S-OIL Corporation and Subsidiaries

Consolidated Financial Statements December 31, 2021 and 2020

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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Board of Directors and Shareholders of S-OIL Corporation

Opinion

We have audited the accompanying consolidated financial statements of S-OIL Corporation 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 comprehensive income, changes in equity and 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 International Financial Reporting Standards as adopted by the Republic of Korea.

Basis for Opinion

We conducted our audits in accordance with Korean Standards on Auditing. 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 of the Republic of Korea that are relevant to our audit of the consolidated financial statements and we have fulfilled our other ethical responsibilities in accordance with the ethical requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit 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.

Related Party Transactions - Existence and Disclosure

Why it is determined to be a key audit matter

Sales and purchases transactions with related parties of the Group in 2021 are $\mbox{$W$}$ 5,422,108 million and $\mbox{$W$}$ 20,508,420 million, respectively. These amounts represent 20% of total sales and 81% of total purchases. We focused on the impact of these significant related party transactions on the consolidated financial statements. See Note 33 for details.

More specifically, sales transactions with Aramco Trading Company and its subsidiaries amount to \forall 4,939,187 million and purchase transactions with Saudi Arabian Oil Company and Aramco Trading Company and its subsidiaries amount to \forall 20,328,295 million. Given the significant size of transactions, we considered related party transactions with these particular related parties (existence and disclosure) as a key audit matter.

How our audit addressed the key audit matter

Our procedures with respect to existence and disclosure of sales and purchases from related parties include:

- · Obtaining an understanding and evaluating process and relevant controls relating to the related party transactions
- Performing external confirmation procedures and examining supporting documents, in a sample basis, to substantive test of sales and purchases at transaction level
- · Evaluating appropriateness of disclosure in accordance with the applicable financial reporting framework

Inventory Valuation

Why it is determined to be a key audit matter

Valuation allowance for inventories of \forall 44,907 million and loss on valuation of inventories of \forall 37,693 million were recognized as of and for the year ended December 31, 2021. See Note 12 for details.

In measuring allowance for inventories, significant management's estimates and judgment are made as to future estimated sales price. Given the size of the balance and the extent of judgment involved, we considered inventory valuation as a key audit matter.

How our audit addressed the key audit matter

Our procedures with respect to inventory valuation include:

- · Obtaining an understanding and evaluating process and relevant controls relating to the inventory valuation
- Examining supporting documents for future estimated sales price which is one of the assumptions management used
- · Recalculating mathematical accuracy of allowance for inventories

Other Matter

Auditing standards and their application in practice vary among countries. The procedures and practices used in the Republic of Korea to audit such consolidated financial statements may differ from those generally accepted and applied in other countries.

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

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

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations.

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 Korean Standards on Auditing 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 Korean Standards on Auditing, 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 Sung-Ki Jun, Certified Public Accountant.

Seoul, Korea March 11, 2022

This report is effective as of March 11, 2022, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that there is a possibility that the above audit report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

S-OIL Corporation and Subsidiaries Consolidated Statements of Financial Position December 31, 2021 and 2020

(In millions of Korean won)				
Assets	Notes	2021		2020
Current assets				
Cash and cash equivalents	3,7,11	₩ 1,945,	526 ₩	737,439
Trade receivables	3,8,11	1,970,		1,196,327
Other receivables	3,8,11,35	124,		171,902
Other current financial assets	3,4,9,11		051	344,119
Derivative financial instruments	3,4,10,11		248	5,336
Inventories	12	3,545,		2,192,289
Other current assets	9	778,		347,667
Current income tax assets	-	-,	-	1,470
		8,377,	423	4,996,549
		, ,		<u> </u>
Non-current assets				
Other receivables	3,8,11,35		501	78,670
Other non-current financial assets	3,4,9,11		440	58,865
Investments in joint venture	13		823	31,636
Property, plant and equipment	6,14,16	9,564,		10,077,801
Intangible assets	6,15	108,		98,770
Investment property	37	136,		-
Other non-current assets	9,35	275,		255,368
Net defined benefit assets Deferred income tax assets	20 30	43,	405	02.051
Deferred income tax assets	30	10,315,	- 812	92,851 10,693,961
Total assets		₩ 18,693,		15,690,510
Total assets		VV 10,033,	200 11	13,030,310
Liabilities				
Current liabilities				
Trade payables	3,11,17	₩ 3,075,	770 ₩	2,003,623
Other payables	3,11,17,35	572,		391,752
Borrowings	3,11,18	2,818,		2,615,377
Derivative financial instruments	3,4,10,11		210	33,577
Current income tax liabilities	, , ,	126,		208
Provisions for other liabilities and charges	19	14,	627	2,875
Contract liabilities	19	18,	431	20,668
Other current liabilities	17	1,876,	481	1,497,031
		8,505,	027	6,565,111
Non-current liabilities	0 44 47 05	055	0.40	045.050
Other payables	3,11,17,35	255,	349	245,653
Net defined benefit liabilities	20	0.706	- 007	2,613 3,194,602
Borrowings Deferred income tax liabilities	3,11,18 30	2,736, 208,		
Deferred income tax habilities	30	3,200,		3,442,922
Total liabilities		11,705,		10,008,033
Total Habilities		11,705,	193	10,000,033
Equity				
Share capital	22	291,	512	291,512
Share premium	22	379,		379,190
Reserves	25	985,		977,944
Treasury share	23		376)	(1,876)
Retained earnings	24	5,333,		4,035,707
Total equity		6,988,		5,682,477
Total liabilities and equity		₩ 18,693,	235 ₩	15,690,510

The above consolidated statements of financial position should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries Consolidated Statements of Comprehensive Income Years Ended December 31, 2021 and 2020

(In millions of Korean won, except earnings per share data)	Notes	2021	2020
Sales	6	₩ 27,463,918	₩ 16,829,681
Cost of sales	26,31	(24,695,192)	(17,366,204)
Gross profit (loss)		2,768,726	(536,523)
Selling expenses Administrative expenses	27,31 27,31	(507,903) (119,881)	(458,855) (103,768)
Operating profit (loss)		2,140,942	(1,099,146)
Other income Other expenses Finance income Finance costs Share of net profit of joint venture	28 28 29 29 13	459,981 (494,023) 129,059 (359,726) 1,787	394,473 (430,609) 416,394 (452,615) 3,706
Profit (loss) before income tax		1,878,020	(1,167,797)
Income tax benefit (expense) Profit (loss) for the year	30	(499,479) 1,378,541	371,689 (796,108)
Other comprehensive income (loss), net of tax Items that will not be reclassified to profit or loss Remeasurements of net defined benefit liabilities Gains on valuation of financial assets at fair value through other comprehensive income Items that may be subsequently reclassified to profit or loss	20	36,466 6,884	(9,748) 3,541
Share of other comprehensive income of joint venture Currency translation differences	25 25	- 191	9 (105)
Total other comprehensive income (loss) for the year		43,541	(6,303)
Total comprehensive income (loss) for the year		₩ 1,422,082	₩ (802,411)
Earnings (loss) per share Basic and diluted earnings (loss) per ordinary share Basic and diluted earnings (loss) per preferred share	32 32	₩ 11,840 ₩ 11,865	₩ (6,839) ₩ (6,814)

The above consolidated statements of comprehensive income should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries Consolidated Statements of Changes in Equity Years ended December 31, 2021 and 2020

