

SK Gas Co., Ltd. AND ITS SUBSIDIARIES

Consolidated Financial Statements

December 31, 2022

(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
SK Gas Co., Ltd.

Opinion

We have audited the consolidated financial statements of SK Gas Co., Ltd. and its subsidiaries ("the Group"), which comprise the consolidated statement of financial position as of December 31, 2022, the consolidated statements of comprehensive income, changes in equity and cash flows for the year then ended, and notes to the consolidated financial statements, including significant accounting policies and other explanatory information.

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

Basis for Opinion

We conducted our audit in accordance with Korean Standards on Auditing (KSAs). Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements as of and for the year ended December 31, 2022. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. We considered the following as key audit matters to be communicated in the audit report.

(1) Occurrence and cut-off of domestic LPG sales

Reason why it is determined to be a key audit matter

The Group's domestic LPG sales mainly arise from LPG gas stations and petrochemical companies. Domestic LPG sales recognized during the year ended December 31, 2022, account for 57% of total sales. Therefore, the Group identifies performance obligations in the contract with respect to revenue recognition for domestic LPG transactions; allocates the transaction price to each performance obligation; and recognizes revenue when such performance obligation is satisfied. The timing of revenue recognition requires the management's judgment. As a result, there are inherent risks related to sales cut-off due to errors in the management's significant judgment, and as the amount of domestic LPG sales recognized in the consolidated financial statements is significant, the occurrence and cut-off of sales thereof is identified as a key audit matter.



How the key audit matter was addressed in our audit

The primary procedures we performed to address the key audit matter are as follows:

- Obtained an understanding of the key process related to domestic LPG transaction and tested the relevant internal controls.
- Reviewed and inspected documents of key transaction terms.
- Assessed the revenue recognition standards for domestic LPG transactions.
- Inquired of and inspected documents with regards to negative sales for domestic LPG transactions.
- Inspected supporting documents for samples of domestic LPG transactions occurred during the reporting period.
- Inspected the supporting documents of domestic LPG transactions that occurred before and after the reporting period end and compared the timing of revenue recognition.

(2) Impairment testing on industrial property right not yet available for use and goodwill in Ulsan GPS Co., Ltd.

Reason why it is determined to be a key audit matter

As discussed in Note 2.3.17 to the consolidated financial statements, the Group performs impairment tests on industrial property rights not yet available for use and goodwill as part of cash-generating units (CGU) on December 31 every year and when there is an indication of possible impairment.

The Group performs an annual impairment testing and assesses the recoverable amounts of the industrial property rights not yet available for use of ₩74,213 million and goodwill of ₩5,085 million which were allocated to Ulsan GPS Co., Ltd., the surviving entity of the spin-off from Dangjin Eco Power Co., Ltd. after the Group acquired equity interests in Dangjin Eco Power Co., Ltd. in 2014 from which industrial property rights not yet available for use and goodwill has incurred.

To evaluate industrial property rights and goodwill, the Group identifies CGUs which include the industrial property rights and goodwill and estimates the recoverable amount of those cash-generating units. Recoverable amounts are determined based on value-in-use, and discounted future cash flows from the continuous use of the assets are used to assess the value-in-use. Key assumptions, such as future sales volume, selling price, fuel costs, and discount rates, have a material impact on the estimation of value-in-use, which involve management's significant judgment. The carrying amounts of the related assets are material to the consolidated financial statements. Also, estimating discounted cash flows is complex, and there are uncertainties and risk of possible bias in management's judgments as significant judgment is involved in determining various inputs. Therefore, we identified the impairment testing on industrial property rights not yet available for use and goodwill in Ulsan GPS Co., Ltd., as a key audit matter.

How the key audit matter was addressed in our audit

The primary procedures we performed to address the key audit matter are as follows:

- Independently assessed the identification of CGUs of the Group.
- Assessed whether management bias is involved in key inputs such as future forecast sales volume, selling price, and purchase cost of fuel used to estimate value-in-use by referring to the Group's business plan and external data.
- Involved our internal valuation specialists to independently recalculate the discount rate based on market data and the inherent information of the Group and assess whether there is a significant difference compared with the discount rate applied by management.
- Obtained management's sensitivity analysis on the discount rates applied to the discounted cash flow forecasts and assessed for indication of management's bias and the effect of changes in key assumptions on management's conclusion.



Other Matter

The consolidated financial statements of the Group for the year ended December 31, 2021 were audited by another auditor who expressed an unmodified opinion on those statements on March 11, 2022.

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

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

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

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

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

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with 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 aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

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

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



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

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

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

The engagement partner on the audit resulting in this independent auditors' report is Cho, Seung Hee.

KPMG Samjong Accounting Corp.

Seoul, Korea
March 15, 2023

This report is effective as of March 15, 2023, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

SK Gas Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2022 and 2021

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

Byung Suk Yoon
Chief Executive Officer
SK Gas Co., Ltd.

SK Gas Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2022 and 2021

(Korean won in millions and US dollar in thousands)

Assets	2022		2021	
Current assets:				
Cash and cash equivalents (Notes 5, 31 and 33)	₩	404,792	₩	162,690
Short-term financial assets (Notes 5, 10 and 33)		317,069		667,146
Current trade and other receivables, net (Notes 5, 6, 22, 25 and 33)		969,701		927,968
Current derivative assets (Notes 5, 20, and 33)		49,116		81,739
Inventories (Note 7)		461,655		464,153
Other current financial assets (Notes 5, 8 and 33)		168,341		38,259
Other current assets (Note 9)		51,380		63,877
Non-current assets held for sale (Note 34)		159,285		-
Total current assets		2,581,339		2,405,832
				\$ 319,413
				\$ 137,234
				\$ 250,192
				\$ 765,171
				\$ 38,756
				\$ 364,282
				\$ 132,834
				\$ 40,543
				\$ 125,689
				\$ -
				\$ 2,029,382
Non current assets:				
Long-term financial assets (Notes 5, 10 and 33)		147,584		140,927
Non-current trade and other receivables, net (Notes 5, 6 and 33)		2,444		2,148
Non-current derivative assets (Notes 5, 20 and 33)		106,410		52,824
Investments in associates and joint ventures (Note 11)		735,981		850,025
Property, plant and equipment, net (Note 12)		1,620,793		1,059,232
Intangible assets, net (Note 13)		115,721		119,592
Right-of-use assets, net (Note 14)		433,222		425,703
Net defined benefit assets (Note 17)		9,729		-
Other non-current financial assets (Notes 5, 8 and 33)		33,372		34,640
Other non-current assets (Note 9 and 22)		44,581		30,612
Deferred tax assets (Note 29)		601		-
Total non-current assets		3,250,438		2,715,703
				\$ 116,455
				\$ 1,929
				\$ 83,965
				\$ 580,748
				\$ 717,018
				\$ 1,278,934
				\$ 91,313
				\$ 341,846
				\$ 7,677
				\$ -
				\$ 26,333
				\$ 29,220
				\$ 35,178
				\$ 25,822
				\$ 474
				\$ -
				\$ 2,290,767
Total assets	₩	5,831,777	₩	5,121,535
				\$ 4,601,732
				\$ 4,320,149
Liabilities and equity				
Current liabilities:				
Trade and other payables (Notes 5, 15, 22, 32 and 33)	₩	342,816	₩	286,939
Short-term borrowings (Notes 5, 16, 32 and 33)		899,681		796,494
Current portion of long-term borrowings (Notes 5, 16, 32 and 33)		149,921		199,954
Current derivative liabilities (Notes 5, 20, 32 and 33)		204,041		33,042
Current tax payables (Note 29)		67,796		55,462
Current portion of lease liabilities (Notes 5, 14, 32 and 33)		63,467		60,535
Other current financial liabilities (Notes 5, 18, 24, 32 and 33)		260		-
Other current liabilities (Note 19 and 25)		14,535		9,532
Total current liabilities		1,742,517		1,441,958
				\$ 270,510
				\$ 242,041
				\$ 709,920
				\$ 118,299
				\$ 161,004
				\$ 27,872
				\$ 46,784
				\$ 51,063
				\$ 205
				\$ -
				\$ 11,469
				\$ 8,040
				\$ 1,374,983
				\$ 1,216,329
Non-current liabilities:				
Trade and other payables (Notes 5, 15, 22, 32 and 33)		31,422		-
Bonds payable (Notes 5, 16, 32 and 33)		1,216,661		1,066,658
Long-term borrowings (Notes 5, 16, 32 and 33)		46,548		-
Non-current derivative liabilities (Notes 5, 20, 32 and 33)		113		-
Defined benefit liabilities (Note 17)		-		2,238
Deferred tax liabilities (Note 29)		67,197		119,642
Non-current lease liabilities (Notes 5, 14, 32 and 33)		349,354		338,524
Other non-current financial liabilities (Notes 5, 18, 24, 32 and 33)		35,540		34,377
Other non-current liabilities (Note 19)		1,530		775
Total non-current liabilities		1,748,365		1,562,214
				\$ 24,795
				\$ 960,042
				\$ 36,730
				\$ 90
				\$ -
				\$ 1,888
				\$ 100,921
				\$ 275,667
				\$ 285,554
				\$ 28,044
				\$ 28,998
				\$ 654
				\$ 1,379,598
				\$ 1,317,768
Total liabilities		3,490,882		3,004,172
				\$ 2,754,581
				\$ 2,534,097
Equity:				
Equity attributable to owners of the parent				
Issued capital (Note 23)		46,151		46,151
Capital surplus (Note 23)		195,492		195,492
Other components of equity (Notes 23 and 24)		(21,810)		(22,022)
Accumulated other comprehensive loss (Notes 10, 14 and 23)		10,908		(3,390)
Retained earnings (Note 23)		2,110,154		1,901,132
Total equity attributable to owners of the parent		2,340,895		2,117,363
				\$ 36,417
				\$ 154,259
				\$ (17,210)
				\$ 8,607
				\$ 1,665,078
				\$ 1,603,655
				\$ 1,786,052
Non-controlling interests		-		-
Total equity		2,340,895		2,117,363
				\$ 1,847,151
				\$ 1,786,052
Total liabilities and equity	₩	5,831,777	₩	5,121,535
				\$ 4,601,732
				\$ 4,320,149

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

SK Gas Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2022 and 2021

(Korean won in millions and US dollar in thousands except earnings per share)

	2022		2021	
	₩	₩	\$	\$
Sales (Notes 22, 25 and 26)	8,066,169	6,494,513	6,364,846	5,478,290
Cost of sales (Notes 22 and 27)	(7,388,052)	(6,125,370)	(5,829,758)	(5,166,909)
Gross profit	678,117	369,143	535,088	311,381
Selling and administrative expenses (Notes 22, 24 and 27)	(287,646)	(263,680)	(226,975)	(222,421)
Operating income (Note 26)	390,471	105,463	308,113	88,960
Finance income (Notes 20 and 28)	716,410	448,766	565,304	378,546
Finance costs (Notes 20 and 28)	(758,498)	(342,900)	(598,515)	(289,245)
Other non-operating income (Notes 22 and 28)	19,479	62,714	15,370	52,901
Other non-operating expenses (Notes 22 and 28)	(14,302)	(13,470)	(11,285)	(11,362)
Share of profit or loss in an associate or joint venture (Note 11)	(48,816)	69,035	(38,520)	58,232
Profit before income tax	304,744	329,608	240,467	278,032
Income tax expense (Note 29)	(47,666)	(80,342)	(37,612)	(67,770)
Net profit for the year	₩ 257,078	₩ 249,266	\$ 202,855	\$ 210,262
Other comprehensive income (loss):				
<i>Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods (net of tax):</i>				
Equity adjustments in equity method (Note 11)	18,329	15,078	14,463	12,720
Net gain (loss) on valuation of derivatives (Notes 14)	(15,247)	(22,559)	(12,031)	(19,030)
Net gain (loss) from translation of foreign operations	16,825	12,339	13,276	10,408
<i>Other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods (net of tax):</i>				
Retained earnings in equity method (Note 11)	7,032	(2,116)	5,549	(1,785)
Equity adjustments in equity method	-	1	-	1
Net gain (loss) on valuation of financial assets at fair value through other comprehensive income (Note 10)	(5,608)	4,087	(4,425)	3,448
Re-measurement loss on defined benefit plans (Note 17)	(341)	(1,027)	(269)	(867)
Other comprehensive income (loss) for the year, net of tax	20,990	5,803	16,563	4,895
Total comprehensive income for the year, net of tax	₩ 278,068	₩ 255,069	\$ 219,418	\$ 215,157
Net profit for the year				
Attributable to:				
Owners of the parent	₩ 257,078	₩ 249,266	\$ 202,855	\$ 210,262
Non-controlling interests	-	-	-	-
	₩ 257,078	₩ 249,266	\$ 202,855	\$ 210,262
Total comprehensive income for the year, net of tax				
Attributable to:				
Owners of the parent	₩ 278,068	₩ 255,069	\$ 219,418	\$ 215,157
Non-controlling interests	-	-	-	-
	₩ 278,068	₩ 255,069	\$ 219,418	\$ 215,157
Earnings per share (Note 30):				
Basic earnings per share (in won)	₩ 28,644	₩ 27,773	\$ 22.60	\$ 23.43
Diluted earnings per share (in won)	₩ 28,559	₩ 27,692	\$ 22.54	\$ 23.36

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

SK Gas Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2022 and 2021

(Korean won in millions and US dollar in thousands)

		Attributable to the owners of the parent							
		Issued capital	Capital surplus	Other components of equity	Accumulated other comprehensive loss	Retained earnings	Total	Non-controlling interest	Total equity
As of January 1, 2021		₩ 46,151	₩ 195,492	₩ (21,501)	₩ (12,336)	₩ 1,690,909	₩ 1,898,715	₩ -	₩ 1,898,715
Total comprehensive income:		-	-	-	-	249,266	249,266	-	249,266
Net profit for the year		-	-	-	-	-	-	-	-
Net gain on valuation of financial assets at fair value through other comprehensive income		-	-	-	4,087	-	4,087	-	4,087
Equity adjustments in equity method		-	-	-	15,079	-	15,079	-	15,079
Retained earnings in equity method		-	-	-	-	(2,116)	(2,116)	-	(2,116)
Hedge accounting - loss on lease liability valuation		-	-	-	(22,559)	-	(22,559)	-	(22,559)
Net gain from translation of foreign operations		-	-	-	12,339	-	12,339	-	12,339
Re-measurement loss on defined benefit plans		-	-	-	(1,027)	(1,027)	(1,027)	-	(1,027)
Sub-total		-	-	-	8,946	246,123	255,069	-	255,069
Transactions with shareholders directly recognised in equity:		-	-	-	-	(35,900)	(35,900)	-	(35,900)
Dividends		-	-	-	-	-	-	-	-
Stock option		-	-	268	-	-	268	-	268
Direct costs related to capital transactions		-	-	(789)	-	-	(789)	-	(789)
Sub-total		-	-	(521)	-	(35,900)	(36,421)	-	(36,421)
As of December 31, 2021		₩ 46,151	₩ 195,492	₩ (22,022)	₩ (3,390)	₩ 1,901,132	₩ 2,117,363	₩ -	₩ 2,117,363
US dollar		\$ 38,930	\$ 164,903	\$ (18,576)	\$ (2,860)	\$ 1,603,655	\$ 1,786,052	\$ -	\$ 1,786,052
As of January 1, 2022		₩ 46,151	₩ 195,492	₩ (22,022)	₩ (3,390)	₩ 1,901,132	₩ 2,117,363	₩ -	₩ 2,117,363
Total comprehensive income:		-	-	-	-	257,078	257,078	-	257,078
Net profit for the year		-	-	-	-	-	-	-	-
Net gain on valuation of financial assets at fair value through other comprehensive income		-	-	-	(5,608)	-	(5,608)	-	(5,608)
Equity adjustments in equity method		-	-	-	18,329	-	18,329	-	18,329
Retained earnings in equity method		-	-	-	-	7,032	7,032	-	7,032
Hedge accounting - loss on lease liability valuation		-	-	-	(15,248)	-	(15,248)	-	(15,248)
Net gain from translation of foreign operations		-	-	-	16,825	-	16,825	-	16,825
Re-measurement loss on defined benefit plans		-	-	-	-	(340)	(340)	-	(340)
Sub-total		-	-	-	14,298	263,770	278,068	-	278,068
Transactions with shareholders directly recognised in equity:		-	-	-	-	(54,748)	(54,748)	-	(54,748)
Dividends		-	-	-	-	-	-	-	-
Stock option		-	-	725	-	-	725	-	725
Direct costs related to capital transactions		-	-	(513)	-	-	(513)	-	(513)
Sub-total		-	-	212	-	(54,748)	(54,536)	-	(54,536)
As of December 31, 2022		₩ 46,151	₩ 195,492	₩ (21,810)	₩ 10,908	₩ 2,110,154	₩ 2,340,895	₩ -	₩ 2,340,895
US dollar		\$ 36,417	\$ 154,259	\$ (17,210)	\$ 8,607	\$ 1,665,078	\$ 1,847,151	\$ -	\$ 1,847,151

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

SK Gas Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2022 and 2021

(Korean won in millions and US dollar in thousands)

	2022		2021	
	₩	\$	₩	\$
Operating activities				
Cash generated from operations				
Net profit for the year	₩ 257,078	\$ 202,855	₩ 249,266	\$ 210,262
Non-cash adjustments to reconcile net profit for the year (Note 31)	125,562	99,078	(85,027)	(71,723)
Working capital adjustments (Note 31)	(157,456)	(124,245)	(502,233)	(423,647)
Interest received	2,383	1,881	517	436
Income tax payment	(87,510)	(69,052)	(51,535)	(43,469)
Net cash flows provided by (used in) operating activities	140,057	110,517	(389,012)	(328,141)
Investing activities				
Net decrease (increase) in short-term financial instruments	₩ 375,175	\$ 296,043	₩ 18,340	\$ 15,470
Increase in short-term loans receivable	(300)	(237)	(5,300)	(4,471)
Decrease in short-term loans receivable	11,863	9,361	14,536	12,262
Increase in long-term financial instruments	(6,650)	(5,247)	(31,345)	(26,440)
Decrease in long-term financial instruments	6	5	6	5
Acquisition of investments in associates and joint ventures	(57,955)	(45,731)	(284,387)	(239,888)
Proceeds from disposal of investments in associates and joint ventures	-	-	282,757	238,513
Acquisition of property, plant and equipment	(508,752)	(401,446)	(190,648)	(160,817)
Proceeds from disposal of property, plant and equipment	98	77	21,605	18,224
Acquisition of intangible assets	(3,826)	(3,019)	(10,224)	(8,624)
Proceeds from disposal of intangible assets	151	119	442	373
Payment of prepaid expenses for investment	(5,200)	(4,103)	-	-
Collection of financial lease receivables	1,470	1,160	1,118	943
Dividends received	1,780	1,404	11,132	9,390
Settlement of derivative instruments	135,432	106,867	112,504	94,900
Net cash flows used in investing activities	(56,708)	(44,747)	(59,464)	(50,160)
Financing activities (Note 31)				
Net increase (decrease) in short-term borrowings in foreign currencies	₩ 169,281	\$ 133,576	₩ 222,717	\$ 187,868
Repayment of short-term borrowings	-	-	(60,000)	(50,612)
Repayment of current portion of long-term borrowings	(200,000)	(157,816)	-	-
Proceeds from issuance of bonds	298,726	235,719	448,073	377,961
Proceeds from issuance of bonds	46,540	36,724	-	-
Repayment of long-term borrowings	-	-	(61)	(51)
Interest paid	(51,204)	(40,404)	(37,129)	(31,319)
Payment of dividends	(54,748)	(43,200)	(35,900)	(30,283)
Cash repayment of lease liabilities	(61,799)	(48,765)	(58,348)	(49,218)
Direct costs related to capital transactions	(512)	(404)	(789)	(666)
Net cash flows provided by financing activities	146,284	115,430	478,563	403,680
Net increase (decrease) in cash and cash equivalents	229,633	181,200	30,087	25,379
Cash and cash equivalents at the beginning of the year	162,690	128,376	122,057	102,958
Net increase (decrease) in cash and cash equivalents denominated in foreign currencies arising from foreign exchange differences	12,469	9,837	10,546	8,897
Cash and cash equivalents at the end of the year	₩ 404,792	\$ 319,413	₩ 162,690	\$ 137,234

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

SK Gas Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2022 and 2021

1. Organization and business

Corporate information

SK Gas Co., Ltd. (the "Company" or "Parent Company") was incorporated on December 20, 1985 under the Commercial Code of the Republic of Korea and was listed on the Korea Stock Exchange in August 1997. The Company is currently engaged in the importation, storage and sale of liquefied petroleum gas (LPG). The headquarters of the Company is located in Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do.

The consolidated financial statements as of December 31, 2022 consist of interests in the Parent Company and its subsidiaries (collectively referred to as the "The Group"), associates and joint ventures.

As of December 31, 2022, the Parent Company's issued capital amounts to ₩46,151,220 thousand of which 72.2% is owned by SK Discovery Co., Ltd.

Financial statement translation

The accompanying 2022 consolidated financial statements are expressed in Korean won, and solely for the convenience of the reader, have been translated into United States dollar (USD) at the rate of ₩1,267.30 and ₩1,185.50 to US\$1, the exchange rates on December 31, 2022 and 2021, respectively. Such translation should not be construed as a representation that Korean won amounts can actually be converted into respective United States dollar amounts at the exchange rate used for the purpose of such translation.

Consolidated subsidiaries

Consolidated subsidiaries as of December 31, 2022 are as follows: (Korean won in thousands):

Subsidiary	Principal activities	Equity ownership (%)	Country of Domicile	Year-end date
SK Gas International Pte. Ltd.	LPG trading	100%	Singapore	Dec. 31
SK Gas Petrochemical Pte. Ltd. (*1)	Investment	100%	Singapore	Dec. 31
Ulsan GPS Co., Ltd. (*2)	Combined Thermal Power(LNG/LPG) Generation Project	100%	Korea	Dec. 31
SK Gas USA Inc.	Sales of liquefied petroleum gas	100%	US	Dec. 31
SK Gas Trading LLC (*3)	Sales of liquefied petroleum gas	100%	US	Dec. 31

(*1) It is a subsidiary of SK Gas International Pte. Ltd.

(*2) The Company's 100% equity ownership includes Korea Development Bank's 0.52% equity ownership in Ulsan GPS Co., Ltd.

(*3) It is a subsidiary of SK Gas USA Inc.

The following table summarizes the financial information of consolidated subsidiaries as of and for the year ended December 31, 2022 (Korean won in thousands):

Subsidiary	Total assets	Total liabilities	Net assets	Sales	Profit (loss) for the year
SK Gas international Pte. Ltd.	₩ 231,854,025	₩ 73,547,489	₩ 158,306,536	₩ 3,006,242,220	₩ 2,022,111
SK Gas Petrochemical Pte. Ltd.	137,977,427	543,699	137,433,728	-	6,100,950
Ulsan GPS Co., Ltd.	883,828,248	491,988,252	391,839,996	-	(9,026,070)
SK Gas USA Inc.	33,009,013	486,238	32,522,775	-	(898,374)
SK Gas Trading LLC	70,868,287	49,330,656	21,537,631	1,201,694,373	986,041
	<u>₩ 1,357,537,000</u>	<u>₩ 615,896,334</u>	<u>₩ 741,640,666</u>	<u>₩ 4,207,936,593</u>	<u>₩ (815,342)</u>

The summarized financial position above is the amount after reflecting goodwill and fair value adjustment that occurred at the time of the business combination and accounting policy differences with the Parent Company, but before removal of related party transactions.

1. Organization and business (cont'd)

Changes in consolidation

There was no change in scope for consolidation for the year ended December 31, 2022 and 2021.

2. Summary of significant accounting policies

2.1 Basis of financial statements preparation and statement of compliance

The Group maintains its official accounting records in Korean won and prepares statutory financial statements in the Korean language in accordance with Korean International Financial Reporting Standards (“KIFRS”) enacted by the *Act on External Audit of stock Companies*.

The consolidated financial statements have been translated into English from the Korean language financial statements. In the event of any differences in interpreting the consolidated financial statements or the independent auditors’ report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail.

