SK Gas Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2021 and 2020
with the independent auditor's report

SK Gas Co., Ltd.

Table of contents

Ernst & Young Han Young
2-4F, 6-8F, Taeyoung Building, 111, Yeouigongwon-ro,
Yeongdeungpo-gu, Seoul 07241 Korea

Tel: +82 2 3787 6600
Fax: +82 2 783 5890
ey.com/kr

Independent auditor's report

The Shareholders and Board of Directors
SK Gas Co., Ltd.

We have audited the consolidated financial statements of SK Gas Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2021 and 2020, and the consolidated statements of profit or loss and other comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

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, 2021 and 2020, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("KIFRS").

Basis for opinion

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

Key audit matters

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

An impairment testing on industrial property right with indefinite useful lives and goodwill in Ulsan GPS Co., Ltd.

As discussed in Note 2.3.17 to the consolidated financial statements, the Group performs impairment tests for other intangible assets with indefinite useful lives and goodwill by individual assets or cash-generating units on every December 31 or when there is an indication of impairment.

The Group performs an annual impairment testing and assesses recoverable amounts on industrial property rights with indefinite useful lives 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 with indefinite useful lives and goodwill has incurred.

Recoverable amounts are determined based on value-in-use, and discounted future cash flows from the continuous use of an asset 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 related assets are material to the consolidated financial statements. Also, estimating discounted cash flows is complex, and there are uncertainties exist as significant judgment is involved in determining various inputs with the risk of possible bias in management's judgments. Therefore, we identified the impairment testing on industrial property rights with indefinite useful lives and goodwill in Ulsan GPS Co., Ltd., as the key audit matter.

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

- Understood key internal controls in the impairment processes of intangible assets with indefinite useful lives and goodwill.
- Reviewed if management's bias is involved in key inputs such as the future sales volumes, selling prices, and purchase costs of fuel used to estimate value-in-use by referring to the Group's business plan and external data.
- Involved valuation specialists to independently calculate the discount rates based on the market and the Group's information to check if there are any significant differences between the discount rates applied by management.
- Obtained the 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 the management's conclusion.

Occurrence and cut-off of domestic LPG sales

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, 2021 account for 51% of total sales.

Therefore, the Group identifies performance obligations in the contract with respect to revenue recognition for domestic LPG transactions; it allocates the transaction price to each performance obligation; and it 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 considered significant, the review of the occurrence and cut-off of sales thereof is identified as the key audit matter.

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

- Reviewed and inspected documents of key transaction terms.
- Assessed the revenue recognition standards for domestic LPG transactions.
- Inquired and inspected documents with regards to negative sales for domestic LPG transactions.
- Inspected the documents by sampling domestic LPG transactions during the reporting period.
- Reviewed the supporting documents of domestic LPG transactions that occurred before and after the reporting period end and compared the timing of revenue recognition.

Responsibilities of management and those charged with governance for the consolidated financial statements

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

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

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

Auditor's responsibilities for the audit of the consolidated financial statements

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

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

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

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

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

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

The engagement partner on the audit resulting in this independent auditor's report is Yong Soo Jung.

Ernst & Young Han Young

March 11, 2022

This audit report is effective as of March 11, 2022, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditor's report date to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.

SK Gas Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2021 and 2020

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

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, 2021 and 2020

(Korean won in millions and US dollar in thousands)

Assets	**2021**	**2020**	**2021**	**2020**
Current assets:				
Cash and cash equivalents (Notes 5, 31 and 33)	₩ 162,690	₩ 122,057	$ 137,234	$ 112,185
Short-term financial assets (Notes 5, 10 and 33)	667,146	666,512	562,755	612,603
Current trade and other receivables, net (Notes 5, 6, 22, 25 and 33)	927,968	720,272	782,765	662,014
Current derivative assets (Notes 5, 20, and 33)	81,739	156,394	68,949	143,745
Inventories (Note 7)	464,153	324,015	391,525	297,808
Other current financial assets (Notes 5, 8 and 33)	38,259	1,469	32,272	1,350
Other current assets (Note 9)	63,877	49,779	53,882	45,753
Total current assets	2,405,832	2,040,498	2,029,382	1,875,458
Non current assets:				
Long-term financial assets (Notes 5, 10 and 33)	140,927	119,750	118,876	110,065
Non-current trade and other receivables, net (Notes 5, 6 and 33)	2,148	1,820	1,812	1,673
Non-current derivative assets (Notes 5, 20 and 33)	52,824	18,709	44,558	17,196
Investments in associates and joint ventures (Note 11)	850,025	735,134	717,018	675,675
Property, plant and equipment, net (Note 12)	1,059,232	939,707	893,490	863,701
Intangible assets, net (Note 13)	119,592	111,933	100,879	102,880
Right-of-use assets, net (Note 14)	425,703	464,388	359,092	426,827
Other non-current financial assets (Notes 5, 8 and 33)	34,640	34,043	29,220	31,290
Other non-current assets (Note 9)	30,612	32,938	25,822	30,271
Total non-current assets	2,715,703	2,458,422	2,290,767	2,259,578
Total assets	**₩ 5,121,535**	**₩ 4,498,920**	**$ 4,320,149**	**$ 4,135,036**
Liabilities and equity				
Liabilities				
Current liabilities:				
Trade and other payables (Notes 5, 15, 22, 32 and 33)	₩ 286,939	₩ 424,185	$ 242,041	$ 389,876
Short-term borrowings (Notes 5, 16, 32 and 33)	796,494	631,740	671,863	580,643
Current portion of long-term borrowings (Notes 5, 16, 32 and 33)	199,954	-	168,666	-
Current derivative liabilities (Notes 5, 20, 32 and 33)	33,042	111,409	27,872	102,398
Income tax payables (Note 29)	55,462	34,043	46,784	31,291
Current portion of lease liabilities (Notes 5, 14, 32 and 33)	60,535	55,188	51,063	50,724
Other current liabilities (Note 19 and 25)	9,532	15,008	8,040	13,794
Total current liabilities	1,441,958	1,271,573	1,216,329	1,168,726
Non-current liabilities:				
Bonds payable (Notes 5, 16, 32 and 33)	1,066,658	817,562	899,753	751,436
Long-term borrowings (Notes 5, 16, 32 and 33)	-	188	-	173
Non-current derivative liabilities (Notes 5, 20, 32 and 33)	-	926	-	851
Defined benefit liabilities (Note 17)	2,238	2,450	1,888	2,252
Deferred tax liabilities (Note 29)	119,642	111,216	100,921	102,220
Non-current lease liabilities (Notes 5, 14, 32 and 33)	338,524	363,526	285,554	334,123
Other non-current financial liabilities (Notes 5, 18, 32 and 33)	34,377	32,657	28,998	30,015
Other non-current liabilities (Note 19)	775	107	654	98
Total non-current liabilities	1,562,214	1,328,632	1,317,768	1,221,168
Total liabilities	**3,004,172**	**2,600,205**	**2,534,097**	**2,389,894**
Equity				
Equity attributable to owners of the parent				
Issued capital (Note 23)	46,151	46,151	38,930	42,418
Capital surplus (Note 23)	195,492	195,492	164,903	179,680
Other components of equity (Notes 23 and 24)	(22,022)	(21,501)	(18,576)	(19,762)
Accumulated other comprehensive loss (Notes 10, 14 and 23)	(3,390)	(12,336)	(2,860)	(11,339)
Retained earnings (Note 23)	1,901,132	1,690,909	1,603,655	1,554,145
Total equity attributable to owners of the parent	2,117,363	1,898,715	1,786,052	1,745,142
Non-controlling interests	-	-	-	-
Total equity	**2,117,363**	**1,898,715**	**1,786,052**	**1,745,142**
Total liabilities and equity	**₩ 5,121,535**	**₩ 4,498,920**	**$ 4,320,149**	**$ 4,135,036**

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

SK Gas Co., Ltd. and its subsidiaries
Consolidated statements of profit or loss and other comprehensive income
for the years ended December 31, 2021 and 2020

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

	2021	2020	2021	2020
Sales (Notes 22, 25 and 26)	₩ 6,494,513	₩ 4,412,319	$ 5,478,290	$ 4,055,440
Cost of sales (Notes 22 and 27)	(6,125,370)	(3,963,468)	(5,166,909)	(3,642,894)
Gross profit	**369,143**	**448,851**	**311,381**	**412,546**
Selling and administrative expenses (Notes 22, 24 and 27)	(263,680)	(258,664)	(222,421)	(237,742)
Operating profit	105,463	190,187	88,960	174,804
Finance income (Notes 20 and 28)	448,766	685,791	378,546	630,322
Finance costs (Notes 20 and 28)	(342,900)	(516,431)	(289,245)	(474,661)
Other non-operating income (Notes 22 and 28)	62,714	17,681	52,901	16,251
Other non-operating expenses (Notes 22 and 28)	(13,470)	(19,339)	(11,362)	(17,775)
Share of profit of associates and joint ventures (Note 11)	69,035	49,869	58,232	45,836
Profit before income tax	**329,608**	**407,758**	**278,032**	**374,777**
Income tax expense (Note 29)	(80,342)	(142,408)	(67,770)	(130,889)
Net profit for the year	**₩ 249,266**	**₩ 265,350**	**$ 210,262**	**$ 243,888**
Other comprehensive income (loss):				
Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods (net of tax):				
Equity adjustments in equity method (Note 11)	15,078	(15,669)	12,720	(14,402)
Net gain (loss) on valuation of derivatives (Notes 2, 14 and 20)	(22,559)	17,942	(19,030)	16,491
Net gain (loss) from translation of foreign operations	12,339	(10,602)	10,408	(9,745)
Other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods (net of tax):				
Retained earnings in equity method (Note 11)	(2,116)	(3,778)	(1,785)	(3,473)
Equity adjustments in equity method	1	(374)	1	(343)
Net gain on valuation of financial assets at fair value through other comprehensive income (Note 10)	4,087	8,135	3,448	7,477
Re-measurement loss on defined benefit plans (Note 17)	(1,027)	(1,347)	(867)	(1,238)
Other comprehensive income (loss) for the year, net of tax	5,803	(5,693)	4,895	(5,233)
Total comprehensive income for the year, net of tax	**₩ 255,069**	**₩ 259,657**	**$ 215,157**	**$ 238,655**
Net profit for the year				
Attributable to:				
Owners of the parent	₩ 249,266	₩ 265,350	$ 210,262	$ 243,888
Non-controlling interests	-	-	-	-
	₩ 249,266	₩ 265,350	$ 210,262	$ 243,888
Total comprehensive income for the year, net of tax				
Attributable to:				
Owners of the parent	₩ 255,069	₩ 259,657	$ 215,157	$ 238,655
Non-controlling interests	-	-	-	-
	₩ 255,069	₩ 259,657	$ 215,157	$ 238,655
Earnings per share (Note 30):				
Basic earnings per share	₩ 27,773	₩ 29,674	$ 23.43	$ 27.27
Diluted earnings per share	₩ 27,692	₩ 29,674	$ 23.36	$ 27.27

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, 2021 and 2020

(Korean won in millions and US dollar in thousands)

	Attributable to 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, 2020	**₩ 45,709**	**₩ 191,942**	**₩ (22,726)**	**₩ (10,811)**	**₩ 1,456,707**	**₩ 1,660,821**	**₩ -**	**₩ 1,660,821**
Total comprehensive income:								
Net profit for the year	-	-	-	-	265,350	265,350	-	265,353
Net gain on valuation of financial assets at fair value through other comprehensive income	-	-	-	8,135	-	8,135	-	8,135
Reclassification due to disposals of financial assets at fair value through other comprehensive income	-	-	-	(958)	958	-	-	-
Equity adjustments in equity method	-	-	-	(16,043)	-	(16,043)	-	(16,043)
Retained earnings in equity method	-	-	-	-	(3,778)	(3,778)	-	(3,778)
Hedge accounting - gain on valuation of interest rate swap	-	-	-	3	-	3	-	3
Hedge accounting - gain on valuation of lease liabilities	-	-	-	17,940	-	17,940	-	17,940
Net loss from translation of foreign operations	-	-	-	(10,602)	-	(10,602)	-	(10,602)
Re-measurement loss on defined benefit plans	-	-	-	-	(1,347)	(1,347)	-	(1,347)
Sub-total	**-**	**-**	**-**	**(1,525)**	**261,183**	**259,658**	**-**	**259,658**
Transactions with shareholders directly recognized in equity:								
Dividends	442	-	-	-	(26,981)	(26,539)	-	(26,539)
Acquisition and disposal of treasury stocks	-	3,550	1,115	-	-	4,665	-	4,665
Stock option	-	-	435	-	-	435	-	435
Direct costs related to capital transactions	-	-	(325)	-	-	(325)	-	(325)
Sub-total	**442**	**3,550**	**1,225**	**-**	**(26,981)**	**(21,764)**	**-**	**(21,764)**
As of December 31, 2020	**₩ 46,151**	**₩ 195,492**	**₩ (21,501)**	**₩ (12,336)**	**₩ 1,690,909**	**₩ 1,898,715**	**₩ -**	**₩ 1,898,715**
US dollar	**$ 42,418**	**$ 179,680**	**$ (19,762)**	**$ (11,339)**	**$ 1,554,145**	**$ 1,745,142**	**$ -**	**$ 1,745,142**
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:								
Net profit for the year	-	-	-	-	249,266	249,266	-	249,266
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 valuation of lease liabilities	-	-	-	(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)
Sub-total	**-**	**-**	**-**	**8,946**	**246,123**	**255,069**	**-**	**255,069**
Transactions with shareholders directly recognized in equity:								
Dividends	-	-	-	-	(35,900)	(35,900)	-	(35,900)
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**

