

POSCO INTERNATIONAL CORPORATION
AND ITS SUBSIDIARIES

Consolidated Financial Statements

December 31, 2023

(With Independent Auditors' Report Thereon)

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Independent Auditors' Report

Based on a report originally issued in Korean

To the Shareholders and Board of Directors of
POSCO International Corporation:

Opinion

We have audited the consolidated financial statements of POSCO International Corporation and its subsidiaries ("the Group"), which comprise the statement of financial position as of December 31, 2023, the statements of comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising summary of material accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2023, its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with Korean International Financial Reporting Standards ("K-IFRS").

We also have audited, in accordance with Korean Standards on Auditing ("KSAs"), the Group's internal control over financial reporting ("ICFR") for consolidation purposes as of December 31, 2023 based on the criteria established in Conceptual Framework for Designing and Operating Internal Control over Financial Reporting issued by the Operating Committee of Internal Control over Financial Reporting in the Republic of Korea, and our report dated March 12, 2024 expressed an unmodified opinion on the effectiveness of the Group's internal control over financial reporting for consolidation purposes.

Basis for Opinion

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

Emphasis of Matter

Without qualifying our opinion, we draw attention to following:

As described in Notes 1 and 38 of the consolidated financial statements, the Group merged POSCO Energy Co., Ltd. as of January 1, 2023.



Key Audit Matter

Key audit matter is a matter that, in our professional judgment, was of most significance in our audit of the consolidated financial statements as of and for the year ended December 31, 2023. This matter was 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 this matter.

Timing of revenue recognition related to overseas sales

As described in Note 3 to the consolidated financial statements, the export and multi-party transactions in overseas revenue stream accounts for 83% of the total sales of the Group. As the volume of these sales transactions is large and timing of revenue recognition varies by transaction conditions, we determined that there is a high risk of fraud in timing of revenue recognition and identified it as a significant risk.

The major audit procedures we have performed to address this key audit matter are as follows:

- Assessed the effectiveness of design and operation of the internal control process established by the Group in relation to the timing of revenue recognition; and
- Selected samples of transactions occurred during a specified period prior to and after December 31, 2023 and tested the timing of recognition by inspection of contracts, shipping documents, and others in relation to the selected samples.

Other matters

The consolidated financial statements of the Group as of and for the year ended December 31, 2022 were audited by another auditor who expressed an unmodified opinion on those financial statements on March 10, 2023.

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

The accompanying consolidated financial statements as of and for the years ended December 31, 2023 and 2022 have been translated into United States dollars solely for the convenience of the reader. We have audited the translation and, in our opinion, the consolidated financial statements expressed in Korean won have been translated into dollars on the basis set forth in note 2.1 to the consolidated financial statements.

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

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

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

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



Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with KSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances.
- Evaluate the appropriateness of accounting policies used in the preparation of the consolidated financial statements 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 auditors' report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.



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

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

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

The engagement partner on the audit resulting in this independent auditors' report is Yeon Jung Kim.

KPMG Samjong Accounting Corp.

Seoul, Korea

March 12, 2024

This report is effective as of March 12, 2024, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

POSCO International Corporation and its subsidiaries
Consolidated statements of financial position
As of December 31, 2023 and 2022

	Notes	Korean won in millions		U.S. dollar in thousands
		2023	2022	2023
Assets				
Current assets				
Cash and cash equivalents	4,31,32	₩ 1,136,863	₩ 1,297,706	\$ 881,699
Trade and other receivables, net	5,31,32	4,467,452	3,777,381	3,464,753
Other current financial assets	6,31,32	243,283	228,380	188,679
Derivative financial assets	20,31	37,331	52,832	28,952
Other current assets	7,19	226,315	204,934	175,520
Inventories, net	8	1,958,797	1,758,239	1,519,154
Assets held for sale		7,219	-	5,599
		<u>₩ 8,077,260</u>	<u>₩ 7,319,472</u>	<u>\$ 6,264,356</u>
Non-current assets				
Trade and other receivables, net	5,31,32	₩ 354,307	₩ 111,977	\$ 274,784
Other non-current financial assets	6,31,32	77,544	49,625	60,140
Long-term derivative financial assets	20,31	7,231	1,172	5,608
Investments in associates and joint ventures	9	970,602	434,167	752,755
Property, plant and equipment, net	10	3,704,943	1,560,752	2,873,385
Right-of-use assets, net	11	392,509	259,358	304,412
Intangible assets, net	12	2,331,918	2,236,253	1,808,530
Investment properties, net	13	141,623	140,149	109,836
Net defined benefit assets	17	63,402	45,215	49,172
Other non-current assets	7	37,126	3,027	28,793
Deferred tax assets	29	459,283	348,406	356,199
Current tax assets		-	6,764	-
		<u>₩ 8,540,488</u>	<u>₩ 5,196,865</u>	<u>\$ 6,623,614</u>
Total assets		<u>₩ 16,617,748</u>	<u>₩ 12,516,337</u>	<u>\$ 12,887,970</u>
Liabilities and equity				
Current liabilities				
Trade and other payables	11,14,31,32	₩ 3,069,417	₩ 2,646,663	\$ 2,380,500
Borrowings	15,31,32	1,830,502	1,998,370	1,419,654
Current portion of bonds	15,31,32	876,709	399,842	679,936
Derivative financial liabilities	20,31,32	44,584	57,587	34,577
Current provision	18,19	102,370	33,208	79,394
Other current liabilities	16	268,348	248,905	208,118
Current tax liabilities		83,549	102,865	64,797
		<u>₩ 6,275,479</u>	<u>₩ 5,487,440</u>	<u>\$ 4,866,976</u>
Non-current liabilities				
Trade and other payables	11,14,31,32	₩ 359,175	₩ 252,026	\$ 278,560
Borrowings	15,31,32	1,214,915	792,556	942,233
Bonds	15,31,32	1,864,114	1,363,593	1,445,722
Long-term derivative financial liabilities	20,31,32	8,358	2,117	6,482
Other non-current liabilities	16	81,655	95,542	63,328
Net defined benefit liabilities	17	8,823	7,903	6,843
Provisions	18,19,20	134,715	95,956	104,479
Deferred tax liabilities	29	45,752	21,077	35,483
		<u>₩ 3,717,507</u>	<u>₩ 2,630,770</u>	<u>\$ 2,883,130</u>
Total liabilities		<u>₩ 9,992,986</u>	<u>₩ 8,118,210</u>	<u>\$ 7,750,106</u>
Equity				
Issued capital	21	₩ 879,614	₩ 616,876	\$ 682,189
Capital surplus	21	1,826,225	540,527	1,416,337
Other components of equity	21	(24,961)	382	(19,359)
Accumulated other comprehensive income	6,23	85,700	16,974	66,465
Retained earnings	24	3,336,680	2,808,104	2,587,777
Equity attributable to equity holders of the parent		<u>₩ 6,103,258</u>	<u>₩ 3,982,863</u>	<u>\$ 4,733,409</u>
Non-controlling interests		521,504	415,264	404,455
Total equity		<u>₩ 6,624,762</u>	<u>₩ 4,398,127</u>	<u>\$ 5,137,864</u>
Total liabilities and equity		<u>₩ 16,617,748</u>	<u>₩ 12,516,337</u>	<u>\$ 12,887,970</u>

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

POSCO International Corporation and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2023 and 2022

	Notes	Korean won in millions		U.S. dollar in thousands
		2023	2022	2023
Sales	3	₩ 33,132,821	₩ 37,989,588	\$ 25,696,309
Cost of sales	25	(31,293,288)	(36,421,950)	(24,269,651)
Gross profit		₩ 1,839,533	₩ 1,567,638	\$ 1,426,658
Selling and administrative expenses	25,26	(676,421)	(665,131)	(524,601)
Operating profit	3	₩ 1,163,112	₩ 902,507	\$ 902,057
Share of profit in associates	9	111,769	77,680	86,683
Share of loss in associates	9	(20,461)	(2,767)	(15,869)
Finance income	27,31	1,282,275	2,405,334	994,474
Finance costs	27,31	(1,572,100)	(2,572,003)	(1,219,249)
Other income	28	21,417	19,002	16,610
Other expenses	28	(71,389)	(87,607)	(55,366)
Profit for the year before tax		₩ 914,623	₩ 742,146	\$ 709,340
Income tax expenses	29	(234,203)	(137,234)	(181,637)
Profit for the year		₩ 680,420	₩ 604,912	\$ 527,703
Other comprehensive income (loss):				
<i>Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods:</i>				
Equity adjustments in equity method	9,23,29	₩ 13,808	₩ 15,573	\$ 10,709
Gain on equity adjustments in equity method	9,23,29	263	524	204
Exchange difference on translation of foreign operations	23,29	29,419	(10,414)	22,816
Gain (loss) on valuation of derivatives	20,23	(990)	819	(768)
<i>Other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods:</i>				
Gain (loss) on valuation of equity instruments at FVOCI	23,29	₩ (4,348)	₩ 2,093	\$ (3,372)
Equity adjustments in equity method	9,23,29	21,584	(3,168)	16,740
Re-measurement net on defined benefit liabilities	17,29	(17,243)	17,760	(13,373)
Exchange differences on translation of foreign operations	23,29	7,854	(29,877)	6,091
Other comprehensive income (loss) for the year, net of tax		₩ 50,347	₩ (6,690)	\$ 39,047
Total comprehensive income for the year, net of tax		₩ 730,767	₩ 598,222	\$ 566,750
Profit for the year attributable to:				
Owners of the parent		₩ 673,886	₩ 589,750	\$ 522,635
Non-controlling interests		6,534	15,162	5,068
Total comprehensive income attributable to:				
Owners of the parent		₩ 716,976	₩ 612,487	\$ 556,054
Non-controlling interests		13,791	(14,265)	10,696
Earnings per share (Korean won and U.S. dollar):				
Basic	30	₩ 3,939	₩ 4,780	\$ 3.05
Diluted	30	₩ 3,939	₩ 4,780	\$ 3.05

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

POSCO International corporation and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2023 and 2022

	Korean won in millions										U.S. dollar in thousands
	Equity attributable to owners of the parent					Non-controlling interest					
	Issued capital	Capital surplus	Other components of equity	Hybrid bonds	Accumulated other comprehensive income (loss)	Retained earnings	Sub-total	Non-controlling interest	Total	Total	
As of January 1, 2022	₩ 616,876	₩ 558,242	₩ (8)	₩ -	₩ 18,776	₩ 2,292,516	₩ 3,486,402	₩ 25,738	₩ 3,512,140	₩ 2,723,856	
Profit for the year	-	-	-	-	-	589,750	589,750	15,162	604,912	469,142	
Net gain on valuation of equity instruments at FVOCI	-	-	-	-	2,093	-	2,093	-	2,093	1,623	
Equity adjustments in equity method	-	-	-	-	12,929	-	12,929	-	12,929	10,027	
Exchange differences on translation of foreign operations	-	-	-	-	(10,414)	-	(10,414)	(29,877)	(40,291)	(31,248)	
Re-measurement net on defined benefit liabilities	-	-	-	-	-	17,718	17,718	42	17,760	13,774	
Gain on valuation of derivatives	-	-	-	-	410	-	410	409	819	635	
Total comprehensive income	₩ -	₩ -	₩ -	₩ -	₩ 5,018	₩ 607,468	₩ 612,486	₩ (14,264)	₩ 598,222	₩ 463,953	
Dividends (DPS; ₩800)	-	-	-	-	-	(98,700)	(98,700)	-	(98,700)	(76,547)	
Dividends from subsidiaries	-	-	-	-	-	-	-	(3,065)	(3,065)	(2,377)	
Capital increase of subsidiaries	-	442	-	-	-	-	442	3,301	3,743	2,903	
Acquisition of business under common control	-	(18,157)	-	-	-	-	(18,157)	-	(18,157)	(14,082)	
Incorporation of subsidiaries	-	-	(417)	-	-	-	(417)	403,554	403,554	312,978	
Acquisition of treasury stock	-	-	807	-	-	-	807	-	(417)	(323)	
Stock compensation cost	-	-	-	-	-	-	-	-	807	626	
Reclassification arising from disposal of equity instruments at FVOCI	-	-	-	-	(6,820)	6,820	-	-	-	-	
As of December 31, 2022	₩ 616,876	₩ 540,527	₩ 382	₩ -	₩ 16,974	₩ 2,808,104	₩ 3,982,863	₩ 415,264	₩ 4,398,127	₩ 3,410,987	
As of January 1, 2023	₩ 616,876	₩ 540,527	₩ 382	₩ -	₩ 16,974	₩ 2,808,104	₩ 3,982,863	₩ 415,264	₩ 4,398,127	₩ 3,410,987	
Profit for the year	-	-	-	-	-	673,887	673,887	6,533	680,420	527,703	
Net loss on valuation of equity instruments at FVOCI	-	-	-	-	(4,348)	-	(4,348)	-	(4,348)	(3,372)	
Equity adjustments in equity method	-	-	-	-	35,655	-	35,655	-	35,655	27,652	
Exchange differences on translation of foreign operations	-	-	-	-	29,419	-	29,419	7,854	37,273	28,907	
Re-measurement net on defined benefit liabilities	-	-	-	-	(496)	(17,141)	(17,141)	(103)	(17,244)	(13,373)	
Loss on valuation of derivatives	-	-	-	-	-	(496)	(496)	(494)	(990)	(767)	
Total comprehensive income	₩ -	₩ -	₩ -	₩ -	₩ 60,230	₩ 656,746	₩ 716,976	₩ 13,790	₩ 730,766	₩ 566,750	
Dividends (DPS; ₩1,000)	-	-	-	-	-	(123,355)	(123,355)	-	(123,355)	(95,669)	
Dividends from subsidiaries, etc.	-	-	-	-	-	-	-	(13,058)	(13,058)	(10,127)	
Capital increase of subsidiaries	-	(2,130)	-	-	-	(2,130)	(2,130)	33,271	31,141	24,152	
Business combination	262,738	1,294,083	(28,836)	139,571	8,496	1,749,052	1,749,052	73,648	1,749,700	1,356,988	
Acquisition of subsidiary	-	(2,530)	(12,765)	-	-	(15,295)	(15,295)	(65,565)	(80,860)	(62,711)	
Disposal of subsidiaries	-	(3,517)	-	-	-	(3,517)	(3,517)	64,154	60,637	47,027	
Dividends from hybrid bonds	-	(429)	-	(139,571)	-	(4,815)	(4,815)	-	(4,815)	(3,735)	
Repayment of hybrid bonds	-	221	16,258	-	-	-	16,479	-	(140,000)	(108,578)	
Stock compensation cost	-	-	(24,961)	-	-	-	-	-	16,479	12,780	
As of December 31, 2023	₩ 879,614	₩ 1,826,225	₩ (24,961)	₩ -	₩ 85,700	₩ 3,336,680	₩ 6,103,258	₩ 521,504	₩ 6,624,762	₩ 5,137,864	

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

POSCO International corporation and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2023 and 2022

	Korean won in millions		U.S. dollar in thousands	
	2023	2022	2023	
Operating activities				
Profit for the year	₩ 680,420	₩ 604,912	\$ 527,703	
Reconciliation of profit for the year to net cash flows provided by operating activities:				
Changes in operating assets and liabilities:	1,088,939	680,713	\$ 844,532	
Interest received	(286,432)	265,903	\$ (222,144)	
Dividends received	69,594	17,173	53,974	
Interest paid	126,375	35,228	98,011	
Income tax paid	(306,030)	(142,374)	(237,343)	
	(296,430)	(228,269)	(229,898)	
Net cash flows provided by operating activities	₩ 1,076,436	₩ 1,233,286	\$ 834,835	
Investing activities				
Cash inflows from investing activities				
Decrease in short-term financial instruments	₩ 155,816	₩ 42,286	120,844	
Disposal of financial assets at FVPL	-	36	-	
Disposal of financial assets at FVOCI	-	11,000	-	
Disposal of investments in associates	2,430	-	1,885	
Decrease in guarantee deposits	1,653	874	1,282	
Decrease in long-term guarantee deposits	947	1,511	734	
Proceeds from disposal of property, plant and equipment	10,158	9,321	7,878	
Proceeds from disposal of intangible assets	1,604	70	1,244	
Proceeds from disposal of assets held for sale	2,035	-	1,578	
Decrease in short-term loans	5,642	53,362	4,376	
Decrease in long-term loans	5,404	7	4,191	
Decrease in long-term financial instruments	125	-	97	
Increase in guarantee deposits received	526	250	408	
Increase in long-term guarantee deposits received	100	-	78	
Decrease in long-term other receivables	-	1,264	-	
Decrease in finance lease receivables	57,469	54,614	44,570	
Decrease in other current assets	7	-	5	
Receipt of government subsidies	52	-	40	
Increase from merger	605,450	-	469,559	
Cash outflows from investing activities				
Increase in short-term financial instruments	(121,091)	(196,262)	(93,913)	
Acquisition of financial assets at FVOCI	-	(5,327)	-	
Acquisition of financial assets at FVPL	-	(4,832)	-	
Increase in guarantee deposits	(4,924)	(10,787)	(3,819)	
Increase in long-term guarantee deposits	(2,081)	(4,585)	(1,614)	
Increase in short-term loans	(12,845)	(459)	(9,962)	
Increase in long-term loans	-	(56)	-	
Increase in long-term financial instruments	(579)	(260)	(449)	
Acquisition of property, plant and equipment	(462,382)	(262,750)	(358,602)	
Acquisition of intangible assets	(265,777)	(368,463)	(206,125)	
Decrease in guarantee deposits received	(1,299)	(565)	(1,007)	
Increase in long-term other receivables	(5,568)	(32)	(4,318)	
Decrease in cash flows from business transfer	-	(24,806)	-	
Decrease in cash flows from change in scope of consolidation	-	(761,093)	-	
Net cash flows used in investing activities	₩ (27,128)	₩ (1,465,682)	\$ (21,040)	

(Continued)

POSCO International corporation and its subsidiaries
Consolidated statements of cash flows (cont'd)
for the years ended December 31, 2023 and 2022

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Financing activities			
Cash inflows from financing activities			
Net increase in short-term borrowings	₩ -	₩ 481,308	\$ -
Increase in long-term borrowings	146,694	633,021	113,769
Issuance of bonds	398,614	606,258	309,147
Paid-in capital increase of subsidiaries	31,141	407,297	24,152
Disposal of subsidiaries	60,637	-	47,027
Others	20	-	16
Cash outflows from financing activities			
Net decrease in short-term borrowings	(344,818)	-	(267,425)
Repayment of current Portion of long-term borrowings	(467,918)	(520,876)	(362,896)
Repayment of long-term borrowings	(5,406)	-	(4,193)
Redemption of current Portion of bonds	(600,000)	(431,824)	(465,333)
Payment of lease liabilities	(91,511)	(94,217)	(70,972)
Repayment of hybrid bonds	(140,000)	-	(108,578)
Dividends paid	(140,314)	(101,765)	(108,821)
Acquisition of treasury stock	-	(417)	-
Additional acquisition of subsidiary stocks	(69,553)	-	(53,942)
Settlement of derivatives	(324)	-	(251)
Others	(2,635)	-	(2,044)
Net cash flows provided by (used in) financing activities	₩ (1,225,373)	₩ 978,785	\$ (950,344)
Net increase (decrease) in cash and cash equivalents	₩ (176,065)	₩ 746,389	\$ (136,549)
Cash and cash equivalents at January 1	1,297,706	521,160	1,006,442
Net foreign exchange difference	15,222	30,157	11,805
Cash and cash equivalents at December 31	₩ 1,136,863	₩ 1,297,706	\$ 881,698

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

1. Corporate information

1.1 The parent company

POSCO International Corporation (the “Company”) was incorporated on December 27, 2000 as a result of a spin-off of the trading segment of Daewoo Corporation.

The Company has listed its shares on the Korea Exchange since March 23, 2001. The Company’s issued capital as of December 31, 2023 amounts to ₩879,614 million. The Company merged POSCO Energy Co., Ltd. as of January 1, 2023 as the base date for the merger (see note 37).

The Company engages in various business activities, such as providing international trade, export agency services, intermediary trading, manufacturing, distribution, natural resource development, lease and electric power service. The primary products sold by the Company include various industrial grade steel, metals, chemicals, auto parts, machinery, ships, plants, electronics, special materials, grain and petroleum. In addition, it has and operates an LNG combined thermal power generation facility (with 3,412MW generation capacity) consisting of 13 gas turbines and 7 steam turbines located in Incheon, and operates 5 LNG storage tanks with a storage capacity of 730,000 kℓ at Gwangyang National Industrial Complex.

As of December 31, 2023, POSCO Holdings Inc. is the largest shareholder of the Company, and it has an effective stake of 73.1%.

1.2 Consolidated subsidiaries

Subsidiaries	Business	Number of shares	Country of domicile	Equity ownership (%)	
				2023	2022
POSCO INTERNATIONAL AMERICA CORP.	Trading	555,000	USA	100	100
POSCO INTERNATIONAL DEUTSCHLAND GMBH	Trading	-	Germany	100	100
POSCO INTERNATIONAL JAPAN CORP.	Trading	209,600	Japan	100	100
POSCO INTERNATIONAL SINGAPORE PTE. LTD.	Trading	3,500,000	Singapore	100	100
POSCO INTERNATIONAL ITALIA S.R.L.	Trading	-	Italy	100	100
POSCO INTERNATIONAL (CHINA) CO., LTD.	Trading	-	China	100	100
POSCO INTERNATIONAL MYANMAR CO., LTD.	Trading	493,240	Myanmar	100	100
POSCO INTERNATIONAL MEXICO S.A. DE C.V.	Trading	53,078	Mexico	100	100
POSCO INTERNATIONAL MALAYSIA SDN. BHD.	Trading	6,091,002	Malaysia	100	100
POSCO INTERNATIONAL SHANGHAI CO., LTD.	Trading	-	China	100	100
DAEWOO INTERNATIONAL SHANGHAI WAIGAOQIAO CO., LTD.	Trading	-	China	100	100
POSCO INTERNATIONAL INDIA PVT., LTD.	Trading	8,940,000	India	100	100
POSCO INTERNATIONAL VIETNAM CO., LTD.	Trading	-	Vietnam	100	100
POSCO INTERNATIONAL UKRAINE LLC.	Trading	-	Ukraine	100	100
POSCO INTERNATIONAL (THAILAND) CO., LTD.	Trading	1,510,000	Thailand	100	100
POSCO INTERNATIONAL INDONESIA	Trading	112,800	Indonesia	100	100
POSCO SOUTH EAST ASIA PTE. LTD.	Trading	1,020,000	Singapore	100	100
POSCO MOBILITY SOLUTION CO., LTD.	Steel manufacturing	1,000,000	Korea	100	100
POSCO INTERNATIONAL TEXTILE LLC.	Cotton	-	Uzbekistan	100	100
POSCO INTERNATIONAL AUSTRALIA HOLDINGS PTY. LTD. (*1)	Natural resource development	119,676,667	Australia	100	100
PI AAPC CORP.	Steel manufacturing	5,000	USA	100	100
PT. BIO INTI AGRINDO	Natural resource development	496,333	Indonesia	85	85
BRASIL SAOPAULO STEEL PROCESSING CENTER	Steel manufacturing	-	Brazil	51	51
POSCO INTERNATIONAL POWER (PNGLAE) LTD.	Service	36,239,782	Papua New Guinea	100	100
POHANG SRDC CO., LTD.	Steel manufacturing	909,979	Korea	51	51
GOLDEN LACE POSCO INTERNATIONAL CO., LTD.	Grain crop/Wholesales	60,000	Myanmar	60	60
POSCO INTERNATIONAL GLOBAL DEVELOPMENT PTE. LTD.	Hotel	254,117,647	Singapore	75	75
POSCO INTERNATIONAL AMARA CO., LTD.	Hotel	680,000	Myanmar	64	64
PT POSCO INTERNATIONAL E&P INDONESIA (*5)	Natural resource development	21,535	Indonesia	100	-
POSCO TMC INDIA PVT. LTD.	Steel manufacturing	876,041	India	74	74
GRAIN TERMINAL HOLDING PTE. LTD. (*6)	Grain	75	Singapore	75	75
MYKOLAIV MILLING WORKS PJSC	Grain	-	Ukraine	75	75
Yuzhnaya Stevedoring Company Limited LLC.	Grain	-	Ukraine	75	75
SUZHOU POSCO-CORE TECHNOLOGY CO., LTD.	Steel manufacturing	-	China	72	72

1.2 Consolidated subsidiaries (cont'd)

Subsidiaries	Business	Number of shares	Country of domicile	Equity ownership (%)	
				2023	2022
POSCO INTERNATIONAL E&P MALAYSIA SDN. BHD.	Natural resource development	39,746,353	Malaysia	100	100
AGPA PTE. LTD.	Grain	92,388,487	Singapore	100	100
SENEX HOLDINGS PTY LTD. (*2) (*3)	Natural resource development	445,641,504	Australia	50	50
POSCO INTERNATIONAL MEXICO E-MOBILITY S.A DE C.V.	Steel manufacturing	1,804,383	Mexico	100	100
ESTEEL4U CO., LTD.	Steel manufacturing	588,200	Korea	61	61
PT. KRAKATAU POSCO ENERGY (*4)	By-product combined power generation	45,705,000	Indonesia	55	-
TANCHEON E&E CO., LTD. (*4)	Heat supply	4,300,000	Korea	100	-
Korea Fuel Cell Co., Ltd. (*4)	Maintenance of fuel cell business facilities	10,000,000	Korea	100	-
Shinan Green Energy Co., Ltd. (*4)	Wind power generation	45,517,744	Korea	55	-
NEH Co., Ltd. (*4)	LNG Terminal operation	5,290,165	Korea	100	-
PT AGPA Refinery Complex (*5)	Oil and fat manufacturing	490,876	Indonesia	60	-
POSCO MOBILITY SOLUTION POLAND Sp. z o.o. (*5)	Steel manufacturing	63,200	Poland	100	-
POSCO INTERNATIONAL E&P USA Inc. (*5)	Natural resource development	1,000	USA	100	-

(*1) POSCO INTERNATIONAL AUSTRALIA HOLDINGS PTY. LTD. is the holding company that has 100% ownership in POSCO INTERNATIONAL NARRABRI INVESTMENT PTY. LTD. and POSCO INTERNATIONAL AUSTRALIA PTY. LTD.

(*2) SENEX HOLDINGS PTY LTD. includes 22 subsidiaries including Senex Energy Limited.

(*3) As of December 31, 2023, the ownership ratio is 50.1%, it is classified as a subsidiary due to obtaining control of the entity in accordance with the shareholders' agreement.

(*4) As POSCO Energy Co., Ltd.'s business unit was merged for the year ended December 31, 2023, these companies were incorporated into the subsidiaries. As of the business combination, the shares of PT. KRAKATAU POSCO ENERGY and NEH Co., Ltd. were 90% and 50%, respectively, and the share ratio changed due to equity transactions with non-controlling shareholders for the year ended December 31, 2023.

(*5) The entities were newly incorporated for the year ended December 31, 2023.

(*6) Put options for redemption have been exercised for shares held by non-controlling shareholders for the year ended December 31, 2023 (see note 20).

