or loss includes the amounts classified as profit or loss from discontinued operations in consolidated statement of profit or loss.

(*2) Other comprehensive income is before income tax effect.

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10. Financial instruments by category (cont'd)

Apart from the above financial instruments, comprehensive income(loss) by derivatives for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023			2022		
	Profit or loss		Other comprehensive income (*1)	Profit or loss		Other comprehensive income (*1)
	Valuation	Disposal		Valuation	Disposal	
Derivatives held for trading	₩ (10,222)	₩ 6,830	₩ -	₩ 13,478	₩ 17,246	₩ -
Derivatives designated as fair value hedges	(16,819)	-	-	25,437	(40)	-
Derivatives designated as cash flow hedges	(612)	1,629	(19,730)	(40,394)	4,699	11,431
	₩ (27,653)	₩ 8,459	₩ (19,730)	₩ (1,479)	₩ 21,905	₩ 11,431

(*1) Other comprehensive income is before income tax effect.

In addition, most of the foreign exchange differences (gain (loss) on foreign currency translations or transactions) from foreign currency transactions other than derivative contracts arise from financial assets (liabilities) at amortized cost.

Financial assets and liabilities subject to an enforceable master-netting arrangement or similar agreement as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023			December 31, 2022		
	Gross recognized financial instruments	Gross financial instruments set off	Net amounts presented in the statements of financial statement	Gross recognized financial instruments	Gross financial instruments set off	Net amounts presented in the statements of financial position
Financial assets:						
Trade receivables	₩ 46,167	₩ (13,617)	₩ 32,550	₩ 20,128	₩ (4,452)	₩ 15,676
Other receivables	21	(19)	2	-	-	-
Derivative assets	61,319	(30,860)	30,459	86,613	(32,277)	54,336
	₩ 107,507	₩ (44,496)	₩ 63,011	₩ 106,741	₩ (36,729)	₩ 70,012
Financial liabilities:						
Trade payables	₩ 27,601	₩ (8,115)	₩ 19,486	₩ -	₩ -	₩ -
Other payables	40,082	(5,520)	34,562	33,581	(4,452)	29,129
Derivative liabilities	119,804	(30,860)	88,944	124,593	(32,277)	92,316
	₩ 187,487	₩ (44,495)	₩ 142,992	₩ 158,174	₩ (36,729)	₩ 121,445

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11. Investments in associates and joint ventures

Details of investments in associates and joint ventures as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Location	Ownership interests (%)	Acquisition cost		Book value	
			December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Associates:						
KDDI Korea Corporation (*1)	Korea	17.63	₩ 4,176	₩ 4,176	₩ 3,314	₩ 3,141
PT. SEGARA AKASA	Indonesia	30.02	71	71	29	38
Mastern General Private Security Investment Trust No.98	Korea	25.45	70,000	70,000	65,922	72,084
Versogen, Inc. (*1)	USA	8.81	6,063	6,063	4,547	5,789
TTC House Inc. (*2)	Korea	14.29	-	-	-	-
SemiFive Inc.(*1,*3)	Korea	7.12	30,000	-	27,787	-
Protera SAS (*1)	France	5.76	591	591	1,137	1,551
Stathera IP Holding Inc. (*4)	Canada	9.42	-	2,875	-	3,932
Folletto Robotics Co., Ltd. (*2)	Korea	7.36	-	-	-	-
MARCONI Growth No. 1 Private Equity Fund (*1,5)	Korea	-	-	7,636	-	3,858
Samcheok Blue Power Co., Ltd. (*1,6)	Korea	9.00	43,568	43,568	32,052	31,876
Daejung Offshore Wind Power Co., Ltd.	Korea	26.65	3,196	3,196	2,380	2,419
Hychangwon Co., Ltd. (*6,7)	Korea	25.74	7,000	7,000	6,180	7,013
Tuwaiq Casting & Forging Company (*1)	Saudi Arabia	15.00	43,926	43,926	37,032	44,674
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1 (*8,9)	Korea	65.00	10,496	8,500	10,406	8,494
Doosan Engineering & Construction Co.,Ltd. (*10)	Korea	46.35	317,666	317,666	108,956	173,702
Daesan Green Energy Co., Ltd. (*1, 11)	Korea	10.00	5,100	5,100	3,804	2,476
Prestolite Asia Ltd.	Korea	32.31	2,787	468	3,638	3,141
Ainstein AI, Inc. (*1)	USA	9.09	2,360	2,360	2,440	2,355
Bundang Doosan Tower Reit Co., Ltd.(*1)	Korea	18.60	30,000	30,000	16,385	21,672
Joint venture:						
Sichuan Kelun-Doosan Biotechnology Company Limited.	China	50.00	2,526	2,526	4,599	4,720
Weve Holdings Ltd.	Korea	46.50	119,584	120,000	73,914	38,450
The Zenith Holdings Ltd. (*12)	Korea	31.75	120,000	120,000	-	-
			₩ 819,110	₩ 795,722	₩ 404,522	₩ 431,385

(*1) Although the Group has less than 20% of shares in the investee, it is classified as an associate since the Group can exercise voting rights in its Board of Directors' meeting.

(*2) Even though the Group has significant influence on the Board of Directors of the investee, shares acquired are classified as financial assets measured at fair value through profit or loss in accordance with KIFRS 1109, as the existing ownership, in substance, does not currently give it access to returns associated with ownership interests.

(*3) The Group newly acquired the investee during the year ended December 31, 2023.

(*4) It was excluded from the associates due to the loss of significant influence as a result of losing the right to exercise voting rights in the meetings of board of directors of the investee during the year ended December 31, 2023.

(*5) It has been liquidated during the year ended December 31, 2023.

(*6) The Group's investments in investee have been pledged as collateral for the investee's project financing and completion guarantee (see Note 33).

(*7) Ownership interests in the entity present the percentage of the Group's ownership in the entity including preferred stocks, and the entity is classified as associate as the Group holds more than 20% of shares with voting rights in the entity.

(*8) The Group additionally acquired the investee during the year ended December 31, 2023.

(*9) As of December 31, 2023, the ownership ratio in Doosan Enerbility Co., Ltd., the Group's subsidiary, exceeded a majority, but the entity has been classified as associate as the Group has no control considering its ability to direct related activities.

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11. Investments in associates and joint ventures (cont'd)

(*10) As of December 31, 2023, Doosan Enerbility Co., Ltd's investments in investee are provided as collateral for Doosan Enerbility Co., Ltd's liabilities (see Note 33).

(*11) The Group's investments in investee have been pledged as collateral for the investee's borrowings(see Note 33).

(*12) There is no book value due to the suspension of the equity method during the year ended December 31, 2022.

Changes in investment in associates and joint ventures for each of the two years in the period ended December 31, 2023 are as follows (Korean won in millions):

	2023						Ending balance
	Beginning balance	Acquisition (disposal)	Dividends	Profit or loss in equity method	Equity changes in equity method	Other (*1)	
Associates:							
KDDI Korea Corporation	₩ 3,141	₩ -	₩ (112)	₩ 285	₩ -	₩ -	₩ 3,314
PT. SEGARA AKASA	38	-	-	(10)	1	-	29
Mastern General Private Security Investment Trust No.98	72,084	-	(4,800)	(1,362)	-	-	65,922
Versogen, Inc.	5,789	-	-	(1,110)	(132)	-	4,547
TTC House Inc.	-	-	-	-	-	-	-
SemiFive Inc.	-	30,000	-	(2,618)	405	-	27,787
Protera SAS	1,551	-	-	(430)	16	-	1,137
Stathera IP Holding Inc.	3,932	-	-	(98)	(728)	(3,106)	-
Folletto Robotics Co., Ltd.	-	-	-	-	-	-	-
MARCONI Growth No. 1 Private Equity Fund	3,858	(3,875)	-	(1)	18	-	-
Samcheok Blue Power Co., Ltd.	31,876	-	-	176	-	-	32,052
Daejung Offshore Wind Power Co., Ltd.	2,419	-	-	(39)	-	-	2,380
Hychangwon Co., Ltd. (*2)	7,013	-	-	(834)	1	-	6,180
Tuwaiq Casting & Forging Company	44,674	-	-	(8,449)	807	-	37,032
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1	8,494	1,996	-	(84)	-	-	10,406
Doosan Engineering & Construction Co., Ltd.	173,702	-	-	(64,746)	-	-	108,956
Daesan Green Energy Co., Ltd.	2,476	-	-	1,328	-	-	3,804
Prestolite Asia Ltd	3,141	-	-	497	-	-	3,638
Ainstein AI, Inc.	2,355	-	-	44	-	41	2,440
Bundang Doosan Tower Reit Co., Ltd.	21,672	-	(3,242)	(2,045)	-	-	16,385

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11. Investments in associates and joint ventures (cont'd)

	2023						
	Beginning balance	Acquisition (disposal)	Dividends	Profit or loss in equity method	Equity changes in equity method	Other (*1)	Ending balance
Joint venture:							
Sichuan Kelun-Doosan Biotechnology Company Limited.	₩ 4,720	₩ -	₩ (1,878)	₩ 1,784	₩ (3)	₩ (24)	₩ 4,599
Weve Holdings Ltd.	38,450	-	-	35,464	-	-	73,914
The Zenith Holdings Ltd.	-	-	-	-	-	-	-
	<u>₩ 431,385</u>	<u>₩ 28,121</u>	<u>₩ (10,032)</u>	<u>₩ (42,248)</u>	<u>₩ 385</u>	<u>₩ (3,089)</u>	<u>₩ 404,522</u>

(*1) Changes are caused by exchange rate differences and account reclassification.

(*2) Share of profit (loss) of equity method investees was calculated based on the Group's ownership ratio of 41.18% of ordinary shares.

	2022						
	Beginning balance	Acquisition (disposal)	Dividends	Profit or loss in equity method	Equity changes in equity method	Other (*1)	Ending balance
Associates:							
KDDI Korea Corporation	₩ 3,254	₩ -	₩ (228)	₩ 115	₩ -	₩ -	₩ 3,141
Wise Fashion Co., Ltd.	1,945	-	-	-	-	(1,945)	-
PT. SEGARA AKASA	50	-	-	(4)	(8)	-	38
Mastern General Private Security Investment Trust No.98	71,983	-	(4,800)	4,901	-	-	72,084
SiO2 Medical Products, Inc.	-	-	-	-	-	-	-
Versogen, Inc.	-	6,063	-	(391)	117	-	5,789
TTC House Inc.	-	-	-	-	-	-	-
Protera SAS	1,517	-	-	(107)	141	-	1,551
Stathera IP Holding Inc.	3,975	-	-	(211)	168	-	3,932
Folletto Robotics Co., Ltd.	-	-	-	-	-	-	-
MARCONI Growth No. 1 Private Equity Fund	-	-	-	(75)	(3,703)	7,636	3,858
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 (*3)	7,870	-	-	(561)	686	(7,995)	-
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1	-	8,500	-	(6)	-	-	8,494
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.	26,296	-	(2,635)	(1,989)	-	-	21,672
Joint venture:							
Sichuan Kelun-Doosan Biotechnology Company Limited.	4,622	-	(1,323)	1,613	(192)	-	4,720
Weve Holdings Ltd. (*4)	120,000	-	-	(78,144)	(3,406)	-	38,450
The Zenith Holdings Ltd. (*4)	120,000	-	-	(120,000)	-	-	-
	<u>₩ 740,003</u>	<u>₩ 52,983</u>	<u>₩ (8,986)</u>	<u>₩ (229,262)</u>	<u>₩ (5,528)</u>	<u>₩ (117,825)</u>	<u>₩ 431,385</u>

(*1) Changes are caused by exchange rate differences, changes in scope of consolidation and impairment losses.

(*2) Share of profit (loss) of equity method investees was calculated based on the Group's ownership ratio of 41.18% of ordinary shares.

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11. Investments in associates and joint ventures (cont'd)

(*3) Share of profit (loss) of associates accounted for using the equity method of the above entities are recognized as discontinued operations.

(*4) Share of profit (loss) of associates and joint ventures in equity method was calculated in accordance with the shareholders' agreement, and as of December 31, 2022, as a result of the impairment test, the Group identified the indication that the book value exceeds the recoverable amount and recognized the impairment loss as other non-operating expenses, accordingly. The impairment loss recognized amounts to ₩116,625 million. Recoverable amount was determined based on the net fair value, which is calculated using the net asset value method.

The condensed financial information of associates and joint ventures as of and for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
Associates:				
KDDI Korea Corporation	₩ 24,583	₩ 5,781	₩ 30,232	₩ 1,597
PT. SEGARA AKASA	125	29	-	(34)
Mastern General Private Security Investment Trust No.98	862,943	603,835	46,086	(7,495)
Versogen, Inc.	14,871	772	1,249	(5,067)
SemiFive Inc	189,050	44,129	65,947	(45,934)
Protera SAS	19,668	10,836	296	(7,464)
Samcheok Blue Power Co., Ltd.	4,228,510	3,668,999	14,002	(28,864)
Daejung Offshore Wind Power Co., Ltd.	5,277	2,094	-	(145)
Hychangwon Co., Ltd	91,241	63,725	-	(3,092)
Tuwaiq Casting & Forging Company	823,364	540,114	-	(17,987)
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1	17,836	8,952	-	(79)
Doosan Engineering & Construction Co., Ltd.	1,670,974	1,410,031	1,721,730	(76,210)
Daesan Green Energy Co., Ltd.	237,691	171,228	111,225	14,541
Prestolite Asia Ltd.	15,711	5,414	19,661	1,540
Ainstein AI, Inc.	7,371	6,131	8,903	481
Bundang Doosan Tower Reit Co., Ltd.	663,593	524,449	27,729	4,033
Joint ventures:				
Sichuan Kelun-Doosan Biotechnology Company Limited	15,753	6,557	12,478	3,567
Weve Holdings Ltd.	1,797,995	1,423,015	1,721,746	(72,194)
The Zenith Holdings Ltd.	1,838,208	1,423,015	1,721,746	(72,187)

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11. Investments in associates and joint ventures (cont'd)

	2022			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
Associates:				
KDDI Korea Corporation	₩ 23,773	₩ 5,952	₩ 27,074	₩ 668
PT. SEGARA AKASA	125	-	-	(12)
Mastern General Private Security Investment Trust No.98	889,649	603,809	57,478	20,340
Versogen, Inc.	16,312	387	1,552	(3,609)
Protera SAS	18,508	2,504	-	(2,981)
Stathera IP Holding Inc.	14,656	3,809	-	(1,075)
MARCONI Growth No. 1 Private Equity Fund	11,232	8	2	(217)
Samcheok Blue Power Co., Ltd.	3,515,861	2,885,218	-	(8,447)
Daejung Offshore Wind Power Co., Ltd.	5,342	2,014	-	(237)
Hychangwon Co., Ltd	80,358	49,733	-	(1,344)
Tuwaiq Casting & Forging Company	338,073	42,217	-	(1,448)
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1	15,063	6,100	-	(9)
Doosan Engineering & Construction Co., Ltd.	1,783,756	1,442,192	1,190,566	(210,444)
Daesan Green Energy Co., Ltd.	245,826	190,918	101,689	(6,641)
Prestolite Asia Ltd.	13,800	4,080	16,891	799
Ainstein AI, Inc.	3,328	2,780	5,375	(1,177)
Bundang Doosan Tower Reit Co., Ltd.	671,559	524,366	27,319	3,606
Joint ventures:				
Sichuan Kelun-Doosan Biotechnology Company Limited	15,739	6,301	12,229	3,225
Weve Holdings Ltd.	1,911,489	1,459,904	1,190,566	(223,371)
The Zenith Holdings Ltd.	1,951,894	1,459,903	1,190,566	(223,370)

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11. Investments in associates and joint ventures (cont'd)

Adjustments from net assets of associates and joint ventures to carrying amount of investments in associates and joint ventures as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023					
	Net assets	Percentage of ownership (%)	Group's shares in net assets	Adjustment amounts		Book value
				Goodwill	Intragroup transactions and others	
Associates:						
KDDI Korea Corporation	₩ 18,802	17.63	₩ 3,314	₩ -	₩ -	₩ 3,314
PT. SEGARA AKASA	96	30.02	29	-	-	29
Mastern General Private Security Investment Trust No.98	259,108	25.45	65,955	-	(33)	65,922
Versogen, Inc.	14,099	8.81	1,242	3,305	-	4,547
SemiFive Inc.(*1)	92,336	7.12	6,576	21,429	(218)	27,787
Protera SAS	8,832	5.76	509	628	-	1,137
Samcheok Blue Power Co., Ltd.(*2)	2,597	9.00	234	38,268	(6,450)	32,052
Daejung Offshore Wind Power Co., Ltd.	3,183	26.65	848	1,532	-	2,380
Hychangwon Co., Ltd.(*3)	10,665	41.18	4,392	79	1,709	6,180
Tuwaiq Casting & Forging Company	283,250	15.00	42,488	-	(5,456)	37,032
Multi-asset ESG Marine Wind Power General Private Investment Trust No. 1	8,884	65.00	5,775	4,664	(33)	10,406
Doosan Engineering & Construction Co.,Ltd.	260,943	46.35	120,947	60,232	(72,223)	108,956
Daesan Green Energy Co., Ltd.	66,463	10.00	6,646	-	(2,842)	3,804
Prestolite Asia Ltd.	10,297	32.31	3,327	-	311	3,638
Ainstein AI, Inc.	1,240	9.09	113	2,306	21	2,440
Bundang Doosan Tower Reit Co., Ltd.	139,144	18.60	25,881	-	(9,496)	16,385
Joint ventures:						
Sichuan Kelun-Doosan Biotechnology Company Limited	9,197	50.00	4,599	-	-	4,599
Weve Holdings Ltd. (*4)	80,896	46.50	37,617	18,517	17,780	73,914
The Zenith Holdings Ltd. (*4)	119,827	31.75	38,045	18,991	(57,036)	-

(*1) In the net asset values, identified intangible assets recognized in the financial statements of the investee based on the business combination are excluded.

(*2) Hybrid securities are excluded from the above amount of net assets held by the entity.

(*3) The amount of net assets held by the entity and percentage of ownership in the entity does not include preferred stock shares.

(*4) Goodwill and non-controlling interests of the investee company are excluded from the amount of net assets.

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11. Investments in associates and joint ventures (cont'd)

Adjustments from net assets of associates and joint ventures to carrying amount of investments in associates and joint ventures as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2022					
	Net assets	Percentage of ownership (%)	Group's shares in net assets	Adjustment amounts		Book value
				Goodwill	Intragroup transactions and others	
Associates:						
KDDI Korea Corporation	₩ 17,821	17.63	₩ 3,141	₩ -	₩ -	₩ 3,141
PT. SEGARA AKASA	125	30.02	38	-	-	38
Mastern General Private Security Investment Trust No.98	285,840	25.45	72,759	-	(676)	72,083
Versogen, Inc.	15,925	10.83	1,725	4,064	-	5,789
Protera SAS	16,005	5.76	922	358	271	1,551
Stathera IP Holding Inc.	10,847	15.82	1,716	2,098	118	3,932
MARCONI Growth No. 1 PrivateEquity Fund	11,225	34.38	3,858	-	-	3,858
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 General Private Investment Trust No. 1	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	-	(5,706)	21,672
Joint ventures:						
Sichuan Kelun-Doosan Biotechnology Company Limited	9,438	50.00	4,719	-	-	4,719
Weve Holdings Ltd. (*3)	28,905	46.50	13,440	19,029	5,981	38,450
The Zenith Holdings Ltd. (*3)	43,936	31.75	13,950	18,991	(32,941)	-

(*1) Hybrid securities are excluded from the above amount of net assets held by the entity.

(*2) The amount of net assets held by the entity and percentage of ownership in the entity does not include preferred stock shares.

(*3) Goodwill and non-controlling interests of individual entities are excluded from the amount of net assets.

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12. Property, plant and equipment

Changes in property, plant and equipment for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023					
	Land	Buildings and structures	Machinery	Others	Construction in progress	Total
January 1	₩ 3,259,477	₩ 1,281,174	₩ 1,259,748	₩ 146,797	₩ 326,120	₩ 6,273,316
Acquisition/capital expenditure	1,535	109,500	162,430	47,586	430,422	751,473
Transfers (*1)	(12,308)	94,012	175,917	23,407	(304,433)	(23,405)
Disposal (*2)	(1,965)	(5,833)	(4,537)	(3,404)	(4,438)	(20,177)
Depreciation	(1,969)	(147,342)	(336,510)	(61,683)	-	(547,504)
Impairment loss	(19,114)	(6,142)	(7,730)	(42)	(240)	(33,268)
Asset revaluation	64,664	-	-	-	-	64,664
Others (*3)	2,729	12,212	15,178	2,936	11,281	44,336
December 31	₩ 3,293,049	₩ 1,337,581	₩ 1,264,496	₩ 155,597	₩ 458,712	₩ 6,509,435
Acquisition cost	₩ 1,682,753	₩ 2,566,369	₩ 3,949,406	₩ 646,040	₩ 501,556	₩ 9,346,124
Accumulated depreciation and accumulated impairment losses	(4,347)	(1,228,788)	(2,684,910)	(490,443)	(42,844)	(4,451,332)
Accumulated revaluation surplus	1,614,643	-	-	-	-	1,614,643

(*1) It includes some of the land and buildings that have been reclassified as assets held for sale for the year ended December 31, 2023 (see Note 37).