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, 2021 and 2020

(Korean won in millions and US dollar in thousands)

		2021		2020		2021		2020
Operating activities								
Cash generated from operations								
Net profit for the year	₩	249,266	₩	265,350	$	210,262	$	243,888
Non-cash adjustments to reconcile net profit for the year (Note 31)		(85,027)		63,992		(71,723)		58,816
Working capital adjustments (Note 31)		(502,233)		4,565		(423,647)		4,196
Interest received		517		1,222		436		1,123
Income tax payment		(51,534)		(106,651)		(43,470)		(98,025)
Net cash flows provided by (used in) operating activities		**(389,011)**		**228,478**		**(328,142)**		**209,998**
Investing activities								
Net decrease (increase) in short-term financial instruments	₩	18,340	₩	(518,875)	$	15,470	$	(476,907)
Increase in short-term loans receivable		(5,300)		(346)		(4,471)		(318)
Decrease in short-term loans receivable		14,536		14,918		12,262		13,711
Increase in long-term financial instruments		(31,345)		(9,430)		(26,440)		(8,667)
Decrease in long-term financial instruments		6		4,187		5		3,848
Acquisition of investments in associates and joint ventures		(284,387)		(104,973)		(239,888)		(96,482)
Proceeds from disposal of investments in associates and joint ventures		282,757		-		238,513		-
Change in scope of consolidation		-		10,000		-		9,191
Acquisition of property, plant and equipment		(190,648)		(78,561)		(160,817)		(72,206)
Proceeds from disposal of property, plant and equipment		21,605		7,976		18,224		7,330
Acquisition of intangible assets		(10,224)		(5,483)		(8,624)		(5,039)
Proceeds from disposal of intangible assets		442		-		373		-
Collection of financial lease receivables		1,118		1,137		943		1,045
Dividends received		11,132		13,873		9,390		12,751
Settlement of derivative instruments		112,504		175,167		94,900		160,999
Net cash flows used in investing activities		**(59,464)**		**(490,410)**		**(50,160)**		**(450,744)**
Financing activities (Note 31)								
Net increase (decrease) in short-term borrowings in foreign currencies	₩	222,717	₩	(7,370)	$	187,868	$	(6,774)
Proceeds from short-term borrowings		-		150,000		-		137,868
Repayment of short-term borrowings		(60,000)		(90,000)		(50,612)		(82,721)
Repayment of current portion of long-term borrowings		-		(155,714)		-		(143,120)
Proceeds from issuance of bonds		448,073		497,886		377,961		457,616
Repayment of long-term borrowings		(61)		(440)		(51)		(405)
Interest paid		(37,129)		(36,826)		(31,319)		(33,848)
Payment of dividends		(35,900)		(26,539)		(30,283)		(24,393)
Cash repayment of lease liabilities		(58,348)		(72,830)		(49,218)		(66,939)
Acquisition of treasury stock		-		(107)		-		(99)
Direct costs related to capital transactions		(789)		(325)		(666)		(298)
Net cash flows provided by financing activities		**478,563**		**257,735**		**403,680**		**236,887**
Net increase (decrease) in cash and cash equivalents		30,087		(4,198)		25,380		(3,858)
Cash and cash equivalents at the beginning of the year		122,057		135,728		102,958		124,750
Net increase (decrease) in cash and cash equivalents denominated in foreign currencies arising from foreign exchange differences		10,546		(9,473)		8,896		(8,707)
Cash and cash equivalents at the end of the year	**₩**	**162,690**	**₩**	**122,057**	**$**	**137,234**	**$**	**112,185**

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

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.

As of December 31, 2021, the 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 2021 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 ₩1,185.50 and ₩1,088.00 to US$1, the exchange rates on December 31, 2021 and 2020, 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, 2021 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 0.74% 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, 2021 (Korean won in thousands):

Subsidiary	Total assets	Total liabilities	Net assets	Sales	Net profit (loss) for the year
SK Gas international Pte. Ltd.	₩ 296,254,930	₩ 132,806,461	₩ 163,448,469	₩ 2,814,163,797	₩ 16,704,165
SK Gas Petrochemical Pte. Ltd.	72,852,278	493,423	72,358,855	-	975,012
Ulsan GPS Co., Ltd.	316,884,713	21,158,401	295,726,312	-	(4,367,823)
SK Gas USA Inc.	35,393,286	663,166	34,730,120	-	(2,141,674)
SK Gas Trading LLC	55,713,602	36,470,950	19,242,652	1,565,590,225	997,731
	₩ 777,098,809	₩ 191,592,401	₩ 585,506,408	₩ 4,379,754,022	₩ 12,167,411

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, 2021. The change of the subsidiaries during the year ended December 31, 2020 was as follows:

Classification		subsidiary	Reason for change
2020	Inclusion	SK Gas Petrochemical Pte. Ltd.	Establishment

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 auditor's 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, contingent consideration 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 thousand 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, 2021. 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 consolidated statement of profit or loss and other 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 associates and joint ventures

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

A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require 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 profit or loss and other 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 profit or loss and 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 consolidated statement of profit or loss and other comprehensive income.

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 is 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, non-cash 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 EBC (Engine Bonus Card) or OKCashbag points in terms of revenue when presenting the EBC card or OKCashbag 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 provides 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 allocates 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 the Group does. 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 consolidated 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) Translation of foreign operations
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 held for sale 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. 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:

	Economical useful life (years)
Buildings	15 - 40
Structures	12 - 40
LPG storage tanks	15 - 20
Machinery	6 - 15
Vehicles	4
Tools, furniture and fixtures	3 - 4

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

Group as a lessee

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

Right-of-use assets

The Group recognizes right-of-use assets at the lease commencement date (i.e., the date the underlying asset is available for use). Right-of-use 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 right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before or the commencement date less any lease incentives received. The estimated useful life of right-of-use assets is as follows.

	Estimated useful life (years)
Vessels	10 – 24
LPG stations	2 - 10
Vehicles	2 – 4
Sites	3 – 10
Others	2 – 10

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

The right-of-use assets are also subject to impairment, and it is described in Note 2.3.17 Accounting policies for impairment of non-financial assets.

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

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

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

Group as a lessor
Leases in which the Group does not transfer substantially all the risks and rewards incidental to ownership of an asset are classified as operating leases. Rental income arising is accounted for on a straight-line basis over the lease terms and is included in revenue in the consolidated statement of profit or loss and other comprehensive income 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 reflected in profit or loss in the period in which the expenditure is incurred.

The useful life of intangible assets is assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life 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.

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 profit or loss.

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.

2.3 Significant accounting policies (cont'd)

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

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

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

Subsequent measurement

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

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

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.

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 amortized cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

The 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 non-operating income in the consolidated 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 may elect to classify irrevocably its non-listed equity investments under this category.

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 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 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.

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

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

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, 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.

2.3 Significant accounting policies (cont'd)

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

Impairment of financial assets
Further disclosures relating to impairment of financial assets are also provided in the following notes:

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

For trade and other receivables, 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) 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:

2.3 Significant accounting policies (cont'd)

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

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 consolidated statement of profit or loss and other comprehensive income.

This category generally applies to interest-bearing loans and borrowings. For more information, refer to Note 3.

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.

2.3.15 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

2.3 Significant accounting policies (cont'd)

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

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 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.

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 stated at the lower of cost or net realizable value, with cost being determined using the gross average method except for materials-in-transit. 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 Significant accounting policies (cont'd)

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.

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 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.

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 consolidated 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.

2.3.22 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 consolidated 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.

2.3 Significant accounting policies (cont'd)

2.3.22 Share-based payments (cont'd)

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.

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, 2021. The Group has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Interest Rate Benchmark Reform – Phase 2: Amendments to KIFRS 1109, KIFRS 1039, KIFRS 1107, KIFRS 1104 and KIFRS 1116

The amendments provide temporary reliefs which address the financial reporting effects when an interbank offered rate (IBOR) is replaced with an alternative nearly risk-free interest rate (RFR). The amendments include the following practical expedients:

- A practical expedient to require contractual changes, or changes to cash flows that are directly required by the reform, to be treated as changes to a floating interest rate, equivalent to a movement in a market rate of interest
- Permit changes required by IBOR reform to be made to hedge designations and hedge documentation without the hedging relationship being discontinued
- Provide temporary relief to entities from having to meet the separately identifiable requirement when an RFR instrument is designated as a hedge of a risk component

These amendments had no impact on the consolidated financial statements of the Group. The Group intends to use the practical expedients in future periods if they become applicable.

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

In 2020, the IASB issued Covid-19-Related Rent Concessions - amendment to KIFRS 1116 *Leases*.
The amendments provide relief to lessees from applying KIFRS 1116 guidance on lease modification accounting for rent concessions arising as a direct consequence of the Covid-19 pandemic. As a practical expedient, a lessee may elect not to assess whether a Covid-19 related rent concession from a lessor is a lease modification. A lessee that makes this election accounts for any change in lease payments resulting from the Covid-19 related rent concession the same way it would account for the change under KIFRS 1116 if the change were not a lease modification.

The amendment was intended to apply until June 30, 2021, but as the impact of the Covid-19 pandemic is continuing, the IASB extended the period of application of the practical expedient to June 30, 2022.The amendment applies to annual reporting periods beginning on or after April 1, 2021. However, the Group has not received Covid-19-related rent concessions, but plans to apply the practical expedient if it becomes applicable within allowed period of application.

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 it's 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.

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 consolidated financial statements are disclosed below.

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

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

The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and must be applied retrospectively. The Group is currently assessing the impact the amendments will have on current practice and whether existing loan agreements may require renegotiation.

Reference to the Conceptual Framework – Amendments to KIFRS 1103
The amendments are intended to replace a reference to the Framework for the Preparation and Presentation of Financial Statements, issued in 1989, with a reference to the Conceptual Framework for Financial Reporting issued in March 2018 without significantly changing its requirements.
The Board also added an exception to the recognition principle of KIFRS 1103 to avoid the issue of potential 'day 2' gains or losses arising for liabilities and contingent liabilities that would be within the scope of KIFRS 1037 or KIFRS 2121 *Levies,* if incurred separately. At the same time, the Board decided to clarify existing guidance in KIFRS 1103 for contingent assets that would not be affected by replacing the reference to the Framework for the Preparation and Presentation of Financial Statements. The amendments are effective for annual reporting periods beginning on or after January 1, 2022 and apply prospectively.

4. Standards issued but not yet effective (cont'd)

Property, Plant and Equipment: Proceeds before Intended Use – Amendments to KIFRS 1016
The amendment prohibits entities deducting from the cost of an item of property, plant and equipment, any proceeds from selling items produced while bringing that asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Instead, an entity recognizes the proceeds from selling such items, and the costs of producing those items, in profit or loss.
The amendment is effective for annual reporting periods beginning on or after January 1, 2022 and must be applied retrospectively to items of property, plant and equipment made available for use on or after the beginning of the earliest period presented when the entity first applies the amendment. The amendments are not expected to have a material impact on the Group.

Onerous Contracts – Costs of Fulfilling a Contract – Amendments to KIFRS 1037
The amendments specify which costs an entity needs to include when assessing whether a contract is onerous or loss-making. The amendments apply a "directly related cost approach". The costs that relate directly to a contract to provide goods or services include both incremental costs and an allocation of costs directly related to contract activities. General and administrative costs do not relate directly to a contract and are excluded unless they are explicitly chargeable to the counterparty under the contract. The amendments are effective for annual reporting periods beginning on or after January 1, 2022. The Group will apply these amendments to contracts for which it has not yet fulfilled all its obligations at the beginning of the annual reporting period in which it first applies the amendments.

Definition of Accounting Estimates - Amendments to KIFRS 1008
The amendments clarify the distinction between changes in accounting estimates and changes in accounting policies and the correction of errors. Also, they clarify how entities use measurement techniques and inputs to develop accounting estimates. The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and apply to changes in accounting policies and changes in accounting estimates that occur on or after the start of that period. Earlier application is permitted as long as this fact is disclosed. The amendments are not expected to have a material impact on the Group.

Disclosure of Accounting Policies - Amendments to KIFRS 1001
The amendments aim to help entities provide accounting policy disclosures that are more useful by replacing the requirement for entities to disclose their 'significant' accounting policies with a requirement to disclose their 'material' accounting policies and adding guidance on how entities apply the concept of materiality in making decisions about accounting policy disclosures.
The amendments to KIFRS 1001 are applicable for annual periods beginning on or after January 1, 2023 with earlier application permitted. The amendments are not expected to have a material impact on the Group.

Amendments to KIFRS 1012 *Income Taxes* – Narrowing the scope of the initial recognition exception of deferred taxes
The amendments narrowed the scope of the initial recognition exemption so that it no longer applies to transactions that, on initial recognition, give rise to equal taxable and deductible temporary difference, thus to resolve accounting diversity in the recognizing of deferred tax assets and liabilities. Paragraphs 15 and 24 (initial recognition exemption of deferred taxes) of KIFRS 1012 were amended to include an additional condition (3) where a deferred tax asset and liability shall be recognized for a temporary difference that arises on initial recognition of an asset or liability in a single transaction if that transaction give rise to equal amounts of taxable and deductible temporary differences. The amendments are effective for annual reporting periods beginning on or after January 1, 2023 with earlier adoption permitted. The amendments are not expected to have a material impact on the Group.