1.3 Summarized financial information of the subsidiaries

Summarized financial information of the subsidiaries as of and for the year ended December 31, 2023 is as follows (Korean won in millions):

Subsidiaries	Assets	Liabilities	Equity	Sales	Net profit(loss)
POSCO INTERNATIONAL AMERICA CORP.	₩ 629,533	₩ 473,572	₩ 155,961	₩ 2,282,133	₩ 29,648
POSCO INTERNATIONAL DEUTSCHLAND GMBH	400,762	384,113	16,649	946,974	3,413
POSCO INTERNATIONAL JAPAN CORP.	872,226	744,064	128,162	2,939,318	27,160
POSCO INTERNATIONAL SINGAPORE PTE. LTD.	294,527	280,090	14,437	3,025,822	7,452
POSCO INTERNATIONAL ITALIA S.R.L.	226,148	209,374	16,774	777,756	1,498
POSCO INTERNATIONAL (CHINA) CO., LTD.	59,250	31,770	27,480	159,002	1,298
POSCO INTERNATIONAL MYANMAR CO., LTD	1,363	891	472	287	3
POSCO INTERNATIONAL MEXICO S.A. DE C.V.	192,303	151,997	40,306	657,129	13,002
POSCO INTERNATIONAL MALAYSIA SDN. BHD.	10,353	6,349	4,004	129,100	1,096
POSCO INTERNATIONAL INDIA PVT., LTD.	11,952	18,603	(6,651)	3,793	(1,992)
POSCO INTERNATIONAL VIETNAM CO., LTD.	26,890	18,989	7,901	239,564	493
POSCO SOUTH EAST ASIA PTE. LTD.	7,841	15,341	(7,500)	-	(634)
POSCO INTERNATIONAL UKRAINE LLC.	3,746	4,494	(748)	882	13
POSCO INTERNATIONAL (THAILAND) CO., LTD.	33,387	19,909	13,478	159,243	2,172
PT POSCO INTERNATIONAL INDONESIA	24,149	8,392	15,757	76,034	3,894

1.3 Summarized financial information of the subsidiaries (cont'd)

Subsidiaries	Assets	Liabilities	Equity	Sales	Net profit(loss)
DAEWOO INTERNATIONAL SHANGHAI WAIGAOQIAO CO.,LTD.	9,105	7,275	1,830	93,639	1,221
POSCO INTERNATIONAL SHANGHAI CO., LTD.	59,535	49,749	9,786	240,014	17
POSCO INTERNATIONAL TEXTILE LLC.	125,316	46,185	79,131	103,198	(29,233)
POSCO INTERNATIONAL AUSTRALIA HOLDINGS PTY. LTD.	99,023	11,121	87,902	45,024	12,499
PT. BIO INTI AGRINDO	334,522	168,721	165,801	213,784	50,740
BRASIL SAOPAULO STEEL PROCESSING CENTER	3,211	34,363	(31,152)	-	(1,548)
POSCO INTERNATIONAL POWER (PNGLAE) LTD.	67,370	23,410	43,960	38,942	9,046
POHANG SRDC CO., LTD.	14,316	4,635	9,681	6,895	190
GOLDEN LACE POSCO INTERNATIONAL CO., LTD.	22,090	24,131	(2,041)	36,328	497
POSCO INTERNATIONAL GLOBAL DEVELOPMENT PTE. LTD.	266,728	265,498	1,230	-	(18,294)
POSCO INTERNATIONAL AMARA CO., LTD.	306,106	400,125	(94,019)	33,288	(21,723)
POSCO TMC INDIA PVT. LTD.	17,296	10,612	6,684	46,191	2,063
GRAIN TERMINAL HOLDING PTE. LTD.	78,547	53,304	25,243	-	(207)
MYKOLAIV MILLING WORKS PJSC	48,857	72,310	(23,453)	462	(10,075)
Yuzhnaya Stevedoring Company Limited LLC.	17,921	585	17,336	-	(893)
POSCO MOBILITY SOLUTION CO., LTD.	1,036,342	448,319	588,023	1,432,416	(24,419)
SUZHOU POSCO-CORE TECHNOLOGY CO., LTD.	137,104	52,652	84,452	114,447	(5,945)
POSCO INTERNATIONAL E&P MALAYSIA SDN. BHD.	7,185	188	6,997	-	(2,201)
AGPA PTE. LTD.	108,304	285	108,019	-	30,005
SENEX HOLDINGS PTY LTD	1,623,493	802,259	821,234	246,493	14,239
POSCO INTERNATIONAL MEXICO E-MOBILITY S.A DE C.V.	100,690	43,200	57,490	464	(9,339)
ESTEEL4U CO., LTD.	136,414	132,431	3,983	511,601	(5,777)
PT AGPA Refinery Complex	70,371	483	69,888	-	(799)
POSCO MOBILITY SOLUTION POLAND Sp. z o.o.,	1,875	510	1,365	-	(693)
TANCHEON E&E CO., LTD.	27,493	845	26,648	7,159	3,130
Korea Fuel Cell Co., Ltd.	204,658	22,568	182,090	110,692	10,717
NEH Co., Ltd.	277,307	12,329	264,978	-	1,471
Shinan Green Energy Co., Ltd.	162,482	150,415	12,067	19,738	1,379
PT. KRAKATAU POSCO ENERGY	263,986	94,202	169,784	34,158	13,895
PT POSCO INTERNATIONAL E&P INDONESIA	1,624	124	1,500	-	(345)
POSCO INTERNATIONAL E&P USA Inc.	276	-	276	-	(677)

The financial information of PI AAPC CORP. is not presented as it is not material to the Group's consolidated financial statements.

2. Basis of preparation and summary of material accounting policies

2.1 Basis of preparation

The Company and its subsidiaries (collectively referred to as, the “Group”) prepares statutory financial statements in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (“KIFRS”) enacted by the *Act on External Audit of Stock Companies*.

The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments, debt and equity instruments that have been measured at fair value. The carrying values of assets and liabilities that are designated as hedged items in fair value is not recorded at amortized cost but recorded reflecting changes in the fair values attributable to the risks that are being hedged. The consolidated financial statements are presented in Korean won (KRW), and the financial statements are presented in Korean won in thousands while all of notes in Korean won in millions, except when otherwise indicated.

The accompanying consolidated financial statements as of and for the years ended December 31, 2023 and 2022 have been translated into United States dollars solely for the convenience of the reader. The exchange rate used was the won/dollar exchange rate on December 31, 2023 which is 1,289.40 won/dollar.

2.1.1 Basis of consolidation

The consolidated financial statements comprise the financial statements of the Group and its subsidiaries as of December 31 of each financial year. 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
- The ability to use its power over the investee to affect its returns

When the Group has less than a majority of the voting 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 between with the other vote holders
- Rights arising from other contractual arrangements
- The Group’s voting rights and potential voting rights

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

Transactions within the Group, related balances, income and expenses, and unrealized gains and losses are all removed when preparing the consolidated financial statements. On the other hand, the Group removes the share of the unrealized profits generated from transactions with equity-accounted investees, and unrealized losses are eliminated in the same way as unrealized profits if there is no evidence of asset impairment.

2.2 Summary of material accounting policies

2.2.1 Business combinations and Goodwill

The Group accounts for business combinations under the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. For each business combination, the acquirer measures the non-controlling interest in the acquiree at fair value or a proportionate share of the non-controlling interest in the acquiree's identifiable net assets. Acquisition-related costs are expensed when incurred.

2.2.2 Investment in associates and joint ventures

Joint arrangements in which two or more parties have joint control are classified as joint operations or joint ventures. Joint operators have rights and obligations regarding the assets and liabilities of the joint operation and recognize their share of the joint operation's assets, liabilities, revenues and expenses of the joint operation. Participants in a joint venture have the right to the net assets of the joint venture and apply the equity method.

2.2.3 Fair value measurement

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

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

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

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

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

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

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

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

For assets and liabilities that are recognized in the consolidated financial statements at fair value on a recurring basis, the Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization based on the lowest level input that is significant to the fair value measurement at each reporting date.

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

2.2.3 Fair value measurement (cont'd)

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

	Notes
Valuation methods, significant estimates and assumptions	2, 6 and 31
Quantitative disclosures of fair value measurement hierarchy	31
Biological assets for consumption	7
Investment properties	13
Financial instruments (including those carried at amortized cost)	6 and 31

2.2.4 Revenue from contracts with customers

Revenue from contracts with customers is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods or services.

2.2.4.1 Trade sector

(1) Classification and implementation of performance obligations

Performance obligations are identified in certain contracts with respect to (1) the sale of goods, and (2) transport services for the performance of their duties as part of their trade transactions with customers. The Group recognizes the transaction price allocated to these performance obligations as revenue upon completion of each performance obligation by applying the expected cost plus margin approach.

For the transactions of custom-made equipment, if the Group has no alternative use for assets created by fulfilling obligations and the Group has the enforceable right for the payment for the portion completed up to now, the revenue is recognized by the percentage-of-completion methods.

The Group provides guarantees for goods and services that are defective at the time of sale in accordance with the requirements of the law. Assurance type guarantees are accounted for in accordance with KIFRS 1037, 'Contingent Liabilities and Contingent Assets'. Guarantees of the types of services classified as separate performance obligations are not recognized.

(2) Variable consideration

If the consideration in a contract includes a variable amount, the Group estimates the amount of consideration to which it will be entitled in exchange for transferring the goods to the customer. The variable consideration is estimated at contract inception and is included in the transaction price only to the extent that it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved.

In the case of a contract in which a right of return exists, for goods that are expected to be returned, instead of revenue, the Group recognizes it as a refund liability. A right of goods returned and corresponding adjustment to cost of sales are also recognized. If the Group receives short-term advances from its customers, the practical expedient is used, and the Group does not adjust the promised amount of consideration for the effects of a significant financing component if it expects, at contract inception, that the period between the transfer of the promised good or service to the customer and when the customer pays for that good or service will be one year or less.

(3) Judgment on principal versus agent

The Group controls each good or service prior to providing the goods or services to the customer, taking into account the main responsibilities and obligation of fulfilling the commitments in the trade transaction with the customer, and right to determine prices. Therefore, the Group has generally concluded that it is the principal in its revenue arrangements, except for the agency services, in which sales commission is recognized as revenue.

2.2.4.2 Energy sector

The Group is engaged in the business of providing electricity sales, LNG test operation services, storage facility rental, LNG resale, and fuel cell facility manufacturing and maintenance services.

Product distribution contracts in some of the contracts of the energy transaction are not subject to the standard as the counterparties to the contract are not the "customers" as defined in KIFRS 1115. Revenue from gas sales is recognized when the control of goods is transferred.

(1) Classification and implementation of performance obligations

In the case of the power generation business, the identified performance obligation is a single performance obligation to provide electricity, and the Group recognizes revenue over the period for the provision of electricity, etc.

In the case of LNG test operation services, the Group identifies the performance obligations of providing LNG and providing services such as LNG loading and unloading. LNG loading and unloading fees are recognized as revenue when incurred, and for LNG sales overseas, revenue is recognized upon shipment, and domestically, upon completion of shipment and unloading.

In the case of leasing LNG storage facilities, performance obligations to provide services such as unloading, storage, and transmission of LNG imported by each customer are identified and over the period during which the service is provided, revenue is recognized for fixed costs based on storage capacity and variable costs based on LNG transmission volume.

Additionally, in the case of LNG resale, a single performance obligation to provide LNG is identified, and revenue is recognized when LNG is provided to the customer.

In the case of the obligation to manufacture and maintain the fuel cell facilities supplied by the Group, the customer simultaneously obtains and consumes the benefits provided by the entity's performance as it performs, and the Group's revenue is recognized over the contract period by applying the progress standard (output method).

(2) Variable consideration

The Group estimates variable considerations using an expected value method that it expects to better predict the consideration it will receive and recognizes revenue by including variable considerations in the transaction price only up to an amount that is highly likely not to reverse a significant portion of the cumulative revenue already recognized when the uncertainty associated with variable considerations is resolved later.

2.2.4.3 Others

The Group has a rental division in addition to the divisions described above, and the relevant goods or services are recognized as revenue at the time of transfer of control, and leases are recognized as revenue during the rental period.

2.2.5 Cash and cash equivalents

Cash and cash equivalents in the consolidated statement of financial position comprise cash at banks and on hand and short-term deposits with an original maturity of three months or less.

2.2.6 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.

2.2.6.1 Financial assets

(1) 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. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under KIFRS 1115.

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.

(2) Subsequent measurement

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

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

Financial assets at amortized cost (debt instruments)

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.

2.2.6.1 Financial assets (cont'd)

The Group's financial assets measured at amortized cost include cash and cash equivalents, trade receivables and other financial assets.

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 consolidated statement 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 elected 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 upon initial recognition designated at fair value through profit or loss or required at fair value. 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 consolidated statement of financial position at fair value with net changes in fair value recognized in profit or loss.

Derivatives and the listed equity investments that were not elected to classify to financial assets at fair value through OCI are included in this category. Dividends on the listed equity investments are recognized as profit or loss when the right is confirmed.

A derivative embedded in a hybrid contract 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 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.

2.2.6.1 Financial assets (cont'd)

(3) 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 statement of financial position) 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, 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.

(4) Impairment of financial assets

Disclosures related to impairment of financial assets are provided below:

- Disclosures for significant assumptions
- Debt instruments at fair value through OCI
- Trade receivables, including contract assets

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.

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

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

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

2.2.6.2 Financial liabilities

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

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

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

2.2.6.3 Offsetting of financial instruments

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

2.2.6.4 Derivative financial instruments and hedge accounting

(1) Initial recognition and subsequent measurement

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

(2) Fair value hedges

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

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.

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.

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

(3) Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss. 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 foreign currency contracts is recognized as other expense and the ineffective portion relating to commodity contracts is recognized in other operating income or expenses.

The Group designates only the spot element of forward contracts as a hedging instrument. The forward element is recognized in OCI and accumulated in a separate component of equity under cost of hedging reserve.

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 period. 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.

2.2.7 Inventories

Inventories are valued at the lower of cost and net realizable value. Acquisition costs for each inventory include purchase cost, conversion cost and other costs attributable to bringing the inventory to the location and condition. The unit cost of inventories is determined by the first-in-first-out method (Materials-in-transit) and the weighted average method (Finished goods and Work-in-process).

2.2.8 Non-current assets held for sale

The Group classifies non-current assets held for sale when non-current assets (or disposal groups) are expected to be mainly recovered through sale transactions or distribution rather than continued use, and when they are immediately available and highly likely to be sold.

2.2.9 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and/or accumulated impairment losses, if any. These costs include alternative costs that meet the asset recognition criteria and borrowing costs for long-term construction projects. If a major part of an item of property, plant and equipment needs to be replaced periodically, the Group recognizes that part as an individual asset and depreciates it over its useful life. In addition, if an asset meets the recognition criteria, such as comprehensive inspection costs, it is included in the carrying amount of the property, plant and equipment, and all repair and maintenance costs are reflected in profit or loss when incurred. The present value of the expenditure is included in the acquisition cost of the property, plant and equipment if the estimated cost of removing, dismantling, or restoring the property to its original state after the economic use is terminated meets the recognition criteria of the provisions.

Land among property, plant and equipment is not depreciated, and property, plant and equipment other than land is estimated by individual assets and then depreciated using a straight-line method over the useful life.

	Useful life (years)
Buildings	9 ~ 50
Machinery	4 ~ 25
Structures	5 ~ 40
Vehicles	4 ~ 5
Tools	4 ~ 15
Fixtures	4 ~ 10
Bearer plants	20

Property, plant and equipment is derecognized on disposal (i.e., the date the acquirer obtains control of the asset) or when future economic benefits are not expected through use or disposal. The gain or loss arising from the removal of property, plant and equipment is determined by the difference between the net selling amount and the carrying amount and is recognized in profit or loss when the asset is derecognized.

The depreciation method, residual value, and useful life of property, plant and equipment are reviewed at the end of each fiscal year and are accounted for as a change in accounting estimates if appropriate.

2.2.10 Investment properties

Investment property is measured at the acquisition cost added to the related transaction cost and includes alternative costs that meet the asset recognition criteria when incurred. However, the costs incurred in daily management activities are recognized as expenses when incurred. Subsequent to initial recognition, investment properties are stated at cost, net of accumulated depreciation and/or accumulated impairment losses.

The depreciation method, residual value and useful life of investment properties are the same as for property, plant and equipment.

2.2.11 Leases

2.2.11.1 The Group as a lessee

(1) Right-of-use assets

The Group recognizes the right-of-use asset at the inception of the lease (i.e., when the underlying asset is available). The right-of-use assets are measured at cost and the cost model is applied for subsequent measurement.

If ownership of the leased asset transfers to the Group at the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset.

Right-of-use assets are also subject to impairment and are described in the accounting policy for impairment of non-financial assets in Note 2.2.15.

(2) Lease liabilities

At the commencement date of the lease, the Group recognizes lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Group and payments of penalties for terminating the lease, if the lease term reflects the Group exercising the option to terminate.

In calculating the present value of lease payments, the Group uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable.

The Group's lease liabilities are included in the interest-bearing borrowings.

2.2.11.2 The Group as a lessor

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

2.2.12 Intangible assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is their fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses. Internally generated intangible assets, excluding development costs, are reflected in profit or loss in the period in which the expenditure is incurred.

Intangible assets are divided into intangible assets with finite useful lives and intangible assets with indefinite useful lives, and intangible assets with finite useful lives are amortized over the relevant useful life and are considered for impairment if an indication of impairment is identified. In addition, the useful life and amortization method is reviewed at least at the end of each fiscal year and is accounted for as a change in accounting estimates if changes are needed due to changes in the expected period of use or changes in the expected pattern of consumption of economic benefits. The amortization cost of an intangible asset is reflected in profit or loss as an expense cost item consistent with the function of intangible asset.

2.2.12 Intangible assets (cont'd)

On the other hand, intangible assets with indefinite useful lives are not amortized but are carrying out impairment testing individually or in the cash-generating unit each year. In addition, whether it is appropriate to apply indefinite useful lives to such intangible assets is reviewed each year and, if not, those are changed to finite useful lives in a forward-looking manner.

An intangible asset is derecognized when it is disposed of (i.e., when the acquirer obtains control of the asset) or when no future economic benefits are expected from use or disposal. The Group shall reflect the profit or loss due to the difference between the net selling amount and the carrying amount when the intangible asset is derecognized in profit or loss at the time of derecognition.

2.2.13 Exploration and evaluation assets, development assets, and mining rights

The Group engages in the development of natural resources either by entering into contracts for sharing the extracted natural resources or by acquiring interests in the related projects. Expenditures related to natural resources are recognized as exploration and evaluation assets, development assets or mining rights. The nature of these intangible assets is as follows:

2.2.13.1 Exploration and evaluation assets

Exploration and evaluation assets consist of expenditures for topographical and geophysical studies and drilling and appraisal of oil fields. These assets are reclassified into development assets when the reserves are proven successful.

2.2.13.2 Development assets

Development assets consist of expenditures for fields, construction of production facilities, and others. These development assets are reclassified as mining rights at the inception of the commercial production.

2.2.13.3 Mining rights

Mining rights (production fields) consist of expenditure for improving productivity, oil reservoir management for prediction of oil output and production optimization and increasing the return rate from crude oil. Mining rights are amortized using the unit of production method.

2.2.14 Biological assets

Consumable biological assets for are measured at fair value less costs to sell. The fair value of consumable biological assets is measured by taking into account the expected fruit yield during the evaluation period based on the purchase price of the crop disclosed by the state, and the change in fair value is recognized as sales for the year. Cash flows over the life cycle of consumable biological assets are determined by taking into account the estimated production of agricultural crops and the published prices and estimated cultivation costs of the region in the main market for the crop. For bearer biological assets, it is measured at acquisition cost less accumulated depreciation and accumulated impairment losses.

2.2.15 Impairment of non-financial assets

The Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists or an annual impairment test of the asset is required, the Group estimates the recoverable amount of the asset.

The value of use is assessed as the present value of the estimate of the expected future cash flows of the asset discounted at a pre-tax discount rate that reflects the time value of the currency and the market's assessment of the risk of the asset. Net fair value takes into consideration the latest transaction price. If no such transaction is identified, the decision is made using the appropriate evaluation model. These calculations use valuation multiples, market prices of listed shares, or other fair value indicators.

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

Impairment losses are reflected in profit or loss as a cost item consistent with the function of the impaired asset. However, if there is previously recognized revaluation surplus as an asset subject to the revaluation model, the impairment loss is offset with the revaluation surplus with the limit of the previous revaluation amount.

2.2.16 Foreign currency translation

The Group's consolidated financial statements are presented in Korean won, which is also the parent company's functional currency. Each entity in the Group determines its own functional currency and items included in the financial statements of each entity are measured using that functional currency. The Group uses the direct consolidation method and reclassifies gains and losses reflecting the amount according to use of the direct consolidation method to profit or loss when disposing of overseas operations.

2.2.16.1 Translation in overseas operations

Assets and liabilities of overseas business sites are converted into Korean won using the exchange rate as of the end of the reporting period, and income statement items are converted into Korean won using the average exchange rate of the current year, and the foreign exchange difference arising from such translation is recognized as a separate item of capital. On the other hand, the cumulative foreign exchange differences recognized in such capital are reflected in profit or loss at the time of disposal of the overseas operations.

2.2.17 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective assets. All other borrowing costs are expensed in the period they occur. Borrowing costs consist of interest and other costs incurred in relation to the borrowing of interest funds.

2.2.18 Government grants

Income-related grant is recognized as revenue according to systematic standards over the period necessary to respond to the related costs to be compensated with the grant, and asset-related grant is recognized as deferred income and the same amount is recognized as revenue each year for the useful life of the related assets.

When a non-monetary asset is received as a grant, the Group records the asset and grant as nominal amount and recognizes them as revenue in the income statement at a fixed amount over the estimated useful life of the related asset. The benefits of lower interest rates are recognized as additional government grant when loans with lower interest rates or similar support are provided.

2.2.19 Taxes

The Group is determining whether interest and penalties related to income taxes constitute income taxes. If they are income taxes, KIFRS 1012 'Income Taxes' is applied, and if they are not income taxes, KIFRS 1037 'Provisions, Contingent Liabilities and Contingent Assets' is applied.

2.2.20 Provisions and contingent liabilities

2.2.20.1 Provisions related to post-processing (restoration)

A provision related to post-processing is recognized as the acquisition cost of assets related to resource development, if the project is obliged to be restored at the end of the project. Post-processing costs are calculated as the present value of the expected cost to fulfill the obligation using future expected cash flows, and the future expected cash flows are measured at a pre-tax rate that reflects the inherent risks of the relevant post-processing. The estimated cost of post-processing is reviewed and adjusted at each reporting date, and changes in the estimated cost or the discount rate to be applied are either added to or deducted from the cost of the asset.

2.2.20 Provisions and contingent liabilities (cont'd)

2.2.20.2 Onerous contract

If the Group has entered into an onerous contract, the related present obligation is recognized and measured as a provision. Before recognizing a provision for an onerous contract, an impairment loss arising from the asset used to fulfill the onerous contract is recognized first.

An onerous contract is a contract in which the non-avoidable cost of fulfilling the contractual obligations exceeds the economic benefits expected to be received in that contract. The non-avoidable cost is the minimum net cost existing in the contract, which is the lower of the costs required to fulfill the contract and the compensation or penalty to be paid when the contract is not fulfilled.

2.2.21 Greenhouse gas emission rights

2.2.21.1 Greenhouse gas emission rights

Greenhouse gas emission rights consist of emission rights allocated free of charge and purchased emission rights from the government. Emission rights are recognized at cost by adding other costs that are directly related to acquisition and normally incurred to the purchase cost.

The Group holds emission rights for the purpose of fulfilling government submission obligations. Among them, emission rights with a submission date exceeding one year are classified as intangible assets, and emission rights that expire within one year are classified as current assets. Emission rights classified as intangible assets are book value after initial recognition minus the cumulative loss of impairment from cost, and emission rights held to obtain short-term gains from trading are measured at fair value at the end of each reporting period after acquisition, and changes in fair value are recognized as profit or loss.

The greenhouse gas emission rights are derecognized when they cannot be submitted to the government, sold, or used and no longer provide future economic benefits.

2.2.21.2 Emission liabilities

Emission liabilities are current obligations to emit greenhouse gases and submit emissions to the government, and are recognized when resources are likely to be leaked to fulfill the obligation and the amount required to fulfill the obligation can be reliably estimated. They are measured by adding the book value of the credits held for the relevant implementation year to be submitted to the government and the expenditure expected to be required to meet the obligations for emissions exceeding the number of credits held. Emission liabilities are derecognized when they are submitted to the government.

2.2.22 Business combinations under common control

Business combinations under common control are accounted for using the book value method. Assets acquired and liabilities assumed in a business combination are measured at the carrying amount in the consolidated financial statements of the top controlling company. In addition, the difference between the consideration transferred and the carrying amount of the net assets acquired is adjusted in capital surplus.

2.2.23 Operating segment

The Group divides its divisions into segments based on internal reporting data that is periodically reviewed by the top sales decision maker to make decisions about resources to be allocated to each segment and to evaluate the performance of each segment. As described in Note 3, there are two reporting segments, each of which is a strategic operating unit of the Group. Strategic operating units provide different products and services and are operated separately because each business unit requires different technologies and marketing strategies.

2.2.23 Operating segment (cont'd)

Segment information reported to CEO includes items directly attributable to the segment and items that can be reasonably allocated, and the segment's capital expenditures are the total costs incurred for the acquisition of tangible assets and intangible assets (excluding goodwill) during the reporting period.

2.3 Significant accounting judgments, estimates and assumptions

The preparation of the Group's financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent liabilities, as of the reporting date. However, uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of the asset or liability affected in future periods.

Other disclosures relating to the Group's exposure to risks and uncertainties are disclosed in Capital management (Note 32.1) and financial risk management (Note 32.2).

2.3.1 Accounting judgments

In the course of applying the accounting policies of the Group, the management's decisions that had the most significant impact on the amounts recognized in the financial statements are as follows:

2.3.1.1 Calculation of the lease term for contracts with options for extension and termination - accounting as a 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 lease agreements that include the option for extension and termination. The Group applies judgement when assessing whether it is probable whether it will exercise the option to extend or terminate a lease. In other words, all relevant facts and circumstances that create an economic incentive to exercise the extension option or not to exercise the termination option are taken into account. 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 (for example, significant lease improvements or significant customer customization of the leased asset).

all relevant facts and circumstances that create an economic incentive to exercise the extension option or not to exercise the termination option are taken into account.

2.3.1.1 Calculation of the lease term for contracts with options for extension and termination - accounting as a lessee (cont'd)

The Group includes the renewal period as part of the lease term for the lease of facilities and machinery with a short non-cancellable period (e.g., 3 to 5 years). If alternative assets are not readily available, it has a significant negative effect on production. Therefore, the Group typically exercises the option to extend the lease. The extended term for a lease of facilities and machinery with a longer non-cancellable term (e.g., 10 to 15 years) is not part of the lease term because it is not probably certain that the extension option will be exercised. In addition, the Group generally leases vehicles and transportation equipment for less than 5 years and does not exercise the option for extension, so the option for extension for leases of vehicles and transportation equipment is not included as part of the lease term. Furthermore, the term during which the termination option is applied is included as part of the lease term only if it is probable that it will not be exercised.

2.3.2 Accounting estimates and changes

Other key sources of uncertainty in important assumptions and estimates for the future as of the end of the reporting period that pose significant risks that could lead to significant adjustments to the carrying amounts of assets and liabilities within the following fiscal year are as follows. Assumptions and estimates are based on available variables at the time of preparation of financial statement. Assumptions on present and future conditions may change due to changes in the market or any conditions out of the control of the Group. When such changes occur, they are reflected in the assumption.

2.3.2.1 Impairment of non-financial assets

The Group assesses at each reporting date whether there is any indication that non-financial assets may be impaired. For goodwill and indefinite-lived intangibles, an impairment test is performed annually or if there is any indication of impairment. For other non-financial assets, an impairment test is performed when there is any indication that the carrying amount will not be recoverable. To calculate the value in use, the management shall estimate the expected future cash flows from the asset or the cash-generating unit and select an appropriate discount rate to calculate the present value of the expected cash flows.

2.3.2.2 Provision for expected credit losses of trade receivables and contract assets

The Group uses a provision matrix to calculate expected credit losses (ECL) for trade receivables and contract assets. The provision setting rate is based on the number of overdue days for a bundle of different customer segments (e.g., regional location, product type, customer type and credit rating, collateral or transaction credit insurance) with similar loss patterns.

The provision matrix is based on the Group's historical observed default rates. The Group will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate in the future which can lead to an increased number of defaults in the manufacturing sector, the historical default rates are adjusted. At every reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation between historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and of forecast economic conditions. The Group's historical credit loss experience and forecast of economic conditions is not representative of customer's actual default in the future.

2.3.2.3 Pension benefits

The cost and present value of the defined benefit obligation is determined using actuarial valuations. An actuarial valuation involves making various assumptions. It includes the determination of the discount rate, future salary growth rate, mortality rate and future pension increase rate. Due to the complexity of the valuation, the underlying assumptions and its long-term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. All assumptions are reviewed at each reporting date.