(*2) Disposal includes the amount due to the termination of the lease contract.

(*3) Others include changes due to exchange rate difference.

	2022					
	Land	Buildings and structures	Machinery	Others	Construction in progress	Total
January 1	₩ 3,484,374	₩ 1,206,515	₩ 817,516	₩ 137,971	₩ 300,886	₩ 5,947,262
Acquisition/capital expenditure	10,326	162,470	109,454	51,870	502,031	836,151
Transfers (*1)	(42,236)	29,929	242,847	10,972	(457,512)	(216,000)
Disposal (*2)	(9,147)	(18,186)	(9,424)	(6,597)	(23,196)	(66,550)
Depreciation	(1,910)	(134,789)	(269,461)	(50,238)	-	(456,398)
Impairment loss	(3,655)	(641)	(8,290)	(611)	(18,900)	(32,097)
Business combination	29,601	62,752	358,796	3,298	7,246	461,693
Changes in scope of consolidation	(208,550)	(51,984)	(11,586)	(1,068)	(100)	(273,288)
Others (*3)	674	25,108	29,896	1,200	15,665	72,543
December 31	₩ 3,259,477	₩ 1,281,174	₩ 1,259,748	₩ 146,797	₩ 326,120	₩ 6,273,316
Acquisition cost	₩ 1,681,180	₩ 2,383,717	₩ 3,691,510	₩ 622,857	₩ 373,040	₩ 8,752,304
Accumulated depreciation and accumulated impairment losses	(2,124)	(1,102,543)	(2,431,762)	(476,060)	(46,920)	(4,059,409)
Accumulated revaluation surplus	1,580,421	-	-	-	-	1,580,421

(*1) Transfers include some portions of land, buildings and construction-in-progress reclassified to investment properties during the year ended December 31, 2022 and transfers of assets held for sale to other property, plant and equipment.

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

(*2) Disposal includes the amount due to the termination of the lease contract.

(*3) Others include changes due to exchange rate difference.

In addition, the Group's land, buildings and machinery are partially pledged as collateral for loans from financial institutions (see Note 33).

Changes in right-of-use assets classified as property, plant and equipment for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023				
	Land	Buildings and structures	Machinery	Others	Total
January 1	₩ 15,349	₩ 391,331	₩ 82,807	₩ 20,629	₩ 510,116
Acquisition/capital expenditure	1,289	66,066	29,852	18,689	115,896
Transfers	-	7,880	(11,117)	(2,697)	(5,934)
Disposal (*1)	(212)	(4,607)	-	(2,029)	(6,848)
Depreciation	(1,969)	(78,353)	(22,531)	(17,169)	(120,022)
Others (*2)	139	1,499	349	(75)	1,912
December 31	₩ 14,596	₩ 383,816	₩ 79,360	₩ 17,348	₩ 495,120
Acquisition cost	₩ 17,786	₩ 585,735	₩ 119,320	₩ 51,313	₩ 774,154
Accumulated depreciation and accumulated impairment losses	(3,190)	(201,919)	(39,960)	(33,965)	(279,034)

(*1) The amount due to the termination of the lease contract.

(*2) Changes due to exchange rate difference and others.

	2022				
	Land	Buildings and structures	Machinery	Others	Total
January 1	₩ 15,297	₩ 405,656	₩ 14,927	₩ 22,204	₩ 458,084
Acquisition/capital expenditure	10,294	95,462	9,207	12,644	127,607
Transfers	-	(13,842)	(1,886)	-	(15,728)
Disposal (*1)	(8,317)	(16,593)	(605)	(1,613)	(27,128)
Depreciation	(1,910)	(72,398)	(16,297)	(13,045)	(103,650)
Business combination	-	328	76,759	69	77,156
Changes in scope of consolidation	-	(13,852)	-	(62)	(13,914)
Others (*2)	(15)	6,570	702	432	7,689
December 31	₩ 15,349	₩ 391,331	₩ 82,807	₩ 20,629	₩ 510,116
Acquisition cost	₩ 17,416	₩ 546,085	₩ 129,480	₩ 71,728	₩ 764,709
Accumulated depreciation and accumulated impairment losses	(2,067)	(154,754)	(46,673)	(51,099)	(254,593)

(*1) The amount due to the termination of the lease contract.

(*2) Changes due to exchange rate difference and others.

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

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

The Group choose the revaluation models as the measurement after recognition for land, and the revaluated amount is the fair value of the revaluation date. As of December 31, 2023, the fair value of land assets was determined from the appraisal that was undertaken by independently qualified valuers, the First Appraisal & Consulting Co., Ltd (“FACC”) and Mirae & Saehan Appraisal Co., Ltd., on October 31, 2023.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers and comprise of certified professionals that have a significant amount of industry experience.

Other comprehensive income before tax recognized in the consolidated statement of comprehensive income, arising from application of the revaluation model, is ₩64,654 million as of December 31, 2023.

In addition, if the land were stated at cost, the land would amount to ₩ 1,678,406 million and ₩ 1,679,056 million as of December 31, 2023 and 2022, respectively.

Fair value measurements of land assets by fair value hierarchy level as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023			December 31, 2022		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 3,293,049	₩ -	₩ -	₩ 3,259,477

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

Valuation technique	Significant inputs that are not based on observable market data (unobservable inputs)	Correlation between unobservable inputs and fair value arguments
Official Assessed Reference Land Price (“OARLP”): OARLP of similar parcels nearby the subject land and reflating corrections necessary for differences between the subject and the comparable	Fluctuation rate of land price	Fair value increases (decreases), if rate of land price increases (decreases).
	Parcel conditions and others	Fair value increases (decreases), if correction of parcel conditions and others increases (decreases).
	Land conditions affecting the sales price and others	Fair value increases (decreases), if correction of land conditions affecting the sales price increases (decreases).
Trade Case Comparison method: When comparing the transaction case of an object that is similar to the target object, fair value is measured through the process of correcting the private information, correcting the timing, comparing the factors of the value formation and others	Private information correction	Fair value increases (decreases), if the private information correction increases (decreases).
	Point-in-time correction	Fair value increases (decreases), if the point-in-time correction increases (decreases).
	Value formation factor	Fair value increases (decreases), if the value forming factor increases (decreases).

Doosan Corporation and its subsidiaries
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12. Property, plant and equipment (cont'd)

Capitalized borrowing costs for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	<u>2023</u>	<u>2022</u>
Capitalized borrowing cost	₩ 6,803	₩ 3,094
Capitalization interest rate	4.01%~6.48%	3.73%~6.29%

Classification of depreciation for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	<u>2023</u>	<u>2022</u>
Cost of sales	₩ 476,759	₩ 388,491
Selling and administrative expenses	65,035	57,579
Research and development cost and others	5,710	5,396
Loss from discontinued operations	-	4,932
	<u>₩ 547,504</u>	<u>₩ 456,398</u>

Classification of depreciation for the years ended December 31, 2023 and 2022 incurred in right-of-use assets classified as property, plant and equipment is as follows (Korean won in millions):

	<u>2023</u>	<u>2022</u>
Cost of sales	₩ 80,355	₩ 63,399
Selling and administrative expenses	38,962	38,352
Research and development cost and others	705	617
Loss from discontinued operations	-	1,282
	<u>₩ 120,022</u>	<u>₩ 103,650</u>

Doosan Corporation and its subsidiaries
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13. Intangible assets

Changes in intangible assets for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023				Total
	Goodwill	Industrial rights	Development costs	Other intangible assets	
January 1	₩ 5,065,264	₩ 1,247,188	₩ 1,233,460	₩ 344,941	₩ 7,890,853
Acquisition/capital expenditure	-	2,972	192,470	81,596	277,038
Transfers	-	-	(4,239)	27,635	23,396
Disposal	-	(22)	-	(1,039)	(1,061)
Amortization	-	(1,874)	(85,894)	(69,076)	(156,844)
Impairment loss	(163,129)	(6,453)	(4,174)	(138)	(173,894)
Others (*1)	130,951	37,656	3,620	(14)	172,213
December 31	₩ 5,033,086	₩ 1,279,467	₩ 1,335,243	₩ 383,905	₩ 8,031,701
Acquisition costs	₩ 5,033,086	₩ 1,473,846	₩ 1,966,572	₩ 742,870	₩ 9,216,374
Accumulated amortization and impairment losses	-	(194,379)	(631,329)	(358,965)	(1,184,673)

(*1) Changes due to exchange rate difference and others.

	2022				Total
	Goodwill	Industrial rights	Development costs	Other intangible assets	
January 1	₩ 4,959,261	₩ 1,187,662	₩ 1,145,230	₩ 289,599	₩ 7,581,752
Acquisition/capital expenditure	-	5,351	200,544	50,738	256,633
Transfers	-	-	2,185	13,223	15,408
Disposal	-	(34)	-	(6,612)	(6,646)
Amortization	-	(1,546)	(99,215)	(61,043)	(161,804)
Impairment loss	(357,552)	-	(34,922)	(30,214)	(422,688)
Business combination	333,486	-	-	93,678	427,164
Changes in scope of consolidation	(5,700)	-	-	(185)	(5,885)
Others (*1)	135,769	55,755	19,638	(4,243)	206,919
December 31	₩ 5,065,264	₩ 1,247,188	₩ 1,233,460	₩ 344,941	₩ 7,890,853
Acquisition costs	₩ 5,065,264	₩ 1,428,134	₩ 1,805,289	₩ 640,522	₩ 8,939,209
Accumulated amortization and impairment losses	-	(180,946)	(571,829)	(295,581)	(1,048,356)

(*1) Changes due to exchange rate difference and others.

Some of the above intangible assets are provided as collateral for the Company's debts. (see Note 33).

The carrying amount of membership with indefinite useful lives in other intangible assets is ₩40,284 million and ₩35,076 million as of December 31, 2023 and 2022, respectively.

In addition, expenditure on research and development, which was recognized as expenses, amounted to ₩272,864 million and ₩229,987 million for the years ended December 31, 2023 and 2022, respectively.

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13. Intangible assets (cont'd)

Before impairment test, the carrying amount of goodwill was allocated to CGUs as follows (Korean won in millions):

Company	CGUs	December 31, 2023	December 31, 2022	Description
Doosan	Fuel Cell	19,107	18,884	Manufacturing and sale of fuel cell
Oricom Inc.	Magazine	1,373	1,373	Advertising services
	Advertisement	9,690	9,690	
Doosan Logistics Solution Co., Ltd.	Logistics automation	12,891	12,891	Manufacturing and sale of logistics automation, maintenance
Doosan Tesna Inc.	Semiconductor test	333,486	333,486	Testing and engineering of semiconductor manufacturing
Doosan Enerbility	Power plant	733,203	711,814	Manufacturing and sale of power plant
Doosan Bobcat	Construction machine& Industrial Vehicles	3,425,620	3,316,281	Manufacturing and sale of small and medium size construction machine, manufacturing and sale of forklifts
Doosan Fuel Cell Co., Ltd.(*1)	Fuel Cell	497,716	660,845	Manufacturing and sale of fuel cell
		<u>₩ 5,033,086</u>	<u>₩ 5,065,264</u>	

(*1) For the year ended December 31, 2023, the carrying amount of net operating assets, including goodwill allocated to the relevant cash generating unit, exceeded the net fair value, and an impairment loss of ₩163,129 million was recognized as non-operating expenses in the consolidated statements of comprehensive income.

A recoverable amount of CGU is calculated based on fair value less costs to sell, or value in use.

The major assumptions and measurement methods of recoverable amount of CGU as of December 31, 2023 are as follows.

Company	CGUs	Discount rate	Permanent growth rate	Recoverable amount assessment methods
Doosan	Fuel Cell	13.1%, 14.7%	1.00%, 2.00%	Value in use
Oricom Inc.	Magazine	9.06%	1.00%	Value in use
	Advertisement	9.06%	1.00%	Value in use
Doosan Logistics Solution Co., Ltd.	Logistics automation	12.13%	1.00%	Value in use
Doosan Tesna Inc.	Semiconductor test	Estimate active market price by adjustment	Estimate quoted active market price	Fair value less costs to sell
Doosan Enerbility	Power plant	Estimate active market price by adjustment	Estimate quoted active market price	Fair value less costs to sell
Doosan Bobcat Inc.	Construction machine& Industrial Vehicles	9.76%	1.50%	Value in use
Doosan Fuel Cell Co., Ltd.	Fuel Cell	Estimate active market price by adjustment	Estimate quoted active market price	Fair value less costs to sell

The Group uses cash flow projections based on financial budgets approved by the directors covering five-year years for a value in use calculation. The financial budgets are determined based on historical result and expectation of market growth. Cash flows beyond that five-year period have been extrapolated using a expected

13. Intangible assets (cont'd)

growth rate, continuing the fifth-year cash flow. Permanent growth rate does not exceed long-term average growth rate of market, and the discount rates used reflect relevant risks specific to the CGUs.

The amount of fair value less costs to sell was determined based on the quoted price in an active market.

The recoverable amount may change according to changes in key assumptions. Accordingly, the Group's management regularly observes relevant turnovers and industrial trends.

Capitalized borrowing costs for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Capitalized borrowing cost	₩ 33,102	₩ 22,907
Capitalization interest rate	4.82% ~ 8.17%	3.73%

Classification of amortization for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023	2022
Cost of sales	₩ 101,809	₩ 104,296
Selling and administrative expenses	54,961	53,067
Research and development cost and others	74	2,388
Loss from discontinued operations	-	2,053
	₩ 156,844	₩ 161,804

Development costs as of December 31, 2023 are as follows (Korea won in millions):

Company	Individual assets	December 31, 2023	Remaining Amortization period (*1)
Doosan Enerbility	Large-sized Heavy-Duty Gas Turbine Development for Power Generation	₩ 727,992	-
	Gas Turbine 7F Retrofit	59,252	-
	Mid-sized Gas Turbine Development Phase1	560	5.58 years
	Mid-sized Gas Turbine Development Phase2	37,777	-
	8MW Offshore Wind Power	49,951	-
Doosan Bobcat	Development related Compact product (new model and emission regulation) (*2)	60,234	-
	Development related Compact product (new model and emission regulation) (*2)	73,191	2.73 years
	Development related Portable Power product (new model and emission regulation) (*2)	214	-
	Development related Portable Power product (new model and emission regulation) (*2)	11,399	3.06 years
	Development related forklifts (new model and emission regulation) (*2)	6,032	-
	Development related forklifts (new model and emission regulation) (*2)	10,442	3.29 years

(*1) If the amortization begins, the remaining amortization year is recorded. If not started, it is marked with '-'.
(*2) Some sub-projects among the development costs began amortization and they are presented separately.

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13. Intangible assets (cont'd)

Intangible assets for which an impairment loss has been recognized for the year ended December 31, 2023 are as follows (Korea won in millions):

Company	Classification	Individual assets	Amount of impairment loss		December 31, 2023	Recoverable amount assessment methods
			2023	Accumulated		
Doosan	Other intangible assets	Others	₩ 138	₩ 177	₩ -	Value in use
Doosan Enerbility	Development costs (*1)	Development of Rota Automation Inspection System	157	536	-	Value in use
		Others	878	24,752	-	Value in use
			₩ 1,035	₩ 25,288	-	
Doosan Bobcat	Industrial Rights - Patents	Trademark rights of RYAN	6,453	6,453	-	Fair value less costs to sell
	Development costs	Medium Frame Gen V and others	3,139	11,292	-	Fair value less costs to sell
			₩ 9,592	₩ 17,745	-	
Doosan Fuel Cell Co., Ltd.	Goodwill(*2)	Goodwill	163,129	520,681	497,716	Fair value less costs to sell
			₩ 173,894	₩ 563,891	₩ 497,716	

(*1) Due to the changes in the business environment, value in use was decreased. Accordingly, the Group recognized impairment loss up to the book value of the development costs.

(*2) The book value of net operating assets, including goodwill allocated to the relevant cash generating unit, exceeded the net fair value, and the impairment losses of ₩163,129 million and ₩357,552 million for the years ended December 31, 2023 and 2022, respectively, were recognized as non-operating expenses.

For the year ended December 31, 2023, none of reversal of impairment losses is recognized for intangible assets .

The accounts on the consolidated statements of comprehensive income for which the Group recognizes an impairment loss (reversal) for the years ended December 31, 2023 and 2022 are as follows (Korea won in millions):

	2023	2022
Other non-operating expenses	₩ 173,894	₩ 422,688

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13. Intangible assets (cont'd)

Details of annual quantity of allocated emission allowances for the third planning period (2021 ~ 2025) as of December 31, 2023 are as follows (tCO2-eq):

	2021	2022	2023	2024	2025	Total
Free quota emission right	260,526	260,526	260,526	258,086	258,086	1,297,750

Changes in emission allowances and book value as of December 31, 2023 and 2022 are as follows (tCO2-eq, Korea won in millions):

	2023 (Quantity)					Total
	2022	2023	2024	2025		
January 1 (*1)	302,876	260,736	258,294	258,294		1,080,200
Free allocation succession	-	-	-	-	-	-
Cancellation	(574)	-	-	-	-	(574)
Government delivery	(214,550)	-	-	-	-	(214,550)
Disposal	(30,000)	-	-	-	-	(30,000)
Carryforward	(57,752)	57,752	-	-	-	-
December 31	-	318,488	258,294	258,294		835,076

(*1) Changes such as the carryover of free allocation and the succession of free allocation, which were confirmed, were reflected.

	2022 (Quantity)					Total
	2021	2022	2023	2024	2025	
January 1 (*1)	264,750	260,526	260,526	258,086	258,086	1,301,974
Free allocation succession	210	210	210	208	208	1,046
Cancellation	(519)	-	-	-	-	(519)
Government delivery	(200,301)	-	-	-	-	(200,301)
Disposal	(22,000)	-	-	-	-	(22,000)
Carryforward	(42,140)	42,140	-	-	-	-
December 31	-	302,876	260,736	258,294	258,294	1,080,200

(*1) Changes in the confirmed free allocation carried over have been reflected.

Emissions allocated free of charge by the government were recognized by measuring the book value as zero (0).

Changes in emission liabilities during the year ended December 31, 2023 are as follows (tCO2-eq, Korean won in millions):

	Quantity	Book value
January 1	55,248	₩ 1,657
Acquisition	-	-
Valuation	-	(939)
December 31	55,248	₩ 718

The estimate of Group's greenhouse gas emissions as of December 31, 2023 is 230,000 tCO2-eq and no emission liabilities are recognized as it is not expected to exceed the free emission permits.

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14. Investment properties

Changes in investment properties for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023			
	Land	Buildings	Construction in progress	Total
January 1	₩ 266,775	₩ 145,915	₩ 46,229	₩ 458,919
Acquisition /capital expenditure	-	1,104	-	1,104
Disposal	(22)	(22)	-	(44)
Valuation (*1)	23,031	(10,139)	(46,229)	(33,337)
Transfers to assets held for sale	(22,643)	(1,517)	-	(24,160)
Transfers	-	(4,966)	-	(4,966)
Others(*2)	-	(6,805)	-	(6,805)
December 31	₩ 267,141	₩ 123,570	₩ -	₩ 390,711

	2022			
	Land	Buildings	Construction in progress	Total
January 1	₩ 226,324	₩ 136,369	₩ -	₩ 362,693
Acquisition /capital expenditure	-	-	-	-
Disposal	(611)	(5,594)	-	(6,205)
Valuation (*1)	5,298	(13,153)	-	(7,855)
Transfers to assets held for sale	-	-	-	-
Transfers	35,764	28,293	46,229	110,286
Others(*2)	-	-	-	-
December 31	₩ 266,775	₩ 145,915	₩ 46,229	₩ 458,919

(*1) Gain or loss on revaluation of investment properties is included in other non-operating income and expenses in the consolidated statements of profit or loss.

(*2) Changes due to exchange rate difference and others.

Some of the above investment properties, superficies and leasehold interest are established by the tenant on the land. (see Note 32).

In addition, lease income related to investment properties amounted to ₩28,648 million and ₩21,421 million for the years ended December 31, 2023 and 2022, respectively.

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14. Investment properties (cont'd)

Changes in right-of-use assets classified as Investment properties for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	<u>2023</u>	<u>2022</u>
January 1	₩ 120,473	₩ 133,508
Transfers	3,272	-
Valuation (*1)	<u>(10,040)</u>	<u>(13,035)</u>
December 31	<u>₩ 113,705</u>	<u>₩ 120,473</u>

(*1) Gain or loss on revaluation of investment properties is included in other non-operating income and expenses in the consolidated statements of profit or loss.

Details of fair value model that the Group applies for measurement of investment properties are as follows:

The Group recognizes subsequent measurement of investment properties using fair value. The fair value of investment properties was determined from the appraisal that was undertaken by independently qualified valuers, the First Appraisal & Consulting Co., Ltd ("FACC") and Mirae & Saehan Appraisal Co., Ltd., on November 30, 2023.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers, and comprise of certified professionals who have a significant amount of industry experience.