4. Standards issued but not yet effective (cont'd)

Annual improvements to KIFRS 2018-2020

KIFRS 1101 *First-time Adoption of International Financial Reporting Standards* – Subsidiary as a first-time adopter

The amendment permits a subsidiary that elects to apply paragraph D16(1) of KIFRS 1101 to measure cumulative translation differences using the amounts reported by the parent, based on the parent's date of transition to KIFRS. This amendment is also applied to an associate or joint venture that elects to apply paragraph D16(1) of KIFRS 1101. The amendment is effective for annual reporting periods beginning on or after January 1, 2022 with earlier adoption permitted.

KIFRS 1109 *Financial Instruments* – Fees in the '10 per cent' test for derecognition of financial liabilities

The amendment clarifies the fees that an entity includes when assessing whether the terms of a new or modified financial liability are substantially different from the terms of the original financial liability. These fees include only those paid or received between the borrower and the lender, including fees paid or received by either the borrower or lender on the other's behalf. An entity applies the amendment to financial liabilities that are modified or exchanged on or after the beginning of the annual reporting period in which the entity first applies the amendment.

The amendment is effective for annual reporting periods beginning on or after January 1, 2022 with earlier adoption permitted. The Group will apply the amendments to financial liabilities that are modified or exchanged on or after the beginning of the annual reporting period in which the entity first applies the amendment. The amendments are not expected to have a material impact on the Group.

KIFRS 1041 *Agriculture* – Taxation in fair value measurements

The amendment removes the requirement in paragraph 22 of KIFRS 1041 that entities exclude cash flows for taxation when measuring the fair value of assets within the scope of KIFRS 1041. An entity applies the amendment prospectively to fair value measurements on or after the beginning of the first annual reporting period beginning on or after January 1, 2022 with earlier adoption permitted. The amendments are not expected to have a material impact on the Group.

5. Financial assets and liabilities

Financial assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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

	2020			
	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	₩ -	₩ -	₩ 122,057,242	₩ 122,057,242
Short-term financial assets	664,375,810	-	2,136,000	666,511,810
Trade and other receivables	-	-	720,271,726	720,271,726
Derivative financial assets	156,394,279	-	-	156,394,279
Other current financial assets	-	-	1,469,319	1,469,319
Sub-total	820,770,089	-	845,934,287	1,666,704,376
Non-current assets:				
Long-term financial assets	2,608,446	25,526,496	91,615,371	119,750,313
Trade and other receivables	-	-	1,820,331	1,820,331
Derivative financial assets	18,709,000	-	-	18,709,000
Other non-current financial assets	-	-	34,043,185	34,043,185
Sub-total	21,317,446	25,526,496	127,478,887	174,322,829
Total	₩ 842,087,535	₩ 25,526,496	₩ 973,413,174	₩ 1,841,027,205

5. Financial assets and liabilities (cont'd)

Financial liabilities as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021			
	Financial liabilities at fair value through profit or loss	Financial liabilities designated as hedge accounting	Financial liabilities at amortized cost	Total
Current liabilities:				
Trade and other payables	₩ -	₩ -	₩ 286,939,586	₩ 286,939,586
Short-term borrowings	-	-	796,493,518	796,493,518
Current portion of long-term borrowings	-	-	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	33,041,827	40,006,633	1,303,915,654	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	1,129,115,886	1,439,558,836
Total	₩ 33,434,019	₩ 350,057,391	₩ 2,433,031,540	₩ 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 income.

	2020			
	Financial liabilities at fair value through profit or loss	Financial liabilities designated as hedge accounting	Financial liabilities at amortized cost	Total
Current liabilities:				
Trade and other payables	₩ -	₩ -	₩ 424,184,568	₩ 424,184,568
Short-term borrowings	-	-	631,739,647	631,739,647
Derivative financial liabilities	111,408,898	-	-	111,408,898
Current portion of lease liabilities (*1)	-	35,377,864	19,810,125	55,187,989
Sub-total	111,408,898	35,377,864	1,075,734,340	1,222,521,102
Non-current liabilities:				
Bonds payable	-	-	817,562,172	817,562,172
Long-term borrowings	-	-	188,071	188,071
Derivative financial liabilities	926,400	-	-	926,400
Lease liabilities (*1)	-	321,692,003	41,833,996	363,525,999
Other non-current financial liabilities	-	-	32,656,790	32,656,790
Sub-total	926,400	321,692,003	892,241,029	1,214,859,432
Total	₩ 112,335,298	₩ 357,069,867	₩ 1,967,975,369	₩ 2,437,380,534

(*1) The effective part of cash flow hedge amount of ₩17,939,937 thousand (including the income tax effect) is recognized in other comprehensive income.

5. Financial assets and liabilities (cont'd)

Profit or loss details of financial instruments for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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	Total
Profit or loss:						
Interest income (expense)	₩ -	₩ -	₩ 3,967,550	₩ (10,645,651)	₩ (29,770,382)	₩ (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	(10,645,651)	(29,770,382)	(28,535,925)
Other comprehensive income:						
Gain from valuation of financial instruments (*2)	-	4,087,197	-	(22,559,636)	-	(18,472,439)
Total	₩ 10,699,666	₩ 4,311,052	₩ 956,587	₩ (33,205,287)	₩ (29,770,382)	₩ (47,008,364)

(*1) Dividend income from investments in subsidiaries, associates and joint ventures were excluded.
(*2) Amount is net of corporate tax effect.

	2020					
	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	Total
Profit or loss:						
Interest income (expense)	₩ -	₩ -	₩ 3,760,687	₩ (10,463,927)	₩ (26,814,112)	₩ (33,517,352)
Dividend income (*1)	-	155,974	-	-	-	155,974
Bad debt expense	-	-	(5,965,019)	-	-	(5,965,019)
Gain from valuation of financial instruments	2,077,597	-	-	-	-	2,077,597
Gain from transactions of financial instruments	5,899,399	-	-	-	-	5,899,399
Sub-total	7,976,996	155,974	(2,204,332)	(10,463,927)	(26,814,112)	(31,349,401)
Other comprehensive income:						
Gain from valuation of financial instruments (*2)	-	8,135,486	-	17,942,511	-	26,077,997
Total	₩ 7,976,996	₩ 8,291,460	₩ (2,204,332)	₩ 7,478,584	₩ (26,814,112)	₩ (5,271,404)

(*1) Dividend income from investments in associates and joint ventures were excluded.
(*2) Amount is net of corporate tax effect.

Other gain or loss by financial instruments for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021			2020		
	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	₩ -	₩ (1,336,573)	₩ (1,336,573)	₩ -	₩ 16,662,317	₩ 16,662,317
Foreign exchange gain (loss)	-	(68,212,833)	(68,212,833)	-	16,179,324	16,179,324
Derivative valuation gain (loss)	85,568,871	-	85,568,871	53,611,290	-	53,611,290
Derivative transaction gain (loss)	115,371,559	-	115,371,559	108,291,106	-	108,291,106
Share-based compensation costs	(392,192)	-	(392,192)	-	-	-
Total	₩ 200,548,238	₩ (69,549,406)	₩ 130,998,832	₩ 161,902,396	₩ 32,841,641	₩ 194,744,037

5. Financial assets and liabilities (cont'd)

Details of restricted bank deposits as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	Financial institution	2021	2020	Description
Long-term financial assets	Woori Bank and others	₩ 136,830	₩ 126,975	Maintenance of checking account, etc.

Details of cash and cash equivalents as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Cash	₩ 1,160	₩ 1,790
Ordinary deposits	162,689,389	122,055,452
Total	₩ 162,690,549	₩ 122,057,242

6. Trade and other receivables

Trade and other receivables as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Current assets:		
Trade receivables	₩ 860,395,376	₩ 631,935,725
Less: allowance for doubtful accounts	(1,216,621)	(992,045)
Other receivables	67,641,883	88,456,673
Finance lease receivables	1,147,526	871,374
Total	₩ 927,968,164	₩ 720,271,727
Non-current assets:		
Finance lease receivables	₩ 2,147,733	₩ 1,820,331

Changes in allowance for doubtful accounts for trade and other receivables for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
As of January 1	₩ (992,045)	₩ (804,694)
Bad debt expense	(820,623)	(224,166)
Reversal	72,037	-
Write-off	571,000	-
Exchange rate fluctuation	(46,990)	36,813
As of December 31	₩ (1,216,621)	₩ (992,045)

6. Trade and other receivables (cont'd)

As of December 31, 2021 and 2020, aging analyses of trade and other receivables are as follows (Korean won in thousands):

	2021			2020		
	Trade receivables	Other receivables	Total	Trade receivables	Other receivables	Total
Not past due	₩ 856,255,269	₩ 70,914,293	₩ 927,169,562	₩ 628,970,570	₩ 91,090,440	₩ 720,061,010
Past due (*1)						
≤ 30 days	1,323,324	-	1,323,324	1,449,138	-	1,449,138
31~90 days	65,660	-	65,660	-	-	-
＞90 days	2,751,123	22,849	2,773,972	1,516,017	57,938	1,573,955
Sub-total	4,140,107	22,849	4,162,956	2,965,155	57,938	3,023,093
Total	₩ 860,395,376	₩ 70,937,142	₩ 931,332,518	₩ 631,935,725	₩ 91,148,378	₩ 723,084,103

(*1) The Group conducts an individual assessment and a collective credit analysis based on expected credit losses on non-secured bonds, excluding bonds of which the contract recovery date is past due and with collateral and joint guarantors.

7. Inventories

Inventories as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Merchandise	₩ 105,970,410	₩ 63,992,470
Merchandise in-transit	351,853,736	254,556,841
Supplies	6,328,930	5,465,653
Total	₩ 464,153,076	₩ 324,014,964

No valuation loss on inventories was recognized in cost of sales for the years ended December 31, 2021 and December 31, 2020. The Group carries comprehensive insurance to Samsung Fire & Marine Insurance with its inventories against fire and other casualty losses for up to ₩291,804,262 thousand and ₩156,023,069 thousand as of December 31, 2021 and 2020, respectively.

8. Other financial assets

Other financial assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Other current financial assets:		
Short-term deposits	₩ 38,258,697	₩ 1,469,319
Other non-current financial assets:		
Long-term deposits	₩ 34,639,765	₩ 34,043,185

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.

9. Other assets

Other current assets and other non-current assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

		2021		2020
Other current assets:				
Advanced payments	₩	20,166,423	₩	13,891,400
Prepaid expenses		4,496,964		4,344,889
Prepaid value added taxes		39,213,259		31,542,823
Total	₩	63,876,646	₩	49,779,112
Other non-current assets:				
Long-term prepaid expenses	₩	30,612,500	₩	32,937,500

10. Financial assets

Financial assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

		2021		2020
Current:				
Financial assets at amortized cost	₩	6,620,000	₩	2,136,000
Financial assets at fair value through profit or loss		660,525,549		664,375,810
Total	₩	667,145,549	₩	666,511,810
Non-current:				
Financial assets at amortized cost	₩	85,693,500	₩	91,615,371
Financial assets at fair value through other comprehensive income		53,863,456		25,526,496
Financial assets at fair value through profit or loss		1,370,055		2,608,446
Total	₩	140,927,011	₩	119,750,313

Financial assets at amortized cost as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	Description	Interest rate (%)		2021		2020
Current:						
Operating loans to gas stations	Operating capital and others	-	₩	6,620,000	₩	2,136,000
Non-current:						
Long-term financial assets	Maintenance of checking account	-	₩	2,354,658	₩	17,000
Operating loans to gas stations	Operating capital and others	-		89,758,616		94,415,705
Oil exploration loans (*1)	KNOC KPL and others	-		-		5,734,609
Employees' loans	Housing loans	2.0		56,786		22,500
	Sub-total			92,170,060		100,189,814
	Less: present value discount			(2,258,567)		(2,821,874)
	Less: allowance for doubtful accounts			(4,217,993)		(5,752,568)
	Total		₩	85,693,500	₩	91,615,372

(*1) The Group obtained a loan from Korea Natural Oil Corporation (KNOC) and lent it to a special purpose company of KNOC. If the exploratory project is unsuccessful, the Group will be exempt from the repayment of the principal and interest owed to KNOC with not collecting the principal and interest from the special purpose company of KNOC. As the oil exploratory project has been suspended during the year ended December 31, 2020, the Group was exempt from the repayment of the principal and interest and recognized bad debt expenses for the entire loan relating to the project amounted to ₩5,734,609 thousand as of December 31, 2020, and the allowance for bad debt related to the loan was fully written off during the year ended December 31, 2021 (see Note 16).