2.3.2.4 Fair value of financial instruments

Where the fair value of financial assets and financial liabilities recorded in the statement of financial position cannot be derived from active markets, they are determined 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 judgment is required in establishing fair values. The judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

2.3.2.5 Provisions for restoration

The Group accounts for the provisions for restoration related to resource development. This provision was calculated by applying the cost of removal and discount rates of resource development facilities based on management assumptions and estimates.

2.3.2.6 Lease - Calculation of the incremental borrowing interest rate

The Group cannot readily determine the implicit interest rate of the lease, so it uses the incremental borrowing rate to measure the lease liability. The incremental borrowing interest rate is the interest rate that the Group would have to pay to borrow the funds required to acquire assets of similar value to those of right-of-use assets with similar collateral over a similar period of time in a similar economic environment. Thus, the incremental borrowing interest rate reflects the items that “would have to pay”, which requires estimation when there is no observable rate available (for subsidiaries that do not enter into financing transactions) or when the incremental borrowing interest rate must be adjusted to reflect the lease conditions (for example, if the lease is not in a functional currency of the subsidiary).

The Group shall, if possible, estimate the incremental borrowing interest rate using observable inputs (such as market interest rates) when available and make certain entity-specific estimates (such as the subsidiary’s stand-alone credit rating).

2.4. New and amended standards adopted by the Group

The Group applied the following new and amended standards for the first time for the annual reporting period commencing on January 1, 2023:

2.4.1 *Disclosure of Accounting Policies - Amendments to KIFRS 1001*

Material accounting policies information (Accounting policy information is material if, when considered together with other information included in an entity’s financial statements, it can reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements) was defined and required disclosure.

The Group has applied the revised accounting policy disclosure (KIFRS 1001 ‘Presentation of Financial Statements’) from January 1, 2023. The amendments do not change the accounting policies themselves, but affect the accounting policy information disclosed in consolidated financial statements of the Group.

The amendments require disclosure of ‘material’ accounting policies rather than ‘significant’ accounting policies. In addition, they provide guidance on applying materiality to the disclosure of accounting policies, thereby providing company-specific accounting policy information that users of consolidated financial statements need to understand.

The management of the Group reviewed the accounting policies and updated the information on material accounting policies (2022: significant accounting policies) disclosed in Note 2 in accordance with these amendments.

2.4.2 Disclosure of valuation gains and losses on financial liabilities subject to exercise price adjustment conditions - Amendments to KIFRS 1001

If all or part of a financial instruments with a condition where the exercise price is adjusted according to changes in the issuer's stock price is classified as a financial liability, the book value of the financial liability and related profits and losses shall be disclosed. The amendments had no material impact on the Group's consolidated financial statements.

2.4.3 Definition of Accounting Estimates - Amendments to KIFRS 1008

The amendments clarify how accounting estimates are defined and distinguished from changes in accounting policies. The amendments had no material impact on the Group's consolidated financial statements.

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

The amendments add to a condition to the initial recognition exemption that the initial recognition exemption does not apply to transactions in which equal amounts of deductible and taxable temporary differences arise on initial recognition. The amendments had no material impact on the Group's consolidated financial statements.

2.4.5 KIFRS 1117 'Insurance Contracts'

KIFRS 1117 'Insurance Contracts' replaces KIFRS 1104 'Insurance Contracts'. KIFRS 1117 'Insurance Contracts' requires that all cash flows under the insurance contract be estimated, insurance liabilities are measured using a discount rate that reflects assumptions and risks at the time of reporting, and revenue is recognized on an accrual basis, reflecting the services (insurance coverage) provided to policyholders for each fiscal year. In addition, it requires that investment elements (cancellation/expiration refunds) paid to policyholders regardless of insurance cases be excluded from insurance income, and that information users can identify the source of profit or loss by separating insurance gains or losses and investment gains or losses. The new standards had no material impact on the Group's consolidated financial statements.

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

The amendments temporarily ease the accounting treatment of deferred tax arising from the enforcement of laws reflecting the Pillar 2 model rules for reforming international taxation of multinational companies and requires disclosure of related current corporate tax effects. The amendments had no material impact on the Group's consolidated financial statements.

2.5. New and amended standards not yet adopted by the Group

The amended accounting standards that have been issued but not yet effective for the annual reporting period commencing on January 1, 2023 which have not been early adopted by the Group are as follows:

2.5.1 Amendments to KIFRS 1001 Presentation of Financial Statements - Classification of Liabilities as Current or Non-current

The amendments to KIFRS 1001 clarify that the classification of liabilities as current or non-current should be based on rights that are in existence at the end of the reporting period and that the classification is unaffected by management's intentions or expectations about whether an entity will exercise its right to defer settlement of a liability. The amendments also introduce a definition of settlement to make clear that settlement includes the transfer to the counterparty of the entity's own equity instruments, however, it would be excluded if an option to settle the liability by the transfer of the entity's own equity instruments is recognized separately from the liability as an equity component of a compound financial instrument. In addition, agreements that the Group shall comply with after the end of the reporting period do not affect the classification of the corresponding liabilities, and If liabilities that must comply with commitments within 12 months after the reporting period are classified as non-current liabilities, information regarding the risk that the liabilities may be repaid within 12 months after the reporting period must be disclosed. The amendments are applied for annual periods beginning on or after January 1, 2024, with early application permitted. The Group is reviewing the impact of these amendments on its consolidated financial statements.

2.5. New and amended standards not yet adopted by the Group (cont'd)

2.5.2 Amendments to KIFRS 1007 'Statement of Cash Flows', and KIFRS 1107 'Financial Instruments: Presentation' - *Disclosure of information about supplier financing arrangements*

The amendments add to the disclosure objectives in KIFRS 1007 'Statement of Cash Flows', that information about supplier financing arrangements should be disclosed to enable users of consolidated financial statements to assess the impact of those arrangements on the Company's liabilities and cash flows. The amendments are applied for annual periods beginning on or after January 1, 2024, with early application permitted. The Group is reviewing the impact of these amendments on its consolidated financial statements.

2.5.3 Amendments to KIFRS 1116 'Leases' - *Lease liabilities arising from sale-and-leaseback transactions*

The amendments add requirements for the subsequent measurement of sale-and-leaseback transactions. They require the seller-lessee to calculate the 'lease payments' or 'revised lease payments' in a way that does not result in the seller-lessee recognizing any gain or loss for the rights of use that the seller-lessee continues to retain after the lease commences. The amendments are applied for annual periods beginning on or after January 1, 2024, with early application permitted. The Group is reviewing the impact of these amendments on its consolidated financial statements.

2.5.4 Amendments to KIFRS 1001 'Presentation of Financial Statements' - *Virtual asset disclosure*

The amendments add to disclosures when holding virtual assets, holding virtual assets on behalf of customers, and issuing virtual assets. The amendments are applied for annual periods beginning on or after January 1, 2024, with early application permitted. The Group is reviewing the impact of these amendments on its consolidated financial statements.

2.6 Approval of consolidated financial statements

The Group's consolidated financial statements were approved by the board of directors dated January 25, 2024, and will be finalized at the general shareholders' meeting on March 25, 2024.

3. Segment information

3.1 Operating segment

For the year ended December 31, 2023, the Group divided the segments provided for management's decision-making by enhancing merger synergies into two segments (global business and energy). As a result, the comparative financial information was restated into two segments. Accounting policies of each segment are the same as those of the Group mentioned in Note 2.

3.1.1 The financial performance of each segment for the years ended December 31, 2023 and 2022 is as follows:

	Korean won in millions				U.S. dollar in Thousands
	2023				2023
	Global	Energy	Consolidation adjustment	Total	Total
Sales	₩ 38,918,339	₩ 4,350,454	₩ -	₩ 43,268,793	\$ 33,557,308
Inter-segment sales	(10,056,795)	(79,177)	-	(10,135,972)	(7,860,999)
Net sales	28,861,544	4,271,277	-	33,132,821	25,696,309
Depreciation	102,557	435,482	-	538,039	417,279
Operating profit	512,902	659,441	(9,231)	1,163,112	902,057

	Korean won in millions				U.S. dollar in Thousands
	2022				2022
	Global	Energy	Consolidation adjustment	Total	Total
Sales	₩ 48,423,641	₩ 1,371,641	₩ -	₩ 49,795,282	\$ 38,618,956
Inter-segment sales	(11,805,694)	-	-	(11,805,694)	(9,155,959)
Net sales	36,617,947	1,371,641	-	37,989,588	29,462,997
Depreciation	97,550	303,009	-	400,559	310,655
Operating profit	521,485	366,734	14,288	902,507	699,943

3.1.2 The financial positions of each segment as of December 31, 2023 and 2022 are as follows:

	Korean won in millions				U.S. dollar in Thousands
	2023				2023
	Global	Energy	Consolidation adjustment	Total	Total
Total assets	₩ 11,946,719	₩ 8,695,133	₩ (4,483,387)	₩ 16,158,465	\$ 12,531,771
Total liabilities	6,381,726	3,291,907	(2,550,772)	7,122,861	5,524,167

	Korean won in millions				U.S. dollar in Thousands
	2022				2022
	Global	Energy	Consolidation adjustment	Total	Total
Total assets	₩ 13,153,801	₩ 2,667,204	₩ (3,659,837)	₩ 12,161,168	\$ 9,431,649
Total liabilities	8,158,412	475,024	(2,402,603)	6,230,833	4,832,351

3.1.3. reconciliation

Current taxes, deferred taxes and certain financial assets and financial liabilities are not allocated to individual segments as they are accounted for at the enterprise level.

3.1.3.1 The reconciliation of assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Segment operating assets	₩ 16,158,465	₩ 12,161,168	\$ 12,531,771
Current tax assets	-	6,763	-
Deferred tax assets	459,283	348,406	356,199
Total assets	₩ 16,617,748	₩ 12,516,337	\$ 12,887,970

3.1.3.2 The reconciliation of liabilities as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Segment operating liabilities	₩ 7,122,861	₩ 6,230,833	\$ 5,524,167
Current tax liabilities	83,549	102,866	64,797
Deferred tax liabilities	45,752	21,077	35,483
Current portion of bonds	876,709	399,841	679,936
Non-current bonds	1,864,115	1,363,593	1,445,723
Total liabilities	₩ 9,992,986	₩ 8,118,210	\$ 7,750,106

3.2 Revenue from the contract with customers

Details of classification of sales except for rental revenue from investment properties of ₩12,310 million (₩10,810 million in 2022) for the years ended December 31, 2023 and 2022 are as follows:

3.2.1 Sales categorization based on the geographical locations

	Korean won in millions			U.S. dollar in thousands
	2023			2023
	Total sales	Inter-Segment sales	Net sales	Net sales
Domestic	₩ 8,333,885	₩ (1,162,031)	₩ 7,171,854	\$ 5,562,164
Asia (excluding China)	18,820,584	(4,988,943)	13,831,641	10,727,192
China	3,621,686	(194,732)	3,426,954	2,657,790
North America	4,326,088	(1,903,385)	2,422,703	1,878,938
Europe	4,634,851	(1,687,914)	2,946,937	2,285,510
Others	3,519,389	(198,967)	3,320,422	2,575,168
Total sales	₩ 43,256,483	₩ (10,135,972)	₩ 33,120,511	\$ 25,686,762
U.S. dollar in thousands	\$ 33,547,761	\$ (7,860,999)	\$ 25,686,762	

	Korean won in millions			U.S. dollar in thousands
	2022			2022
	Total sales	Inter-Segment sales	Net sales	Net sales
Domestic	₩ 6,492,402	₩ (910,420)	₩ 5,581,982	\$ 4,329,131
Asia (excluding China)	23,680,062	(6,734,457)	16,945,605	13,142,241
China	4,920,999	(302,447)	4,618,552	3,581,939
North America	5,099,765	(1,896,700)	3,203,065	2,484,152
Europe	5,264,172	(1,799,790)	3,464,382	2,686,817
Others	4,327,072	(161,880)	4,165,192	3,230,333
Total sales	₩ 49,784,472	₩ (11,805,694)	₩ 37,978,778	\$ 29,454,613
U.S. dollar in thousands	\$ 38,610,572	\$ (9,155,959)	\$ 29,454,613	

3.2.2 Sales categorization based on the major product and services

	Korean won in millions	U.S. dollar in thousands
	2023	2023
Steel	₩ 33,332,558	\$ 25,851,216
Energy	4,350,454	3,374,014
Food material	5,572,313	4,321,633
Others	1,158	898
Total sales	₩ 43,256,483	\$ 33,547,761
Internal sales	(10,135,972)	(7,860,999)
Total	₩ 33,120,511	\$ 25,686,762

	Korean won in millions	U.S. dollar in thousands
	2022	2022
Steel	₩ 38,491,457	\$ 29,852,224
Energy	1,371,641	1,063,782
Food material	7,296,117	5,658,537
Others	2,625,257	2,036,029
Total sales	₩ 49,784,472	\$ 38,610,572
Internal sales	(11,805,694)	(9,155,959)
Total	₩ 37,978,778	\$ 29,454,613

3.2.3 Sales categorization based on occurrence

	Korean won in millions	U.S. dollar in thousands
	2023	2023
Triangular (*1)	₩ 23,393,031	\$ 18,142,571
Export	12,574,872	9,752,499
Domestic	7,288,580	5,652,691
Total sales	₩ 43,256,483	\$ 33,547,761
Internal sales	(10,135,972)	(7,860,999)
Net sales	₩ 33,120,511	\$ 25,686,762

	Korean won in millions	U.S. dollar in thousands
	2022	2022
Triangular (*1)	₩ 30,010,239	\$ 23,274,577
Export	14,142,605	10,968,361
Domestic	5,631,628	4,367,634
Total sales	₩ 49,784,472	\$ 38,610,572
Internal sales	(11,805,694)	(9,155,959)
Net sales	₩ 37,978,778	\$ 29,454,613

(*1) This is a type of sales where products are purchased from a supplier in a third country and sold to customers located oversea.

3.2.4 Sales categorization based on revenue recognition period

	Korean won in millions		U.S. dollar in thousands	
	2023		2023	
Temporary Sales	₩	39,481,253	\$	30,619,864
Period sales		3,775,230		2,927,897
Total sales	₩	43,256,483	\$	33,547,761
Internal sales		(10,135,972)		(7,860,999)
Net sales	₩	33,120,511	\$	25,686,762

	Korean won in millions		U.S. dollar in thousands	
	2022		2022	
Temporary Sales	₩	48,139,187	\$	37,334,564
Period sales		1,645,285		1,276,008
Total sales	₩	49,784,472	\$	38,610,572
Internal sales		(11,805,694)		(9,155,959)
Net sales	₩	37,978,778	\$	29,454,613

3.3 Information about key customers

There are no external customers accounting for more than 10% of the Group's sales for the year ended December 31, 2023 and 2022.

3.4 Contract balance

Details of contract assets and liabilities arising from revenue from contracts with customers for the year ended December 31, 2023 and 2022 are as follows:

		Korean won in millions				U.S. dollar in thousands	
		2023				2023	
		Beginning balance	Increase due to merger	Increase (Decrease)	Ending balance	Ending balance	
Contract assets	Due from customers - global	₩ 29,441	₩ -	₩ (3,993)	₩ 25,448	\$	19,736
Contract liabilities	Advances received - global	124,776	-	(17,931)	106,845		82,864
	Advances received - energy	-	1,800	(940)	860		667
	Long-term advances received - global	1,890	-	(1,890)	-		-
	Unearned revenues - global	68,315	-	(31,965)	36,350		28,191
	Unearned revenues - energy	-	11,534	(2,443)	9,091		7,051

		Korean won in millions				U.S. dollar in thousands	
		2022				2022	
		Beginning balance	Increase due to merger	Increase (Decrease)	Ending balance	Ending balance	
Contract assets	Due from customers - global	₩ 46,755	₩ -	₩ (17,314)	₩ 29,441	\$	22,833
Contract liabilities	Advances received - global	160,657	-	(33,991)	126,666		98,236
	Unearned revenues - global	77,516	-	(9,201)	68,315		52,982

4. Cash and cash equivalents

4.1 The Group's cash and cash equivalents are managed in the same amount in the consolidated statements of financial position and cash flows. Cash and cash equivalents as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Cash	₩ 5,269	₩ 2,773	\$ 4,086
Savings account and checking account	863,274	1,228,985	669,516
Other cash equivalents	268,320	65,948	208,097
Total	₩ 1,136,863	₩ 1,297,706	\$ 881,699

4.2 Restricted deposits

As of December 31, 2023 and 2022, the Group had ₩57,201 million (\$44,362 thousand) and ₩28,544 million (\$22,137 thousand), respectively, in cash and cash equivalents that were restricted in use due to financial agreements, collateral provisions and others.

5. Trade and other receivables

5.1 Trade and other receivables as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Current			
Trade receivables	₩ 4,174,528	₩ 3,545,815	\$ 3,237,574
Allowance for doubtful accounts	(61,704)	(65,776)	(47,855)
Accounts receivable	248,080	240,733	192,400
Allowance for doubtful accounts	(13,485)	(6,069)	(10,458)
Accrued income	71,994	627	55,835
Allowance for doubtful accounts	(3,576)	-	(2,773)
Guarantee deposits	16,609	14,530	12,881
Short-term loans	3,665	1,411	2,842
Current portion of lease bonds	29,438	46,109	22,831
Current portion of long-term loans	1,903	-	1,476
	₩ 4,467,452	₩ 3,777,380	\$ 3,464,753
Non-current			
Long-term trade receivables	22,398	8,606	17,371
Allowance for doubtful accounts	(16,766)	(6,491)	(13,003)
Long-term loans	7	1,819	5
Allowance for doubtful accounts	-	(502)	-
Long-term other receivables	140,324	137,954	108,829
Allowance for doubtful accounts	(93,291)	(91,229)	(72,352)
Long-term finance lease receivables	283,009	45,607	219,489
Long-term guarantee	18,680	16,212	14,487
Allowance for doubtful accounts	(54)	-	(42)
	₩ 354,307	₩ 111,976	\$ 274,784
	₩ 4,821,759	₩ 3,889,356	\$ 3,739,537

5.2 Changes in allowance for doubtful accounts related to trade receivables for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Beginning balance	₩ 72,267	₩ 52,591	\$ 56,047
Increase due to merger	31,960	25	24,787
Bad debt expenses(reversal)	(24,122)	25,460	(18,708)
Write-off	-	(1,106)	-
Foreign exchange translation loss(profit)	(1,539)	(6,213)	(1,194)
Others	(96)	1,510	(74)
Ending balance	₩ 78,470	₩ 72,267	\$ 60,858

5.3 Financial assets transferred but not derecognized

As of December 31, 2023 and 2022, the Group continues to recognize the book value of discounted trade receivables amounting to ₩98,704 million (\$76,550 thousand) and ₩167,709 million (\$130,067 thousand), respectively, and cash received through discounts was recognized as collateral borrowing.

The Group transferred the above trade receivables on the condition that the transferee has the right of recourse, and therefore continues to bear credit risks such as default by the debtor arising from ownership of the trade receivables even after the transfer. The fair values of the above receivables transferred and the related borrowings are not significantly different from their book values.

6. Other financial assets

6.1 Other current financial assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Financial assets at FVPL (*1)	₩ 134,915	₩ 134,507	\$ 104,634
Deposits in financial institutions	108,368	93,873	84,045
Total	₩ 243,283	₩ 228,380	\$ 188,679

(*1) The Group classifies assets with maturities exceeding three months among its constituent assets, including MMW, as financial assets at FVPL.

6.2 Other non-current financial assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Financial assets measured at amortized cost	₩ 3,001	₩ -	\$ 2,328
Financial assets at FVOCI (equity)	53,887	44,044	41,792
Financial assets at FVPL (long-term investment)	1,782	467	1,382
Financial assets at FVPL (other securities)	4,849	4,861	3,761
Deposits in financial institutions	14,025	253	10,877
Total	₩ 77,544	₩ 49,625	\$ 60,140

6.2.1 Financial instruments at fair value

Details of financial instruments measured at fair value as of December 31, 2023 and 2022 are as follows:

	Number of shares	Equity ownership (%)	Korean won in million				U.S. Dollar in thousand
			Acquisition cost	2023		2022	2023
				Fair value or net asset value	book value	book value	book value
FVOCI financial assets(securities)							
Marketable securities							
Maruichi Steel Tube Ltd.	120,000	0.14	₩ 2,933	₩ 4,018	₩ 4,018	₩ 3,092	\$ 3,116
Kumho Petro Chemical Co., Ltd.	37,000	0.13	8,063	4,917	4,917	4,662	3,813
Northwest Copper Corp.	18,358,439	11.12	10,145	3,041	3,041	3,606	2,358
FuelCell Energy, Inc. (*1)	63,794	0.01	27,219	132	132	-	102
			₩ 48,360	₩ 12,108	₩ 12,108	₩ 11,360	\$ 9,389
Non-marketable securities							
Daewoo Songdo development	285	-	26	-	-	-	-
Jail Car Sales Corp.	401	-	3	3	3	2	2
DW Development Co., Ltd. - Engineering & Construction (Common Share)	140	-	2	2	2	1	2
DW Development Co., Ltd. - Engineering & Construction (Preferred Share) (*2)	-	-	-	-	-	1	-
N.I. CO., LTD. (*3)	-	50.00	3,099	-	-	-	-
The Korea Economic Daily	178,881	0.96	1,952	974	974	974	755
Hanmi ADM Co., Ltd.	10,000	12.57	1,000	1,000	1,000	1,000	776
S&S INC	8,149	0.17	113	113	113	113	88
POSCO Humans Co., Ltd.	122,000	4.56	630	630	630	454	489
ITI Co., Ltd. (*4)	111,111	10.00	5,000	-	-	5,000	-
BioaApplications Inc.	450,000	4.44	4,950	4,950	4,950	4,950	3,839
Down SF	607	1.26	-	-	-	-	-
FORCETEC	43,877	0.24	-	-	-	-	-
Hangang Steel	1,232	1.97	-	-	-	-	-
CJ PHILIPPINES, INC.	109,200	10.00	349	349	349	349	271
DONGJIN VIETNAM CO, LTD.	20,000	10.00	803	803	803	803	623
POSCO ASSAN TST STEEL INDUSTRY A.S.	24,096,526	10.00	15,460	11,951	11,951	11,951	9,269
TES MI s.r.o.	750	3.00	523	523	523	523	406
Kiho Co., Ltd. (*1)	200	10.00	377	377	377	377	292
K. K. KOREA KAMCHATKA CO., LTD.	328	10.00	-	-	-	-	-
KNOC INAM LTD.	10	10.00	-	-	-	-	-
Erae AMS Co., Ltd. (*5)	1,984,938	16.70	14,006	14,006	14,006	-	10,862
POSCO VIETNAM Processing center CO., LTD. (*1)	1,924,551	2.70	735	735	735	-	570
POSCO AAPC, LLC.	-	13.10	4,712	5,363	5,363	6,186	4,159
			₩ 53,740	₩ 41,779	₩ 41,779	₩ 32,684	\$ 32,403
FVPL financial assets(other securities)							
Korea Investment Private Placement KEXIM Carbon Credit Special Asset Fund No.1 (*6)	-	-	₩ -	₩ -	₩ -	₩ 17	\$ -
Convertible bonds of HARDT	-	-	4,832	4,832	4,832	4,832	3,747
Hansung Steel Co., Ltd.	-	-	12	12	12	12	9
Wind Power Cooperative (*1)	-	-	5	5	5	-	4
			₩ 4,849	₩ 4,849	₩ 4,849	₩ 4,861	\$ 3,760
FVPL financial assets(investments)							
POSCO Agricultural Products Export Fund	-	10.00	₩ 300	₩ 300	₩ 300	₩ 300	\$ 233
Korea Die & Mold Industry Cooperative	-	-	1	1	1	1	1
Korea Finance for Construction	-	-	1,211	1,211	1,211	166	939
PT POSCO INTERNATIONAL E&P INDONESIA (*7)	1	0.01	1	1	1	-	1
Posco Community Credit Cooperative (*1)	270,000	12.90	270	270	270	-	209
			₩ 1,783	₩ 1,783	₩ 1,783	₩ 467	\$ 1,383
			₩ 108,732	₩ 60,519	₩ 60,519	₩ 49,372	\$ 46,935

(*1) For the year ended December 31, 2023, the financial instruments were added to the Group through the merger.

(*2) The financial instrument was converted to common stock for the year ended December 31, 2023.

(*3) N.I.CO., LTD. is classified as FVOCI securities as it cannot exercise significant influence on major decision-making.

(*4) The Group recognized the decrease in fair value due to the increase in credit risk of financial instruments as other comprehensive income.

(*5) It was reclassified as FVOCI equity securities as it could not exercise significant influence due to the resignation of outside director.

(*6) For the year ended December 31, 2023, it was liquidated.

(*7) The Group newly invested the financial instruments for the year ended December 31, 2023.

6.2.1 Financial instruments at fair value (cont'd)

Maruichi Steel Pipe Ltd., Kumho Petro Chemical Co., Ltd., Northwest Copper Corp. and FuelCell Energy, Inc. which are listed stocks among financial assets at FVOCI, were valued at their closing prices as of December 31, 2023. As a result, ₩265 million, which was calculated by adding the deferred tax effect of ₩129 million and deducting the effect of the average tax rate change of ₩389 million from the valuation profit of ₩1,182 million and valuation loss of ₩657 million, was reflected in accumulated other comprehensive income.

6.3 Restricted deposits

As of December 31, 2023 and 2022, the Group has deposits of ₩41,644 million (\$32,297 thousand) and ₩26,108 million (\$20,248 thousand), respectively, in financial institutions that were restricted in use due to financial arrangements, collateral provisions and others.

7. Other assets

7.1 Other current assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Other current assets			
Advanced payments	₩ 70,977	₩ 91,482	\$ 55,047
Allowance for doubtful accounts	(13)	(1,777)	(10)
Prepaid expenses	124,925	87,185	96,886
Allowance for doubtful accounts	(2,371)	(2,139)	(1,839)
Emission rights	5,923	-	4,594
Others (*)	26,874	30,183	20,842
Total	₩ 226,315	₩ 204,934	\$ 175,520

(*) Consumable biological assets are included. Consumable biological assets are measured at fair value less costs to sell, and changes in fair value are recognized in profit or loss. Cash flows over the life cycle of biological assets are determined by taking into account the estimated production, market prices and estimated cultivation costs of agricultural crops.

	Korean won in millions			U.S. dollar in thousands
	2022	Increase	2023	2023
Fair value less costs to sell of consumable biological assets	₩ 11,821	₩ (830)	₩ 10,991	\$ 8,524

7.2 Other non-current assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Other non-current assets			
Long-term advanced payments	₩ 24,239	₩ 1,928	\$ 18,799
Allowance for doubtful accounts	(1,703)	-	(1,321)
Long-term prepaid expenses	14,503	1,099	11,248
Others	87	-	67
Total	₩ 37,126	₩ 3,027	\$ 28,793

8. Inventories

Inventories as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Merchandise	₩ 902,752	₩ 970,505	\$ 700,133
Valuation allowance	(4,470)	(15,654)	(3,467)
Finished goods	79,179	121,405	61,408
Valuation allowance	(6,668)	(10,118)	(5,171)
Semi-finished goods and Work-in-process	107,447	73,179	83,331
Valuation allowance	(9,657)	(2,950)	(7,490)
Raw materials	358,854	209,925	278,311
Valuation allowance	(40,681)	(1,364)	(31,550)
Materials-in-transit	530,979	390,495	411,803
Valuation allowance	-	(289)	-
Others	41,270	23,105	32,007
Valuation allowance	(208)	-	(161)
	₩ 1,958,797	₩ 1,758,239	\$ 1,519,154

The Group recognized loss on valuation of inventories in cost of sales of ₩3,009 million (\$2,334 thousand) and ₩21,611 million (\$16,761 thousand) for the years ended December 31, 2023 and 2022, respectively. In addition, the Group recognized reversal of loss on valuation of inventories in cost of sales of ₩17,390 million (\$13,487 thousand) and nil for the years ended December 31, 2023 and 2022, respectively.