The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments, debt and equity financial assets, liabilities for cash-settled share-based payment and net defined benefit liability (asset) that have been measured at fair value. The carrying values of recognized assets and liabilities that are designated as hedged items in fair value hedges that would otherwise be carried at amortized cost are adjusted to record changes in the fair values attributable to the risks that are being hedged in effective hedge relationships.

The consolidated financial statements are presented in Korean won (KRW) and all values are rounded to the nearest thousands, except when otherwise indicated.

2.2 Basis of consolidation

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

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

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

- The contractual arrangement with the other vote holders of the investee
- Rights arising from other contractual arrangements
- The Group’s voting rights and potential voting rights

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

2.2 Basis of consolidation (cont'd)

bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

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

If the Group loses control of the subsidiary, it derecognizes the subsidiary's assets (including goodwill), liabilities, non-controlling interests and other items of equity on the date it loses control of the subsidiary and recognizes gains or losses in profit or loss. Remaining investments in previous subsidiaries are recognized at fair value.

2.3 Significant accounting policies

2.3.1 Business combinations and goodwill

Business combinations are accounted for using 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 either at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition costs incurred are expensed and included in administrative expenses.

When the Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances and pertinent conditions as of the acquisition date. This includes the separation of embedded derivatives in host contracts by the acquiree.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration which is deemed to be an asset or liability will be recognized in accordance with KIFRS 1109 either in profit or loss or as change to OCI. If the contingent consideration is classified as equity, it shall not be remeasured until it is finally settled within equity. Subsequent settlement is accounted for within equity. In instances where the contingent consideration does not fall within the scope of KIFRS 1109, it is measured in accordance with the appropriate KIFRS. Contingent consideration that is classified as equity is not remeasured and subsequent settlement is accounted for within equity.

Goodwill is initially measured at cost, being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests, and any previous interest held, over the net identifiable assets acquired and liabilities assumed. If the fair value of the net assets acquired is in excess of the aggregate consideration transferred, the Group re-assesses whether it has correctly identified all of the assets acquired and all of the liabilities assumed and reviews the procedures used to measure the amounts to be recognized at the acquisition date. If the re-assessment still results in an excess of the fair value of net assets acquired over the aggregate consideration transferred, then the gain is recognized in profit or loss.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill has been allocated to a cash-generating unit (CGU) and part of the operation within that unit is disposed of, the goodwill associated with the disposed operation is included in the carrying amount of the operation when determining the gain or loss on disposal. Goodwill disposed in these circumstances is measured based on the relative values of the disposed operation and the portion of the cash-generating unit retained.

2.3 Significant accounting policies (cont'd)

2.3.2 Investments in an associate and joint ventures

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

A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

The considerations made in determining significant influence or joint control are similar to those necessary to determine control over subsidiaries. The Group's investments in its associate and joint venture are accounted for using the equity method. Under the equity method, the investments in an associate or a joint venture is initially recognized at cost. The carrying amount of the investments is adjusted to recognize changes in the Group's share of net assets of the associate or joint venture since the acquisition date. Goodwill relating to the associate or joint venture is included in the carrying amount of the investments and is neither amortized nor individually tested for impairment.

The consolidated statements of comprehensive income reflect the share of the results of operations of the associate. Where there has been a change recognized directly in the equity of the associate, the Group recognizes its share of any changes and discloses this, when applicable, in the consolidated statements of changes in equity. Unrealized gains and losses resulting from transactions between the Group and the associate are eliminated to the extent of the interest in the associate.

The Group's share of profit of associates is shown on the face of the consolidated statements of comprehensive income. This is the profit attributable to equity holders of the associate and, therefore, is profit after tax and non-controlling interests in the subsidiaries of the associates.

The financial statements of the associate are prepared for the same reporting period as the parent group. Where necessary, adjustments are made to bring the accounting policies in line with those of the Group.

After application of the equity method, the Group determines whether it is necessary to recognize an additional impairment loss on the Group's investments in its associates. The Group determines at each reporting date whether there is any objective evidence that the investments in the associate is impaired. If this is the case the Group calculates the amount of impairment as the difference between the recoverable amount of the associate and its carrying value and recognizes the amount in the 'share of profit of an associate' in the income statement.

Upon loss of significant influence over the associate, the Group measures and recognizes any retaining investments at its fair value. Any difference between the carrying amount of the associate upon loss of significant influence and the fair value of the retaining investments and proceeds from disposal is recognized in profit or loss.

2.3 Significant accounting policies (cont'd)

2.3.3 Current versus non-current classification

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

An asset is current when it is:

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

All other assets are classified as non-current.

A liability is current when:

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

The Group classifies all other liabilities as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities

2.3.4 Fair value measurement

The Group measures financial instruments such as derivatives, and non-financial assets such as investment properties, at fair value at each balance sheet 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 as a whole:

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

2.3 Significant accounting policies (cont'd)

2.3.4 Fair value measurement (cont'd)

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 as a whole) at the end of each reporting period.

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, as explained above.

Fair-value related disclosures for financial instruments and non-financial assets that are measured at fair value or where fair values are disclosed, are summarized in the following Note 33.

2.3.5 Revenue from contracts with customers

The Group is in the business of importing, storing and selling liquefied petroleum gas (LPG). 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. The Group has generally concluded that it is the principal in its revenue arrangements, except for the agency services below, because it typically controls the goods or services before transferring them to the customer.

Sale of goods

Revenue from sale of goods are recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of the goods. The normal credit term is 30 to 90 days upon delivery. The Group considers whether there are other promises in the contract that are separate performance obligations to which a portion of the transaction price needs to be allocated (e.g., warranties, customer loyalty points).

In determining the transaction price for the sale of goods, the Group considers the effects of variable consideration, the existence of significant financing components, noncash consideration, and consideration payable to the customer (if any).

(1) Variable consideration

The terms and conditions of the contract with the customer may change the consideration received from the customer, but since the Group usually recognizes revenue by including the variable consideration in the transaction price, the financial effect of the variable consideration regulation is deemed to be limited.

(2) Significant financing component

Generally, the Group receives short-term advances from its customers. Using the practical expedient in KIFRS 1115, 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) Non-cash consideration

The Group applies the requirements of KIFRS 1113 *Fair Value Measurement* in measuring the fair value of the non-cash consideration. If the fair value cannot be reasonably estimated, the non-cash consideration is measured indirectly by reference to the stand-alone selling price of the fire prevention equipment.

- Customer loyalty Program

The Group provides a certain percentage of muffin point or OK Cashbag points in terms of revenue when presenting the muffin membership card or OK Cashbag card to customers who purchase the product and recognizes them as a reduction in sales.

2.3 Significant accounting policies (cont'd)

2.3.5 Revenue from contracts with customers (cont'd)

- Transportation

The Group provide transportation services with the transfer of goods. Transportation services are available from third parties and do not significantly customize or modify the goods. A contract that provides both the sale and transport of goods consists of two performance obligations. This is because the transfer of goods and the provision of transport services are distinct and separately identifiable. Therefore, The Group distribute the transaction price based on the relative stand-alone selling price of the goods and transport services. The Group recognizes revenue for the provision of transport services over time as a progress rate in accordance with the input method. This is because the customer simultaneously receives and consumes the benefits of the entity's performance as we do. Revenue from the sale of goods is recognized at a point in time, which is typically the time of delivery of the goods.

Contract balances

(1) Trade receivables

A trade receivable represents the Group's right to an amount of consideration that is unconditional (i.e., only the passage of time is required before payment of the consideration is due). Refer to accounting policies of financial assets in the Note 2.3.14.

(2) Contract liabilities

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

2.3.6 Taxes

(1) Current income tax

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

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

(2) Deferred tax

Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their book values for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

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

2.3 Significant accounting policies (cont'd)

2.3.6 Taxes (cont'd)

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

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

The book value of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are re-assessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

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

Deferred tax relating to items recognized outside profit or loss is recognized outside profit or loss. Deferred tax items are recognized in correlation to the underlying transaction either in OCI or directly in equity.

Deferred tax assets and deferred tax liabilities are offset, if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

2.3.7 Foreign currency translation

The Group's consolidated financial statements are presented in Korean won, which is also its functional currency. However, the individual entities in the Group determine each functional currency and measure financial statements through it. The Group uses the direct consolidation method and reclassifies the profit or loss that reflects the amount from the use of the direct consolidation method when disposing of overseas operations.

(1) Transactions and balances

For each entity, the Group determines the functional currency, and items included in the financial statements of each entity are measured using that functional currency.

Transactions in foreign currencies are initially recorded by the Group entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange at the reporting date.

2.3 Significant accounting policies (cont'd)

2.3.7 Foreign currency translation (cont'd)

However, the translational differences arising from items for hedging net investment risk at overseas sites are directly reflected in capital until the time of disposal of the relevant net investment and reflected in profit or loss at the time of disposal. Related income tax effects are also treated as capital items.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as of the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined.

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

Foreign exchange differences arising from monetary items that are part of the Group's net investment in overseas operations are recognized in other comprehensive income and reclassified from capital to profit or loss at the time of disposal of the net investment.

(2) Conversion of overseas business sites

The assets and liabilities of foreign operations are translated into Korean won using the exchange rates at the end of the reporting period and the income and expense items using the average exchange rates for the year. The cumulative exchange differences recognized in these equity instruments are reflected in the profit or loss at the time of disposal of the foreign operations. The fair value adjustments for the carrying amounts of goodwill and assets and liabilities arising from the acquisition of foreign operations are translated at the exchange rates at the reporting date based on the assets and liabilities of the foreign operations.

2.3.8 Non-current assets that are to be sold and discontinued operations

If the non-current asset (or asset group for disposal) is to be recovered principally through a sale or distribution, instead of continued use, the Group carries it at the assets held for sale or asset for allocation to the owners of the parent group. Non-current assets and asset group for disposal classified as held for sale or held for distribution are measured at the lower of fair value net of the selling and distribution costs or book value. The distribution cost means the cost which is directly attributable to the distribution (excluding finance costs and income tax expense).

The classification of the assets for the assets held for distributions are made when the non-current (or asset group for disposal) assets are readily distributable and the distribution is highly probable. In addition, the measures required to complete the distribution should show that the distribution is unlikely to be significantly changed or withdrawn and should be expected to be completed within one year from the date of classification. Property, plant and equipment and intangible assets that are classified as held for sale or classified as held for sale are not depreciated or amortized.

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

The Group of assets for disposal is considered to be a discontinued operation if either of the following is true:

- This group belongs to a separate major business line or business area.
- This group is a part of a single plan to dispose of a separate major business line or operating area.
- This group is a subsidiary acquired for the sole purpose of selling.

Discontinued operations are excluded from the results of continuing operations and are presented as a single amount as profit or loss after tax from discontinued operations in the statement of profit or loss and other comprehensive income. All other notes to the financial statements include amounts for continuing operations, unless indicated otherwise.

2.3 Significant accounting policies (cont'd)

2.3.9 Cash dividend

The Group recognizes a liability to pay a dividend when the distribution is authorized and the distribution is no longer at the discretion of the Group. A distribution is authorized when it is approved by the shareholders. A corresponding amount is recognized directly in equity.

2.3.10 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and accumulated impairment losses, if any. Such cost includes the cost of replacing part of the plant and equipment and borrowing costs for long-term construction projects if the recognition criteria are met. Likewise, when a major inspection is performed, its cost is recognized in the book value of the plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in profit or loss as incurred. Depreciation of property, plant and equipment is provided using the straight-line method over the estimated useful lives of the assets as follows:

	<u>Economical useful Life</u>
Buildings	15 - 40
Structures	10 - 40
LPG storage tanks	4 - 25
Machinery	4 - 25
Vehicles	4 - 6
Tools, furniture and fixtures	3 - 5

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

The assets' residual values, useful lives and methods of depreciation are reviewed at each financial year end, and adjusted prospectively, if appropriate. In particular, the Group considers the impact of health, safety and environmental legislation in its assessment of expected useful lives and estimated residual values.

2.3.11 Leases

The Group determines whether the contract itself is a lease or whether the contract includes a lease at the time of the contract's contract, taking into account whether or not the contract controls the use of the identified assets in exchange for a certain period of time.

Company as a lessee

The Group applies one perception overmeasurement approach to all leases except short-term leases and small-scale leases. The Group recognizes lease liabilities representing the obligation to pay lease payments and license assets representing the right-of-use underlying assets.

Right-of-use asset

The Group recognizes licensed assets at the lease commencement date (i.e., when the underlying assets are available). Licensed assets are measured at cost, and the cost model is applied for subsequent measurement. In order to apply the cost model, the accumulated depreciation amount and the accumulated impairment loss are deducted, and the adjustment according to the remeasurement of the lease liability is reflected.

2.3 Significant accounting policies (cont'd)

2.3.11 Leases (cont'd)

The cost of the licensed asset includes the recognized lease liability amount, the initial direct cost, and the lease payments paid before or after the lease commencement less the lease incentive received. The estimated useful life of licensed assets is as follows.

	Estimated Useful life
Vessels	10 – 24
LPG stations	2 - 10
Vehicles	2 – 4
Sites	3 – 50
Others	2 – 10

If the ownership of the underlying asset is transferred to the Group at the end of the lease term or the cost of the licensed asset reflects that the Group will exercise the purchase option, the depreciation is calculated using the estimated useful life of the underlying asset of the asset.

Right-of-use assets are also subject to impairment and are described in Note 2.3.17 accounting policies for impairment of non-financial assets.

Lease liabilities

On the lease commencement date, the Group measures the lease liability at the present value of the lease payments to be paid over the lease term. Lease payments consist of fixed lease payments (including actual fixed lease payments, lease incentives to be deducted), variable lease payments depending on the index or rate, and the amount expected to be paid according to the residual value guarantee. The lease payment also includes the price paid to terminate the lease if the option of the purchase option is exercised and the lease term reflects our exercise of the termination option if it is fairly certain that we will exercise that option.

Variable lease payments, other than variable lease payments that vary by index or rate, are recognized as expenses during the period in which the event or condition that triggers the lease payment occurs (if not incurred in the production of the inventory).

When calculating the present value of the lease payments, company use the incremental borrowing rate at the lease commencement date because it is not easy to calculate the lease's intrinsic interest rate. After the lease commencement date, the amount of lease liabilities increases to reflect interest and decreases to reflect the lease payments paid. In addition, the book value of a lease liability is subject to changes in the lease term, changes in lease payments (e.g., changes in future lease payments due to changes in the index or rate used to calculate the lease payments), or the valuation of options for buying underlying assets. If present, it will be re-measured.

Short-term leases and low-value assets

The Group applies an exemption policy for the recognition of short-term leases (i.e., these leases are less than 12 months from the date the lease commences and do not include the option to buy) for the lease of other assets. In addition, the Group applies an exemption on recognition of low-value asset of other assets that are considered low-value assets. Lease payments for short-term leases and low-value asset leases are recognized as expenses on a straight-line basis over the lease term.

Company as a lessor

Leases in which the Group does not transfer substantially all the risks and rewards of 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 book value 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.

2.3 Significant accounting policies (cont'd)

2.3.12 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 asset. All other borrowing costs are expensed in the period in which they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

2.3.13 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 intangibles, excluding capitalized development costs, are not capitalized and related expenditure is recognized in profit or loss in the period in which the expenditure is incurred.

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

Other than the intangible assets using the units-of-production method, the estimated useful life for the intangible assets using the straight-line method is as follow.

	<u>Estimated Useful life</u>
Industrial property	30
Goodwill	20 – 26
Software and others	1 – 4

Otherwise, Intangible assets with indefinite useful lives are tested for impairment annually or individually or included in cash-generating units. In addition, the Group evaluates whether it is appropriate to apply the indefinite useful lives to the intangible assets each year, and if not, changes the intangible assets to finite useful lives

An intangible asset is derecognized upon disposal (i.e., at the date the recipient obtains control) or when no future economic benefits are expected from its use or disposal. Any gain or loss arising upon derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the statement of profit or loss.

2.3 Significant accounting policies (cont'd)

2.3.14 Financial instruments – initial recognition and subsequent measurement

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

(1) Financial assets

Initial recognition and measurement

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

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the 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.

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

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

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

Subsequent measurement

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

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

Financial assets at amortized cost (debt instruments)

This category is the most relevant to the Group. The Group measures financial assets at amortized cost if both of the following conditions are met:

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

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

2.3 Significant accounting policies (cont'd)

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

Financial assets at fair value through OCI (debt instruments)

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

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

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

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

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

Upon initial recognition, the 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. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in the statement of profit or loss and other comprehensive income 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 designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortized cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

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

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss.

Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

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

2.3 Significant accounting policies (cont'd)

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

Derecognition

The Group derecognizes financial assets when the rights to receive cash flows from the asset have expired, transfer its rights to receive cash flows from the financial asset and substantial risks and rewards of the asset, or neither transferred nor retains substantial risks and rewards of the asset but has transferred control of the asset.

If the Group transfers an asset recognized in the consolidated financial statements, but retains most of the risks and rewards of ownership of the transferred asset, the transferred asset is not derecognized.

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

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

Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in the Note 6:

- 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 expected credit losses (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 origination, 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.

2.3 Significant accounting policies (cont'd)

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

(2) Financial liabilities

Initial recognition and measurement

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

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

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

Subsequent measurement

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

Financial liabilities at fair value through profit or loss

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

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

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

Loans and borrowings

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

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

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

Derecognition

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

(3) Offsetting of financial instruments

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

2.3 Significant accounting policies (cont'd)

2.3.15 Derivative and non-derivative financial instruments and hedge accounting

Initial recognition and subsequent measurement

The Group uses derivative and non-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 and non-derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

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

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

At the beginning of risk hedging, company formally designate and document the risk hedging relationship, risk management objectives and risk hedging strategies that we want to apply.

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

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

The Group applies cash flow hedge accounting to reduce the risk of future cash flow changes in expected transactions due to specific risks. Hedges that meet all the criteria for hedge accounting are accounted for as follows:

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 finance income or cost and the ineffective portion relating to commodity contracts is recognized in finance income or cost.

The Group has applied hedge accounting, which specifies the amount of lease repayment as a hedge measure for non-financial items. The effective part of hedge is recognized in other comprehensive income and as a cash flow hedge reserve as a separate capital item.

2.3 Significant accounting policies (cont'd)

2.3.15 Derivative and non-derivative financial instruments and hedge accounting (cont'd)

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 book value 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.

2.3.16 Inventories

Inventories are measured at the lower of cost and net realizable value. The cost of merchandise is based on the gross average method, the merchandise in transit is based on specific identification method and the supplies is based on moving average method. The cost of inventories comprises purchase costs, conversion costs, and other costs required to prepare inventory for use. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

2.3.17 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 when annual impairment testing for an asset is required, the Group estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or cash-generating unit's (CGU) fair value less costs of disposal and its value in use. Recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or group of assets. When the book value of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Fair value is determined using an appropriate valuation model using stock prices of subsidiaries traded in the open market or other available fair value measurement indicators.

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

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

2.3 Significant accounting policies (cont'd)

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

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

The following assets have specific characteristics for impairment testing:

Goodwill

Goodwill arising on the acquisition of subsidiaries is tested for impairment annually as of December 31 and when circumstances indicate that the carrying value may be impaired.

Impairment is determined for goodwill by assessing the recoverable amount of each CGU (or group of CGUs) to which the goodwill relates. When the recoverable amount of the CGU is less than its book value, an impairment loss is recognized. Impairment losses relating to goodwill cannot be reversed in future periods.

Industrial property right

Industrial property right which is not yet available for use is tested for impairment annually as of December 31, regardless of indications of asset impairment.

Impairment testing of industrial property right is conducted by estimating the recoverable amount of each cash-generating unit or cash-generating unit associated with the industrial property, and if the recoverable amount of the cash-generating unit is less than the carrying amount, impairment loss is recognized. As industrial property has a limited useful life, the Group will amortize using the straight-line method at the time of use.

Other intangible assets

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

2.3.18 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 a maturity of three months or less, which are subject to an insignificant risk of changes in value.

2.3.19 Treasury shares

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

2.3 Significant accounting policies (cont'd)

2.3.20 Provisions

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

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

2.3.21 Pension benefits and other post-retirement benefits

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

Past service costs are recognized in profit or loss on the earlier of :

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

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Group recognizes the following changes in the net defined benefit obligation under 'cost of sales' and 'selling and administrative expenses' in the consolidated statement of profit or loss and other comprehensive income:

The Group operate a defined contribution plan for some executives and employees, and contributions are recognized as expenses when they provide service.

2.3 Significant accounting policies (cont'd)

2.3.22 Share-based payments

The Group provides share-based compensation for employees' work services and is operated in the form of an equity settlement type share-based compensation that grants the share options to employees and officers. The equity settlement type share-based compensation costs are measured at fair value as of the date of granting using an appropriate valuation model.

That cost is recognized in employee benefits expense, together with a corresponding increase in equity (other capital reserves), over the period in which the service and, where applicable, the performance conditions are fulfilled (the vesting period). The cumulative expense recognized for equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired and the Group's best estimate of the number of equity instruments that will ultimately vest. The expense or credit in the statement of profit or loss and other comprehensive income for a period represents the movement in cumulative expense recognized as of the beginning and end of that period.

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

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

When the terms of an equity-settled award are modified, the minimum expense recognized is the grant date fair value of the unmodified award, provided the original terms of the award are met. An additional expense, measured as of the date of modification, is recognized for any modification that increases the total fair value of the share-based payment transaction, or is otherwise beneficial to the employee. Where an award is cancelled by the entity or by the counterparty, any remaining element of the fair value of the award is expensed immediately through profit or loss.

The dilutive effect of outstanding options is reflected as additional share dilution in the computation of diluted earnings per share.

For cash-settled share-based payment transactions that pay cash in exchange for goods or services received, the goods or services received and the liabilities borne in return are measured at fair value and recognized as share-based payment expenses and liabilities during the vesting period. In addition, the fair value of the liabilities are remeasured at the end of each reporting period and on the final settlement date until the liabilities are settled, and any change in fair value are recognized as share-based compensation expense.

2.3 Significant accounting policies (cont'd)

2.3.23 Earnings per share

The Group calculates the basic and diluted earnings per share of common stock for continuing operations and net profit (loss) and presents those in the consolidated financial statements. Basic earnings per share is calculated by dividing net profit (loss) attributed to common stock by weighted average number of common stocks outstanding during the reporting period. Diluted earnings per share are calculated by adjusting the net profit (loss) attributable to common stocks and the weighted average number of common stocks outstanding, taking into account the impact of all potential common shares with dilution effects, including share-based compensation granted to employees.

2.4 New and amended standards and interpretations

The Group applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2022. The Group has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Amendments to KIFRS 1116 Covid-19 Related Rent Concessions beyond 30 June 2021

The practical expedient that allows to avoid assessing whether a discount on rent that occurs due to a direct result of COVID-19 constitutes a lease modification has been expanded to a lease reduction that affects lease payments to be due before June 30, 2022. Lessors should apply the practical expedients consistently to contracts with similar characteristics under similar circumstances.

This amendment had no impact on the consolidated financial statements of the Group.

Amendments to KIFRS 1103 Reference to the Conceptual Framework

Although a definition of assets and liabilities to be recognized in a business combination has been revised to reference the revised Conceptual Framework for Financial Reporting, this relevant interpretation would be applied for liabilities and contingent liabilities that would be within the scope of KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets* or KIFRS Interpretation 2121 *Levies* as an exception and clarifies that contingent assets do not qualify for recognition at the acquisition date.

This amendment had no impact on the consolidated financial statements of the Group.

Amendment to KIFRS 1016 Proceeds before Intended Use

The amendments require entities recognize the proceeds from selling such items, and the costs of producing those items, in profit or loss before being capable of operating in the manner intended by management, and prohibit entities from deducting from the acquisition cost of property, plant and equipment.

This amendment had no impact on the consolidated financial statements of the Group.

Onerous Contracts – Costs of Fulfilling a Contract – Amendments to KIFRS 1037

The amendment specifies that when assessing whether a contract is onerous, the scope of cost of fulfilling a contract is an allocation of both incremental costs to fulfill the contract and other costs directly related to the contract fulfillment.

This amendment had no impact on the consolidated financial statements of the Group.

Annual improvements to KIFRS 2018-2020

These amendments were effective for annual reporting periods beginning on or after January 1, 2022 with earlier adoption permitted. These amendments had no impact on the separate financial statements of the Group.