10. Financial assets (cont'd)

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

Current financial assets at fair value through profit or loss as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Short-term bonds, commercial papers and others	₩ 660,525,549	₩ 664,375,810

Non-current financial assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

		2021		2020
	Equity ownership (%)	Acquisition cost	Book value / fair value (*2)	Book value
Financial assets at fair value through other comprehensive income (FVOCI)				
Hanil Holdings Co., Ltd. (*1)	0.26	₩ 1,586,720	₩ 1,015,200	₩ 819,680
Hanil Cement Co., Ltd. (*1)	0.26	2,181,746	3,850,140	1,925,070
Bloom Energy (*1)	0.20	5,597,994	8,665,997	10,394,016
Korea Business Finance Co., Ltd. (*1)	10.34	3,000,000	4,737,000	3,253,332
SK TIC (*1)	1.62	2,852,212	2,847,074	969,750
Ip Sung Co., Ltd.	12.40	299,992	299,992	299,992
Kornatus Co., Ltd. – Convertible Preference Shares ("CPS")	6.11	1,000,053	1,000,053	1,000,053
Enechange Investment (*1)	1.10	707,266	4,925,588	3,295,271
Carbon Lighthouse.Inc	0.80	1,517,759	1,517,759	1,392,933
Metron	-	2,479,763	2,479,763	2,176,000
CZERO Inc	-	22,524,492	22,524,492	-
Others	-	398	398	398
Sub-total		43,748,395	53,863,456	25,526,495
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
Hylium Industries, Inc. - RCPS	5.13	1,000,054	1,000,054	1,000,054
Optimitive SLU (*3)	-	1,349,368	-	1,238,391
Sub-total		2,719,423	1,370,055	1,370,055
Total		₩ 46,467,818	₩ 55,233,511	₩ 28,134,941

(*1) The Group assessed financial instruments for which an active transaction market exists or fair value can be assessed reliably. Differences of ₩5,325,711 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 ₩1,238,513 thousand.

(*2) 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.

(*3) 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 of the invested company.

10. Financial assets (cont'd)

Changes in financial assets for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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.

	2020					
	Jan. 1	Increase	Decrease	Revaluation	Others (*1)	Dec. 31
Current:						
Financial assets at amortized cost	₩ 55,759,697	₩ 346,000	₩ (14,917,835)	₩ -	₩ (39,051,862)	₩ 2,136,000
Financial assets at fair value through profit of loss (*2)	140,290,235	524,774,403	-	2,077,597	(2,766,425)	664,375,810
Total	₩ 196,049,932	₩ 525,120,403	₩ (14,917,835)	₩ 2,077,597	₩ (41,818,287)	₩ 666,511,810
Non-current						
Financial assets at amortized cost	₩ 52,635,501	₩ 4,522,017	₩ (5,714)	₩ (5,740,853)	₩ 40,204,421	₩ 91,615,372
Financial assets at fair value through other comprehensive income	16,018,485	3,360,153	(4,180,899)	10,569,933	(241,176)	25,526,496
Financial assets at fair value through profit of loss	1,387,839	1,300,055	-	-	(79,448)	2,608,446
Total	₩ 70,041,825	₩ 9,182,225	₩ (4,186,613)	₩ 4,829,080	₩ 39,883,797	₩ 119,750,314

(*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.

11. Investments in associates and joint venture

Investments in associates and joint ventures as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

Associates and joint venture	Country of domicile	Year-end date	Principal activities	2021 Equity ownership (%)	2021 Book value	2020 Equity ownership (%)	2020 Book value
Investments in joint Ventures:							
SK D&D Co., Ltd. (*1)	Korea	12.31	Real estate development	-	₩ -	29.30	₩ 160,659,822
SK D&D Co., Ltd. - preferred share (*1)	Korea	12.31	Real estate development	-	-	38.46	53,144,000
Dangjin Eco Power Co., Ltd. (*2,3)	Korea	12.31	Electricity	66.00	50,019,120	66.00	48,882,909
Korea Energy Terminal Co., Ltd. (*3)	Korea	12.31	Construction and operation of tank terminals	47.58	80,860,266	47.31	43,595,368
Bitgoeul Eco Energy Co., Ltd. (*3)	Korea	12.31	Construction and operation of fuel cell power plant	29.00	4,379,052	29.00	29,000
G-Energy Corp. (*3)	Korea	12.31	Coal supply	50.00	111,451	-	-
Sub-total					135,369,889		306,311,099
Investments in associates:							
Global Opportunities Fund	Cayman Islands	12.31	Finance	20.63	764,568	20.63	851,795
Weonil Energy Co., Ltd.	Korea	12.31	LPG gas station	29.00	2,509,805	29.00	2,507,141
SK Advanced Co., Ltd.	Korea	12.31	PDH manufacturing	45.00	297,930,584	45.00	297,593,261
SK Holdco Pte. Ltd.	Singapore	12.31	Investments	36.49	124,003,058	36.49	94,521,851
Gridwiz Co., Ltd.	Korea	12.31	Power demand management service	19.95	12,535,113	19.95	13,133,220
Gridwiz Co., Ltd. - preferred share (*4)	Korea	12.31	Power demand management service	5.76	8,501,260	5.76	8,501,260
Goseong Green Power Co., Ltd. (*6)	Korea	12.31	Coal-fired power plant construction and operation	19.00	187,951,290	0.73	1,522,634
SKIIS (*6,7)	Singapore	12.31	Investments	8.33	-	8.33	-
VOPAK GAS TERMINAL LLP	Singapore	12.31	LPG tank terminal	20.00	9,670,202	20.00	10,191,694
APOIC(*5,6)	Saudi Arabia	12.31	PDH/PP manufacturing	15.00	70,003,650	-	-
KOHYGEN Corp.(*6)	Korea	12.31	Hydrogen fueling infrastructure operation	9.50	785,449	-	-
Sub-total					714,654,979		428,822,856
Total					₩ 850,024,868		₩ 735,133,955

(*1) During the year ended December 31, 2021, all convertible preferred stocks of SK D&D Co., Ltd. were converted to common stock, and the entire share, including common stock, was disposed of at ₩282,757 million to SK Discovery Co., Ltd. (see Note 22).

(*2) 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.

(*3) 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.

(*4) This is redeemable convertible preference shares of Gridwiz Co., Ltd. (see Note 11).

(*5) APOIC stands for Advanced Polyolefins Industry Company.

(*6) 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%.

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

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

Changes in investments in associates and joint ventures for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021							
Associates	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
APOIC	-	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.

	2020						
Associates	Jan. 1	Additions (*1)	Gain(loss) in equity method	Equity adjustments in equity method	Dividends received	Others (*3)	Dec. 31
SK D&D Co., Ltd.	₩ 154,944,326	₩ -	₩ 16,545,851	₩ (3,557,690)	₩ (3,338,633)	₩ (3,934,032)	₩ 160,659,822
SK D&D Co., Ltd. - preferred share	-	51,100,000	2,044,000	-	-	-	53,144,000
Dangjin Eco Power Co., Ltd.	48,835,671	-	500,794	(458,894)	-	5,338	48,882,909
Korea Energy Terminal Co., Ltd. (*2)	-	45,342,650	(1,745,619)	-	-	(1,663)	43,595,368
Bitgoeul Eco Energy Co., Ltd.	-	29,000	-	-	-	-	29,000
Global Opportunities Fund	957,876	-	(106,081)	-	-	-	851,795
Weonil Energy Co., Ltd.	2,481,522	-	25,619	-	-	-	2,507,141
SK Advanced Co., Ltd.	290,622,096	-	15,567,309	-	(8,569,663)	(26,481)	297,593,261
SK Holdco Pte. Ltd.	93,047,623	-	17,038,048	(15,563,820)	-	-	94,521,851
Gridwiz Co., Ltd.	13,909,190	-	(775,970)	-	-	-	13,133,220
Gridwiz Co., Ltd. - preferred share	-	8,501,260	-	-	-	-	8,501,260
Goseong Green Power Co., Ltd.	1,621,197	-	(98,802)	-	-	239	1,522,634
VOPAK GAS TERMINAL LLP	11,374,864	-	874,329	(248,700)	(1,808,799)	-	10,191,694
Total	₩ 617,794,365	₩ 104,972,910	₩ 49,869,478	₩ (19,829,104)	₩ (13,717,095)	₩ (3,956,599)	₩ 735,133,955

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

(*1) It is the amount of acquisition due to paid-in capital increase.
(*2) After the initial acquisition, the acquisition amount due to paid-in capital increase is ₩ 41,518,000 thousand.
(*3) Changes in retained earnings on equity method are classified as others.

The fair value of marketable shares relating to subsidiary, associate and joint venture investments as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	Corporate name	2021	2020
Investments in joint ventures	SK D&D Co., Ltd. (*1)	₩ -	₩ 240,103,385

(*1) It is the fair value of the common stock and the entire share held during the current period was disposed of at KRW 282,757 million to SK Discovery Co., Ltd. (see note 22).

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
Shares after investment (%)(* 1)		25.71%
Price per share (in Korean Won)		KRW 565,770
Expected period		10 years from issue date
Conversion condition	Conversion period	From the day after the issue date to day before the expiration of the expected period
	Conversion ratio	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	From the day 4 years have elapsed from the issue date to the day before the expiration of the expected period.
	Repayment price	Acquisition price per share* 5% annual compound - dividends paid
Profit dividends		1.0% per year based on par value of the issue price (cumulative, participating)

(*1) It is the ownership ratio of the Group including the existing common stock and the potential common stock.

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

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 and the years ended December 31, 2021 and 2020 are set out below (Korean won in thousands):

	2021					
Associates	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.	₩ 905,910,086	₩ 19	₩ 172,122,916	₩ 15,828,374	₩ -	₩ 187,951,290
Dangjin Eco Power Co., Ltd.	75,786,546	66	50,019,120	-	-	50,019,120
SK Advanced Co., Ltd.	640,786,787	45	288,354,054	9,645,751	(69,221)	297,930,584
SK Holdco Pte. Ltd.	339,806,559	36.49	123,995,413	-	7,645	124,003,058
VOPAK GAS Terminal LLP	48,148,404	20	9,629,681	-	40,521	9,670,202
Korea Energy Terminal Co., Ltd.	158,896,125	47.58	75,608,116	5,252,150	-	80,860,266

(*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.

	2020					
Associates	Net assets (*1)	Equity ownership (%) (*2)	Group's share in net assets	Equity method basis differences	Intercompany transactions and others	Carrying amount
SK D&D Co., Ltd.	₩ 531,471,748	₩ 29.30	₩ 164,363,709	₩ 49,440,113	₩ -	₩ 213,803,822
Dangjin Eco Power Co., Ltd.	74,065,013	66	48,882,909	-	-	48,882,909
Korea Energy Terminal Co., Ltd.	81,161,740	47.31	38,397,793	5,197,575	-	43,595,368
SK Advanced Co., Ltd.	639,975,146	45	287,988,816	9,645,751	(41,306)	297,593,261
SK Holdco Pte. Ltd.	259,018,974	36.49	94,516,024	-	5,827	94,521,851
VOPAK GAS Terminal LLP	56,719,210	20	11,343,841	-	(1,152,147)	10,191,694

(*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.

The following table presents the summarized financial information of associates and joint venture as of and for the years ended December 31, 2021 and 2020 (Korean won in thousands):

	2021					
Associates	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)

	2020					
Associates	Current assets	Non-current assets	Liabilities	Equity	Sales	Profit (loss) for the year
SK D&D Co., Ltd.	₩ 1,005,808,736	₩ 706,329,476	₩ 1,180,666,464	₩ 531,471,748	₩ 699,753,025	₩ 66,110,584
Dangjin Eco Power Co., Ltd.	3,742,431	94,091,675	23,769,093	74,065,013	3,952,713	564,605
SK Advanced Co., Ltd.	143,457,355	891,605,542	395,087,751	639,975,146	621,745,287	34,579,127
SK Holdco Pte. Ltd.	-	259,291,117	272,143	259,018,974	-	46,689,498
VOPAK GAS Terminal LLP	8,934,385	52,759,659	4,974,834	56,719,210	11,817,102	4,146,179
Korea Energy Terminal Co., Ltd.	34,297,400	200,811,212	153,946,872	81,161,740	-	(3,775,053)

12. Property, plant and equipment

Details of property, plant and equipment as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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

	2020			
	Acquisition cost	Accumulated depreciation	Accumulated impairment loss	Net book value
Land	₩ 370,687,545	₩ -	₩ -	₩ 370,687,545
Buildings	168,316,847	(45,182,332)	(255,000)	122,879,515
Structures	183,489,910	(86,252,327)	-	97,237,583
LPG storage tanks	277,761,407	(121,571,685)	-	156,189,722
Machinery	309,667,597	(170,175,669)	(5,244,346)	134,247,582
Vehicles	524,204	(402,069)	-	122,135
Tools, furniture and fixtures	54,867,472	(43,220,470)	-	11,647,002
Other properties	785,326	(531,112)	-	254,214
Construction-in-progress	46,441,752	-	-	46,441,752
Total	₩ 1,412,542,060	₩ (467,335,664)	₩ (5,499,346)	₩ 939,707,050

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

Changes in the book value of property, plant and equipment for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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
	₩ 939,707,050	₩ 194,163,189	₩ (17,281,531)	₩ (53,878,221)	₩ (3,529,818)	₩ 51,932	₩ 1,059,232,601

(*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.