9. Investments in associates and joint venture

9.1 Investments in associates and joint venture as of December 31, 2023 and 2022 are as follows:

	Nationality	Number of shares	Equity ownership (%)	Korean won in millions					U.S. dollar in thousand
				2023		2022		2023	
				Acquisition cost	Net asset value	Book value	Book value	Book value	
<Associates>									
Shanghai Lansheng Daewoo Corp	China	-	49.0	₩ 5,312	₩ 1,164	₩ -	₩ -	\$ -	
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	China	-	49.0	161	1,709	1,608	1,614	1,247	
KOREA LNG LTD.	Bermuda	2,400	20.0	-	58,759	58,759	29,124	45,571	
GENERAL MEDICINES CO., LTD.	Sudan	9,702	33.0	736	5,432	5,592	5,814	4,337	
POSCO IJPC	Indonesia	11,693,706	21.7	13,475	13,979	13,608	13,390	10,554	
DMSA/AMSA (*1) POSCO MEXICO PROCESSING CENTER HOLDING LLC. (*1)	Madagascar	-	3.9	346,880	16,567	16,572	23,740	12,852	
POSCO-ESDC LTD.	Slovenia	-	20.0	757	2,274	2,198	1,943	1,705	
GLOBAL KOMSCO DAEWOO LLC.	Uzbekistan	-	35.0	4,445	7,358	7,360	7,427	5,708	
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.	Hongkong	50,082	25.0	132,907	287,284	287,280	290,318	222,801	
Blue Ocean Recovery PEF No.1	Korea	333 units	27.5	33,300	34,159	-	-	-	
SPH Co., Ltd. (*5) YULCHON MEXICO S.A. DE C.V. (*1)	Korea	-	-	-	-	-	500	-	
Mexico	Mexico	18,267,000	6.2	1,349	1,397	1,765	1,500	1,369	
HYUNSON ENGINEERING & CONSTRUCTION (*1)	Algerie	279	4.9	281	274	264	24	205	
CURO CO., LTD. (*4)	Korea	-	-	-	-	-	687	-	
Korea	Korea	350,000	10.0	350	(993)	-	-	-	
Inco tech Inc. (*1) HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD. (*1) (*2)	China	-	10.0	11,488	9,165	8,779	8,943	6,809	
POSCO-MALAYSIA SDN.BHD. (*1)	Malaysia	24,128,000	13.6	7,905	176	5,992	5,445	4,647	
POSCO-ITPC S.P.A (*1) SHINPOONG DAEWOO PHARMA CO., LTD. (*1)	Italy	-	10.0	781	2,468	2,476	2,873	1,920	
Vietnam	Vietnam	-	3.4	343	707	722	677	560	
Erae cs Co.,Ltd. (*6) Gyeonggi Green Energy Co., Ltd. (*1) (*3)	Korea	-	-	-	-	-	20,163	-	
Korea	Korea	2,880,000	19.0	-	(6,582)	-	-	-	
Noeul Green Energy Co., Ltd. (*1) (*3)	Korea	120,000	10.0	-	(1,758)	-	-	-	
Samcheok Blue Power Co.,Ltd. (*3)	Korea	3,844,324	29.0	321,963	162,253	301,330	-	233,698	
AES Mong Duong Power CO., LTD. (*3)	Vietnam	30	30.0	218,385	217,011	230,699	-	178,920	
Mong Duong Finance Holdings B.V (*3)	Netherlands	30	30.0	4,768	1,546	2,271	-	1,761	
				₩ 1,119,590	₩ 835,061	₩ 967,500	₩ 434,167	\$ 750,350	
<Joint venture>									
ECO ENERGY SOLUTION CO., LTD. (*3)	Korea	600,000	50.0	2,982	3,102	3,102	-	2,405	
				₩ 1,122,572	₩ 838,163	₩ 970,602	₩ 434,167	\$ 752,755	

(*1) These securities are classified as investments in associates even though the Group's equity ownership is below 20%, as the Group is able to exercise significant influence over the investee.

(*2) For the years ended December 31, 2023, HUNCHUN POSCO HYUNDAI INTERNATIONAL LOGISTICS changed its name to HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD.

(*3) For the year ended December 31, 2023, the associates and joint venture were added to the Group through the merger.

(*4) For the year ended December 31, 2023, the associate was sold and gain on disposal of investments in associates amounting to ₩134 million (\$104 thousand) was recognized.

(*5) For the year ended December 31, 2023, the associate was liquidated and gain on disposal of investments in associates amounting to ₩909 million (\$705 thousand) was recognized.

(*6) It was reclassified as financial assets at FVOCI as it could not exercise significant influence due to the resignation of outside director, and loss on disposal of investments in associates amounting to ₩5,373 million (\$4,167 thousand) was recognized.

9.2 Changes in the carrying amounts of investments in associates for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023							
	Beginning balance	Business combination	Disposal	Alternative use	Share of the associate's profit (loss)	Dividends	Others	Ending balance
Shanghai Lansheng Daewoo Corp (*1)	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	1,614	-	-	-	-	-	(6)	1,608
KOREA LNG LTD. GENERAL MEDICINES CO., LTD.	29,124	-	-	-	21,060	(21,106)	29,681	58,759
POSCO IJPC	5,814	-	-	-	377	(428)	(171)	5,592
DMSA/AMSA	13,390	-	-	-	-	-	218	13,608
POSCO MEXICO PROCESSING CENTER HOLDING LLC.	23,740	-	-	-	(7,681)	-	513	16,572
POSCO-ESDC LTD.	19,985	-	-	-	(108)	-	348	20,225
GLOBAL KOMSCO DAEWOO LLC	1,943	-	-	-	225	(84)	114	2,198
SOUTH-EAST ASIA GAS PIPELINE COMPANY LTD	7,427	-	-	-	(200)	-	133	7,360
Blue Ocean Recovery PEF No. 1	290,318	-	-	-	50,339	(59,295)	5,918	287,280
SPH Co., Ltd.	-	-	-	-	-	-	-	-
YULCHON MEXICO S.A. DE C.V.	500	-	(500)	-	-	-	-	-
HYUNSON ENGINEERING & CONSTRUCTION	1,500	-	-	-	75	-	190	1,765
CURO CO., LTD.	24	-	-	-	239	-	1	264
Inco tech Inc. (*1)	687	-	(882)	-	33	-	162	-
HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD.	-	-	-	-	-	-	-	-
POSCO-MALAYSIA SDN.BHD.	8,943	-	-	-	(135)	-	(29)	8,779
POSCO-ITPC S.P.A SHINPOONG DAEWOO PHARMA CO., LTD.	5,445	-	-	-	552	-	(5)	5,992
Erae AMS Co., Ltd.	2,873	-	-	-	(552)	-	155	2,476
Gyeonggi Green Energy Co., Ltd. (*1)	677	-	-	-	53	-	(8)	722
Noeul Green Energy Co., Ltd. (*1)	20,163	-	-	(19,379)	(784)	-	-	-
Samcheok Blue Power Co., Ltd.	-	321,963	-	-	(10,542)	(10,020)	(71)	301,330
AES Mong Duong Power CO., LTD.	-	218,385	-	-	38,696	(33,839)	7,457	230,699
Mong Duong Finance Holdings B.V	-	4,768	-	-	(460)	(2,031)	(6)	2,271
ECO ENERGY SOLUTION CO., LTD.	-	2,982	-	-	120	-	-	3,102
	₩ 434,167	₩ 548,098	₩ (1,382)	₩ (19,379)	₩ 91,307	₩ (126,803)	₩ 44,594	₩ 970,602
U.S. dollar in thousand	\$ 336,720	\$ 425,080	\$ (1,072)	\$ (15,029)	\$ 70,814	\$ (98,343)	\$ 34,585	\$ 752,755

(*1) As of December 31, 2023, the cumulative unrecognized loss due to the discontinuing the use of the equity method was ₩15,720 million (\$12,191 thousand).

9.2 Changes in the carrying amounts of investments in associates for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions) (cont'd):

	2022															
	Beginning balance	Acquisition and transfer	Disposal	Share of the associate's profit (loss)	Reversal (impairment)	Dividends	Others	Ending balance								
Shanghai Lansheng Daewoo Corp (*1)	₩	-	₩	-	₩	-	₩	-	₩	-						
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.		1,659	-	-	-	-	(45)			1,614						
KOREA LNG LTD.		31,340	-	-	21,027	-	(21,161)	(2,082)		29,124						
GENERAL MEDICINES CO., LTD.		4,058	-	-	3,154	-	(400)	(998)		5,814						
POSCO IJPC		12,115	-	-	442	-	-	833		13,390						
DMSA/AMSA		24,144	-	-	(2,109)	-	-	1,705		23,740						
POSCO MEXICO PROCESSING CENTER HOLDING LLC		17,548	-	-	1,247	-	-	1,190		19,985						
POSCO-ESDC LTD.		1,758	-	-	249	-	(75)	11		1,943						
GLOBAL KOMSCO DAEWOO LLC		6,773	-	-	264	-	-	390		7,427						
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.		238,601	-	-	50,143	-	(14,541)	16,115		290,318						
Blue Ocean Recovery PEF No. 1		-	-	-	-	-	-	-		-						
SPH Co., Ltd.		500	-	-	-	-	-	-		500						
YULCHON MEXICO S.A. DE C.V.		1,132	-	-	269	-	-	99		1,500						
HYUNSON ENGINEERIN& CONSTRUCTION		468	-	-	(475)	-	-	31		24						
CURO CO., LTD.		682	-	-	-	-	-	5		687						
Inco tech Inc. (*1)		-	-	-	-	-	-	-		-						
KWANIKA COPPER CORP.		1,399	-	(7,784)	-	6,385	-	-		-						
HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD.		9,263	-	-	(74)	-	-	(246)		8,943						
POSCO-MALAYSIA SDN.BHD.		5,553	-	-	(109)	-	-	1		5,445						
POSCO-ITPC S.P.A		2,070	-	-	793	-	-	10		2,873						
SHINPOONG DAEWOO PHARMA CO., LTD.		571	-	-	92	-	-	14		677						
Erae AMS Co., Ltd.		-	20,163	-	-	-	-	-		20,163						
	₩	359,634	₩	20,163	₩	(7,784)	₩	74,913	₩	6,385	₩	(36,177)	₩	17,033	₩	434,167
U.S. dollar in thousand	\$	278,916	\$	15,638	\$	(6,037)	\$	58,099	\$	4,952	\$	(28,057)	\$	13,210	\$	336,721

(*1) As of December 31, 2022, the cumulative unrecognized loss due to the discontinuing the use of the equity method was ₩1,465 million (\$1,156 thousand).

9.3 Unrealized gains and losses reflected in gain or loss on investments in associates for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
GENERAL MEDICINES CO., LTD.	₩ (23)	₩ (9)	\$ (18)
GLOBAL KOMSCO DAEWOO LLC.	(2)	12	(2)
POSCO IJPC	(219)	(54)	(170)
POSCO-ITPC S.P.A	18	(39)	14
POSCO-MALAYSIA SDN. BHD.	(18)	28	(14)
POSCO MEXICO PROCESSING CENTER HOLDING LLC.	(53)	(395)	(41)
	<u>₩ (297)</u>	<u>₩ (457)</u>	<u>\$ (231)</u>

9.4 The summarized financial information of associates as of and for the year ended December 31, 2023 is as follows (Korean won in millions):

Subsidiaries	Assets	Liabilities	Sales	Net profit(loss)
Shanghai Lansheng Daewoo Corp	₩ 4,262	₩ 1,887	₩ -	₩ -
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	46,905	43,418	-	-
KOREA LNG LTD.	293,930	136	108,081	105,300
GENERAL MEDICINES CO., LTD.	22,065	5,603	4,657	1,213
POSCO IJPC	214,503	150,069	351,373	1,012
DMSA/AMSA	3,058,209	2,632,239	1,106,369	(197,482)
POSCO MEXICO PROCESSING CENTER HOLDING LLC.	521,303	415,819	934,346	(278)
POSCO-ESDC LTD.	15,927	4,558	32,228	1,127
GLOBAL KOMSCO DAEWOO LLC.	45,614	24,590	28,356	(563)
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.	1,758,765	611,483	434,358	201,031
Blue Ocean Recovery PEF No. 1	323,584	199,462	-	-
YULCHON MEXICO S.A. DE C.V.	38,768	16,366	30,914	1,197
HYUNSON ENGINEERING & CONSTRUCTION	276,836	271,236	154,079	4,881
Inco tech Inc.	59,370	69,299	-	(4,532)
HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD.	97,929	6,275	1,459	(1,354)
POSCO-MALAYSIA SDN.BHD.	60,512	59,224	123,599	4,182
POSCO-ITPC S.P.A	93,005	68,329	123,294	(5,710)
SHINPOONG DAEWOO PHARMA CO., LTD.	21,749	1,090	201,466	1,541
Gyeonggi Green Energy Co., Ltd.	180,176	214,822	80,630	(32,098)
Noeul Green Energy Co., Ltd.	89,844	107,428	24,463	1,364
Samcheok Blue Power Co., Ltd.	4,228,568	3,669,074	14,002	(28,880)
AES Mong Duong Power CO., LTD.	1,612,793	889,424	449,807	128,988
Mong Duong Finance Holdings B.V	815,107	809,954	-	(1,535)
ECO ENERGY SOLUTION CO., LTD.	8,869	2,664	5,609	240

10. Property, plant and equipment

10.1 Property, plant and equipment as of December 31, 2023 and 2022 are as follows:

	2023					U.S. dollar in thousands
	Korean won in millions					
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Government grants	Book value	
Land	₩ 554,862	₩ -	₩ (3,817)	₩ -	₩ 551,045	\$ 427,365
Buildings	1,004,768	(284,455)	(73,630)	(210)	646,473	501,375
Structures	885,918	(409,444)	(3,920)	-	472,554	366,491
Machinery	2,913,077	(1,441,074)	(79,146)	-	1,392,857	1,080,237
Vehicles	32,436	(20,059)	(131)	(24)	12,222	9,479
Tools	87,818	(60,428)	(305)	-	27,085	21,006
Fixtures	127,723	(95,530)	(3,106)	(1)	29,086	22,558
Construction-in-progress	462,595	-	(26,269)	(36)	436,290	338,367
Bearer plants	186,723	(49,392)	-	-	137,331	106,508
	₩ 6,255,920	₩ (2,360,382)	₩ (190,324)	₩ (271)	₩ 3,704,943	\$ 2,873,386
U.S. dollar in thousands	\$ 4,851,807	\$ (1,830,605)	\$ (147,607)	\$ (210)	\$ 2,873,385	\$ 2,228,467

	2022					U.S. dollar in thousands
	Korean won in millions					
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Government grants	Book value	
Land	₩ 161,718	₩ -	₩ (52)	₩ -	₩ 161,666	\$ 125,381
Buildings	693,416	(127,392)	(55,375)	-	510,649	396,036
Structures	94,904	(23,106)	-	-	71,798	55,683
Machinery	956,555	(502,691)	(6,135)	-	447,729	347,238
Vehicles	24,938	(16,157)	(67)	-	8,714	6,758
Tools	71,875	(45,442)	(30)	-	26,403	20,477
Fixtures	107,876	(77,501)	(2,116)	(13)	28,246	21,906
Construction-in-progress	189,449	-	(25,622)	-	163,827	127,057
Bearer plants	180,486	(38,766)	-	-	141,720	109,912
	₩ 2,481,217	₩ (831,055)	₩ (89,397)	₩ (13)	₩ 1,560,752	\$ 1,210,448
U.S. dollar in thousands	\$ 1,924,319	\$ (644,528)	\$ (69,332)	\$ (10)	\$ 1,210,449	\$ 938,768

10.2 Changes in the carrying amount of property, plant and equipment for the years ended December 31, 2023 and 2022 are as follows:

	2023									
	Korean won in millions									
	Beginning balance	Increase (Decrease) due to merger	Acquisition	Disposal, etc.	Depreciation	impairment	Others (*3)	Foreign exchange, etc.	Ending balance	
Land (*1)	₩ 161,666	₩ 358,647	₩ 36,443	₩ -	₩ -	₩ (3,765)	₩ (2,488)	₩ 542	₩ 551,045	
Buildings (*1)	510,649	90,163	23,249	(3,796)	(27,349)	(1,520)	47,143	8,144	646,683	
(Government grants)	-	(224)	-	-	14	-	-	-	(210)	
Structures	71,798	411,798	1,221	(580)	(29,270)	-	14,663	2,924	472,554	
Machinery (*1)	447,729	972,741	48,735	(9,215)	(127,582)	(3,086)	49,786	13,749	1,392,857	
Vehicles	8,714	209	4,697	(53)	(2,574)	-	1,082	171	12,246	
(Government grants)	-	(18)	(14)	-	8	-	-	-	(24)	
Tools	26,403	419	9,064	(344)	(14,115)	-	5,649	9	27,085	
Fixtures	28,259	3,243	8,366	(517)	(10,285)	-	(283)	304	29,087	
(Government grants)	(13)	-	-	-	12	-	-	-	(1)	
Construction-in-progress (*2)	163,827	77,894	330,757	-	-	(251)	(142,482)	6,545	436,290	
Bearer plants	141,720	-	-	-	(9,579)	-	220	4,970	137,331	
	₩ 1,560,752	₩ 1,914,872	₩ 462,518	₩ (14,505)	₩ (220,720)	₩ (8,622)	₩ (26,710)	₩ 37,358	₩ 3,704,943	
U.S. dollar in thousands	\$ 1,210,448	\$ 1,485,088	\$ 358,708	\$ (11,249)	\$ (171,180)	\$ (6,687)	\$ (20,715)	\$ 28,972	\$ 2,873,385	

(*1) For the year ended December 31, 2023, impairment loss of ₩8,371 million (\$6,492 thousand) was recognized according to the result of the impairment test on the building of the BSPC subsidiary in Brazil (book value of ₩8,604 million (\$6,673 thousand)) owned by the Group.

10.2 Changes in the carrying amount of property, plant and equipment for the years ended December 31, 2023 and 2022 are as follows: (cont'd)

(*2) For the year ended December 31, 2023, impairment loss was recognized for the amount below the book value according to the impairment test result of SENEX HOLDINGS PTY LTD, a subsidiary.

(*3) It includes replacement of construction-in-progress with main account, intangible assets, etc.

2022										
Korean won in millions										
	Beginning balance	Increase (Decrease) due to merger	Acquisition	Disposal, etc.	Depreciation	impairment	Others (*3)	Foreign exchange, etc.	Ending balance	
Land	₩ 154,945	₩ -	₩ 5,780	₩ -	₩ -	₩ -	₩ 902	₩ 39	₩ 161,666	
Buildings (*1)	489,619	-	15,013	(353)	(16,594)	(5,677)	9,898	18,743	510,649	
Structures	35,421	38,212	1,016	(127)	(5,526)	-	4,265	(1,463)	71,798	
Machinery (*2)	423,277	-	30,055	(530)	(49,858)	(327)	43,771	1,341	447,729	
Vehicles	5,946	15	4,868	(100)	(2,024)	-	98	(89)	8,714	
Tools (*2)	22,530	-	12,375	(252)	(11,946)	(30)	3,752	(26)	26,403	
Fixtures	22,599	1,788	10,381	(636)	(8,811)	-	2,462	476	28,259	
(Government grants)	(88)	-	-	-	75	-	-	-	(13)	
Construction-in-progress	44,218	11,041	177,553	(205)	-	-	(65,316)	(3,464)	163,827	
Bearer plants	154,682	-	-	-	(9,691)	-	168	(3,439)	141,720	
	₩ 1,353,149	₩ 51,056	₩ 257,041	₩ (2,203)	₩ (104,375)	₩ (6,034)	₩ -	₩ 12,118	₩ 1,560,752	
U.S. dollar in thousands	\$ 1,049,441	\$ 39,597	\$ 199,349	\$ (1,709)	\$ (80,949)	\$ (4,680)	\$ -	\$ 9,399	\$ 1,210,448	

(*1) For the year ended December 31, 2022, impairment loss of ₩5,677 million (\$4,403 thousand) was recognized according to the result of the impairment test on the building of the BSPC subsidiary in Brazil (book value of ₩11,196 million (\$8,683 thousand)) owned by the Group.

(*2) For the year ended December 31, 2022, impairment loss was recognized for the amount below the book value according to the impairment test result of GRAIN TERMINAL HOLDINGS PTE., LTD., a subsidiary.

(*3) It includes replacement of construction-in-progress with main account, intangible assets, etc.

11. Leases

11.1 Accounting as a lessee

11.1.1 The carrying amount and changes in right-of-use assets and lease liabilities for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

2023									
Right-of-use assets									
	Land	Building and structure	Aircraft	Facility	Others	Total	Lease receivables	Lease liabilities	
Beginning balance	₩ 51,187	₩ 37,964	₩ 584	₩ 166,246	₩ 3,377	₩ 259,358	₩ 91,717	₩ 307,710	
Acquisition	34	13,757	25,137	41,709	63,720	144,357	51,606	193,223	
Contract termination or cancel	(1,819)	(481)	-	(2)	(48)	(2,350)	-	(630)	
Depreciation	(1,130)	(16,552)	(3,769)	(16,436)	(16,517)	(54,404)	-	-	
Interest income	-	-	-	-	-	-	5,968	-	
Related profit	-	-	-	-	-	-	25,329	-	
Interest expense	-	-	-	-	-	-	-	20,439	
Foreign exchange	-	-	-	-	-	-	1,530	4,911	
Lease payment	-	-	-	-	-	-	-	(111,949)	
Lease receipt	-	-	-	-	-	-	(63,437)	-	
Increase due to merger	-	-	-	31,919	175	32,094	221,121	4,202	
Others	(3,384)	309	-	16,159	370	13,454	(21,387)	3,921	
Ending balance	₩ 44,888	₩ 34,997	₩ 21,952	₩ 239,595	₩ 51,077	₩ 392,509	₩ 312,447	₩ 421,827	
U.S. dollar in thousands	\$ 34,813	\$ 27,142	\$ 17,025	\$ 185,819	\$ 39,613	\$ 304,412	\$ 242,320	\$ 327,150	
Current							₩ 29,438	₩ 74,361	
U.S. dollar in thousands							\$ 22,831	\$ 57,671	
Non-current							₩ 283,009	₩ 347,466	
U.S. dollar in thousands							\$ 219,489	\$ 269,479	

11.1.1 The carrying amount and changes in right-of-use assets and lease liabilities for the year ended December 31, 2023 and 2022 are as follows (Korean won in millions) (cont'd):

	2022						Lease receivables	Lease liabilities
	Right-of-use assets					Total		
	Land	Building and structure	Aircraft	Others				
Beginning balance	₩ 45,911	₩ 21,643	₩ 4,828	₩ 18,798	₩ 91,180	₩ 143,886	₩ 185,262	
Acquisition	4,436	24,859	-	3,432	32,727	1,474	34,949	
Contract termination or cancel	-	(1,685)	-	(7,333)	(9,018)	(8,082)	(17,583)	
Depreciation	(1,166)	(14,692)	(4,244)	(21,986)	(42,088)	-	-	
Interest income	-	-	-	-	-	6,308	-	
Interest expense	-	-	-	-	-	-	14,230	
Translation	-	-	-	-	-	2,745	(4,385)	
Lease payment	-	-	-	-	-	-	(94,217)	
Lease receipt	-	-	-	-	-	(54,614)	-	
Impairment loss	-	-	-	-	-	-	-	
Increase in business combination	-	6,714	-	186,288	193,002	-	193,002	
Others	2,006	1,125	-	(9,576)	(6,445)	-	(3,548)	
Ending balance	₩ 51,187	₩ 37,964	₩ 584	₩ 169,623	₩ 259,358	₩ 91,717	₩ 307,710	
U.S. dollar in thousands	\$ 39,698	\$ 29,443	\$ 453	\$ 131,552	\$ 201,146	\$ 71,132	\$ 238,646	
Current						₩ 46,109	₩ 66,305	
U.S. dollar in thousands						\$ 35,760	\$ 51,423	
Non-current						₩ 45,608	₩ 241,405	
U.S. dollar in thousands						\$ 35,371	\$ 187,223	

11.1.2 The amount recognized in profit or loss for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
<Revenues>			
Interest and Related profit on lease receivables	₩ 31,297	₩ 6,308	\$ 24,273
<Expenses>			
Depreciation of right-of-use assets	₩ (54,404)	₩ (42,088)	\$ (42,193)
Interest of lease liabilities	(20,439)	(14,230)	(15,852)
Short-term lease	(4,572)	(1,297)	(3,546)
Leases of low-value assets	(1,980)	(2,161)	(1,536)
	₩ (81,395)	₩ (59,776)	\$ (63,127)
Net profit or loss	₩ (50,098)	₩ (53,468)	\$ (38,854)

11.2 Accounting as a lesser

11.2.1. Details of finance lease receivables as of December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023		2022	
	Current	Non-current	Current	Non-current
Finance lease receivables	₩ 29,438	₩ 283,009	₩ 46,109	₩ 45,608
U.S. dollar in thousands	\$ 22,831	\$ 219,489	\$ 35,760	\$ 35,371

11.2.2 Details of maturity profile of finance lease receivables for the year ended December 31, 2023 and 2022 are as follows. The maturity amount is an undiscounted contractual cash flow that includes interest receipt.

	2023	
	Korean won in millions	U.S. dollar in thousands
Within 1year	₩ 30,108	\$ 23,350
More than 1year and within 5years	81,111	62,906
More than 5years	234,822	182,117
	₩ 346,041	\$ 268,373

	2022	
	Korean won in millions	U.S. dollar in thousands
Within 1year	₩ 47,116	\$ 36,541
More than 1year and within 5years	21,334	16,546
More than 5years	54,665	42,396
	₩ 123,115	\$ 95,483

11.2.3 The Group recognized rental income of ₩12,146 million (\$9,420 thousand) and ₩10,876 million (\$8,435 thousand) in relation to operating lease arrangements for the years ended December 31, 2023 and 2022, respectively.

12. Intangible assets

12.1 Changes in the net book value of intangible assets for the years ended December 31, 2023 and 2022 are as follows:

	2023							U.S. dollar in thousands	
	Korean won in million								
	Beginning balance	Increase (Decrease) due to merger	Acquisition	Disposal, etc.	Amortization	Impairment	Others (*3)	Ending balance	Ending balance
Goodwill (*1)	₩ 7,270	₩ 44,275	₩ -	₩ -	₩ -	₩ (8,083)	₩ 243	₩ 43,705	\$ 33,896
Exploration and evaluation intangible assets (*2)	99,628	-	17,341	-	-	(1,204)	(11,405)	104,360	80,937
(Government grants)	(41,646)	-	-	-	-	-	7,930	(33,716)	(26,149)
Development block intangible assets	78,970	-	27,831	-	-	-	(96,567)	10,234	7,937
Industrial property rights	1,485	-	560	-	(4,982)	-	19,486	16,549	12,835
Mining rights (*4)	2,058,699	-	191,166	-	(247,741)	-	123,597	2,125,721	1,648,612
Membership	15,200	3,290	3,283	(1,680)	(85)	-	(3)	20,005	15,515
Construction-in-progress	4,280	(1,340)	4,596	-	-	-	(7,536)	-	-
Software	12,367	2,604	2,959	-	(7,084)	-	31,348	42,194	32,724
Others	-	15,807	-	-	-	-	(12,942)	2,865	2,222
	₩ 2,236,253	₩ 64,636	₩ 247,736	₩ (1,680)	₩ (259,892)	₩ (9,287)	₩ 54,151	₩ 2,331,917	\$ 1,808,529
U.S. dollar in thousand	\$ 1,734,336	\$ 50,129	\$ 192,133	\$ (1,303)	\$ (201,560)	\$ (7,203)	\$ 41,997	\$ 1,808,529	

(*1) According to the impairment evaluation result of Shinan Green Energy Co., Ltd. amounting to ₩8,083 million (\$6,269 thousand) was recognized as an impairment loss. Details are listed in note 12-2.

(*2) For the year ended December 31, 2023, according to the results of the impairment test of SENEX HOLDINGS PTY LTD, a subsidiary, an impairment loss was recognized for the amount less than the book value.

(*3) It included replacement of assets under construction and reductions due to and forgivable borrowing reduction applications.

(*4) It included the mining rights related to Myanmar A-1/A-3 blocks.