(In millions of Korean won)	Share Capital	Share Premium	Reserves	Treasury Share	Retained Earnings	Total Equity
Balance at January 1, 2020	₩ 291,512	₩ 379,190	₩ 979,629	₩ (1,876)	₩ 4,848,171	₩ 6,496,626
Loss for the year					(796,108)	(796,108)
Other comprehensive income (loss)						
Gains on valuation of financial assets at fair value through other comprehensive income Reclassification due to disposal of financial assets at fair	-	-	3,541	-	-	3,541
value through other comprehensive income	-	-	(5,130)	-	5,130	-
Share of other comprehensive income in joint venture	-	-	9	-	-	9
Foreign currency translation adjustments	-	-	(105)	-	-	(105)
Remeasurements of net defined benefit liabilities					(9,748)	(9,748)
Other comprehensive loss for the year			(1,685)		(4,618)	(6,303)
Total comprehensive loss for the year			(1,685)		(800,726)	(802,411)
Transactions with owners Dividends paid for 2019					(11,738)	(11,738)
Balance at December 31, 2020	₩ 291,512	₩ 379,190	₩ 977,944	₩ (1,876)	₩ 4,035,707	₩ 5,682,477

S-OIL Corporation and Subsidiaries Consolidated Statements of Changes in Equity Years ended December 31, 2021 and 2020

(In millions of Korean won)	_	hare apital		Share remium	Re	eserves		easury Share	Retained Earnings	To	tal Equity
Balance at January 1, 2021	₩	291,512	₩	379,190	₩	977,944	₩	(1,876)	₩ 4,035,707	₩	5,682,477
Profit for the year				-		-		-	1,378,541		1,378,541
Other comprehensive income (loss) Gains on valuation of financial assets at fair value through other comprehensive income		_		_		6,884		_	_		6,884
Reclassification due to disposal of financial assets at fair value through other comprehensive income		-		-		455		-	(455)		-
Foreign currency translation adjustments		-		-		191		-	-		191
Remeasurements of net defined benefit liabilities				_				-	36,466		36,466
Other comprehensive income for the year				_		7,530		-	36,011		43,541
Total comprehensive income for the year		-		-		7,530		-	1,414,552		1,422,082
Transactions with owners Dividends paid for 2020 Interim Dividends paid for 2021		<u>-</u>		- -		- -		- -	(96) (116,421)		(96) (116,421)
Balance at December 31, 2021	₩	291,512	₩	379,190	₩	985,474	₩	(1,876)	₩ 5,333,742	₩	6,988,042

The above consolidated statements of changes in equity should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries Consolidated Statements of Cash Flows Years ended December 31, 2021 and 2020

(In millions of Korean won)	Notes		2021		2020
Cash flows from operating activities					
Cash generated from operations	34	₩	1,660,093	₩	1,745,149
Interest received			8,898		13,248
Interest paid			(111,174)		(169,630)
Income tax refunded (paid)			(85,604)		39,117
Dividends received			4,952		3,088
Net cash inflow from operating activities			1,477,165		1,630,972
Cash flows from investing activities					
Proceeds from disposal of property, plant and equipment			175,277		23,819
Proceeds from disposal of intangible assets			1,004		2,781
Decrease in other receivables			21,001		15,646
Decrease in other financial assets			334,992		11,867
Purchase of property, plant and equipment	14		(271,967)		(547,100)
Purchase of intangible assets	15		(13,301)		(362)
Payments for acquisition of associate			(8,200)		-
Purchase of financial assets at fair value through profit or					
loss	4		(2,981)		(5,863)
Increase in other receivables			(4,366)		(5,098)
Increase in other current assets			(11,753)		-
Settlement of derivative assets and liabilities			(10,326)		(49,212)
Increase in other financial assets			-		(82,669)
Others			(12,798)		595
Net cash inflow (outflow) from investing activities			196,582		(635,596)
Cash flows from financing activities					
Proceeds from borrowings			458,602		1,097,361
Repayment of borrowings			(740,000)		(1,571,332)
Decrease in other payables			(68,217)		(62,975)
Dividends paid			(116,519)		(11,742)
Net cash outflow from financing activities			(466,134)		(548,688)
Net increase in cash and cash equivalents			1,207,613		446,688
Cash and cash equivalents at the beginning of the year	7		737,439		291,005
Effects of exchange rate changes on cash and cash			4		(0.5.1)
equivalents			474		(254)
Cash and cash equivalents at the end of the year	7	₩	1,945,526	₩	737,439

The above consolidated statements of cash flows should be read in conjunction with the accompanying notes.

1. General Information

The general information of S-OIL Corporation (the "Company" or the "Parent Company") and its subsidiaries, S-International Ltd., North East Chemicals Co., Ltd. and S-OIL Singapore PTE. LTD. (the "Subsidiaries") (collectively referred to as the "Group") under Korean IFRS 1110 *Consolidated Financial Statements*, are as follows:

The Company

S-OIL Corporation was established in 1976 to manufacture and sell oil refining products, lube products and petrochemical products, and to import and export crude oil and products. In 1987, the Company listed its stock on the Korea Exchange. The Company's headquarters is located in Mapo-gu, Seoul, Korea.

As of December 31, 2021, the major shareholders of the Company and their respective shareholdings are as follows:

	2021				
Name of shareholders	Number of ordinary shares	Percentage of ownership (%)			
Aramco Overseas Co., B.V.	71,387,560	63.41			
Institutional and individual investors	41,195,232	36.59			
Total	112,582,792	100.00			

Consolidated Subsidiaries

Details of the consolidated subsidiaries as of December 31, 2021 and 2020, are as follows:

	Number of Shares	Location	2021 Ownership interest held by the Group (%)	2020 Ownership interest held by the Group (%)	Main business	Closing Month
S-International Ltd.	10	Samoa	100	100	Purchasing and sales of crude oil and petroleum goods	December
S-OIL Singapore PTE. LTD.	1,200,000	Singapore	100	100	Lube base oil trading and overseas services	December

Summarized financial information for consolidated subsidiaries as of and for the years ended December 31, 2021 and 2020, is as follows:

(In millions of Korean won)				2021		
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the year	Total comprehensive income
S-International Ltd.	₩ 1,382	₩ -	₩ 1,382	₩ -	₩ 1	₩ 114
S-OIL Singapore PTE. LTD.	35,671	32,354	3,317	261,595	1,669	1,819
(In millions of Korean won)				2020		Total
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the year	Total comprehensive income (loss)
S-International Ltd.	₩ 1,268	₩ -	₩ 1,268	₩ -	₩ 6	₩ (76)
North East Chemicals Co., Ltd. ¹	-	-	-	7,522	2,156	2,207
S-OIL Singapore PTE. LTD.	14,523	13,026	1,497	95,279	531	467

¹ North East Chemicals Co., Ltd. was excluded from the consolidated subsidiaries because it was merged with the Company for the year ended December 31, 2020, and transactions before the merger with the Company were presented.

Changes in Scope for Consolidation

There are no changes in subsidiaries included or excluded in the consolidation for the year ended December 31, 2021.

2. Significant Accounting Policies

The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

2.1 Basis of Preparation

The Group maintains its accounting records in Korean won and prepares statutory consolidated financial statements in the Korean language (Hangul) in accordance with International Financial Reporting Standards as adopted by the Republic of Korea ("Korean IFRS"). The accompanying consolidated financial statements have been condensed, restructured and translated into English from the Korean language consolidated financial statements.

Certain information attached to the Korean language financial statements, but not required for a fair presentation of the Group's financial position, financial performance or cash flows, is not presented in the accompanying consolidated financial statements.

The consolidated financial statements of the Group have been prepared in accordance with Korean IFRS. These are the standards, subsequent amendments and related interpretations issued by the International Accounting Standards Board (IASB) that have been adopted by the Republic of Korea.

The financial statements have been prepared on a historical cost basis, except for the following:

- · Certain financial assets and liabilities (including derivative instruments), certain classes of property, plant and equipment and investment property measured at fair value
- · assets held for sale measured at fair value less costs to sell, and
- · defined benefit pension plans plan assets measured at fair value.