Fair value measurements of investment properties by fair value hierarchy level as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	<u>December 31, 2023</u>			<u>December 31, 2022</u>		
	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
Land	₩ -	₩ -	₩ 267,141	₩ -	₩ -	₩ 266,775
Buildings	-	-	123,570	-	-	145,915
Construction in progress	-	-	-	-	-	46,229
	<u>₩ -</u>	<u>₩ -</u>	<u>₩ 390,711</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ 458,919</u>

14. Investment properties (cont'd)

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

Valuation techniques	Significant inputs that are not based on observable market data (unobservable inputs)	Correlation between unobservable inputs and fair value arguments
Official Assessed Reference Land Price ("OARLP"): OARLP of similar parcels nearby the subject land and reflating corrections necessary for differences between the subject and the comparable	Fluctuation rate of land price	Fair value increases (decreases), if rate of land price increases (decreases).
	Parcel conditions and others	Fair value increases (decreases), if correction of parcel conditions and others increases (decreases).
	Land conditions affecting the sales price and others	Fair value increases (decreases), if correction of land conditions affecting the sales price increases (decreases).
Trade case comparison method: When comparing the transaction case of an object that is similar to the target object, fair value is measured through the process of correcting the private information, correcting the timing, comparing the factors of the value formation and others	Private information correction	Fair value increases (decreases), if the private information correction increases (decreases).
	Point-in-time correction	Fair value increases (decreases), if point-in-time correction increases (decreases).
	Value formation factor	Fair value increases (decreases), if the value-forming factor increases (decreases).
Estimated cost price approach: Fair value is based on depreciation and replacement costs considered with structure, building materials, construction condition, building equipment, end use, present condition and management condition	Replacement cost	Fair value decreases (increases), if replacement cost increases (decreases).
Discounted cash flow method: Fair value is measured by estimating the appropriate market rent for the remaining lease period from the present time of the evaluation by comparing transaction cases and then discounting it to the present value	Private information correction	Fair value increases (decreases), if the private information correction increases (decreases).
	Point-in-time correction	Fair value increases (decreases), if point-in-time correction increases (decreases).
	Value formation factor	Fair value increases (decreases), if the value-forming factor increases (decreases).
	Discount rate	Fair value increases (decreases), if the discount rate decreases (increases).

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15. Bonds and borrowings

15.1 Bonds

Bonds as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Annual interest rate (%)	December 31, 2023	December 31, 2022
Public issued bonds (*1)	3.80 ~ 6.50	₩ 882,820	₩ 982,190
Private placement bonds (*1)	4.80 ~ 9.20	234,500	248,500
Convertible bonds	-	-	23,374
		₩ 1,117,320	₩ 1,254,064
Less: Adjustment for conversion rights		-	(491)
Add: Redemption premium		-	1,604
Less: Discount on bonds		(6,642)	(3,310)
Less: Current portion of long-term bonds		(484,048)	(717,885)
		₩ 626,630	₩ 533,982

(*1) Among the above public issued bonds and private placement bonds, Doosan Bobcat Inc.'s ordinary shares and Doosan Fuel Cell Co., Ltd.'s ordinary shares held by Doosan Enerbility Co., Ltd are provided as collateral in relation to Doosan Enerbility Co., Ltd's foreign currency public offering bonds (see Note 32, 33).

15.2 Convertible bonds

Changes in convertible bonds issued by the Group for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		
	January 1	Exercise/ Amortization(*1)	December 31
Convertible bonds	₩ 23,374	₩ (23,374)	₩ -
Redemption premium	1,604	(1,604)	-
Discount on bonds	(31)	31	-
Adjustment for conversion rights	(491)	491	-
Book value	₩ 24,456	₩ (24,456)	₩ -
Consideration for conversion rights (other capital surplus)	760	(760)	-

(*1) The right of conversion was exercised for the year ended December 31, 2023.

	2022		
	January 1	Exercise/Amortization	December 31
Convertible bonds	₩ 23,374	₩ -	₩ 23,374
Redemption premium	1,604	-	1,604
Discount on bonds	(82)	51	(31)
Adjustment for conversion rights	(1,299)	808	(491)
Book value	₩ 23,597	₩ 859	₩ 24,456
Consideration for conversion rights (other capital surplus)	760	-	760

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15.3 Short-term borrowings

Short-term borrowings as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Creditor	Annual interest rate (%)	December 31, 2023	December 31, 2022
Borrowings in Korean won:				
Doosan (*3)	Korea Exim Bank and others	5.26 ~ 7.50	₩ 411,149	₩ 311,148
Doosan Enerbility (*2)	Korea Development Bank and others	2.00 ~ 6.55	753,250	948,250
Doosan Bobcat (*1)	Shinhan Bank China	3.30	12,825	-
Doosan Fuel Cell Co., Ltd.	Woori Bank and others.	Industrial Financial Debenture(1ye ar) + 1.30 ~ CD (3M)+2.80	60,000	64,000
			₩ 1,237,224	₩ 1,323,398
Borrowings in foreign currency:				
Doosan (*3)	Korea Exim Bank and others	2.25 ~ 5.53	119,760	118,020
Doosan Enerbility (*2)	Woori Bank and others	0.53 ~ 10.30	310,851	367,381
Doosan Bobcat (*1)	Shinhan Bank China and others	EURIBOR + 1.50 ~ 3.30	49,651	53,941
			₩ 480,262	₩ 539,342
			₩ 1,717,486	₩ 1,862,740

(*1) It includes its own consolidated subsidiaries.

(*2) It includes its own consolidated subsidiaries other than those mentioned in (*1) and Doosan Fuel Cell Co., Ltd. above.

(*3) It includes its own consolidated subsidiaries other than those mentioned in (*1) and (*2) above.

The Group pledges property, plant and equipment as collateral for the above borrowings (see Note 33).

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15.4 Long-term borrowings

Long-term borrowings as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Creditor	Annual interest rate (%)	December 31, 2023	December 31, 2022
Borrowings in Korean won:				
Doosan (*3)	New Star Eneo Ville The 1st Co., Ltd. and others	3.00 ~ 7.30	₩ 1,102,267	₩ 836,613
Doosan Enerbility (*2)	NH investment securities and others	1.10 ~ 6.85	1,280,663	1,292,714
Doosan Bobcat (*1)	NH Bank and others	3.25 ~ 3M MOR+1.88	80,000	80,000
Doosan Fuel Cell Co., Ltd.	Korea Development Bank	Industrial Financial Debenture(1year) + 1.45 ~ 1.47	70,000	30,000
			<u>2,532,930</u>	<u>2,239,327</u>
Borrowings in foreign currency:				
Doosan (*3)	Korea Development Bank and others	5.90 ~ 6.70	15,064	17,650
Doosan Enerbility (*2)	SABB and others	1M SOFR + 2.63 ~ 8.17	162,709	6,589
Doosan Bobcat (*1)	USA Institutional investors, banks and others	Japan ST Prime Lending Rate (-) 0.58 ~ 3M SOFR+2.50	1,060,898	1,174,452
			<u>1,238,671</u>	<u>1,198,691</u>
Redeemable convertible preference shares:				
Doosan Corporation (*4)			31,403	29,088
Convertible preference shares:				
Doosan Corporation (*5)			<u>204,012</u>	<u>-</u>
			4,007,016	3,467,106
Less: present value discounts			(18,293)	(29,774)
Less: current portion of long-term borrowings			<u>(1,680,071)</u>	<u>(229,801)</u>
			<u>₩ 2,308,652</u>	<u>₩ 3,207,531</u>

(*1) It includes its own consolidated subsidiaries.

(*2) It includes its own consolidated subsidiaries other than those mentioned in (*1) above, Doosan Fuel Cell Co., Ltd.

(*3) It includes its own consolidated subsidiaries other than those mentioned in (*1) and (*2) above.

(*4) Redeemable convertible preference shares liabilities issued by Doosan Mobility Innovation Inc., a subsidiary, has priority to profit dividends over ordinary shares, has special provisions on conversion and repayment, and is a preferred stock with voting rights. The Group is obliged to repay redeemable convertible preferred shares if the holder requests, and the repayment to the holder is determined at the option of the holder, not at the discretion of the Group. Thus, redeemable convertible preferred shares and put options attached to bonds are classified as liabilities and conversion consideration is classified as capital. (see Note 32).

(*5) The convertible preferred stock liabilities issued by its subsidiary HyAxiom Inc., have been granted a put option for investors to claim repayment. The Group classified the convertible preferred stock as a liability in consideration of the put option (see Note 32).

The Group provide items of property, plant and equipment and others as collateral for the above loans (see Note 33).

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15.5 Asset-backed loans

The Group has transferred some of its future trade receivables and others to the securitization companies to carry out the asset-backed securitizations (ABS). Details of the asset-backed loans as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Creditor	Annual interest rate (%)	December 31, 2023	December 31, 2022
Asset-backed loans:				
Doosan (*1)	China Bank and others	4.50 ~ 6.88	₩ 113,750	₩ 205,800
Doosan Fuel Cell Co., Ltd.	Newstar FC The 1st Co., Ltd., and others	7.00 ~ CD(3M) + 3.61	70,000	-
			₩ 183,750	₩ 205,800
Less: present value discounts			(1,054)	(716)
Less: current portion of long-term asset-backed loans			(106,766)	(91,731)
			₩ 75,930	₩ 113,353

(*1) It includes its own consolidated subsidiaries.

The carrying amount of trade receivables and others recognized in the consolidated financial statements as of December 31, 2023 and 2022 are ₩33,155 million and ₩25,840 million, respectively, as it does not meet the requirement for derecognition of financial instruments in relation to the asset-backed loans (see Notes 32).

The Group provides beneficiary certificates as collateral in relation to the above asset-backed loans (see Note 33).

16. Lease

16.1 Right-of-use assets

Changes in right-of-use assets classified as property, plant and equipment and investment properties for the years ended December 31, 2023 and 2022 are described in Notes 12.2 and 14.2. The composition of depreciation expenses by accounts arising from right-of-use assets classified as property, plant and equipment for the years ended December 31, 2023 and 2022 is described in Note 12.7.

16.2 Lease liabilities

Changes in lease liabilities for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
January 1	₩ 749,137	₩ 691,012
Payment of lease fees	(191,122)	(175,877)
Acquisition of lease assets	115,753	127,607
Cancel contracts	(4,603)	(27,215)
Interest expense	41,996	40,809
Business combination	-	77,156
Changes in scope of consolidation	-	(16,885)
Others(*1)	(11)	32,530
December 31	₩ 711,150	₩ 749,137

(*1) Others include changes due to exchange rate difference.

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16.2 Lease liabilities (cont'd)

The maturity analysis of lease liabilities as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	December 31, 2023				
	Nominal cash flows according to contract				
	Total	Less than 1 year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Lease liabilities	₩ 857,771	₩ 179,182	₩ 160,743	₩ 329,439	₩ 188,407

	December 31, 2022				
	Nominal cash flows according to contract				
	Total	Less than 1 year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Lease liabilities	₩ 885,079	₩ 169,825	₩ 145,543	₩ 306,078	₩ 263,633

Classification of expenses for the years ended December 31, 2023 and 2022 incurred in short-term lease and leases of low-value assets that are not included in right-of-use assets is as follows (Korean won in millions):

	2023	2022
Cost of sales	₩ 18,419	₩ 22,842
Selling and administrative expenses	8,901	5,003
Research and development cost and others	2	1
Loss from discontinued operations	-	208
	₩ 27,323	₩ 28,054

Cash outflows from financing activities due to the repayment of lease liabilities are ₩191,122 million and ₩175,877 million for the years ended December 31, 2023 and 2022, respectively. Cash outflows from operating activities due to short-term and leases of low value fees are ₩27,323 million and ₩28,054 million for the years ended December 31, 2023 and 2022, respectively. Therefore, the total cash outflow of the lease is ₩218,445 million and ₩203,931 million for the years ended December 31, 2023 and 2022, respectively.

16.3 Lease payments receivable

The maturity analysis of lease payments receivable as of December 31, 2022 is as follows (Korean won in millions):

	December 31, 2022				
	Nominal cash flows according to contract				
	Total	Less than 1 year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Lease payments receivable	₩ 2,345	₩ 2,345	₩ -	₩ -	₩ -

16.4 Sale-and-leaseback liabilities

Details of sale-and-leaseback liabilities as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	Annual interest rate(%)	December 31, 2023	December 31, 2022
Doosan(*1)	4.08	₩ 29,970	₩ 29,970
Doosan Bobcat	7.00	66,299	77,347
		₩ 96,269	₩ 107,317
Less: current portion		(17,269)	(27,499)
		₩ 79,000	₩ 79,818

16.4 Sale-and-leaseback liabilities (cont'd)

(*1) It includes its own consolidated subsidiaries.

(*2) It includes its own consolidated subsidiaries other than those mentioned in (*1) above.

The above sale-and-leaseback liabilities are classified as current lease liabilities and non-current lease liabilities in the consolidated financial position statement.

17. Net defined benefit liabilities

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

Details of net defined benefit liabilities as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Present value of defined benefit liabilities	₩ 1,896,520	₩ 1,746,782
Fair value of plan assets	(1,398,446)	(1,289,534)
	<u>₩ 498,074</u>	<u>₩ 457,248</u>
Net defined benefit assets	₩ (10,383)	₩ (14,508)
Net defined benefit liabilities	508,457	471,756

Retirement benefits generated by defined benefits retirement pension recognized in the consolidated statements of profit or loss for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Current service costs	₩ 78,031	₩ 93,287
Net interest costs	21,594	18,355
Past service costs and profit or loss on settlement (*1)	(67,935)	20,974
	<u>₩ 31,690</u>	<u>₩ 132,616</u>

(*1) For the year ended December 31, 2023, ₩67,935 million in changes in retirement benefit liabilities due to the revision of the pension plan of the subsidiary was recognized as a deduction to past service costs.

Classification of the retirement benefits generated by defined benefits retirement pension recognized in the consolidated statements of profit or loss for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023	2022
Cost of sales	₩ 51,928	₩ 71,673
Selling and administrative expenses	(25,515)	56,755
Research and development cost and others	5,277	2,969
Loss from discontinued operations	-	1,219
	<u>₩ 31,690</u>	<u>₩ 132,616</u>

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17. Net defined benefit liabilities (cont'd)

Changes in net defined benefit liabilities(assets) for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities(assets)
Beginning balance	₩ 1,746,782	₩ (1,289,534)	₩ 457,248
Profit or loss:			
Current service cost	78,031	-	78,031
Interest cost (income)	86,308	(64,714)	21,594
Past service cost	(67,935)	-	(67,935)
	₩ 96,404	₩ (64,714)	₩ 31,690
Remeasurements:			
Return on plan assets (excluding amounts included in interest income)	-	(6,348)	(6,348)
Actuarial gain (loss) from change in demographic assumptions	2,613	-	2,613
Actuarial gain (loss) from change in financial assumptions	69,591	-	69,591
Others	58,264	-	58,264
	₩ 130,468	₩ (6,348)	₩ 124,120
Transfer in and out	(1,355)	(84)	(1,439)
Contributions by plan participants directly to plan assets	976	(1,033)	(57)
Contributions by employer directly to plan assets	-	(101,568)	(101,568)
Benefit payments	(128,766)	102,040	(26,726)
Others (*1)	52,011	(37,205)	14,806
Ending balance	₩ 1,896,520	₩ (1,398,446)	₩ 498,074

(*1) Others include changes due to exchange rate difference.

17. Net defined benefit liabilities (cont'd)

	2022		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities/assets
Beginning balance	₩ 2,240,998	₩ (1,662,617)	₩ 578,381
Profit or loss:			
Current service cost	93,287	-	93,287
Interest cost (income)	57,852	(39,497)	18,355
Past service cost	20,974	-	20,974
	₩ 172,113	₩ (39,497)	₩ 132,616
Remeasurements:			
Return on plan assets (excluding amounts included in interest income)	-	413,473	413,473
Actuarial gain (loss) from change in demographic assumptions	(1,391)	-	(1,391)
Actuarial gain (loss) from change in financial assumptions	(630,885)	-	(630,885)
Others	72,761	-	72,761
	₩ (559,515)	₩ 413,473	₩ (146,042)
Transfer in and out	(575)	5,174	4,599
Changes in scope of consolidation	(6,419)	16,008	9,589
Contributions by plan participants directly to plan assets	1,480	(20,328)	(18,848)
Contributions by employer directly to plan assets	-	(96,047)	(96,047)
Benefit payments	(123,514)	94,647	(28,867)
Others (*1)	22,214	(347)	21,867
Ending balance	₩ 1,746,782	₩ (1,289,534)	₩ 457,248

(*1) Others include changes due to exchange rate difference.

Assumptions used for actuarial valuation as of December 31, 2023 and 2022 are as follows:

	December 31, 2023	December 31, 2022
Discount rate (%)	3.50~7.44	2.00~7.44
Salary growth rate (%)	0.75~6.00	0.80~6.00

Details of plan assets as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Equity securities	₩ 124,830	₩ 156,812
Debt securities	719,076	570,221
Saving deposits and others	554,540	562,501
	₩ 1,398,446	₩ 1,289,534

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17. Net defined benefit liabilities (cont'd)

The sensitivity analysis for the significant actuarial assumptions as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	Impact on defined benefit obligations			
	December 31, 2023		December 31, 2022	
	Amount	Ratio	Amount	Ratio
Discount rate:				
1% increase	₩ (188,236)	(-9.93%	₩ (139,443)	(-7.98%
1% decrease	175,804	9.27%	223,658	12.8%
Salary growth rate:				
1% increase	128,618	6.78%	153,162	8.77%
1% decrease	(159,896)	(-8.43%	(114,722)	(-6.57%

The weighted average maturity of defined benefit obligations as of December 31, 2023 and 2022 is 9.6 years and 10.39 years, respectively. The Group expects to contribute ₩334,768 million for defined benefit plans in 2024.

In addition, the amount recognized for the defined contribution retirement benefit plan is ₩28,562 million and ₩49,590 million as of December 31, 2023 and 2022, respectively.

18. Provisions

Changes in provisions for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023					
	Provision for product warranties	Provision for restoration	Provision for losses compensation	Provision for construction losses	Other provisions (*2,3)	Total
January 1	₩ 426,045	₩ 7,963	₩ -	₩ 99,589	₩ 197,778	₩ 731,375
Increase(decrease)	139,149	1,146	17,750	(1,823)	70,089	226,311
Utilized	(129,057)	-	(8,005)	(16,482)	(67,045)	(220,589)
Others (*1,*2)	5,909	308	87	906	(71,682)	(64,472)
December 31	₩ 442,046	₩ 9,417	₩ 9,832	₩ 82,190	₩ 129,140	₩ 672,625
Current	₩ 135,204	₩ -	₩ -	₩ 54,259	₩ 71,428	₩ 260,891
Non-Current	306,842	9,417	9,832	27,931	57,712	411,734

(*1) It includes changes in the amounts from foreign exchange rate and others.

(*2) For the year ended December 31, 2023, it includes ₩54,855 million, which has been transferred from provisions related to the guarantee of membership fees return to provisions for bad debts of loans.

(*3) Doosan Enerbility Co., Ltd., a subsidiary, has a ₩5,256 million funding agreement with Gyeonggi Dongseo Circulation Road Co., Ltd. in connection with the construction of Bongdam Songsan Expressway, and recognized provisions for the year ended December 31, 2023 (see Note 32).

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18. Provisions (cont'd)

	2022					Total
	Provision for product warranties	Provision for restoration	Provision for construction losses	Other provisions (*2)		
January 1	₩ 335,697	₩ 6,750	₩ 94,319	₩ 218,222	₩ 654,988	
Increase(decrease)	175,837	1,213	10,671	47,814	235,535	
Utilized	(97,949)	-	-	(55,397)	(153,346)	
Others (*1)	12,460	-	(5,401)	(12,861)	(5,802)	
December 31	₩ 426,045	₩ 7,963	₩ 99,589	₩ 197,778	₩ 731,375	
Current	₩ 125,574	₩ -	₩ 64,054	₩ 134,635	₩ 324,263	
Non-current	300,471	7,963	35,535	63,143	407,112	

(*1) It includes changes in the amounts from foreign exchange rate, reclassification as liabilities held for sale, the scope of consolidation and others.

(*2) As of December 31, 2022, other provisions include those related to guaranteed return on membership fee of ₩54,855 million, and related to provisions for pending litigations and others

The Group recognizes the expected expenses due to quality assurance, exchange and refund, onerous contract defect repair, and subsequent post-service as provisions based on the warranty period and past experience rate.

19. Share capital and share premium

Changes in share capital and share premium for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions, except for share data):

	Number of shares		Share capital			Share premium
	Ordinary shares	Preferred shares	Ordinary shares	Preferred shares	Total	
January 1, 2022	16,523,835	4,889,500	₩ 99,291	₩ 24,447	₩ 123,738	₩ 322,462
December 31, 2022	16,523,835	4,889,500	₩ 99,291	₩ 24,447	₩ 123,738	₩ 322,462
January 1, 2023	16,523,835	4,889,500	₩ 99,291	₩ 24,447	₩ 123,738	₩ 322,462
December 31, 2023	16,523,835	4,889,500	₩ 99,291	₩ 24,447	₩ 123,738	₩ 322,462

The Company's number of shares authorized is 400,000,000 shares with a par value of ₩5,000 per share. The amount of share capital is not the same as total par value of shares issued due to retirement of shares.