- KIFRS 1101 First-time Adoption of International Financial Reporting Standards – Subsidiary as a first-time adopter
- KIFRS 1109 Financial Instruments – Fees in the '10 per cent' test for derecognition of financial liabilities
- KIFRS 1041 Agriculture – Taxation in fair value measurements

3. Significant accounting judgments, estimates and assumptions

The preparation of the Group's consolidated financial statement requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future periods.

Other disclosures about risks and uncertainties that have been exposed to the Group include the objectives and policies of financial risk management, as described in Note 32.

Estimates and assumptions

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

(1) Impairment of non-financial assets

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

(2) Provision for expected credit losses of trade and other receivables

The Group uses a provision matrix to calculate ECLs for trade and other receivables. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by geography, product type, customer type and rating, and coverage by letters of credit and other forms of credit insurance).

The provision matrix is initially 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 over the next year 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 may also not be representative of customer's actual default in the future.

(3) Share-based payments

The Group measures the cost of equity-settled transactions with employees by reference to the fair value of the equity instruments at the date at which they are granted. Estimating fair value for share-based payment transactions requires determination of the most appropriate valuation model, which depends on the terms and conditions of the grant. This estimate also requires determination of the most appropriate inputs to the valuation model including the expected life of the share option, volatility and dividend yield and making assumptions about them. The assumptions and models used for estimating fair value for share-based payment transactions are disclosed in Note 24.

3. Significant accounting judgments, estimates and assumptions (cont'd)

(4) Defined benefit plans (pension benefits)

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

(5) Fair value measurement of financial instruments

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

(6) Leases - Estimating the incremental borrowing rate

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

(7) Lease term

When calculating the lease term, the Group considers all facts and circumstances that create an economic incentive to exercise an extension option or not to exercise a termination option. The period covered by the extension option (or the period covered by the termination option) is included in the lease term only if it is reasonably certain that the lessee will (or will not) exercise the extension option. The lease term is reassessed when the option is exercised (not exercised) or obligated to exercise the option (not exercised). Only when a significant event occurs or when significant change in circumstances that affects the calculation of the lease period is within the control of the lessee, the Group changes its judgment that it is quite certain to exercise (or not to exercise) the extension option.

4. Standards issued but not yet effective

The new and amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below. At the date of authorization of these financial statements, the Group has not applied the following new and revised KIFRS Standards that have been issued but are not yet effective.

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

The classification of liabilities as current or non-current is based on rights that are in existence at the end of the reporting period, and the classification is unaffected by the right to defer the liability settlement or management's expectations. The settlement of liability includes the transfer of an equity instrument, unless the option to settle an equity instrument in a compound financial instrument meets the definition of an equity instrument and is recognized separately from the liability.

The amendments are effective for annual reporting periods beginning on or after January 1, 2024 and can be applied early. The amendments are not expected to have a material impact on the Group.

Disclosure of Accounting Policies - Amendments to KIFRS 1001

It defines 'material' accounting policies and requires disclose. The amendments are applicable for annual reporting periods beginning on or after January 1, 2023 and can be applied early. The amendments are not expected to have a material impact on the Group.

Definition of Accounting Estimates - Amendments to KIFRS 1008

It defines accounting estimates and clarify the distinction between the accounting estimates and changes in accounting policies. The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and can be applied early. The amendments are not expected to have a material impact on the Group.

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

The exception to the initial recognition of an asset or liability transaction, it added a requirement that the transaction does not create a same temporary difference deduction and same temporary difference addition at the time of the transaction. The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and can be applied early. The amendments are not expected to have a material impact on the Group.

KIFRS 1117 Insurance Contracts

Insurance liabilities are measured at market value using a discount rate at the end of each fiscal year, not at the cost evaluation, and insurance revenue is recognized on an accrual basis, not at the cash basis. The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and the Group which applies KIFRS 1109 'Financial assets and liability' can be applied early. The amendments are not expected to have a material impact on the Group.

SK Gas Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2022 and 2021

5. Financial assets and liabilities

Financial assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Financial assets at amortized cost	Total
Current assets:				
Cash and cash equivalents	₩ -	₩ -	₩ 404,791,630	₩ 404,791,630
Short-term financial assets	315,168,804	-	1,900,000	317,068,804
Trade and other receivables	19,296,638	-	950,404,795	969,701,433
Derivative financial assets	49,115,758	-	-	49,115,758
Other current financial assets	-	-	168,341,050	168,341,050
Sub-total	383,581,200	-	1,525,437,475	1,909,018,675
Non-current assets:				
Long-term financial assets	18,028,229	48,566,689	80,988,984	147,583,902
Trade and other receivables	-	-	2,444,390	2,444,390
Derivative financial assets	106,409,477	-	-	106,409,477
Other non-current financial assets	-	-	33,371,407	33,371,407
Sub-total	124,437,706	48,566,689	116,804,781	289,809,176
Total	₩ 508,018,906	₩ 48,566,689	₩ 1,642,242,256	₩ 2,198,827,851
2021				
	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Financial assets at amortized cost	Total
Current assets:				
Cash and cash equivalents	₩ -	₩ -	₩ 162,690,549	₩ 162,690,549
Short-term financial assets	660,525,549	-	6,620,000	667,145,549
Trade and other receivables	-	-	927,968,164	927,968,164
Derivative financial assets	81,739,169	-	-	81,739,169
Other current financial assets	-	-	38,258,697	38,258,697
Sub-total	742,264,718	-	1,135,537,410	1,877,802,128
Non-current assets:				
Long-term financial assets	1,370,055	53,863,456	85,693,500	140,927,011
Trade and other receivables	-	-	2,147,733	2,147,733
Derivative financial assets	52,824,512	-	-	52,824,512
Other non-current financial assets	-	-	34,639,765	34,639,765
Sub-total	54,194,567	53,863,456	122,480,998	230,539,021
Total	₩ 796,459,285	₩ 53,863,456	₩ 1,258,018,408	₩ 2,108,341,149

SK Gas Co., Ltd. and its subsidiaries
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December 31, 2022 and 2021

5. Financial assets and liabilities (cont'd)

Financial liabilities as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022				
	Financial liabilities at fair value through profit or loss	Hedge designated financial liabilities	Financial liabilities at amortized cost	Other financial liabilities	Total
Current liabilities:					
Trade and other payables	₩ 89,621,135	₩ -	₩ 253,195,791	₩ -	₩ 342,816,926
Short-term borrowings	-	-	899,681,398	-	899,681,398
Current portion of bond payable	-	-	149,920,649	-	149,920,649
Derivative financial liabilities	204,040,928	-	-	-	204,040,928
Current portion of lease liabilities (*1)	-	42,444,241	-	21,022,462	63,466,703
Other current financial liabilities	260,081	-	-	-	260,081
Sub-total	293,922,144	42,444,241	1,302,797,838	21,022,462	1,660,186,685
Non-current liabilities:					
Trade and other payables	-	-	31,422,269	-	31,422,269
Bonds payable	-	-	1,216,661,475	-	1,216,661,475
Long-term borrowings	-	-	46,547,635	-	46,547,635
Long-term derivative financial liabilities	113,607	-	-	-	113,607
Lease liabilities (*1)	-	289,247,130	-	60,106,636	349,353,766
Other non-current financial liabilities	260,081	-	35,279,697	-	35,539,778
Sub-total	373,688	289,247,130	1,329,911,076	60,106,636	1,679,638,530
Total	₩ 294,295,832	₩ 331,691,371	₩ 2,632,708,914	₩ 81,129,098	₩ 3,339,825,215

(*1) The effective part of cash flow hedge amount of ₩15,246,949 thousand (including the income tax effect) is recognized in other comprehensive loss.

	2021				
	Financial liabilities at fair value through profit or loss	Hedge designated financial liabilities	Financial liabilities at amortized cost	Other financial liabilities	Total
Current liabilities:					
Trade and other payables	₩ 95,384,653	₩ -	₩ 191,554,933	₩ -	₩ 286,939,586
Short-term borrowings	-	-	796,493,518	-	796,493,518
Current portion of bond payable	-	-	199,953,852	-	199,953,852
Derivative financial liabilities	33,041,827	-	-	-	33,041,827
Current portion of lease liabilities (*1)	-	40,006,633	-	20,528,698	60,535,331
Sub-total	128,426,480	40,006,633	1,188,002,303	20,528,698	1,376,964,114
Non-current liabilities:					
Bonds payable	-	-	1,066,657,697	-	1,066,657,697
Lease liabilities (*1)	-	310,050,758	-	28,472,922	338,523,680
Other non-current financial liabilities	392,192	-	33,985,267	-	34,377,459
Sub-total	392,192	310,050,758	1,100,642,964	28,472,922	1,439,558,836
Total	₩ 128,818,672	₩ 350,057,391	₩ 2,288,645,267	₩ 49,001,620	₩ 2,816,522,950

(*1) The effective part of cash flow hedge amount of ₩22,559,636 thousand (including the income tax effect) is recognized in other comprehensive loss.

SK Gas Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
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5. Financial assets and liabilities (cont'd)

Profit or loss details of financial instruments for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022						
	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Financial assets at amortized cost	Financial liabilities designated as hedge accounting	Financial liabilities at amortized cost	Other financial liabilities	Total
Profit or loss:							
Interest income (expense)	₩ -	₩ -	₩ 5,073,285	₩ (8,402,712)	₩ (47,724,637)	₩ (1,581,226)	₩ (52,635,290)
Dividend income (*1)	-	188,066	-	-	-	-	188,066
Reversal of allowance for bad debt	-	-	617,901	-	-	-	617,901
Gain from valuation of financial instruments	2,822,299	-	-	-	-	-	2,822,299
Gain from transactions of financial instruments	28,023,138	-	-	-	-	-	28,023,138
Sub-total	30,845,437	188,066	5,691,186	(8,402,712)	(47,724,637)	(1,581,226)	(20,983,886)
Other comprehensive income:							
Loss from valuation of financial instruments (*2)	-	(5,608,121)	-	(15,246,949)	-	-	(20,855,070)
Total	₩ 30,845,437	₩ (5,420,055)	₩ 5,691,186	₩ (23,649,661)	₩ (47,724,637)	₩ (1,581,226)	₩ (41,838,956)

(*1) Dividend income from investments in subsidiaries, associates and joint ventures were excluded.

(*2) Amount is net of income tax effect.

	2021						
	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Financial assets at amortized cost	Financial liabilities designated as hedge accounting	Financial liabilities at amortized cost	Other financial liabilities	Total
Profit or loss:							
Interest income (expense)	₩ -	₩ -	₩ 3,967,550	₩ (9,364,024)	₩ (29,765,074)	₩ (1,286,935)	₩ (36,448,483)
Dividend income (*1)	-	223,855	-	-	-	-	223,855
Bad debt expense	-	-	(3,010,963)	-	-	-	(3,010,963)
Loss from valuation of financial instruments	(473,365)	-	-	-	-	-	(473,365)
Gain from transactions of financial instruments	11,173,031	-	-	-	-	-	11,173,031
Sub-total	10,699,666	223,855	956,587	(9,364,024)	(29,765,074)	(1,286,935)	(28,535,925)
Other comprehensive income:							
Loss from valuation of financial instruments (*2)	-	4,087,197	-	(22,559,636)	-	-	(18,472,439)
Total	₩ 10,699,666	₩ 4,311,052	₩ 956,587	₩ (31,923,660)	₩ (29,765,074)	₩ (1,286,935)	₩ (47,008,364)

(*1) Dividend income from investments in subsidiaries, associates and joint ventures were excluded.

(*2) Amount is net of income tax effect.

Other profit or loss details of financial instruments as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			2021		
	Financial assets/liabilities at fair value through profit or loss	Financial assets/liabilities at amortized cost	Total	Financial assets/liabilities at fair value through profit or loss	Financial assets/liabilities at amortized cost	Total
Gain (loss) on foreign currency translation	₩ -	₩ 48,669,701	₩ 48,669,701	₩ -	₩ (1,336,573)	₩ (1,336,573)
Foreign exchange gain (loss)	-	(128,904,999)	(128,904,999)	-	(68,212,833)	(68,212,833)
Derivative valuation gain (loss)	(101,473,340)	-	(101,473,340)	85,568,871	-	85,568,871
Derivative transaction gain (loss)	161,222,703	-	161,222,703	115,371,559	-	115,371,559
Share-based compensation costs	(127,971)	-	(127,971)	(392,192)	-	(392,192)
Total	₩ 59,621,392	₩ (80,235,298)	₩ (20,613,906)	₩ 200,548,238	₩ (69,549,406)	₩ 130,998,832

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5. Financial assets and liabilities (cont'd)

Details of restricted bank deposits as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	Financial institution	2022	2021	Description
Cash and cash equivalent	Kookmin Bank	₩ 70,741,448	₩ -	Establishment of PF-related pledges (*1)
Long-term financial assets	Woori Bank and others	145,099	136,830	Maintenance of checking account, etc.
Total		<u>₩ 70,886,547</u>	<u>₩ 136,830</u>	

(*1) Pledge has been established in relation to the PF loans and can be used only for construction and operating funds according to the agreement.

Details of cash and cash equivalents as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Cash	₩ -	₩ 1,160
Ordinary deposits and others	404,791,630	162,689,389
Total	<u>₩ 404,791,630</u>	<u>₩ 162,690,549</u>

6. Trade and other receivables

Trade and other receivables as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Current assets:		
Trade receivables	₩ 904,361,333	₩ 860,395,376
Less: allowance for doubtful accounts	(646,144)	(1,216,621)
Other accounts receivables	64,515,830	67,641,883
Finance lease receivables	1,470,414	1,147,526
Total	<u>₩ 969,701,433</u>	<u>₩ 927,968,164</u>
Non-current assets:		
Finance lease receivables	₩ 2,144,390	₩ 2,147,733
Long-term other accounts receivables	300,000	-
Total	<u>₩ 2,444,390</u>	<u>₩ 2,147,733</u>

Details of changes in allowance for doubtful accounts for trade and other receivables for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
As of January 1	₩ (1,216,621)	₩ (992,045)
Bad debt expense	-	(820,623)
Reversal of allowance for bad debt	617,901	72,037
Write-off	-	571,000
Exchange rate fluctuation	(47,424)	(46,990)
As of December 31	<u>₩ (646,144)</u>	<u>₩ (1,216,621)</u>

SK Gas Co., Ltd. and its subsidiaries
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6. Trade and other receivables (cont'd)

For trade receivables classified as financial assets at amortized cost, the Group applies a simplified method of recognizing expected credit losses for the entire period as allowance for doubtful accounts, and expected credit losses include forward-looking information. To measure the amount, the Group classified trade receivables based on credit risk and overdue period, and calculated the expected loss rate based on actual credit loss experience over the past three years. As a result, the allowance for doubtful accounts as of the end of the year ended December 31, 2022 is as follows (Korean won in thousands):

	2022		
	Expected credit loss	Total receivable	Allowance for doubtful account
Collective assessment			
Not past due	0.05%	₩ 748,943,662	₩ (366,774)
Past due			
≤ 3 months	0.71%	17,628,334	(125,755)
3 ~ 6 months	6.84%	2,077,266	(142,073)
6 ~ 9 months	47.68%	-	-
9~ 12 months	77.07%	-	-
> 12 months	100.00%	11,542	(11,542)
Sub-total		19,717,142	(279,370)
Individual assessment	0.00%	116,403,891	-
Total		₩ 885,064,695	₩ (646,144)

The Group conducts an individual assessment for receivables with collateral and joint guarantors and performs a collective credit analysis according to expected credit losses for unsecured receivables. Meanwhile, other receivables other than trade receivables are individually evaluated to measure expected credit losses. There is no loss allowance for the years ended December 31, 2022 and December 31, 2021.

7. Inventories

Inventories as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Merchandise	₩ 122,548,795	₩ 105,970,410
Merchandise in-transit	333,495,407	351,853,736
Supplies	5,610,815	6,328,930
Total	₩ 461,655,017	₩ 464,153,076

No valuation loss on inventories was recognized in cost of sales for the years ended December 31, 2022 and December 31, 2021. The Group carries comprehensive insurance to Samsung Fire & Marine Insurance with its inventories against fire and other casualty losses for up to ₩433,362,281 thousand and ₩291,804,262 thousand as of December 31, 2022 and 2021, respectively.

SK Gas Co., Ltd. and its subsidiaries
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8. Other financial assets

Other financial assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Other current financial assets:		
Short-term deposits	₩ 168,341,050	₩ 38,258,697
Other non-current financial assets:		
Long-term deposits	₩ 33,371,407	₩ 34,639,765

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statements 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. ₩33,673,704 thousand of the current year short-term deposits were offset against other payables.

9. Other assets

Other current assets and other non-current assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Other current assets:		
Advanced payments	₩ 24,642,929	₩ 20,166,423
Prepaid expenses	4,836,051	4,496,964
Prepaid value added taxes	21,901,494	39,213,259
Total	₩ 51,380,474	₩ 63,876,646
Other non-current assets:		
Long-term advanced payments	₩ 5,451,380	₩ -
Long-term prepaid expenses	39,129,846	30,612,500
Total	₩ 44,581,226	₩ 30,612,500

SK Gas Co., Ltd. and its subsidiaries
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10. Financial assets

Financial assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Current:		
Financial assets at amortized cost	₩ 1,900,000	₩ 6,620,000
Financial assets at fair value through profit or loss	315,168,804	660,525,549
Total	<u>₩ 317,068,804</u>	<u>₩ 667,145,549</u>
Non-current:		
Financial assets at amortized cost	₩ 80,988,984	₩ 85,693,500
Financial assets at fair value through other comprehensive income	48,566,689	53,863,456
Financial assets at fair value through profit or loss	18,028,229	1,370,055
Total	<u>₩ 147,583,902</u>	<u>₩ 140,927,011</u>

Financial assets at amortized cost as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	Description	Interest rate (%)	2022	2021
Current:				
Operating loans to gas stations	Operating capital and others	-	₩ 1,900,000	₩ 6,620,000
Non-current:				
Long-term financial assets	Maintenance of checking account	-	₩ 17,000	₩ 2,354,658
Operating loans to gas stations	Operating capital and others	-	87,022,283	89,758,616
Employees' loans	Housing loans	2.30	101,071	56,786
	Sub-total		<u>87,140,354</u>	<u>92,170,060</u>
	Less: present value discount		<u>(1,772,078)</u>	<u>(2,258,567)</u>
	Less: allowance for doubtful accounts (*1)		<u>(4,379,292)</u>	<u>(4,217,993)</u>
	Total		<u>₩ 80,988,984</u>	<u>₩ 85,693,500</u>

(*1) Loans such as operating loans to gas stations are secured, and expected credit losses are measured by individual evaluations.

The Group recognizes the difference between the present value and the nominal value of operating loans as a deduction of sales.

SK Gas Co., Ltd. and its subsidiaries
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10. Financial assets (cont'd)

Current financial assets at fair value through profit or loss as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
MMW and others	₩ 315,168,804	₩ 660,525,549

Non-current financial assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	Equity ownership (%)	2022		2021	
		Acquisition cost	Book value / fair value (*3)	Book value / fair value (*3)	Book value / fair value (*3)
Financial assets at fair value through other comprehensive income (FVOCI) (*1)					
Hanil Holdings Co., Ltd. (*2)	0.26	₩ 1,586,720	₩ 869,011	₩ 1,015,200	
Hanil Cement Co., Ltd. (*2)	0.26	2,181,746	2,135,911	3,850,140	
Bloom Energy (*2)	0.26	5,597,994	8,076,917	8,665,997	
Korea Business Finance Co., Ltd. (*2)	10.34	3,000,000	4,980,600	4,737,000	
SK TIC (*2)	1.62	2,852,212	2,298,337	2,847,074	
Ip Sung Co., Ltd.	12.40	299,992	299,992	299,992	
Kornatus Co., Ltd. – Convertible Preference Shares (“CPS”)	4.89	1,000,053	1,000,053	1,000,053	
Enechange Investment (*2)	1.10	756,068	2,175,911	4,925,588	
Carbon Lighthouse.Inc (*4)	0.80	1,622,485	-	1,517,759	
Metron	2.68	2,650,868	2,650,868	2,479,763	
CZERO Inc	14.60	24,078,691	24,078,691	22,524,492	
Others	-	398	398	398	
Sub-total		45,627,227	48,566,689	53,863,456	
Financial assets at fair value through profit or loss (FVPL)					
Korea LPG Association	50.00	70,000	70,000	70,000	
Safeschoolbus Co., Ltd. - Redeemable Convertible Preference Shares (“RCPS”)	6.00	300,001	300,001	300,001	
Hylum Industries, Inc. - RCPS	2.54	1,000,054	1,000,054	1,000,054	
EverBest Medellin Private Equity Investment Limited (*5,6)	92.59	5,000,000	5,161,983	-	
Gridwiz Co., Ltd – RCPS (*5)	5.76	8,501,260	11,496,191	-	
Optimitive SLU (*4)	-	1,442,475	-	-	
Sub-total		16,313,790	18,028,229	1,370,055	
Total		₩ 61,941,017	₩ 66,594,918	₩ 55,233,511	

(*1) As of December 31, 2022, equity securities to be held for the long term for the Group's strategic purposes are classified as FVOCI.

(*2) The Group assessed financial instruments for which an active transaction market exists or fair value can be assessed reliably. Differences of ₩5,608,121 thousand between the book value and fair value measured based on quoted prices in active markets was recorded in other comprehensive income after deducting the income tax effect of ₩1,567,478 thousand from ₩7,175,599 thousand.

(*3) For financial assets measured at fair value through other comprehensive income that are non-listed shares where no active trade market exists, fair value cannot be reliably measured, or there is no material difference between fair value and acquisition costs, the Group determined acquisition cost is the appropriate fair value.

(*4) The Group evaluated the fair value of its financial assets in consideration of the financial status of the invested company due to incidents such as default of an obligation or capital impairment of the invested company.

(*5) The Group evaluated financial instruments which fair value can be reliably evaluated, and the difference from the book value of ₩ 3,156,913 thousand was recorded as current year profit.

10. Financial assets (cont'd)

(*6) According to the articles of incorporation of EverBest Medellian Private Equity Investment Limited, the Group has no power over the investee and no ability to participate in financial and operating policies. Hence, it is classified as a financial instrument as it is considered as no control or significant influence over the investee.

Details of Gridwiz's Redeemable Convertible Preference Shares ("RCPS") are as follows.

Detail	Description
Amounts invested	KRW 8,501 million
Number of shares invested (share)	Registered Redeemable Convertible Preference Shares ("RCPS") with voting right. 15,026 shares
Price per share (in Korean Won)	KRW 565,770
Expected Period	10 years from issue date
Conversion condition	Conversion period Conversion ratio
	From the day after the issue date to the day before the expiration of the expected period
	1:1 The conversion ratio is the issue price that is lower than issue price of RCPS and is adjusted when certain conditions are met, such as IPO (stock offering), paid-in capital increase, stock dividend, and capital Increase without consideration.
Repayment condition	Repayment period Repayment price
	From the day 4 years have elapsed from the issue date to the day before the expiration of the expected period.
	Acquisition price per share* 5% annual compound - dividends paid
Profit dividends	1.0% per year based on the par value of the issue price (cumulative, participating)

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10. Financial assets (cont'd)

Changes in financial assets for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022					
	Jan. 1	Increase	Decrease	Revaluation	Others (*1)	Dec. 31
Current:						
Financial assets at amortized cost	₩ 6,620,000	₩ 300,000	₩ (11,863,319)	₩ -	₩ 6,843,319	₩ 1,900,000
Financial assets at fair value through profit of loss (*2)	660,525,549	-	(321,286,250)	(334,615)	(23,735,880)	315,168,804
Total	₩ 667,145,549	₩ 300,000	₩ (333,149,569)	₩ (334,615)	₩ (16,892,561)	₩ 317,068,804
Non-current						
Financial assets at amortized cost	₩ 85,693,500	₩ 1,650,000	₩ (5,714)	₩ -	₩ (6,348,802)	₩ 80,988,984
Financial assets at fair value through other comprehensive income	53,863,456	-	-	(7,175,599)	1,878,832	48,566,689
Financial assets at fair value through profit of loss	1,370,055	5,000,000	-	3,156,914	8,501,260	18,028,229
Total	₩ 140,927,011	₩ 6,650,000	₩ (5,714)	₩ (4,018,685)	₩ 4,031,290	₩ 147,583,902

(*1) Others include changes in current/non-current classification, changes in the present value discount, foreign currency valuation.