The preparation of consolidated financial statements requires the use of critical accounting estimates. Management also needs to exercise judgement in applying the Group's accounting policies. The areas involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements are disclosed in Note 5.

(1) New and amended standards adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2021.

- Amendments to Korean IFRS 1116 *Lease* - Practical expedient for COVID-19 - Related Rent Concessions

As a practical expedient, a lessee may elect not to assess whether a rent concession occurring as a direct consequence of the COVID-19 pandemic is a lease modification. A lessee that makes this election shall account for any change in lease payments resulting from the rent concession the same way it would account for the change applying this standard if the change were not a lease modification. The amendment does not have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1109 Financial Instruments, Korean IFRS 1039 Financial Instruments: Recognition and Measurement, Korean IFRS 1107 Financial Instruments: Disclosure, Korean IFRS 1104 Insurance Contracts and Korean IFRS 1116 Lease – Interest Rate Benchmark Reform (Phase 2 amendments)

In relation to interest rate benchmark reform, the amendments provide exceptions including adjust effective interest rate instead of book amounts when interest rate benchmark of financial instruments at amortized costs is replaced, and apply hedge accounting without discontinuance although the interest rate benchmark is replaced in hedging relationship. The amendment does not have a significant impact on the consolidated financial statements.

(2) New standards and interpretations not yet adopted by the Group

The following new accounting standards and interpretations have been published that are not mandatory for December 31, 2021 reporting period and have not been early adopted by the Group.

- Amendment to Korean IFRS 1116 - Covid-19 - Related Rent Concessions beyond June 30, 2021

The application of the practical expedient, a lessee may elect not to assess whether a rent concession occurring as a direct consequence of the COVID-19 pandemic is a lease modification, is extended to lease payments originally due on or before June 30, 2022. The amendment should be applied for annual periods beginning on or after April 1, 2021, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1103 *Business Combination* - Reference to the Conceptual Framework

The amendments update a reference of definition of assets and liabilities to be recognized in a business combination in revised Conceptual Framework for Financial Reporting. However, the amendments add an exception for the recognition of liabilities and contingent liabilities within the scope of Korea IFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*, and Korean IFRS 2121 *Levies.* The amendments also clarify that contingent assets should not be recognized at the acquisition date. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that this amendment has a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1016 Property, Plant and Equipment - Proceeds before intended use

The amendments prohibit an entity from deducting from the cost of an item of property, plant and equipment any proceeds from selling items produced while the entity is preparing the asset for its intended use. Instead, the entity will recognize the proceeds from selling such items, and the costs of producing those items, in profit or loss. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group is in review for the impact of these amendments on the consolidated financial statements.

- Amendments to Korean IFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets* - Onerous Contracts : Cost of Fulfilling a Contract

The amendments clarify that the direct costs of fulfilling a contract include both the incremental costs of fulfilling the contract and an allocation of other costs directly related to fulfilling contracts when assessing whether the contract is onerous. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1001 *Presentation of Financial Statements -* Classification of Liabilities as Current or Non-current

The amendments clarify that liabilities are classified as either current or non-current, depending on the substantive rights that exist at the end of the reporting period. Classification is unaffected by the likelihood that an entity will exercise right to defer settlement of the liability or the expectations of management. Also, the settlement of liability includes the transfer of the entity's own equity instruments, however, it would be excluded if an option to settle them by the entity's own equity instruments if compound financial instruments is met the definition of equity instruments and recognized separately from the liability. The amendments should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted. The Group is in review for the impact of these amendments on the consolidated financial statements.

- New Standard: Korean IFRS 1117 Insurance Contract

Korean IFRS 1117 *Insurance Contracts* replaces Korean IFRS 1104 *Insurance Contracts*. This standard estimates future cash flows of an insurance contract and measures insurance liabilities using discount rates applied with assumptions and risks at the measurement date. The entity recognizes insurance revenue on an accrual basis including services (insurance coverage) provided to the policyholder by each annual period. In addition, investment components (Refunds due to termination/maturity) repaid to a policyholder even if an insured event does not occur, are excluded from insurance revenue, and insurance financial income or expense and the investment income or expense are presented separately to enable users of the information to understand the sources of income or expenses. This standard should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted for entities that applied Korean IFRS 1109 *Financial Instruments*. The Group is in review for the impact of this new standard on the consolidated financial statements.

- Korean IFRS 1001 Presentation of Financial Statements - Disclosure of Accounting Policies

The amendments to Korean IFRS 1001 define and require entities to disclose their material accounting policies. The IASB amended IFRS Practice Statement 2 *Disclosure of Accounting Policies* to provide guidance on how to apply the concept of materiality to accounting policy disclosures. The amendments should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted. The Group is in review for the impact of these amendments on the consolidated financial statements.

- Korean IFRS 1008 Accounting policies, changes in accounting estimates and errors - Definition of Accounting Estimates

The amendments define accounting estimates and clarify how to distinguish them from changes in accounting policies. The amendments should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Korean IFRS 1012 *Income Taxes* - Deferred Tax related to Assets and Liabilities arising from a Single Transaction

The amendments include an additional condition to the exemption to initial recognition of an asset or liability that a transaction does not give rise to equal taxable and deductible temporary differences at the time of the transaction. The amendments should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Annual improvements to Korean IFRS 2018-2020

Annual improvements of Korean IFRS 2018-2020 Cycle should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Korean IFRS 1101 First time Adoption of Korean International Financial Reporting Standards
 Subsidiaries that are first-time adopters
- Korean IFRS 1109 Financial Instruments Fees related to the 10% test for derecognition of financial liabilities
- Korean IFRS 1116 Leases Lease incentives
- Korean IFRS 1041 Agriculture Measuring fair value

2.2 Consolidation

The Group has prepared the consolidated financial statements in accordance with Korean IFRS 1110 Consolidated Financial Statements.

(1) Subsidiaries

Subsidiaries are all entities over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power to direct the activities of the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are deconsolidated from the date that control ceases.

The acquisition method of accounting is used to account for business combinations by the Group. The consideration transferred is measured at the fair values of the assets transferred, and identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date. The Group recognizes any non-controlling interest in the acquired entity on an acquisition-by-acquisition basis either at fair value or at the non-controlling interest's proportionate share of the acquired entity's net identifiable assets. All other non-controlling interests are measured at fair values, unless otherwise required by other standards. Acquisition-related costs are expensed as incurred.

The excess of consideration transferred, amount of any non-controlling interest in the acquired entity and acquisition-date fair value of any previous equity interest in the acquired entity over the fair value of the net identifiable assets acquired is recoded as goodwill. If those amounts are less than the fair value of the net identifiable assets of the business acquired, the difference is recognized directly in the profit or loss as a bargain purchase.

Intercompany transactions, balances and unrealized gains on transactions between group companies are eliminated. Accounting policies of subsidiaries have been changed where necessary to ensure consistency with the policies adopted by the Group.

(2) Associates

Associates are entities over which the Group has significant influence but not control or joint control. Investments in associates are accounted for using the equity method of accounting, after initially being recognized at cost. Unrealized gains on transactions between the Group and its associates are eliminated to the extent of the Group's interest in the associates. If the Group's share of losses of an associate equals or exceeds its interest in the associate (including long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognizing its share of further losses. After the Group's interest is reduced to zero, additional losses are provided for, and a liability is recognized, only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate. If there is an objective evidence of impairment for the investment in the associate, the Group recognizes the difference between the recoverable amount of the associate and its book amount as impairment loss. If an associate uses accounting policies other than those of the Group for like transactions and events in similar circumstances, if necessary, adjustments shall be made to make the associate's accounting policies conform to those of the Group when the associate's financial statements are used by the entity in applying the equity method.