12.1 Changes in the net book value of intangible assets for the years ended December 31, 2023 and 2022 are as follows: (cont'd)

	2022										U.S. dollar in thousands	
	Korean won in million											
	Beginning balance	Increase (Decrease) due to merger	Acquisition	Disposal, etc.	Amortization	Impairment	Others (*1)	Ending balance	Ending balance			
Goodwill	₩ 29,658	₩ -	₩ -	₩ -	₩ -	₩ -	₩ (24,167)	₩ 1,779	₩ 7,270	\$ 5,638		
Exploration and evaluation intangible assets	80,493	19,104	6,013	-	-	-	(5,982)	-	99,628	77,267		
(Government grants)	(41,646)	-	-	-	-	-	-	-	(41,646)	(32,299)		
Development block intangible assets	-	76,592	6,607	-	-	-	(4,229)	-	78,970	61,246		
Industrial property rights	1,642	-	324	(6)	(433)	-	(42)	-	1,485	1,152		
Mining rights	1,088,726	909,934	351,940	-	(246,196)	-	(45,705)	-	2,058,699	1,596,633		
Membership	14,455	-	835	(9)	(84)	-	3	-	15,200	11,789		
Construction-in-progress	691	-	4,836	-	-	-	(1,247)	-	4,280	3,319		
Software	8,725	5,886	1,465	-	(4,540)	-	831	-	12,367	9,591		
Land use right	2,615	-	-	-	-	(2,849)	234	-	-	-		
Harbor policy usage rights	4,010	-	-	-	-	(4,367)	357	-	-	-		
	₩ 1,189,369	₩ 1,011,516	₩ 372,020	₩ (15)	₩ (251,253)	₩ (31,383)	₩ (54,001)	₩ 2,236,253	\$ 1,734,336			
U.S. dollar in thousand	\$ 922,420	\$ 784,486	\$ 288,522	\$ (12)	\$ (194,860)	\$ (24,339)	\$ (41,881)	\$ 1,734,336				

(*1) Decease in Mining rights amounting to ₩1,080 million (\$838 thousand) was incurred, due to early termination of lease contracts for drilling vessels related to Myanmar gas fields for the year ended December 31, 2022.

12.2 Book value of goodwill allocated to Group's CGU as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
	POSCO ENERGY Co., Ltd. (*1)	₩ 26,471	₩ -
PT. BIO INTI AGRINDO	7,512	7,270	5,826
Shinan Green Energy Co., Ltd. (*2)	9,722	-	7,540
	₩ 43,705	₩ 7,270	\$ 33,896

(*1) This is the amount of goodwill of the merged corporation recognized by POSCO Holdings Inc., the top controlling company, following the business combination under common control with POSCO Energy Co., Ltd for the year ended December 31, 2023.

(*2) As of December 31, 2023, management performed an impairment assessment on the goodwill amounting to ₩17,804 million (\$13,808 thousand) recorded in the financial statements in relation to Shinan Green Energy Co., Ltd., which was acquired through the business combination of POSCO Energy Co., Ltd. The recoverable amount of a cash-generating unit including goodwill was measured based on the present value (value in use) of future cash flows expected to arise from the cash-generating unit during the business operation period until March 31, 2041. The discount rate used was 9.75%, and the average capital structure of similar companies during the evaluation period (operation period) was applied. The recoverable amount, of the cash-generating unit was estimated to be lower than its carrying amount, and an impairment loss of ₩8,083 million (\$6,269 thousand) was recognized.

12.3 Joint arrangement

The mining rights of intangible assets and the machinery of property, plant and equipment include the Group's share of the jointly held assets held under joint arrangements. The major joint arrangements of the Group as of December 31, 2023 are as follows:

	Activities	Equity interest (%)	Location
Myanmar A-1/A-3 blocks	Development and production for gas area	51	Myanmar
Offshore midstream	Gas transmission facilities	51	Myanmar

13. Investment properties

13.1 Investment properties as of December 31, 2023 and 2022 are as follows:

	2023				U.S. dollar in thousands
	Korean won in millions				
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Book value	
Land	₩ 52,856	₩ -	₩ -	₩ 52,856	\$ 40,993
Buildings	125,399	(32,924)	(3,708)	88,767	68,843
	₩ 178,255	₩ (32,924)	₩ (3,708)	₩ 141,623	\$ 109,836
U.S. dollar in thousands	\$ 138,246	\$ (25,534)	\$ (2,876)	\$ 109,836	

	2022				U.S. dollar in thousands
	Korean won in millions				
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Book value	
Land	₩ 50,368	₩ -	₩ -	₩ 50,368	\$ 39,063
Buildings	113,658	(23,877)	-	89,781	69,630
	₩ 164,026	₩ (23,877)	₩ -	₩ 140,149	\$ 108,693
U.S. dollar in thousands	\$ 127,211	\$ (18,518)	\$ -	\$ 108,693	

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

	2023			
	Beginning balance	Depreciation	Replacement	Ending balance
Land	₩ 50,368	₩ -	₩ 2,488	₩ 52,856
Building	89,781	(3,024)	2,010	88,767
	₩ 140,149	₩ (3,024)	₩ 4,498	₩ 141,623
U.S. dollar in thousands	\$ 108,693	\$ (2,345)	\$ 3,488	\$ 109,836

	2022			
	Beginning balance	Depreciation	Replacement	Ending balance
Land	₩ 50,368	₩ -	₩ -	₩ 50,368
Building	92,623	(2,842)	-	89,781
	₩ 142,991	₩ (2,842)	₩ -	₩ 140,149
U.S. dollar in thousands	\$ 110,897	\$ (2,204)	\$ -	\$ 108,693

13.3 The fair value of investment properties

The fair value of investment property amount to ₩177,505 million (\$137,665 thousand) as of December 31, 2023.

13.4 The income and expense arising from investment properties for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Rental income	₩ 12,310	₩ 10,810	\$ 9,547
Rental expense	(6,640)	(5,884)	(5,150)
	₩ 5,670	₩ 4,926	\$ 4,397

13.5 Joint arrangement

The Group owns POSCO Tower Songdo, a real estate property, located in Yeonsu-gu, Incheon, under a joint arrangement. As of December 31, 2023, the Group owns 60% of the real estate property and has classified the asset as property, plant and equipment and investment properties. Such joint arrangements are accounted for as joint operations, and rental income generated and expenses incurred as a result of the joint operation are recognized as income and expenses in proportion to the Group's shares.

14. Trade and other payables

Trade and other payables as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
<Current>			
Trade payables	₩ 2,423,121	₩ 2,070,930	\$ 1,879,262
Other payables	506,041	440,811	392,462
Accrued expenses	62,695	65,107	48,623
Guarantee deposits received	3,199	3,510	2,481
Current portion of lease liabilities	74,361	66,305	57,671
	₩ 3,069,417	₩ 2,646,663	\$ 2,380,499
<Non-current>			
Long-term Other payables	₩ 1,736	₩ 965	\$ 1,346
Long-term accrued expenses	2,007	1,774	1,557
Guarantee deposits received	7,774	7,776	6,029
Long-term financial guarantee liabilities	192	106	149
Long-term lease liabilities	347,466	241,405	269,479
	₩ 359,175	₩ 252,026	\$ 278,560
Total	₩ 3,428,592	₩ 2,898,689	\$ 2,659,059

15. Borrowings and bonds

15.1 Borrowings as of December 31, 2023 and 2022 are as follows:

	Creditor	Annual interest rates	The longest maturity	Korean won in millions		U.S. dollar in thousands
				2023	2022	2023
<Current borrowings>						
Short-term borrowings:						
Banker's usance	Wooribank and others	3M TERM SOFR+0.50% and others	2024.07.01	₩ 12,521	₩ 12,061	\$ 9,711
General borrowings (Limit)	Wooribank and others	3M TERM SOFR+0.80% and others	2024.07.01	511,600	675,694	396,774
Korean won-denominated borrowings	Wooribank and others	5.35% and others	2024.09.30	141,900	101,500	110,051
NEGO borrowings	Wooribank and others	3M TERM SOFR+0.725% and others	2024.07.01	457,817	723,010	355,062
Other borrowings	SMBC Bank and others	Tibor + 0.63% and others	2024.05.31	467,700	364,896	362,727
				<u>₩ 1,591,538</u>	<u>₩ 1,877,161</u>	<u>\$ 1,234,325</u>
Current-portion of long-term borrowings:						
Energy special account financing loan	Korea Energy Agency	3year government bond yield-2.25%	2024.12.15	1,843	3,848	1,429
Forgivable borrowings	Korea Energy Agency	3year government bond yield-1.25%	2024.09.15	6,717	1,749	5,209
General borrowings	KB Bank and others	3.16% and others	2024.12.31	132,553	49,197	102,802
Other borrowings (*1)	Korea EXIM Bank and others	2.12% and others	2024.10.29	97,851	66,415	75,889
Less: present value discount				-	-	-
				<u>₩ 238,964</u>	<u>₩ 121,209</u>	<u>\$ 185,329</u>
				<u>₩ 1,830,502</u>	<u>₩ 1,998,370</u>	<u>\$ 1,419,654</u>

15.1 Borrowings as of December 31, 2023 and 2022 are as follows: (cont'd)

	Creditor	Annual interest rates	The longest maturity	Korean won in millions		U.S. dollar in thousands
				2023	2022	2023
<Non-current borrowings>						
Long-term borrowings denominated in Korean won:						
Energy special account financing loan	Korea Energy Agency	3year government bond yield-2.25%	2027.12.15	₩ 768	2,588	\$ 596
General borrowings	Community Credit Cooperatives and others	6.04% and others	2040.03.15	178,015	90,000	138,060
Other borrowings (*1)	Korea Rural Community Cooperation and others	2.00% and others	2035.09.15	129,477	32,827	100,416
				₩ 308,260	₩ 125,415	\$ 239,072
Long-term borrowings denominated in foreign currency:						
Energy special account financial loan	Korea Energy Agency	3year government bond yield-2.25%	2027.12.15	1,815	4,435	1,408
Forgivable borrowings (*2)	Korea Energy Agency	3year government bond yield-1.25%	Undecided	64,682	58,340	50,164
General borrowings	Hancock Energy and others	3M BBSW+2.22% and others	2028.09.30	357,092	194,004	276,944
Other borrowings (*1)	Korea EXIM Bank and others	2.12% and others	2027.03.23	485,912	411,872	376,851
				₩ 909,501	₩ 668,651	\$ 705,367
				₩ 1,217,761	₩ 794,066	\$ 944,439
Less: present value discount				(2,846)	₩ (1,510)	\$ (2,206)
				₩ 1,214,915	₩ 792,556	\$ 942,233
Total borrowings				₩ 3,045,417	₩ 2,790,926	\$ 2,361,887

(*1) The Group's property, plant and equipment are provided as collateral for the borrowings as of December 31, 2023 (see Note 20).

(*2) Due to the nature of the exploration project, the maturity date of the Forgivable borrowings cannot be specified.

15.2 Details of bonds as of December 31, 2023 and 2022 are as follows:

	Annual interest rates	Maturity	Korean won in millions		U.S. dollar in thousands	
			2023	2022	2023	
Current Portion of bonds:						
18-2nd unsecured bond	3.08%	2023.03.02	₩	-	₩ 70,000	\$ -
19-2nd unsecured bond	2.53%	2023.09.13		-	80,000	-
21-2nd unsecured bond	2.27%	2024.03.07		130,000	-	100,822
22-2nd unsecured bond	1.73%	2024.07.04		80,000	-	62,044
22-4th unsecured bond	2.52%	2024.04.29		60,000	-	46,533
22-5th unsecured bond	1.92%	2024.08.08		60,000	-	46,533
24-1st unsecured bond	1.75%	2023.05.26		-	250,000	-
25-1st unsecured bond	1.51%	2024.03.19		70,000	-	54,289
25-4th unsecured bond	2.50%	2024.10.18		219,500	-	170,234
26th unsecured bond	1.68%	2024.10.11		257,880	-	200,000
			₩	877,380	₩ 400,000	\$ 680,455
Less: present value discount on bonds				(671)	(158)	(519)
			₩	876,709	₩ 399,842	\$ 679,936
Non-current bonds:						
17-1st unsecured bond	3.13%	2025.07.10	₩	70,000	₩ -	\$ 54,289
21-2nd unsecured bond	2.27%	2024.03.07		-	130,000	-
22-2nd unsecured bond	1.73%	2024.07.04		-	80,000	-
22-3rd unsecured bond	1.95%	2026.07.04		50,000	50,000	38,778
22-6th unsecured bond	2.25%	2026.08.08		50,000	-	38,778
24-2nd unsecured bond	1.94%	2025.05.28		50,000	50,000	38,778
24-4th unsecured bond	2.47%	2027.04.28		50,000	-	38,778
24-6th unsecured bond	1.68%	2025.08.06		110,000	-	85,311
24-7th unsecured bond	1.86%	2027.08.06		40,000	-	31,022
25-1st unsecured bond	1.51%	2024.03.19		-	70,000	-
25-2nd unsecured bond	2.18%	2026.03.19		80,000	80,000	62,044
25-3rd unsecured bond	2.47%	2028.03.17		50,000	50,000	38,778
26th unsecured bond	1.68%	2024.10.11		-	253,460	-
27th unsecured bond	Daily SOFR + 1.30%p.a.	2025.03.17		322,350	316,825	250,000
28th unsecured bond(*1)	3M SOFR + 1.50%p.a.	2025.07.26		128,940	126,730	100,000
29th unsecured bond (*1)	Daily SOFR + 1.55%p.a.	2025.10.25		166,066	160,328	128,793
30-1st unsecured bond	2.86%	2025.01.27		160,000	-	124,089
30-2nd unsecured bond	3.02%	2027.01.27		40,000	-	31,022
30-3rd unsecured bond	4.00%	2032.05.02		100,000	-	77,555
31st unsecured bond	4.18%	2026.05.25		200,000	-	155,111
32-1st unsecured bond	4.29%	2025.08.29		30,000	-	23,267
32-2nd unsecured bond	4.39%	2026.08.28		120,000	-	93,066
32-3rd unsecured bond	4.56%	2028.08.29		50,000	-	38,777
			₩	1,867,356	₩ 1,367,343	\$ 1,448,236
Less: present value discount on bonds				(3,242)	(3,750)	(2,514)
			₩	1,864,114	₩ 1,363,593	\$ 1,445,722
			₩	2,740,823	₩ 1,763,435	\$ 2,125,658

(*1) The Group enters into currency swap contracts to avoid the risk of exchange rate fluctuations and interest rate fluctuations.

16. Other liabilities

Other liabilities as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Current:			
Advances received	₩ 107,705	₩ 124,776	\$ 83,531
Unearned revenue	45,212	68,315	35,064
Withholdings	101,350	39,504	78,602
Others	14,081	16,310	10,921
	₩ 268,348	₩ 248,905	\$ 208,118
Non-current:			
Long-term unearned revenue	₩ 229	₩ -	\$ 178
Long-term withholdings	37,357	38,847	28,972
Long-term advances received	1,923	1,890	1,491
Others	42,146	54,805	32,687
	₩ 81,655	₩ 95,542	\$ 63,328
Total	₩ 350,003	₩ 344,447	\$ 271,446

17. Retirement benefits

The Group operates a defined benefit pension plan and a defined contribution pension plan for its employees and uses the projected unit credit method in the actuarial valuation of plan assets and the defined benefit obligation.

17.1 The amount recognized as an expense under the defined contribution pension plan for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Defined contribution retirement benefit expense	₩ 3,769	₩ 423	\$ 2,923

17.2 The amounts recognized in the consolidated statement of financial position related to net defined benefit liabilities (assets) as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Present value of defined benefit obligation	₩ 248,763	₩ 173,224	\$ 192,930
Fair value of plan assets	(303,342)	(210,536)	(235,259)
Net defined benefit liabilities	8,823	7,903	6,843
Net defined benefit assets	(63,402)	(45,215)	(49,172)

17.3 Changes in the present value of the defined benefit obligation for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Beginning balance	₩ 173,224	₩ 184,553	\$ 134,345
Current service cost	23,575	22,878	18,284
Interest cost	11,068	4,683	8,584
Benefits paid	(27,248)	(13,024)	(21,132)
Increase due to merger	45,657	-	35,409
Re-measurement loss(gain) in OCI:			
- Actuarial changes arising from changes in demographic assumptions	58	(71)	45
- Actuarial changes arising from changes in financial assumptions	15,988	(34,682)	12,400
- Others	6,946	9,707	5,387
Others	(505)	(820)	(392)
Ending balance	₩ 248,763	₩ 173,224	\$ 192,930

17.4 Changes in fair value of plan assets for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Beginning balance	₩ 210,537	₩ 188,194	\$ 163,283
Contribution by the employer	46,245	31,700	35,866
Interest income	13,531	4,474	10,494
Benefits paid	(25,561)	(12,643)	(19,824)
Increase due to merger	58,634	-	45,474
Re-measurement gain (loss) in OCI:			
- Actuarial changes arising from changes in financial assumptions	309	(1,520)	240
Others	(353)	331	(274)
Ending balance	₩ 303,342	₩ 210,536	\$ 235,259

17.5 The components of plan assets as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Debt products	₩ 69,714	₩ -	\$ 54,067
Deposit product	135,658	210,536	105,210
Others	97,970	-	75,982
	₩ 303,342	₩ 210,536	\$ 235,259

17.6 The Gains and losses recognized in relation to defined benefit plans for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Current service cost	₩ 23,575	₩ 22,878	\$ 18,284
Net interest on net defined benefit	(2,463)	209	(1,910)
	₩ 21,112	₩ 23,087	\$ 16,374

17.7 Details of re-measurement gain (loss) recorded in other comprehensive income for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Re-measurement of defined benefit obligation	₩ (22,992)	₩ 25,046	\$ (17,832)
Re-measurement of plan assets	309	(1,520)	240
	₩ (22,683)	₩ 23,526	\$ (17,592)
Income tax effect	5,440	(5,766)	4,219
Other comprehensive income	₩ (17,243)	₩ 17,760	\$ (13,373)

17.8 Principal assumptions used in actuarial valuation as of December 31, 2023 and 2022 are as follows:

	2023	2022
Discount rate	4.28% ~ 7.50%	5.18 ~ 5.20%
Expected future salary growth rate	2.90% ~ 10.00%	3.83 ~ 5.00%

The sensitivity analysis of defined benefit obligation arising from changes in principal assumptions as of December 31, 2023 is as follows:

	Discount rate		Expected future salary growth rate	
	1% point increase	1% point decrease	1% point increase	1% point decrease
Amount (Korean won in millions)	₩ (22,248)	₩ 25,494	₩ 25,418	₩ (22,575)
Amount (U.S. dollar in thousands)	\$ (17,255)	\$ 19,772	\$ 19,713	\$ (17,508)
Rate	(8.94%)	10.25%	10.22%	(9.07%)

17.9 Details of impact on defined benefit plans for future cash flows are as follows:

There are no additional estimated contributions for the fiscal year ending December 31, 2024. The maturity profile of the Group's un-discounted pension benefit payments for the year ended December 31, 2023 is as follows:

	Korean won in millions			
	Less than 1year	1year to 5years	Over 5years	Total
Benefits paid	₩ 25,199	₩ 101,765	₩ 673,221	₩ 800,185
U.S. dollar in thousands	\$ 19,543	\$ 78,924	\$ 522,120	\$ 620,587

The weighted average maturity of the Company's defined benefit obligations is 7.85 years.

18. Provisions

18.1 Provisions as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Current:			
Provision for bonus, etc.	₩ 28,296	₩ 33,208	\$ 21,945
Provision for REC (*1)	64,166	-	49,764
Provision for emission rights (see note 19)	2,945	-	2,284
Provision for LTSA (*2)	6,963	-	5,401
	₩ 102,370	₩ 33,208	\$ 79,394
Non-current:			
Provision for contingency (see note 20)	₩ 21,902	₩ 19,976	\$ 16,986
Provision for restoration (*3) (see note 20)	90,643	74,969	70,299
Provision for sales guarantee	158	1,011	123
Provision for LTSA (*2)	16,262	-	12,612
Provision for emission rights (see note 19)	5,750	-	4,459
	₩ 134,715	₩ 95,956	\$ 104,479
Total: Provisions	₩ 237,085	₩ 129,164	\$ 183,873

(*1) In accordance with Article 12-5 of the New Energy and Renewable Energy Development, Utilization and Distribution Promotion Act, the Group has an obligation to supply more than a certain amount of power generation using new and renewable energy. In accordance with the Act, the amount required to fulfill its obligations, including the amount of insufficient supply among the supply using new and renewable energy that the Group had to bear during the current period, was estimated and set as a provision.

(*2) The Group estimated the costs expected to be borne in the future in relation to fuel cell long-term service agreement (the "LTSA") and set them as provisions.

(*3) The Group recorded restoration provisions for restoration obligations for mining areas and office leases.

18.2 Changes in provisions for the year ended December 31, 2023 and 2022 are as follows:

2023								
Korean won in millions								
	Provision for bonus, etc.	Provision for REC	Provision for emission rights	Provision for contingency	Provision for restoration	Provision for sales guarantee	Provision for LTSA (*1)	Total
Beginning balance	₩ 33,208	₩ -	₩ -	₩ 19,976	₩ 74,969	₩ 1,011	₩ -	₩ 129,164
Increase due to merger	-	123,073	13,402	-	2,858	-	97,928	237,261
Increase	37,757	64,166	2,945	3,740	12,018	14	2,431	123,071
Reversal	(2,102)	-	(7,652)	(42)	(80)	(867)	(19,823)	(30,566)
Used	(40,559)	(123,073)	-	(2,009)	(693)	-	(57,311)	(223,645)
Foreign currency translation	56	-	-	237	1,579	-	-	1,872
Others	(64)	-	-	-	(8)	-	-	(72)
Ending balance	₩ 28,296	₩ 64,166	₩ 8,695	₩ 21,902	₩ 90,643	₩ 158	₩ 23,225	₩ 237,085
U.S. dollar in thousands	\$ 21,945	\$ 49,764	\$ 6,743	\$ 16,986	\$ 70,299	\$ 123	\$ 18,012	\$ 183,872
Current	₩ 28,296	₩ 64,166	₩ 2,945	₩ -	₩ -	₩ -	₩ 6,963	₩ 102,370
U.S. dollar in thousands	\$ 21,945	\$ 49,764	\$ 2,284	\$ -	\$ -	\$ -	\$ 5,400	\$ 79,394
Non-current	₩ -	₩ -	₩ 5,750	₩ 21,902	₩ 90,643	₩ 158	₩ 16,262	₩ 134,715
U.S. dollar in thousands	\$ -	\$ -	\$ 4,459	\$ 16,986	\$ 70,299	\$ 123	\$ 12,612	\$ 104,479

(*1) For the year ended December 31, 2023, provisions amounting to ₩15,993 million (\$12,403 thousand) were reversed due to the notice of termination of the long-term maintenance contract with CGN YULCHON GENERATION CO., LTD., and the amount used includes costs amounting to ₩46,217million (\$35,843 thousand) from facility replacement of Noeul Green Energy Co., Ltd.

2022						
Korean won in millions						
	Provision for bonus, etc.	Provision for contingency	Provision for restoration	Provision for sales guarantee	Other long-term provisions	Total
Beginning balance	₩ 24,343	₩ 25,379	₩ 34,959	₩ 1,338	₩ 2,357	₩ 88,376
Business combination	35,267	3,969	14,329	90	599	54,254
Increase	(494)	(1,169)	-	(417)	-	(2,080)
Reversal	(26,102)	(8,749)	(1,849)	-	(2,806)	(39,506)
Used	339	-	23,806	-	-	24,145
Foreign currency translation, etc.	(145)	546	3,724	-	(150)	3,975
Ending balance	₩ 33,208	₩ 19,976	₩ 74,969	₩ 1,011	₩ -	₩ 129,164
U.S. dollar in thousands	\$ 25,755	\$ 15,492	\$ 58,143	\$ 784	\$ -	\$ 100,174
Current	₩ 33,208	₩ -	₩ -	₩ -	₩ -	₩ 33,208
U.S. dollar in thousands	\$ 25,755	\$ -	\$ -	\$ -	\$ -	\$ 25,755
Non-current	₩ -	₩ 19,976	₩ 74,969	₩ 1,011	₩ -	₩ 95,956
U.S. dollar in thousands	\$ -	\$ 15,492	\$ 58,143	\$ 784	\$ -	\$ 74,419

19. Greenhouse gas emission rights and liabilities

19.1 Greenhouse gas emission rights held for the purpose of fulfilling obligations

19.1.1 The quantity of free emission rights allocated to the Company for the 3rd plan period (2022-2025) is as follows:

	Ton (tCO ₂ -eq)				Total
	For 2022 (KAU22)	For 2023 (KAU23)	For 2024 (KAU24)	For 2025 (KAU25)	
Free emission rights (*1)	4,149,936	3,808,796	5,120,725	4,870,725	17,950,182

(*1) It is the free emission rights inherited through the merger.

19.1.2 Changes in quantity and book value of the emission rights for the year ended December 31, 2023 are as follows:

	Ton (tCO2-eq)				Total
	For 2022 (KAU22)	For 2023 (KAU23)	For 2024 (KAU24)	For 2025 (KAU25)	
<Quantity>					
Beginning balance	-	-	-	-	-
Increase due to merger	3,778,618	3,554,495	1,184,832	934,832	9,452,777
Additional allocation and cancellation	766,518	254,301	3,935,893	3,935,893	8,892,605
Purchase	5	220,995	-	-	221,000
Sell	(355,323)	-	-	-	(355,323)
Submit emission rights	(4,189,818)	-	-	-	(4,189,818)
Ending balance	<u>-</u>	<u>4,029,791</u>	<u>5,120,725</u>	<u>4,870,725</u>	<u>14,021,241</u>
Korean won in millions					
	For 2022 (KAU22)	For 2023 (KAU23)	For 2024 (KAU24)	For 2025 (KAU25)	Total
<Book value>					
Beginning balance	₩ -	₩ -	₩ -	₩ -	₩ -
Increase due to merger	5,920	-	-	-	5,920
Additional allocation and cancellation	-	-	-	-	-
Purchase	-	5,923	-	-	5,923
Sell	(5,920)	-	-	-	(5,920)
Submit emission rights	-	-	-	-	-
Ending balance	<u>₩ -</u>	<u>₩ 5,923</u>	<u>₩ -</u>	<u>₩ -</u>	<u>₩ 5,923</u>
U.S. dollar in thousands	<u>\$ -</u>	<u>\$ 4,594</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 4,594</u>

19.1.3 There are no emission permits provided as collateral as of December 31, 2023.

19.1.4 The Company did not hold greenhouse gas emission rights for short-term trading profits as of December 31, 2023.

19.2 Emission liabilities

19.2.1 The estimated quantity of the Company's greenhouse gas emissions is 4,262,078 tons (tCO2-eq), as of December 31, 2023, for the current implementation year.

19.2.2 Changes in emission liabilities for the year ended December 31, 2023 are as follows:

	Korean won in millions			U.S. dollar in thousands
	Current	Non-current	Total	Total
Beginning balance	₩ -	₩ -	₩ -	\$ -
Increase due to merger	7,652	5,750	13,402	10,394
Increase	2,945	-	2,945	2,284
Reversal	(7,652)	-	(7,652)	(5,935)
Ending balance	<u>₩ 2,945</u>	<u>₩ 5,750</u>	<u>₩ 8,695</u>	<u>\$ 6,743</u>
U.S. dollar in thousands	<u>\$ 2,284</u>	<u>\$ 4,459</u>	<u>\$ 6,743</u>	

20. Commitments and contingencies

20.1 Provision for contingencies

Changes in provision for contingencies for the year ended December 31, 2023 are as follows (Korean won in millions):

	Beginning balance	Increase	Reversal	Used	Translation	Ending balance	Principal debt amount
Daewoo Corp. (EXIM India, etc.)	₩ 3,316	₩ 843	₩ -	₩ -	₩ 19	₩ 4,178	₩ 280,129
Legal proceeding provisions, etc.	316	258	-	-	7	581	-
Provision for loss	16,344	2,639	(42)	(2,009)	211	17,143	-
	₩ 19,976	₩ 3,740	₩ (42)	₩ (2,009)	₩ 237	₩ 21,902	₩ 280,129
U.S. dollar in thousands	\$ 15,492	\$ 2,901	\$ (33)	\$ (1,558)	\$ 184	\$ 16,986	\$ 217,255

20.1.1 Contingent liabilities carried over from Daewoo Corporation prior to the spin-off

On July 22, 2000, Daewoo Corporation, prior to the spin-off, approved a proposal to divide the company into one surviving company and two newly incorporated companies, which each company engages in the trade and construction sector, respectively. On December 27, 2000, the Group was newly incorporated as Daewoo International Corporation through a spin-off of Daewoo Corporation's trade sector.