(*2) Increase in the financial assets is presented as net amounts including the decreases.

	2021					
	Jan. 1	Increase	Decrease	Revaluation	Others (*1)	Dec. 31
Current:						
Financial assets at amortized cost	₩ 2,136,000	₩ 5,300,000	₩ (14,536,485)	₩ -	₩ 13,720,485	₩ 6,620,000
Financial assets at fair value through profit of loss (*2)	664,375,810	-	(7,197,154)	829,245	2,517,648	660,525,549
Total	₩ 666,511,810	₩ 5,300,000	₩ (21,733,639)	₩ 829,245	₩ 16,238,133	₩ 667,145,549
Non-current						
Financial assets at amortized cost	₩ 91,615,372	₩ 8,729,858	₩ (5,714)	₩ (2,262,377)	₩ (12,383,639)	₩ 85,693,500
Financial assets at fair value through other comprehensive income	25,526,496	21,848,967	-	5,325,711	1,162,282	53,863,456
Financial assets at fair value through profit of loss	2,608,446	102,086	(102,086)	(1,302,610)	64,219	1,370,055
Total	₩ 119,750,314	₩ 30,680,911	₩ (107,800)	₩ 1,760,724	₩ (11,157,138)	₩ 140,927,011

(*1) Others include changes in current/non-current classification, changes in the present value discount, foreign currency valuation.

(*2) Increase in the financial assets is presented as net amounts including the decreases.

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11. Investments in associates and joint venture

Investments in associates and joint ventures as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

Associates and joint venture	Country of domicile	Year-end date	Principal activities	2022		2021	
				Equity ownership (%)	Book value	Equity ownership (%)	Book value
Investments in joint Ventures:							
Dangjin Eco Power Co., Ltd. (*1,2)	Korea	12.31	Electricity	66.00	₩ 51,248,616	66.00	₩ 50,019,120
Korea Energy Terminal Co., Ltd. (*2)	Korea	12.31	Construction and operation of tank terminals	47.58	78,746,655	47.58	80,860,266
G-Energy Corp. (*2)	Korea	12.31	Coal supply	50.00	450,253	50.00	111,451
KD Eco Hub Co., Ltd. (*2)	Korea	12.31	Rent and management of pipeline	40.00	340,941	-	-
Lotte SK Eneroute Co., Ltd. (*2)	Korea	12.31	Supply/sale of hydrogen	45.00	1,243,730	-	-
Sub-total					132,030,195		130,990,837
Investments in associates:							
Global Opportunities Fund	Cayman Islands	12.31	Finance	20.63	671,113	20.63	764,568
Weonil Energy Co., Ltd.	Korea	12.31	LPG gas station	29.00	2,457,967	29.00	2,509,805
SK Advanced Co., Ltd.	Korea	12.31	PDH manufacturing	45.00	239,149,948	45.00	297,930,584
Bitgoeul Eco Energy Co., Ltd	Korea	12.31	Construction and operation of fuel cell power plant	29.00	5,317,696	29.00	4,379,052
SK Holdco Pte. Ltd. (*7)	Singapore	12.31	Investments	-	-	36.49	124,003,058
Gridwiz Co., Ltd. (*8)	Korea	12.31	Power demand management service	19.95	11,546,081	19.95	12,535,113
Gridwiz Co., Ltd. - preferred share (*3)	Korea	12.31	Power demand management service	-	-	5.76	8,501,260
Goseong Green Power Co., Ltd. (*5)	Korea	12.31	Coal-fired power plant construction and operation	19.00	206,141,993	19.00	187,951,290
SKIS (*5,6)	Singapore	12.31	Investments	8.33	-	8.33	-
VOPAK GAS TERMINAL LLP	Singapore	12.31	LPG tank terminal	20.00	9,348,589	20.00	9,670,202
APOC(*4,5)	Saudi Arabia	12.31	PDH/PP manufacturing	15.00	127,611,925	15.00	70,003,650
KOHYGEN Corp.(*5)	Korea	12.31	Hydrogen fueling infrastructure operation	9.05	1,705,966	9.05	785,449
Sub-total					603,951,278		719,034,031
Total					₩ 735,981,473		₩ 850,024,868

(*1) The Group's ownership interests in the entity include 11.13% ownership interests to be acquired when the put options held by Korea Development Bank are exercised.

(*2) The Group classified the joint arrangement that it has joint control of as a joint venture since the arrangement has been structured through a separate vehicle and the parties holding joint control hold the rights to the net assets of the joint arrangement.

(*3) This is redeemable convertible preference shares of Gridwiz Co., Ltd., and the Group reclassified the preferred share of Gridwiz Co., Ltd. to investment in associates during the current year ended December 31, 2022. (See Note 10)

(*4) APOC stands for Advanced Polyolefins Industry Company.

(*5) The Group classified it as investments in associates because it can exercise voting rights on the board of directors of the investee although its shareholding is less than 20%.

(*6) SKIS stands for SK International Investment Singapore Pte Ltd. The investment was fully impaired during prior years.

(*7) The Group signed a sale contract during the current year ended December 31, 2022 and classified it as a non-current asset held for sale. (See note 34)

(*8) The equity ratio calculated by combining the issued common stocks and preferred stocks is 19.95%, and the equity ratio calculated based on the issued common stocks is 32.91%.

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

Changes in investments in associates and joint ventures for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

Associates	2022							
	Jan. 1	Additions (*1)	Gain(loss) in equity method	Equity adjustments in equity method	Dividends received	Transfer (*2)	Others (*3)	Dec. 31
Dangjin Eco Power Co., Ltd.	₩ 50,019,120	₩ -	₩ 485,294	₩ 748,317	₩ -	₩ -	₩ (4,115)	₩ 51,248,616
Korea Energy Terminal Co., Ltd.	80,860,266	-	(2,118,227)	-	-	-	4,616	78,746,655
Bitgoeul Eco Energy Co., Ltd.	4,379,052	-	938,644	-	-	-	-	5,317,696
KD Eco Hub Co., Ltd.	-	400,000	(59,059)	-	-	-	-	340,941
Lotte SK Eneroute Co., Ltd.	-	1,350,000	(106,270)	-	-	-	-	1,243,730
Global Opportunities Fund	764,568	-	(93,455)	-	-	-	-	671,113
Weonil Energy Co., Ltd.	2,509,805	-	(51,838)	-	-	-	-	2,457,967
SK Advanced Co., Ltd.	297,930,584	-	(57,675,971)	(112,240)	(1,591,509)	-	599,084	239,149,948
SK Holdco Pte. Ltd.	124,003,058	-	2,262,950	17,517,131	-	(143,783,139)	-	-
Gridwiz Co., Ltd.	12,535,113	-	(967,755)	(21,277)	-	-	-	11,546,081
Gridwiz Co., Ltd. - preferred share	8,501,260	-	-	-	-	(8,501,260)	-	-
Goseong Green Power Co., Ltd.	187,951,290	-	10,430,961	-	-	-	7,759,742	206,141,993
VOPAK GAS TERMINAL LLP	9,670,202	-	(1,031,610)	709,997	-	-	-	9,348,589
KOHYGEN Corp	785,449	1,235,000	(314,483)	-	-	-	-	1,705,966
G-Energy Corp.	111,451	-	338,802	-	-	-	-	450,253
APOC	70,003,650	54,969,836	(854,268)	3,492,707	-	-	-	127,611,925
Total	₩ 850,024,868	₩ 57,954,836	₩ (48,816,285)	₩ 22,334,635	₩ (1,591,509)	₩ (152,284,399)	₩ 8,359,327	₩ 735,981,473

(*1) It is the amount of acquisition due to paid-in capital increase.

(*2) The Group signed a sale contract during the current year ended December 31, 2022 and classified it as non-current assets held for sale. (See note 34). Also, during the current year, the preferred shares of Gridwiz Co., Ltd are reclassified as Fair Value through Profit or Loss (FVPL) account.

(*3) Changes in retained earnings of associates and joint ventures are included.

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

Associates	2021							
	Jan. 1	Additions (*1)	Disposal	Gain(loss) in equity method	Equity adjustments in equity method	Dividends received	Others (*2)	Dec. 31
SK D&D Co., Ltd.	₩ 160,659,822	₩ -	₩ (242,762,758)	₩ 34,920,517	₩ 233,836	₩ (3,338,633)	₩ 50,287,216	₩ -
SK D&D Co., Ltd. - preferred share	53,144,000	-	-	-	-	(2,044,000)	(51,100,000)	-
Dangjin Eco Power Co., Ltd.	48,882,909	-	-	531,470	604,420	-	321	50,019,120
Korea Energy Terminal Co., Ltd.	43,595,368	39,098,450	-	(1,830,187)	-	-	(3,365)	80,860,266
Bitgoeul Eco Energy Co., Ltd.	29,000	4,611,000	-	(260,948)	-	-	-	4,379,052
Global Opportunities Fund	851,795	-	-	(87,227)	-	-	-	764,568
Weonil Energy Co., Ltd.	2,507,141	-	-	2,664	-	-	-	2,509,805
SK Advanced Co., Ltd.	297,593,261	-	-	5,267,491	(41,934)	(4,590,891)	(297,343)	297,930,584
SK Holdco Pte. Ltd.	94,521,851	-	-	16,014,268	13,466,939	-	-	124,003,058
Gridwiz Co., Ltd.	13,133,220	-	-	(522,157)	(75,950)	-	-	12,535,113
Gridwiz Co., Ltd. -preferred share	8,501,260	-	-	-	-	-	-	8,501,260
Goseong Green Power Co., Ltd.	1,522,634	170,240,000	-	16,174,383	-	-	14,273	187,951,290
VOPAK GAS TERMINAL LLP	10,191,694	-	-	91,547	321,324	(934,363)	-	9,670,202
KOHYGEN Corp.	-	950,000	-	(164,551)	-	-	-	785,449
G-Energy Corp.	-	100,000	-	11,451	-	-	-	111,451
APOC	-	69,387,360	-	(1,114,158)	1,730,448	-	-	70,003,650
Total	₩ 735,133,955	₩ 284,386,810	₩ (242,762,758)	₩ 69,034,563	₩ 16,239,083	₩ (10,907,887)	₩ (1,098,898)	₩ 850,024,868

(*1) It is the amount of acquisition due to paid-in capital increase.

(*2) Conversion of convertible preferred stocks to common stocks, changes in retained earnings on equity method are classified as others.

Summarized financial information of the associates and joint venture, based on its financial statements, and reconciliation with the carrying amount of the investments in the consolidated financial statements as of December 31, 2022 is as below (Korean won in thousands):

Associates	2022						
	Net assets (*1)	Equity ownership (%) (*2)	Group's share in net assets	Equity method basis differences	Intercompany transactions and others	Carrying amount	
Goseong Green Power Co., Ltd.	₩ 1,001,650,639	19.00	₩ 190,313,621	₩ 15,828,372	₩ -	₩ 206,141,993	
SK Advanced Co., Ltd.	510,368,467	45.00	229,665,810	9,645,752	(161,614)	239,149,948	
APOC	850,746,172	15.00	127,611,926	-	-	127,611,926	
Korea Energy Terminal Co., Ltd.	154,454,208	47.58	73,494,502	5,252,151	-	78,746,653	
Dangjin Eco Power Co., Ltd.	77,649,418	66.00	51,248,616	-	-	51,248,616	
VOPAK GAS Terminal LLP	46,742,948	20.00	9,348,590	-	-	9,348,590	

(*1) Total assets including non-controlling interests.

(*2) The equity ratio is the percentage held in the investees with respect to the number of issued common stocks, and the effective equity ratio based on voting rights was applied when evaluating the equity method.

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

The following table presents the summarized financial information of associates and joint venture as of and for the years ended December 31, 2022 and 2021 (Korean won in thousands):

Associates	2022					
	Current assets	Non-current assets	Liabilities	Equity	Sales	Profit (loss) for the year
Goseong Green Power Co., Ltd.	₩ 1,064,579,166	₩ 4,453,678,172	₩ 4,516,606,699	₩ 1,001,650,639	₩ 1,999,825,182	₩ 26,980,744
Dangjin Eco Power Co., Ltd.	6,134,063	92,581,177	21,065,822	77,649,418	4,185,027	735,120
SK Advanced Co., Ltd.	178,690,187	827,085,600	495,407,320	510,368,467	726,697,024	(127,963,509)
APOC	331,030,933	1,335,426,084	815,710,845	850,746,172	-	(5,695,112)
VOPAK GAS Terminal LLP	3,125,084	54,560,149	10,942,285	46,742,948	3,541,720	(4,899,339)
Korea Energy Terminal Co., Ltd.	117,401,491	731,515,368	694,462,651	154,454,208	-	(4,451,617)

Associates	2021					
	Current assets	Non-current assets	Liabilities	Equity	Sales	Profit (loss) for the year
Goseong Green Power Co., Ltd.	₩ 845,088,187	₩ 4,571,436,894	₩ 4,510,614,995	₩ 905,910,086	₩ 740,028,282	₩ 54,540,170
Dangjin Eco Power Co., Ltd.	5,402,819	92,606,383	22,222,657	75,786,545	4,138,528	805,258
SK Advanced Co., Ltd.	210,652,473	844,911,551	414,777,237	640,786,787	896,651,039	11,767,571
SK Holdco Pte. Ltd	-	340,114,646	308,087	339,806,559	-	43,884,029
VOPAK GAS Terminal LLP	3,585,387	50,551,284	5,988,268	48,148,403	7,263,545	(205,199)
Korea Energy Terminal Co., Ltd.	69,311,688	354,085,701	264,501,264	158,896,125	-	(3,849,233)

As of the year ended December 31, 2022, some of the associates and joint ventures' equities are provided as collateral for project financing contracts (See note 21).

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12. Property, plant and equipment

Details of property, plant and equipment as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Acquisition cost	Accumulated depreciation	Accumulated Impairment loss	Net book value
Land	₩ 357,173,444	₩ -	₩ -	₩ 357,173,444
Buildings	175,791,861	(56,612,346)	(255,000)	118,924,515
Structures	186,272,295	(100,903,651)	-	85,368,644
LPG storage tanks	292,398,028	(147,877,522)	-	144,520,506
Machinery	340,444,121	(201,911,730)	(5,244,346)	133,288,045
Vehicles	707,385	(329,970)	-	377,415
Tools, furniture and fixtures	64,744,181	(50,843,245)	-	13,900,936
Other properties	939,800	(824,365)	-	115,435
Construction-in-progress	767,123,611	-	-	767,123,611
Total	₩ 2,185,594,726	₩ (559,302,829)	₩ (5,499,346)	₩ 1,620,792,551

	2021			
	Acquisition cost	Accumulated depreciation	Accumulated Impairment loss	Net book value
Land	₩ 357,035,514	₩ -	₩ -	₩ 357,035,514
Buildings	170,219,331	(50,848,853)	(255,000)	119,115,478
Structures	185,512,955	(93,605,288)	-	91,907,667
LPG storage tanks	283,813,228	(135,379,536)	-	148,433,692
Machinery	327,786,545	(187,855,833)	(5,244,346)	134,686,366
Vehicles	604,446	(466,702)	-	137,744
Tools, furniture and fixtures	58,852,089	(46,160,048)	-	12,692,041
Other properties	861,380	(690,245)	-	171,135
Construction-in-progress	195,052,964	-	-	195,052,964
Total	₩ 1,579,738,452	₩ (515,006,505)	₩ (5,499,346)	₩ 1,059,232,601

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

Changes in the book value of property, plant and equipment for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022							
	Jan. 1	Additions	Disposals	Depreciation	Transfers (*1)	Schedule for sale (*2)	Others (*3)	Dec. 31
Land	₩ 357,035,514	₩ 148,280	₩ (10,350)	₩ -	₩ -	₩ -	₩ -	₩ 357,173,444
Buildings	119,115,478	4,834,686	(5,051)	(5,772,824)	752,226	-	-	118,924,515
Structures	91,907,667	813,951	(55,764)	(7,303,028)	5,818	-	-	85,368,644
LPG storage tanks	148,433,692	6,620,209	(973,798)	(14,937,153)	5,377,556	-	-	144,520,506
Machinery	134,686,366	11,921,085	(741,966)	(17,753,111)	5,175,671	-	-	133,288,045
Vehicles	137,744	338,830	-	(93,287)	-	-	(5,872)	377,415
Tools, furniture and fixtures	12,692,041	3,613,870	(21,366)	(5,702,701)	3,305,178	-	13,914	13,900,936
Other properties	171,135	22,321	-	(90,367)	-	-	12,346	115,435
Construction-in-progress	195,052,964	603,543,424	-	-	(15,970,710)	(15,502,067)	-	767,123,611
	<u>₩ 1,059,232,601</u>	<u>₩ 631,856,656</u>	<u>₩ (1,808,295)</u>	<u>₩(51,652,471)</u>	<u>₩ (1,354,261)</u>	<u>₩ (15,502,067)</u>	<u>₩ 20,388</u>	<u>₩ 1,620,792,551</u>

(*1) During the year ended December 31, 2022, ₩1,354,261 thousand was transferred to other intangible assets from construction-in-progress.

(*2) As explained in Note 34, the assets subject to sell to KD Eco Hub Co., Ltd. for ₩15,502,067 thousand under the agreement were reclassified from assets under construction to non-current assets held for sale during the year ended December 31, 2022.

(*3) Includes the effect of exchange rate fluctuations.

	2021							
	Jan. 1	Additions	Disposals	Depreciation	Transfers (*1)	Others (*2)	Dec. 31	
Land	₩ 370,687,545	₩ -	₩ (13,652,031)	₩ -	₩ -	₩ -	₩ 357,035,514	
Buildings	122,879,515	1,524,755	(226,497)	(5,710,144)	647,849	-	119,115,478	
Structures	97,237,583	1,764,695	(2,335)	(7,357,475)	265,199	-	91,907,667	
LPG storage tanks	156,189,722	5,735,087	(576,352)	(14,647,624)	1,732,859	-	148,433,692	
Machinery	134,247,582	17,672,315	(763,749)	(19,914,204)	3,444,422	-	134,686,366	
Vehicles	122,135	26,009	(2)	(62,098)	51,700	-	137,744	
Tools, furniture and fixtures	11,647,002	7,288,321	(1,221,978)	(6,073,945)	1,018,977	33,664	12,692,041	
Other properties	254,214	11,384	-	(112,731)	-	18,268	171,135	
Construction-in-progress	46,441,752	160,140,623	(838,587)	-	(10,690,824)	-	195,052,964	
	<u>₩ 939,707,050</u>	<u>₩ 194,163,189</u>	<u>₩ (17,281,531)</u>	<u>₩ (53,878,221)</u>	<u>₩ (3,529,818)</u>	<u>₩ 51,932</u>	<u>₩ 1,059,232,601</u>	

(*1) During the year ended December 31, 2021, ₩3,529,818 thousand was transferred to other intangible assets from construction-in-progress.

(*2) Includes the effect of exchange rate fluctuations.

Borrowing cost

The amount of borrowing costs capitalized during the year ended December 31, 2022 was ₩ 8,946,444 thousand (2021: ₩ 267,836 thousand). The rate used to determine the amount of borrowing costs eligible for capitalization was 1.76% ~ 4.93% (2021: 1.48%), which is the EIR of the general borrowing and 3.60% ~ 5.75% of the specific borrowing.

Insured assets

The Group carries comprehensive insurance to Samsung Fire & Marine Insurance and other insurance company on its property, plant and equipment against fire and other casualty losses for up to ₩ 1,437,783,610 thousand and ₩ 1,240,289,958 thousand as of December 31, 2022 and 2021, respectively.

Collateralized assets

As of the year ended December 31, 2022, some of the Group's property, plant and equipment are provided as collateral for project financing contracts (See note 21).

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13. Intangible assets

Details of intangible assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Net book value
Goodwill	₩ 5,085,236	₩ -	₩ -	₩ 5,085,236
Membership	16,725,019	-	(1,175,662)	15,549,357
Industrial property right	74,212,694	-	-	74,212,694
Other intangible assets	43,892,913	(23,018,831)	-	20,874,082
Total	₩ 139,915,862	₩ (23,018,831)	₩ (1,175,662)	₩ 115,721,369

	2021			
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Net book value
Goodwill	₩ 5,085,236	₩ -	₩ -	₩ 5,085,236
Membership	17,158,296	-	(1,524,262)	15,634,034
Industrial property right	74,212,694	-	-	74,212,694
Other intangible assets	38,709,236	(14,049,582)	-	24,659,654
Total	₩ 135,165,462	₩ (14,049,582)	₩ (1,524,262)	₩ 119,591,618

Changes in the book value of intangible assets for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022						Exchange rate fluctuations	Dec. 31
	Jan. 1	Additions	Disposals	Amortization	Transfers (*1)			
Goodwill	₩ 5,085,236	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 5,085,236	
Memberships	15,634,034	-	(162,400)	-	-	77,723	15,549,357	
Industrial property right	74,212,694	-	-	-	-	-	74,212,694	
Other intangible assets	24,659,654	4,142,834	(656)	(9,282,011)	1,354,261	-	20,874,082	
Total	₩ 119,591,618	₩ 4,142,834	₩ (163,056)	₩ (9,282,011)	₩ 1,354,261	₩ 77,723	₩ 115,721,369	

(*1) During the year ended December 31, 2022, ₩ 1,354,261 thousand was replaced by other intangible assets from construction-in-progress.

	2021								Exchange rate fluctuations	Dec. 31
	Jan. 1	Additions	Disposals	Amortization	Impairment	Reversal of Impairment	Transfers (*1)			
Goodwill	₩ 5,085,236	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 5,085,236	
Memberships	13,431,387	1,271,360	(302,065)	-	(348,600)	1,490,743	-	91,209	15,634,034	
Industrial property right	74,212,694	-	-	-	-	-	-	-	74,212,694	
Other intangible assets	19,203,686	8,952,743	(6,868)	(7,019,725)	-	-	3,529,818	-	24,659,654	
Total	₩ 111,933,003	₩ 10,224,103	₩ (308,933)	₩ (7,019,725)	₩ (348,600)	₩ 1,490,743	₩ 3,529,818	₩ 91,209	₩ 119,591,618	

(*1) During the year ended December 31, 2021, ₩ 3,529,818 thousand was replaced by other intangible assets from construction-in-progress.

13. Intangible assets (cont'd)

Impairment test for the intangible assets

Both the goodwill acquired by the Group and the industrial property rights with indefinite useful lives resulted from a business combination by the acquisition of shares in Dangjin Eco Power Co., Ltd. in 2014. In addition, the Group performs annual impairment tests on goodwill and industrial property rights and evaluates the recoverable amount. The recoverable amount is determined based on the value of use and the recoverable amount is determined based on the value in use, and the value in use is determined by discounting the expected future cash flows from the continued use of the asset.

Key assumptions used in value calculation

The following factors are sensitive to the calculation of the value in use of the cash-generating unit in the operating segment.

- ① Based on the 10th Basic Plan for Electricity Demand and Supply, cash flows estimated based on the 30-year financial budget of the Combined Cycle Power Plant (LNG / LPG) project period are used.
- ② Future cash flows are estimated based on past experience and the mid- to long-term business plan proposed by the Group.
- ③ When determining the recoverable amount, the after-tax discount rate was applied to the weighted average capital cost (5.41 %).

The main assumptions used in the calculation of value in use reflect management's assessment of the industry's future, which is determined by considering external and internal information. However, it is determined that the related total carrying amount will not exceed the total recoverable amount due to reasonably possible changes in the key assumptions, but may be offset by changes in the key assumptions.

The Group performed an impairment test on memberships with indefinite useful lives and does not recognize impairment losses during the year ended December 31, 2022. The Group recognized impairment loss of ₩348,600 thousand and reversal of impairment loss of ₩1,461,695 thousand during the year ended December 31, 2021.

Amortization

Amortization expenses of customer-related intangible assets included in Other intangible assets are recognized as cost of sale, and all the other amortization expenses are recognized as selling and administrative expenses.