(3) Joint Arrangements

A joint arrangement, wherein two or more parties have joint control, is classified as either a joint operation or a joint venture. A joint operator recognizes its direct right to the assets, liabilities, revenues and expenses of joint operations and its share of any jointly held or incurred assets, liabilities, revenues and expenses. Interests in joint ventures are accounted for using the equity method, after initially being recognized at cost in the consolidated statement of financial position.

2.3 Foreign Currency Translation

(1) Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which each entity operates (the "functional currency"). The consolidated financial statements are presented in Korean won, which is the Parent Company's functional and presentation currency.

(2) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies at year end exchange rates are generally recognized in profit or loss.

Non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined. Translation differences on assets and liabilities carried at fair value are reported as part of the fair value gain or loss. For example, translation differences on non-monetary assets and liabilities such as equities held at fair value through profit or

loss are recognized in profit or loss as part of the fair value gain or loss and translation differences on non-monetary assets such as equities held at fair value through other comprehensive income are recognized in other comprehensive income.

(3) Translation to presentation currency

The results and financial position of subsidiary that have a functional currency different from the presentation currency are translated into the presentation currency of as follows:

- · assets and liabilities for each statement of financial position presented are translated at the closing rate at the end of the reporting period,
- · income and expenses for each statement of profit or loss are translated at average exchange rates,
- · equity is translated at the historical exchange rate, and
- · all resulting exchange differences are recognized in other comprehensive income.

2.4 Financial Assets

(1) Classification

The Group classifies its financial assets in the following measurement categories:

- those to be measured at fair value through profit or loss,
- those to be measured at fair value through other comprehensive income, and
- those to be measured at amortized cost.

The classification depends on the Group's business model for managing the financial assets and the contractual terms of the cash flows.

For financial assets measured at fair value, gains and losses will either be recorded in profit or loss or other comprehensive income. For investments in debt instruments, this will depend on the business model in which the investment is held. The Group reclassifies debt investments when, and only when its business model for managing those assets changes.

For investments in equity instruments that are not held for trading, this will depend on whether the Group has made an irrevocable election at the time of initial recognition to account for the equity investment at fair value through other comprehensive income. Changes in fair value of non-designated equity investment are recognized in profit or loss.

(2) Measurement

At initial recognition, the Group 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 that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss.

Financial assets with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

A. Debt instruments

Subsequent measurement of debt instruments depends on the Group's business model for managing the asset and the cash flow characteristics of the asset. The Group classifies its debt instruments into one of the following three measurement categories:

- Amortized cost: Assets that are held for collection of contractual cash flows where those cash
 flows represent solely payments of principal and interest are measured at amortized cost. A
 gain or loss on a debt investment that is subsequently measured at amortized cost and is not
 part of a hedging relationship is recognized in profit or loss when the asset is derecognized
 or impaired. Interest income from these financial assets is included in 'finance income' using
 the effective interest rate method.
- Fair value through other comprehensive income: Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets is included in 'finance income' using the effective interest rate method. Foreign exchange gains and losses are presented in 'other income or expenses' and impairment losses are presented in 'other expenses'.
- Fair value through profit or loss: Assets that do not meet the criteria for amortized cost or fair
 value through other comprehensive income are measured at fair value through profit or loss.
 A gain or loss on a debt investment that is subsequently measured at fair value through profit
 or loss and is not part of a hedging relationship is recognized in profit or loss and presented
 net in the statement of profit or loss within 'other income or expenses' in the year in which it
 arises.

B. Equity instruments

The Group subsequently measures all equity investments at fair value. Where the Group's management has elected to present fair value gains and losses on equity investments, which held for long-term investment or strategic purpose, in other comprehensive income, there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividend income from such investments continue to be recognized in profit or loss as 'other income' when the right to receive payments is established.

Changes in the fair value of financial assets at fair value through profit or loss are recognized in 'other income and expenses' in the statement of profit or loss as applicable. Impairment loss (reversal of impairment loss) on equity investments measured at fair value through other comprehensive income are not reported separately from other changes in fair value.

(3) Impairment

The Group assesses on a forward-looking basis the expected credit losses associated with its debt instruments carried at amortized cost and fair value through other comprehensive income. The impairment methodology applied depends on whether there has been a significant increase in credit risk. For trade receivables and lease receivables, the Group applies the simplified approach, which requires expected lifetime credit losses to be recognized from initial recognition of the receivables.

(4) Recognition and derecognition

Regular way purchases and sales of financial assets are recognized or de-recognized on trade-date, the date on which the Group commits to purchase or sell the asset. Financial assets are derecognized when the rights to receive cash flows from the financial assets have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership.

(5) Offsetting of financial instruments

Financial assets and liabilities are offset and the net amount reported in the statements of financial position where there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis or realize the assets and settle the liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default, insolvency or bankruptcy of the Group or the counterparty.

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2.5 Derivative Instruments

Derivatives are initially recognized at fair value on the date when a derivative contract is entered into and are subsequently remeasured at their fair value at the end of each reporting period. Changes in the fair value of any derivative instrument that does not qualify for hedge accounting are recognized immediately in profit or loss within 'other income or other expenses' based on the nature of transactions.

The Group applies cash flow hedge accounting to hedge the foreign currency risk associated with forecast sale. The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in the cash flow hedge reserve within equity, limited to the cumulative change in fair value (present value) of the hedged item (the present value of the cumulative change in the future expected cash flows of the hedged item) from the inception of the hedge. The ineffective portion is recognized in 'other income or other expenses'.

When forward contracts are used to hedge the foreign currency risk associated with forecast sale, the Group generally designates only the change in fair value of the forward contract related to the spot element as the hedging instrument. Gains or losses relating to the effective portion of the change in the spot element of the forward contracts are recognized in the cash flow hedge reserve within equity. Amounts accumulated in equity are reclassified to 'sale' in the periods when the hedged item affects profit or loss.

2.6 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using the first-in, first-out (FIFO) method except for in-transit inventories which are determined using the specific identification method and supplies which are determined using the moving weighted average method.

2.7 Property, Plant and Equipment

Property, plant and equipment are stated at historical cost less accumulated depreciation and accumulated impairment losses. Historical cost includes expenditure that is directly attributable to the acquisition of the items.

Depreciation of all property, plant and equipment, except for land and catalysts, is calculated using the straight-line method to allocate their cost or revalued amounts, net of their residual values, over their estimated useful lives as follows:

Buildings Structures Machinery and equipment Vehicles Other property, plant and equipment Catalysts Estimated useful lives
20 - 40 years
20 - 40 years
15 - 30 years
5 years
3 - 5 years
Units-of-production method

The assets' depreciation method, residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

2.8 Borrowing Costs

General and specific borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying asset are capitalized during the period of time that is required to complete and prepare the asset for its intended use or sale. Investment income earned on the temporary investment of specific borrowings on qualifying assets is deducted from the borrowing costs eligible for capitalization. Other borrowing costs are expensed in the period in which they are incurred.

2.9 Intangible Assets

Goodwill is measured as described in Note 2.2 (1), and carried at cost less accumulated impairment losses

Intangible assets, except for goodwill, are initially recognized at its historical cost and carried at its cost less accumulated amortization and accumulated impairment losses. Membership rights that have an indefinite useful life are not subject to amortization because there is no foreseeable limit to the period over which the assets are expected to be utilized. The Group amortizes intangible assets with a limited useful life using the straight-line method over the following periods:

Estimated useful lives

Facility usage rights
Other intangible assets

Periods with exclusive supply rights or contract periods 5 years

2.10 Investment Property

Investment property is property held to earn rentals or for capital appreciation or both. An investment property is measured initially at its cost. An investment property is measured after initial measurement at depreciated cost (less any accumulated impairment losses). After recognition as an asset, investment property is carried at cost less accumulated depreciation and impairment losses. The investment property held by the Group is land.