The number of shares with the voting rights under limitation pursuant to *Commercial Code* of the Republic of Korea is 3,000,866 shares and 3,000,866 shares as of December 31, 2023 and 2022, respectively. The number of shares with the voting rights under limitation pursuant to *Monopoly Regulation and Fair Trade Act* is 510,231 shares and 510,231 shares as of December 31, 2023 and 2022, respectively. In addition, although the preferred shares in the Company do not contain voting right, if there is a resolution at the shareholders' meeting that the Company does not pay a certain dividend to the preferred shareholders, the preferred shares are deemed to have voting rights from the subsequent shareholders' meeting until the end of the shareholders' meeting where shareholders resolute to pay dividends to such preferred shareholders.

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20. Capital surplus

Details of capital surplus as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Share premium	₩ 322,462	₩ 322,462
Revaluation reserves	277,542	277,542
Other capital surplus	1,281,151	1,004,656
	<u>₩ 1,881,155</u>	<u>₩ 1,604,660</u>

21. Other equity items

Other capital items as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Treasury stocks	₩ (185,025)	₩ (185,025)
Loss on disposal of treasury stocks	(16,738)	(16,738)
Stock options	9,201	3,527
Loss from capital reduction	(948,311)	(948,311)
Others	(47,500)	(47,557)
	<u>₩ (1,188,373)</u>	<u>₩ (1,194,104)</u>

21.1 Treasury stocks

The Company acquired registered ordinary shares and non-voting preferred shares, and recognized them as other capital items for the stabilization of share price. Changes in treasury stocks for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions, except for share data):

	Number of treasury stocks			Book value of treasury stocks		
	Ordinary shares	Preferred shares	Total	Ordinary shares	Preferred shares	Total
January 1, 2022	3,000,866	612,104	3,612,970	₩ 171,231	₩ 13,794	₩ 185,025
December 31, 2022	<u>3,000,866</u>	<u>612,104</u>	<u>3,612,970</u>	<u>₩ 171,231</u>	<u>₩ 13,794</u>	<u>₩ 185,025</u>
January 1, 2023	<u>3,000,866</u>	<u>612,104</u>	<u>3,612,970</u>	<u>₩ 171,231</u>	<u>₩ 13,794</u>	<u>₩ 185,025</u>
December 31, 2023	<u>3,000,866</u>	<u>612,104</u>	<u>3,612,970</u>	<u>₩ 171,231</u>	<u>₩ 13,794</u>	<u>₩ 185,025</u>

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21.2 Share-based payment

21.2.1 Stock option

The Company granted stock options to its directors several times in the past. Stock options are settled based on the Board of Directors' decision by issuance of new shares, treasury stocks or cash settlement. Vesting condition offers two-year service after the resolution at the shareholders' meeting. The number of granted options as of December 31, 2023 is as follows (Korean won, except for share data):

	Date of grant	Number of granted options	Exercisable period	Exercisable price	Expected fair value at the date of grant
16th	2014.3.28	5,252	2017.3.28 - 2024.3.27	134,300	39,558

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

	Risk-free interest rate	Expected exercisable period	Expected volatility	Expected dividend yield ratio
16th	2.88%	3.60	40.90%	48.00%

Risk-free interest rate is based on a three-year treasury bond yield rate.

Changes in stock options for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions, except for share data):

		2023					
		Number of ordinary shares to be issued			Valuation amount		
		Beginning	Forfeited	Ending	Beginning	Forfeited	Ending
15th	₩	5,252	(5,252)	-	₩ 228	(228)	₩ -
16th	₩	5,976	(724)	5,252	236	(28)	208
	₩	11,228	(5,976)	5,252	₩ 464	(256)	₩ 208

		2022					
		Number of ordinary shares to be issued			Valuation amount		
		Beginning	Forfeited	Ending	Beginning	Forfeited	Ending
14th	₩	2,987	(2,987)	-	₩ 190	(190)	₩ -
15th	₩	9,600	(4,348)	5,252	416	(188)	228
16th	₩	11,049	(5,073)	5,976	437	(201)	236
	₩	23,636	(12,408)	11,228	₩ 1,043	(579)	₩ 464

The weighted-average of remaining contractual period (from December 31, 2023 to maturity) of stock options is 0.2 years.

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21.2.2 Restricted Stock Unit

During the years ended December 31, 2023 and 2022, the Company granted the Company's executives the Restricted Stock Unit (hereinafter referred to as "RSU") by the resolution of the Board of Directors, and the details are as follows.

	2023		2022
Shares	Doosan Corporation ordinary shares		Doosan Corporation ordinary shares
Total number of granted shares	93,249		83,912
Grant date	2023-03-02		2022-03-08
Fair value on the grant date	₩ 99,700	₩	114,000
Exercise price	-		-
Vesting conditions	if they have served for three years or more (in case of those retiring after providing two years of service or more, shares are granted in proportion to the number of days of the retiree's tenure for three years on the stock grant date).		

The changes in RSU granted as of December 31, 2023 and 2022 are as follows. (Unit: Number of shares)

	2023	2022
January 1	82,949	-
Granted	93,249	83,912
Cancellation	(2,501)	(963)
January 1	<u>173,697</u>	<u>82,949</u>

The share-based compensation expenses recognized in the consolidated statement of comprehensive income in accordance with the RSU contract of the Company for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
RSU (equity-settled)	₩ 5,930	₩ 3,063

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22. Accumulated other comprehensive income

Accumulated other comprehensive income as of December 31, 2023 and 2022 is as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Loss on valuation of financial assets at fair value through Other comprehensive income	₩ (19,812)	₩ (18,185)
(Negative) equity changes in equity method	(1,245)	(2,735)
Gain(loss) on foreign operations translation	19,767	(2,265)
Gain on valuation of derivatives designated as hedges	39,777	46,624
Land revaluation surplus	561,145	563,548
	<u>₩ 599,632</u>	<u>₩ 586,987</u>

23. Retained earnings

Retained earnings as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Legal reserves	₩ 67,423	₩ 67,423
Unappropriated retained earnings	140,547	602,028
	<u>₩ 207,970</u>	<u>₩ 669,451</u>

The Commercial Code of the Republic of Korea requires the Company to appropriate an amount equal to a minimum of 10% of annual cash dividends declared as a legal reserve until the reserve equals 50% of its issued share capital.

Details of dividends for the year ended December 31, 2023 are as follows (Korean won, except for share data and dividend amount):

	2023		
	Preferred shares (old)	Preferred shares (new)	Ordinary shares
Par value per share	₩ 5,000	₩ 5,000	₩ 5,000
Year end (planned):			
Number of shares issued	3,996,462	893,038	16,523,835
Number of treasury stocks	564,242	47,862	3,000,866
Shares eligible for dividends	3,432,220	845,176	13,522,969
Number of shares eligible for dividends	3,432,220	845,176	13,522,969
Rate of dividend per par value	41%	40%	40%
Dividend per share	₩ 2,050	₩ 2,000	₩ 2,000
Dividend amount (planned) (Korean won in millions)	<u>₩ 7,036</u>	<u>₩ 1,690</u>	<u>₩ 27,046</u>

Details of dividends paid by the Company for the year ended December 31, 2023 are as follows (Korean won in millions, except for share data and dividend amount):

	Preferred shares (old)	Preferred shares (new)	Ordinary shares	Total
Annual dividends for previous year:				
Shares eligible for dividends	3,432,220	845,176	13,522,969	
Number of shares eligible for dividends	3,432,220	845,176	13,522,969	
Dividend per share (Korean won)	₩ 2,050	₩ 2,000	₩ 2,000	
	<u>₩ 7,036</u>	<u>₩ 1,690</u>	<u>₩ 27,046</u>	<u>₩ 35,772</u>

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24. Operating segment information

As of December 31, 2023, the composition of the group's sales division and the main products and services by sales division are as follows:

Operating segment	Main products and services
Electro-Materials BG	Manufacture and sale of copper clad laminates
Digital Innovation BU	Development and maintenance service of information technology system and others
Others	Advertisement, operations of golf club, semiconductor test, and others.
Doosan Enerbility (*1)	NSSS, BOP, Turbine, freshwater and water treatment facilities, plant facilities installment construction, road construction, etc.
Doosan Bobcat	Manufacturing and sale of small size construction machine and equipment
Doosan Fuel Cell	Fuel cell and renewable energy business and others

(*1) As described in Note 36 to the consolidated financial statements, the prior year operating performance of each segment, such as Doosan Babcock Ltd. and its subsidiaries (collectively, "DBL"), Doosan Mecatec Co., Ltd. and its subsidiaries (collectively, "Doosan Mecatec") is presented as discontinued operations.

Information on each segment for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023				
	Total sales	Inter-segment sales	Net sales	Operating profit (loss)	Profit (loss) for the year
Electro-Materials BG	₩ 814,055	₩ (62,388)	₩ 751,667	₩ 34,642	₩ (50,348)
Digital Innovation BU	278,330	(206,742)	71,588	13,758	13,419
Others	986,180	(207,094)	779,086	(85,878)	(193,351)
Doosan Enerbility	8,239,267	(709,746)	7,529,521	225,069	(268,755)
Doosan Bobcat	9,758,907	(7,357)	9,751,550	1,389,900	921,479
Doosan Fuel Cell	260,886	(14,168)	246,718	1,642	(8,500)
	<u>₩ 20,337,625</u>	<u>₩ (1,207,495)</u>	<u>₩ 19,130,130</u>	<u>₩ 1,579,133</u>	<u>₩ 413,944</u>
Consolidation adjustments	(1,207,495)	1,207,495	-	(142,871)	(141,870)
	<u>₩ 19,130,130</u>	<u>₩ -</u>	<u>₩ 19,130,130</u>	<u>₩ 1,436,262</u>	<u>₩ 272,074</u>

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24. Operating segment information (cont'd)

	2022				
	Total sales	Inter-segment sales(*2)	Net sales	Operating profit (loss)	Profit (loss) for the year
Electro-Materials BG	₩ 950,383	₩ (58,959)	₩ 891,424	₩ 86,093	₩ 43,314
Digital Innovation BU	275,517	(178,588)	96,929	16,483	19,139
Others	986,613	(284,048)	702,565	(100,442)	(14,207)
Doosan Enerbility(*1)	7,605,462	(506,256)	7,099,206	167,236	(714,717)
Doosan Bobcat	8,621,912	(7,550)	8,614,362	1,071,607	644,056
Doosan Fuel Cell	312,148	(45,346)	266,802	7,222	3,864
	<u>₩ 18,752,035</u>	<u>₩ (1,080,747)</u>	<u>₩ 17,671,288</u>	<u>₩ 1,248,199</u>	<u>₩ (18,551)</u>
Discontinued operation adjustments(*1)	(678,763)	3,235	(675,528)	(2,524)	83,933
Consolidation adjustments	₩ (1,077,512)	1,077,512	-	(119,646)	(562,618)
	<u>₩ 16,995,760</u>	<u>₩ -</u>	<u>₩ 16,995,760</u>	<u>₩ 1,126,029</u>	<u>₩ (497,236)</u>

(*1) It includes profit or loss about DBL, Doosan Mecatec classified as discontinued operations.

(*2) It includes the amount of adjustment for discontinued operations of Doosan Mecatec.

Segment assets and liabilities as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023		December 31, 2022	
	Assets	Liabilities	Assets	Liabilities
Electro-Materials BG	₩ 641,129	₩ 210,829	₩ 706,330	₩ 224,172
Digital Innovation BU	141,249	72,176	130,337	62,331
Others	7,647,262	4,003,513	7,164,340	3,924,729
Doosan Enerbility	16,278,525	10,003,954	15,901,517	9,383,327
Doosan Bobcat	10,371,754	4,416,941	9,248,386	4,223,999
Doosan Fuel Cell	1,070,843	558,191	1,026,930	503,865
	<u>36,150,762</u>	<u>19,265,604</u>	<u>34,177,840</u>	<u>18,322,423</u>
Consolidation adjustments	(7,863,953)	(2,185,534)	(7,862,487)	(2,304,886)
	<u>₩ 28,286,809</u>	<u>₩ 17,080,070</u>	<u>₩ 26,315,353</u>	<u>₩ 16,017,537</u>

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25. Revenues

25.1 Disaggregation of revenues

Details of disaggregation of revenues for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Revenues from contracts with customers:		
Merchandise and finished goods	₩ 10,972,873	₩ 9,954,742
Construction contracts	7,298,986	6,300,043
Others	847,999	748,346
	<u>19,119,858</u>	<u>17,003,131</u>
Others:		
Rental income and others (*1)	10,272	(7,371)
	<u>₩ 19,130,130</u>	<u>₩ 16,995,760</u>

(*1) It includes hedge gains and losses adjusted from sales in accordance with the application of hedge accounting.

	2023					
	Electro- Materials BG	Digital Innovation BU	Others	Doosan Enerbility	Doosan Bobcat	Doosan Fuel Cell
Geographical market:						
Korea	₩ 443,872	₩ 42,400	₩ 746,754	₩ 3,116,005	₩ 374,654	₩ 245,020
USA	6,087	12,837	31,963	393,719	7,477,439	1,698
Asia	301,708	3,624	369	2,051,090	181,352	-
Middle East	-	-	-	1,528,687	152,104	-
Europe	-	12,727	-	437,917	1,334,622	-
Others	-	-	-	2,103	231,379	-
	<u>₩ 751,667</u>	<u>₩ 71,588</u>	<u>₩ 779,086</u>	<u>₩ 7,529,521</u>	<u>₩ 9,751,550</u>	<u>₩ 246,718</u>
Timing of revenue recognition:						
Transfer at a point in time	₩ 748,003	₩ 8,999	₩ 190,154	₩ 335,860	₩ 9,726,670	₩ 136,506
Transfer over time	3,664	62,589	588,932	7,193,661	24,880	110,212
	<u>₩ 751,667</u>	<u>₩ 71,588</u>	<u>₩ 779,086</u>	<u>₩ 7,529,521</u>	<u>₩ 9,751,550</u>	<u>₩ 246,718</u>

	2023	
	Total	
Geographical market:		
Korea	₩	4,968,705
USA		7,923,743
Asia		2,538,143
Middle East		1,680,791
Europe		1,785,266
Others		233,482
	<u>₩</u>	<u>19,130,130</u>
Timing of revenue recognition:		
Transfer at a point in time	₩	11,146,192
Transfer over time		7,983,938
	<u>₩</u>	<u>19,130,130</u>

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25.1 Disaggregation of revenues (cont'd)

	2022					
	Electro- Materials BG	Digital Innovation BU	Others	Doosan Enerbility (*1)	Doosan Bobcat	Doosan Fuel Cell
Geographical market:						
Korea	₩ 544,018	₩ 79,100	₩ 656,496	₩ 2,735,745	₩ 386,088	₩ 266,802
USA	7,993	4,355	45,729	395,239	6,406,036	-
Asia	339,413	4,290	340	2,027,813	197,804	-
Middle East	-	-	-	959,179	121,780	-
Europe	-	9,184	-	965,564	1,264,402	-
Others	-	-	-	15,666	238,252	-
	<u>₩ 891,424</u>	<u>₩ 96,929</u>	<u>₩ 702,565</u>	<u>₩ 7,099,206</u>	<u>₩ 8,614,362</u>	<u>₩ 266,802</u>
Timing of revenue recognition:						
Transfer at a point in time	₩ 890,867	₩ 7,487	₩ 237,876	₩ 188,506	₩ 8,586,076	₩ 147,326
Transfer over time	557	89,442	464,689	6,910,700	28,286	119,476
	<u>₩ 891,424</u>	<u>₩ 96,929</u>	<u>₩ 702,565</u>	<u>₩ 7,099,206</u>	<u>₩ 8,614,362</u>	<u>₩ 266,802</u>

	2022		
	Subtotal	Adjustment for discontinued operations (*1)	Total
Geographical market:			
Korea	₩ 4,668,249	₩ (8,800)	₩ 4,659,449
USA	6,859,352	(31,984)	6,827,368
Asia	2,569,660	(28,274)	2,541,386
Middle East	1,080,959	(91,251)	989,708
Europe	2,239,150	(500,208)	1,738,942
Others	253,918	(15,011)	238,907
	<u>₩ 17,671,288</u>	<u>₩ (675,528)</u>	<u>₩ 16,995,760</u>
Timing of revenue recognition:			
Transfer at a point in time	₩ 10,058,138	₩ 5	₩ 10,058,143
Transfer over time	7,613,150	(675,533)	6,937,617
	<u>₩ 17,671,288</u>	<u>₩ (675,528)</u>	<u>₩ 16,995,760</u>

(*1) It includes the revenues of DBL and Doosan Mecatec classified as discontinued operations.

25.2 Contract balances

Receivables, contract assets and liabilities arising from contracts with customers as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Receivables in trade and other receivables (*1)	₩ 1,820,584	₩ 2,149,271
Contract assets (*2)	1,509,129	1,321,555
Contract liabilities	(2,933,831)	(2,106,826)

(*1) As of December 31, 2023 and 2022, provisions of ₩222,633 million and ₩201,011 million are included.

(*2) As of December 31, 2023 and 2022, provisions of ₩59,940 million and ₩77,170 million are included.

25.2 Contract balances (cont'd)

Contract assets are amounts unbilled that the Group has a right to receive as consideration in exchange for the goods or services transferred to the customer and are transferred to receivables upon billings. Contract liabilities are advances from customers for construction contracts performed over time and are recognized as revenue as the Group transfers the goods or services to the customer.

The Group recognized assets for the costs it spent to enter into a contract with the customer, such as brokerage fees, which would not have been incurred unless the contract was entered into.

Details of incremental cost of obtaining a contract as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Incremental cost of obtaining a contract recognized as an asset as of December 31.	₩ 48,174	₩ 25,403
Amount of amortization recognized as cost of sales for the years ended December 31.	₩ 20,060	₩ 25,045

The incremental cost of obtaining a contract is amortized and recognized as expenses in the same manner as revenue recognized over the progress of the particular contract concerned.

The Group recognized design costs of an asset to be transferred for certain contracts that are not yet approved as an asset as they relate directly to a contract or to an anticipated contract with the customer that the entity can specifically identify, generate or enhance resources of the entity that will be used in satisfying performance obligations in the future, and are expected to be recovered.

Details of costs to fulfill a contract as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Costs to fulfill a contract recognized as assets as of December 31, 2023 and 2022	₩ 102,763	₩ 143,481
Amount of amortization recognized as cost of sales for the years ended December 31, 2023 and 2022	₩ 94,777	₩ 92,614

The costs to fulfill a contract are amortized and recognized as expenses on a systematic basis consistent with the transfer of the related goods or services to the customers.

25.3 Change in the balance of construction contracts

As a contract that recognizes revenue over time by applying the cost-based input method, changes in the balance of construction contracts for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	Project	2023			
		Beginning balance	Changes	Recognized construction revenue	Ending balance
Doosan Corporation	Installation of New Renewable Energy System for Housing Reconstruction and Improvement Project in Jamsil Jinju Apartment	₩ 12,789	₩ 24,300	₩ (1,582)	₩ 35,507
Doosan Enerbility	Vung Ang II Power Project and others	14,002,976	8,782,691	(7,194,330)	15,591,337
Doosan Logistics Solution Co., Ltd.	Nike Icheon CSC Phase 2, etc.	11,466	143,491	(15,163)	139,794
		₩ 14,027,231	₩ 8,950,482	₩ (7,211,075)	₩ 15,766,638
Inter-company transactions		(386)	99	287	-
		₩ 14,026,845	₩ 8,950,581	₩ (7,210,788)	₩ 15,766,638

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25.3 Change in the balance of construction contracts (cont'd)

	Project	2022			
		Beginning balance	Changes	Recognized construction revenue	Ending balance
Doosan Corporation	Installation of New Renewable Energy System for Housing Reconstruction and Improvement Project in Jamsil Jinju Apartment	₩ -	₩ 16,774	₩ (3,985)	₩ 12,789
Doosan Enerbility	Vung Ang II Power Project and others	15,479,029	5,438,164	(6,914,217)	14,002,976
Doosan Logistics Solution Co., Ltd.	Coupang Icheon ECH2 FC Automation and others	52,061	30,061	(70,656)	11,466
		₩ 15,531,090	₩ 5,484,999	₩ (6,988,858)	₩ 14,027,231
Inter-company transactions		-	(745)	359	(386)
Amount attributable to discontinued operation segment		(1,313,209)	634,873	678,336	-
		₩ 14,217,881	₩ 6,119,127	₩ (6,310,163)	₩ 14,026,845

25.4 The effect of changing in accounting estimate that related contracts recognized revenue over a year by applying the cost-based input method

Changes in profit or loss in the current and succeeding reporting years and the amount of due from/to customers for contract work (excluding foreign currency translation effect) resulting from changes in total contract revenue and in total estimated contract costs for construction contracts in progress as of December 31, 2023 are as follows (Korean won in millions):

	2023					
	Provision for construction loss	Changes in total contract amount	Changes in total contract cost	Impact on profit or loss for the current year	Impact on profit or loss for the succeeding year	Changes in due from/to customers for contract work
Doosan Corporation	₩ -	₩ -	₩ 26	₩ (11)	₩ (15)	₩ (11)
Doosan Enerbility	73,882	508,153	282,622	(12,235)	237,766	(12,235)
Doosan Logistics Solution Co., Ltd.	8,308	(4,019)	110	(4,129)	-	(4,129)
	₩ 82,190	₩ 504,134	₩ 282,758	₩ (16,375)	₩ 237,751	₩ (16,375)

The impacts on profit or loss for the current year and succeeding year are determined based on total estimated contract costs which are estimated based on the circumstances present from the start of the contract to the end of current year and the estimated contract revenue as of December 31, 2023. The total contract costs and contract revenue may change in the future.