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14. Leases

Right-of-use assets as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022		
	Acquisition cost	Accumulated Depreciation	Net book value
Vessels	₩ 457,531,396	₩ (101,431,807)	₩ 356,099,589
LPG stations	96,819,697	(69,690,759)	27,128,938
Vehicles	4,033,571	(1,734,666)	2,298,905
Sites	44,280,464	(757,795)	43,522,669
The others	8,171,846	(4,000,204)	4,171,642
Total	₩ 610,836,974	₩ (177,615,231)	₩ 433,221,743

	2021		
	Acquisition cost	Accumulated Depreciation	Net book value
Vessels	₩ 457,531,396	₩ (76,073,856)	₩ 381,457,540
LPG stations	93,835,341	(52,753,513)	41,081,828
Vehicles	3,708,239	(1,980,459)	1,727,780
Sites	749,261	(302,152)	447,109
The others	3,939,218	(2,950,460)	988,758
Total	₩ 559,763,455	₩ (134,060,440)	₩ 425,703,015

Changes in the book value of right-of-use assets for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022						Lease liabilities
	Right-of-use assets						
	Vessels	LPG stations	Vehicles	Sites	The others	Total	
Jan. 1	₩ 381,457,540	₩ 41,081,828	₩ 1,727,780	₩ 447,109	₩ 988,758	₩ 425,703,015	₩ 399,059,011
Increase	-	8,389,291	1,803,734	43,531,955	4,288,296	58,013,276	57,010,645
Decrease	-	(3,359,642)	(25,611)	-	-	(3,385,253)	(817,391)
Depreciation	(25,357,951)	(18,982,539)	(1,206,998)	(456,395)	(1,104,655)	(47,108,538)	-
Interest expense	-	-	-	-	-	-	10,518,285
Payment	-	-	-	-	-	-	(72,317,564)
Valuation (*1)	-	-	-	-	(757)	(757)	19,367,482
Dec. 31	₩ 356,099,589	₩ 27,128,938	₩ 2,298,905	₩ 43,522,669	₩ 4,171,642	₩ 433,221,743	₩ 412,820,468

(*1) This includes gain on valuation of foreign currency lease liabilities. During the year ended December 31, 2022, the Group recognized ₩484,899 thousand in profit and ₩15,246,949 thousand (including the effect of income tax) as other comprehensive loss.

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14. Leases (cont'd)

	2021						Lease liabilities
	Right-of-use assets					Total	
	Vessels	LPG stations	Vehicles	Sites	The others		
Jan. 1	₩ 406,815,492	₩ 53,502,079	₩ 1,612,007	₩ 547,770	₩ 1,910,285	₩ 464,387,633	₩ 418,713,987
Increase	-	10,806,670	1,575,620	6,977	114,657	12,503,924	9,764,461
Decrease	-	(3,864,894)	(233,115)	-	-	(4,098,009)	(374,396)
Depreciation	(25,357,952)	(19,362,027)	(1,226,732)	(107,638)	(1,043,038)	(47,097,387)	-
Interest expense	-	-	-	-	-	-	10,649,750
Payment	-	-	-	-	-	-	(68,998,156)
Valuation (*1)	-	-	-	-	6,854	6,854	29,303,365
Dec. 31	₩ 381,457,540	₩ 41,081,828	₩ 1,727,780	₩ 447,109	₩ 988,758	₩ 425,703,015	₩ 399,059,011

(*1) This includes gain on valuation of foreign currency lease liabilities. During the year ended December 31, 2021, the Group recognized ₩466,455 thousand in profit and ₩22,559,636 thousand (including the effect of income tax) as other comprehensive loss.

Amounts recognized in the consolidated statements of profit and loss and other comprehensive income relating to leases are as follows (Korean won in thousands):

	Increase (decrease)	
	2022	2021
Profit:		
Interest income on financial lease receivables	₩ (721,109)	₩ (1,235,623)
Loss:		
Depreciation expense of right-of-use assets	47,108,538	47,097,387
Interest expense on lease liabilities	10,518,285	10,649,750
Expense relating to short-term lease and leases of low-value assets	8,057,004	3,985,148
Others	829,841	-
Gain(loss) on valuation of lease liabilities recognized in profit or loss	(484,889)	(466,455)
Gain(loss) on valuation of lease liabilities recognized in other comprehensive income (loss) (*1)	15,246,949	22,559,636
Net amount recognized in comprehensive income	₩ 80,554,619	₩ 82,589,843

(*1) The effect of income tax included.

Total cash outflows for leases in years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Payment of principal portion of lease liabilities	₩ 61,799,279	₩ 58,348,407
Payment of interest portion of lease liabilities	10,518,285	10,649,750
Short-term lease payments, payments for leases of low-value assets and variable lease payments	8,057,004	3,985,148
Total	₩ 80,374,568	₩ 72,983,305

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14. Leases (cont'd)

Undiscounted contractual repayment plans for lease liabilities related to right-of-use assets are as follows (Korean won in thousands):

	2022							Total
	Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years		
Vessels	₩ 50,846,220	₩ 52,342,518	₩ 52,299,146	₩ 44,201,152	₩ 39,502,787	₩ 134,165,282	₩ 373,357,105	
LPG stations	19,255,501	8,151,399	3,203,055	1,458,900	504,000	670,000	33,242,855	
Vehicles	1,249,361	802,052	369,398	5,138	-	-	2,425,949	
Sites	2,600,890	2,600,890	2,600,890	2,600,890	2,600,297	112,140,078	125,143,935	
The others	1,155,243	989,643	898,151	922,702	446,027	-	4,411,766	
Total	₩ 75,107,215	₩ 64,886,502	₩ 59,370,640	₩ 49,188,782	₩ 43,053,111	₩ 246,975,360	₩ 538,581,610	

Non-financial hedging

For stable LPG supply, the Group have signed long-term contracts for LPG transport with shipping companies and recognize the amount of foreign currency that we have to pay as a lease liability under the long-term contracts for LPG transport. Foreign currency sales of LPG revenue for petrochemicals provided at the same day with the repayment of the lease liabilities are exposed to the corresponding risk of exchange rate fluctuations. In order to avoid the risk of foreign currency fluctuations of LPG sales for petrochemical, the Group identified those foreign currency LPG sales as the risks of exchange rate fluctuations and designated the lease liabilities as hedging instrument. Hedge accounting is applied, in which the repayment amount is designated as a hedge instrument for non-financial items. The amount of future cash flow and hedge accounting schedule are in note 14.

During the year ended December 31, 2022, the Group recognized ₩15,246,949 thousand of valuation loss (including the income tax effect) (₩ 22,559,636 thousand of valuation loss in 2021) on the hedging instruments in other comprehensive income or loss since it was determined to be the effective portion of the cash flow hedges. The amounts are included in lease liabilities. There is no amount considered as ineffective portion of the cash flow hedges and recognized as profit or loss of the year.

Group as a lessor

Details of undiscounted financial lease receivable contract maturity analysis are as follows (Korean won in thousands):

	2022	2021
Less than 1 year	₩ 1,564,364	₩ 1,208,000
1 to 2 years	1,235,864	906,000
2 to 3 years	764,727	699,000
3 to 4 years	216,000	402,000
4 to 5 years	-	216,000
More than 5 years	-	-
Total undiscounted lease	3,780,955	3,431,000
Less: Unrealized financial income	166,150	135,741
Net lease investment	₩ 3,614,805	₩ 3,295,259

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14. Leases (cont'd)

Operating leases

The Group have signed operating lease contracts for tanks, LPG gas stations, offices, etc., with the period from 1 to 14 years. The contracts include provisions to adjust lease payments according to market conditions. The rental income recognized by the Group during the year ended December 31, 2022 is ₩69,740,836 thousand (₩65,936,290 thousand in 2021).

As of December 31, 2022 and 2021, the future undiscounted lease payment plans related to the operating lease contract provided by the Group are as follows (Korean won in thousands):

	2022	2021
Less than 1 year	₩ 54,439,233	₩ 64,459,023
1 to 2 years	51,810,106	69,755,914
2 to 3 years	50,879,472	68,502,930
3 to 4 years	13,465,772	18,130,000
4 to 5 years	918,302	1,236,381
More than 5 years	459,151	650,710
Total	<u>₩ 171,972,036</u>	<u>₩ 222,734,958</u>

15. Trade and other payables

Trade and other payables as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Current liabilities		
Trade payables	₩ 141,704,953	₩ 149,754,158
Other payables	49,071,134	89,404,695
Accrued expenses	152,040,839	47,780,733
Total	<u>₩ 342,816,926</u>	<u>₩ 286,939,586</u>
Non-current liabilities		
Long-term other payables	₩ 22,745,975	-
Long-term accrued expenses	8,676,294	-
Total	<u>₩ 31,422,269</u>	<u>₩ -</u>

16. Borrowings

Short-term borrowings

Short-term borrowings as of December 31, 2022 and 2021 consist of the following (Korean won in thousands and US dollar):

Classification	Financial institution	Interest rate (%)	2022	2021
Usance	Kookmin Bank and others	4.10 ~ 6.17	₩ 899,681,398	₩ 796,493,518
			(US\$ 709,919,828)	(US\$ 671,862,942)

Current portion of bonds payable

Current portion of bonds payable as of December 31, 2022 and 2021 consist of the following (Korean won in thousands):

	2022	2021
Current portion of bonds payable	₩ 149,920,649	₩ 199,953,852

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16. Borrowings (cont'd)

Bonds payable

Details of bonds payable as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	Issue date	Maturity date	Interest rate (%)	2022		2021		Description
				₩		₩		
33-2 nd unsecured	2015.03.06	2022.03.06	2.58	₩	-	₩	100,000,000	
34-2 nd unsecured	2017.04.17	2022.04.17	2.42		-		100,000,000	
35-1 st unsecured	2019.09.27	2024.09.27	1.79		40,000,000		40,000,000	
35-2 nd unsecured	2019.09.27	2026.09.27	2.07		80,000,000		80,000,000	
36-1 st unsecured	2020.03.06	2023.03.06	1.37		50,000,000		50,000,000	
36-2 nd unsecured	2020.03.06	2025.03.06	1.56		140,000,000		140,000,000	
36-3 rd unsecured	2020.03.06	2027.03.06	1.82		60,000,000		60,000,000	
37-1 st unsecured	2020.06.19	2023.06.19	1.46		100,000,000		100,000,000	Interest payment at every quarter and lump-sum
37-2 nd unsecured	2020.06.19	2025.06.19	1.70		60,000,000		60,000,000	
37-3 rd unsecured	2020.06.19	2027.06.19	1.96		90,000,000		90,000,000	
38-1 st unsecured	2021.03.04	2024.03.04	1.31		50,000,000		50,000,000	repayment on maturity
38-2 nd unsecured	2021.03.04	2026.03.04	1.73		150,000,000		150,000,000	
38-3 rd unsecured	2021.03.04	2028.03.04	2.08		100,000,000		100,000,000	
39-1 st unsecured	2021.07.20	2024.07.20	1.77		80,000,000		80,000,000	
39-2 nd unsecured	2021.07.20	2028.07.20	2.28		70,000,000		70,000,000	
1-1 st unsecured (*1)	2022.02.25	2025.02.25	3.14		100,000,000		-	
1-2 nd unsecured (*1)	2022.02.25	2027.02.25	3.32		50,000,000		-	
2-1 st unsecured (*1)	2022.07.11	2025.07.11	4.71		120,000,000		-	
2-2 nd unsecured (*1)	2022.07.11	2027.07.09	4.59		30,000,000		-	
	Sub-total				1,370,000,000		1,270,000,000	
	Less: discount on bonds				(3,417,876)		(3,388,451)	
	Less: current portion				(149,920,649)		(199,953,852)	
	Total			₩	1,216,661,475	₩	1,066,657,697	

(*1) During the year ended December 31, 2022, a subsidiary, Ulsan GPS Co., Ltd., issued ₩ 300,000 million of public bond.

Long-term borrowings

Long-term borrowings as of December 31, 2022 and 2021 consist of the following (Korean won in thousands and US dollar):

Long-term borrowings	Financial institution	Type	Interest	Interest rate (%)	2022		2021	
					₩		₩	
	Kyobo life insurance and 10 others	PF	Fixed	4.00	₩	25,600,000	₩	-
	Woori bank and 4 others (*1)	PF	Variable	CD interest + 2.25		14,000,000		-
	Kookmin bank and 2 others (*2)	PF	Variable	CD interest + 2.10		10,400,000		-
	Sub-total					50,000,000		-
	Less: discount on current value					(3,452,365)		-
	Less: current portion					-		-
	Total				₩	46,547,635	₩	-

(*1) After four years from the initial borrowing date ('22.12.16), the principal will be repaid in unequal installments over 19 years, and interest will be paid every three months.

(*2) After four years from the initial borrowing date ('22.12.16), the principal will be repaid in unequal installments over 6 years, and interest will be paid every three months.

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17. Employee benefits

The Group has a defined benefit plan for its employees and defined contribution plan for some executives and employees. The present value of the pension liability is determined using the projected unit credit method based on actuarial assumptions and on a discount basis by an independent actuary firm.

Changes in the net defined benefit liability(asset) for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Changes in defined benefit liability(asset):		
Beginning balance	₩ 2,237,655	₩ 2,449,633
Retirement benefits paid	(1,408,479)	(773,920)
Provision during the period	4,536,731	5,036,560
Re-measurement loss	445,413	1,355,275
Contributions by the Group	(15,544,593)	(5,829,893)
Transfer from/to related parties	3,967	-
Ending balance	(9,729,306)	2,237,655
Defined benefit liabilities in the consolidated statement of financial position:		
Present value of defined benefit obligation	42,477,173	40,383,028
Fair value of plan assets	(52,206,479)	(38,145,373)
Total	₩ (9,729,306)	₩ 2,237,655

Expenses incurred in relation to the defined benefit plan for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Current service cost	₩ 5,115,508	₩ 4,980,365
Interest cost on defined benefit obligation	839,214	776,707
Expected return on plan assets	(1,417,991)	(720,512)
Total	₩ 4,536,731	₩ 5,036,560

Changes in the present value of the defined benefit obligation for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Beginning balance	₩ 40,383,028	₩ 35,143,196
Retirement benefits paid	(3,054,138)	(2,973,032)
Current service cost	5,115,508	4,980,364
Interest cost on defined benefit obligation	839,214	776,707
Re-measurement loss (gain)	(237,880)	1,157,985
Transfer from/to related parties	(568,559)	1,297,808
Ending balance	₩ 42,477,173	₩ 40,383,028

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17. Employee benefits (cont'd)

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

	2022	2021
Beginning balance	₩ (38,145,373)	₩ (32,693,563)
Retirement benefits paid	1,645,659	2,199,112
Expected return on plan assets	(1,417,991)	(720,512)
Re-measurement loss	683,293	197,290
Contributions by the Group	(15,544,593)	(5,829,893)
Transfer from/to related parties	572,526	(1,297,807)
Ending balance	<u>₩ (52,206,479)</u>	<u>₩ (38,145,373)</u>

Details of re-measurement gain as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Re-measurement loss:		
Demographic assumptions	₩ 402,763	₩ -
Financial assumptions	(5,256,836)	(256,621)
Empirical adjustments	4,616,193	1,414,606
Sub-total	<u>(237,880)</u>	<u>1,157,985</u>
Remeasurements of plan assets:	683,293	197,290
Total	<u>₩ 445,413</u>	<u>₩ 1,355,275</u>

The principal assumptions used in the actuarial calculation as of December 31, 2022 and 2021 are as follows:

	2022	2021
Discount rate	5.23 % ~ 5.75 %	2.68 % ~ 3.65 %
Future salary increases	3.00 % ~ 4.39 %	3.00 % ~ 4.58 %

The following table demonstrates sensitivity analysis on the effect of changes in the principal assumptions used in the actuarial calculation on the present value of defined benefit obligation as of December 31, 2022 and 2021 (Korean won in thousands):

	2022			
	Changes in discount rate		Changes in future salaries increase rate	
	+1% points	-1% points	+1% points	-1% points
Defined benefit obligation	₩ (1,687,155)	₩ 1,935,682	₩ 1,945,346	₩ (1,724,949)
	2021			
	Changes in discount rate		Changes in future salaries increase rate	
	+1% points	-1% points	+1% points	-1% points
Defined benefit obligation	₩ (2,308,660)	₩ 2,714,753	₩ 2,662,853	₩ (2,311,435)

The sensitivity analyses above have been determined based on a method that extrapolates the impact on the defined benefit obligation as a result of reasonable changes in key assumptions occurring at the end of the reporting period. The sensitivity analyses are based on a change in a significant assumption, keeping all other assumptions constant. The sensitivity analyses may not be representative of an actual change in the defined benefit obligation as it is unlikely that changes in assumptions would occur in isolation from one another.

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17. Employee benefits (cont'd)

Detail of the plan assets for the year ended December 31, 2022 is as follows (Korean won in thousands):

	Amount	%
Principal and interest compensation financial instruments	₩ 48,022,061	92.0%
Deposits	4,184,198	8.0%
Others	219	0.0%
Total	<u>₩ 52,206,478</u>	<u>100.0%</u>

The expected payment to the defined benefit plan in next reporting period is ₩ 5,704,251 thousand and the average duration of the defined benefit obligation as of December 31, 2022 is 11.34 years (2021: 10.78 years).

The expense recognized in relation to the defined contribution plan during the current year is ₩ 375,264 thousand.

18. Other financial liabilities

Other financial liabilities as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Other current financial liabilities:		
Stock Appreciation Rights (Note 24)	₩ 260,081	₩ -
Other non-current financial liabilities:		
Long-term deposits	₩ 4,677,876	₩ 4,050,294
Non-current financial liabilities (Note 21)	30,601,821	29,934,973
Stock Appreciation Rights (Note 24)	260,081	392,192
Total	<u>₩ 35,539,778</u>	<u>₩ 34,377,459</u>

19. Other liabilities

Other current liabilities and other non-current liabilities as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Other current liabilities:		
Advance received	₩ 177,537	₩ 4,895,477
Withholding tax	921,036	691,017
Other withholdings	4,153,333	703,091
Contract liabilities	9,282,869	3,242,306
Total	<u>₩ 14,534,775</u>	<u>₩ 9,531,891</u>
Other non-current liabilities:		
Long-term unearned income	₩ 86,689	₩ 96,719
Other long-term employee benefits	1,361,323	678,658
Provision for restoration	81,509	-
Total	<u>₩ 1,529,521</u>	<u>₩ 775,377</u>

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20. Derivative instruments

Derivative assets and liabilities as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Derivative assets		Derivative liabilities	
	Current	Non-current	Current	Non-current
Currency forward contracts	₩ 11,164,839	₩ -	₩ 84,265,224	₩ -
LPG forward contracts	37,950,919	12,688,196	118,996,240	113,607
Options	-	15,009,281	779,464	-
TRS	-	78,712,000	-	-
Total	₩ 49,115,758	₩ 106,409,477	₩ 204,040,928	₩ 113,607

	2021			
	Derivative assets		Derivative liabilities	
	Current	Non-current	Current	Non-current
Currency forward contracts	₩ 4,321,998	₩ -	₩ 1,851,913	₩ -
LPG forward contracts	77,417,171	9,854,392	31,189,914	-
Options	-	6,283,120	-	-
TRS	-	36,687,000	-	-
Total	₩ 81,739,169	₩ 52,824,512	₩ 33,041,827	₩ -

The Group evaluates derivatives at fair value at the time of initial recognition and at the end of each reporting period, and for long-term forward derivatives contracts with a maturity of more than one year, the amount that has taken into account the time value of money is reflected in adjusted profit or loss.

Outstanding currency forward contracts as of December 31, 2022 and 2021 are as follows (Korean won in thousands and US dollar):

Financial institution	Buy/sell	2022		
		Contracted notional amount	Derivative assets	Derivative liabilities
Hana Bank and others	Buy	\$ 857,051,775	₩ -	₩ 84,259,419
	Sell	264,632,971	11,164,839	5,805
Total			₩ 11,164,839	₩ 84,265,224

Financial institution	Buy/sell	2021		
		Contracted notional amount	Derivative assets	Derivative liabilities
Hana Bank and others	Buy	\$ 817,374,148	₩ 3,988,900	₩ 784,036
	Sell	203,775,977	333,098	1,067,877
Total			₩ 4,321,998	₩ 1,851,913

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20. Derivative instruments (cont'd)

Outstanding LPG forward contracts as of December 31, 2022 and 2021 are as follows (Korean won in thousands and US dollar):

Account	Buy/Sell	2022		
		Quantities	Contract amount (USD)	Fair value(*1)
ICE	Buy	1,143,000 barrel	\$ 74,013,390	₩ 13,439,189
		1,506,000 ton	904,219,610	(149,769,237)
ICE	Sell	3,404,000 barrel	308,653,130	41,144,747
		728,000 ton	347,488,240	37,237,600
Nymex	Buy	8,577,000 barrel	360,924,165	(55,938,912)
		693,000 ton	424,626,700	(35,262,312)
Nymex	Sell	9,086,000 barrel	417,61,845	64,027,153
		301,000 ton	184,159,670	13,125,470
Macquarie	Buy	36,000 barrel	2,158,650	22,424
		4,800 ton	1,869,100	(49,575)
Macquarie	Sell	350,000 mmbtu	10,500,000	(2,573,886)
		9,000 barrel	784,500	301,360
CME	Buy	1,200 ton	647,200	235,448
		350,000 mmbtu	14,000,000	6,943,908
CME	Sell	88,000 ton	50,473,000	(7,312,954)
CME	Sell	66,000 ton	27,342,000	5,958,845
Total				₩ (68,470,732)

(*1) The Group offsets derivative assets and liabilities that have the same maturity on the same exchange.

Account	Buy/Sell	2021		
		Quantities	Contract amount (USD)	Fair value(*1)
ICE	Buy	1,806,000 barrel	\$ 106,844,815	₩ 10,676,005
		794,065 ton	361,292,055	52,659,776
ICE	Sell	1,695,000 barrel	111,201,260	(10,504,859)
		322,629 ton	175,019,690	(20,413,093)
Nymex	Buy	9,234,000 barrel	454,351,275	17,573,987
		303,500 ton	215,072,270	(3,041,282)
Nymex	Sell	9,027,000 barrel	449,951,985	(11,817,338)
		324,500 ton	212,111,635	5,478,984
Macquarie	Buy	72,000 barrel	3,570,090	1,132,216
		9,600 ton	3,208,588	964,332
Macquarie	Sell	9,000 barrel	522,270	(78,930)
		1,200 ton	467,448	(59,051)
CME	Buy	830,000 mmbtu	21,004,900	3,591,294
CME	Buy	131,129 ton	84,066,220	7,172,026
CME	Sell	62,065 ton	43,969,760	2,747,582
Total				₩ 56,081,649

(*1) The Group offsets derivative assets and liabilities that have the same maturity on the same exchange.

Outstanding options as of December 31, 2022 are as follows (Korean won in thousands):

Outstanding options	Contracted notional amount (barrel)	Derivative assets	Derivative liabilities
Buying call options and Selling put options (ZCC Option)(*1)	504,000	₩ 5,567,896	₩ -
Buying put options and selling call options on APOIC stocks (Note 21)	-	9,441,385	-
Selling call option on Gridwiz - RCPS	-	-	779,464
Total		₩ 15,009,281	₩ 779,464

(*1) This is the evaluation of derivative assets and liabilities according to the contract price hedging strategy.

20. Derivative instruments (cont'd)

The Total Return Swap agreement (TRS)

The Group has entered into a lease agreement for LPG station for 7 years from the date of the contract with Pine Street Charging Station Private Trust, which has acquired 48 LPG stations from SK Networks Co, Ltd., and signed a Total Return Swap agreement with Buldu First Inc., Buldu Second Inc., Buldu Third Inc. The Total Return Swap agreement consists of the total return swap associated with changes in the value of the LPG station on the contract expiration date and the total return exchange swap associated with principal and interest during the contract period. During the year ended December 31, 2022, the valuation gain recognized due to the agreement is ₩42,025 million (2021: ₩17,978 million).