2.11 Impairment of Non-financial Assets

Goodwill and intangible assets that have an indefinite useful life are not subject to amortization and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Other assets are tested for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs of disposal and value in use. Non-financial assets other than goodwill that suffered an impairment are reviewed for possible reversal of the impairment at the end of each reporting period.

2.12 Financial Liabilities

(1) Classification and measurement

The Group's financial liabilities at fair value through profit or loss are financial instruments held for trading. A financial liability is held for trading if it is incurred principally for the purpose of repurchasing in the near term. A derivative that is not a designated as hedging instruments and an embedded derivative that is separated are also classified as held for trading.

The Group classifies non-derivative financial liabilities, except for financial liabilities at fair value through profit or loss, financial guarantee contracts and financial liabilities that arise when a transfer of financial assets does not qualify for derecognition, as financial liabilities carried at amortized cost and present as 'trade payables', 'other payables' and 'borrowings' in the consolidated statement of financial position.

(2) Derecognition

Financial liabilities are removed from the consolidated statement of financial position when it is extinguished; for example, when the obligation specified in the contract is discharged or cancelled or expired or when the terms of an existing financial liability are substantially modified.

2.13 Current Tax and Deferred Tax

The tax expense for the period consists of current tax and deferred tax. Current tax and deferred tax are recognized in profit or loss, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. In this case, the tax is also recognized in other comprehensive income or directly in equity, respectively.

The current tax is measured at the amount expected to be paid to the taxation authorities, using the tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. The Group recognizes current income tax on the basis of amounts expected to be paid to the tax authorities.

Deferred tax is provided in full, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. However, deferred income tax is not accounted for if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss. Deferred tax assets are recognized only if it is probable that future taxable amounts will be available to utilize those temporary differences and losses.

The Group recognizes deferred tax liability all taxable temporary differences associated with investments in subsidiaries, associates, and interests in joint arrangements, except to the extent that the Group is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. In addition, The Group recognizes a deferred tax asset for all deductible temporary differences arising from such investments to the extent that it is probable the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets and liabilities and when the deferred tax balances relate to the same taxation authority. Current tax assets and tax liabilities are offset where the entity has a legally enforceable right to offset and intends either to settle on a net basis.

2.14 Post-employment Benefits

The Group operates both defined contribution and defined benefit pension plans.

For defined contribution plans, the Group pays contribution to publicly or privately administered pension insurance plans on mandatory, contractual or voluntary basis. The Group has no further payment obligation once the contribution have been paid. The contribution are recognized as employee benefit expense when they are due.

A defined benefit plan is a pension plan that is not a defined contribution plan. Generally, post-employment benefits are payable after the completion of employment, and the benefit amount depended on the employee's age, periods of service or salary levels. The liability recognized in the consolidated statement of financial position in respect of defined benefit pension plans is the present value of the defined benefit obligation at the end of the reporting period less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms approximating to the terms of the related obligation. Remeasurement gains and losses arising from experience adjustments and changes in actuarial assumptions are recognized in the period in which they occur, directly in other comprehensive income.

Changes in the present value of the defined benefit obligation resulting from plan amendments or curtailments are recognized immediately in profit or loss as past service costs.

2.15 Provisions

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the end of the reporting period, and the increase in the provision due to the passage of time is recognized as interest expense.

2.16 Customer Loyalty Program

The award credits ("points") provide the customers with benefits that they would not have if there is no contract entered into. Accordingly, providing points to customers is a separate performance obligation. Transaction price per performance obligation is allocated based on relative stand-alone selling price of goods and points. The management estimates the stand-alone selling price of points based on discounts to be provided when the points are redeemed and the probability of redemption from past experience. Stand-alone selling price of goods are estimated based on the retail price.

2.17 Share Capital

Ordinary shares and preferred shares that are not mandatorily redeemable are classified as equity.

Where the Company purchases its own equity share capital (treasury share), the consideration paid, including any directly attributable incremental costs is deducted from equity attributable to the subsequently reissued, any consideration received is included in equity attributable to the Company's equity holders.

2.18 Revenue Recognition

The Group manufactures and sells oil refining products, lube products and petrochemical products, and imports and exports crude oil and products. Revenue from the sale of goods is recognized when the Group sells a product to the customer based on the contract.

The Group estimates an amount of variable consideration by using the expected value which the Group expects to better predict the amount of consideration. The Group recognize revenue with transaction price including variable consideration only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the refund period has lapsed. The refund liability is measured at the amount of consideration received for which the Group does not expect to be entitled.

The transaction price in an arrangement must be allocated to each separate performance obligation based on the relative stand-alone selling prices of the goods or services being provided to a customer. The Group determines the stand-alone selling price for each separate performance obligation by using 'adjust market assessment approach'. In limited circumstances, the Group plans to use 'expected cost plus a margin approach' to estimate expected cost plus a reasonable margin.

A gross contract liability (refund liability) for the expected refunds to customers is recognized and sales are adjusted. At the same time, the Group has a right to collect the product from the customer when the customer exercises the right of return and recognizes an asset and adjusts cost of sales. Right to collect the product from the customer is measured by previous book amount of the product less cost to collect the product.

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2.19 Lease

(1) Lessor

Lease income from operating leases where the Group is a lessor is recognized in income on a straightline basis over the lease term. Initial direct costs incurred in obtaining an operating lease are added to the carrying amount of the underlying asset and recognized as expense over the lease term on the same basis as lease income. The respective leased assets are included in the statement of financial position based on their nature.

(2) Lessee

The Group leases vessels, storage facilities, sites for gas station and charging station and other facilities and machinery. Lease contracts are made for fixed periods of 1 to 20 years, but may have extension options.

Contracts may contain both lease and non-lease components. The Group allocates the consideration in the contract to the lease and non-lease components based on their relative stand-alone prices.

Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions.

The lease agreements do not impose any covenants, but leased assets may not be used as security for borrowing purposes.

The Group determines the lease term as the non-cancellable period of a lease, together with periods covered by an option to extend the lease if the lessee is reasonably certain to exercise that option. When the lessee and the lessor each has the right to terminate the lease without permission from the other party, the Group should consider a termination penalty in determining the period for which the contract is enforceable.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- Fixed payments (including in-substance fixed payments), less any lease incentives receivable
- Variable lease payment that are based on an index or a rate, initially measured using the index or rate as of the commencement date
- · Amounts expected to be payable by the Group (the lessee) under residual value guarantees
- The exercise price of a purchase option if the Group (the lessee) is reasonably certain to exercise that option, and
- Payments of penalties for terminating the lease, if the lease term reflects the Group (the lessee) exercising that option

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The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the lessee's incremental borrowing rate is used, being the rate that the lessee would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions.

To determine the incremental borrowing rate, the Group:

- where possible, uses recent third-party financing received by the individual lessee as a starting point, adjusted to reflect changes in financing conditions since third party financing was received, and
- makes adjustments specific to the lease, for example term, country, currency and security.

The Group is exposed to potential future increases in variable lease payments based on an index or rate, which are not included in the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

Each lease payment is allocated between the liability and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability
- any lease payments made at or before the commencement date less any lease incentives received
- any initial direct costs, and
- · restoration costs

The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If the Group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the underlying asset's useful life of 1 to 20 years.

Payments associated with short-term leases and leases of low-value assets are recognized on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and others.