	2020							
	Jan. 1	Additions	Disposals	Depreciation	Transfers (*1)	Others (*2)	Impairment	Dec. 31
Land	₩ 367,819,193	₩ 3,171,565	₩ (303,213)	₩ -	₩ -	₩ -	₩ -	₩ 370,687,545
Buildings	121,985,754	3,669,252	(19,226)	(5,533,342)	3,032,077	-	(255,000)	122,879,515
Structures	102,464,141	1,742,853	-	(7,217,927)	248,516	-	-	97,237,583
LPG storage tanks	163,044,649	7,034,121	(222,781)	(14,085,380)	419,113	-	-	156,189,722
Machinery	136,794,267	15,446,876	(126,847)	(18,852,259)	6,229,891	-	(5,244,346)	134,247,582
Vehicles	97,053	29,100	(3)	(41,409)	37,394	-	-	122,135
Tools, furniture and fixtures	13,251,086	3,708,753	(220,089)	(6,122,191)	1,052,394	(22,951)	-	11,647,002
Other properties	78,944	13,414	(680)	(112,084)	293,832	(19,212)	-	254,214
Construction-in-progress	22,162,241	43,788,789	(6,775,395)	-	(12,685,900)	(47,983)	-	46,441,752
	₩ 927,697,328	₩ 78,604,723	₩ (7,668,234)	₩(51,964,592)	₩ (1,372,683)	₩ (90,146)	₩ (5,499,346)	₩ 939,707,050

(*1) During the year ended December 31, 2020, ₩1,372,683 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, 2021 was ₩ 267,836 thousand (2020: ₩ 43,921 thousand). The rate used to determine the amount of borrowing costs eligible for capitalization was 1.48% (2020: 1.48%), which is the EIR 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 ₩ 1,240,289,958 thousand and ₩ 1,182,476,463 thousand as of December 31, 2021 and 2020, respectively.

13. Intangible assets

Changes in the book value of intangible assets for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021								
	Jan. 1	Additions	Disposals	Amortization	Impairment	Reversal of impairment	Transfers (*1)	Exchange rate fluctuations	Dec. 31
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
Patents	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
	₩ 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.

	2020						
	Jan. 1	Additions	Amortization	Impairment	Transfers (*1)	Exchange rate fluctuations	Dec. 31
Goodwill	₩ 5,085,236	₩ -	₩ -	₩ -	₩ -	₩ -	₩ 5,085,236
Memberships	13,525,324	-	-	(29,952)	-	(63,985)	13,431,387
Patents	74,212,694	-	-	-	-	-	74,212,694
Other intangible assets	18,193,151	5,239,082	(5,601,230)	-	1,372,683	-	19,203,686
	₩ 111,016,405	₩ 5,239,082	₩ (5,601,230)	₩ (29,952)	₩ 1,372,683	₩ (63,985)	₩ 111,933,003

(*1) During the year ended December 31, 2020, ₩1,372,683 thousand was replaced by other intangible assets from construction-in-progress.

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 9th Basic Plan for Electricity Demand and Supply, cash flows estimated based on the 20- to 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 (5.20 %).

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.

Impairment test for the intangible assets with indefinite useful lives
The Group performed an impairment test on memberships with indefinite useful lives and recognized impairment loss of ₩348,600 thousand during the year ended December 31, 2021 (2020: ₩29,952 thousand) and reversal of impairment loss of ₩1,490,743 thousand during the year ended December 31, 2021 (2020: nil).

14. Leases

Right-of-use assets as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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

	2020		
	Acquisition cost	Accumulated depreciation	Net book value
Vessels	₩ 457,531,396	₩ (50,715,904)	₩ 406,815,492
LPG stations	87,674,546	(34,172,467)	53,502,079
Vehicles	3,157,992	(1,545,985)	1,612,007
Sites	743,253	(195,483)	547,770
The others	3,996,657	(2,086,372)	1,910,285
Total	₩ 553,103,844	₩ (88,716,211)	₩ 464,387,633

Changes in the book value of right-of-use assets for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021						
	Right-of-use assets						Lease liabilities
	Vessels	LPG stations	Vehicles	Sites	The others	Total	
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.

14. Leases (cont'd)

	2020						
	Right-of-use assets						Lease liabilities
	Vessels	LPG stations	Vehicles	Sites	The others	Total	
Jan. 1	₩ 436,804,545	₩ 67,891,702	₩ 1,962,342	₩ 521,755	₩ 3,052,601	₩ 510,232,945	₩ 511,195,049
Increase	-	4,302,669	883,371	128,120	170,200	5,484,360	5,457,797
Decrease	-	(764,116)	(126,392)	-	(281,471)	(1,171,979)	(836,674)
Depreciation	(29,989,053)	(17,928,176)	(1,107,314)	(102,105)	(1,025,369)	(50,152,017)	-
Interest expense	-	-	-	-	-	-	12,128,361
Payment	-	-	-	-	-	-	(84,958,186)
Valuation (*1)	-	-	-	-	(5,676)	(5,676)	(24,272,360)
Dec. 31	₩ 406,815,492	₩ 53,502,079	₩ 1,612,007	₩ 547,770	₩ 1,910,285	₩ 464,387,633	₩ 418,713,987

(*1) This includes gain on valuation of foreign currency lease liabilities. During the year ended December 31, 2020, the Group recognized ₩598,405 thousand in profit and ₩17,939,937 thousand (including the effect of income tax) as other comprehensive income.

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

	Increase (decrease)	
	2021	2020
Profit:		
Interest income on financial lease receivables	₩ (1,235,623)	₩ (69,860)
Loss:		
Depreciation expense of right-of-use assets	47,097,387	50,152,017
Interest expense on lease liabilities	10,649,750	12,128,361
Expense relating to short-term lease and leases of low-value assets	3,985,148	5,362,294
Gain(loss) on valuation of lease liabilities recognized in profit or loss	(466,455)	(598,405)
Gain(loss) on valuation of lease liabilities recognized in other comprehensive income (loss) (*1)	22,559,636	(17,939,937)
Net amount recognized in comprehensive income	₩ 82,589,843	₩ 49,034,470

(*1) The effect of income tax included.

Total cash outflows for leases in years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Payment of principal portion of lease liabilities	₩ 58,348,407	₩ 72,829,825
Payment of interest portion of lease liabilities	10,649,750	12,128,361
Short-term lease payments, payments for leases of low-value assets and variable lease payments	3,985,148	5,362,294
Total	₩ 72,983,305	₩ 90,320,480

14. Leases (cont'd)

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

	2021			
	Less than 1 year	1 to 5 years	More than 5 years	Total
Vessels	₩ 48,915,451	₩ 223,741,151	₩ 125,500,876	₩ 398,157,478
LPG stations	19,821,982	27,085,326	652,000	47,559,308
Vehicles	977,041	788,038	-	1,765,079
Sites	114,911	356,184	1,974	473,069
The others	529,455	502,516	-	1,031,971
Total	₩ 70,358,840	₩ 252,473,215	₩ 126,154,850	₩ 448,986,905

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.

During the year ended December 31, 2021, the Company recognized ₩22,559,636 thousand of valuation loss (including the income tax effect) (₩ 17,939,937 thousand of valuation gain in 2020) 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.

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

	2021	2020
Less than 1 year	₩ 1,208,000	₩ 924,000
1 to 5 years	2,223,000	1,724,000
More than 5 years	-	192,000
Total	₩ 3,431,000	₩ 2,840,000

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, 2021 is ₩65,792,764 thousand (₩67,478,315 thousand in 2020).

As of December 31, 2021 and 2020, the future undiscounted lease payment plans related to the operating lease contract provided by the Group are as follows (Korean won in thousands):

	2021	2020
Less than 1 year	₩ 64,232,675	₩ 66,132,232
1 to 5 years	157,304,566	193,265,758
More than 5 years	650,710	48,295,007
Total	₩ 222,187,951	₩ 307,692,997

15. Trade and other payables

Trade and other payables as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Trade payables	₩ 149,754,158	₩ 275,453,585
Other accounts payables	89,404,695	111,401,465
Accrued expenses	47,780,733	37,329,518
Total	₩ 286,939,586	₩ 424,184,568

16. Borrowings

Short-term borrowings

Short-term borrowings as of December 31, 2021 and 2020 consist of the following (Korean won in thousands and US dollar):

Classification	Financial institution	Interest rate (%)	2021	2020
Usance	Kookmin Bank and others	0.54 ~ 1.04	₩ 796,493,518	₩ 571,739,647
			(US$ 671,862,942)	(US$ 525,495,999)
Commercial Paper	KB securities	-	-	60,000,000
Total			₩ 796,493,518	₩ 631,739,647
			(US$ 671,862,942)	(US$ 525,495,999)

Current portion of long-term borrowings

Current portion of long-term borrowings as of December 31, 2021 and 2020 consist of the following (Korean won in thousands):

	2021	2020
Current portion of bonds payable	₩ 199,953,852	₩ -

Bonds payable

Details of bonds payable as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	Issue date	Maturity date	Interest rate (%)	2021	2020	Description
33-2 nd unsecured	2015.03.06	2022.03.06	2.58	₩ 100,000,000	₩ 100,000,000	Interest payment at every quarter and lump-sum repayment on maturity
34-2 nd unsecured	2017.04.17	2022.04.17	2.42	100,000,000	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	
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	
38-1st unsecured	2021.03.04	2024.03.04	1.31	50,000,000	-	
38-2 nd unsecured	2021.03.04	2026.03.04	1.73	150,000,000	-	
38-3 rd unsecured	2021.03.04	2028.03.04	2.08	100,000,000	-	
39-1st unsecured	2021.07.20	2024.07.20	1.77	80,000,000	-	
39-2 nd unsecured	2021.07.20	2028.07.20	2.28	70,000,000	-	
Sub-total				1,270,000,000	820,000,000	
Less: discount on bonds				(3,388,451)	(2,437,828)	
Less: current portion				(199,953,852)	-	
Total				₩ 1,066,657,697	₩ 817,562,172	

16. Borrowings (cont'd)

Long-term borrowings

Long-term borrowings as of December 31, 2021 and 2020 consist of the following (Korean won in thousands and US dollar):

	Financial institution	Last Expiration Date	Interest rate (%)	2021	2020
Oil exploration loans (*1)	Korea Energy Agency	-	-	₩ -	₩ 188,071 (US$ 179,599.9)

(*1) The Group has an obligation to repay the oil exploration loans, including interests based on a 3-year government bond, only in the event that the oil exploration results in a successful commercial production. As the oil exploratory project has been suspended during the year ended December 31, 2020, the Group was exempt from the repayment of the principal and interest and recognized bad debt expenses for the entire loan relating to the project and the allowance for bad debt related to the loan was fully written off during the current year (see Note 10).

17. Defined benefit liabilities

The Group has a defined benefit pension plan for its employees, and 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 defined benefit liabilities for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Changes in defined benefit liabilities:		
Beginning balance	₩ 2,449,633	₩ 2,870,302
Retirement benefits paid	(773,920)	(624,574)
Provision during the period	5,036,560	4,561,697
Re-measurement loss	1,355,275	1,777,226
Contributions by the Group	(5,829,893)	(6,135,018)
Ending balance	2,237,655	2,449,633
Defined benefit liabilities in the consolidated statement of financial position:		
Present value of defined benefit obligation	40,383,028	35,143,196
Fair value of plan assets	(38,145,373)	(32,693,563)
Total	₩ 2,237,655	₩ 2,449,633

Expenses incurred in relation to the defined benefit pension plan for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Current service cost	₩ 4,980,365	₩ 4,499,206
Interest cost on defined benefit obligation	776,707	622,982
Expected return on plan assets	(720,512)	(560,490)
Total	₩ 5,036,560	₩ 4,561,698

17. Defined benefit liabilities (cont'd)

Changes in the present value of the defined benefit obligation for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Beginning balance	₩ 35,143,196	₩ 29,952,635
Retirement benefits paid	(2,973,032)	(2,026,581)
Current service cost	4,980,364	4,499,205
Interest cost on defined benefit obligation	776,707	622,982
Re-measurement loss	1,157,985	1,706,608
Transfer from/to related parties	1,297,808	388,347
Ending balance	₩ 40,383,028	₩ 35,143,196

Changes in the fair value of plan assets for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Beginning balance	₩ (32,693,563)	₩ (27,082,333)
Retirement benefits paid	2,199,112	1,402,006
Expected return on plan assets	(720,512)	(560,490)
Re-measurement loss	197,290	70,618
Contributions by the Group	(5,829,893)	(6,135,017)
Transfer from/to related parties	(1,297,807)	(388,347)
Ending balance	₩ (38,145,373)	₩ (32,693,563)

As of December 31, 2021 and 2020, plan assets consist of time deposits and others.

Details of re-measurement loss as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Re-measurement loss:		
Demographic assumptions	₩ -	₩ 619,059
Financial assumptions	(256,621)	(853,880)
Empirical adjustments	1,414,606	1,941,429
Sub-total	1,157,985	1,706,608
Remeasurements of plan assets:	197,290	70,618
Total	₩ 1,355,275	₩ 1,777,226

The principal assumptions used in the actuarial calculation as of December 31, 2021 and 2020 are as follows:

	2021	2020
Discount rate	2.68 % ~ 3.65 %	1.90 % ~ 2.30 %
Future salary increases	3.00 % ~ 4.58 %	3.30 %

17. Defined benefit liabilities (cont'd)

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, 2021 and 2020 (Korean won in thousands):

	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)

	2020			
	Changes in discount rate		Changes in future salaries increase rate	
	+1% points	-1% points	+1% points	-1% points
Defined benefit obligation	₩ (2,562,615)	₩ 2,957,720	₩ 2,996,412	₩ (2,646,710)

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.

The expected payment to the defined benefit plan in the next reporting period is ₩ 4,998,873 thousand, and the average duration of the defined benefit plan obligation as of December 31, 2021 is 10.78 years.