Detail of netting arrangement

Details of financial assets and financial liabilities subject to the Group's enforceable netting agreements or similar agreements as of the year ended December 31, 2022 are as follows (Korean won in thousand):

	Subject to netting agreement		
	Total assets (liabilities)	Netted amount	Amount after netting
Derivatives valuation assets	₩ 225,139,315	₩ (168,932,304)	₩ 56,207,011
Derivatives valuation liabilities	(288,042,151)	168,932,304	(119,109,847)

21. Commitments and contingences

Outstanding litigation

The Group is a defendant in the following major lawsuits and the final outcome of the pending litigations cannot presently be determined as of December 31, 2022 (Korean won in thousands):

Description	Plaintiff	Defendant	Claim amount	Status
Litigation arising from the Fair Trade Commission investigation	Yoo, In-chul and others	The Company and others	₩ 16,160,000	First trial in process
	Gangbuk transportation Co., Ltd. and others	The Company and others	4,722,000	First trial in process
Litigation to confirm absence of debt	Jung, Man-woo and others	The Company and others	4,289,000	First trial in process
	GNS Co., Ltd. and others	The Company	764,500	Completion of pleading

SK Gas International Pte. Ltd., which is one of the consolidated subsidiaries, has completed arbitration with Sinopec Chemical Commercial Holding (HK) Co., Ltd. over LPG price. According to the arbitrating result, the arbitrate amount including related expenses and interest expense of USD 3,156,238 has been recorded as liabilities under consolidated financial statements as of December 31, 2022.

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21. Commitments and contingences (cont'd)

Major commitments

As of December 31, 2022, major commitments of the Group are as follows:

Parties	Details
Kookmin Bank and others	Foreign currency transaction commitments for up to \$2,485 million. Local currency borrowing commitments for up to ₩43,000 million.
Trafigura and others	Purchase agreements for 3,840 thousand tons of LPG.
E1 Co., Ltd., GS Caltex Co., Ltd. and SK Energy Co., Ltd.	LPG commodity exchange agreement
SK Advanced Co., Ltd. and others.	Contract for long-term supply of LPG
Goseong Green Power Co., Ltd. (*1)	Agreement for long-term supply of coal
Pine Street Charging Station Private Equity Trust	Lease contract for LPG filling stations
Buldu First, Buldu Second, Buldu Third Inc	Changes in the value of the LPG filling station and the total revenue exchange agreement with the contractual period principal
SK Energy Co., Ltd.(*2)	The Group entered into a contract to lease additional mooring facilities for oil tankers for ₩46.5 billion.
SK Enmove Co.,Ltd.(*3)	Consignment contract on reservoirs for petroleum products
Korea Energy Terminal Co., Ltd.(*4)	Stock sales contract (₩167,484 million), agreement between shareholders and basic contract for using liquefied gas terminal
SK ecoengineering Co., Ltd. (*5)	Contract for the main equipment for power generation facilities that amounts to ₩930,464 million.
G-Energy Corp. (*6)	Agreement for joint exercise of coal supply right
QH Oil Investments LLC (*7)	Contract to sell holding stock of SK Holdco Pte. Ltd. (\$ 119 million)
Kookmin Bank and others (*8)	Project financing investor agreement for Ulsan GPS Co., Ltd.
Korea East-West Power Co., Ltd (*9)	Liquefied gas terminal use contract
SIEMENS Gas and Power GmbH & Co. KG, SIEM and ENS Energy Ltd.(*10)	Long-term gas turbine maintenance agreement (LTSA)

(*1) The contract period for the coal long-term supply contract is from October 31, 2020 to April 30, 2051.

(*2) Regarding the above arrangement, the long- and short-term prepaid expenses amounted to ₩30,613 million are recorded.

(*3) Effective from March 26, 2012 to March 25, 2026, a consignment fee of ₩45 billion per annum (adjusted for inflation), plus the amounts in excess of maximum amounts stipulated in the contract. SK Lubricants Co., Ltd. changed its name to SK Enmove Co., Ltd.

(*4) This is the amount of investment applied to the total size of the business and the purchase amount of the old stock with 45.5% of the Parent Company's initial stake. The equity ratio and amount can be changed and will be paid in installments over the next three years. Also, the contract period for the liquified gas terminal is 20 years from the commencement date of commercial operation.

(*5) The expected acquisition completion date is August 15, 2024, the expected commercial operation date, and may be changed depending on the way the contract is carried out and the construction process. The contract price includes the total construction cost including the implement of main equipment.

(*6) The Parent Company receives a commission for joint exercise of the coal supply right from G-Energy Corp. Even after entering into the contract for the joint exercise of the coal supply right, the Subsidiary maintains the contractual status and other matters for the long-term coal supply contract with Goseong Green Power Co., Ltd.

(*7) It is a contract to sell all stocks (52 million shares) accounting for 36.49% of SK Holdco PTE. LTD.'s shares held by the Parent Company to invest Eurasia Tunnel. In relation to this contract, investments in associates amounting to ₩143,783,139 thousand were classified as non-current assets held for sale (See Note 34).

21. Commitments and contingences (cont'd)

(*8) Ulsan GPS Co., Ltd., a subsidiary of our company, entered into a project financing agreement to construct a power plant. The Group has entered into an investor agreement with the project finance lender, and the agreement includes the Subsidiary's obligation to supplement funds for the excess of total project cost and the shortfall in operating cost of Ulsan GPS Co., Ltd.

(*9) It is a contract to provide liquefied gas terminals use and related services to the contracting party for part of the storage facilities (LNG storage tanks) of liquefied gas terminals scheduled to be built for the Clean Energy Complex project at Section 2 of the Ulsan New Port.

(*10) The Group has entered into the long-term gas turbine maintenance agreement (LTSA) with SIEMENS Gas and Power GmbH & Co. KG(Germany), SIEMENS Energy Ltd.(Korea) and secured the operational reliability of the gas turbines to be installed in the power plant. The contract term is 26 years from the EPC contract date. For project finance agreements, the Group provided the right and status of the agreement as collateral on a first priority basis to senior loan lenders (see Note 21).

Other commitments

(1) As of December 31, 2022, the Group holds voting rights for 0.52% equity interests in Ulsan GPS Co., Ltd. and 11.13% equity interests in Dangjin Eco Power Co., Ltd. held by Korea Development Bank. Put options held by Korea Development Bank can be exercised until one year from the start date of commercial production by Ulsan GPS Co., Ltd. The present value of ₩30,601,821 thousand of exercise price (₩ 33,570,000 thousand) which will be paid in the event the put option is exercised is recorded as other non-current financial liabilities.

(2) Regarding the long-term coal supply contract signed with Goseong Green Power Co., Ltd., the Parent Company signed an agreement for a joint supply of coal with G-Energy Corp., a joint venture between the Parent Company and GS Global Corp. The period of joint venture between the Parent Company and GS Global Co., Ltd. through G Energy Corp. is until the end of 2025, but it is decided whether to extend annually. When the joint venture is terminated, the Parent Company and GS Global Corp. each hold a call option and a put option to purchase or sell all of the mutually held stocks of G-Energy Corp. at the issuance price.

(3) As of December 31, 2022, the Group provides Letter of Undertaking (LOU) to the financial group for six of the carriers in service, through this LOU, if the carrier fails to fulfill the related contract, the Group will bear all obligations related to the contract fulfillment.

(4) The Group entered into a shareholder contract about AGIC(Advanced Global Investment Company) and APOC(Advanced Polyolefins Industry Company) to conduct PDH business in Saudi Arabia. According to this contract, the Group has a put option to sell APOC (Advanced Polyolefins Industry Company) stocks invested by the Group to AGIC (Advanced Global Investment Company) within three months from the commencement of commercial operation. Also, AGIC has a call option to purchase APOC (Advanced Polyolefins Industry Company) stocks owned by the Group within 3 months from the commencement of commercial operation. As of December 31, 2022, the Group performed a fair value assessment of options, and the assessed amount was ₩9,441,385 thousand (see Note 20).

(5) According to the joint investment venture agreement of Lotte SK Energy Root Co., Ltd. established by the Group and Lotte Chemical Co., Ltd, both companies hold a Put Option that allows the other party to request purchasing some of the shares issued by the joint venture if there is a reasonable need for operating of the joint venture.

(6) According to the joint venture agreement of KD Eco Hub Co., Ltd. established by the Group and Kyungdong City Gas Co., Ltd, Kyungdong City Gas Co., Ltd hold a Put Option to sell all of its shares to the Group depending on the situation of the joint venture, and the Group holds a Call Option to purchase all of the shares hold by Kyungdong City Gas Co., Ltd. if there is a reasonable need for operating of the joint venture.

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21. Commitments and contingences (cont'd)

Collateral pledged

As of December 31, 2022, the assets and pledged notes provided as collateral to the other party are as follows. (Korean won in millions):

Pledged assets	Pledged to	Purpose of pledged asset	Book value	Capitalized amount	Maximum bond amount (*4)
Investment in joint ventures (*1)	Korea Development Bank and others	Provided for Korea Energy Terminal Co., Ltd.'s project financing contract amount of ₩633,700 million	₩ 78,747	₩ 251,925	₩ 760,440
Investment in associates (*2)	Hanhwa life insurance and others	Provided for Goseong Green Power's project financing contract amount of ₩4,340,000 million	206,142	172,140	5,208,000
Investment in subsidiaries and beneficiary certificates (*3)	Kookmin Bank and others	Provided for Ulsan GPS Co., Ltd. project financing contract amount of ₩752,000 million	89,538	542,323	902,400

(*1) As of the year ended December 31, 2022, Korea Energy Terminal Co., Ltd.'s project financing execution amount is ₩389,700 million. The collateral value includes the acquisition cost of ₩ 84,441 million for 1,660,822 shares of Korea Energy Terminal Co., Ltd. held by the Group and ₩ 167,484 million for additional investment under the stock purchase contract.

(*2) As of the year ended December 31, 2022, Goseong Green Power's project financing execution amount is ₩4,062,394 million.

(*3) As of year ended December 31, 2022, amount of Ulsan GPS Co., Ltd project financing execution amount is ₩50,000 million, and it provides Ulsan GPS Co., Ltd.'s shares owned by the Group and the beneficiary certificate under the real estate collateral trust contract, deposit and security for rights and status on key business documents as collateral.

(*4) The maximum bond amount is set at 120% of the total amount of project financing agreements for each borrower related to the purpose of providing collateral and the maximum bond amount borne by the Group is 120% of the Group's collateral amount.

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21. Commitments and contingences (cont'd)

Details of payment guarantee provided by the Group as of December 31, 2022 is as follows (Korean won in thousands, and US dollar):

	Guaranteed party	Guarantee amount	Details	
Payment guarantee provided	Mizuho Bank	USD 42,000,000	Contract performance guarantees	
	QH Oil Investments LLC	USD 52,281,544	Joint guarantee (*1)	
Payment guarantees received	Seoul Guarantee Insurance Company	₩ 10,320,151	Performance and deposit guarantees	
		26,015	Warranty for road occupation and restoration	
		57,489	Warranty for approval of land quality change restoration	
		25,944	Contract deposit for the design administration service	
		2,640	Service contract guarantee for preparation of safety and health register for plant construction project	
		25,498	Guarantee for development service of power plant construction management system	
		614,823	Contract guarantee for construction of off-site underground piping for plant utilities (industrial water/waste water)	
		32,450	Warranty for underground piping construction of industrial water and wastewater design service between Korea Energy Terminal Co., Ltd., and Ulsan GPS Co., Ltd.	
		2,040	Contract guarantee for four-side stability review service	
		49,025	Contract guarantee for review of hydrogen mixture preliminary feasibility	
		Engineering Guarantee Insurance Company	₩ 102,351,014	Guarantee for power plant construction contract
			18,700	Contract guarantee for post-construction environmental impact investigation services
			67,210	Contract guarantee for additional construction work (tree transplantation, temporary office installation, authorization, additional work) of industrial complex development construction
		Construction Guarantee Cooperative	764,830	Contract guarantee for additional construction work (floor ironing, mole drainage construction) of industrial complex development construction
	595,100		Contract guarantee for construction project management services, such as acting supervisory authority for power plant construction work	
702,429	Services for power plant construction business owner support			
Professional Construction Guarantee Cooperative	34,866,965	Advanced payment guarantee for power plant contract		
	160,908	Contract guarantee for additional construction of industrial complex development (construction road and buffer green earthworks, etc.)		
	76,758	Firefighting UG piping construction contract guarantee of power plant construction		
WOORI BANK NY	USD 22,417,475	SBLC payment guarantee		
SMBC	USD 40,610,415	SBLC payment guarantee		
Mizuho Bank	USD 63,751,841	SBLC payment guarantee		

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21. Commitments and contingences (cont'd)

(*1) A subsidiary signed a Share sales agreement to sell shares of SK Holdco. Pte. Ltd. owned by the Subsidiary, SK ecoplant Co., Ltd and SK MENA Co., Ltd. to QH Oil Investments LLC, and provided joint guarantees to SK MENA and SK ecoplant Co., Ltd. with respect to the damages clause in the stock sale contract. In the event of damage claim, right to indemnity can be claimed to SK ecoplant Co., Ltd. and SK MENA, after prepayment by the Subsidiary.

As of December 31, 2022, detail of the insurance contracts of the Group is as follows (Korean won in thousand):

	Insurance Detail	Insurance amount	Insurance Company
Assembly Insurance	Property risk guarantee (*1)	₩ 966,878,976	
	Liability risk guarantee	20,000,000	
	Guarantee for risk of loss of expected profit (*1)	507,039,000	Hyundai Marine & Fire Insurance Co., Ltd.
Comprehensive property insurance		300,662	
Group accident insurance		11,880,000	
Cargo insurance		839,710,093	DB Insurance Co., Ltd.
Professional liability insurance		20,000,000	Samsung Fire & Marine Insurance Co., Ltd.

(*1) The Group provided insurance fundamentals as collateral for insurance claims, etc. to senior loan borrowers of Ulsan GPS Co., Ltd. (See Note 21).

22. Related party

Related parties of the Group and nature of their relationship with the Group as of December 31, 2022 are as follows:

	Relationship	Related party
Parent		SK Discovery Co.,Ltd. Dangjin Eco Power Co., Ltd., SK Advanced Co., Ltd., Korea Energy Terminal Co., Ltd., Goseong Green Power Co., Ltd., Global Opportunities Fund, Gridwiz Co., Ltd., Weonil Energy Co., Ltd., Bitgoeul Eco Energy Co., Ltd.,
Associates and joint ventures		G-Energy Corp. (*1), KOHYGEN Corp. (*1), KD Eco Hub Co., Ltd. (*2), Lotte SK Eneroute Co., Ltd. (*2), Vopak Gas Terminal LLP (*3), SK International Investment Singapore Pte. Ltd. (*3), Advanced Polyolefins Industry Company(*4) SK Holdco Pte. Ltd. (*5)
Others		Affiliates of SK Enterprise Group (*6)

(*1) The entity has been included in associates and joint ventures as the Group acquired the shares therein during the year ended December 31, 2021.

(*2) The entities have been included in associates and joint ventures as the Group acquired the shares therein during the year ended December 31, 2022.

(*3) The entity is an associate of SK Gas International Pte. Ltd.

(*4) The entity is an associate of SK Gas Petrochemical Pte. Ltd. and has been included in associates and joint ventures as the Group acquired the shares therein during the year ended December 31, 2022.

(*5) The associates have been classified as non-current assets held for sale during the year ended December 31, 2022.

(*6) The entities have been classified as related parties as designated by the Fair Trade Commission in accordance with substance of the relationship as prescribed in paragraph 10 of KIFRS 1024.

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22. Related party (cont'd)

Significant transactions with the related parties for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

		2022			
	Related party	Sales(*1)	Other income, sales of asset and others (*2)	Purchases	Other expenses and capital expenditure(*2)
Parent	SK Discovery Co., Ltd.	₩ -	₩ 587,531	₩ -	₩ 40,652,846
Associates and joint ventures	SK Advanced Co., Ltd.	634,525,462	2,389,324	-	1,041,612
	Korea Energy Terminal Co., Ltd.	-	4,380,272	-	54,018
	Weonil Energy Co., Ltd.	8,834,608	-	-	15,560
	G-Energy Corp.	-	5,125,741	-	-
	Bitgoeul Eco Energy Co., Ltd.	4,811,144	-	-	1,018,578
	SK Holdco Pte. Ltd.	-	5,727	-	-
	Lotte SK Eneroute Co., Ltd.	-	231,937	-	-
Others	SK Holdings Co., Ltd.	-	-	-	16,637,709
	SK DND Co., Ltd. (*6)	-	1,876,841	-	115,621
	SKPIC Global Co., Ltd.	57,946,152	6,055	-	-
	SK Enmove Co., Ltd. (*8)	53,068,754	-	-	-
	SK Energy Co., Ltd.	230,814,453	9,500,224	242,402,697	11,443,684
	SK Innovation Co., Ltd.	-	-	-	3,485,087
	SK Geo Centric Co., Ltd. (*3)	12,345,388	161,654	-	-
	SK Incheon Petrochem Co., Ltd.	43,703,558	-	-	-
	SK Planet Co., Ltd.	-	-	-	4,490,634
	SK Chemicals Co., Ltd.	10,033,436	487,274	-	345,871
	Ulsan Aromatics Co., Ltd.	47,955,023	82,386	-	-
	SK Networks Co., Ltd.	-	-	363,134	488,032
	SK ecoplant Co., Ltd. (*4)	-	-	-	29,787,061
	SK Bioscience Co., Ltd.	-	2,059,986	-	-
	SK shieldus Co., Ltd. (*5)	-	-	-	1,461,951
	SK ecoengineering Co., Ltd. (*7)	-	-	-	540,598,580
	Prism Energy International Pte. Ltd.	73,754,956	-	-	-
Others	1,130,421	638,683	-	4,667,309	
Total	₩ 1,178,923,355	₩ 27,533,635	₩ 242,765,831	₩ 656,304,153	

(*1) In the above transactions with SK Energy Co., Ltd., taxes and dues were excluded from LPG sales.

(*2) Dividend receipts and payments are included.

(*3) SK Global Chemical Co., Ltd. changed its name to SK Geo Centric Co., Ltd. during the year ended December 31, 2021.

(*4) SK Engineering & Construction Co., Ltd. changed its name to SK ecoplant Co., Ltd. during the year ended December 31, 2021.

(*5) SK infosec Co., Ltd. changed its name to SK shielders Co., Ltd. after merging with ADT Caps Co., Ltd. during the year ended December 31, 2021.

(*6) During the year ended December 31, 2021, all shares on SK D&D Co., Ltd. were disposed, and changed the category from associates to others.

(*7) SK ecoengineering Co., Ltd. was established through physical division from SK ecoplant Co., Ltd. during the year ended December 31, 2022.

(*8) SK Lubricants Co., Ltd changed its name to SK Enmove Co., Ltd. during the year ended December 31, 2022.

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22. Related party (cont'd)

		2021			
	Related party	Sales(*1)	Other income, sales of asset and others (*2)	Purchases	Other expenses and capital expenditure(*2)
Parent	SK Discovery Co., Ltd. (*3)	₩ -	₩ 283,184,988	₩ -	₩ 27,365,466
Associates and joint ventures	SK D&D Co., Ltd. (*4)	-	6,975,775	-	601,551
	SK Advanced Co., Ltd.	692,342,827	5,442,038	-	310,306
	Korea Energy Terminal Co., Ltd.	-	2,604,147	-	59,218
	Weonil Energy Co., Ltd.	8,099,275	3	142,774	-
	G-Energy Corp.	-	1,711,693	-	-
	Bitgoeul Eco Energy Co., Ltd.	-	20,647	-	-
	Gridwiz Co., Ltd.	-	-	-	175,000
	SK Holdco Pte. Ltd.	-	4,216	-	25,962
	Vopak Gas Terminal LLP	8,845	7,802	4,313	1,123,347
Others	SK Holdings Co., Ltd.	-	-	-	17,973,002
	SKC Ltd.	-	-	-	5,495
	SK picglobal Co., Ltd.	31,992,877	5,762	-	1,540
	SK Enmove Co.,Ltd. (*8)	47,340,366	-	-	-
	SK Energy Co., Ltd.	79,272,775	7,836,157	70,029,235	13,017,987
	SK Innovation Co., Ltd	-	-	-	3,156,255
	SK Geo Centric Co., Ltd. (*5)	5,869,470	162,136	-	-
	SK Incheon Petrochem Co., Ltd.	14,752,088	-	-	384,451
	SK Planet Co., Ltd	-	-	-	7,059,677
	SK Chemicals Co., Ltd	6,028,432	3,289,292	-	386,951
	Ulsan Aromatics Co.,Ltd.	30,156,288	78,382	-	-
	SK Networks Co., Ltd.	-	-	482,847	175,217
	SK ecoplant Co., Ltd. (*6)	-	-	-	83,262,511
	SK Bioscience Co.,Ltd.	-	745,004	-	-
	SK shieldus Co.,Ltd. (*7)	-	-	-	1,645,794
Others	-	1,178	-	3,701,497	
Total	₩ 915,863,243	₩ 312,069,220	₩ 70,659,169	₩ 160,431,227	

(*1) In the above transactions with SK Energy Co., Ltd., taxes and dues were excluded from LPG sales.

(*2) Dividend receipts and payments are included.

(*3) During the current year, shares on SK D&D Co., Ltd. were disposed for ₩282,757 million, and recognized the gain on disposition of share of ₩37,046 million.

(*4) It's transactions until the termination of the joint venture relationship.

(*5) SK Global Chemical Co., Ltd. changed its name to SK Geo Centric Co., Ltd. during the year ended December 31, 2021.

(*6) SK Engineering & Construction Co., Ltd. changed its name to SK ecoplant Co., Ltd. during the year ended December 31, 2021.

(*7) SK infosec Co., Ltd. changed its name to SK shielders Co., Ltd. after merging with ADT Caps Co., Ltd. during the year ended December 31, 2021.

(*8) SK Lubricants Co., Ltd changed its name to SK Enmove Co., Ltd. during the year ended December 31, 2022.

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22. Related party (cont'd)

Outstanding balances with the related parties as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	Related party	2022			
		Trade receivables	Other receivables	Trade payables	Other payables
Parent	SK Discovery Co., Ltd.	₩ -	₩ 78,257	₩ -	₩ 437,009
Associates and joint ventures	SK Advanced Co. Ltd.	137,777,945	164,448	-	506,201
	Weonil Energy Co., Ltd.	1,255,526	40,495	-	17,408
	Korea Energy Terminal Co., Ltd. (*3)	-	7,275,451	-	-
	G-Energy Corp.	-	433,238	-	-
	SK Holdco Pte. Ltd. (*1)	-	141,360	-	-
	Bitgoeul Eco Energy Co., Ltd.	1,083,270	-	-	-
	Others	SK Holdings Co., Ltd.	-	-	-
	SK D&D Co., Ltd.	-	193,297	-	993,755
	SK picglobal Co., Ltd.	9,086,678	-	-	-
	SK Enmove Co., Ltd. (*2)	4,441,866	-	-	3,730,673
	SK Energy Co., Ltd. (*4)	32,079,209	49,131,525	-	822,504
	SK Innovation Co., Ltd.	-	-	-	366,414
	SK Incheon Petrochem Co., Ltd.	21,237,998	-	-	-
	Ulsan Aromatics Co., Ltd.	7,274,796	45,312	-	-
	SK Chemicals Co., Ltd.	1,163,251	107,081	-	32,263
	SK Planet Co., Ltd.	-	-	-	1,066,021
	SK Bioscience Co., Ltd.	-	84,178	-	765,252
	SK ecoplant Co., Ltd. (*5)	-	155,031	-	17,489
	SK Geo Centric Co., Ltd. (*6)	-	91,482	-	-
	SK shieldus Co., Ltd. (*7)	-	-	-	423,360
	SK Networks Co., Ltd.	-	-	-	29,025
	SK ecoengineering Co., Ltd. (*8)	-	-	-	122,888,899
	Others	172,062	292,585	-	284,459
	Total	₩ 215,572,601	₩ 58,233,740	₩ -	₩ 133,638,197

(*1) This associate has been classified as non-current asset held for sale during the year ended December 31, 2022.

(*2) SK Lubricants Co., Ltd changed its name to SK Enmove Co., Ltd. during the year ended December 31, 2022. The above other payables include ₩ 3,731 million in relation to petroleum product storage consignment contract.

(*3) The above other receivables include ₩5,200 million in relation to the use of large pier oil tanker mooring facilities in Ulsan.

(*4) The above other receivables include ₩17,657 million due to LPG volume exchange transactions and prepaid expense of ₩30,613 million in relation to the use of large pier oil tanker mooring facilities in Ulsan.

(*5) SK Engineering & Construction Co., Ltd. changed its name to SK ecoplant Co., Ltd. during the year ended December 31, 2021.

(*6) SK Global Chemical Co., Ltd. changed its name to SK Geo Centric Co., Ltd. during the year ended December 31, 2021.