IDBI, a creditor of Daewoo Motor India (DMIL), to which Daewoo Corporation provided debt guarantees, filed a lawsuit against DMIL, Daewoo Corporation, Daewoo Engineering & Construction and the Group in Delhi in May 2002 with regards to the disposition of assets and confirmation of the debt.

As of December 31, 2023, the Group has recorded ₩4,178 million (\$3,240 thousand) as provision for contingent losses by reasonably estimating the enforceability and amount of the lawsuit.

20.1.2 Contingent liabilities related to local taxes of foreign subsidiaries

As of December 31, 2023, the final calculated tax amount is being negotiated in relation to unconfirmed taxes for overseas subsidiaries. The amount and timing of resource outflows are uncertain, and the management of the consolidated company believes that the results of such tax imposition will not have a material impact on the financial condition of the consolidated company, as of December 31, 2023.

20.2 Pending litigations

As of December 31, 2023, the Group is a defendant in pending lawsuits involving 26 claims (domestic: 8 claims and overseas: 18 claims). The total litigation value is ₩75,558 million (\$58,599 thousand) in Korea and ₩176,101 million (\$136,576 thousand) in foreign countries (USD 77,778 thousand, INR 4,469,396 thousand, BRL 6,729 thousand, PKR 124,775 thousand and IDR 50,000 million). The Group records ₩4,759 million (\$3,691 thousand), an amount expected to be paid in accordance with some litigation cases, as a provision for contingent losses. Excluding these, the final results of pending litigation cases cannot be reasonably predicted, so the impact of the litigation results is not reflected in the Group's consolidated financial statements. Meanwhile, as of December 31, 2023, there are 28 lawsuits pending in which the consolidated company is the plaintiff.

20.3 Credit facilities

As of December 31, 2023, the Group has entered into an agreement with Woori Bank, etc. for the opening of L/C, etc. as follows (Korean won in millions, USD in thousands):

Description	Description	Currency unit	Credit line amount	Execution amount
Local L/C	Woori Bank and others	KRW	180,000	65,900
Import L/C	Woori Bank and others	USD	1,256,130	490,347
Export Bill Negotiation	Woori Bank and others	USD	1,781,196	355,062
Export Bill Negotiation without recourse	Woori Bank and others	USD	1,400,000	446,758
Credit line in foreign currency	Woori Bank and others	USD	1,398,224	774,285
Credit line in Korean currency	Woori Bank and others	KRW	808,000	398,400
P bond and others	Woori Bank and others	USD	425,106	131,528
Overdraft and others	Woori Bank and others	KRW	7,000	-

20.4 Collateral

The Group has pledged 29 blank promissory notes and 18 blank checks as collateral to Korea Energy Agency for the contract performance guarantees and other purposes as of December 31, 2023.

20.5 Derivatives

As of December 31, 2023, the Group has entered into currency forward contracts and commodity futures contracts with financial institutions for the purpose of hedging foreign exchange risks related to foreign currency debt obligations and fair value risks associated with the purchase and sale of inventory assets.

20.5.1 Details of unsettled derivatives: (Korean won in millions)

Contract	Description	Korean won in millions			
		Unsettled contractual amount		Accumulated valuation gain(loss)	
		Long position	Short position		
Currency forwards	USD	₩ 25,375	₩ 613,351	₩ 16,499	
	EUR			(11,368)	
	JPY			(4,019)	
	CNY			5	
	THB			(144)	
	GBP			(798)	
	AUD			(3,423)	
	SGD			-	
	PLN			(606)	
	MXN			(10)	
				(3,864)	
Commodity futures	COPPER	24,529	116,891	(1,884)	
	CORN	925	-	(13)	
	NICKEL	28,631	99,885	7,926	
	SOYBEAN	30,734	-	441	
	SOYBEAN MEAL	1,437	-	(43)	
	GASOIL	214	-	(9)	
	MARINE FUEL OIL (ICE)	2,159	61	(96)	
				6,322	

20.5.1 Details of unsettled derivatives (Korean won in millions): (cont'd)

Unsettled currency swap and interest rate swap for the year ended December 31, 2023 are as follows (Korean won in millions, USD in thousands, SGD in thousands, EUR in thousands and JPY in thousands):

Bank	Payment		Receipt		Expiration date	Interest rate	Accumulated valuation gain (loss)
Woori Bank	KRW	131,100	USD	100,000	2025.07.28	Receive USD TERM 3M SOFR 3M + 1.50%	₩ (1,040)
Credit Agricole Corporate & investment Bank	USD	50,936	SGD	68,000	2025.10.25	Receive SGD SORA + 1.55%	735
Credit Agricole Corporate & investment Bank	KRW	6,846	EUR	5,200	2025.04.22	Receive Euribor(6M)+0.86%	887
Credit Agricole Corporate & investment Bank	KRW	40,113	EUR	29,122	2026.10.22	Receive Euribor(6M)+0.86%	2,311
KB Bank	USD	76,427	SGD	102,000	2025.10.25	Receive SGD SORA + 1.55%	1,085
Korea Development Bank	KRW	10,256	EUR	7,800	2025.04.22	Receive Euribor(6M)+0.86%	1,411
MUFG Bank	KRW	47,700	JPY	5,000,000	2025.07.15	Receive JPY 3M D-TIBOR+0.85%	(2,484)
Sumitomo Mitsui Banking Corporation	KRW	47,640	JPY	5,000,000	2025.07.15	Receive 0.9%	(2,590)
ANZ Bank	0.6247%		3M AUD-BBR-BBSY		2024.06.28	Netting settlement on paid interest rate (fixed interest rate) and received interest rate (variable interest rate)	337
Shinhan Bank (Indonesia)	2.225%		C.SOFR+1.928%		2026.04.01	Receive Compound SOFR+ 1.928%	5,153
	2.24%		C.SOFR + 1.961%		2026.04.01	Receive Compound SOFR + 1.961%	
							₩ 5,805
							<u>\$ 4,502</u>

U. S. dollar in thousands

20.5.2 Derivatives trading and valuation gains and losses

Changes in the book value of derivative financial assets (liabilities) for the year ended December 31, 2023 are as follows:

	Korean won in millions					
	Beginning balance	Increase due to merger	Settlement	Valuation gain	Valuation loss	Ending balance
Currency forwards	₩ 3,237	₩ -	₩ (1,841)	₩ 19,622	₩ (24,881)	₩ (3,863)
Commodity futures	(10,644)	-	9,494	10,753	(3,281)	6,322
Firm commitment contracts	2,212	-	17,094	11,499	(47,448)	(16,643)
Currency and interest rate swap	(504)	12,410	(5,494)	4,514	(5,122)	5,804
	<u>₩ (5,699)</u>	<u>₩ 12,410</u>	<u>₩ 19,253</u>	<u>₩ 46,388</u>	<u>₩ (80,732)</u>	<u>₩ (8,380)</u>
U.S. dollar in thousands	<u>\$ (4,420)</u>	<u>\$ 9,625</u>	<u>\$ 14,932</u>	<u>\$ 35,976</u>	<u>\$ (62,612)</u>	<u>\$ (6,499)</u>

The Group has entered into product futures and other commitments for fair value hedges when hedging the exposure to changes in the fair value of firm sales and purchase contracts arising from fluctuations in product price, and applied fair value hedges using firm commitments as hedging methods and product futures and other commitments as hedging targets.

20.6 Guarantee obligations

20.6.1 Guarantees provided by the Group to certain creditors on behalf of associates/debtors as of December 31, 2023 are as follows (Korean won in millions, U.S. dollar in thousands and Indonesian rupiah in millions):

Debtor	Creditor	Limit amount		outstanding balance		Year of expiration
		Foreign currency amounts	Korean won equivalent	Foreign currency amounts	Korean won equivalent	
GLOBAL KOMSOO Daewoo LLC	Hana Bank (Bahrain)	USD 6,650	₩ 8,575	USD 6,300	₩ 8,123	2025
POSCO ASSAN TST STEEL INDUSTRY	ING (Seoul) and others Bank	USD 13,700	17,665	USD 13,700	17,665	2026
KSU Mandob Sejatera	Muamalat	IDR 80,000	6,688	IDR 80,000	6,688	2026
		USD 20,350	₩ 26,240	USD 20,000	₩ 25,788	
		IDR 80,000	₩ 6,688	IDR 80,000	₩ 6,688	

20.7 Other commitments

20.7.1 Commitments to supplement funds for Korea Ambatovy Consortium (KAC)

The Group invested in the Ambatovy Nickel Project (DMSA / ASMA) in Madagascar through Korea Ambatovy Consortium (KAC), which is composed of Korea Mine Rehabilitation and Mineral Resources Corporation (KOMIR) and STX Co., Ltd. Sherritt International Corp., the operator, transferred part of the project shares to Sumitomo and AHL (Ambatovy Holdings Limited) in December 2017, and in August 2020 and the remaining shares were transferred to Sumitomo and AHL2 (Ambatovy Holdings II Limited). KAC has the rights and obligations for the 15.33% stake in the project held by AHL and AHL2.

20.7.2 Environmental restoration expenses of Peru Block 8 and termination of mining contract

The Operator entered into a contract on the ratio of paying for environmental restoration cost with former operators. However, as the cost of environment restoration is expected to increase due to the revision of the local environmental law, the former operator refused to pay, and the Group applied for an arbitration. As a result of the arbitration in June 2018, the former operator is obligated for 94% of the cost for the pollution-prone areas where the responsibility of the former operator has already been proven and areas where the responsibility for pollution is proven in the future. As the procedure to obtain approval from the Peruvian government is in progress, the environmental restoration cost to be borne by the Group, the other participant and the former operator has not yet been determined.

The Peruvian Environmental Supervision Authority (El Organismo de Evaluación Fiscalización Ambiental, OEFA) has been imposing fines for environmental pollution on operators from 2020, and the fines imposed are shared by the participating companies if the operator makes a claim to the participating companies in proportion to their shares. The operator is not responsible for the pollution and is taking legal action arguing that the Environmental Supervision Administration unreasonably demands restoration and imposes a fine, but the fine continues to be imposed.

Perupetro, a mining rights management agency under the Peruvian government, opposed the termination of the mining rights contract and filed an international arbitration against mining concession participants at the International Chamber of Commerce (ICC). And, in February 2023, the International Chamber of Commerce's arbitration tribunal notified an interim partial ruling acknowledging the liquidation of the operator and the resulting termination of mining rights in Peru Block 8, and in December, notified a partial ruling ordering the return of Peru Block 8 to Perupetro. Korean participating companies are continuing to respond by jointly appointing an arbitration agent. In addition, the Korean participating companies additionally initiated a separate international arbitration with the International Chamber of Commerce (ICC) to force the operator and its parent company to jointly bear environmental restoration obligations.

The Group recognizes loss provisions and restoration provisions respectively in relation to environmental pollution fines and restoration costs in Mine 8 of Peru.

20.7.3 Transfer of contract status on ship purchase agreement

The Group operates the chartered ship. The Group, the ship owner, and the shipping company have entered into a ship purchase agreement, under which, the shipping company is obliged to pay the contract amount to the ship owner and take over the ownership of the ship from the ship owner at the end of the contract period due to the expiration or termination of the agreement. If the shipping company fails to fulfill its obligation to purchase ships, such as payment of the acquisition price of ships, the Group is obliged to take over the ship with the transfer of the shipping company's contractual obligations and rights. The details of the ship purchase arrangement concluded as of December 31, 2023 as follows:

<u>Ship</u>	<u>Ship owner</u>	<u>Shipping company</u>	<u>Arrangement period</u>	<u>U.S. dollar in thousands</u> <u>Purchase arrangement amount</u>
Containership Heung-A Janice	D&G Shipping SA	Heung A Line Co., Ltd.	2014.10.28 ~ 2025.03.16	\$ 7,700
Containership Heung-A Haiphong	D&M Shipping SA	Heung A Line Co., Ltd.	2014.12.29 ~ 2025.03.16	7,700
Containership Heung-A Xiamen	D&F Shipping SA	Heung A Line Co., Ltd.	2015.02.05 ~ 2025.05.16	7,700
Containership Heung-A Akita	D&S Shipping SA	Heung A Line Co., Ltd.	2015.03.05 ~ 2025.05.16	7,700
				<u>\$ 30,800</u>

The Group records lease liabilities and lease receivables for charter parties and major contracts, respectively.

20.7.4 Long-term power supply and demand contract

The Group supplies the entire amount of electricity produced from Units 1 and 2 of the Offshore Combined Cycle Power Plant in Indonesia pursuant to a long-term power supply and demand contract with PT.KRAKATAU POSCO. The price of electricity supplied by the Group is determined by compensating for the cost of electricity production, a certain rate of return on investment in electricity production facilities, and related costs in accordance with the above contract. The expiration date of this Agreement is as follows:

	<u>Expiration date</u>
Units 1 of the Offshore Combined Cycle Power Plant in Indonesia	February 28, 2039
Units 2 of the Offshore Combined Cycle Power Plant in Indonesia	March 31, 2039

20.7.5 Deferred Premium Agreement

In relation to the equity investment in AES Mong Duong Power Co., Ltd. located in Vietnam, the Group pays a certain percentage of dividends to AES Mong Duong Holdings B.V. when it receives dividends from AES Mong Duong Power Co., Ltd. A premium agreement is being concluded, and related costs are accounted for as paid commissions.

20.7.6 Capital investment agreement

In the case of basic capital investment obligation according to the investor agreement, investment obligation of disallowed investment cost, investment obligation of excess project cost, and loss of profits within the deadline in financial documents, the Group provides the obligation to provide funds for the burden of the investment obligation under the investor agreement signed with Samcheok Blue Power Co., Ltd. for the construction of Samcheok Thermal Power Plant. Of these, the basic capital commitment obligation of ₩250,495 million (\$194,273 thousand) was completed during 2021.

20.7.7 Long-term purchase contract

The Group has entered into a long-term natural gas purchase contract with Korea Gas Corporation to procure entire amount of the natural gas required for the operation of Incheon LNG combined generating Units 5 to 9.

20.7.8 Contingent consideration liabilities related to business combination in Louisiana mining area

The Group recognized a contingent consideration liability as part of a business combination related to the acquisition of a Louisiana mine in 2022. The obligation to pay such debt is established when all necessary approvals related to the acquisition of mining areas are completed.

20.7.9 Agreements related to the Narrabri bituminous coal project

The Group has formed a consortium with the Korea Mine & Reclamation Corporation and is participating in a project to operate, produce, and sell bituminous coal mines in the coalfield area of New-South Wales, Australia. According to the business agreement, the shares held by the Group are held by the partner company. Preferential purchase rights are granted.

20.7.10 Korea Fuel Cell Fuel Cell Performance Guarantee Agreement

In relation to the supply of fuel cells, the Group provides a performance guarantee agreement guaranteeing a certain amount of output when signing a Long-Term Service Agreement with Gyeonggi Green Energy Co., Ltd., etc.

20.7.11 Major agreements related to GRAIN TERMINAL HOLDING PTE. LTD.

After the stock transfer restriction period has elapsed, the Group has the right to purchase the target stocks held by other shareholders. Additionally, after the stock transfer restriction period has elapsed, other shareholders have the right to sell the target stocks they own to the Group. For the year ended December 31, 2023, other shareholders who held rights expressed their intention to sell the target stocks they held to the Group, and the Group recognized the related non-controlling interest as a liability and recognized capital transaction gain and loss of ₩11,308 million (\$8,770 thousand).

20.8 Assets provided as collateral

Details of assets provided as collateral in relation to borrowings as of December 31, 2023 are as follows (Korean won in millions and U.S. dollar in thousands):

Collateral provided by	Assets provided as collateral	Collateral amount		Creditor	Reason for providing collateral
DMSA/AMSA	Shares of DMSA/AMSA	KRW	23,740	PF lender	PF financing
Samcheok Blue Power Co., Ltd.	Shares and capital investment of Samcheok Blue Power Co., Ltd.	KRW	391,047	PF lenders such as Korea Development Bank	PF financing SPC, equity participation and PF financing as a fuel cell manufacturer
Gyeonggi Green Energy Co., Ltd.	Shares of Gyeonggi Green Energy Co., Ltd.	KRW	14,400	Korea Development Bank and others	SPC, equity participation and PF financing as a fuel cell manufacturer
Noeul Green Energy Co., Ltd.	Shares of Noeul Green Energy Co., Ltd.	KRW	600	Hana Bank	PF financing as a fuel cell manufacturer
AES Mong Duong Power Co., Ltd.	Shares of AES Mong Duong Power Co., Ltd.	KRW	142,388	HSBC Bank	Construction financing
Shinan Green Energy Co., Ltd.	Shares of Shinan Green Energy Co., Ltd.	KRW	15,344	Community Credit Cooperatives, TONGYANG LIFE INSURANCE CO., LTD. and Industrial Bank of Korea	PF financing
POSCO INTERNATIONAL	Property, plant and equipment	KRW	772,671	Korea Development Bank, KB Bank, NongHyup Bank, Nord LB and KfW-IPEX Bank	Raising facility funds and operating funds
POSCO MOBILITY SOLUTION	Property, plant and equipment	KRW	252,000	KB Bank and others	Raising facility funds and operating funds
Mykolaiv Millimg Works PJSC.	Building and machinery	USD	36,000	Kexim Bank	Raising facility funds and operating funds

21. Issued capital and capital surplus

21.1 Issued capital as of December 31, 2023 is as follows (Korean won in millions, Korean won for Par Value amount):

	Number of shares authorized	Number of shares issued	Par value	Issued capital	Paid-in capital in excess of par value (capital surplus)
Ordinary shares	500,000,000	175,922,788	₩ 5,000	₩ 879,614	₩ 517,586
U.S. dollar in thousands				\$ 682,189	\$ 401,416

21.2 Changes in the number of issued shares of the Group for the years ended December 31, 2023 and 2022 are as follows:

	2023			2022		
	Number of shares issued	Treasury stock	Number of outstanding shares	Number of shares issued	Treasury stock	Number of outstanding shares
Beginning	123,375,149	20,518	123,354,631	123,375,149	258	123,374,891
Increase due to merger	52,547,639	-	52,547,639	-	-	-
Acquisition of treasury stock	-	5,767,304	(5,767,304)	-	20,260	(20,260)
Disposal of treasury stock	-	(18,801)	18,801	-	-	-
Ending	<u>175,922,788</u>	<u>5,769,021</u>	<u>170,153,767</u>	<u>123,375,149</u>	<u>20,518</u>	<u>123,354,631</u>

21.3 Capital surplus as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Paid-in capital in excess of par value	₩ 517,586	₩ 518,848	\$ 401,416
Loss on repayment of hybrid bonds	(429)	-	(333)
Other capital surplus	1,309,068	21,679	1,015,254
	<u>₩ 1,826,225</u>	<u>₩ 540,527</u>	<u>\$ 1,416,337</u>

21.4 Other capital components as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Treasury stock	₩ (29,164)	₩ (423)	\$ (22,618)
Other capital adjustments	4,203	805	3,261
	<u>₩ (24,961)</u>	<u>₩ 382</u>	<u>\$ (19,357)</u>

21.5 Treasury stock

The Group holds its treasury stock for purposes such as stabilizing the stock price in accordance with the resolution of the board of directors. Changes in the treasury stock of the Group for the years ended December 31, 2023 and 2022 are as follows:

	2023		
	Number of Shares	Amount (Korean won in millions)	Amount (U.S. dollar in thousands)
Beginning	20,518	₩ (423)	\$ (328)
Acquisition of treasury stock	5,767,304	(28,836)	(22,364)
Disposal of treasury stock	(18,801)	95	74
Ending	<u>5,769,021</u>	<u>₩ (29,164)</u>	<u>\$ (22,618)</u>

	2022		
	Number of Shares	Amount (Korean won in millions)	Amount (U.S. dollar in thousands)
Beginning	258	₩ (6)	\$ (5)
Acquisition of treasury stock	20,260	(417)	(323)
Disposal of treasury stock	-	-	-
Ending	<u>20,518</u>	<u>₩ (423)</u>	<u>\$ (328)</u>

22. Hybrid bonds

For the year ended December 31, 2023, the Group acquired hybrid bonds through the business combination, and the hybrid bonds are bond-type hybrid securities classified as equity. For the year ended December 31, 2023, the entire amount of hybrid bonds amounting to ₩139,571 million (\$108,245 thousand) was repaid.

23. Other components of equity and accumulated other comprehensive income

Accumulated other comprehensive income as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Losses on valuation of financial assets at FVOCI	₩ (36,745)	₩ (11,666)	\$ (28,498)
Change in equity adjustment in equity method	99,916	50,726	77,490
Negative change in equity adjustment in equity method	(25,549)	(25,812)	(19,815)
Cumulative exchange differences on translations of foreign operations	48,164	3,316	37,354
Gain (loss) on valuation of derivatives	(86)	410	(66)
	₩ 85,700	₩ 16,974	\$ 66,465

24. Retained earnings

24.1 Details of retained earnings as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Legal appropriated retained earnings (*1)	₩ 93,100	₩ 80,764	\$ 72,204
Discretionary appropriated related earnings (*2)	1,984,400	1,810,400	1,539,010
Unappropriated retained earnings	1,259,180	916,940	976,563
	₩ 3,336,680	₩ 2,808,104	\$ 2,587,777

(*1) In accordance with the Commercial law, the Group is required to accumulate at least 10% of the dividend from cash dividends at each balance sheet as reserve for profits until the balance reaches 50% of the paid-in capital. It can be used to transfer capital or to protect deficits.

(*2) The voluntary reserve for the Group is the full amount of the business expansion reserves.

24.2 Details of dividends declared for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in thousands		U.S. dollar in thousands
	2023	2022	2023
Dividends per share (Korean won and %)	₩ 1,000(20%)	₩ 1,000(20%)	\$ 0.78(20%)
Number of shares	170,153,767	123,354,631	170,153,767
Dividends	₩ 170,153,767	₩ 123,354,631	\$ 131,963,523

25. Expenses disclosed by nature

Expenses disclosed by the nature of expense (cost of sales and selling and administrative expense) for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Raw materials used and changes in inventory assets, etc.	₩ 29,793,850	₩ 34,974,017	\$ 23,106,755
Employee Benefits	466,454	389,342	361,761
Depreciation (*1)	278,147	149,306	215,718
Amortization	259,892	251,253	201,560
Water cost for electricity	49,222	27,251	38,174
Commissions	94,779	86,434	73,506
Transportation and storage costs	355,478	507,377	275,693
Others	671,887	702,101	521,085
	₩ 31,969,709	₩ 37,087,081	\$ 24,794,252

(*1) It Includes the depreciation of investment property.

26. Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Salaries	₩ 310,216	₩ 270,616	\$ 240,589
Retirement benefits	15,879	19,541	12,315
Employee welfare	66,839	51,667	51,837
Travel	14,996	10,895	11,630
Communication	6,704	5,615	5,199
Utilities	5,846	4,712	4,534
Taxes and dues	10,783	10,305	8,363
Rents	17,010	10,448	13,192
Depreciation	22,179	20,799	17,201
Amortization	9,563	5,072	7,417
Depreciation of right-of-use assets	15,855	15,609	12,296
Repairs	2,622	2,127	2,034
Insurance	28,119	33,505	21,808
Entertainment	3,727	2,887	2,890
Advertising	4,331	1,733	3,359
Shipping	44,911	59,220	34,831
Commissions	95,885	97,857	74,364
Bad debt expenses (reversal)	(24,122)	25,460	(18,708)
Supplies expenses	3,551	2,982	2,754
Vehicles maintenance	3,148	2,026	2,441
Publication expenses	766	458	594
Training expenses	4,226	2,989	3,277
Development expenses	3,974	955	3,082
Sales promotional expenses	3,258	5,102	2,527
Miscellaneous expenses	629	608	488
Others	5,527	1,943	4,287
	₩ 676,422	₩ 665,131	\$ 524,601

27. Finance income and costs

27.1 Details of finance income for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
<Finance income>			
Interest income	₩ 61,563	₩ 34,342	\$ 47,745
Financial guarantee income	76	75	59
Dividends income	386	553	299
Gains on foreign currency transactions	777,499	1,216,104	602,993
Gains on foreign currency translation	82,268	235,004	63,803
Gains on valuation of derivatives	46,388	224,314	35,976
Gains on settlement of derivatives	296,570	672,651	230,006
Gains on valuation of trade payable	1,867	4,066	1,448
Gains on valuation of trade receivables	-	14,065	-
Gains on valuation of financial assets at FVPL	7,923	-	6,145
Gains on disposal of financial assets at FVPL	7,735	4,160	6,000
	₩ 1,282,275	₩ 2,405,334	\$ 994,474
<Finance cost>			
Losses on disposal of trade receivables	₩ 71,339	₩ 58,207	55,327
Interest expenses	282,071	145,707	218,761
Financial guarantee expenses	113	301	88
Losses on foreign currency transactions	737,396	1,227,449	571,891
Losses on foreign currency translation	119,309	266,662	92,531
Losses on valuation of derivatives	80,732	207,063	62,612
Losses on settlement of derivatives	272,350	623,306	211,222
Losses on valuation on trade payables	-	4,871	-
Losses on valuation on trade receivables	5,405	21,190	4,192
Losses on valuation on financial assets at FVPL	3,145	14,357	2,439
Losses on disposal of financial assets at FVPL	240	2,890	186
	₩ 1,572,100	₩ 2,572,003	\$ 1,219,249

27.2 Details of interest income for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Interest income on cash equivalents	₩ 40,717	₩ 13,950	\$ 31,578
Other interest income	20,846	20,392	16,167
	₩ 61,563	₩ 34,342	\$ 47,745

27.3 Details of interest expenses for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Interest on borrowings and bonds	₩ 289,570	₩ 145,707	\$ 224,577
Deduction: Amount included in the cost of eligible assets	(7,499)	-	(5,816)
	₩ 282,071	₩ 145,707	\$ 218,761

28. Other income and expenses

Details of other income for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
<Other income>			
Gain on disposal of property, plant and equipment	₩ 904	₩ 700	\$ 701
Gain on disposal of intangible assets	33	61	26
Gain on termination of lease contract	338	-	262
Gain from disposal of assets held for sale	7,461	-	5,786
Reversal of provisions for contingencies	122	1,169	95
Reversal of other allowance for doubtful accounts	123	-	95
Gain on disposal of investments in associates	1,043	2,347	809
Reversal of impairment loss on investment in associates	-	6,385	-
Rental income	318	152	247
Insurance benefits	-	16	-
Gain from disposal of carbon emissions rights	7	-	5
Miscellaneous income	11,068	8,172	8,584
	₩ 21,417	₩ 19,002	\$ 16,610
<Other expenses>			
Contribution to provisions for restoration	₩ 5,131	₩ 12,373	\$ 3,979
Other bad debt expenses	9,444	5,151	7,324
Loss on disposal of property, plant and equipment	6,552	1,060	5,081
Loss on impairment of property, plant and equipment	8,622	6,035	6,687
Loss on disposal of intangible assets	142	100	110
Loss on impairment of intangible assets	9,287	31,383	7,203
Donations	4,242	15,658	3,290
Contingencies	3,740	3,969	2,901
Loss on disposal of investments in associates	5,373	-	4,167
Others	18,856	11,878	14,624
	₩ 71,389	₩ 87,607	\$ 55,366

29. Income taxes

29.1 The major components of income tax expenses for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Current income taxes	₩ 238,426	₩ 229,994	\$ 184,912
Changes in deferred income tax arising from temporary differences and others	(16,066)	(93,786)	(12,460)
Carryover tax deduction and others	(3,197)	(2,108)	(2,479)
Income tax charged directly to equity	15,040	3,134	11,664
Income tax expenses	₩ 234,203	₩ 137,234	\$ 181,637

29.2 A reconciliation between income tax expenses at the effective income tax rates of the Group and income before income taxes at the Korea statutory tax rate for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Profit before income tax	₩ 914,622	₩ 742,147	\$ 709,339
Tax at the statutory income tax rate	₩ 231,098	₩ 193,728	\$ 179,229
Adjustments:			
Non-taxable income	(1,204)	(59)	(934)
Non-deductible expenses	284	141	220
Tax credits	(78,470)	(96,150)	(60,858)
Others (*1)	82,495	39,574	63,980
Income tax expense	₩ 234,203	₩ 137,234	\$ 181,637
Effective income tax rates	25.61%	18.49%	25.61%

(*1) It includes direct foreign taxes paid.