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25.5 A major contract in which revenue is recognized over a period of time by applying the cost-based input method, and the contract amount is 5% or more of the previous year's sales.

As of December 31, 2023, details of contracts that the revenue was recognized based on the percentage-of-completion measured by input method, and contract revenue has been recognized over time, which is more than 5% of sales of the year ended December 31, 2023 are as follows (Korean won in millions):

	Contract date	Contractual completion date (*1)	Percentage-of-completion (%)	Due from customers		Trade receivables (receivables from construction contracts)	
				Total	Accumulated impairment loss	Total	Allowance for doubtful accounts
Shinhanul #1, 2 NSSS	2009-07-31	2024-04-30	97.86	₩ -	₩ -	₩ 33,444	₩ 114
UAE BNPP #1, 2 T/G	2010-06-30	2022-11-18	99.62	1,232	5	-	-
UAE BNPP #1, 2 NSSS	2010-06-30	2022-11-18	98.00	2,680	9	-	-
UAE BNPP #3, 4 NSSS	2010-06-30	2024-12-31	97.30	-	-	6,905	23
UAE BNPP #3, 4 T/G	2011-09-27	2024-12-31	93.37	3,987	14	-	-
Yanbu ph.3 MSF	2012-12-04	2022-12-31	99.98	-	-	10,786	1,043
Vinh Tan 4 TPP	2014-02-26	2021-10-31	99.66	20,105	68	24,817	4,963
Sae-ul #3, 4 NSSS	2014-08-28	2025-03-31	93.21	59,677	203	21,902	-
Nghi Son 2	2014-12-24	2022-07-10	99.72	-	-	-	-
Song Hau 1	2015-04-10	2022-05-17	99.60	21,151	72	-	-
Sae-ul #3, 4 facilities construction	2015-06-12	2025-09-30	94.09	121,724	414	-	-
Jawaharpur	2016-12-22	2024-06-30	96.83	60,962	-	11,059	603
Obra C	2016-12-22	2024-06-30	90.63	31,167	-	12,399	415
Samcheok #1, 2 EPC	2018-07-24	2024-04-30	94.65	125,648	427	-	-
Jawa #9, 10	2019-03-20	2025-02-15	87.15	141,915	483	9,096	20
Guam Ukudu CCGP	2020-12-18	2025-09-30	73.57	-	-	11,282	38
Yanbu 4 IWP	2021-01-22	2023-11-01	89.41	-	-	-	-
Vung Ang II Power Project	2021-10-26	2025-10-26	63.08	-	-	-	-
Tuwaiq Casting & Forging Facility Project	2022-02-10	2025-01-15	53.04	-	-	32,116	-
Shuaibah 3 IWP	2022-08-19	2025-05-20	36.08	-	-	-	-
El-Dabaa NPP	2022-11-09	2029-04-08	3.69	-	-	97,510	332
Turkistan CCGT	2023-03-14	2026-08-23	15.35	-	-	-	-
Shin Hanul Unit 3 and 4 Reactor Facility	2023-03-29	2033-10-31	8.78	-	-	-	-

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

25.6 Sales recognized by external customers accounting for more than 10% of the Group's sales.

Sales recognized by external customers who account for more than 10% of sales of the Groups for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Group A	₩ 2,122,271	₩ 1,655,292

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26. Expenses by nature

Breakdown of expenses by nature for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		2022
Changes in inventories	₩ (170,448)	₩	(707,285)
Purchases of raw materials and merchandise	9,326,442		8,970,461
Employee benefits expenses	2,353,282		2,231,279
Depreciation and amortization	704,348		611,217
Others	5,480,244		4,764,059
	₩ 17,693,868	₩	15,869,731

27. Selling and administrative expenses

Selling and administrative expenses for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		2022
Salaries	₩ 697,221	₩	618,257
Retirement benefits	(21,332)		61,171
Employee benefits	131,194		107,757
Share-based payment expenses	13,213		6,531
Travel expenses	56,069		44,365
Sales commission	30,652		36,146
Taxes and dues	29,896		25,553
Depreciation	65,035		63,973
Insurance expenses	27,575		43,384
Repairing expenses	7,559		6,442
Advertising expenses	113,212		80,175
Packaging expenses	188		674
Research and development	263,168		223,099
Training expenses	15,534		14,707
Freight expenses	22,191		31,122
Promotional expenses	16,358		4,432
Commission expenses	158,554		154,378
Service contract expenses	7,613		7,115
Bad debt expenses	28,806		18,159
Amortization	54,961		53,067
Expansion expenses of overseas market	8,716		13,160
Warranty expenses	6,801		24,466
Others	75,623		73,885
	₩ 1,808,807	₩	1,712,018

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28. Finance income and expenses

Finance income and expenses for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		2022
Finance income:			
Interest income	₩ 103,362	₩	33,083
Dividend income	3,061		3,864
Gain on foreign currency transaction	288,964		331,640
Gain on foreign currency translation	81,253		136,958
Gain on derivative transactions	76,389		139,557
Gain on valuation of derivatives	66,578		95,346
Gain on valuation of firm commitment	43,958		67,459
Financial guarantee income	-		219
	₩ 663,565	₩	808,126
Finance expenses:			
Interest expense	₩ 466,417	₩	364,849
Loss on foreign currency transactions	279,009		373,178
Loss on foreign currency translations	91,220		306,745
Loss on derivative transactions	69,109		100,947
Loss on valuation of derivatives	94,231		96,825
Loss on valuation of firm commitment	27,139		54,165
Loss on repayment of bonds	59		16,547
Loss on repayment of borrowings	2,218		10,675
Financial guarantee expense	29,988		52,781
Others	4,794		2,756
	₩ 1,064,184	₩	1,379,468
Net finance income and expenses	₩ (400,619)	₩	(571,342)

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29. Other non-operating income and expenses

Other non-operating income and expenses for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Other non-operating income:		
Gain on disposal of short-term investment securities	₩ 742	₩ 3,660
Gain on disposal of long-term investment securities	94	2,071
Gain on valuation of long-term and short-term investment securities	11,878	24,456
Gain on disposal of property, plant and equipment	5,844	3,908
Gain on disposal of intangible assets	1,236	915
Gain on disposal of assets held for sale	627	18,524
Gain on disposal of investment properties	49	2,347
Gain on valuation of investment properties	25,193	5,399
Reversal of impairment loss of property, plant and equipment	29	-
Reversal of impairment loss of long-term investment securities	-	19
Others	39,171	107,940
	₩ 84,863	₩ 169,239
Other non-operating expenses:		
Loss on disposal of short-term investment securities	79	1,446
Loss on disposal of long-term investment securities	-	548
Loss on valuation of long-term and short-term investment securities	139,421	64,685
Loss on disposal of trade receivables	10,933	7,840
Loss on disposal of property, plant and equipment	2,219	4,463
Loss on disposal of intangible assets	49	1,134
Loss on disposal of investment properties	22	864
Loss on disposal of investments in subsidiaries	1,268	-
Loss on disposal of assets held for sale	2,620	5,206
Impairment loss of property, plant and equipment	18,032	30,572
Impairment loss of intangible assets	173,894	422,688
Impairment loss of assets held for sale	-	340
Loss on valuation of investment properties	58,530	13,254
Bad debt expenses of others	80,030	13,230
Donations	26,163	17,762
Others	114,025	82,558
	₩ 627,285	₩ 666,590
Net other non-operating income and expenses	₩ (542,422)	₩ (497,351)

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30. Income tax expenses

Details of income tax expenses for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Current income tax charge on profit for the year	₩ 381,144	₩ 439,233
Deferred tax:		
Origination and reversal of temporary differences	(168,926)	(184,628)
Charged or credited directly to equity	(94,291)	(96,587)
Others	60,973	43,326
Income tax expenses (benefit) classified as loss (profit)		
from discontinued operations	-	9,988
Income tax expenses	<u>₩ 178,900</u>	<u>₩ 211,332</u>

Changes in deferred tax assets and liabilities for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		
	Beginning balance	Changes	Ending balance
Allowance for doubtful accounts	₩ 310,493	₩ 58,267	₩ 368,760
Derivatives	(14,349)	20,638	6,289
Property, plant, equipment and Investment properties	(557,535)	(123,279)	(680,814)
Intangible assets	(441,863)	(30,782)	(472,645)
Assets and liabilities in foreign currencies	11,537	(16,283)	(4,746)
Defined benefit liabilities	143,376	(304)	143,072
Others	493,755	260,064	753,819
	<u>₩ (54,586)</u>	<u>₩ 168,321</u>	<u>₩ 113,735</u>
	2022		
	Beginning balance	Changes	Ending balance
Allowance for doubtful accounts	₩ 301,139	₩ 9,354	₩ 310,493
Derivatives	27,254	(41,603)	(14,349)
Property, plant, equipment and Investment properties	(589,883)	32,348	(557,535)
Intangible assets	(416,811)	(25,052)	(441,863)
Assets and liabilities in foreign currencies	3,870	7,667	11,537
Defined benefit liabilities	187,464	(44,088)	143,376
Others	255,421	238,334	493,755
	<u>₩ (231,546)</u>	<u>₩ 176,960</u>	<u>₩ (54,586)</u>

The Group offsets deferred tax assets and deferred tax liabilities, if the Group has a legally enforceable right to set off current tax assets against current tax liabilities and the deferred tax assets against deferred tax liabilities relating to income taxes levied by the same taxation authority.

Temporary differences, net loss and tax credit carryforwards, which have not been recognized as deferred income tax assets and expired or unused as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022
Deductible temporary differences	₩ 2,930,248	₩ 3,142,021
Net loss carried over	49,012	44,856
Carried forward tax credit	55,671	52,691
Others	6,015	-
	<u>₩ 3,040,946</u>	<u>₩ 3,239,568</u>

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30. Income tax expenses (cont'd)

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

Temporary differences from investments in subsidiaries, joint ventures and associated investments, which are not recognized as deferred tax assets (liabilities), as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023	December 31, 2022	Remarks
Investments in subsidiaries	₩ (1,414,602)	₩ (724,298)	Able to control the timing of the reversal of the temporary difference
Investments in associates and joint ventures	624,171	961,467	Probable that the temporary difference will not reverse in the foreseeable future
	<u>₩ (790,431)</u>	<u>₩ 237,169</u>	

A reconciliation of income tax expenses and profit before income tax expenses for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023	2022
Profit (loss) before income tax expenses	₩ 450,974	₩ (285,904)
Tax expense by applicable tax rates	255,981	90,895
Adjustments:		
Non-taxable income and non-deductible expenses	(17,834)	57,005
Tax credits	(44,650)	(47,448)
Temporary difference not recognized as deferred income tax	58,417	89,183
Others	(73,014)	21,697
Income tax expenses	<u>₩ 178,900</u>	<u>₩ 211,332</u>
Average effective tax rate (Income tax expenses/Profit before income tax expenses)	39.7%	-

31. Earnings (losses) per share

31.1 Basic earnings (losses) per share

Basic earnings (losses) per share for the years ended December 31, 2023 and 2022 are as follows (Korean won):

	2023		
	Continuing	Discontinued	Total
Basic losses per ordinary share	₩ (21,823)	₩ -	₩ (21,823)
Basic losses per old-type preferred share (*1)	(21,773)	-	(21,773)
	2022		
	Continuing	Discontinued	Total
Basic losses per ordinary share	₩ (37,159)	₩ (1,973)	₩ (39,132)
Basic losses per old-type preferred share (*1)	(37,112)	(1,970)	(39,082)

(*1) The Company calculated earnings per share for old-type preferred share due to the nature of the share, which does not have preferred right on dividends and liquidation. Therefore, the share is considered as ordinary share, based on KIFRS 1033 *Earnings per share*.

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31.1 Basic earnings (losses) per share (cont'd)

Profit (loss) for the year attributable to the ordinary equity holders of the Company for the years ended December 31, 2023 and 2022 is as follows (Korean won):

	2023		
	Continuing	Discontinued	Total
Loss for the year attributable to the equity holders of the Company	₩ (388,278,803,854)	₩ -	₩ (388,278,803,854)
Less: Loss attributable to new-type preferred Shares	18,443,945,831	-	18,443,945,831
Less: Loss attributable to old-type preferred shares	74,728,385,875	-	74,728,385,875
Loss for the year attributable to the ordinary equity holders of the Company	<u>₩ (295,106,472,148)</u>	<u>₩ -</u>	<u>₩ (295,106,472,148)</u>
	2022		
	Continuing	Discontinued	Total
Loss for the year attributable to the equity holders of the Company	₩ (662,955,184,798)	₩ (33,443,656,690)	₩ (696,398,841,488)
Less: Loss attributable to new-type preferred Shares	33,073,739,148	-	33,073,739,148
Less: Loss attributable to old-type preferred shares	127,376,227,430	6,763,061,287	(134,139,288,717)
Loss for the year attributable to the ordinary equity holders of the Company	<u>₩ (502,505,218,220)</u>	<u>₩ (26,680,595,403)</u>	<u>₩ (529,185,813,623)</u>

The weighted-average number of ordinary shares and old-type preferred shares outstanding used in basic earnings per share calculation for the years ended December 31, 2023 and 2022 are as follows:

	2023		2022	
	Ordinary shares	Old-type preferred shares	Ordinary shares	Old-type preferred shares
Beginning outstanding shares	13,522,969	3,432,220	13,522,969	3,432,220
Weighted-average number of shares outstanding	<u>13,522,969</u>	<u>3,432,220</u>	<u>13,522,969</u>	<u>3,432,220</u>

31.2 Diluted earnings (losses) per share

Diluted earnings (losses) per share for the years ended December 31, 2023 and 2022 are as follows (Korean won):

	2023		
	Continuing	Discontinued	Total
Diluted losses per ordinary share	₩ (21,823)	₩ -	₩ (21,823)
Diluted losses per old-type preferred share	(21,773)	-	(21,773)
	2022		
	Continuing	Discontinued	Total
Diluted losses per ordinary share	₩ (37,159)	₩ (1,973)	₩ (39,132)
Diluted losses per old-type preferred share	(37,112)	(1,970)	(39,082)

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31.2 Diluted earnings (losses) per share (cont'd)

Diluted profit (loss) for the year attributable to the ordinary equity holders of the parent for the years ended December 31, 2023 and 2022 is as follows (Korean won):

	2023		
	Continuing	Discontinued	Total
Loss for the year attributable to the ordinary equity holders of the Company	₩ (295,106,472,148)	₩ -	₩ (295,106,472,148)
Adjustment	-	-	-
Diluted Loss for the year attributable to the ordinary equity holders of the Company	₩ (295,106,472,148)	₩ -	₩ (295,106,472,148)
	2022		
	Continuing	Discontinued	Total
Loss for the year attributable to the ordinary equity holders of the Company	₩ (502,505,218,220)	₩ (26,680,595,403)	₩ (529,185,813,623)
Adjustment	-	-	-
Diluted Loss for the year attributable to the ordinary equity holders of the Company	₩ (502,505,218,220)	₩ (26,680,595,403)	₩ (529,185,813,623)

Diluted weighted-average number of ordinary shares outstanding for the years ended December 31, 2023 and 2022 is as follows (unit: shares)

	2023	2022
Weighted-average number of ordinary shares outstanding	13,522,969	13,522,969
Exercise of stock options	-	-
Diluted weighted-average number of ordinary shares outstanding	13,522,969	13,522,969

Details of potential ordinary shares that were not included in the calculation of diluted earnings or losses per share for the years ended December 31, 2023 and 2022 due to anti-dilutive effect but could dilute the earnings or losses per share in the future are as follows (unit: shares)

	December 31, 2023	December 31, 2022
Restricted Stock Unit (RSU)	173,697	82,949
Stock option	5,252	11,228

As there are no potential ordinary shares for old-type preferred share, diluted earnings (losses) per share for old-type preferred share are equal to basic earnings per share for old-type preferred share.

31.3 Conditions for preferred shares dividends

	Par value (Korean won)	Number of shares issued
Old-type preferred shares (*1)	₩ 5,000	3,996,462
New-type preferred shares (*2)	5,000	893,038

(*1) Cash dividends available to ordinary shares plus 1%

(*2) The Company should distribute 2% of par value of preferred shares annually. In case the Company distributes more than 2% of par value for ordinary shares, preferred shares are participated in dividends for the exceeded dividends.

33. Contingencies and commitments

32.1 Notes, bills and checks offered in security

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has provided 2 blank checks as collateral in connection with the construction of Bongdam-Songsan Expressway.

32.2 Financial covenant

32.2.1 The Company

The subscription agreement of unsecured bonds issued by the Company requires the Company to maintain a debt-to-equity ratio below 700%, establish collateral rights within 500% of its own equity and limit disposal of an asset within 100% of total asset stated in the Company's consolidated financial statements. If the Company fails to meet certain requirements mentioned above, an acceleration clause included in the subscription agreement would be invoked for the immediate payment. As of December 31, 2023, the amount of bonds required to meet aforementioned debt covenant is ₩186,000 million.

As of December 31, 2023, ₩50,000 million in private equity bonds issued by the Company, ₩30,000 million in short-term borrowings and ₩108,350 million in asset-backed loans borrowed from China Bank and others is subject to commitment requiring the Company to maintain BBB0 of credit rating during the term of the borrowing agreement. If the Company fails to maintain the credit rating, an acceleration clause included in the borrowing agreement would be invoked.

₩400,000 million long-term loan borrowed from New Star Eneo Ville The 1st Co., Ltd. includes is subject to commitment requiring the Company to maintain a credit rating of BBB- or higher during the term of the borrowing agreement. If the Company fails to maintain the credit rating, an acceleration clause would be invoked. The borrowings are secured by 37,180,000 ordinary shares in Doosan Enerbility Co., Ltd. held by the Company, and additional collateral must be provided in the event of failure to meet the pledged collateral maintenance ratio.

With regards to ₩30,000 million of short-term borrowings from Korea Securities Finance Co., Ltd., 5,000,000 common shares of Doosan Enerbility Co., Ltd., which are held by the Company, are provided as collateral and additional collateral shall be provided if the contractual ratio of security maintenance is not met.

The short-term borrowings of ₩40,000 million borrowed by the subsidiary, HyAxiom, Inc. from Global Bears The 1st Co., Ltd. include the arrangement about loss of the benefit of time if the credit rating granted by one or more of the three domestic credit rating agencies (Nice Credit Rating Co., Ltd., Korea Credit Rating Co., Ltd., Korea Ratings) falls below BB+ or if there is no valid credit rating received by one or more of the three domestic credit rating agencies.

₩30,000 million of long-term borrowings borrowed by its subsidiary HyAxiom, Inc. from SY GLOBAL 1ST CO.,LTD., include the arrangement about loss of the benefit of time if the credit rating granted by one or more of the three domestic credit rating agencies (Nice Credit Rating Co., Ltd., Korea Credit Rating Co., Ltd., Korea Ratings) falls below BBB- or if there is no valid credit rating or corporate bond credit rating received by two or more of the three domestic credit rating agencies.

The short-term borrowings of ₩130,000 million borrowed by its subsidiary HyAxiom Co., Ltd. from Korea Investment & Securities Co., Ltd. include the arrangement about loss of the benefit of time if the credit rating granted by one or more of the three domestic credit rating agencies (Nice Credit Rating Co., Ltd., Korea Credit Rating Co., Ltd., Korea Ratings) falls below BBB-.

The long-term borrowings of ₩255,532 million of Doosan Portfolio Holdings Co., Ltd., a subsidiary, includes financial compliance of matters and conditions for maintaining the LTV ratio. In case of violation of them, Doosan

32.2.1 The Company (cont'd)

Portfolio Holdings Co., Ltd. shall make early repayment of loans through a paid-in capital increase from the Company or a subordinated loan from the Company or disposal of all or part of the shares in Doosan Tesna Inc. held by Doosan Portfolio Holdings Co., Ltd., or acquire additional shares of Doosan Tesna Inc. and provide them as collateral.

32.2.2 Doosan Enerbility Co., Ltd.

As of December 31, 2023, USD 300,000 thousand of foreign currency bonds issued by Doosan Enerbility Co., Ltd., a subsidiary, contains a put option which can be exercised when and if Doosan Enerbility Co., Ltd.'s guarantor, Korea Development Bank, becomes privatized. In addition, Doosan Enerbility Co., Ltd. has provided its 11,000,000 shares in Doosan Bobcat Inc. to lender as collateral for above bonds. If the price of the shares drops below the base price, additional shares or deposits equivalent to the difference should be provided as collateral.

As of December 31, 2023, Doosan Enerbility Co., Ltd. has provided 3,650,000 shares of Doosan Bobcat Inc. as collateral for its borrowings of ₩100,000 million from Standard Chartered Bank Korea Ltd. If contractual ratio of collateral limit amount of the borrowings is not fulfilled, Doosan Enerbility Co., Ltd. should provide additional shares or deposits as collaterals or make early redemption of part of the borrowings.