(*7) SK infosec Co., Ltd. changed its name to SK shielders Co., Ltd. after merging with ADT Caps Co., Ltd. year ended December 31, 2021.

(*8) SK ecoengineering Co., Ltd. was established through physical division from SK ecoplant Co., Ltd. during the year ended December 31, 2022.

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22. Related party (cont'd)

		2021			
	Related party	Trade receivables	Other receivables	Trade payables	Other payables
Parent	SK Discovery Co., Ltd.	₩ -	₩ 36,351	₩ -	₩ 642,389
Associates and joint ventures	SK Advanced Co. Ltd.	153,778,398	170,066	-	234,835
	Weonil Energy Co., Ltd.	1,169,483	-	-	11,023
	Korea Energy Terminal Co., Ltd.	-	918,854	-	-
	G-Energy Corp.	-	188,837	-	-
	SK Holdco Pte. Ltd.	-	135,634	-	25,962
Others	SK Holdings Co., Ltd.	-	-	-	1,074,356
	SK D&D Co., Ltd.	-	158,911	-	717,747
	SK Incheon Petrochem Co.,Ltd.	7,470,682	-	-	-
	SK picglobal	5,365,705	-	-	-
	SK Lubricants Co.,Ltd. (*3)	4,324,985	-	-	7,154
	SK Energy Co., Ltd. (*1)	10,431,931	33,655,548	4,520,870	14,840,282
	SK Innovation Co., Ltd	-	-	-	284,341
	Ulsan Aromatics Co.,Ltd.	4,965,662	43,110	-	-
	SK Chemicals Co., Ltd	880,110	115,321	-	25,488
	SK Planet Co., Ltd.	-	-	-	1,610,895
	SK Bioscience Co.,Ltd.	-	104,116	-	361,505
	SK ecoplant Co., Ltd. (*2)	-	-	-	2,175,351
	Others	-	112,371	-	526,158
	Total	₩ 188,386,956	₩ 35,639,119	₩ 4,520,870	₩ 22,537,486

(*1) The above other payables include ₩13,764 million due to LPG volume exchange transactions. The above other receivables include prepaid expense of ₩32,938 million in relation to the use of large pier oil tanker mooring facilities in Ulsan.

(*2) SK Engineering & Construction Co., Ltd. changed its name to SK ecoplant Co., Ltd. during the year ended December 31, 2021.

(*3) SK Lubricants Co., Ltd changed its name to SK Enmove Co., Ltd. during the year ended December 31, 2022.

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22. Related party (cont'd)

Transactions with related parties

Other transactions

Other transactions with the related parties for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

Description	Related party	Investment	
		2022	2021
Associates and joint ventures	Korea Energy Terminal Co., Ltd.	₩ -	₩ 39,098,450
	Bitgoeul Eco Energy Co., Ltd.	-	4,611,000
	KOHYGEN Corp.	1,235,000	950,000
	G-Energy Corp.	-	100,000
	Goseong Green Power Co., Ltd.	-	170,240,000
	KD Eco Hub Co., Ltd.	400,000	-
	Lotte SK Eneroute Co., Ltd.	1,350,000	-
	Advanced Polyolefins Industry Company (*1)	54,969,836	69,387,360
Total		₩ 57,954,836	₩ 284,386,810

(*1) This is the equity acquisition amount at paid-in capital increase after the initial acquisition.

Compensation for key management personnel for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Salaries	₩ 6,491,531	₩ 5,362,372
Retirement benefits	709,243	797,018
Stock compensation cost	709,550	90,687
Total	₩ 7,910,324	₩ 6,250,077

The Group provides guarantees of payment to others for its other related parties (see Note 21).

The Group provides collateral to others for its associates and joint ventures (see Note 21).

23. Equity

Issued capital

Issued capital as of December 31, 2022 and 2021 are as follows (Korean won in thousands, except par value amounts):

	2022	2021
Authorized shares (in shares)	20,000,000	20,000,000
Par value (in won)	₩ 5,000	₩ 5,000
Ordinary shares issued (in shares)	9,230,244	9,230,244
Issued capital	₩ 46,151,220	₩ 46,151,220

Capital surplus

Details of capital surplus as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Paid in capital in excess of par value	₩ 30,356,778	₩ 30,356,778
Revaluation reserve	120,748,809	120,748,809
Treasury stock gains	44,174,341	44,174,341
Other capital surplus	212,265	212,265
	₩ 195,492,193	₩ 195,492,193

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23. Equity (cont'd)

Other components of capital

Details of other components of capital as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Treasury stock (*1)	₩ (7,418,439)	₩ (7,418,439)
Stock option	1,849,670	1,125,718
Others	(16,241,489)	(15,728,926)
Total	<u>₩ (21,810,258)</u>	<u>₩ (22,021,647)</u>

(*1) The Group acquired treasury stock at market price for the purpose of stabilizing its stock price. As of December 31, 2022, the number of shares of treasury stocks outstanding is 255,198 shares.

Accumulated other comprehensive income (loss)

Accumulated other comprehensive income (loss) as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Income (loss) on valuation of financial instruments at FVOCI	₩ (2,367,135)	₩ 3,240,986
Gain (loss) on valuation of lease liabilities for cash flow hedge	(27,103,334)	(11,856,386)
Equity adjustments in equity method	19,126,836	797,555
Gain (loss) on translation of foreign operations	21,251,835	4,427,060
Total	<u>₩ 10,908,202</u>	<u>₩ (3,390,785)</u>

Retained earnings

Details of retained earnings as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021	Description
Legal reserve	₩ 23,075,610	₩ 23,075,610	Legal (*1)
Business rationalization reserve	83,060	83,060	Discretionary
Capital expenditure reserve	1,089,204	1,089,204	Discretionary(*2)
Unappropriated	2,085,905,916	1,876,884,537	
Total	<u>₩ 2,110,153,790</u>	<u>₩ 1,901,132,411</u>	

(*1) In accordance with the Korean Commercial Code, an amount equal to at least 10% of cash dividends is required to be appropriated as a legal reserve until the reserve equals 50% of issued capital. The legal reserve may not be utilized for cash dividends but may only be used to offset a deficit, if any, or be transferred to capital.

(*2) The Korean Financial Control Regulation for listed companies requires that an amount be appropriated as reserve for improvement of financial position until the ratio of equity to total assets equals 30%. Effective from December 2007, such reserve is no longer required by the revised Tax Incentives Limitation Law ("TILL").

Dividends paid and proposed

Details of dividends proposed for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands, except per share amounts):

	2022	2021
Cash dividends (interim)		
(2021: ₩1,000 per share)	₩ -	₩ 8,975,046
Cash dividends (year-end)		
(2022: ₩5,500, 2021: ₩5,100 per share)	49,362,753	45,772,735
Total	<u>₩ 49,362,753</u>	<u>₩ 54,747,781</u>

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24. Share-based payments

Stock option

In accordance with the special resolution of the general meeting of shareholders, the Company has granted stock options to employees of the Company. Major terms are as follows.

	1-1	1-2	1-3	1-4	1-5	1-6	1-7
The grant date of the right	2018-03-26		2019-03-05		2019-03-27	2020-03-03	2022-03-24
Types of shares to be issued	Registered common stock						
Method of grant	In the exercise of rights, the Company chooses one method by resolution of the board of directors. ① Issuance of new shares ② Transfer of own shares ③ If the exercise price is lower than the actual value of the stock at the event, the difference or difference Grant equivalent treasury stock						
Number of shares granted	15,000 shares	15,000 shares	20,000 shares	20,000 shares	10,000 shares	24,000 shares	43,500 shares
Exercise price	95,290 won	102,910 won	81,270 won	87,770 won	90,490 won	78,510 won	118,670 won
Available period	2020.3.27~ 2025.3.26	2021.3.27~ 2025.3.26	2021.3.6~ 2026.3.5	2022.3.6~ 2026.3.5	2021.3.28~ 2026.3.27	2022.3.4~ 2027.3.3	2025.3.25~ 2029.3.24
Vesting condition	More than 2 years of employment period after grant date	More than 3 years of employment period after grant date	More than 2 years of employment period after grant date	More than 3 years of employment period after grant date	More than 2 years of employment period after grant date	More than 2 years of employment period after grant date	Employment period after grant date - More than 2 years (29,000 shares) - More than 3 years (14,500 shares)

Stock Appreciation Rights

The Group has granted cash-settled stock appreciation rights to executives of the Group. Major terms are as follows.

	Detail
The grant date of the right	March 1, 2020
Vesting condition	More than 3 years of employment period after grant date ((Maintain its condition in case of involuntary resignation (moving out of affiliated companies, etc.))
Compensate amount	Calculation of payout rate and payment amount based on the stock price increase rate after 3 years and the minimum required rate of return by year
Method of payment	Installment payment over 3 years from 3 years after the grant date

In relation to the stock appreciation right, the Group recognizes ₩260,081 thousand of other current financial liabilities and ₩260,081 thousand of other non-current financial liabilities in the statement of financial position.

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24. Share-based payments (cont'd)

The compensation cost of stock options and cash-settled stock appreciation rights are calculated using the fair value approach using the binomial model. The assumptions and variables used to calculate compensation cost are as follows.

	Equity-settled stock options							Stock appreciation rights
	1-1	1-2	1-3	1-4	1-5	1-6	1-7	
Risk-free rate of return	2.58%	2.58%	2.02%	2.02%	1.89%	1.32%	2.76%	3.68%
Share price of grant day (previous day closing price)	₩ 92,500	₩ 92,500	₩ 82,700	₩ 82,700	₩ 91,900	₩ 77,500	₩ 111,500	₩ 78,490
Price volatility	15.90%	15.90%	16.25%	16.25%	17.01%	22.72%	46.18%	10.45%
Discount rate	3.52%	3.52%	3.01%	3.01%	2.88%	3.87%	4.57%	4.21%
Exercise price (*1)	₩ 95,290	₩ 102,910	₩ 81,270	₩ 87,770	₩ 90,490	₩ 78,510	₩ 118,670	₩ 78,490
Fair value per share	₩ 11,759	₩ 9,347	₩ 10,713	₩ 8,432	₩ 13,084	₩ 13,925	₩ 45,985	₩ 42,458

(*1) The exercise price of the stock appreciation rights is equal to the base price on the grant date. The Company re-measures the liability for the stock appreciation rights at the end of each reporting period until settlement, at the fair value of the stock appreciation rights.

Share-based payments

The Group has recognized ₩ 851,923 thousand and ₩ 660,742 thousand as stock compensation expense for the years ended December 31, 2022 and 2021, respectively, and the remaining compensation expenses amounted to ₩ 1,315,193 thousand.

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25. Revenue from Contracts with Customers

Classification of revenue information

	2022	2021
Revenue from contracts with customers:		
LPG sales	₩ 7,702,642,072	₩ 6,174,930,023
Service revenue and others	318,608,796	275,517,539
Subtotal	<u>8,021,250,868</u>	<u>6,450,447,562</u>
Revenue from other sources:		
Rental income	16,805,724	15,411,535
Consignment storage income	28,112,526	28,654,089
Subtotal	<u>44,918,250</u>	<u>44,065,624</u>
Total	<u>₩ 8,066,169,118</u>	<u>₩ 6,494,513,186</u>

The following are the disaggregation of revenue from contracts with customers of a consolidated group (Korean won in thousands):

	2022	2021
Types of goods or services:		
LPG sales	₩ 7,702,642,072	₩ 6,174,930,023
Other sales	22,135,200	18,978,784
Transportation service	296,473,596	256,538,755
Total revenue from contracts with customers	<u>₩ 8,021,250,868</u>	<u>₩ 6,450,447,562</u>
Geographical market:		
Korea	₩ 5,080,053,552	₩ 3,799,441,415
Overseas	2,941,197,316	2,651,006,147
Total revenue from contracts with customers	<u>₩ 8,021,250,868</u>	<u>₩ 6,450,447,562</u>
The time of transfer of goods or services:		
Goods transferred at one time	₩ 7,723,351,601	₩ 6,192,099,393
Services transferred over time	297,899,267	258,348,169
Total revenue from contracts with customers	<u>₩ 8,021,250,868</u>	<u>₩ 6,450,447,562</u>

There is no customer that accounted for more than 10% of the Group's revenue during the year ended December 31, 2022 (2021 : one customer) and the amount of revenue from the major customer during the year ended December 31, 2021 was ₩692,342,827 thousand.

Contract balance

	(Korean won in thousands)	
	2022	2021
Trade receivables	₩ 903,715,188	₩ 859,178,756
Contract liabilities (*1)	9,282,869	3,242,306

(*1) It is short-term advances received from customers in relation to LPG sales, and the Group recognizes contract liabilities as revenue when performance obligations under the contract are satisfied. Among the contract liabilities balance at the year ended December 31, 2021, the income recognized in the current year ended December 31, 2022 was ₩ 3,242 million.

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26. Operating segment information

The Group has 2 reportable segments that are strategic business units. The strategic operating segments of the Group provide different goods or services and are separately operated based on each segment's required technologies and marketing strategies.

Details of the operating segments for the year ended December 31, 2022 is as follows:

Segment	Goods or services
Gas	LPG import, storage and sale
Others	Energy development and others

Information on the reporting sector for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Gas	Others	Internal transactions, etc.	Total
Sales	₩ 11,186,874,041	₩ -	₩ (3,120,704,923)	₩ 8,066,169,118
Operating income(loss)	400,493,052	(11,015,076)	993,014	390,470,990
Depreciation and amortization(*1)	107,756,486	335,648	(49,114)	108,043,020

(*1) Depreciation of property, plant and equipment and right-of-use assets and amortization of intangible assets.

	2021			
	Gas	Others	Internal transactions, etc.	Total
Sales	₩ 9,378,035,127	₩ -	₩ (2,883,521,941)	₩ 6,494,513,186
Operating income(loss)	111,283,243	(4,961,503)	(859,375)	105,462,365
Depreciation and amortization(*1)	107,849,169	290,823	(144,659)	107,995,333

(*1) Depreciation of property, plant and equipment and right-of-use assets and amortization of intangible assets.

The Group's assets and liabilities by segment for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Gas	Others	Internal transactions, etc.	Total
Total assets	₩ 5,460,812,126	₩ 883,828,248	₩ (512,863,482)	₩ 5,831,776,892
Fixed assets	1,388,068,645	783,407,051	(1,740,033)	2,169,735,663
Associates and joint ventures	-	735,981,473	-	735,981,473
Total liabilities	3,044,682,227	491,988,252	(45,788,734)	3,490,881,745

	2021			
	Gas	Others	Internal transactions, etc.	Total
Total assets	₩ 5,137,790,466	₩ 316,884,713	₩ (333,139,707)	₩ 5,121,535,472
Fixed assets	1,378,136,256	227,900,662	(1,509,684)	1,604,527,234
Associates and joint ventures	-	850,024,868	-	850,024,868
Total liabilities	2,978,948,107	21,158,401	4,065,572	3,004,172,080

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27. Operating expense

Classification of expenses by nature

Details of cost of sales and operating expenses for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Changes in goods	₩ 1,779,945	₩ (139,274,835)
Purchase of goods	7,280,047,928	6,172,450,321
Salaries and wages	97,922,577	87,247,873
Retirement benefits	4,897,864	5,573,795
Transport and storage of oil expenses	27,113,320	24,697,862
Rental fees and service fees	49,787,919	39,931,346
Taxes and dues	19,930,598	17,041,345
Depreciation of property, plant and equipment	98,761,009	100,975,608
Amortization of intangible assets	9,282,011	7,019,725
Others	86,174,957	73,387,781
Total	<u>₩ 7,675,698,128</u>	<u>₩ 6,389,050,821</u>

Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Salaries and wages	₩ 93,640,683	₩ 82,679,385
Retirement benefits	4,470,136	5,320,898
Employee welfare benefits	15,946,196	17,965,566
Training	4,718,430	3,744,094
Entertainment	2,803,346	2,424,999
Travel	3,399,284	1,711,214
Utilities	9,679,364	7,958,533
Supplies	1,392,788	901,071
Repairs	8,877,964	9,318,671
Office supplies and management	5,216,275	7,292,928
Technical service fees	17,059,139	16,091,760
Transport and storage of oil	7,313,437	7,829,693
Communication	512,479	462,085
Advertising and marketing	8,147,171	7,624,845
Rental fees and service fees	48,275,774	37,801,786
Taxes and dues	19,329,596	16,481,096
Insurance	1,741,359	1,813,736
Depreciation of property, plant and equipment	24,671,019	24,797,290
Amortization of intangible assets	8,996,088	6,717,820
Bad debt expenses (reversal)	(617,901)	3,010,963
Compensation expenses associated with stock option	851,923	660,742
Miscellaneous	1,221,011	1,071,040
Total	<u>₩ 287,645,561</u>	<u>₩ 263,680,215</u>

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28. Finance income and costs and other non-operating revenue and expense

Finance income and costs

Finance income and finance costs for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Finance income:		
Interest income	₩ 5,073,285	₩ 3,967,550
Dividends income	188,066	223,855
Gain on transaction of derivatives	354,134,201	252,025,070
Gain on valuation of derivatives	104,487,779	116,115,763
Gain on foreign currency transaction	152,804,944	61,956,099
Gain on foreign currency translation	68,876,871	2,475,788
Transaction gain from financial assets at fair value through profit or loss	28,023,138	11,173,031
Valuation gain from financial assets at fair value through profit or loss	2,822,299	829,245
Total	<u>₩ 716,410,583</u>	<u>₩ 448,766,401</u>
Finance costs:		
Interest expenses	₩ 57,708,575	₩ 40,416,032
Loss on transaction of derivatives	192,911,498	136,653,511
Loss on valuation of derivatives	205,961,119	30,546,892
Valuation loss from financial assets at fair value through profit or loss	-	1,302,610
Loss on foreign currency transaction	281,709,943	130,168,932
Loss on foreign currency translation	20,207,170	3,812,361
Total	<u>₩ 758,498,305</u>	<u>₩ 342,900,338</u>

Other non-operating income and costs

Other non-operating income for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Rental income	₩ 8,387,090	₩ 5,933,066
Gain on disposal of property, plant and equipment	110,090	5,991,545
Gain on disposal of intangible assets	-	140,390
Gain on disposal of investments in joint ventures (*1)	-	37,003,045
Gain on debt exemption	-	127,203
Reversal of impairment loss on intangible assets	-	1,490,743
Miscellaneous income	10,981,431	12,028,457
Total	<u>₩ 19,478,611</u>	<u>₩ 62,714,449</u>
Loss on disposal of property, plant and equipment	₩ 698,672	₩ 1,640,535
Loss on disposal of intangible assets	11,656	6,868
Loss on impairment of intangible assets	-	348,600
Donations	8,130,787	3,672,022
Miscellaneous expenses	5,460,503	7,801,736
Total	<u>₩ 14,301,618</u>	<u>₩ 13,469,761</u>

(*1) During the year ended December 31, 2021, the Group disposed shares on SK D&D Co., Ltd. to SK Discovery Co., Ltd. (see Note 22).

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29. Income tax

Corporate tax expense is calculated by adjusting the adjustments recognized in the current year ended December 31, 2022 for current corporate tax for the past period, deferred tax expense (income) due to the temporary differences, and corporate tax expense (income) related to items recognized outside profit or loss.

The major components of income tax expense for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Current income tax	₩ 99,388,339	₩ 72,534,414
Changes in deferred tax assets and liabilities	(53,009,603)	8,426,766
Income tax expense directly recognized to equity	1,287,493	(619,386)
Income tax expense	<u>₩ 47,666,229</u>	<u>₩ 80,341,794</u>

A reconciliation of profit before income taxes at the Korea statutory tax rate to income tax expense at the effective tax rate of the Group is summarized as follows (Korean won in thousands):

	2022	2021
Profit before income tax	₩ 304,743,977	₩ 329,607,679
Tax at the statutory income tax rate (*1)	73,442,594	78,166,266
Adjustments:		
Non-deductible expenses and tax exemption	509,673	(1,303,556)
Prior period tax adjustment	(3,203,561)	-
Effect of deferred tax arising from temporary difference not recognized	1,933,345	934,458
Income tax refund and reflux tax	-	2,230,260
Deferred tax unrecognized effect	(918,217)	-
Effect of tax rate change	(32,747,908)	-
Others	8,650,303	314,366
Income tax expense	<u>₩ 47,666,229</u>	<u>₩ 80,341,794</u>
Effective income tax rate	15.64%	24.37%

(*1) The taxable income of income tax rate includes corporate income tax (10% on taxable income of less than ₩200 million, 20% on taxable income of more than ₩200 million and less than ₩20,000 million, 22% on taxable income of more than ₩20,000 million and less than ₩300,000 million, 25% on taxable income of more than ₩300,000 million) and resident surtax (10% of corporate income tax).

Significant changes in cumulative temporary differences and deferred tax assets and liabilities for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022			
	Jan. 1	Recognized to profit or loss	Recognized directly to equity	Dec. 31
Revaluation surplus	₩ (35,538,943)	₩ 2,050,291	₩ -	₩ (33,488,652)
Allowance for doubtful accounts	3,699,346	(152,865)	-	3,546,481
Defined benefit liabilities	-	(2,307,499)	104,520	(2,202,979)
Financial assets at fair value through other comprehensive income	(86,334)	(927,448)	1,567,478	553,696
Gain (loss) on valuation of derivative instruments	(23,288,785)	19,121,397	-	(4,167,388)
Depreciable assets	14,360,405	686,628	-	15,047,033
Investment assets	(47,396,121)	36,778,267	(5,332,377)	(15,950,231)
Lease assets and liabilities	(7,212,740)	(2,965,333)	4,605,849	(5,572,224)
Others	7,562,086	189,724	342,023	8,093,833
	<u>(87,901,086)</u>	<u>52,473,162</u>	<u>1,287,493</u>	<u>(34,140,431)</u>
Deduction: Unrecognized deferred tax assets (liabilities)	31,741,217	685,625	28,673	32,455,515
Deferred tax assets (liabilities) after deduction	<u>₩ (119,642,303)</u>	<u>₩ 51,787,537</u>	<u>₩ 1,258,820</u>	<u>₩ (66,595,946)</u>

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29. Income tax (cont'd)

	2021			
	Jan. 1	Recognized to profit or loss	Recognized directly to equity	Dec. 31
Revaluation surplus	₩ (36,588,439)	₩ 1,049,496	₩ -	₩ (35,538,943)
Allowance for doubtful accounts	5,455,472	(1,756,126)	-	3,699,346
Defined benefit liability	230,488	(558,465)	327,977	-
Financial assets at fair value through other comprehensive income	772,668	379,512	(1,238,514)	(86,334)
Gain (loss) on valuation of derivative instruments	(9,826,090)	(13,462,695)	-	(23,288,785)
Depreciable assets	15,044,489	(684,084)	-	14,360,405
Investment assets	(47,505,679)	8,715,429	(8,605,871)	(47,396,121)
Lease assets and liabilities	(11,675,492)	(2,739,665)	7,202,417	(7,212,740)
Others	3,683,805	2,159,056	1,719,225	7,562,086
	(80,408,778)	(6,897,542)	(594,766)	(87,901,086)
Deduction: Unrecognized deferred tax assets (liabilities)	30,806,759	909,838	24,620	31,741,217
Deferred tax assets (liabilities) after deduction	₩ (111,215,537)	₩ (7,807,380)	₩ (619,386)	₩ (119,642,303)

Unrecognized temporary difference for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Investment in subsidiaries, associates and joint ventures	₩ 140,785,533	₩ 131,997,601
Deferred tax liabilities	(61,202,745)	(61,202,745)
Deferred tax assets	201,988,278	193,200,346

The future realizability deferred tax assets depends on a number of factors, including the Group's ability to generate taxable income during the period in which the temporary difference is to be realized, the overall economic environment and industry prospects. The Group periodically reviews these matters and recognized deferred tax assets for deductible temporary differences that are expected to be realized in the future as of December 31, 2022. In addition, the Group has control over the extinguishment of temporary differences to be added to the foreseeable future for subsidiaries and the deferred tax liabilities are not recognized for the part where the temporary difference to be added in the foreseeable future is not extinguished.