18. Other financial liabilities

Other financial liabilities as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Other non-current financial liabilities:		
Long-term deposits	₩ 4,050,294	₩ 3,759,239
Non-current financial liabilities	29,934,973	28,897,551
Stock Appreciation Rights (Note 24)	392,192	-
Total	₩ 34,377,459	₩ 32,656,790

19. Other liabilities

Other current liabilities and other non-current liabilities as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Other current liabilities:		
Withholding tax	₩ 691,017	₩ 746,674
Advance received	4,895,477	13,549,834
Contract liabilities (Note 25)	3,242,306	-
Other withholdings	703,091	711,308
Total	₩ 9,531,891	₩ 15,007,816
Other non-current liabilities:		
Long-term unearned income	₩ 96,719	₩ 107,020
Other long-term employee benefits	678,658	-
Total	₩ 775,377	₩ 107,020

20. Derivative instruments

Derivative assets and liabilities as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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	₩ -

	2020			
	Derivative assets		Derivative liabilities	
	Current	Non-current	Current	Non-current
Currency forward contracts	₩ 1,264,474	₩ -	₩ 26,006,142	₩ -
LPG forward contracts	155,129,805	-	85,402,756	926,400
TRS	-	18,709,000	-	-
Total	₩ 156,394,279	₩ 18,709,000	₩ 111,408,898	₩ 926,400

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, 2021 and 2020 are as follows (Korean won in thousands):

2021				
Financial institution	Buy/sell	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

20. Derivative instruments (cont'd)

2020				
Financial institution	Buy/sell	Contracted notional amount	Derivative assets	Derivative liabilities
Hana Bank and others	Buy	$ 582,042,608	₩ -	₩ 25,966,189
	Sell	119,997,140	1,264,474	39,953
Total			₩ 1,264,474	₩ 26,006,142

Outstanding LPG forward contracts as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

2021				
Account	Buy/Sell	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)
		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.

2020				
Account	Buy/Sell	Quantities	Contract amount (USD)	Fair value(*1)
ICE	Buy	3,876,000 barrel	141,230,420	₩ 134,708,067
		1,099,800 ton	416,027,810	19,793,336
ICE	Sell	2,848,000 barrel	137,996,580	3,245,386
		1,032,103 ton	391,727,418	(131,438,924)
Nymex	Buy	20,585,000 barrel	474,633,531	136,807,711
		871,000 ton	322,460,890	143,944,128
Nymex	Sell	19,152,000 barrel	401,512,209	(143,984,823)
		841,000 ton	343,909,870	(124,494,372)
Macquarie	Buy	93,000 barrel	4,273,240	(365,546)
		12,900 ton	4,000,950	(379,335)
Macquarie	Sell	6,000 barrel	218,800	(54,944)
		900 ton	228,900	(43,523)
CME	Buy	535,774 ton	223,566,795	71,677,728
CME	Sell	301,371 ton	118,604,098	(40,614,240)
Total				₩ 68,800,649

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

20. Derivative instruments (cont'd)

Outstanding options as of December 31, 2021 are as follows (Korean won in thousands):

Outstanding options	Contracted notional amount (MT)	Derivative assets	Derivative liabilities
Buying call options and Selling put options (ZCC Option)(*1)	504,000	₩ 3,497,195	₩ -
Buying put options and selling call options on APOIC stocks (Note 21)	-	2,785,925	-
Total		₩ 6,283,120	₩ -

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

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, 2021, the valuation gain recognized due to the agreement is ₩17,978million (2020: ₩5,814 million).

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, 2021 (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
	Jung, Man-woo and others	The Company and others	4,289,000	First trial in process
Litigation to confirm absence of debt	GNS Co., Ltd. and others	The Company	2,400,000	Before the designation of pleading date

SK Gas International Pte. Ltd., which is one of the consolidated subsidiaries, is in the process of arbitrating disputes with Sinopec Chemical Commercial Holding (HK) Co., Ltd. over LPG price. The arbitrating procedure is independent of litigation and the final outcome thereof is not reasonably estimable as of December 31, 2021.

21. Commitments and contingences (cont'd)

Major commitments

As of December 31, 2021, major commitments of the Group are as follows:

Parties	Details
Kookmin Bank and others	Foreign currency transaction commitments for up to $2,397 million. Local currency borrowing commitments for up to ₩43 billion.
KUWAIT Petroleum Corporation and others	Purchase agreements for 3,670 thousand tons of LPG.
E1 Co., Ltd., GS Caltex Co., Ltd. and SK Energy Co., Ltd.	LPG commodity exchange agreement
SK Chemical Co.,Ltd. and SK Advanced Co., Ltd.	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 Lubricants Co.,Ltd. (*3)	Consignment contract on reservoirs for petroleum products
Korea Energy Terminal Co., Ltd. (*4)	Stock sales contract (₩82,484 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 ₩930,463 million.
G-Energy Corp. (*6)	Agreement for joint exercise of coal supply right

(*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 ₩32,938 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.

(*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 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 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 Company maintains the contractual status and other matters for the long-term coal supply contract with Goseong Green Power Co., Ltd.

21. Commitments and contingences (cont'd)

Other commitments

(1) As of December 31, 2021, the Group holds voting rights for 0.74% 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 ₩ 33,570,000 thousand of exercise price 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 Company signed an agreement for a joint supply of coal with G-Energy Corp., a joint venture between the Company and GS Global Corp. The period of joint venture between the Company and GS Global Corp. through G-Energy Corp. is until the end of 2025, but the extension is determined annually. When the joint venture is terminated, the Company and GS Global Corp. each holds 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) The Group entered into a shareholder contract about AGIC (Advanced Global Investment Company) and APOIC(Advanced Polyolefins Industry Company) to conduct PDH business in Saudi Arabia. According to this contract, the Group has a put option to sell APOIC (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 APOIC (Advanced Polyolefins Industry Company) stocks owned by the Group within 3 months from the commencement of commercial operation. As of December 2021, the Group performed a fair value assessment of options, and the assessed amount was ₩2,785,925 thousand (see Note 20).

Collateral pledged

As of December 31, 2021, the assets and pledged notes provided as collateral to the other party are as follows. (Korean won in millions):

Pledged assets	Pledged to	Collateralized amount		Related borrowing
Investments in joint ventures (*1)	Korea Development Bank and others	₩	166,925	Provided for Korea Energy Terminal Co., Ltd.'s borrowings of ₩142,700 million

(*1) 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 ₩82,484 million for additional investment under the stock purchase contract.

21. Commitments and contingences (cont'd)

Payment guarantees

Details of payment guarantee provided by the Group as of December 31, 2021 is as follows (Korean won in thousands):

	Guaranteed party	Guarantee amount		Details
Payment guarantee provided	Mizuho Bank	₩	49,791,000	Contract performance guarantees

Details of payment guarantees provided to the Group as of December 31, 2021 are as follows (Korean won in thousands):

	Guarantor	Guarantee amount		Details
Payment guarantees received	Seoul Guarantee Insurance Company	₩	5,195,010	Performance and deposit guarantees
			383,262	Guarantee of deposit for road occupancy construction cost
			28,866	Warranty for road occupation and restoration
			57,489	Warranty for land use permit

22. Related party

Related parties of the Group and nature of their relationship with the Group as of December 31, 2021 are as follows:

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

(*1) The entity has been included in associates and joint ventures as the Group acquired the shares therein during the year ended December 31, 2020.
(*2) The entities have been included in associates and joint ventures as the Group acquired the shares therein during the year ended December 31, 2021.
(*3) 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, 2021.
(*5) 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.

22. Related party (cont'd)

Significant transactions with the related parties for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

		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	31,992,877	5,762	-	1,540
	SK Lubricants Co.,Ltd.	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.

22. Related party (cont'd)

		2020			
	Related party	Sales (*1)	Other income, sales of asset and others (*2)	Purchases	Other expenses and capital expenditure (*2)
Parent	SK Discovery Co., Ltd.	₩ -	₩ 240,851	₩ -	₩ 18,370,988
Associates and joint ventures	SK D&D Co., Ltd.	-	4,910,049	-	97,077
	SK Advanced Co., Ltd.	407,505,989	10,253,757	-	217,549
	Korea Energy Terminal Co., Ltd.	-	8,483,284	-	-
	Weonil Energy Co., Ltd.	7,148,083	-	167,038	-
	SK Holdco Pte. Ltd.	-	7,749	-	-
	Gridwiz Co., Ltd.	-	39,809	-	-
	Vopak Gas Terminal LLP	11,505	888,993	12,005	4,205,077
Others	SK Holdings Co., Ltd.	-	-	-	16,254,484
	SKC Ltd.	2,218,257	5,717	-	-
	SK picglobal (*3)	15,753,757	-	-	-
	SK Lubricants Co.,Ltd.	46,447,329	-	-	-
	SK Energy Co., Ltd.	157,651,460	6,114,868	3,940,955	9,014,783
	SK Innovation Co., Ltd	-	4,395	-	2,832,896
	SK Geo Centric Co., Ltd. (*3)	44,579,676	160,393	-	1,147,747
	SK Incheon Petrochem Co., Ltd.	19,087,062	-	-	-
	SK Planet Co., Ltd	-	-	-	7,394,694
	SK Chemicals Co., Ltd	5,293,344	467,253	-	275,209
	Ulsan Aromatics Co.,Ltd.	26,145,898	74,682	-	-
	SK Networks Co., Ltd.	-	-	293,844	432,584
	SK ecoplant Co., Ltd. (*4)	-	-	-	10,768,623
	SK Bioscience Co.,Ltd.	-	274,074	-	-
	SK shieldus Co.,Ltd. (*5)	-	-	-	1,133,267
	SK Wyverns Co., Ltd.	-	-	-	1,000,000
	Others	-	810	49,318	3,256,122
	Total	₩ 731,842,360	₩ 31,869,241	₩ 4,463,160	₩ 76,401,100

(*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.

22. Related party (cont'd)

Outstanding balances with the related parties as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

		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.	4,324,985	-	-	7,154
	SK Energy Co., Ltd. (*1)	10,431,931	33,655,548	4,520,870	1,076,254
	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	₩ 8,773,458

(*1) The amount due to the LPG volume exchange transaction is excluded.

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

22. Related party (cont'd)

		2020			
	Related party	Trade receivables	Other receivables	Trade payables	Other payables
Parent	SK Discovery Co., Ltd.	₩ -	₩ 25,487	₩ -	₩ 449,037
Associates and joint ventures	SK D&D Co., Ltd.	-	154,679	-	685,613
	SK Advanced Co. Ltd.	77,883,358	572,861	-	315,203
	Weonil Energy Co., Ltd.	1,011,210	-	-	19,934
	Korea Energy Terminal Co., Ltd.	-	3,894,954	-	-
	SK Holdco Pte. Ltd.	-	105,455	-	-
Others	SK Holdings Co., Ltd.	-	-	-	1,589,861
	SK picglobal	2,195,368	-	-	-
	SK Lubricants Co.,Ltd.	4,223,009	-	-	-
	SK Energy Co., Ltd. (*1)	5,824,563	36,423,024	4,542,144	1,004,115
	SK Innovation Co., Ltd	-	-	-	334,799
	SK Incheon Petrochem Co.,Ltd.	3,442,597	-	-	-
	Ulsan Aromatics Co.,Ltd.	2,051,461	41,075	-	-
	SK Chemicals Co., Ltd	442,194	111,763	-	23,875
	SK Planet Co., Ltd.	-	-	-	1,783,160
	SK Bioscience Co.,Ltd.	-	37,916	-	215,832
	SK ecoplant Co., Ltd. (*2)	-	3,531,442	-	-
	SK shieldus Co.,Ltd. (*3)	-	-	-	166,210
	SK Telecom Co., Ltd.	-	-	-	102,834
	Others	-	103,190	-	193,129
	Total	₩ 97,073,760	₩ 45,001,846	₩ 4,542,144	₩ 6,883,602

(*1) The amount due to the LPG volume exchange transaction is excluded.

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

(*3) 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.

22. Related party (cont'd)

Transactions with related parties

Treasury transactions
There is no treasury transaction with the related parties during the current year, the major treasury transactions with the related parties for the year ended December 31, 2020 was as follows (Korean won in thousands):

		2020			
Description	Related party	Jan.1	Loan	Collection	Dec.31
Associates	Gridwiz Co., Ltd.	₩ -	₩ 10,000,000	₩ 10,000,000	₩ -

Other transactions
Other transactions with the related parties for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

		Investment	
Description	Related party	2021	2020
Associates and joint ventures	SK D&D Co., Ltd.	₩ -	₩ 51,100,000
	Gridwiz Co., Ltd.	-	8,501,260
	Korea Energy Terminal Co., Ltd.	39,098,450	41,518,000
	Bitgoeul Eco Energy Co., Ltd.	4,611,000	-
	KOHYGEN Corp.	950,000	-
	G-Energy Corp.	100,000	-
	Goseong Green Power Co., Ltd.	170,240,000	-
	Advanced Polyolefins Industry Company	69,387,360	-
Total		₩ 284,386,810	₩ 101,119,260

Compensation for key management personnel for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Salaries	₩ 5,362,372	₩ 4,139,330
Retirement benefits	797,018	734,433
Stock compensation cost	90,687	228,814
Total	₩ 6,250,077	₩ 5,102,577

23. Equity

Issued capital
Issued capital as of December 31, 2021 and 2020 are as follows (Korean won in thousands, except par value amounts):

	2021	2020
Authorized shares	20,000,000	20,000,000
Par value	₩ 5,000	₩ 5,000
Ordinary shares issued	9,230,244	9,230,244
Issued capital	₩ 46,151,220	₩ 46,151,220

Capital surplus
Details of capital surplus as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
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
Total	₩ 195,492,193	₩ 195,492,193

23. Equity (cont'd)

Other components of equity

Details of other components of equity as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Treasury stock (*1)	₩ (7,418,439)	₩ (7,418,439)
Stock option	1,125,718	857,168
Others	(15,728,926)	(14,939,679)
Total	₩ (22,021,647)	₩ (21,500,950)

(*1) The Group acquired treasury stock at market price for the purpose of stabilizing its stock price. As of December 31, 2021, 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, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Gain (loss) on valuation of financial instruments at FVOCI	₩ 3,240,986	₩ (846,211)
Gain (loss) on valuation of lease liabilities for cash flow hedge	(11,856,386)	10,703,251
Equity adjustments in equity method	797,555	(14,281,862)
Gain (loss) on translation of foreign operations	4,427,060	(7,911,736)
Total	₩ (3,390,785)	₩ (12,336,558)

Retained earnings

Details of retained earnings as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020	Description
Legal reserve	₩ 26,071,284	₩ 25,850,126	Legal (*1)
Business rationalization reserve	83,060	83,060	Discretionary
Capital expenditure reserve	1,089,204	1,089,204	Discretionary(*2)
Unappropriated retained earnings	1,873,888,863	1,663,887,215	
Total	₩ 1,901,132,411	₩ 1,690,909,605	

(*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, 2021 and 2020 are as follows (Korean won in thousands, except per share amounts):

	2021	2020
Cash dividend		
Cash dividends (2021: ₩5,100, 2020: ₩4,000 per share)	₩ 45,772,735	₩ 35,900,184

Dividends proposed in the prior year represent actual dividends paid during the current financial year.