2.20 Dividends

Dividends paid to the Group's shareholders is recognized as a liability in the consolidated financial statements in the period in which the dividends are approved by the Group's shareholders.

2.21 Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to equity holders of the Group by the weighted average number of ordinary shares in issue during the year. Basic earnings per preferred share is also calculated by dividing the profit attributable to participating shares with right to participate in distribution of earnings by the weighted average number of preferred shares in issue during the year.

2.22 Segment Reporting

Information of each operating segment is reported in a manner consistent with the internal business segment reporting provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the Board of Directors that makes strategic decisions.

2.23 Greenhouse Gas Emission Permits and Obligations

With enforcement of *The Act on the Allocation and Trading of Greenhouse Gas Emission Permits*, emission permits that are allocated free of charge from the government are measured at zero, and emission permits purchased are recognized at acquisition cost by including any directly attributable costs incurred during the normal course of business. Emission permits are carried at cost less accumulated impairment losses, and those to be submitted to the government within one year from the end of reporting period are classified as current assets.

Emission obligation is a present obligation of submitting the allowances to the government. Emissions obligations are measured as the sum of the carrying amount of the allocated allowances that will be submitted to the government and the best estimate of expenditure required to settle the obligation at the end of reporting period for any excess emission. The emission obligations to be settled within one year from the end of the reporting period are classified as current liabilities.

The Group derecognizes the emission permits when the emission allowance is disposed or submitted to the government or becomes unable to be disposed or submitted, and accordingly, the future economic benefits are no longer expected to be probable. The Group derecognizes the emission obligations when the Group submits the emission permits to the government. The emission permits and emission obligations are classified as intangible assets and provisions, respectively, in the statement of financial position.

2.24 Approval of Issuance of the Consolidated Financial Statements

The issuance of the consolidated financial statements for the year 2021 of the Group was approved by the Board of Directors on February 28, 2022, which is subject to change with the approval of shareholders at the general shareholders' meeting.

3. Financial Risk Management

3.1 Financial Risk Factors

The Group's activities expose it to a variety of financial risks: market risk, credit risk and liquidity risk. The Group's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize any adverse effects on the financial performance of the Group.

Risk management is carried out by each relevant department under policies approved by the Board of Directors. The Group identifies, evaluates and hedges financial risks in close co-operation with the Group's operating units.

(1) Market risk

a. Foreign exchange risk

The Group operates internationally and is exposed to foreign exchange risk arising from foreign currency transactions, primarily with respect to the US dollar. Foreign exchange risk arises when future commercial transactions, recognized asset and liabilities are presented in currencies other than the functional currency.

The purpose of foreign exchange risk management is to maximize the Group's value by minimizing the uncertainty and volatility of foreign exchange gains and losses from foreign exchange rate fluctuations.

The Group maintains foreign exchange risk management system to offset foreign exchange effects arising from recognized income/expense and assets/liabilities.

As of December 31, 2021, if the Korean won had weakened or strengthened by 10% against the foreign currencies with all other variables held constant, profit for the year would have been decreased or increased by \$\psi\$ 223,972 million (2020: \$\psi\$ 192,505 million) in relation to foreign currency-denominated trade receivables, trade payables, and usance borrowings. However, the Group's foreign exchange risk is controlled effectively as the above foreign exchange risk has offsetting effect with other foreign exchange effects affecting operating income.

The Group's financial instruments denominated in major currencies as of December 31, 2021 and 2020, are converted into Korean won as follows:

(In millions of Korean won) Trade receivables		2021		2020
KRW	₩	418,969	₩	261,433
USD		1,530,260		922,950
EUR		17,670		9,872
AUD		4,097		2,072
Total	₩	1,970,996	₩	1,196,327
Trade payables				
KRW	₩	123,140	₩	49,331
USD		2,951,608		1,953,408
JPY		1,022		884
Total	₩	3,075,770	₩	2,003,623
Borrowings				
KRW	₩	3,195,991	₩	4,134,393
USD		2,358,921		1,675,586
Total	₩	5,554,912	₩	5,809,979

b. Product margin risk

The Group is exposed to product margin risk arising from difference in timing of purchase and sale. The purpose of product margin risk management is to maximize the Group's value by minimizing the uncertainty of volatility of product margin.

In order to minimize the product margin risk, the Group tries to sell products produced within the month. For the products that need to be stored for a longer period, the Group secures the product margin by executing product swap to mitigate a risk of future price fluctuation.

c. Interest rate risk

Interest rate risk is defined as the risk that the interest income or expenses arising from deposits and borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises on floating rate deposits and borrowings. As a result, the Group is exposed to cash flow interest rate risk.

The objective of interest rate risk management lies in maximizing the Group's value by minimizing uncertainty caused by fluctuations in interest rates and minimizing net interest expense.

There is no impact on the Group's equity and profit for the year as of and for the years ended December 31, 2021 and 2020, when the interest rate has increased or decreased by 100 basis point with all other variables held constant.

d. Price risk of financial assets at fair value through other comprehensive income and financial assets at fair value through profit or loss

The Group is exposed to equity securities price risk arises from investments held by the Group that are classified as financial assets at fair value through other comprehensive income and financial assets at fair value through profit or loss in the consolidated statement of financial position. To manage its price risk arising from investments in equity securities, the Group diversifies its portfolio.

The table below summarizes the impact of increases or decreases of these two indexes on the Group's total comprehensive income for the year. The analysis is based on the assumption that the equity indexes has increased/decreased by 10% with all other variables held constant, and that all the Group's equity instruments moved in line with the indexes.

(In millions of Korean won)	2	021		2020
Listed stocks	₩	-	₩	21
Unlisted stocks		3,948		3,192
Fund		1,085		1,049
	₩	5,033	₩	4,262

(2) Credit risk

a. Risk management

Credit risk arises from receivables, cash and cash equivalents, derivative financial instruments and deposits with banks and financial institutions. For banks and financial institutions, only independently rated parties with high ratings are accepted. If customers are independently rated, these ratings are used. If there is no independent rating, the credit quality of the customer is evaluated taking into account its financial position, past experience and other factors.

Individual risk limits are set based on internal or external ratings in accordance with limits set by the Group. The utilization of credit limits is strictly executed.

The maximum exposure to credit risk as of December 31, 2021 and 2020, is as follows:

(In millions of Korean won)		2021		2020
Financial assets				
Cash and cash equivalents	₩	1,945,481	₩	737,385
Trade receivables		1,970,996		1,196,327
Other receivables		205,277		250,572
Other financial assets		11,074		344,194
Derivative financial assets		1,248		5,336
Total	₩	4,134,076	₩	2,533,814

With the exception of trade receivables and other receivables, none of financial assets is past due or impaired. There is no collateral held by the Group except for trade receivables and other receivables.

b. Impairment of financial assets

The Group has three types of financial assets that are subject to the expected credit loss model:

- trade receivables for sales of goods and provision of services,
- · other receivables and other financial assets at amortized cost,
- · debt investments carried at fair value through other comprehensive income, and
- · lease receivables, which are subject to application of Korean IFRS 1116 Leases.

The identified impairment loss in lease receivables was immaterial. While cash equivalents are also subject to the impairment requirement, the identified impairment loss was immaterial.

(i) Trade receivables

The Group applies the simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables.

Expected credit losses are estimated based on the information that has impact on credit risk related to customers.