30. Earnings per share

Basic earnings per share

The Group's basic earnings per share attributable to owners of the Parent Company for the years ended December 31, 2022 and 2021 are computed as follows (Korean won in thousands, except per share amounts):

	2022	2021
Profit for the year attributable to equity holders of the Parent Company	₩ 257,077,748	₩ 249,265,885
Weighted average number of ordinary shares outstanding (in shares)	8,975,046	8,975,046
Basic earnings per share (in won)	₩ 28,644	₩ 27,773

The weighted-average number of ordinary shares outstanding for basic earnings per share as of December 31, 2022 and 2021 are computed as follows (shares):

2022				Accumulated number of shares
Period	Description	Number of shares	Number of days	
1.1~12.31	Ordinary stock	9,230,244	365	3,369,039,060
1.1~12.31	Treasury stock	(255,198)	365	(93,147,270)
				3,275,891,790

The weighted-average number of shares of ordinary stock outstanding as of December 31, 2022:
 $3,275,891,790/365 = 8,975,046$ (in shares)

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30. Earnings per share (cont'd)

2021				
Period	Description	Number of shares	Number of days	Accumulated number of shares
1.1~12.31	Ordinary stock	9,230,244	365	3,369,039,060
1.1~12.31	Treasury stock	(255,198)	365	(93,147,270)
				3,275,891,790

The weighted-average number of shares of ordinary stock outstanding as of December 31, 2021:
 $3,275,891,790/365 = 8,975,046$ (in shares)

Diluted earnings per share

The Group's diluted earnings per share attributable to owners of the Parent for the years ended December 31, 2022 and 2021 are computed as follows (Korean won in thousands, except per share amounts):

	2022	2021
Profit for the year attributable to equity holders of the Parent adjusted for the effect of dilution	₩ 257,077,748	₩ 249,265,885
Weighted average number of ordinary shares adjusted for the effect of dilution (in shares)	9,001,776	9,001,219
Diluted earnings per share (in won)	₩ 28,559	₩ 27,692

The diluted weighted-average number of ordinary shares outstanding for diluted earnings per share as of December 31, 2022 and 2021 are computed as follows (shares):

	2022	2021
Weighted-average number of shares of ordinary stock outstanding	8,975,046	8,975,046
Effect of dilution from exercise share options	26,730	26,173
Diluted weighted-average number of shares of ordinary stock outstanding	9,001,776	9,001,219

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31. Statements of cash flows

Cash in the consolidated statements of cash flows represents cash and cash equivalents in the consolidated statements of financial position.

Adjustments in the cash flows generated from operations for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Retirement benefits	₩ 4,419,593	₩ 5,036,560
Depreciation	51,652,471	53,878,222
Depreciation expenses of right-of-use assets	47,108,537	47,097,387
Amortization of intangible assets	9,282,011	7,019,725
Compensation expenses associated with stock option	851,923	660,742
Bad debt expenses (reversal)	(617,901)	3,010,963
Interest income	(5,073,285)	(3,967,550)
Interest expenses	57,708,575	40,416,032
Dividend income	(188,066)	(223,855)
Gain on valuation of derivative instruments	(104,487,779)	(116,115,763)
Gain on settlement of derivative instruments	(354,134,201)	(252,025,071)
Gains on valuation of financial assets at FVTPL	(2,822,299)	(829,245)
Gains on transactions of financial assets at FVTPL	(28,023,138)	(11,173,031)
Loss on valuation of financial assets at FTVPL	-	1,302,610
Loss on valuation of derivative instruments	205,961,119	30,546,892
Loss on settlement of derivative instruments	192,911,498	136,653,511
Gain on foreign currency translation	(68,876,871)	(2,475,788)
Gain on disposal of property, plant and equipment	(110,090)	(5,991,545)
Gain on disposal of intangible assets	-	(140,390)
Loss on foreign currency translation	20,207,170	3,812,361
Loss on disposal of property, plant and equipment	698,672	1,640,535
Loss on disposal of intangible assets	11,656	6,868
Impairment loss on intangible assets	-	348,600
Reversal of impairment loss on intangible assets	-	(1,490,743)
Equity method gains	(14,456,651)	(73,013,790)
Equity method losses	63,272,937	3,979,227
Gain on disposal of investments in joint ventures	-	(37,003,045)
Gain on debt exemption	-	(127,203)
Income tax expense	47,666,229	80,341,794
Others	2,599,675	3,797,708
Total	₩ 125,561,785	₩ (85,027,282)

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31. Statements of cash flows (cont'd)

Changes in assets and liabilities arising from operating activities for the years ended December 31, 2022 and 2021 are as follows(Korean won in thousands):

	2022	2021
Trade receivables	₩ (53,657,694)	₩ (228,785,175)
Other receivables	(27,933,821)	(8,392,960)
Inventories	2,498,059	(140,138,112)
Other current financial assets	299,016	-
Other current assets	14,608,545	(15,202,450)
Other non-current financial assets	(47,813)	(2,150,634)
Other non-current assets	(4,912,869)	-
Trade payables	(5,630,815)	(125,654,711)
Other payables	(71,822,925)	29,889,948
Other current liabilities	5,486,693	(5,475,925)
Other non-current financial liabilities	617,137	291,055
Other non-current liabilities	(10,031)	(10,301)
Transfer of defined benefit obligations to related parties	3,967	-
Retirement benefits paid	(1,408,479)	(773,920)
Plan assets	(15,544,593)	(5,829,893)
Total	<u>₩ (157,455,623)</u>	<u>₩ (502,233,078)</u>

The statements of cash flows of the Group are prepared using the indirect method and significant non-cash transactions for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Transfer of long-term loans to current portion	₩ 6,843,319	₩ 13,720,485
Changes in payments due to acquisition of property, plant and equipment and intangible assets	133,852,405	16,356
Transfer of construction-in-progress to respective asset	15,970,710	10,690,825
Valuation of financial assets at FVOCI	5,608,121	4,087,197
Transfer of long-term lease liabilities to current portion	64,493,744	63,625,975
Transfer of long-term bonds payable to current portion	149,793,927	199,875,684
Transfer to non-current assets held for sale	159,285,206	-
Increase in newly contracted lease assets and liabilities	50,753,448	4,682,932

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31. Statements of cash flows (cont'd)

Changes in liabilities arising from financing activities for the years ended December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022				
	Jan. 1	Financing activities cash flows	Reclassification to current portion	Others (*1)	Dec. 31
Accrued expenses	₩ 47,780,734	₩ (51,716,342)	₩ -	₩ 155,976,447	₩ 152,040,839
Dividends payable	-	(54,747,781)	-	54,747,781	-
Short-term borrowings	796,493,517	169,281,058	-	(66,093,177)	899,681,398
Current portion of long-term borrowings	199,953,852	(200,000,000)	149,793,927	172,870	149,920,649
Current portion of lease liabilities	60,535,330	(61,799,279)	64,493,744	236,908	63,466,703
Long-term borrowings	-	46,540,000	-	7,635	46,547,635
Bonds payable	1,066,657,697	298,726,320	(149,793,927)	1,071,385	1,216,661,475
Lease liabilities	338,523,680	-	(64,493,744)	75,323,830	349,353,766
Treasury stock	(7,418,439)	-	-	-	(7,418,439)
	₩ 2,502,526,371	₩ 146,283,976	₩ -	₩ 221,443,679	₩ 2,870,254,026

(*1) It includes accrued interest on interest-bearing borrowings and others, dividends payable, foreign currency valuation gains or losses, and changes in lease liabilities.

	2021				
	Jan. 1	Financing activities cash flows	Reclassification to current portion	Others (*1)	Dec. 31
Accrued expenses	₩ 37,329,520	₩ (37,917,981)	₩ -	₩ 48,369,195	₩ 47,780,734
Dividends payable	-	(35,900,184)	-	35,900,184	-
Short-term borrowings	631,739,647	162,717,000	-	2,036,870	796,493,517
Current portion of long-term borrowings	-	-	199,875,684	78,168	199,953,852
Current portion of lease liabilities	55,187,989	(58,348,407)	63,625,975	69,773	60,535,330
Long-term borrowings	188,070	(60,867)	-	(127,203)	-
Bonds payable	817,562,172	448,073,100	(199,875,684)	898,109	1,066,657,697
Lease liabilities	363,525,999	-	(63,625,975)	38,623,656	338,523,680
Treasury stock	(7,418,439)	-	-	-	(7,418,439)
	₩ 1,898,114,958	₩ 478,562,661	₩ -	₩ 125,848,752	₩ 2,502,526,371

(*1) It includes accrued interest on interest-bearing borrowings and others, dividends payable, foreign currency valuation gains or losses, and changes in lease liabilities.

32. Financial risk management objectives and policies

The Group's principal financial liabilities comprise trade and other payables, loans, and bonds. The main purpose of these financial liabilities is to finance the Group's operations and to provide guarantees to support its operations. Also, the Group has various financial assets incurred from operating activity including trade and other receivables, cash and cash equivalents, loans and financial assets such as financial assets at fair value through other comprehensive income incurred from investing activity.

The Group is exposed to market risk, credit risk and liquidity risk. The Group's senior management oversees the management of these risks in accordance with the Group risk policies which are reviewed regularly, and details are provided below. Furthermore, it is the Group's policy that no trading in derivatives for speculative purposes is to be undertaken.

Market risk

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

The sensitivity analyses in the following sections relate to the position as of December 31, 2022 and 2021.

32. Financial risk management objectives and policies (cont'd)

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt liability with floating interest rates. The Group manages its interest rate risk by having a balanced portfolio of fixed and variable rate loans and borrowings.

Borrowings with floating interest rates amount to ₩313,050,916 thousand and ₩233,010,745 thousand as of December 31, 2022 and 2021, respectively. With all other variables held constant, the Group's profit before tax is affected through the impact on floating rate borrowings, as follows (Korean won in thousands):

	2022		2021	
	+1%	-1%	+1%	-1%
Profit before tax	₩ (3,130,509)	₩ 3,130,509	₩ (2,330,107)	₩ 2,330,107

Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The book values of monetary assets and liabilities which are not presented in functional currency as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022		2021	
	Assets	Liabilities (*1)	Assets	Liabilities
USD	₩ 455,988,603	₩ 1,179,337,566	₩ 399,477,252	₩ 982,461,487
SGD	1,147,990	7,844,251	567,071	10,975,486
EUR	-	57,104	-	-
	₩ 457,136,593	₩ 1,187,238,921	₩ 400,044,323	₩ 993,436,973

(*1) The Company applies non-financial item as hedge items using the lease liabilities denominated in foreign currency. The amount was excluded because it means determined to be effective in avoiding the risk of exchange rate fluctuations (see Note 14).

If the exchange rate of the functional currency fluctuates by 5% for each foreign currency as of December 31, 2022 and 2021, the impact on current and prior profit and loss are as follows (Korean won in thousands). The Group internally measures the exchange risk of won exchange rate fluctuations regularly and effectively manages exchange risk through currency futures trading, which has a limited impact on profit and loss. (Korean won in thousands):

	2022		2021	
	+5%	-5%	+5%	-5%
USD	₩ (36,167,448)	₩ 36,167,448	₩ (29,149,212)	₩ 29,149,212
SGD	(334,813)	334,813	(520,421)	520,421
EUR	(2,855)	2,855	-	-
	₩ (36,505,116)	₩ 36,505,116	₩ (29,669,633)	₩ 29,669,633

32. Financial risk management objectives and policies (cont'd)

Other price risk

Other price risk is the risk that the fair value or future cash flows of financial instruments will fluctuate due to fluctuations in market prices other than interest rate risk or foreign exchange risk. Listed equity securities of ₩ 13,257,750 thousand among the Group's financial assets at FVOCI are susceptible to market price risk arising from the fluctuation in the price of the securities. The following table demonstrates the sensitivity analyses of a reasonably possible change in the price of listed equity securities by 5% on the consolidated financial statements of the Group as of December 31, 2022 and 2021, respectively (Korean won in thousands):

	2022	
	+5%	-5%
Other comprehensive income for the year before income tax	₩ 662,887	₩ (662,887)
Income tax expense	(151,396)	151,396
Other comprehensive income for the year, net of tax	511,491	(511,491)
	2021	
	+5%	-5%
Other comprehensive income for the year before income tax	₩ 922,846	₩ (922,846)
Income tax expense	(215,448)	215,448
Other comprehensive income for the year, net of tax	707,398	(707,398)

Credit risk

Credit risk is the risk that a counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss of the Group.

Trade receivables and other receivables

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and control relating to customer credit risk management. Credit quality of the customer is assessed based on an extensive credit rating scorecard and individual credit limits are defined in accordance with this assessment.

Outstanding customer receivables and contract assets are regularly monitored and any shipments to major customers are generally covered by letters of credit or other forms of credit insurance obtained from reputable banks and other financial institutions. The Group evaluates the impairment of trade receivables and other receivables at every reporting date. The maximum exposure to credit risk at the reporting date is the book value of financial assets.

An impairment analysis is performed at each reporting date using a provision matrix to measure expected credit losses. The provision rates are based on days past due for groupings of various customer segments with similar loss patterns (i.e., by geographical region, product type, customer type and rating, and coverage by letters of credit or other forms of credit insurance). The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions. Generally, trade receivables are written-off if past due for more than one year and are not subject to enforcement activity.

The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets disclosed in Note 5. The Group does not hold collateral as security. The letters of credit and other forms of credit insurance are considered integral part of trade receivables and considered in the calculation of impairment. The Group considers the risk relating to trade receivables and other receivables to be low as the customer is located in multiple jurisdictions and industries and operates mostly in an independent market.

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 related other assets. The Group deposits its surplus funds with Woori Bank and other financial institutions whose credit ratings are high. Accordingly, credit risk related to financial institutions is considered limited.

32. Financial risk management objectives and policies (cont'd)

Liquidity risk

Liquidity risk refers to the risk that the Group may default on the contractual obligations that become due.

The Group manages its risk to a shortage of funds using a recurring liquidity planning tool, and matches the financial liabilities with the financial assets taking into account the maturity dates and cash flow from operating activities of those financial assets.

The table below summarizes the maturity profile of the Group's financial liabilities based on contractual undiscounted payments (Korean won in thousands):

	2022			
	1 year	1 to 4 years	More than 4 years	Total
Trade and other payables	₩ 342,816,926	₩ 31,422,269	₩ -	₩ 374,239,195
Short-term borrowings	910,134,915	-	-	910,134,915
Current derivative liabilities	204,040,928	-	-	204,040,928
Current portion of lease liabilities	75,107,215	-	-	75,107,215
Other current financial liabilities	260,081	-	-	260,081
Bonds payable	179,508,250	878,946,550	407,995,650	1,466,450,450
Long-term borrowings	2,528,520	7,592,487	75,570,346	85,691,353
Non-current derivative liabilities	-	113,607	-	113,607
Non-current lease liabilities	-	173,445,924	290,028,471	463,474,395
Other non-current financial liabilities	-	38,507,957	-	38,507,957
	<u>₩ 1,714,396,835</u>	<u>₩ 1,130,028,794</u>	<u>₩ 773,594,467</u>	<u>₩ 3,618,020,096</u>
	2021			
	1 year	1 to 4 years	More than 4 years	Total
Trade and other payables	₩ 287,339,586	₩ -	₩ -	₩ 287,339,586
Short-term borrowings	796,493,518	-	-	796,493,518
Current derivative liabilities	33,041,827	-	-	33,041,827
Current portion of lease liabilities	70,358,840	-	-	70,358,840
Bonds payable	220,776,300	565,274,525	564,973,150	1,351,023,975
Non-current lease liabilities	-	171,974,474	206,653,591	378,628,065
Other non-current financial liabilities	-	37,620,294	-	37,620,294
	<u>₩ 1,408,010,071</u>	<u>₩ 774,869,293</u>	<u>₩ 771,626,741</u>	<u>₩ 2,954,506,105</u>

32. Financial risk management objectives and policies (cont'd)

Capital management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder value.

The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. To maintain the sound capital structure, the Group may adjust the dividend payment to shareholders, reduce capital stock, or issue new shares. No changes were made in the objectives, policies or processes for managing capital during the year ended December 31, 2022.

The Group monitors its debt ratio which is total liabilities divided by shareholder's equity. Debt ratios as of December 31, 2022 and 2021 are as follows (Korean won in thousands):

	2022	2021
Total liabilities	₩ 3,490,881,745	₩ 3,004,172,080
Shareholder's equity	2,340,895,146	2,117,363,392
Debt ratio	149.13 %	141.88 %

33. Fair value

Fair value hierarchy

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

- Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities
- Level 2: Other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly
- Level 3: Techniques which use inputs that have a significant effect on the recorded fair value, and those inputs are not based on observable market data

Fair value of financial instruments

As of December 31, 2022 and 2021, the fair value of financial instruments by fair value hierarchy is as follows (Korean won in thousands):

	2022			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Trade and other receivables	₩ -	₩ 19,296,638	₩ -	₩ 19,296,638
Short-term financial instruments	-	315,168,804	-	315,168,804
Current derivative assets	-	49,115,758	-	49,115,758
Long-term financial assets	13,257,750	-	53,337,168	66,594,918
Non-current derivative assets	-	18,256,092	88,153,385	106,409,477
	₩ 13,257,750	₩ 401,837,292	₩ 141,490,553	₩ 556,585,595
Financial liabilities:				
Trade and other payables	₩ -	₩ 89,621,135	₩ -	₩ 89,621,135
Other current financial liabilities	-	-	260,081	260,081
Current derivative liabilities	-	203,261,464	779,464	204,040,928
Non-current derivative liabilities	-	113,607	-	113,607
Other non-current financial liabilities	-	-	260,081	260,081
	₩ -	₩ 292,996,206	₩ 1,299,626	₩ 294,295,832

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33. Fair value (cont'd)

	2021			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Short-term financial instruments	₩ -	₩ 660,525,549	₩ -	₩ 660,525,549
Current derivative assets	-	81,739,169	-	81,739,169
Long-term financial assets	18,456,925	-	36,776,586	55,233,511
Non-current derivative assets	-	13,351,587	39,472,925	52,824,512
	<u>₩ 18,456,925</u>	<u>₩ 755,616,305</u>	<u>₩ 76,249,511</u>	<u>₩ 850,322,741</u>
Financial liabilities:				
Trade and other payables	₩ -	₩ 95,384,653	₩ -	₩ 95,384,653
Current derivative liabilities	-	33,041,827	-	33,041,827
Other non-current financial liabilities	-	-	392,192	392,192
	<u>₩ -</u>	<u>₩ 128,426,480</u>	<u>₩ 392,192</u>	<u>₩ 128,818,672</u>

The fair value of cash and cash equivalents, trade receivables, other receivables, other financial assets, trade payables, other payables, and long- and short-term interest-bearing borrowings were excluded from the fair value disclosure because the discount impact was not significant.

Valuation technique and input variables

As of December 31, 2022, the correlations between valuation techniques, input variables classified as Level 2 in the fair value hierarchy among assets and liabilities measured at fair value in the separate financial statements are as follows (Korean won in thousands):

	Book value	Valuation technique	Input variables
Trade and other receivables			
Trade receivables	₩ 19,296,638	Market approach	Fair value of underlying assets
Short-term financial instruments			
MMW and others	315,168,804	Market approach	Fair value of underlying assets
Derivative assets (current and non-current)			
Currency forward	11,164,839		
LPG forward	50,639,115	Market approach	Fair value of underlying assets
ZCC option	5,567,896		
Subtotal	<u>67,371,850</u>		
Total financial assets	<u>₩ 401,837,292</u>		
Trade and other payables			
Trade payables	₩ 89,621,135	Market approach	Fair value of underlying assets
Derivative liabilities (current and non-current)			
Currency forward	84,265,224		
LPG forward	119,109,847	Market approach	Fair value of underlying assets
Subtotal	<u>203,375,071</u>		
Total financial liabilities	<u>₩ 292,996,206</u>		

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33. Fair value (cont'd)

As of December 31, 2022, the correlations between valuation techniques, input variables classified as Level 3 in the fair value hierarchy among assets and liabilities measured at fair value in the consolidated financial statements are as follows. There has been no material change in significant but unobservable input variables used for measuring level 3 fair value since the year ended December 31, 2021 (Korean won in thousands):

	Book value	Valuation technique	Input variables
Long-term financial assets			
Korea Business Finance Co., Ltd.	₩	Market comparable companies	Price-to-book ratio
SK TIC	4,980,600	Net asset value	Fair value of net assets
Gridwiz Co., Ltd – RCPS	2,298,337	Discounted cash flow, Binomial model	Expected cash flow and discount rate, Volatility of the underlying asset
EverBest Medellia Private Equity Investment Limited	11,496,191	Net asset value	Fair value of net assets
CARBON LIGHTHOUSE, INC	5,161,983	Net asset value	Fair value of net assets
Subtotal	<u>23,937,111</u>		
Derivative assets (non-current)			
TRS	78,712,000	Net asset value	Fair value of net assets
Buying of put option and selling of call option of APOC shares	9,441,385	Discounted cash flow, Binomial model	Expected cash flow and discount rate, Volatility of the underlying asset
Subtotal	<u>88,153,385</u>		
Other financial liabilities (current and non-current)			
Stock appreciation rights	520,162	Binomial model	Volatility of the underlying asset
Derivative liabilities (current)			
Gridwiz Co., Ltd – RCPS sales of call option	779,464	Discounted cash flow, Binomial model	Expected cash flow and discount rate, Volatility of the underlying asset
Total financial liabilities	<u>₩ 113,390,122</u>		

From the level 3 inputs, if the price-to-book ratio of similar companies increases, the fair value of Korea Business Finance Co., Ltd. increases. In addition, if expected cash flow is increased or discount rate is decreased, the fair value of the selling call options on Gridwiz Co., Ltd.'s RCPS and Gridwiz Co., Ltd.'s RCPS and buying put options and selling call options on APOC stocks' will increase.

The Group believes that the difference between the fair value and the carrying amount of financial instruments that have not been subsequently measured at fair value in the consolidated financial statements as of the year ended December 31, 2022 and 2021 is not material. As of December 31, 2022 and 2021, the carrying amounts of financial instruments not subsequently measured at fair value are as follows (Korean won in thousand):

	2022	2021
Long-term financial assets		
Conatus Co., Ltd. - Convertible preferred stock	₩ 1,000,053	₩ 1,000,053
Iipseong Co., Ltd.	299,992	299,992
Metron	2,650,868	2,479,763
CZERO INC	24,078,691	22,524,492
Korea LPG Association	70,000	70,000
Schoolbus Co., Ltd. – RCPS	300,001	300,001
Hylum Industries Inc. – RCPS	1,000,054	1,000,054
Others	398	398
Total	<u>₩ 29,400,057</u>	<u>₩ 27,674,753</u>

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33. Fair value (cont'd)

There is no replacement between level 1, level 2 and level 3 during the current year, and the details of changes in items classified as level 3 fair value measurement during the current year are as follows (Korean won in thousand):

	Jan. 1	Purchase (Issue)	Valuation	Others	Dec. 31
Long-term financial assets (Financial assets at FVOCI)	₩ 9,101,833	₩ -	₩ (1,822,896)	₩ -	₩ 7,278,937
Long-term financial assets (Financial assets at FVPL)	-	5,000,000	3,156,913	8,501,260	16,658,174
Derivative assets (Non-current)	39,472,925	-	48,680,460	-	88,153,385
Other financial liabilities (Current and non-current)	392,192	-	127,970	-	520,162
Derivative liabilities (Current)	-	-	779,464	-	779,464

34. Non-current assets held for sale

As of December 31, 2022, non-current assets held for sale is as follows (Korean won in thousands):

	2022
Investment in associates	₩ 143,783,139
Construction-in-progress	15,502,067
	₩ 159,285,206

SK Holdco Pte. Ltd. stocks were classified as non-current assets held for sale as the Group entered a sales contract during the year ended December 31, 2022.

In addition, as KD Eco Hub Co., Ltd. was established during the year ended December 31, 2022, the assets agreed to be sold according to the joint venture contract were classified as non-current assets held for sale.

The proceeds from the sales of non-current assets held for sale are expected to exceed the net assets value, and the Group does not recognize impairment loss on non-current assets held for sale.

35. Other matters

Approval of financial statements

These consolidated financial statements were approved by the board of directors on February 7, 2023 and will receive final approval at the shareholders' meeting on March 23, 2023.

36. Events after the reporting period

Issuing public bonds

On January 30, 2023, a subsidiary issued ₩220 billion of public bonds to repayment of borrowings and for operating funds.