29.3 Income tax charged directly to equity for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Gains or losses on valuation of financial assets at FVOCI	₩ 1,383	₩ 1,495	\$ 1,073
Re-measurement loss (gain) on defined benefit liabilities	5,440	(5,766)	4,219
Equity adjustments in equity method	(8,943)	(3,636)	(6,936)
Exchange differences on translation of foreign operations	(4,216)	5,762	(3,270)
Gains or losses on disposal of financial assets at FVOCI	-	(2,320)	-
Gain from disposal of treasury stock	(72)	-	(56)
Business combination under common control	21,448	7,599	16,634
	₩ 15,040	₩ 3,134	\$ 11,664

29.4 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	Business combination	Recognized in profit or loss	Recognized directly to equity	Merger effect	Ending balance
Valuation of derivatives	₩ 217	₩ -	₩ 6,336	₩ -	₩ (1,172)	₩ 5,381
Loss on impairment of investments	48,368	-	-	-	-	48,368
Equity in equality methods	121,097	-	78,696	(8,943)	-	190,850
Provisions of severance liability	42,486	-	3,000	5,440	8,457	59,383
Severance insurance deposits	(43,065)	-	(9,028)	-	(11,344)	(63,437)
Debt restructuring	(4,007)	-	-	-	-	(4,007)
Extraordinary loss	4,891	-	506	-	-	5,397
Allowance for doubtful accounts	31,838	-	(8,244)	-	7,654	31,248
Depreciation	74,322	-	2,882	-	1,117	78,321
Capitalized borrowing costs	(10,902)	-	3,047	-	-	(7,855)
Accrued expenses	17,078	-	(1,707)	-	-	15,371
Foreign currency translation	615	-	500	-	(1,630)	(515)
Equity instruments valuation at FVOCI	4,284	-	109	1,383	6,263	12,039
Financial guarantee liabilities	1,887	-	(91)	-	-	1,796
Borrowings with low interest rates	(60)	-	60	-	-	-
Forgivable borrowings	14,806	-	2,787	-	-	17,593
Accrued revenue	8,289	-	19,580	-	(35,617)	(7,748)
Provisions	11,295	-	(27,999)	-	50,908	34,204
Treasury stock (merger of energy)	-	-	-	21,448	-	21,448
Others	81,708	-	(1,340)	(4,216)	43,321	119,473
	₩ 405,147	₩ -	₩ 69,094	₩ 15,112	₩ 67,957	₩ 557,310
Tax credit carryforwards (*1)	(77,818)	-	(64,943)	-	(1,018)	(143,779)
	<u>₩ 327,329</u>	<u>₩ -</u>	<u>₩ 4,151</u>	<u>₩ 15,112</u>	<u>₩ 66,939</u>	<u>₩ 413,531</u>
U.S. dollar in thousands	<u>\$ 253,861</u>	<u>\$ -</u>	<u>\$ 3,219</u>	<u>\$ 11,720</u>	<u>\$ 51,915</u>	<u>\$ 320,715</u>

2022						
	Beginning balance	Business combination	Recognized in profit or loss	Recognized directly to equity	Ending balance	Ending balance
Valuation of derivatives	₩ 1,222	₩ -	₩ (1,005)	₩ -	₩ -	₩ 217
Loss on impairment of investments	51,355	-	(2,987)	-	-	48,368
Equity in equality methods	26,733	-	98,000	(3,636)	-	121,097
Provisions of severance liability	46,207	-	2,045	(5,766)	-	42,486
Severance insurance deposits	(44,816)	-	1,751	-	-	(43,065)
Debt restructuring	(4,061)	-	54	-	-	(4,007)
Extraordinary loss	6,305	-	(1,414)	-	-	4,891
Allowance for doubtful accounts	17,760	-	14,078	-	-	31,838
Depreciation	66,794	-	7,528	-	-	74,322
Capitalized borrowing costs	(12,126)	-	1,224	-	-	(10,902)
Accrued expenses	17,261	-	(183)	-	-	17,078
Foreign currency translation	586	-	29	-	-	615
Equity instruments valuation at FVOCI	2,789	-	-	1,495	-	4,284
Financial guarantee liabilities	2,216	-	(329)	-	-	1,887
Borrowings with low interest rates	(61)	-	1	-	-	(60)
Forgivable borrowings	9,002	-	5,804	-	-	14,806
Others	75,902	48,067	(33,718)	11,041	-	101,292
	₩ 263,068	₩ 48,067	₩ 90,878	₩ 3,134	₩ -	₩ 405,147
Tax credit carryforwards (*1)	(31,633)	(48,067)	1,882	-	-	(77,818)
	<u>₩ 231,435</u>	<u>₩ -</u>	<u>₩ 92,760</u>	<u>₩ 3,134</u>	<u>₩ -</u>	<u>₩ 327,329</u>
U.S. dollar in thousands	<u>\$ 179,490</u>	<u>\$ -</u>	<u>\$ 71,940</u>	<u>\$ 2,431</u>	<u>\$ -</u>	<u>\$ 253,861</u>

(*1) As of December 31, 2023 and 2022, the amounts related to investments in subsidiaries and associates that are not recognized as deferred tax assets and liabilities are deductible temporary differences of ₩456,357 million (\$353,930 thousand) and ₩175,592 million (\$136,181 thousand), respectively.

29.5 Uncertain income tax implications are taken into account in current tax assets and current tax liabilities.

30. Earnings per share

30.1 Earnings per share

Details of earnings per share for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions, except for per share amounts):

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Profit for the year attributable to ordinary equity holders of the parent (*1)	₩ 670,235	₩ 589,750	\$ 519,804
Weighted average number of ordinary shares outstanding (*2)	170,149,543	123,373,395	170,149,543
Basic earnings per share (Korean won, U.S dollar)	3,939	4,780	3.05

(*1) This is the amount after deducting the after-tax interest amount on hybrid bonds from the parent company's owner's net profit.

(*2) The weighted average number of ordinary shares outstanding used to calculate basic earnings per share is as follows:

	2023	2022
Number of shares issued	175,922,788	123,375,149
Weighted average number of treasury stock	(5,773,245)	(1,754)
Weighted average number of ordinary shares outstanding	170,149,543	123,373,395

30.2 Diluted earnings per share

Diluted earnings per share are consistent with basic earnings per share because there is no potential common stock that can be converted into common stock for the years ended December 31, 2023 and 2022.

31. Fair value measurement

31.1 Fair value hierarchy

The following are the criteria for classifying fair value from Level 1 to Level 3, depending on how observable it is in the market.

- Level1 - Quoted (unadjusted) prices in active markets for identical assets or liabilities
- Level2 - Input variables for assets or liabilities observable either directly (e.g., price) or indirectly (e.g., derived from the price), except for the quoted prices included in Level
- Level3 - Input variables for assets or liabilities that are not based on observable market data (unobservable inputs)

31.2 Assumption used for fair value valuation technique

The fair value of financial instruments that are traded in active markets is determined based on quoted market prices at the end of reporting period. These instruments are included in Level 1, mostly are classified into financial assets at fair value which are listed stocks.

For financial instruments not traded in an active market, the fair value is determined using appropriate valuation techniques. This valuation technique fully makes use of observable market information as possible and internal information at minimum. When every significant input variable required for measuring fair value of the instrument is observable, the instrument is classified into Level 2.

31.2 Assumption used for fair value valuation technique (cont'd)

When one or more significant input variables are not based on observable market information, the instrument is classified into Level 3.

Valuation techniques used to measure fair values of instruments are:

- Quoted prices or dealer prices of similar instrument
- Present value discounted by forward exchange rate as the end of reporting period is used for fair value of derivative instrument
- Discounted cash flow and other techniques are used for other instruments

Book values of instruments which are classified into same category with trade and other receivables are estimated as reasonable approximate values of fair value.

The Group considered the maturity interest rate of the Group in determining the fair value of the derivative financial assets, liabilities and bonds valued at Level 2 hierarchy.

31.3 Financial instruments by category

The book value and fair value of financial instruments of the Group as of December 31, 2023 and 2022 are as follows:

	2023					U.S. dollar in thousand
	Korean won in millions				Total	
	Book value	Level 1	Level 2	Level 3		
<Financial assets>						
Financial assets at FVPL						
Trade and other receivables	₩ 6,419	₩ -	₩ 6,419	₩ -	₩ 6,419	\$ 4,978
Long-term investment (*1)	1,783	-	-	-	-	-
Other securities (*1)	4,849	-	-	5	5	4
Other financial assets	146,760	-	146,760	-	146,760	113,820
Derivative financial assets	44,562	-	44,562	-	44,562	34,560
Financial assets at FVOCI						
Equity instruments (*1)	53,887	12,108	-	-	12,108	9,390
Financial assets at amortized costs (*2)						
Cash and Cash equivalents	1,136,863	-	-	-	-	-
Trade and other receivables (*3)	4,815,340	-	-	-	-	-
Other securities	113,547	-	-	-	-	-
<Financial liabilities>						
Financial liabilities at FVPL						
Derivative financial liabilities	₩ 52,941	₩ -	₩ 52,941	₩ -	₩ 52,941	\$ 41,059
Financial liabilities at amortized costs (*2)						
Trade and other receivables (*4)	3,428,592	-	-	-	-	-
Borrowings	3,045,417	-	-	-	-	-
Bonds	2,740,823	-	-	-	-	-

(*1) For some of the financial assets, the acquisition cost was measured at fair value because sufficient information was not available to measure fair value during the current period and there was no clear evidence of value changes in the previous period or current period.

(*2) In the case of financial assets and financial liabilities measured at amortized cost, the book value is similar to the fair value, so the fair value is not separately disclosed.

(*3) Trade and other receivables and long-term trade and other receivables include ₩29,438 million (\$22,831 thousand) of current portion of lease receivables and ₩283,009 million (\$219,489 thousand) of long-term lease receivables, respectively.

(*4) Trade and other payables and long-term trade and other payables include ₩74,361 million (\$57,671 thousand) of current portion of lease liabilities and ₩347,466 million (\$269,479 thousand) of long-term lease liabilities, respectively.

31.3 Financial instruments by category (cont'd)

	2022					U.S. dollar in thousand
	Korean won in millions					
	Book value	Level 1	Level 2	Level 3	Total	
<Financial assets>						
Financial assets at FVPL						
Trade and other receivables	₩ 15,376	₩ -	₩ -	₩ 15,376	₩ 15,376	\$ 11,925
Long-term investment (*1)	467	-	-	-	-	-
Other securities (*1)	4,861	-	17	-	17	13
Other financial assets	134,507	-	134,507	-	134,507	104,318
Derivative financial assets	54,004	-	54,004	-	54,004	41,883
Financial assets at FVOCI						
Equity instruments (*1)	44,044	11,360	-	-	11,360	8,810
Financial assets at amortized costs (*2)						
Cash and Cash equivalents	1,297,706	-	-	-	-	-
Trade and other receivables (*3)	3,873,980	-	-	-	-	-
Other securities	94,126	-	-	-	-	-
<Financial liabilities>						
Financial liabilities at FVPL						
Derivative financial liabilities	₩ 59,704	₩ -	₩ 59,704	₩ -	₩ 59,704	\$ 46,304
Financial liabilities at amortized costs (*2)						
Trade and other receivables (*4)	2,898,689	-	-	-	-	-
Borrowings	2,790,926	-	-	-	-	-
Bonds	1,763,434	-	-	-	-	-

(*1) For some of the financial assets, the acquisition cost was measured at fair value because sufficient information was not available to measure fair value during the previous period and there was no clear evidence of value changes in the previous period or current period.

(*2) In the case of financial assets and financial liabilities measured at amortized cost, the book value is similar to the fair value, so the fair value is not separately disclosed.

(*3) Trade and other receivables and long-term trade and other receivables include ₩46,109 million (\$35,760 thousand) of current portion of lease receivables and ₩45,608 million (\$35,371 thousand) of long-term lease receivables, respectively.

(*4) Trade and other payables and long-term trade and other payables include ₩66,305 million (\$51,423 thousand) of current portion of lease liabilities and ₩241,405 million (\$187,223 thousand) of long-term lease liabilities, respectively.

31.4. Financial income (loss) by category of financial instruments

The Group's financial income and losses by category of financial instruments for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	Financial income (loss)							Other comprehensive income
	Interest income (expenses) (*1)	Foreign exchange gain (loss)	Disposal gain (loss)	Valuation gain (loss)	Dividend income	Others	Total	
<2023>								
Financial assets at FVPL	₩ 42	₩ -	₩ 304,305	₩ 45,761	₩ 10	₩ -	₩ 350,118	₩ -
Financial assets at FVOCI	-	-	-	-	376	-	376	(4,476)
Financial assets at amortized costs	61,521	18,605	(71,339)	-	-	-	8,787	-
Financial liabilities at FVPL	-	-	(272,590)	(78,865)	-	-	(351,455)	-
Financial liabilities at amortized costs	(282,071)	(15,543)	-	-	-	(37)	(297,651)	-
Total	₩ (220,508)	₩ 3,062	₩ (39,624)	₩ (33,104)	₩ 386	₩ (37)	₩ (289,825)	₩ (4,476)
U.S. dollar in thousand	\$ (171,016)	\$ 2,375	\$ (30,731)	\$ (25,674)	\$ 300	\$ (29)	\$ (224,775)	\$ (3,471)
<2022>								
Financial assets at FVPL	₩ 2,364	₩ -	₩ 673,922	₩ 202,832	₩ 1	₩ -	₩ 879,119	₩ -
Financial assets at FVOCI	-	-	-	-	552	-	552	(8,081)
Financial assets at amortized costs	31,978	256,375	(58,207)	-	-	-	230,146	-
Financial liabilities at FVPL	-	-	(623,306)	(207,868)	-	-	(831,174)	-
Financial liabilities at amortized costs	(145,707)	(299,378)	-	-	-	(226)	(445,311)	-
Total	₩ (111,365)	₩ (43,003)	₩ (7,591)	₩ (5,036)	₩ 553	₩ (226)	₩ (166,668)	₩ (8,081)
U.S. dollar in thousand	\$ (86,370)	\$ (33,351)	\$ (5,887)	\$ (3,906)	\$ 429	\$ (175)	\$ (129,260)	\$ (6,267)

(*1) financial income and losses by category of financial instruments above include income and losses related to lease liabilities.

32. Financial instruments risk management

32.1 Capital risk management

The purpose of the Group's capital management is to maintain an optimal capital structure to protect the ability to continue to provide benefits to shareholders and stakeholders as a continuing entity and to reduce capital costs. In order to maintain or adjust the capital structure, the Group applies policies such as adjusting dividends.

Capital structure of the Group is composed of net borrowings, which are borrowings less cash and cash equivalents and equity. The Group maintains the same capital risk management policies as 2022. Details of the capital components managed by the Group as of December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Total borrowings	₩ 5,786,241	₩ 4,554,361	\$ 4,487,545
Less: Cash and cash equivalents	(1,136,863)	(1,297,706)	(881,699)
Net borrowings	₩ 4,649,378	₩ 3,256,655	\$ 3,605,846
Total equity	₩ 6,624,762	₩ 4,398,127	\$ 5,137,864
Gearing ratio	70.18%	74.05%	70.18%

32.2 Financial risk management

The Group is exposed to market risk (foreign currency risk and interest rate risk), credit risk, and liquidity risk. The purpose of Group's financial risk management is to detect potential risk which could decrease the Group's profit and to eliminate, reduce and hedge such risk to an acceptable level. The Group uses derivative financial instruments for hedging special risk such as foreign currency risk. Financial risk management policy of the Group has been consistent with the policy of 2022.

32.2.1 Market risk

Market risk is the risk that the fair value of financial instrument will fluctuate because of changes in market prices. Market prices comprise three types of risk: foreign currency risk, interest rate risk and other price risk.

32.2.1.1 Foreign currency risk

The Group is exposed to the risk of exchange rate fluctuations because it has transactions denominated in foreign currency. The book values of monetary assets and liabilities denominated in major foreign currencies other than functional currencies as of December 31, 2023 and 2022 are as follows:

	Korean won in million				U.S. dollar in thousand	
	2023		2022		2023	
	Asset	Liability	Asset	Liability	Asset	Liability
USD	₩ 2,898,496	₩ 3,462,720	₩ 2,741,379	₩ 3,058,545	\$ 2,247,942	\$ 2,685,528
JPY	320,705	252,478	429,927	277,909	248,724	195,810
EUR	495,012	300,252	527,567	251,667	383,909	232,862
CNY	222,097	230,391	66,064	267,369	172,248	178,681

The effect that fluctuation in the exchange rate of 10% of the functional currency on each foreign currency has on profit or loss as of December 31, 2023 is as follows:

	Korean won in million		U.S. dollar in thousand	
	Increase by 10%	Decrease by 10%	Increase by 10%	Decrease by 10%
USD	₩ (56,422)	₩ 56,422	\$ (43,759)	\$ 43,759
JPY	6,823	(6,823)	5,293	(5,293)
EUR	19,476	(19,476)	15,105	(15,105)
CNY	(829)	829	(643)	643

32.2.1.2 Interest rate risk

The interest rate risk of the Group arises from borrowings and bonds. Due to short-term borrowings issued at floating interest rates, the Group is exposed to cash flow interest rate risk.

As of December 31, 2023, with all other variables remain constant, a change of 1% in the floating interest rate on borrowings will have an effect of ₩29,654 million (\$22,998 thousand) decrease or increase in the Group's income before income taxes.

32.2.2 Credit risk

Credit risk is the risk that counterparties will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. The Group's exposure to the credit risk relates to operating and financial activities.

32.2.2.1 Trade and other receivables

It is the principle for the Group to conduct transactions only with those with sound financial status by performing credit verification procedures for all counterparties that desire credit transactions with the Group. In addition, the Group manages the balance of accounts receivable by continuously reevaluating credit ratings so that the level of the Group's exposure to the credit risk is maintained at an insignificant level.

32.2.2.2 Other assets

Credit risks associated with the Group's other assets which consist of cash, short-term deposits and short-term and long-term loans arise from the default by the counterparties. Maximum exposure to credit risks will be the book value of the other assets. The Group deposits cash and cash equivalents and short-term financial products at financial institutions such as Woori Bank, and deals with financial institutions with excellent credit ratings. So, credit risk from financial institutions is limited.

32.2.2.3 Maximum exposure to credit risk

The book value of a financial asset represents the maximum exposure to a credit risk. If a financial guarantee is provided, the maximum exposure to credit risk is the maximum amount due on the claims of the assured. For borrowing arrangements, the maximum exposure to credit risk is the total commitment amount. In addition, in the case of a borrowing agreement, the maximum exposure amount of credit risk is the balance of the applicable borrowing as of the end of the current year, and the limit of the agreement amount is detailed in Note 20.

32.2.2.4 Aging analysis of non-derivative financial instruments

Aging analysis of non-derivative financial instruments as of December 31, 2023 is as follows (Korean won in millions):

	Not Past due	Past due				Total
		Within 1 month	1 to 3 months	3 to 12 months	Over 12 months	
Trade and other receivables (*1)	₩ 4,364,891	₩ 359,264	₩ 12,900	₩ 26,874	₩ 57,830	₩ 4,821,759
Other financial assets	320,827	-	-	-	-	320,827
	<u>₩ 4,685,718</u>	<u>₩ 359,264</u>	<u>₩ 12,900</u>	<u>₩ 26,874</u>	<u>₩ 57,830</u>	<u>₩ 5,142,586</u>
U.S. dollar in thousand	<u>\$ 3,634,030</u>	<u>\$ 278,629</u>	<u>\$ 10,005</u>	<u>\$ 20,842</u>	<u>\$ 44,850</u>	<u>\$ 3,988,356</u>

(*1) Trade and other receivables and long-term trade and other receivables include ₩29,438 million (\$22,831 thousand) of current lease receivables and ₩283,009 million (\$219,489 thousand) of long-term lease receivables, respectively.

32.2.3 Liquidity risk

The Group establishes short and long-term capital management plans and analyzes and reviews cash flow budgets against actual cash outflows in order to match the maturity of financial liabilities and financial assets. The Group believes that it has sufficient cash inflows from operating activities and financial assets to redeem financial liabilities that become due.

32.2.3.1 The maturity analysis based on the maturity of the remaining contract of the financial liability outstanding as of December 31, 2023 is as follows. The maturity amount is an undiscounted contractual cash flow that includes interest payments (Korean won in millions):

	Within 1 year	1 to 5 years	Over 5 years	Total
Trade and other payables (*1)	₩ 3,069,417	₩ 371,562	₩ 367	₩ 3,441,346
Derivative financial liabilities	44,583	8,358	-	52,941
Borrowings	1,923,280	1,164,663	198,343	3,286,286
Bonds	967,778	1,853,151	114,000	2,934,929
	<u>₩ 6,005,058</u>	<u>₩ 3,397,734</u>	<u>₩ 312,710</u>	<u>₩ 9,715,502</u>
U.S. dollar in thousand	<u>\$ 4,657,250</u>	<u>\$ 2,635,128</u>	<u>\$ 242,524</u>	<u>\$ 7,534,902</u>

(*1) The Trade and other payables and the long-term trade and other payables include ₩74,361 million (\$57,671 thousand) of current portion of lease liabilities and ₩347,466 million (\$269,479 thousand) of long-term lease liabilities, respectively.

32.2.3.2 The maturity analysis based on the guarantee period of the financial guarantee contract as of December 31, 2023 is as follows (Korean won in millions):

	Within 1 year	1 to 5 years	Over 5 years	Total
Financial guarantee contract (*)	₩ 32,476	₩ -	₩ -	₩ 32,476
U.S. dollar in thousand	<u>\$ 25,187</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 25,187</u>

(*) The Group provides arrangements of guarantee obligations and fund supplementary to the associates and other related parties, and for further information, see Note 20.

33. Related party transactions

33.1 Details of related parties as of December 31, 2023 are as follows:

	Company Name
Parent	POSCO Holdings Inc.
Associates and joint ventures	POSCO MEXICO PROCESSING CENTER HOLDING LLC., HUNCHUN POSCO HMM INTERNATIONAL LOGISTICS CO., LTD, POSCO-MALAYSIA SDN.BHD., POSCO-ITPC S.P.A, YULCHON MEXICO S.A. DE C.V., HYUNSON ENGINEERING & CONSTRUCTION, POSCO-ESDC LTD., POSCO IJPC, Inco tech Inc., SHINPOONG DAEWOO PHARMA VIETNAM CO., LTD., Erae AMS Co., Ltd., Shanghai Lansheng DAEWOO Corp, Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd., GENERAL MEDICINES CO., LTD., KOREA LNG LTD., DMSA/AMSA, SOUTH-EAST ASIA GAS PIPELINE CO., LTD., GLOBAL KOMSCO DAEWOO LLC., Blue Ocean Recovery PEF No.1, Gyeonggi Green Energy Co., Ltd. (*1), Noeul Green Energy Co., Ltd. (*1), Samcheok Blue Power Co., Ltd. (*1), Mong Duong Finance Holdings B.V (*1), ECO ENERGY SOLUTION CO., LTD. (*1), AES Mong Duong Power Co., LTD. (*1)
Other related parties (*2)	POSCO Co., Ltd., PT. KRAKATAU POSCO, POSCO-THAINOX, POSCO ASSAN TST STEEL INDUSTRY, POSCO STEELEON Co., Ltd., POSCO-CSPC, POSCO VST CO., LTD., POSCO FLOW CO., LTD., POSCO YAMATOVINA STEEL JOINT STOCK COMPANY, POSCO-MKPC, POSCO ASIA CO., LTD., POSCO-TNPC, POSCO-FOSHAN STEEL PROCESSING CENTER CO., LTD., POSCO VIETNAM HOLDINGS, POSCO-CTPC, POSCO Eco & Challenge Co., Ltd., ZHANGJIAGANG POHANG STAINLESS STEEL CO., LTD., POSCO-VIETNAM CO., LTD., COMPANHIA SIDERURGICA DO PECÉM, POSCO MAHARASHTRA STEEL PVT. LTD., POSCO-IPPC, POSCO-ICPC, etc.

(*1) As POSCO Energy Co., Ltd. and its subsidiaries, which were other related parties for the year ended December 31, 2022, were absorbed and merged in the beginning of the current period, the classification of the above companies was changed from other related parties to associates and joint ventures.

(*2) Other related parties are subsidiaries, associates, and joint ventures of POSCO Holdings Inc., the parent company.

33.2 Significant transactions with related parties for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023											
	Sales and others			Purchase and others								
	Sales	Others	Total	Purchase	Others	Total						
Parent company												
POSCO Holdings Inc. (*1)	₩	263	₩	-	₩	263	₩	-	₩	79,866	₩	79,866
Associates												
POSCO MEXICO PROCESSING CENTER HOLDING, LLC.	₩	582,242	₩	-	₩	582,242	₩	11,940	₩	13	₩	11,953
Gyeonggi Green Energy Co., Ltd.		31,268		-		31,268		-		7,776		7,776
POSCO-MALAYSIA SDN. BHD.		89,813		-		89,813		5,987		-		5,987
POSCO-ITPC S.P.A		78,469		-		78,469		1,480		24		1,504
Noeul Green Energy Co., Ltd.		6,499		28		6,527		-		10,321		10,321
YULCHON MEXICO S. A. DE C. V.		2,119		-		2,119		-		-		-
POSCO-ESDC LTD.		-		84		84		4,915		9,312		14,227
POSCO IJPC		295,267		-		295,267		89		-		89
Samcheok Blue Power Co., Ltd.		118,420		10,020		128,440		-		-		-
Mong Duong Finance Holdings B.V		-		2,031		2,031		-		-		-
GENERAL MEDICINES CO., LTD.		1,354		428		1,782		-		-		-
KOREA LNG LTD.		-		21,106		21,106		-		-		-
AES Mong Duong Power CO., LTD.		2,666		33,839		36,505		-		-		-
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.		-		59,295		59,295		-		-		-
GLOBAL KOMSCO DAEWOO LLC.		-		-		-		26,431		-		26,431
Blue Ocean Recovery PEF No.1		-		-		-		123		2,828		2,951
Others												
POSCO Co., Ltd.	₩	3,178,025	₩	2,187	₩	3,180,212	₩	12,147,524	₩	418,962	₩	12,566,486
PT. KRAKATAU POSCO		999,800		-		999,800		267,760		1,954		269,714
POSCO-THAINOX POSCO STEELEON Co., Ltd.		210,862		-		210,862		88,733		-		88,733
POSCO-CSPC		64,411		-		64,411		221,961		169		222,130
POSCO ASSAN TST STEEL INDUSTRY		277,167		-		277,167		4,640		-		4,640
POSCO FLOW CO., LTD.		183,819		-		183,819		54,287		-		54,287
POSCO VST CO., LTD.		326		-		326		1,723		216,133		217,856
POSCO VIETNAM HOLDINGS		128,119		-		128,119		62,738		-		62,738
POSCO YAMATO VINA STEEL JOINT STOCK COMPANY		177,257		-		177,257		2,318		-		2,318
Others		149,054		-		149,054		54,393		18		54,411
		2,493,230		219		2,493,449		1,073,693		166,841		1,240,534
	₩	9,070,450	₩	129,237	₩	9,199,687	₩	14,030,735	₩	914,217	₩	14,944,952
U.S. dollar in thousand	\$	7,034,629	\$	100,230	\$	7,134,859	\$	10,881,600	\$	709,025	\$	11,590,625

33.2 Significant transactions with related parties for the years ended December 31, 2023 and 2022 are as follows: (Korean won in million) (cont'd)

	2022											
	Sales and others			Purchase and others								
	Sales	Others	Total	Purchase	Others	Total						
Parent company												
POSCO Holdings Inc. (*1)	₩	253,942	₩	237	₩	254,179	₩	2,172,433	₩	110,152	₩	2,282,585
Associates												
POSCO MEXICO PROCESSING CENTER HOLDING, LLC.	₩	698,079	₩	-	₩	698,079	₩	2,247	₩	3,145	₩	5,392
SPH CO., LTD.		134		9		143		-		-		-
POSCO-ESDC LTD.		-		75		75		897		11,395		12,292
POSCO IJPC GENERAL MEDICINES CO., LTD.		333,978		-		333,978		9		-		9
		11,385		400		11,785		-		-		-
KOREA LNG LTD.		-		21,161		21,161		-		-		-
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.		-		17,458		17,458		-		-		-
GLOBAL KOMSCO DAEWOO LLC		-		26		26		21,582		-		21,582
YULCHON MEXICO S.A. DE C.V.		1,050		-		1,050		-		-		-
POSCO-MALAYSIA SDN. BHD.		111,127		-		111,127		7,534		-		7,534
POSCO-ITPC S.P.A		152,344		-		152,344		1,585		-		1,585
CURO CO., LTD.		-		-		-		65		-		65
Erae AMS Co., Ltd.		-		-		-		177,648		-		177,648
Others												
POSCO Co., Ltd.	₩	3,480,008	₩	854	₩	3,480,862	₩	11,167,892	₩	492,574	₩	11,660,466
POSCO ASIA CO., LTD.		-		-		-		-		4,564		4,564
POSCO-VIETNAM CO., LTD.		326,431		-		326,431		125,431		-		125,431
POSCO-THAINOX		498,883		-		498,883		282,841		-		282,841
POSCO ASSAN TST STEEL INDUSTRY		505,750		1,134		506,884		220,178		-		220,178
POSCO-AAPC		147,009		-		147,009		121		50		171
POSCO STEELEON Co., Ltd.		112,333		-		112,333		267,245		104		267,349
POSCO AMERICA CORP.		-		-		-		276		-		276
ZHANGJIAGANG POHANG STAINLESS STEEL CO., LTD.		35,794		-		35,794		465,874		284		466,158
POSCO-Foshan Steel Processing Center CO., LTD.		191,099		-		191,099		16,973		-		16,973
COMPANHIA SIDERURGICA DO PECÉM		3,995		-		3,995		126,123		-		126,123
POSCO Energy Co., Ltd.		747,590		-		747,590		-		-		-
POSCO VST CO., LTD.		412,167		604		412,771		100,090		-		100,090
POSCO YAMATO VINA STEEL JOINT STOCK COMPANY		139,958		-		139,958		61,540		103		61,643
PT. KRAKATAU POSCO		968,007		-		968,007		276,267		658		276,925
POSCO Maharashtra Steel PVT.LTD.		53		-		53		71,922		-		71,922
Others		2,770,426		69		2,770,495		1,164,825		491,287		1,656,112
	₩	11,901,542	₩	42,027	₩	11,943,569	₩	16,731,598	₩	1,114,316	₩	17,845,914
U.S. dollar in thousand	\$	9,230,295	\$	32,594	\$	9,262,889	\$	12,976,266	\$	864,213	\$	13,840,479

(*1) In addition to the above transactions, dividends paid to POSCO Holdings Inc. for the years ended December 31, 2023 and 2022 amounted to ₩77,616 million (\$60,195 thousand) and ₩62,093 million (\$48,157 thousand), respectively.