On that basis, the loss allowance as of December 31, 2021 and 2020 was determined as follows for both trade receivables:

(In millions of Korean won)		2021		2020
Gross carrying amount – trade receivables	₩	1,973,705	₩	1,197,889
Loss allowance provision		(2,709)		(1,562)
	₩	1,970,996	₩	1,196,327

Changes in the loss allowance provision for trade receivables for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	Trade receivables			
		2021		2020
Beginning balance	₩	1,562	₩	2,346
Increase in loss allowance recognized in profit or loss during the year		1,179		-
Receivables written off during the year as uncollectible		(32)		(71)
Allowance reversal		-		(713)
Ending balance	₩	2,709	₩	1,562

Trade receivables are written off when there is no reasonable expectation of recovery.

Impairment losses on trade receivables are presented as net impairment losses within impairment loss in the statement of comprehensive income. Subsequent recoveries of amounts previously written off are credited against the same line item.

(ii) Other receivables and other financial assets at amortized cost

There are no movements in loss allowance provision for other receivables and other financial assets at amortized cost for the year ended December 31, 2021.

All of the other receivables and other financial assets at amortized costs other than lease receivables are considered to have low credit risk, and the loss allowance recognized during the period was, therefore, limited to 12 months expected losses. Other instruments are considered to be low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term. The Group applies the simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all lease receivables.

(iii) Debt investments at fair value through other comprehensive income

Debt investments at fair value through other comprehensive income include government bonds, corporate bonds and trade receivables subject to be sold or discounted. The loss allowance for debt investments at fair value through other comprehensive income is recognized in profit or loss and reduces the fair value loss otherwise recognized in other comprehensive income.

All of the debt investments at fair value through other comprehensive income other than trade receivables subject to be sold or discounted are considered to have low credit risk, and the loss allowance recognized during the period was, therefore, limited to 12 months expected losses. Management considers 'low credit risk' for listed bonds to be an investment grade credit rating with at least one major rating agency. Other instruments are considered to be low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term.

The Group applies the simplified approach to measure expected credit losses which uses a lifetime expected loss allowance for all trade receivables. There are no movements in loss allowance provision for other financial assets at fair value through other comprehensive income other than trade receivables subject to be sold or discounted for the year ended December 31, 2021.

c. Impairment loss

Following losses (reversal of losses) are recognized in profit or loss in relation to impaired financial assets for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	Trade receivables				
	2021			2020	
Impairment loss (reversal)	₩	1,179	₩		(713)

(3) Liquidity risk

Liquidity risk is defined as the risk that the Group is unable to meet its short-term payment obligations on time due to deterioration of its business performance.

The Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants on any of its borrowing facilities. The Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of liquid assets necessary to meet these, monitoring balance sheet liquidity ratios against internal and external regulatory requirements and maintaining debt financing plans.

Details of the Group's liquidity risk analysis as of December 31, 2021 and 2020, are as follows:

	2021				
(In millions of Korean won)	Less than 1 year	Between 1 and 2 years	Over 2 years	Total	
Trade payables	₩ 3,075,770	₩ -	₩ -	₩ 3,075,770	
Other payables	584,441	82,165	187,585	854,191	
Borrowings	2,881,106	640,915	2,251,839	5,773,860	
Currency forward (gross)					
Inflow	(413,040)	_	-	(413,040)	
Outflow	412,031	-	-	412,031	
Commodity Swap (net)	1,969	-	-	1,969	
Total	₩ 6,542,277	₩ 723,080	₩ 2,439,424	₩ 9,704,781	

	2020			
(In millions of Korean won)		Between		
	Less than 1 and 2		Over	
	1 year	years	2 years	Total
Trade payables	₩ 2,003,624	₩ -	₩ -	₩ 2,003,624
Other payables	401,663	60,782	204,571	667,016
Borrowings	2,696,384	519,973	2,891,493	6,107,850
Currency forward (gross)				
Inflow	(1,103,218)	-	-	(1,103,218)
Outflow	1,127,419	-	-	1,127,419
Commodity Swap (net)	4,095	<u> </u>		4,095
Total	₩ 5,129,967	₩ 580,755	₩ 3,096,064	₩ 8,806,786

The amounts disclosed in the above table are undiscounted cash flows.

3.2 Capital Risk Management

The Group's objectives when managing capital are to safeguard the Group's ability to continue as a going concern, so the Group can continue to provide returns for shareholders and benefits for other stakeholders, and to maintain an optimal capital structure to reduce the cost of capital.

The Group monitors financial ratios, such as debt-to-equity ratio and net borrowings-to-equity ratio each month and implements required action plan to maintain or adjust the capital structure.

Debt-to-equity ratio and net borrowings-to-equity ratio as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021	2020
Interest bearing liabilities (A) ¹	₩ 5,841,904	₩ 6,073,461
Cash and cash equivalents and current financial deposits (B)	1,956,526	1,081,439
Net borrowings (C=A-B)	3,885,378	4,992,022
Equity (D)	6,988,042	5,682,477
Debt-to-equity ratio (A/D)	84%	107%
Net borrowings-to-equity ratio (C/D)	56%	88%

¹ Borrowings and lease liabilities are included.

4. Fair Value

4.1 Fair Value of Financial Instruments by Category

Carrying amount and fair value of financial instruments by category as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020				
		Carrying		Fair		arrying		Fair
	1	amount	V	alue	а	ımount		value
Financial assets								
Financial assets at fair value through other comprehensive income Financial assets at fair value through	₩	54,517	₩	54,517	₩	44,505	₩	44,505
profit or loss		16,214		16,214		19,805		19,805
Total	₩	70,731	₩	70,731	₩	64,310	₩	64,310
Financial liabilities								
Derivative financial liabilities	₩	2,210	₩	2,210	₩	33,577	₩	33,577
Public bonds		3,195,991	3	,157,469		3,934,393		3,986,365
Total	₩	3,198,201	₩ 3	,159,679	₩	3,967,970	₩	4,019,942

Carrying amount of other financial assets and liabilities other than financial assets at fair value and derivative financial instruments and public bonds is a reasonable approximation of fair value.

4.2 Fair Value Hierarchy

Items that are measured at fair value are categorized by the fair value hierarchy levels, and the defined levels are as follows:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities that an entity can access at the measurement date (Level 1).
- All inputs other than quoted prices included in level 1 that are observable (either directly that is, prices, or indirectly that is, derived from prices) for the asset or liability (Level 2).
- Unobservable inputs for the asset or liability (Level 3).

Fair value hierarchy classifications of the financial instruments that are measured at fair value as of December 31, 2021, are as follows:

(In millions of Korean won)		Level 1		Level 2		Level 3		Total
Financial assets/liabilities that are measured at fair value								
Assets								
Financial assets at fair value through other comprehensive income								
Equity securities	₩	-	₩	-	₩	54,451	₩	54,451
Debt securities		66		-		-		66
Financial assets at fair value through profit or loss								
Derivative financial assets held for trading		-		1,248		-		1,248
Equity securities		-		-		14,966		14,966
Total	₩	66	₩	1,248	₩	69,417	₩	70,731
Liabilities								
Financial liabilities at fair value through profit or loss								
Derivative financial liabilities held for								
trading	₩	-	₩	2,210	₩	-	₩	2,210
Borrowings								
Public bonds		3,157,469		_				3,157,469
Total	₩	3,157,469	₩	2,210	₩	_	₩	3,159,679

Fair value hierarchy classifications of the financial instruments that are measured at fair value as of December 31, 2020, are as follows:

(In millions of Korean won)		Level 1		Level 2		Level 3		Total
Financial assets/liabilities that are measured at fair value Assets								
Financial assets at fair value through other comprehensive income								
Equity securities	₩	290	₩	-	₩	44,031	₩	44,321
Debt securities		184		-		-		184
Financial assets at fair value through profit or loss								
Derivative financial assets held for								
trading		-		5,336		-		5,336
Equity securities		-		-		14,469		14,469
Total	₩	474	₩	5,336	₩	58,500	₩	64,310
Liabilities								
Financial liabilities at fair value through profit or loss								
Derivative financial liabilities held for								
trading	₩	-	₩	33,577	₩	-	₩	33,577
Borrowings								
Public bonds		3,986,365		-		-		3,986,365
Total	₩	3,986,365	₩	33,577	₩	-	₩	4,019,942