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has provided 8,500,000 shares in Doosan Bobcat Inc. and 20,780,229 shares in Doosan Fuel Cell Co., Ltd. as collateral for borrowings of ₩500,000 million from NH Investment and ₩100,000 million of the 72nd Private placement bonds. If the entity fails to meet the pledged collateral limit ratio defined in the applicable agreement, additional shares or deposits equivalent to the difference must be provided as collateral. In addition, if Doosan Enerbility Co., Ltd. receives the long-term credit rating lower than BB+ level or the short-term credit rating lower than B+ level from one or more domestic credit rating agencies out of three agencies (i.e., Nice Investors Service Co., Ltd., Korea Investors Service Inc. and Korea Ratings Corporation), or otherwise, fails to obtain any effective credit rating, an acceleration clause included in the applicable agreement would be invoked.

As of December 31, 2023, ₩160,000 million of the 73rd and 74th public bonds issued by Doosan Enerbility Co., Ltd., a subsidiary, include an acceleration clause that shall be invoked when the entity fails to maintain its debt-to-equity ratio below 700%.

As of December 31, 2023, 2,800,000 shares in Doosan Bobcat Inc. held by Doosan Enerbility Co., Ltd., a subsidiary, are provided as collateral for ₩80,000 million of loan agreement signed with Korea Securities Finance Co., Ltd. and if the entity fails to meet the pledged collateral limit ratio defined in the above borrowing agreement, additional shares equivalent to the difference must be provided as collateral, or otherwise, a portion of loans must be repaid earlier.

As of December 31, 2023, 2,000,000 shares in Doosan Fuel Cell Co., Ltd. held by Doosan Enerbility Co., Ltd. are provided as collateral for ₩50,000 million of borrowings from Standard Chartered Bank of Korea, and If the entity fails to meet the pledged collateral limit ratio defined in the above borrowing agreement, additional shares or deposits equivalent to the difference must be provided as collateral, or otherwise, a portion of loans must be repaid earlier.

32.2.2 Doosan Enerbility Co., Ltd. (cont'd)

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has provided 11,100,000 shares of Doosan Bobcat Inc. as collateral for borrowings of ₩250,000 million from Korea Development Bank and 3 other financial institution. The share or deposit should be provided additionally as collateral when the contracted mortgage ceiling ratio is not met in relation to the above borrowings. In addition, if the long-term credit rating given by two or more of the three domestic credit rating agencies (Nice Investors Service Co., Ltd., Korea Investors Service Inc and Korea Ratings Corporation) of Doosan Enerbility Co., Ltd. is below BB0, it includes arrangements that constitute trigger clause for the financial institutions to collect the loans before the maturity.

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has provided its 3,200,000 shares in Doosan Bobcat Inc. as collateral for borrowings of ₩80,000 million from Korea Development Bank and 2 other financial institution. The share or deposit should be provided additionally as collateral when the contracted mortgage ceiling ratio is not met in relation to the above borrowings. In addition, if Doosan Enerbility Co., Ltd. receives the long-term credit rating lower than BB0 level from two or more domestic credit rating agencies out of three agencies (i.e., Nice Investors Service Co., Ltd., Korea Investors Service Inc. and Korea Ratings Corporation), an acceleration clause included in the borrowing agreement would be invoked.

As of December 31, 2023, for ₩143,000 million in long-term borrowings borrowed by Doosan Enerbility Co., Ltd., a subsidiary, from Korea Standard Chartered Bank, additional deposits equivalent to the difference must be provided or some loans must be repaid early if the collection schedule and amount of certain projects provided by Doosan Enerbility Co., Ltd. are not satisfied.

32.2.3 Doosan Fuel Cell Co., Ltd.

As of December 31, 2023, the bond recruitment contract for unguaranteed public bonds issued by Doosan Fuel Cell Co., Ltd., includes commitments for maintaining a debt ratio of 700% or less based on Doosan Fuel Cell Co., Ltd.'s financial statements, restrictions on the establishment of security rights within 500% of equity capital, and restrictions on the disposal of assets within 100% of total assets.

This agreement includes the arrangement about loss of the benefit of time in case the commitments above are not complied with

Bonds issued by applying the requirements above held by Doosan Fuel Cell Co., Ltd., are ₩150,000 million as of December 31, 2023.

As of December 31, 2023, the acquisition contract of unguaranteed private placement bonds issued by Doosan Fuel Cell Co., Ltd., a subsidiary, includes the arrangement about loss of the benefit of time if the credit rating of the entity falls below BB+ during the borrowing agreement period. Bonds issued by applying the commitments above held by Doosan Fuel Cell Co., Ltd., are ₩27,500 million as of December 31, 2023.

As of December 31, 2023, Doosan Fuel Cell Co., Ltd., a subsidiary, has ₩70,000 million in securitized loans provided by New Star FC The 1st Co., Ltd. In this regard, the agreement includes the arrangement about loss of the benefit of time if the collateral (including deposit return bonds and other rights to be collected under the Long-Term Service Agreement, which is the original trust in the trust contract) is transferred or provided to a third party.

32.3 Discounted trade receivables

In relation to the asset-backed loans, the Group recognizes financial instruments including trade receivables which do not meet the criteria for the derecognition of financial instruments at the carrying amount of ₩33,155 million and ₩38,017 million as of December 31, 2023 and 2022, respectively (see Note 15).

32.4 Litigation in progress

Details of major lawsuits as a defendant with claims against the Group are as follows (Korean won in millions):

	Claim	Claimed amount
Doosan	Claims for damages and others	₩ 139
Doosan Enerbility	Claims for damages and others	55,632
Doosan Bobcat	Claims for damages and others	9,250
Doosan Fuel Cell Co., Ltd.	Claims for damages and others	5,389
		<u>₩ 70,410</u>

The outcome of lawsuits cannot be estimated reliably as of December 31, 2023.

32.5 Technical contract

The Group has technical license agreements with Mitsubishi Hitachi Power Systems, Ltd. and others for the year ended December 31, 2023 and the Group paid ₩13,950 million and ₩21,501 million for the years ended December 31, 2023 and 2022, respectively, as license fee.

32.6 Credit lines for borrowings

The Group has credit lines of borrowing, bank overdraft and others amounting to ₩6,584,043 million from various financial institutions as of December 31, 2023.

32.7 Contingent liabilities for PF (Project Financing)

32.7.1 Comprehensive summary table of real estate PF

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, provides a commitment to assume debt obligations amounting to ₩459,262 million (₩385,417 million in 2022) for borrowings to finance operating expenses, in the event a violation of construction completion. All other businesses are solely run by Doosan Enerbility Co., Ltd., and there is no credit enhancement for other businesses provided to related parties.

The amount was disclosed as a contingent liability for the year ended December 31, 2022 but recognized as a provision liability during the year ended December 31, 2023 is ₩5,256 million (see Note 18).

The details of the PF contingent liabilities related to Other businesses are as follows, and no PF contingent liabilities occurred for improvement projects (Korean won in millions):

	Bridge Loan	PF
Guarantee Limit	₩ -	₩ 591,890
Guarantee Amounts	-	459,262
Maturity of loans:		
Within 3 months	-	-
3 months ~ 6 months	-	-
6 months ~ 12 months	-	32,578
1 year ~ 2 years	-	253,300
2 years ~ 3 years	-	67,400
Over 3 years	-	-
December 31, 2023	<u>₩ -</u>	<u>₩ 353,278</u>
December 31, 2022	-	296,475

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32.7.2 Details of Real Estate PF (Loan) Guarantee

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has entered into a contingent liability assumption agreement for business expense loans in the event of a violation of the obligation to complete the task as follows.

Some agreements related to PF guarantees include an arrangement of event of default amounting to ₩459,262 million and ₩385,417 million as of December 31, 2023 and 2022, respectively, if the borrower fails to make payment as per the financial contract, default of contractor or the borrower, or the contractor's credit rating declines. Details are as follows (Korean won in millions):

	Business Region				Total
	Yangsan, Gyeonnam (*1,2)	Suncheon, Jeonnam	Seoul (*1)	Suwon, Gyeonggi (*3)	
Classification	Apartment building	Apartment building	Officetel	Knowledge Industry Center	
PF Type	PF	PF	PF	PF	
Credit Enhancement Type	contingent liability assumption agreement				
Burden Rate (%)	100%	100%	100%	100%	
Borrower	Kung Dong Smart And Others	Dongbu Dosig aebal And Other	Ruby Limited Company	Tstar Co., Ltd.	
Related party/non-related party	Non Related Party	Non Related Party	Non Related Party	Non Related Party	
Creditor institution	Financial Institutions And Others	Saemaul Geumgo And Others	Saemaul Geumgo And Others	Capital Corp And Others	
Loan period	2021.06.30~2024.09.30	2021.05.04~2025.03.04	2022.05.19~2026.02.19	2022.07.29~2025.11.29	
Loan type	Asset Backed Loan	Project Financing Loan	Project Financing Loan	Project Financing Loan	
Expiration date of securitized securities	2024.09.30	-	-	-	
Guarantee Limit	₩ 70,590	₩ 292,500	₩ 143,000	₩ 85,800	₩ 591,890
Guarantee Amount	42,352	260,260	87,620	69,030	459,262
Contract amount	331,462	667,638	49,820	34,848	1,083,768
Loan Balance:					
December 31, 2023	₩ 32,578	₩ 200,200	₩ 67,400	₩ 53,100	₩ 353,278
December 31, 2022	44,875	159,000	54,000	38,600	296,475

*1) The borrower, in accordance with the financial operating regulations set forth by the lender, is allowed to make early repayments within the extent as permitted by the payment terms prior to the end of the trust period of the land trust income.

*2) Doosan Enerbility Co., Ltd., a subsidiary, has an agreement to lend repayment funds to the borrower using the construction payment it receives from Korea Asset Trust Co., Ltd.. If the repayment funds lent fall short of the principal loan amount stipulated in the loan agreement, Doosan Enerbility has an obligation to supplement the installment repayment principal.

*3) The borrower may make early repayments within the extent allowed for prepayment as stipulated in the managed land trust agreement set by the lender.

32.7.3 Real estate PF (Project Financing) Completion Agreement

As of December 2023 and 2022, Doosan Enerbility Co., Ltd., a subsidiary, has entered into a contingent liability assumption commitment in the event of non-performance of construction completion obligation related to Other businesses, and no such commitment was made for improvement projects. Details are as follows (Korean won in millions):

	2023			
	Number of construction	Contract Amount	Agreed Amount	Loan Balance
Other business	4	₩ 1,083,768	₩ 1,083,768	₩ 353,278

	2022			
	Number of construction	Contract Amount	Agreed Amount	Loan Balance
Other business	4	₩ 1,001,623	₩ 1,001,623	₩ 296,475

32.7.4 Guarantee of SOC in Real Estate PF

Doosan Enerbility Co., Ltd., a subsidiary, in case of an early termination due to the reason attributable to the project implementer and the termination payment received by the SOC Corporation from the competent authority is less than the total amount of its debts and financial investors' investment principal, Doosan Enerbility has an obligation to jointly provide the equivalent amount of the shortfall according to the ratio of obligation upon claim from the representative bank of the creditors.

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32.7.5 Guarantee of the interim payment loan for PF

As of December 31, 2023 and 2022, Doosan Enerbility Co., Ltd., a subsidiary, has signed an agreement guaranteeing ₩104,543 million and ₩52,216 million, respectively, for the interim payment loans of the buyers in relation to its Other businesses. All Other businesses are solely operated by Doosan Enerbility Co., Ltd., and no such commitment was made for improvement projects. Details are as follows (Korean won in millions):

	2023			
	Number of construction	Guarantee Limit	Agreed Amount	Loan Balance
Other business	3	₩ 282,084	₩ 104,543	₩ 460,572

	2022			
	Number of construction	Contract Amount	Agreed Amount	Loan Balance
Other business	2	₩ 185,004	₩ 52,216	₩ 232,551

32.8 Guarantees of payment

32.8.1 Comprehensive summary table

As of December 31, 2023 and 2022, the Group provides payment guarantees such as contract performance, sales guarantees, and defect warranties, which amount to ₩177,758 million and ₩210,799 million, respectively, to the current orderers and the like, through various methods such as by carrying insurance or issuing a guarantee from an insurance company. Details are as follows (Korean won in millions):

	Provided to	Warranty type	Guarantee limit	Guarantee amounts	A guaranteed company	Related Party/non-related party
Payment Guarantee provided	Tuwaig Casting & Forging Company and others	Construction Guarantee and others	₩ 112,429	₩ 10,563	Korea Development Bank and others	Related Party
	Altrad Babcock General Maintenance Services LLC. And others	Construction Guarantee and others	167,195	167,195	Construction Industry Guarantee and others	Non-Related Party
Payment Guarantee received	Doosan Corp. and others	Performance Guarantee and others	475,728	180,394	Seoul Guarantee Insurance and others	Non-Related Party
	Doosan Enerbility Co., Ltd., and others	Construction Guarantee and others	14,258,543	10,327,939	Hana Bank and others	Non-Related Party

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32.8.2 Payment Guarantees provided to related parties

The details of payment Guarantees provided to related parties as of December 31, 2023 are as follows (Korean won in millions):

Classification	Provided to	Guarantee type	Guaranteed limit	Guarantee amounts	Provided by
Associates	Doosan Engineering & Construction Co., Ltd.	Construction guarantee	₩ 10,563	₩ 10,563	Korea Export and Import Bank
	Tuwaiq Casting & Forging Company	Borrowing guarantee	101,866	-	Korea Development Bank

32.8.3 Payment Guarantees provided to others(except for related parties)

Guarantees of payment provided by the Group as of December 31, 2023 are as follows (Korean won in millions):

Provided by	Provided to	Guarantee type	Guaranteed limit	Guarantee amounts	Provided by
Doosan Enerbility(*2)	Altrad Babcock General Maintenance Services LLC.	Construction guarantee	₩ 2,481	₩ 2,481	Construction Industry Guarantee
	Altrad Babcock W.L.L.	Construction guarantee	2,761	2,761	Construction Industry Guarantee
	Employees of Doosan Power Systems India Private Ltd. and others	Employee loan	1,160	1,160	Doosan Power Systems India Private Ltd.
Doosan Bobcat(*1)	End customer and others	Financial guarantee	160,793	160,793	Doosan Bobcat North America Inc and others

(*1) It includes its own consolidated subsidiaries.

(*2) Excluding (*1) above, it includes subsidiaries subject to consolidation in the relevant sector

In addition to the above, according to the spin-off during 2019, in accordance with Article 530-9, Paragraph 1 of the Commercial Act, the succeeding company after division (the Company) and the newly incorporated company (Doosan Fuel Cell Co., Ltd. and Solus Advanced Materials Co., Ltd. (formerly, Doosan Solus Co., Ltd.)) will be repaid in solidarity with respect to the debts of the Company before the division.

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32.8.4 Guarantees of payment provided by others

Guarantees of payment provided by third parties to the Group as of December 31, 2023 are as follows (Korean won in millions):

Provided to	Provided by	Guaranteed limit	December 31, 2023
Doosan Corporation	Korea Development Bank and others	₩ 27,319	₩ 18,925
	Seoul Guarantee Insurance	45,790	45,790
	Korea Software Financial Cooperative (*1)	19,160	10,081
	Woori Bank and others	121,848	33,740
	Machinery Financial Cooperative(*1)	178,806	10,934
	Oricom Inc.	Seoul Guarantee Insurance	327
Doosan Bears Inc.	Seoul Guarantee Insurance	9,376	9,376
Hancomm Inc.	Seoul Guarantee Insurance	1,438	1,438
	Seoul Guarantee Insurance	6,286	6,286
Doosan Logistics Solutions Co., Ltd.	Machinery Financial Cooperative(*1)	62,647	40,766
	Hana Bank	1,711	1,711
Doosan Tesna Inc.	Seoul Guarantee Insurance	14	14
Doosan Robotics Inc.	Seoul Guarantee Insurance	834	834
Doosan Mobility Innovation Inc	Seoul Guarantee Insurance	172	172
Doosan Enerbility Co., Ltd.	Hana Bank	113,844	23,159
	Korea Exim Bank	210,966	210,966
	Korea Trade Insurance Corporation	412,608	73,562
	Woori Bank	84,198	68,799
	Construction Industry Guarantee(*1)	1,288,127	1,118,864
	Construction Guarantee(*1)	6,580,318	4,143,283
	Seoul Guarantee Insurance	318,860	318,860
	Machinery Financial Cooperative(*1)	2,610,380	2,320,306
	Engineering Guarantee Insurance(*1)	646,145	449,388
	Korea Federation of Small and Medium Business	20,000	14,171
	Korea Development Bank	450,645	450,645
	Standard Chartered Bank and others	176,737	176,737
	Others	810,743	635,949
	Doosan Bobcat Inc.	Machinery Financial Cooperative(*1)	1,627
Seoul Guarantee Insurance		5	5
Woori Bank		1,825	1,825
Shinhan Bank		17,401	17,401
Others		15,725	15,725
Machinery Financial Cooperative(*1)		364,994	153,272
Doosan Fuel Cell Co., Ltd.	Seoul Guarantee Insurance	133,395	133,395
		₩ 14,734,271	₩ 10,508,333

(*1) As of December 31, 2023, the shares of the association held by the Company are provided as collateral.

32.9 Covenant related to consolidated structured entities

The carrying amount of assets and liabilities related to the consolidated structured entities' interests in the Group, details of the financial support provided and the maximum exposure amount of the Group to structured entity's losses as of December 31, 2023 are as follows (Korean won in millions):

	Financial support for structured entities	Book value of liabilities regarding structured entities' interests	The maximum exposure amount of the Group to structured entities' losses
Doosan Corporation: D-Pay 3rd Co., Ltd. (*1)	The duty to replenishment of principal and interest of borrowings and others	₩ 108,350	₩ 130,020
Doosan Bears Inc.: NewstarBears Co., Ltd. (*2)		5,400	6,480

(*1) D-Pay 3rd Co., Ltd. was established for the purpose of securitizing future accounts receivable of Electro-Materials BG of Doosan corporation. It is mainly financed by issuing ABLs from financial institutions. Based on the book value presented in its financial statements, underlying amounted to ₩108,350 million as of December 31, 2023.

(*2) NewStarBears Co., Ltd. was established for the purpose of securitizing future accounts receivable of Doosan Bears Inc., a subsidiary. It is mainly financed by issuing ABLs from financial institutions. Based on the book value presented in its financial statements, underlying amounted to ₩5,400 million as of December 31, 2023.

32.10 Agreement between shareholders

The Company has entered into a contract between investors and shareholders in relation to the issuance of shares in the following subsidiaries during the year ended December 31, 2023. Details are as follows.

	Doosan Mobility Innovation Inc.	HyAxiom, Inc.
Outstanding shares	279,670 Redeemable convertible preference shares	159,922 convertible preference shares
Amount issued	₩29,000 million	USD 159,922 thousand
Investor's put option	In the event of a specific reason, an investor may request the Company to purchase all or part of redeemable convertible preferred shares the investor holds. A purchase request could be made at the higher of the amount of the issuance plus a certain level of return on investment and the appraisal amount of the accounting firm.	In the event of a specific reason, an investor may request the Company to purchase all or part of the convertible preference shares held by the investor at the amount of issuance plus a certain level of return on investment.
Investor's tag-along right	If the majority of Doosan Mobility Innovation Inc. shares held by the Company are sold to a third party, the investor has the right to jointly sell the shares with the Company.	If all or part of shares in HyAxiom Inc. held by the Company are sold to a third party, the investor reserves the right to jointly sell the shares.

32.11 Other commitments

The Company sold Doosan Tower, located in 275, Jangchungdan-ro, Jung-gu, Seoul, as of September 28, 2020, and has been responsible for leasing offices and shopping malls of Doosan Tower for five years after the sale. Meanwhile, if the lessor notifies the Company for extending the lease term of Doosan Tower within 6 months from the 4th year of the commencement date of the lease term, the Company's obligation on lease agreement will be extended on the same terms once for 5 years.

The Company entered into an agreement with the Pangaea Ventures Fund IV, L.P. (total amount of investment commitment: USD 10,000 thousand), and the remaining investment commitment is USD 4,156 thousand as of December 31, 2023.

The Company entered into a lease contract for land located in Jungjang-ri, Anmyeon-eup, Taean-gun, Chungcheongnam-do. As of January 25, 2022, the Company has received a total rent of ₩90,000 million from the tenant for a total lease period of 25 years (i.e., a rent until January 25, 2047). The rent is amortized through straight-line method during the lease period and is recognized as rental income in the statements of profit or loss. In this regard, other non-current liabilities (long-term unearned revenues) of ₩79,200 million and other current liabilities (unearned revenues) of ₩3,600 million are recognized for the year ended December 31, 2023. Meanwhile, superficies and leasehold interest are established by the tenant on the land.

Doosan Property Co., Ltd., a subsidiary, has contracted on selling Bundang Doosan Tower, located in 155, Jeongjail-ro Bundang-gu, Seongnam, Gyeonggi-do to Bundang Doosan Tower REIT Co., Ltd. as of January 8, 2021. The Company agreed to a five-year lease contract with Doosan Enerbility Co., Ltd., Doosan Bobcat Inc., after the sale of Bundang Doosan Tower. In this regard, the Group has been responsible for a part of Bundang Doosan Tower for five years since the sale. If the Group fails to meet certain conditions, the lease agreement will be extended on the same terms once for 5 years. Meanwhile, Doosan Property Co., Ltd. was absorbed and merged into Doosan Cuvex Co.,Ltd., the Company's subsidiary, and was extinguished during the previous period.