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
Grant date of the right	2018-03-26		2019-03-05		2019-03-27	2020-03-03
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. ①Issuance of new shares ②Transfer of own shares ③If 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
Exercise price	95,290 won	102,910 won	81,270 won	87,770 won	90,490 won	78,510 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
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

Stock appreciation rights

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

	Detail
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 (transferring to affiliates, etc.))
Compensation 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

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	
Risk-free rate of return	2.58%	2.58%	2.02%	2.02%	1.89%	1.32%	1.42%
Share price of grant day (previous day closing price)	₩ 92,500	₩ 92,500	₩ 82,700	₩ 82,700	₩ 91,900	₩ 77,500	₩ 78,490
Price volatility	15.90%	15.90%	16.25%	16.25%	17.01%	22.72%	15.13%
Discount rate	3.52%	3.52%	3.01%	3.01%	2.88%	3.87%	3.10%
Exercise price (*1)	₩ 95,290	₩ 102,910	₩ 81,270	₩ 87,770	₩ 90,490	₩ 78,510	₩ 78,490
Fair value per share	₩ 11,759	₩ 9,347	₩ 10,713	₩ 8,432	₩ 13,084	₩ 13,925	₩ 48,387

(*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 ₩ 660,742 thousand and ₩ 435,079 thousand as stock compensation expense for the years ended December 31, 2021 and 2020, respectively, and the remaining compensation expenses amounted to ₩ 38,797 thousand.

25. Revenue from Contracts with Customers

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

	2021	2020
Types of goods or services:		
LPG sales	₩ 6,155,889,289	₩ 3,999,306,541
Other sales	63,044,408	87,705,848
Transportation service	275,579,489	325,306,594
Total revenue from contracts with customers	6,494,513,186	4,412,318,983
Geographical market:		
Korea	3,843,507,039	2,657,887,213
Overseas	2,651,006,147	1,754,431,770
Total revenue from contracts with customers	6,494,513,186	4,412,318,983
The time of transfer of goods or services:		
Goods transferred at one time	6,173,058,659	4,040,835,663
Services transferred over time	321,454,527	371,483,320
Total revenue from contracts with customers	6,494,513,186	4,412,318,983

There is one major customer that accounted for more than 10% of the Group's revenue during the year ended December 31, 2021 and the amount of revenue from the major customer was ₩692,342,827 thousand. (2020: None).

Contract balance
Details of Contract balance as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Trade receivables	₩ 859,178,756	₩ 630,943,680
Contract liabilities (*1)	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.

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, 2021 are 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, 2021 and 2020 are as follows (Korean won in thousands):

	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.

	2020			
	Gas	Others	Internal transactions, etc.	Total
Sales	₩ 6,013,668,540	₩ -	₩ (1,601,349,557)	₩ 4,412,318,983
Operating income(loss)	192,267,690	(3,955,191)	1,874,357	190,186,856
Depreciation and amortization(*1)	107,641,800	164,643	(88,604)	107,717,839

(*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, 2021 and 2020 are as follows (Korean won in thousands):

	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	952,585,600	227,382,880	(1,144,261)	1,178,824,219
Total liabilities	2,978,948,107	21,158,401	4,065,572	3,004,172,080

	2020			
	Gas	Others	Internal transactions, etc.	Total
Total assets	₩ 4,482,988,823	₩ 160,924,781	₩ (144,993,180)	₩ 4,498,920,424
Fixed assets	948,720,410	97,023,539	5,896,104	1,051,640,053
Total liabilities	2,603,524,575	19,964,284	(23,283,944)	2,600,204,915

27. Operating expense

Classification of expenses by nature

Details of cost of sales and operating expenses for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Changes in goods	₩ (139,274,835)	₩ 54,036,721
Purchase of goods	6,172,450,321	3,810,161,285
Salaries and wages	87,247,873	77,063,514
Retirement benefits	5,573,795	5,590,962
Transport and storage of oil expenses	24,697,862	26,525,314
Rental fees and service fees	39,931,346	44,178,255
Taxes and dues	17,041,345	17,132,274
Depreciation of property, plant and equipment	100,975,608	102,116,608
Amortization of intangible assets	7,019,725	5,601,229
Others	73,387,781	79,725,965
	₩ 6,389,050,821	₩ 4,222,132,127

Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Salaries and wages	₩ 82,679,385	₩ 73,743,886
Retirement benefits	5,320,898	5,343,409
Employee welfare benefits	17,965,566	24,186,087
Training	3,744,094	3,187,926
Entertainment	2,424,999	2,146,622
Travel	1,711,214	1,674,591
Utilities	7,958,533	5,834,490
Supplies	901,071	1,751,030
Repairs	9,318,671	7,390,697
Office supplies and management	7,292,928	7,399,224
Technical service fees	16,091,760	15,484,996
Transport and storage of oil	7,829,693	8,107,594
Communication	462,085	458,195
Advertising and marketing	7,624,845	10,907,608
Rental fees and service fees	37,801,786	42,248,983
Taxes and dues	16,481,096	16,571,642
Insurance	1,813,736	1,467,870
Depreciation of property, plant and equipment	24,797,290	23,903,012
Amortization of intangible assets	6,717,820	5,240,918
Bad debt expenses	3,010,963	230,410
Compensation expenses associated with stock option	660,742	435,079
Miscellaneous	1,071,040	949,393
	₩ 263,680,215	₩ 258,663,662

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, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Finance income:		
Interest income	₩ 3,967,550	₩ 3,760,687
Dividends income	223,855	155,974
Gain on transaction of derivatives	252,025,070	370,534,656
Gain on valuation of derivatives	116,115,763	166,798,799
Gain on foreign currency transaction	61,956,099	19,562,041
Gain on foreign currency translation	2,475,788	116,981,295
Transaction gain from financial assets at fair value through profit or loss	11,173,031	5,919,651
Valuation gain from financial assets at fair value through profit or loss	829,245	2,077,597
	₩ 448,766,401	₩ 685,790,700
Finance costs:		
Interest expenses	₩ 40,416,032	₩ 37,278,039
Loss on transaction of derivatives	136,653,511	262,244,963
Loss on valuation of derivatives	30,546,892	113,187,509
Transaction loss from financial assets at fair value through profit or loss	-	20,252
Valuation loss from financial assets at fair value through profit or loss	1,302,610	-
Loss on foreign currency transaction	130,168,932	100,800,558
Loss on foreign currency translation	3,812,361	2,899,724
	₩ 342,900,338	₩ 516,431,045

Other non-operating income and expenses

Other non-operating income for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Rental income	₩ 5,933,066	₩ 4,771,672
Gain on disposal of property, plant and equipment	5,991,545	160,290
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	5,358,510
Reversal of impairment loss on intangible assets	1,490,743	-
Miscellaneous income	12,028,457	7,390,668
	₩ 62,714,449	₩ 17,681,140

(*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).

Other non-operating expenses for the years and December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Loss on disposal of property, plant and equipment	₩ 1,640,535	₩ 152,548
Loss on disposal of intangible assets	6,868	-
Loss on impairment of property, plant and equipment	-	5,499,346
Loss on impairment of intangible assets	348,600	29,952
Donations	3,672,022	5,647,923
Other bad debt expenses	-	5,734,609
Miscellaneous expenses	7,801,736	2,275,113
	₩ 13,469,761	₩ 19,339,491

29. Income tax

The major components of income tax expense for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Current income tax	₩ 72,534,414	₩ 41,679,190
Changes in deferred tax assets and liabilities	8,426,766	103,064,834
Income tax expense directly recognized to equity	(619,386)	(2,336,461)
Income tax expense	₩ 80,341,794	₩ 142,407,563

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):

	2021	2020
Profit before income tax	₩ 329,607,679	₩ 407,757,638
Tax at the statutory tax rate (*1)	78,166,266	98,677,348
Adjustments:		
Non-deductible expenses and tax exemption	(1,303,556)	(9,666,777)
Effect of deferred tax arising from temporary difference not recognized	934,458	45,005,746
Income tax refund and reflux tax	2,230,260	4,841,283
Others	314,366	3,549,963
Income tax expense	₩ 80,341,794	₩ 142,407,563
Effective tax rate	24.37%	34.92%

(*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, 2021 and 2020 are as follows (Korean won in thousands):

	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 liabilities	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)

29. Income tax (cont'd)

	2020			
	Jan.1	Recognized to profit or loss	Recognized directly to equity	Dec. 31
Revaluation surplus	₩ (37,206,322)	₩ 617,883	₩ -	₩ (36,588,439)
Allowance for doubtful accounts	5,455,472	-	-	5,455,472
Defined benefit liabilities	330,376	(529,977)	430,089	230,488
Financial assets at fair value through other comprehensive income	2,801,791	456,184	(2,485,307)	772,668
Gain (loss) on valuation of derivative instruments	22,100,697	(31,924,663)	(2,124)	(9,826,090)
Depreciable assets	12,652,573	2,391,916	-	15,044,489
Investment assets	(31,192,781)	(23,245,473)	6,932,575	(47,505,679)
Lease assets and liabilities	(604,736)	(5,343,230)	(5,727,526)	(11,675,492)
Others	3,313,241	1,854,732	(1,484,168)	3,683,805
	(22,349,689)	(55,722,628)	(2,336,461)	(80,408,778)
Deduction: Unrecognized deferred tax assets (liabilities)	(14,198,987)	45,005,746	-	30,806,759
Deferred tax assets (liabilities) after deduction	₩ (8,150,702)	₩ (100,728,374)	₩ (2,336,461)	₩ (111,215,537)

Unrecognized temporary difference for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Investment in subsidiaries, associates and joint ventures, etc.	₩ 131,162,054	₩ 127,300,656

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, 2021.

30. Earnings per share

Basic earnings per share

The Group's basic earnings per share attributable to owners of the parent for the years ended December 31, 2021 and 2020 are computed as follows (Korean won in thousands, except per share amounts):

	2021	2020
Profit for the year attributable to owners of the parent	₩ 249,265,885	₩ 265,350,075
Weighted average number of ordinary shares outstanding	8,975,046	8,942,065
Basic earnings per share	₩ 27,773	₩ 29,674

The weighted-average number of ordinary shares outstanding for basic earnings per share as of December 31, 2021 and 2020 are computed as follows (shares):

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

30. Earnings per share (cont'd)

2020				
Period	Description	Number of shares	Number of days	Accumulated number of shares
1.1~12.31	Ordinary stock	9,230,244	366	3,378,269,304
1.1~12.31	Treasury stock	(295,394)	366	(108,114,204)
4.22~12.31	Treasury stock	(1,854)	254	(470,916)
10.19~12.31	Treasury stock	42,050	74	3,111,700
				3,272,795,884

The weighted-average number of shares of ordinary stock outstanding as of December 31, 2020:
3,272,795,884/366 = 8,942,065

Diluted earnings per share
The Group's diluted earnings per share attributable to owners of the parent for the years ended December 31, 2021 and 2020 are computed as follows (Korean won in thousands, except per share amounts):

	2021	2020
Profit for the year attributable to owners of the parent adjusted for the effect of dilution	₩ 249,265,885	₩ 265,350,075
Weighted average number of ordinary shares adjusted for the effect of dilution	9,001,219	8,942,065
Diluted earnings per share	₩ 27,692	₩ 29,674

The diluted weighted-average number of ordinary shares outstanding for diluted earnings per share as of December 31, 2021 and 2020 are computed as follows (shares):

	2021	2020
Weighted-average number of shares of ordinary stock outstanding	8,975,046	8,942,065
Effect of dilution from exercise share options	26,173	-
Diluted weighted-average number of shares of ordinary stock outstanding	9,001,219	8,942,065