33.3 Significant balances of receivables and payables outstanding with related parties as of December 31, 2023 and 2022 are summarized as follows (Korean won in million):

	2023					
	Receivables (*1)			Payables		
	Trade receivables	Others	Total	Trade payables	Others	Total
Parent company						
POSCO Holdings Inc.	₩ -	₩ 200	₩ 200	₩ -	₩ 7,430	₩ 7,430
Associates						
POSCO MEXICO PROCESSING CENTER HOLDING, LLC.	₩ 74,139	₩ -	₩ 74,139	₩ 4,412	₩ 119	₩ 4,531
Gyeonggi Green Energy Co., Ltd.	10,714	8,450	19,164	-	149	149
POSCO-MALAYSIA SDN.BHD.	18,756	-	18,756	75	-	75
POSCO-ITPC S.P.A	1,819	-	1,819	68	61	129
Noeul Green Energy Co., Ltd.	-	1,808	1,808	-	-	-
YULCHON MEXICO S. A. DE C. V.	961	-	961	-	-	-
POSCO-ESDC LTD.	-	-	-	1,029	701	1,730
POSCO IJPC	71,441	-	71,441	-	-	-
Samcheok Blue Power Co., Ltd.	7,870	-	7,870	-	-	-
Shanghai Lansheng DAEWOO Corp	-	-	-	-	383	383
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	-	-	-	-	633	633
GENERAL MEDICINES CO., LTD.	807	426	1,233	-	78	78
KOREA LNG LTD.	-	1,289	1,289	-	-	-
DMSA/AMSA	-	103,016	103,016	-	-	-
GLOBAL KOMSCO DAEWOO LLC.	-	2,177	2,177	-	38	38
Blue Ocean Recovery PEF No.1	-	-	-	-	10	10
Others						
POSCO Co., Ltd.	₩ 202,405	₩ 3,313	₩ 205,718	₩ 1,272,647	₩ 30,751	₩ 1,303,398
PT. KRAKATAU POSCO	593,109	-	593,109	11,693	201	11,894
POSCO-CSPC	53,699	-	53,699	535	-	535
POSCO-ICPC	51,645	1	51,646	-	-	-
POSCO Eco & Challenge Co., Ltd.	53,154	3,282	56,436	9,843	17,823	27,666
POSCO-TNPC	48,362	-	48,362	-	-	-
POSCO-CTPC	8,145	-	8,145	-	-	-
POSCO-FOSHAN STEEL PROCESSING CENTER CO., LTD.	17,503	-	17,503	1,171	65	1,236
POSCO VIETNAM HOLDINGS	40,721	-	40,721	210	-	210
POSCO ASSAN TST STEEL INDUSTRY	14,677	306	14,983	-	1,632	1,632
Others	370,830	1,369	372,199	62,333	404,754	467,087
	₩ 1,640,757	₩ 125,637	₩ 1,766,394	₩ 1,364,016	₩ 464,828	₩ 1,828,844
U.S. dollar in thousand	\$ 1,272,497	\$ 97,438	\$ 1,369,935	\$ 1,057,869	\$ 360,499	\$ 1,418,368

33.3 Significant balances of receivables and payables outstanding with related parties as of December 31, 2023 and 2022 are summarized as follows: (Korean won in million) (cont'd)

	2022					
	Receivables (*1)			Payables		
	Trade receivables	Others	Total	Trade payables	Others	Total
Parent company						
POSCO Holdings Inc.	₩ -	₩ 577	₩ 577	₩ 2,450	₩ 76	₩ 2,526
Associates						
POSCO MEXICO PROCESSING CENTER HOLDING, LLC.	₩ 55,838	₩ -	₩ 55,838	₩ 92	₩ 1,239	₩ 1,331
SPH CO., LTD.	2	-	2	-	17	17
POSCO-ESDC LTD.	-	-	-	-	803	803
POSCO IJPC	72,389	-	72,389	-	538	538
Shanghai Lansheng DAEWOO Corp	2,606	-	2,606	-	377	377
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	-	-	-	-	622	622
GENERAL MEDICINES CO., LTD.	3,313	-	3,313	-	40	40
KOREA LNG LTD.	-	1,977	1,977	-	-	-
SOUTH-EAST ASIA GAS PIPELINE CO., LTD.	-	-	-	-	-	-
GLOBAL KOMSCO DAEWOO LLC	-	2,082	2,082	-	63	63
YULCHON MEXICO S.A. DE C.V.	314	-	314	-	13	13
POSCO-MALAYSIA SDN. BHD.	14,546	-	14,546	72	59	131
POSCO-ITPC S.P.A	5,629	-	5,629	745	1,374	2,119
CURO CO., LTD.	-	-	-	6	-	6
Erae AMS Co., Ltd.	-	54	54	4,359	2,004	6,363
Others						
POSCO Co., Ltd.	₩ 80,194	₩ 18,336	₩ 98,530	₩ 1,206,754	₩ 31,249	₩ 1,238,003
POSCO ASIA CO., LTD.	-	-	-	-	278,500	278,500
POSCO-VIETNAM CO., LTD.	-	135	135	68	-	68
POSCO-THAINOX	4,324	86	4,410	19,927	34	19,961
POSCO ASSAN TST STEEL INDUSTRY	26,319	139	26,458	7,921	434	8,355
POSCO-AAPC	29,601	1	29,602	-	-	-
POSCO STEELEON Co., Ltd.	5,336	405	5,741	16,404	5	16,409
POSCO AMERICA CORP. ZHANGJIAGANG POHANG STAINLESS STEEL CO., LTD.	-	-	-	-	142	142
POSCO-Foshan Steel Processing Center CO., LTD.	2,252	73	2,325	2,168	-	2,168
POSCO Energy Co., Ltd.	2,162	-	2,162	-	19	19
POSCO VST CO., LTD.	-	62	62	-	-	-
POSCO YAMATO VINA STEEL JOINT STOCK COMPANY	1,327	2	1,329	5,339	12	5,351
PT. KRAKATAU POSCO	1,636	56	1,692	6,252	-	6,252
POSCO Maharashtra Steel PVT. LTD.	506,617	406	507,023	7,613	-	7,613
Others	-	-	-	6,727	-	6,727
	378,376	104,082	482,458	28,350	42,058	70,408
	₩ 1,192,781	₩ 128,473	₩ 1,321,254	₩ 1,315,247	₩ 359,678	₩ 1,674,925
U.S. dollar in thousand	\$ 925,067	\$ 99,638	\$ 1,024,705	\$ 1,020,046	\$ 278,950	\$ 1,298,996

(*1) Allowance for doubtful accounts for the above receivables as of December 31, 2023 and 2022 amount to ₩132,256 million (\$102,571 thousand) and ₩103,523 million (\$80,288 thousand), respectively.

33.4 Details of fund transactions with related parties

There are no details of fund transactions with related parties for the year ended December 31, 2023.

33.5 Key management personnel compensation

Compensations for key management personnel for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Salaries	₩ 24,278	₩ 16,759	\$ 18,829
Long-term employee benefits	12	23	9
Retirement benefits	1,688	1,412	1,309
	₩ 25,978	₩ 18,194	\$ 20,147

33.6 Guarantees provided to the related parties

Guarantees provided to the related parties as of December 31, 2023 and 2022 are disclosed in Note 20.6.

34. Statement of Cash Flows

34.1 Changes in assets and liabilities resulting from operating activities for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Reconciliation of profit for the year to net cash flows			
Depreciation	₩ 275,124	₩ 146,463	\$ 213,374
Amortization	259,892	251,253	201,560
Depreciation of investment properties	3,024	2,843	2,345
Retirement benefits	21,112	23,087	16,374
Bad debt expenses	(24,122)	25,460	(18,708)
Interest expenses	282,071	145,707	218,761
Loss on valuation of financial assets at FVPL	3,145	14,357	2,439
Loss on disposal of financial assets at FVPL	240	2,890	186
Gain on disposal of investment of associates	(1,043)	(2,347)	(809)
Loss on disposal of investment of associates	5,373	-	4,167
Reversal of impairment loss on investment in associates	-	(6,385)	-
Loss on foreign currency translation	119,309	266,662	92,531
Loss on settlement of derivatives	3,309	623,306	2,566
Loss on valuation of derivatives	86,137	233,125	66,804
Reversal of other allowance for doubtful accounts	(123)	-	(95)
Other bad debt expenses	9,444	5,151	7,324
Loss on disposal of property, plant and equipment	6,552	1,060	5,081
Impairment loss on property, plant and equipment	8,622	6,035	6,687
Loss on disposal of intangible assets	142	100	110
Impairment loss on intangible assets	9,287	31,383	7,203
Income tax expense	234,203	137,234	181,637
Loss on valuation of inventories	3,009	21,611	2,334
Financial guarantee expense	113	301	88
Loss on investment in associates	20,461	2,767	15,869
Other expenses	97,146	16,342	75,342
Gain on valuation of financial assets at FVPL	(7,923)	-	(6,145)
Interest income	(61,563)	(34,342)	(47,745)
Dividends income	(386)	(553)	(299)
Gain on foreign currency translation	(82,268)	(235,004)	(63,803)
Gain on disposal on financial assets at FVPL	(7,735)	(4,161)	(5,999)

34.1 Changes in assets and liabilities resulting from operating activities for the years ended December 31, 2023 and 2022 are as follows: (cont'd)

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Gain on settlement of derivatives	(3,633)	(672,651)	(2,818)
Gain on valuation of derivatives	(48,255)	(242,445)	(37,424)
Gain on disposal of property, plant and equipment	(904)	(700)	(701)
Gain on disposal of intangible assets	(33)	(61)	(26)
Reversal of loss on valuation of inventories	(17,390)	-	(13,487)
Financial guarantee income	(76)	(75)	(59)
Stock compensation cost	16,970	807	13,161
Gain on investment in associates	(111,768)	(77,680)	(86,682)
Gain on disposal of assets held for sale	(7,461)	-	(5,786)
Gain on fair value valuation of biological assets	(830)	344	(644)
Other incomes	(233)	(1,171)	(181)
	₩ 1,088,939	₩ 680,713	\$ 844,532
Changes in operating assets and liabilities:			
Trade receivables	₩ (213,531)	₩ 469,549	\$ (165,605)
Other current receivables	(5,396)	(69,679)	(4,185)
Other current assets	55,522	31,714	43,060
Inventories	91,243	174,128	70,764
Other non-current receivables	2,106	135	1,633
Other non-current assets	6,655	72,787	5,161
Trade payables	10,091	(445,257)	7,826
Other current payables	(77,003)	144,649	(59,720)
Other current liabilities	(19,358)	(77,824)	(15,013)
Other non-current payables	315	(797)	244
Other non-current liabilities	5,230	(2,284)	4,056
Provisions	(94,374)	(1,629)	(73,192)
Retirement benefits paid	(1,687)	(380)	(1,308)
Increase in plan assets	(46,245)	(29,209)	(35,866)
	₩ (286,432)	₩ 265,903	\$ (222,145)

34.2 Changes in liabilities arising from financing activities for the years ended December 31, 2023 and 2022 are as follows (Korean won in millions):

	2023						
	Beginning balance	Increase due to merger	Cash flows arising from financing activities	Non-cash flows			Ending balance
				Reclassification	Exchange rate fluctuation	Others	
Current portion of lease liabilities	₩ 66,305	₩ 4,129	₩ (31,953)	₩ 10,646	₩ 240	₩ 24,994	₩ 74,361
Short-term borrowings	1,877,161	32,742	(344,818)	-	26,453	-	1,591,538
Current portion of long-term borrowings	121,208	359,698	(467,918)	189,017	36,959	-	238,964
Current portion of bonds	399,841	199,907	(600,000)	872,158	4,378	425	876,709
Long-term lease liabilities	241,405	73	(59,558)	(10,646)	4,671	171,521	347,466
Bonds	1,363,594	958,403	398,613	(872,158)	13,448	2,214	1,864,114
Long-term borrowings	792,557	476,201	141,288	(189,017)	7,609	(13,723)	1,214,915
	<u>₩ 4,862,071</u>	<u>₩ 2,031,153</u>	<u>₩ (964,346)</u>	<u>₩ -</u>	<u>₩ 93,758</u>	<u>₩ 185,431</u>	<u>₩ 6,208,067</u>
U.S. dollar in thousand	<u>\$ 3,770,802</u>	<u>\$ 1,575,270</u>	<u>\$ (747,903)</u>	<u>\$ -</u>	<u>\$ 72,714</u>	<u>\$ 143,812</u>	<u>\$ 4,814,695</u>
	2022						
	Beginning balance	Increase due to merger	Cash flows arising from financing activities	Non-cash flows			Ending balance
				Reclassification	Exchange rate fluctuation	Others	
Current portion of lease liabilities	₩ 91,392	₩ -	₩ (94,218)	₩ 61,686	₩ 3,030	₩ 4,415	₩ 66,305
Short-term borrowings	1,543,586	-	481,308	-	(147,733)	-	1,877,161
Current portion of long-term borrowings	350,799	-	(520,875)	150,817	68,449	72,018	121,208
Current portion of bonds	408,877	-	(431,824)	399,594	22,710	484	399,841
Long-term lease liabilities	93,871	-	-	(61,686)	(5,700)	214,920	241,405
Bonds	1,143,578	-	606,258	(399,594)	11,908	1,444	1,363,594
Long-term borrowings	246,111	-	633,021	(150,817)	40,439	23,803	792,557
	<u>₩ 3,878,214</u>	<u>₩ -</u>	<u>₩ 673,670</u>	<u>₩ -</u>	<u>₩ (6,897)</u>	<u>₩ 317,084</u>	<u>₩ 4,862,071</u>
U.S. dollar in thousand	<u>\$ 3,007,767</u>	<u>\$ -</u>	<u>\$ 522,468</u>	<u>\$ -</u>	<u>\$ (5,349)</u>	<u>\$ 245,916</u>	<u>\$ 3,770,802</u>

34.3 Major investing activities and financing activities that are accompanied by non-cash transactions for the years ended December 31, 2023 and 2022 are as follows:

	Korean won in millions		U.S. dollar in thousands
	2023	2022	2023
Reclassification of current portion of long-term trade receivables	₩ -	₩ 22,879	\$ -
Write-off of trade receivables	-	10,883	-
Actuarial gains and losses remeasurement component	(22,683)	18,839	(17,592)
Accounts receivable when disposing of investment stocks in affiliates	-	10,145	-
Reclassification of current portion of long-term loans	10,692	11,246	8,292
Other accounts payable related to the acquisition of tangible and intangible assets	32,963	(7,658)	25,565
Reclassification of financial assets at FVOCI as investments in associates	(14,006)	25,860	(10,862)
Reclassification of current portion of long-term borrowings	189,017	150,817	146,593
Reclassification of current portion of long-term bonds	872,158	399,594	676,406
Reclassification of current portion of lease receivables	25,766	35,821	19,983
Reclassification of current portion of lease liabilities	10,646	61,686	8,257
Recognition of right-of-use assets and lease liabilities through acquisition	193,223	34,949	149,855

In connection with the merger and absorption of POSCO Energy Co., Ltd. For the year ended December 31, 2023, non-cash transactions amounting to ₩233,902 million (\$181,404 thousand) occurred due to the issuance of new shares and the acquisition of treasury stocks (see Note 37).

35. Uncertainty of the impact of the Myanmar coup

The military government of Myanmar announced the establishment of a transitional government in February 2021 and declared a national emergency for one year. The military government extended the national emergency declaration until February 2024 and announced that general elections would be held after the goals of the national emergency were achieved. Meanwhile, February 2022 and November 2023, economic and financial sanctions were announced by the European Union and the U.S. government against Myanmar State Oil and Gas Company (MOGE), which holds a 15% stake in Myanmar's A-1/A-3 gas field project. The business, in which the Group holds a 51% stake, is operating normally, and the Group is continuously monitoring situations that may have an impact, such as additional economic and financial sanctions from the international community. As of December 31, 2023, the impact on the business of the Group such as Myanmar gas field in the future could not be estimated reasonably, and the impact from this was not reflected in the consolidated financial statements.

36. Uncertainty of the impact of Russia's invasion of Ukraine

On February 24, 2022, the Russian army launched an all-out invasion, starting with the bombing of major military facilities in Ukraine, and as of the end of this year, major cities are engaged in combat. Meanwhile, the West, including the United States, is in the midst of strong economic sanctions against Russia for invading Ukraine by withdrawing the SWIFT payment network from Russian banks, freezing major assets, and export controls on strategic materials/high-tech. In this regard, the Group set provision for bad debts amounting to ₩229 million (\$178 thousand) for trade receivables to customers in Russia as of December 31, 2023. However, the future impact of this on the Group's business could not be reasonably estimated as of December 31, 2023, and the resulting impact was not reflected in the Group's consolidated financial statements.

37 Business combination

37.1 Business combination overview

The Group absorbed and merged with POSCO Energy Co., Ltd. for the year ended December 31, 2023. The purpose of this business combination is to strengthen competitiveness and improve management efficiency by integrating the group's energy business and completing the LNG business value chain, and to lay the foundation for sustainable growth.

	Information
Surviving corporation after merger	POSCO INTERNATIONAL
Extinct corporation after merger	POSCO Energy Co., Ltd.
Board resolution date	August 12, 2022
Date of merger	January 1, 2023
Ratio of merger	POSCO INTERNATIONAL : POSCO Energy Co., Ltd. = 1 : 1.1626920

37.2 Accounting for business combination

The business combination is a business combination under the common control, and the assets acquired and liabilities assumed through this business combination were recognized at the book amount in the consolidated financial statements of the top controlling company. The Group recorded the difference between the issue price of new merged shares and the book value of the acquired net assets in capital surplus.

The book amounts of identifiable assets and liabilities acquired through a merger under the common control are as follows:

	Korean won in millions	U.S. dollar in thousands
	<u>2023</u>	<u>2023</u>
<Purchase price>		
Issuance of new shares (number of shares issued: 52,547,639 shares)	₩ 262,738	\$ 203,768
Treasury stock	(28,836)	(22,364)
	₩ 233,902	\$ 181,404
<Identifiable acquired assets and assumed liabilities>		
Current assets		
Cash and cash equivalents	₩ 606,711	\$ 470,537
Trade and other receivables	646,244	501,197
Other current financial assets	40,167	31,152
Derivative financial assets	6,193	4,803
Other current assets	167,768	130,113
Inventory	268,331	208,105
	₩ 1,735,414	\$ 1,345,907

37.2 Accounting for business combination (cont'd)

	Korean won in millions	U.S. dollar in thousands
	2023	2023
Non-current assets		
Long-term trade and other receivables	₩ 220,210	\$ 170,785
Other non-current financial assets	18,725	14,522
Long-term derivative financial assets	7,972	6,183
Associates and joint ventures	548,098	425,080
Property, plant and equipment	1,914,872	1,485,088
Right-of-use assets	32,094	24,891
Intangible assets	64,636	50,129
Net defined benefit assets	13,085	10,148
Other non-current assets	57,184	44,349
Deferred tax assets	90,893	70,492
	₩ 2,967,769	\$ 2,301,667
Current liabilities		
Trade and other payables	₩ 484,433	\$ 375,704
Borrowings	392,440	304,359
Current portion of bonds	199,907	155,039
Derivative financial liabilities	1,585	1,229
Current portion of provisions	130,724	101,384
Other current liabilities	144,517	112,081
Current income tax liability	46,251	35,870
	₩ 1,399,857	\$ 1,085,666
Non-current liabilities		
Long-term trade and other payables	₩ 717	\$ 556
Long-term borrowings	476,201	369,320
Bonds	958,403	743,294
Long-term derivative financial liabilities	170	132
Other non-current liabilities	7,725	5,991
Net defined benefit liabilities	106	82
Provisions	106,537	82,625
Deferred tax liabilities	23,954	18,578
	₩ 1,573,813	\$ 1,220,578
Equity		
Accumulated other comprehensive income	₩ 8,497	\$ 6,590
Hybrid bonds	139,571	108,245
Non-controlling interests	73,648	57,118
	₩ 221,716	\$ 171,953
<Equity arising from business combination>		
Capital surplus	₩ 1,273,895	\$ 987,973

The sales and net profit generated from the business operated by POSCO Energy Co., Ltd. after the merger are ₩2,998,669 million (\$2,325,631 thousand) and ₩203,334 million (\$157,697 thousand). In addition, sales and net income generated from businesses conducted by POSCO Energy Co., Ltd.'s subsidiaries, associates, and joint ventures prior to the merger are disclosed in Note 1 and Note 9, respectively.

Notice to Readers

This report is annexed in relation to the audit of the consolidated financial statements as of December 31, 2023 and the audit of internal accounting control system for consolidation purposes pursuant to Article 8-7 of the Act on External Audit for Joint-stock Companies of the Republic of Korea.

Independent Auditors' Report on Internal Control over Financial Reporting for Consolidation Purposes

English translation of a Report Originally Issued in Korean

To the Shareholders and Board of Directors of
POSCO International Corporation:

Opinion on Internal Control over Financial Reporting for Consolidation Purposes

We have audited POSCO International Corporation and its subsidiaries ("the Group") internal control over financial reporting ("ICFR") for consolidation purposes as of December 31, 2023 based on the criteria established in the Conceptual Framework for Designing and Operating ICFR ("ICFR Design and Operation Framework") issued by the Operating Committee of Internal Control over Financial Reporting in the Republic of Korea (the "ICFR Committee").

In our opinion, the Group maintained, in all material respects, effective internal control over financial reporting for consolidation purposes as of December 31, 2023, based on ICFR Design and Operation Framework.

We also have audited, in accordance with Korean Standards on Auditing (KSAs), the consolidated financial statements of the Group, which comprise the consolidated statement of financial position as of December 31, 2023, the consolidated statements of comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising material accounting policy information and explanatory information, and our report dated March 12, 2024 expressed an unmodified opinion on those consolidated financial statements.

Basis for Opinion on Internal Control over Financial Reporting for Consolidation Purposes

We conducted our audit in accordance with KSAs. Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Internal Control over Financial Reporting for Consolidation Purposes* section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the internal control over financial reporting in Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Internal Control over Financial Reporting for Consolidation Purposes

The Group's management is responsible for designing, operating and maintaining effective internal control over financial reporting for consolidation purposes and for its assessment of the effectiveness of internal control over financial reporting for consolidation purposes, included in the accompanying Report on Operating Status of Internal Control over Financial Reporting for Consolidation Purposes.

Those charged with governance are responsible for overseeing the Group's internal control over financial reporting for consolidation purposes.



Auditors' Responsibilities for the Audit of the Internal Control over Financial Reporting for Consolidation Purposes

Our responsibility is to express an opinion on the Group's internal control over financial reporting for consolidation purposes based on our audit. We conducted our audit in accordance with KSAs. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting for consolidation purposes was maintained in all material respects.

Our audit of internal control over financial reporting for consolidation purposes included obtaining an understanding of internal control over financial reporting for consolidation purposes, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk.

Definition and Limitations of Internal Control over Financial Reporting for Consolidation Purposes

A company's internal control over financial reporting for consolidation purposes 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 Korean International Financial Reporting Standards ("K-IFRS"). A company's internal control over financial reporting for consolidation purposes 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 Group; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with K-IFRS, and that receipts and expenditures of the Group are being made only in accordance with authorizations of management and directors of the Group; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Group's assets that could have a material effect on the consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting for consolidation purposes may not prevent or detect material misstatements in the consolidated financial statements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls 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 auditors' report is Yeon Jung Kim.

KPMG Samjong Accounting Corp.

Seoul, Korea

March 12, 2024

This report is effective as of March 12, 2024, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the internal control over financial reporting. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

Report on Operating Status of Internal Control over Financial Reporting
for Consolidation Purposes
English Translation of a Report Originally Issued in Korean

To the Shareholders, Board of Directors and Audit Committee of POSCO International Corporation

We, as the Chief Executive Officer and the Internal Control Officer of POSCO International Corporation and its subsidiaries (the "Group"), assessed operating status of the Group's Internal Control over Financial Reporting("ICFR") for Consolidation Purposes as of December 31, 2023.

Design and operation of ICFR for Consolidation Purposes is the responsibility of the Group's management, including the Chief Executive Officer and the Internal Control Officer (collectively, "We").

We evaluated whether the Group effectively designed and operated its ICFR for Consolidation Purposes to prevent and detect errors or frauds which may cause a misstatement in consolidated financial statements to ensure preparation and disclosure of reliable financial information.

We used the 'Conceptual Framework for Designing and Operating Internal Control over Financial Reporting' for evaluating design and operation of the Group's ICFR for Consolidation Purposes, established by the Operating Committee of Internal Control over Financial Reporting in Korea (the "ICFR Committee").

Based on our assessment, we concluded that the Group's ICFR for Consolidation Purposes is designed and operated effectively as of December 31, 2023, in all material respects, in accordance with the 'Conceptual Framework for Designing and Operating Internal Control over Financial Reporting'.

We certify that this report does not contain any untrue statement of a fact, or omit to state a fact necessary to be presented herein. We also certify that this report does not contain or present any statements which might cause material misunderstandings of the readers, and we have reviewed and verified this report with sufficient care.

January 25, 2024

/s/ Jeong, Tak, Chief Executive Officer
/s/ Chung, Kyung-jin, Internal Control Officer