Doosan Enerbility Co., Ltd, the investor of Samcheok Blue Power Co., Ltd. which is responsible for the EPC construction project of Samcheok #1, 2 TPP, is obliged to make an additional investment of ₩77,740 million before the completion date of the comprehensive completion in accordance with the investor agreement.

As of December 31, 2023, if Doosan Enerbility Co., Ltd sells Doosan Engineering & Construction Co.,Ltd.'s ordinary shares (53.65%) held by The Zenith Holdings Ltd., it will compensate investors for the shortfall within the return on Doosan Engineering & Construction Co.,Ltd.'s ordinary shares (46.35%) held by Doosan Enerbility Co., Ltd if the final distribution falls short of the principal invested by investors (The representative PEF 2018 QCP 13 private equity investment joint venture is excluded).

Doosan Enerbility Co., Ltd., has agreed to invest a total of ₩18,525 million in Multi-asset ESG Sea Wind Power General Private Equity Investment Trust No. 1, and as of December 31, 2023, and the remaining investment amount is ₩8,029 million.

Doosan Bobcat North America Inc. (formerly Clark Equipment Co.) and Doosan Bobcat EMEA s.r.o, the two subsidiaries, have signed a Supply Chain Financing contract, and recognized USD 33,659 thousand as trade payables related thereto.

32.11 Other commitments (cont'd)

D20 Capital FUNDI, L.P., a subsidiary, entered into investment agreements with ZIGG CAPITALI, L.P. and eight other funds, with a total remaining investment agreement of USD 1,221 thousand.

Daesan Green Energy Co., Ltd., an associate of Doosan Fuel Cell Co., Ltd., has signed a loan agreement of ₩200,000 million with financial institutions such as Korea Development Bank and others. In this regard, the investors of Daesan Green Energy Co., Ltd. (i.e., Doosan Fuel Cell Co., Ltd. and other shareholders) have signed an investor agreement with the financial institutions. Each investor is obligated to replenish the funds according to the share of the investment if the net operating cash inflow of Daesan Green Energy Co., Ltd. does not meet the risk-sharing standard. If Doosan Fuel Cell Co., Ltd. is obligated to provide expenses for the performance of settlement obligations, and others, in accordance with the settlement procedure agreement concluded between the investors and Daesan Green Energy Co., Ltd., it should be carried out in a way that provides cash, executes subordinated loans, or does not receive payments.

In connection with the above funding agreement, Doosan Fuel Cell Co., Ltd. provided ₩689 million of capital to Daesan Green Energy Co., Ltd. during the year ended December 31, 2023.

Doosan Bears Inc., a subsidiary, sold its real estate (Icheon Bears Park) in Icheon, Gyeonggi Province to Korea Asset Management Corporation and has been using it through a lease agreement for 5 years from November 2020. Doosan Bears Inc. may exercise the priority purchase right at the market price from one year after the date of the lease contract to 3 months before the expiry of the contract period. If the priority purchase right is not exercised within the exercise period, Korea Asset Management Corporation may request a repurchase. The Group judged that both risks and rewards could not be eliminated and the transaction was marked as a financial transaction.

Doosan Logistics Solutions Co., Ltd., formed a consortium with a third party, the Thailand-based construction company in 2020 and signed a construction contract for the new construction project of Thailand International Distribution Center Smart Warehouse as per order by GC Logistics Solution Company Limited (hereinafter referred to as the "GCL"). Then a collapse accident has occurred at the construction site. Accordingly, an accident investigation committee was established between the three parties, but the three parties have failed to come to an agreement, and thus, GCL applied for arbitration and submitted an opinion in a written form to Thai Arbitration Institute (TAI) of the judicial office in 2023. In response, Doosan Logistics Solutions Co., Ltd. submitted a an opinion in a written form to TAI on January 15, 2024, claiming that GCL's opinion is unfair.

As of December 31, 2023, the scope of the accident liability to which Doosan Logistics Solutions Co., Ltd. is obligated has not been determined, and accordingly, Doosan Logistics Solutions Co., Ltd. estimated losses based on the information available. Accordingly, the estimated loss amount recognized in the consolidated statement of comprehensive income during the current fiscal year totaled ₩30,719 million, and as of December 31, 2023, ₩7,719 million in construction loss provision, ₩18,259 million in other provision, ₩1,544 million in bad debt provision for accounts receivable, and ₩3,196 million in unclaimed construction loan loss provision are recognized.

The actual losses may be change depending on the outcome of the judgment of TAI in the future.

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33. Pledged assets

The Group pledged certain assets as collateral for its long-term and short-term borrowings as of December 31, 2023 as follows (Korean won in millions):

Provided by	Pledged assets	Institution	Financial liabilities	Pledged amount
Doosan	financial instruments, property, plant and equipment, Investments in subsidiaries and others(*1)	New Star Eneo Ville The 1st Co., Ltd. and others	₩ 679,686	₩ 1,275,817
Doosan Portfolio Holdings Co., Ltd (formerly, Doosan Investment Co., Ltd)	Investments in subsidiaries and others	Shinhan Bank and others	255,532	488,175
Doosan Tesna Inc.	Property, plant and equipment	Korea Development Bank and others	226,875	331,600
Doosan Logistics Solution Co., Ltd.	Investments in subsidiaries (*2)	Hana Bank	5,000	4,950
Doosan Enerbility	Property, plant and equipment (*3)	Korea Development Bank and others	752,960	1,163,117
	Investments in subsidiaries and equity share (*3,4)	Korea Development Bank and others	1,696,494	2,640,115
Doosan Bobcat	Property, plant and equipment	Shinhan Bank and others	61,051	95,736
	Inventories and others	Unitcredit and others	114,503	499,178
	Property, plant and equipment, intangible assets and Investments in subsidiaries	Multiple Institutional Investors and Banks in the United States	947,870	3,239,839
Doosan Cuvex Co., Ltd	Beneficiary certificates (*5)	Woori Bank	20,000	24,000
Doosan Fuel Cell Co., Ltd.	Property, plant and equipment.	Korea Development Bank and others	100,000	90,000
			<u>₩ 4,859,971</u>	<u>₩ 9,852,527</u>

(*1) As of December 31, 2023, ₩400,000 million borrowed by the Company from New Star Eneo Ville The 1st Co., Ltd. and ₩30,000 million borrowed from The Korea Securities Finance Corporation shall be provided with additional collateral if the contractual collateral maintenance ratio is not met (see Note 32).

(*2) As of December 31, 2023, Doosan Logistics Solution Co., Ltd. provides 352,314 shares of Doosan Enerbility Co., Ltd. held by the Company as collateral for ₩5,000 million in long-term borrowings from Hana Bank.

(*3) As of December 31, 2023, Doosan Enerbility Co., Ltd. has provided 40,250,000 shares in Doosan Bobcat Inc., 22,780,229 shares in Doosan Fuel Cell Co., Ltd. and land as collateral regarding its bonds and borrowing agreement. (see Note 32)

(*4) As of December 31, 2023, a total of 50,000,000 shares in Doosan Engineering & Construction Co., Ltd. held by Doosan Enerbility Co., Ltd. are provided as collateral in connection with Doosan Enerbility Co., Ltd.'s payment guarantee.

(*5) This is a real estate security trust beneficiary certificates for property, plant and equipment.

33. Pledged assets (cont'd)

The Company entrusts Doosan Electronics BG's trade receivables to Kookmin Bank to provide securitized loans from a group of lenders of D-Pay 3rd Co., Ltd., and provides the first class beneficiary certificates issued to D-Pay 3rd Co., Ltd. as collateral.

Doosanbears Inc, a subsidiary, entrusts KB Financial Group Inc. with sales receivables related to income from tickets sold and advertising revenue to provide securitized loans from a group of lenders of NewstarBears Co., Ltd., and provides the first class beneficiary certificates issued to NewstarBears Co., Ltd. as collateral.

Doosan Fuel Cell Co., Ltd., a subsidiary, has trusted KB Financial Group Inc. with accounts receivable to be incurred under the Long-Term Service Agreement to provide securitized loans from IBK Capital Co., KB Securities Co., kisrating Co.,Ltd., and Newstar FC The 1st Co., Ltd., and provides the first class beneficiary certificates to the two financial institutions, including KEB Hana Bank, the lenders of IBK Capital Co., KB Securities Co., kisrating Co.,Ltd.

The period of providing collateral is from April 3, 2023 to April 3, 2026, and if the expected cash flows from the trust property falls short of the agreed amount, additional bonds must be trusted.

Other collateral details provided by the Group as of December 31, 2023 are as follows (Korean won in millions):

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has pledged to complete its responsibility in connection with the construction project for the EPCs of Samcheok Thermal Power Plant Units 1 and 2. In addition, 1,193,066 shares of Samcheok Blue Power Co., Ltd (book value: ₩32,052 million) held by Doosan Enerbility Co., Ltd. are provided as collateral for the Company's project financing, and the right to pledge is set with the PF lender, Korea Development Bank.

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has provided part of its land, buildings, and machinery (pledged amount: ₩420,000 million) located in Changwon factory, and all of its shares in Doosan Power Systems S.A. (pledged amount: GBP 293 million) as collateral, in relation to the export guarantee insurance limit contract with a limit to ₩459,000 million, which was entered into with Korea Trade Insurance Corporation.

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has pledged to complete its responsibility in connection with the Changwon hydrogen liquefaction project. In addition, 1,400,000 shares in Hychangwon Co., Ltd. (book value: ₩6,180 million) held by Doosan Enerbility Co., Ltd. are provided as collateral for the Company's project financing, and the right to pledge is set with the PF lender, Kyongnam Bank.

As of December 31, 2023, Doosan Enerbility Co., Ltd., and Doosan Fuel Cell Co., Ltd., the subsidiaries, provide ₩6,041 million and ₩1,400 million, respectively, in deposits to Korea Securities Finance Co., Ltd. as collateral in connection with the employee's stock ownership association's acquisition fund loan.

As of December 31, 2023, Doosan Enerbility Co., Ltd., a subsidiary, has entered into a contract for transfer of construction bonds for ₩32,578 million (collateral established: ₩42,352 million) out of ₩54,300 million of loans under the agreement, excluding the payment amount of ₩21,722 million, of Yangsan Deokgye Third Co., Ltd. in relation to the construction of the third and fifth apartment buildings in Yangsan, Deokgye.

As of December 31, 2023, the equity shares of Machinery Financial Cooperative and Construction Industry Guarantee acquired by the Group for business activities are provided as collateral to the cooperative.

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33. Pledged assets (cont'd)

Details of collateral provided by the Group for third parties are as follows (Korean won in millions):

<u>Provided by</u>	<u>Pledged assets</u>	<u>Book value</u>	<u>Institution</u>	<u>Provided to</u>
Doosan Enerbility Co., Ltd	Long-term investment securities (*1)	₩ 1,221	Kookmin Bank and others	Gyeonggi East-West Beltway Co.
Doosan Fuel Cell Co., Ltd.	Investments in associates (*2)	3,804	Korea Development Bank	Daesan Green Energy Co., Ltd.
		<u>₩ 5,025</u>		

(*1) As of December 31, 2023, out of Doosan Enerbility Co., Ltd.'s long-term investment securities, shares in Gyeonggi East-West Beltway Co. are provided as collateral for the Company's project financing(see Note 6).

(*2) As of December 31, 2023, shares of Daesan Green Energy Co. Ltd. held by Doosan Fuel Cell Co., Ltd. are provided as collateral for the entity's borrowings (see Note 11).

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34. Related party transactions

Details related to the disclosure of related parties as of December 31, 2023 and 2022 are as follows:

	December 31, 2023	December 31, 2022	Remarks
Associates	KDDI Korea Corporation	KDDI Korea Corporation	-
	PT. SEGARA AKASA	PT. SEGARA AKASA	-
	Mastern General Private Security Investment Trust No.98	Mastern General Private Security Investment Trust No.98	-
	-	SiO2 Medical Products, Inc.	(*1)
	Versogen, Inc.	Versogen, Inc.	-
	TTC House Inc.	TTC House Inc.	-
	SemiFive Inc.	-	-
	Protera SAS	Protera SAS	-
	-	Stathera IP Holding Inc.	-
	Folletto Robotics Co., Ltd.	Folletto Robotics Co., Ltd.	-
	-	MARCONI Growth No. 1 Private Equity Fund	-
	Samcheok Blue Power Co., Ltd.	Samcheok Blue Power Co., Ltd.	-
	Daejung Offshore Wind Power Co., Ltd.	Daejung Offshore Wind Power Co., Ltd.	-
	Hychangwon Co., Ltd.	Hychangwon Co., Ltd.	-
	Tuwaik Casting & Forging Company	Tuwaik Casting & Forging Company	-
	Multi-asset ESG Sea Wind Power General Private Equity Investment Trust No. 1	Multi-asset ESG Sea Wind Power General Private Equity Investment Trust No. 1	-
	Doosan Engineering & Construction Co.,Ltd.	Doosan Engineering & Construction Co.,Ltd.	-
	Daesan Green Energy Co., Ltd.	Daesan Green Energy Co., Ltd.	-
	Prestolite Asia Ltd.	Prestolite Asia Ltd.	-
	Ainstein AI, Inc.	Ainstein AI, Inc.	-
Bundang Doosan Tower REIT Co., Ltd.	Bundang Doosan Tower Reit Co., Ltd.	-	
Joint ventures	Sichuan Kelun-Doosan Biotechnology Company Limited	Sichuan Kelun-Doosan Biotechnology Company Limited	-
	Weve Holdings Ltd.	Weve Holdings Ltd.	-
	The Zenith Holdings Ltd.	The Zenith Holdings Ltd.	-
Other related parties	Doosan Yonkang Foundation	Doosan Yonkang Foundation	(*2)
	Doosan Credit Union	Doosan Credit Union	(*2)
	Valuegrowth Co., Ltd.	Valuegrowth Co., Ltd	-
	Wonsang Co., Ltd.	Wonsang Co., Ltd.	(*2)
	Chung-Ang University and others	Chung-Ang University and others	(*2)

(*1) It was excluded from associates as the Company lost significant influence due to the retirement of shares during the current period.

(*2) It is not included in the scope of related parties of KIFRS 1024 but includes entities that belong to the same large-scale enterprise group under the Monopoly Regulation and Fair Trade Act.

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34. Related party transactions (cont'd)

Significant transactions for the years ended December 31, 2023 and 2022, between the Group and related parties are as follows (Korean won in millions):

Related parties	2023					
	Sales	Other income	Others (disposal of assets and other)	Purchases	Other expenses	Others (acquisition of assets and other)
Associates:						
KDDI Korea Corporation	₩ -	₩ 43	₩ -	₩ -	₩ -	₩ -
PT. SEGARA AKASA	-	-	-	-	-	-
Mastern General Private Security Investment Trust No.98	-	-	-	46	11,757	-
SiO2 Medical Products, Inc.(*1)	-	-	-	17	-	-
TTC House Inc.	-	-	-	13	-	-
SemiFive Inc.	13	-	-	-	-	-
Folletto Robotics Co., Ltd..	-	-	-	73	4	-
The HS-City Expressway(*2)	-	-	-	-	-	-
Samcheok Blue Power Co., Ltd.	264,301	-	-	-	-	-
Hychangwon Co., Ltd.	11,865	-	-	-	-	-
Tuwaiq Casting & Forging Company	440,863	-	-	-	-	-
Doosan Engineering & Construction Co.,Ltd.	2,338	1,032	-	132	5,975	-
Daesan Green Energy Co., Ltd.	14,543	-	-	-	43	-
Prestolite Asia Ltd.	-	43	-	11,224	-	-
Bundang Doosan Tower Reit Co., Ltd.	-	-	-	-	18,710	-
	₩ 733,923	₩ 1,118	₩ -	₩ 11,505	₩ 36,489	₩ -
Other related parties:						
Doosan Yonkang Foundation	₩ 1,948	₩ 190	₩ -	₩ 257	₩ 4,706	₩ 162
Doosan Credit Union	153	12	-	-	-	-
Valuegrowth Co., Ltd.	-	-	-	-	-	-
The Path With you (*2)	-	-	-	-	-	-
Wonsang Co., Ltd.	30	-	-	-	-	-
Chung-Ang University and others	49	12	-	1,061	10,914	-
	₩ 2,180	₩ 214	₩ -	₩ 1,318	₩ 15,620	₩ 162
	₩ 736,103	₩ 1,332	₩ -	₩ 12,823	₩ 52,109	₩ 162

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34. Related party transactions (cont'd)

Related parties	2022					
	Sales	Other income	Others (disposal of assets and other)	Purchases	Other expenses	Others (acquisition of assets and other)
Associates:						
KDDI Korea Corporation	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
PT. SEGARA AKASA	1	-	-	-	-	-
Mastern General Private Security Investment Trust No.98	-	-	-	60	12,929	-
SiO2 Medical Products, Inc.(*1)	-	-	-	-	-	-
TTC House Inc.	-	-	-	-	-	-
SemiFive Inc.	-	-	-	-	-	-
Folletto Robotics Co., Ltd.	720	-	-	2,853	14	-
The HS-City Expressway(*2)	9	-	-	-	-	-
Samcheok Blue Power Co., Ltd.	416,708	-	-	-	-	-
Hychangwon Co., Ltd.	53,696	-	-	-	-	-
Tuwaik Casting & Forging Company	137,852	-	-	-	-	-
Doosan Engineering & Construction Co., Ltd.	35,746	148	-	38	4,424	1,234
Daesan Green Energy Co., Ltd.	14,523	-	-	-	43	-
Prestolite Asia Ltd.	-	34	-	9,558	-	-
Bundang Doosan Tower Reit Co., Ltd.	-	-	-	-	18,023	-
	<u>₩ 659,255</u>	<u>₩ 182</u>	<u>₩ -</u>	<u>₩ 12,509</u>	<u>₩ 35,433</u>	<u>₩ 1,234</u>
Other related parties:						
Doosan Yonkang Foundation	₩ 1,593	₩ -	₩ -	₩ 333	₩ 4,824	₩ -
Doosan Credit Union	241	-	-	-	323	-
Valuegrowth Co., Ltd.	812	-	-	-	-	-
The Path With you (*2)	19	-	-	-	19	-
Wonsang Co., Ltd.	91	-	-	-	-	-
Chung-Ang University and others	30	-	-	1,643	10,343	-
	<u>₩ 2,786</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ 1,976</u>	<u>₩ 15,509</u>	<u>₩ -</u>
	<u>₩ 662,041</u>	<u>₩ 182</u>	<u>₩ -</u>	<u>₩ 14,485</u>	<u>₩ 50,942</u>	<u>₩ 1,234</u>

(*1) It was excluded from related parties during the year ended December 31, 2023, and the amount is the transaction details before being excluded from related parties.

(*2) It was excluded from related parties during the year ended December 31, 2022, and the amount is the transaction details before being excluded from related parties.

The transaction details above include carrying amount classified as the profit or loss from discontinued operations on consolidated statements of profit or loss.

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34. Related party transactions (cont'd)

Significant balances related to the transactions between the Group and related parties as of December 31, 2023 and 2022 are as follows (Korean won in millions):

Related parties	December 31, 2023					
	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Lease liabilities
Associates:						
Mastern General Private Security Investment Trust No.98	₩ -	₩ 32,200	₩ -	₩ -	₩ 3,073	₩ 194,316
Folletto Robotics Co., Ltd.	-	-	-	6	-	-
Samcheok Blue Power Co., Ltd.	-	125,648	-	-	-	-
Hychangwon Co., Ltd.	5,500	47	-	-	1,992	-
Tuwaiq Casting & Forging Company	32,116	119	-	-	248,551	-
Doosan Engineering & Construction Co.,Ltd.	1,006	56,818	-	1,084	21,649	-
Daesan Green Energy Co., Ltd.	3,625	-	689	-	4	-
Prestolite Asia Ltd.	-	-	-	308	-	-
Bundang Doosan Tower Reit Co., Ltd	-	27,998	-	-	-	175,029
	<u>₩ 42,247</u>	<u>₩ 242,830</u>	<u>₩ 689</u>	<u>₩ 1,398</u>	<u>₩ 275,269</u>	<u>₩ 369,345</u>
Joint ventures:						
Sichuan Kelun-Doosan Biotechnology Co., Ltd.	-	-	-	-	-	-
	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>
Other related parties:						
Doosan Yonkang Foundation	170	434	-	-	95	34
Doosan Credit Union	14	1	-	-	84	-
Valuegrowth Co., Ltd.	-	-	-	-	-	-
Chung-Ang University	34	487	-	213	286	-
	<u>₩ 218</u>	<u>₩ 922</u>	<u>₩ -</u>	<u>₩ 213</u>	<u>₩ 465</u>	<u>₩ 34</u>
	<u>₩ 42,465</u>	<u>₩ 243,752</u>	<u>₩ 689</u>	<u>₩ 1,611</u>	<u>₩ 275,734</u>	<u>₩ 369,379</u>

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34. Related party transactions (cont'd)

Related parties	December 31, 2022					
	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Lease liabilities
Associates:						
Mastern General Private Security Investment Trust No.98	₩ -	₩ 32,200	₩ -	₩ -	₩ 3,034	₩ 215,713
Folletto Robotics Co., Ltd.	318	-	-	3	-	-
Samcheok Blue Power Co., Ltd.	-	99,581	-	-	-	-
Hychangwon Co., Ltd.	4,070	-	-	-	9,313	-
Tuwaiq Casting & Forging Company	32,430	-	-	-	201,223	-
Doosan Engineering & Construction Co.,Ltd.	30,813	17,221	-	123	10,483	-
Daesan Green Energy Co., Ltd.	3,625	-	1,004	-	-	-
Prestolite Asia Ltd.	-	-	-	-	-	-
Bundang Doosan Tower Reit Co., Ltd	-	22,091	-	-	-	187,653
	<u>₩ 71,256</u>	<u>₩ 171,093</u>	<u>₩ 1,004</u>	<u>₩ 126</u>	<u>₩ 224,053</u>	<u>₩ 403,366</u>
Joint ventures:						
Sichuan Kelun-Doosan Biotechnology Co., Ltd.	-	1,245	-	-	-	-
	<u>₩ -</u>	<u>₩ 1,245</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ -</u>
Other related parties:						
Doosan Yonkang Foundation	129	2,759	-	-	104	74
Doosan Credit Union	14	-	-	-	454	-
Valuegrowth Co., Ltd.	50	-	-	-	-	-
Chung-Ang University	41	-	-	245	334	-
	<u>234</u>	<u>2,759</u>	<u>-</u>	<u>245</u>	<u>892</u>	<u>74</u>
	<u>₩ 71,490</u>	<u>₩ 175,097</u>	<u>₩ 1,004</u>	<u>₩ 371</u>	<u>₩ 224,945</u>	<u>₩ 403,440</u>

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34. Related party transactions (cont'd)

The Group provides guarantees of payment and others for related parties as of December 31, 2023 (see Notes 32 and 33).