31. Consolidated 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, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Retirement benefits	₩ 5,036,560	₩ 4,498,518
Depreciation	53,878,222	51,964,592
Depreciation expenses of right-of-use assets	47,097,387	50,152,016
Amortization of intangible assets	7,019,725	5,601,229
Compensation expenses associated with stock option	660,742	435,079
Bad debt expenses	3,010,963	230,410
Interest income	(3,967,550)	(3,760,686)
Interest expenses	40,416,032	37,278,040
Dividend income	(223,855)	(155,974)
Gain on valuation of derivative instruments	(116,115,763)	(166,798,799)
Gain on settlement of derivative instruments	(252,025,071)	(370,534,656)
Gains on valuation of financial assets at FVTPL	(829,245)	(2,077,597)
Gains on transactions of financial assets at FVTPL	(11,173,031)	(5,919,651)
Loss on valuation of financial assets at FVTPL	1,302,610	-
Loss on transactions of financial assets at FVTPL	-	20,252
Loss on valuation of derivative instruments	30,546,892	113,187,509
Loss on settlement of derivative instruments	136,653,511	262,244,962
Gain on foreign currency translation	(2,475,788)	(19,562,041)
Gain on disposal of property, plant and equipment	(5,991,545)	(160,290)
Gain on disposal of intangible assets	(140,390)	-
Loss on foreign currency translation	3,812,361	2,899,724
Loss on disposal of property, plant and equipment	1,640,535	152,548
Loss on disposal of intangible assets	6,868	-
Impairment loss on property, plant and equipment	-	5,499,346
Impairment loss on intangible assets	348,600	29,952
Reversal of impairment loss on intangible assets	(1,490,743)	-
Equity method gains	(73,013,790)	(52,595,951)
Equity method losses	3,979,227	2,726,473
Gain on disposal of investments in joint ventures	(37,003,045)	-
Gain on debt exemption	(127,203)	(5,358,510)
Income tax expense	80,341,794	142,407,563
Others	3,797,708	11,588,232
Total	₩ (85,027,282)	₩ 63,992,290

31. Consolidated statements of cash flows (cont'd)

Changes in assets and liabilities arising from operating activities for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

		2021		2020
Trade receivables	₩	(228,785,175)	₩	(56,865,518)
Other receivables		(8,392,960)		28,213,844
Inventories		(140,138,112)		53,496,664
Other current assets		(15,202,450)		2,998,853
Other non-current financial assets		(2,150,634)		1,314,597
Trade payables		(125,654,711)		(19,686,200)
Other payables		29,889,948		(3,476,083)
Other current liabilities		(5,475,925)		5,246,669
Other non-current financial liabilities		291,055		193,113
Other non-current liabilities		(10,301)		(11,110)
Retirement benefits paid		(773,920)		(724,574)
Plan assets		(5,829,893)		(6,135,017)
Total	₩	(502,233,078)	₩	4,565,238

The consolidated statements of cash flows of the Group are prepared using the indirect method, and significant non-cash transactions for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

		2021		2020
Transfer of long-term loans to current portion	₩	13,720,485	₩	39,051,862
Changes in other payables due to acquisition of property, plant and equipment and intangible assets		16,356		275,632
Transfer of construction-in-progress to respective assets		10,690,825		12,685,900
Valuation of financial assets at FVOCI		4,087,197		8,135,486
Transfer of long-term lease liabilities to current portion		63,625,975		54,617,600
Transfer of long-term bonds payable to current portion		199,875,684		-

31. Consolidated statements of cash flows (cont'd)

Changes in liabilities arising from financing activities for the years ended December 31, 2021 and 2020 are as follows (Korean won in thousands):

	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.

	2020				
	Jan. 1	Financing activities cash flows	Reclassification to current portion	Others (*1)	Dec. 31
Accrued expenses	₩ 21,785,802	₩ (37,150,999)	₩ -	₩ 52,694,717	₩ 37,329,520
Dividends payable	-	(26,539,161)	-	26,539,161	-
Short-term borrowings	596,602,365	52,630,212	-	(17,492,930)	631,739,647
Current portion of long-term borrowings	155,668,212	(155,714,280)	-	46,068	-
Current portion of lease liabilities	73,380,550	(72,829,825)	54,617,601	19,663	55,187,989
Long-term borrowings	5,986,713	(440,133)	-	(5,358,510)	188,070
Bonds payable	319,137,587	497,885,680	-	538,905	817,562,172
Lease liabilities	437,814,499	-	(54,617,601)	(19,670,899)	363,525,999
Treasury stock	(8,533,594)	(107,211)	-	1,222,366	(7,418,439)
	₩ 1,601,842,134	₩ 257,734,283	₩ -	₩ 38,538,541	₩ 1,898,114,958

(*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 including trade and other receivables, cash and cash equivalents, loans, financial assets such as financial assets at fair value through other comprehensive income.

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, 2021 and 2020.

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 ₩233,010,745 thousand and ₩65,899,565 thousand as of December 31, 2021 and 2020, 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):

	2021		2020	
	+1%	-1%	+1%	-1%
Profit before tax	₩ (2,330,107)	₩ 2,330,107	₩ (658,996)	₩ 658,996

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, 2021 and 2020 are as follows (Korean won in thousands):

	2021		2020	
	Assets	Liabilities (*1)	Assets	Liabilities
USD	₩ 768,017,389	₩ 1,104,785,886	₩ 673,796,021	₩ 1,033,351,788
CNY	-	-	37,697	-
SGD	419,570	8,120,656	1,180,282	6,479,082
	₩ 768,436,959	₩ 1,112,906,542	₩ 675,014,000	₩ 1,039,830,870

(*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, 2021 and 2020, 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.

	2021		2020	
	+5%	-5%	+5%	-5%
USD	₩ (16,838,425)	₩ 16,838,425	₩ (17,977,788)	₩ 17,977,788
CNY	-	-	1,885	(1,885)
SGD	(385,054)	385,054	(264,940)	264,940
	₩ (17,223,479)	₩ 17,223,479	₩ (18,240,843)	₩ 18,240,843

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 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, 2021 and 2020, respectively (Korean won in thousands):

	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)

	2020			
		+5%		-5%
Other comprehensive income for the year before income tax	₩	821,702	₩	(821,702)
Income tax expense		(193,579)		193,579
Other comprehensive income for the year, net of tax		628,123		(628,123)

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):

	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	200,000,000	520,000,000	550,000,000	1,270,000,000
Non-current lease liabilities	-	171,974,474	206,653,591	378,628,065
Other non-current financial liabilities	-	37,620,294	-	37,620,294
	₩ 1,387,233,771	₩ 729,594,768	₩ 756,653,591	₩ 2,873,482,130

	2020			
	1 year	1 to 4 years	More than 4 years	Total
Trade and other payables	₩ 439,383,284	₩ -	₩ -	₩ 439,383,284
Short-term borrowings	571,739,647	-	-	571,739,647
Current derivative liabilities	96,262,882	-	-	96,262,882
Current portion of lease liabilities	66,107,274	-	-	66,107,274
Bonds payable	-	390,000,000	430,000,000	820,000,000
Long-term borrowings (*1)	-	-	-	-
Non-current derivative liabilities	-	936,405	-	936,405
Non-current lease liabilities	-	219,436,669	189,884,539	409,321,208
Other non-current financial liabilities	-	3,759,239	33,570,000	37,329,239
	₩ 1,173,493,087	₩ 614,132,313	₩ 653,454,539	₩ 2,441,079,939

(*1) Oil exploratory loans has been excluded due to the uncertainty of repayment obligations

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 years ended December 31, 2021.

The Group monitors its debt ratio which is total liabilities divided by total equity. Debt ratios as of December 31, 2021 and 2020 are as follows (Korean won in thousands):

	2021	2020
Total liabilities	₩ 3,004,172,080	₩ 2,600,204,915
Total equity	2,117,363,392	1,898,715,509
Debt ratio	141.88 %	136.95 %

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 2021 and 2020, the fair value of financial instruments by fair value hierarchy is as follows (Korean won in thousands):

	2021			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Cash and cash equivalents	₩ 1,160	₩ 162,689,389	₩ -	₩ 162,690,549
Short-term financial instruments	-	660,525,549	6,620,000	667,145,549
Trade and other receivables	-	-	927,968,164	927,968,164
Current derivative assets	-	81,739,169	-	81,739,169
Other current financial assets	-	38,258,697	-	38,258,697
Long-term financial assets	18,456,925	17,000	122,453,086	140,927,011
Long-term trade and other receivables	-	-	2,147,733	2,147,733
Non-current derivative assets	-	52,824,512	-	52,824,512
Other non-current financial assets	-	-	34,639,765	34,639,765
	₩ 18,458,085	₩ 996,054,316	₩ 1,093,828,748	₩ 2,108,341,149
Financial liabilities:				
Trade and other payables	₩ -	₩ -	₩ 286,939,586	₩ 286,939,586
Short-term borrowings	-	796,493,518	-	796,493,518
Current portion of long-term borrowings	-	199,953,852	-	199,953,852
Current derivative liabilities	-	33,041,827	-	33,041,827
Current portion of lease liabilities	-	60,535,331	-	60,535,331
Bonds payable	-	1,066,657,697	-	1,066,657,697
Non-current lease liabilities	-	338,523,680	-	338,523,680
Other non-current financial liabilities	-	392,192	33,985,267	34,377,459
	₩ -	₩ 2,495,598,097	₩ 320,924,853	₩ 2,816,522,950

33. Fair value (cont'd)

	2020							
	Level 1		Level 2		Level 3		Total	
Financial assets:								
Cash and cash equivalents	₩	1,790	₩	122,055,452	₩	-	₩	122,057,242
Short-term financial instruments		-		664,375,810		2,136,000		666,511,810
Trade and other receivables		-		-		720,271,726		720,271,726
Current derivative assets		-		156,394,279		-		156,394,279
Other current financial assets		-		1,469,319		-		1,469,319
Long-term financial assets		16,434,037		17,000		103,299,276		119,750,313
Long-term trade and other receivables		-		-		1,820,331		1,820,331
Non-current derivative assets		-		18,709,000		-		18,709,000
Other non-current financial assets		-		-		34,043,185		34,043,185
	₩	16,435,827	₩	963,020,860	₩	861,570,518	₩	1,841,027,205
Financial liabilities:								
Trade and other payables	₩	-	₩	-	₩	424,184,568	₩	424,184,568
Short-term borrowings		-		631,739,647		-		631,739,647
Current derivative liabilities		-		111,408,898		-		111,408,898
Current portion of lease liabilities		-		55,187,989		-		55,187,989
Bonds payable		-		817,562,172		-		817,562,172
Long-term borrowings		-		188,071		-		188,071
Non-current derivative liabilities		-		926,400		-		926,400
Non-current lease liabilities		-		363,525,999		-		363,525,999
Other non-current financial liabilities		-		-		32,656,790		32,656,790
	₩	-	₩	1,980,539,176	₩	456,841,358	₩	2,437,380,534

Valuation technique and input variables

As of December 31 2021 and 2020, the correlations between valuation techniques, input variables, and significant but unobservable input variables of items 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 (Korean won in thousands):

<2021>

	Book value		Valuation technique	Input variables	Significant but not observable interactions between input variables
Financial assets at FVOCI:					
Unlisted stock	₩	4,737,000	Comparison with similar companies	Price-to-net asset ratio	The estimated fair value increases (decreases) based on followings; -When the price-to-net asset ratio of a similar company increases (decreases) -When the net asset value of the target company increases (decreases)

<2020>

	Book value		Valuation technique	Input variables	Significant but not observable interactions between input variables
Financial assets at FVOCI:					
Unlisted stock	₩	3,253,332	Comparison with similar companies	Price-to-net asset ratio	The estimated fair value increases (decreases) based on followings; -When the price-to-net asset ratio of a similar company increases (decreases) -When the net asset value of the target company increases (decreases)

33. Fair value (cont'd)

The amounts of assets evaluated using the above valuation technique among the categories classified as Level 3 are as follows (Korean won in thousands):

	2021					
	Jan. 1		Valuation		Dec. 31	
Financial assets:						
Financial assets at FVOCI:	₩	3,253,332	₩	1,483,668	₩	4,737,000

	2020					
	Jan. 1		Valuation		Dec. 31	
Financial assets:						
Financial assets at FVOCI:	₩	4,264,800	₩	(1,011,468)	₩	3,253,332

34. Other matters

Uncertainties about the impact of Covid-19
To prevent the spread of Coronavirus disease 2019 ("COVID-19"), various prevention and control measures, including restrictions on movement, are being implemented worldwide, and as a result, the global economy is affected extensively. In addition, government is announcing various government support policies to address Covid-19. The Group evaluated the impact of Covid-19 on its consolidated financial statements and determined that uncertainties may exist in estimates used to measure net realizable value of inventories (see Note 5) and others. Based on the information available as of December 31, 2021, the Group reasonably estimated the impact of Covid-19 in preparing its consolidated financial statements.

However, there is significant uncertainty in estimating the termination of Covid-19 and the impact therefrom on the Group.

Approval of the consolidated financial statements
The consolidated financial statements for the year ended December 31, 2021 were approved by the Board of Directors on February 8, 2022 and will receive final approval at the shareholders' meeting on March 24, 2022.

35. Events after the reporting period

Resolution to provide collateral for others
On February 23, 2022, the Group decided to provide 17,214,000 shares of Goseong Green Power Co., Ltd. held by the Group as collateral to Hanwha Life Insurance Co., Ltd. and other parties to guarantee the repayment of ₩4,170,000 million of long-term borrowings. The limit of provided collateral is ₩172,140 million, which is the acquisition cost of Goseong Green Power Co., Ltd.