Compensation to key management personnel of the Group for the years ended December 31, 2023 and 2022 is as follows (Korean won in millions):

	2023	2022
Employee benefits	₩ 85,927	₩ 81,190
Retirement benefits	14,477	31,400
Share-based payment cost	11,819	6,227
	₩ 112,223	₩ 118,817

35. Cash flow statement

The adjustments and changes in cash generated from operating activities in the consolidated statements of cash flows for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Adjustments for:		
Bad debt expenses	₩ 28,806	₩ 21,692
Loss from valuation of inventories	12,073	16,808
Depreciation	547,504	456,398
Amortization	156,844	161,804
Retirement benefits	31,271	132,616
Interest income	(103,362)	(33,740)
Dividend income	(3,061)	(4,409)
Gain on foreign currency translation	(81,253)	(158,280)
Gain on valuation of derivatives	(66,578)	(94,887)
Gain on valuation of firm commitment	(43,958)	(82,476)
Interest expense	466,417	371,221
Loss on foreign currency translation	91,220	307,490
Loss on valuation of derivatives	94,231	111,493
Loss on valuation of firm commitment	27,139	54,208
Loss on repayment of bonds	59	16,547
Loss (gain) on repayment of loans	2,218	10,675
Financial guarantee expenses	471	-
Increase in provision	226,218	235,535
Loss (gain) on disposal of short-term investment securities, long-term investment securities	(757)	(3,735)
Loss (gain) on valuation of short-term investment securities, long-term investment securities	132,989	41,024
Gain on disposal of property, plant and equipment	(5,844)	(3,940)

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35. Cash flow statement (cont'd)

	2023	2022
Gain on disposal of intangible assets	(1,236)	(915)
Gain on disposal of investment properties	(49)	(2,347)
Loss on disposal of trade receivables	10,933	7,841
Gain on valuation of investment properties	(25,193)	(5,399)
Impairment loss on property, plant and equipment	18,032	30,572
Impairment loss on intangible assets	173,894	422,688
Loss on disposal of property, plant and equipment	2,219	5,628
Loss on disposal of intangible assets	49	1,134
Loss on disposal of investment properties	22	864
Loss on valuation of investment properties	58,530	13,254
Loss on disposal of investments in subsidiaries	1,268	-
Impairment loss on investments in associates	-	118,597
Other bad debt expenses	80,030	13,230
Share of loss (gain) of associates and joint ventures accounted for using the equity method	42,248	224,852
Income tax expenses	178,900	201,344
Loss (gain) from disposal of discontinued operations and impairment loss	-	106,120
Loss (gain) on disposal of assets held for sale and Impairment loss on assets held for sale	1,187	(12,978)
Shared-based payment	13,004	6,531
Loss on valuation of Greenhouse gas emission allowances	939	-
Other expenses (income)	(13,269)	18,106
	<u>₩ 2,054,155</u>	<u>₩ 2,705,166</u>
	2023	2022
Changes in operating assets and liabilities:		
Trade receivables	₩ 189,998	₩ (662,508)
Other receivables	(5,503)	(117,522)
Due from customers for contract work	(203,313)	192,479
Derivative assets (liabilities)	67,526	(54,025)
Inventories	(295,562)	(682,822)
Other current assets	17,211	(15,114)
Long-term other receivables	(44,430)	(37,803)
Other non-current assets	(160)	(2,214)
Trade payables	34,358	563,274
Other payables	453,066	106,473
Due to customers for contract work	557,488	303,650
Provisions	(211,981)	(100,398)
Other current liabilities	13,692	346
Long-term other payables	27,381	60,589
Other non-current liabilities	(20,921)	(85,198)
Retirement benefits paid	(26,312)	(28,867)
Plan assets	(101,564)	(114,895)
Other assets and liabilities related to operating activities	(18,304)	(8,466)
	<u>₩ 432,670</u>	<u>₩ (683,021)</u>

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35. Cash flow statement (cont'd)

Significant non-cash transactions for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023	2022
Reclassification of construction in progress to property, plant and equipment and others	₩ 296,308	₩ 411,283
Acquisition of right-of-use assets	115,895	127,607
Current portion of bonds and borrowings	2,453,117	1,119,453
Transfer to assets and liabilities held for sale (see Note 37)	12,298	3,057
Write-off of trade receivables and other receivables	8,706	46,673

Details of changes in liabilities arising from financing activities for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023					
	January 1	Cash flows from financing activities	Fluctuation of foreign exchange rate	Reclassification of current portion	Others	December 31
Short-term borrowings	₩ 1,862,740	₩ (141,561)	₩ (30,588)	₩ 26,808	₩ 87	₩ 1,717,486
Current portion of long-term borrowings	229,801	(215,308)	3,657	1,659,737	2,184	1,680,071
Current portion of long-term asset-backed loan	91,731	(92,164)	1	106,942	256	106,766
Current portion of bonds	717,885	(729,676)	48,851	518,471	(71,483)	484,048
Current portion of lease liabilities	142,391	(133,242)	2,726	127,111	4,525	143,511
Current portion of sale-and-leaseback liabilities (*1)	27,499	(24,891)	613	14,048	-	17,269
Long-term borrowings	3,207,531	744,017	1,508	(1,686,545)	42,141	2,308,652
Long-term asset-backed loan	113,353	69,611	(1)	(106,942)	(91)	75,930
Bonds	533,982	601,895	36,168	(518,471)	(26,944)	626,630
Non-current lease liabilities	606,746	(15,884)	4,623	(127,111)	99,265	567,639
Sale-and-leaseback liabilities (*1)	79,818	8,245	4,985	(14,048)	-	79,000
	<u>₩ 7,613,477</u>	<u>₩ 71,042</u>	<u>₩ 72,543</u>	<u>₩ -</u>	<u>₩ 49,940</u>	<u>₩ 7,807,002</u>

(*1) They are included in current and non-current lease liabilities in the consolidated statement of financial position.

	2022						
	January 1	Cash flows from financing activities	Changes in scope of consolidation	Fluctuation of foreign exchange rate	Reclassification of current portion	Others	December 31
Short-term borrowings	₩ 4,725,061	₩ (2,793,628)	₩ (15,401)	₩ (53,636)	₩ 344	₩ -	₩ 1,862,740
Current portion of long-term borrowings	463,729	(443,213)	12,500	1,622	195,163	-	229,801
Current portion of long-term asset-backed loan	115,042	(116,903)	-	-	92,841	751	91,731
Current portion of bonds	690,901	(767,707)	(9,998)	24,540	731,859	48,290	717,885
Current portion of lease liabilities	99,479	(69,588)	23,124	1,228	93,566	(5,418)	142,391
Current portion of sale-and-leaseback liabilities	30,936	-	-	-	5,680	(9,117)	27,499
Long-term borrowings	1,520,834	1,672,626	93,750	95,465	(195,507)	20,363	3,207,531
Long-term asset-backed loan	16,435	189,563	-	-	(92,841)	196	113,353
Bonds	1,139,454	77,754	-	31,530	(731,859)	17,103	533,982
Non-current lease liabilities	591,533	(65,451)	37,147	21,615	(93,566)	115,468	606,746
Sale-and-leaseback liabilities	283,194	(28,800)	(174,386)	-	(5,680)	5,490	79,818
	<u>₩ 9,676,598</u>	<u>₩ (2,345,347)</u>	<u>₩ (33,264)</u>	<u>₩ 122,364</u>	<u>₩ -</u>	<u>₩ 193,126</u>	<u>₩ 7,613,477</u>

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36. Discontinued operations

Details of discontinued operations for the year ended December 31, 2022 are as follows:

	2022	
	Doosan Babcock Ltd. and its subsidiaries ("DBL")	Doosan Mecatec Co., Ltd. and its subsidiaries ("Doosan Mecatec")
Main business	Engineering and service	Manufacturing industrial heating boilers, metal tanks and similar containers
Method	Transfer of business (*1)	Transfer of business (*2)

(*1) Doosan Enerbility Co., Ltd, a subsidiary, has decided to sell its subsidiary Doosan Babcock Ltd. in accordance with a resolution made at the Board of Directors' meeting in October 2021. Accordingly, the sale process was completed as of September 25, 2022 (sales price: ₩53,117 million).

(*2) Doosan Enerbility Co., Ltd, a subsidiary, has decided to sell its subsidiary Doosan Mecatec in accordance with a resolution made at the Board of Directors' meeting on June 3, 2022. Accordingly, the sale process was completed as of September 15, 2022.

36. Discontinued operations (cont'd)

With regard to discontinued operations that occurred during the year ended December 31, 2022, assets and liabilities removed from the Consolidated Statement as follows (Korean won in millions):

	2022	
	Doosan Mecatec	
Assets		
Cash and cash equivalents	₩	40,448
Trade receivables and other receivables		57,935
Due from customers for contract work		191,437
Inventories		32,897
Investments in associates and joint ventures		7,995
Property, plant and equipment		273,288
Intangible assets		1,512
Other assets		91,153
	₩	<u>696,665</u>
Liabilities		
Trade and other payables	₩	47,888
Due to customers for contract work		50,156
Bonds and borrowings		59,399
Lease liabilities		14,212
Other liabilities		227,178
	₩	<u>398,833</u>

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36. Discontinued operations (cont'd)

Details of profit or loss from discontinued operations for the year ended December 31, 2022 are as follows (Korean won in millions):

	2022		
	DBL	Doosan Mecatec	Total
Sales	₩ 462,541	₩ 212,986	₩ 675,527
Cost of sales	418,179	197,196	615,375
Selling and administrative expenses	43,871	13,757	57,628
Operating profit(loss)	491	2,033	2,524
Non-operating profit(loss)	10,185	(510)	9,675
Profit(loss) before income tax expenses	10,676	1,523	12,199
Income tax expenses(benefits)	539	(10,527)	(9,988)
	₩ 10,137	₩ 12,050	₩ 22,187
Profit(loss) from disposal of discontinued operations before income tax expenses, impairment loss	57,420	(163,540)	(106,120)
Tax expenses(benefits) related to disposal of discontinued operations	-	-	-
Profit(loss) from disposal of discontinued operations	57,420	(163,540)	(106,120)
Profit(loss) from discontinued operations	₩ 67,557	₩ (151,490)	₩ (83,933)
Profit/loss attributable to:			
Equity holders of the Company	₩ 20,569	₩ (54,012)	₩ (33,443)
Non-controlling interests	46,988	(97,478)	(50,490)

Cash flows from discontinued operations for the year ended December 31, 2022 are as follows (Korean won in millions):

	2022		
	DBL	Doosan Mecatec	Total
Net cash flows from operating activities	₩ (8,156)	₩ (41,923)	₩ (50,079)
Net cash flows from investing activities (*1)	(28,423)	10,925	(17,498)
Net cash flows from financing activities	41,616	3,725	45,341
Effect of exchange rate changes	(794)	315	(479)
	₩ 4,243	₩ (26,958)	₩ (22,715)

(*1) Net cash flows of investing activities include cash flows of the disposal of discontinued operations.

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37. Assets held for sale and liabilities held for sale

Details of assets held for sale and liabilities held for sale as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	December 31, 2023		
	Book value before impairment	Accumulated impairment loss	Net fair value
Property, plant and equipment (*1,3)	₩ 30,637	₩ (41)	₩ 30,596
Investment properties (*2)	13,588	-	13,588
	<u>₩ 44,225</u>	<u>₩ (41)</u>	<u>₩ 44,184</u>

(*1) Doosan Enerbility Co., Ltd, a subsidiary, classified some of the land and buildings as assets held for sale during the year ended December 31, 2023, and completed the sale of some of the land, buildings and heavy equipment.

(*2) Doosan Enerbility Co., Ltd, a subsidiary, signed a sales contract for land and buildings located in Icheon, Gyeonggi-do, on March 23, 2023, and classified them as assets held for sale.

(*3) Doosan Power Systems India Private Ltd., a subsidiary, entered into an agreement on the sale of the land and buildings in operation on November 22, 2023, and reclassified them as assets held for sale for the year ended December 31, 2023.

	December 31, 2022		
	Book value before impairment	Accumulated impairment loss	Net fair value
Property, plant and equipment (*1)	₩ 5,871	₩ (1,186)	₩ 4,685

(*1) Doosan Industrial Vehicle Co., Ltd., a subsidiary, signed a contract to sell rental assets in operation as of August 12, 2022, and reclassified them as assets held for sale, and completed the sale in April, 2023.

38. Business Combination of Doosan Tesna Inc.

As of April 27, 2022, the Group acquired control over Doosan Tesna Inc. (formerly, Tesna Corporation) by acquiring 30.78% of shares in Doosan Tesna Inc. (2,909,292 ordinary shares and 2,320,672 preferred shares) and bonds with warrant on new shares therein (the number of ordinary shares to be issued in case of warrant exercise: 2,246,989 shares) from AI Tree Limited.

The Group has elected to measure the non-controlling interests at the proportionate share of the Group's equity instrument to the amounts recognized for Doosan Tesna Inc.'s identifiable net assets as of the acquisition date. As of the acquisition date, the fair value of Doosan Tesna Inc.'s identifiable assets and liabilities are as follows (Korean won in millions):

Assets	Book amount	Liabilities	Book amount
Cash and cash equivalents	₩ 46,948	Trade and other payables	₩ 21,149
Trade receivables and other receivables	24,400	borrowings	93,750
Property, plant and equipment	461,693	Deferred tax liabilities	28,714
Intangible assets	93,678	Other liabilities	137,869
Other assets	65,794		
Assets total	₩ 692,513	Liabilities total	₩ 281,482
① Fair value of net assets (total assets – total liabilities)			₩ 411,030
② Non-controlling interests			284,516
③ Consideration transferred (Cash)			460,000
Goodwill due to acquisition (②+③-①)			₩ 333,486

Doosan Tesna Inc.'s sales and net profit after the acquisition date included in the consolidated statements of comprehensive income of the previous year are ₩199,950 million and ₩30,310 million, respectively, and assuming that the acquisition date was on January 1, 2022, the Group's sales and net loss from continuing operations would have been ₩17,073,466 million and ₩567,475 million, respectively.

39. Effect of Global Minimum Tax

Global Minimum Tax is a system where a multinational group, consisting of entities(subsidiaries, etc.) included in consolidated financial statements, with sales exceeding €750 million in at least 2 of the immediate preceding 4 fiscal years, that fail to meet an effective tax rate of 15%, shall pay the shortfall to the tax authority of the country where the controlling entity is located.

The tax legislation related to the Global Minimum Tax in the Republic of Korea, in which the parent company is domiciled, was enacted in 2023 and will be effective from January 1, 2024.

The Group believes that it is in the scope of applying Global Minimum Tax, but as the related legislation will be effective from January 1, 2024, there is no impact on income tax expenses for the current year. Also, the Group applies a mandatory temporary exception for deferred tax accounting under KIFRS 1012, and the Group does not recognize related deferred tax assets and liabilities or disclose information related thereto.

It is difficult to reasonably estimate the impact on the Group as of December 31, 2023 since the laws of the countries in which the subsidiaries are primarily affected by the Global Minimum Tax have not been enacted or specific legislation is still pending. The Group is reviewing the impact therefrom by engaging tax experts.

Audit opinion on internal control over financial reporting

The accompanying independent auditor's report on internal control over financial reporting is attached as a result of auditing the internal control over financial reporting of Doosan Corporation (the "Company") and its subsidiaries (collectively referred to as the "Group") and the consolidated financial statements of the Group for the year ended December 31, 2023 in accordance with the Article 8 of the *Act on External Audit of Stock Companies*.

Attachments:

1. Independent auditor's report on internal control over financial reporting
2. Management's Report on the Effectiveness of Internal Control over Financial Reporting for Consolidation Purposes

Independent auditor's report on internal control over financial reporting
(English Translation of a Report Originally Issued in Korean)

Doosan Corporation
The Shareholders and Board of Directors

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting ("ICFR") of Doosan Corporation's (the "Company") and its subsidiaries (collectively referred to as the "Group") based on the Conceptual Framework for Design and Operation of ICFR established by the Operating Committee of ICFR in Korea (the "ICFR Committee") as of December 31, 2023

In our opinion, the Group's ICFR has been effectively designed and operated, in all material respects, as of December 31, 2023, in accordance with the Conceptual Framework for designing and operating ICFR.

We also have audited, in accordance with Korean Standards on Auditing ("KSA"), the consolidated statement of financial position as of December 31, 2023, and the consolidated statement of income (or consolidated statement of profit or loss and other comprehensive income), consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of material accounting policy information, of the Group, and our report dated March 20, 2024 expressed an unqualified opinion thereon.

Basis for opinion on ICFR

We conducted our audit in accordance with KSA. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of ICFR section of our report.

We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of ICFR in the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of management and those charged with governance for ICFR

Management is responsible for designing, implementing, and maintaining an effective ICFR, and for assessing the effectiveness of the ICFR included in the accompanying Management's Report on the Effectiveness of Internal Control over Financial Reporting for Consolidation Purposes.

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

Auditor's responsibilities for the audit of ICFR

Our responsibility is to express an opinion of the Group's ICFR based on our audit. We conducted our audit in accordance with KSA. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective ICFR was maintained in all material respects.

An audit of the ICFR involves performing procedures to obtain audit evidence as to whether a material weakness exists. The procedures selected depend on the auditor's judgment, including the assessment of the risks that a material weakness exists. An audit also includes testing and evaluating the design and operation of ICFR based on obtaining an understanding of ICFR and the assessed risk.

ICFR definition and inherent limitations

A company's ICFR is implemented by those charged with governance, management, and other employees and is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with International Financial Reporting Standards as adopted by the Republic of Korea ("KIFRS"). A company's ICFR includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with KIFRS, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, ICFR may not prevent or detect material misstatements of the consolidated financial statements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that ICFR may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The engagement partner on the audit resulting in this independent auditor's report is Jee hoon Kim.



March 20, 2024

This audit report is effective as of March 20, 2024, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditors' report date to the time this report is used. Such events and circumstances could significantly affect the Group's ICFR and may result in modifications to this report.

Management's Report on the Effectiveness of Internal Control over Financial Reporting for Consolidation Purposes

To the Shareholders, Board of Directors and Audit Committee of Doosan Corporation.

We, as the Chief Executive Officer and the Internal Accounting Manager of Doosan Corporation (the "Company") and its subsidiaries (collectively referred to as the "Group"), assessed the operating status of the Group's Internal Control over Financial Reporting ("ICFR") for consolidation purposes for the year ended December 31, 2023.

The design and operation of ICFR for consolidation purposes are the responsibilities of the Group's management, including the Chief Executive Officer and the Internal Accounting Manager.

We evaluated the effectiveness of the design and operation of the Group's ICFR for consolidation purposes to prevent and detect errors or fraud which could result in misstatements in financial statements to ensure preparation and disclosure of reliable financial information.

We used the 'Conceptual Framework for Design and Operation of Internal Control over Financial Reporting' established by the Operating Committee of Internal Control over Financial Reporting in Korea (the "ICFR Committee") as the criteria for the design and operation of the Group's ICFR for consolidation purposes. Additionally, we conducted our evaluation of ICFR for consolidation purposes based on the 'Management Guideline for Evaluating and Reporting Effectiveness of Internal Control over Financial Reporting' established by the ICFR Committee.

Based on our assessment, we conclude that the Group's ICFR for consolidation purposes is designed and operating effectively as of December 31, 2023, in all material respects, in accordance with the 'Conceptual Framework for Design and Operation of Internal Control over Financial Reporting'.

We certify that this report does not contain any untrue statement of a fact or omit any facts necessary to present herein. We also certify that this report does not contain or present any statements which might cause material misunderstandings for the readers, and we have reviewed and verified this report with sufficient care.

February 26, 2024

Internal Accounting Manager

Baek Seung-am



Chief Executive Officer

Moon Hong-sung