4.3 Transfers between Fair Value Hierarchy Levels of Recurring Fair Value Measurements

The Group's policy is to recognize transfers between levels of the fair value at the end of the reporting period. There were no transfers between levels 1 and 2 for recurring fair value measurements during the year. Changes in level 3 for recurring fair value measurements for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2	2021		2020
Beginning balance	₩	58,500	₩	57,919
Acquisition		2,981		5,863
Disposal		(1,534)		(8,865)
Total profit or loss				
Gains on valuation (other comprehensive income)		9,470		3,583
Ending balance	₩	69,417	₩	58,500

4.4 Valuation Technique and the Inputs

Valuation techniques and inputs used in levels 2 and 3 fair value measurements as of December 31, 2021 are as follows:

(1) Level 3

(In millions of Korean won)	Fair value	Level	Valuation technique		Inputs	Range of inputs
Equity instruments at fair value through other comprehensive income						
Equity securities	₩ 54,451	3	Present val technique		Discount rate	6.70%
Financial assets at fair value through profit or loss			·			
Equity securities	14,966	3	Net asset va approach		Discount rate	N/A
(2) Level 2						
(In millions of Korean won)			Fair value	Leve	l Valuation to	echniques
Financial assets at fair value profit or loss	e through					
Currency forward			₩ 1,174	2	Present value	e technique
Commodity swap Financial liabilities at fair va profit or loss	lue througl	1	74	2	Present value	e technique
Currency forward			167	2	Present valu	e technique
Commodity swap			2,043	2	Present valu	e technique

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4.5 Valuation Processes for Fair Value Measurements Categorized as Level 3

The accounting department of the Group that performs the fair value measurements required for financial reporting purposes, including Level 3 fair values. This department discusses valuation processes and result with the management.

4.6 Sensitivity Analysis for Recurring Fair Value Measurements Categorized as Level 3

Sensitivity analysis of financial instruments is performed to measure favorable and unfavorable changes in the fair value of financial instruments which are affected by the unobservable parameters, using a statistical technique. When the fair value is affected by more than two input parameters, the most favorable or most unfavorable amounts are presented. Changes in fair value of financial instruments categorized as level 3 subject to sensitivity analysis; such as, equity securities, are recognized in other comprehensive income or profit or loss.

5. Critical Accounting Estimates and Assumptions

The preparation of consolidated financial statements requires the Group to make estimates and assumptions concerning the future. Estimates and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. The resulting accounting estimates will, by definition, seldom equal the related actual results.

During 2021, the spread of Coronavirus disease 2019 ("COVID-19") has a material impact on the global economy. The slowdown or spread of COVID-19 in the future is expected to have a positive or negative impact on the financial statements after 2021.

The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below.

5.1 Net Defined Benefit Liabilities

The present value of net defined benefit liability depends on a number of factors that are determined on an actuarial basis using a number of assumptions including the discount rate (Note 20).

5.2 Fair Value of Financial Instruments

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. The Group uses its judgment to select a variety of methods and make assumptions that are mainly based on market conditions existing at the end of each reporting period (Note 4).

5.3 Income Taxes

The Group's taxable income generated from these operations are subject to income taxes based on tax laws and interpretations of tax authorities in numerous jurisdictions. There are many transactions and calculations for which the ultimate tax determination is uncertain (Note 30).

If certain portion of the taxable income is not used for investments or increase in wages or dividends, the Group is liable to pay additional income tax calculated based on the tax laws for the specified periods. Accordingly, the measurement of current and deferred income tax is affected by the tax effects. As the Group's income tax is dependent on the investments, increase in wages and dividends, there is an uncertainty measuring the final tax effects.

5.4 Estimated Goodwill Impairment

The recoverable amount of a cash generating unit (CGU) is determined based on value-in-use calculations (Note 15).

5.5 Impairment of Financial Assets

The provision for impairment for financial assets are based on assumptions about risk of default and expected loss rates. The Group uses judgment in making these assumptions and selecting the inputs to the impairment calculation based on the Group's past history, existing market conditions as well as forward looking estimates at the end of each reporting period (Note 3.1 (2) b).

5.6 Lease

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

Most extension options in offices and others have not been included in the lease liability, because the Group could replace the assets without significant cost or business disruption.

The lease term is reassessed if an option is actually exercised (or not exercised) or the Group becomes obliged to exercise (or not exercise) it. The assessment of reasonable certainty is only revised if a significant event or a significant change in circumstances occurs, which affects this assessment, and that is within the control of the lessee.

In addition, the Group initially estimates and recognizes amounts expected to be payable under residual value guarantees as part of the lease liability. Typically, the expected residual value at lease commencement is equal to or higher than the guaranteed amount, and so the Group does not expect to pay anything under the guarantees.

5.7 Measurement of Net Realizable Value of Inventories

Inventories are measured at the lower of cost and net realizable value. It is required to estimate the expected selling price and the expected selling expenses in the measurement of the net realizable value. In these estimation processes, the management's judgments take an important role.

6. Operating Segment Information

The reportable operating segments of the Group are oil refining business, lube oil business and petrochemical business.

Financial information by operating segments as of and for the years ended December 31, 2021 and 2020, is as follows:

				20)21			
(In millions of Korean won)		l Refining Business	_	ube Oil usiness		ochemical usiness		Total
Sales from external customers	₩	20,190,770	₩	2,615,788	₩	4,657,360	₩	27,463,918
Inter-segment sales		6,644,647		208,994		1,367,515		8,221,156
Total sales	₩	26,835,417	₩	2,824,782	₩	6,024,875	₩	35,685,074
Operating profit	₩	908,222	₩	988,965	₩	243,755	₩	2,140,942
Property, plant, equipment and intangible assets	₩	6,748,840	₩	176,940	₩	2,747,429	₩	9,673,209
Depreciation and amortization and others	₩	395,387	₩	13,631	₩	181,845	₩	590,863
				20	020			
(In millions of Korean won)	Ωi	l Refining		ube Oil	Potr	ochemical		
,		Business	_	usiness		usiness		Total
Sales from external customers		12,635,043	_	usiness 1,332,456		usiness 2,862,182	₩	16,829,681
Sales from external customers Inter-segment sales	₩	12,635,043 3,746,009	₩	1,332,456 173,245	B ₩	2,862,182 800,195		16,829,681 4,719,449
Sales from external customers	E	12,635,043	В	usiness 1,332,456	В	usiness 2,862,182	₩	16,829,681
Sales from external customers Inter-segment sales	₩	12,635,043 3,746,009	₩	1,332,456 173,245	B ₩	2,862,182 800,195		16,829,681 4,719,449
Sales from external customers Inter-segment sales Total sales	₩	12,635,043 3,746,009 16,381,052	₩	1,332,456 173,245 1,505,701	\ \ \ \ \	2,862,182 800,195 3,662,377	₩	16,829,681 4,719,449 21,549,130

Sales by geographic region for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020	
Korea	₩	12,379,125	₩	7,667,689	
Southeast Asia		3,957,421		2,282,463	
China		3,448,724		2,379,318	
America		1,737,423		863,017	
Japan		2,250,376		1,378,585	
Australia		1,680,580		1,007,567	
Europe		449,246		206,523	
Others		1,561,023		1,044,519	
Total	₩	27,463,918	₩	16,829,681	

Details of a customer, who contributes more than ten percent of the Group sales for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020	Segments
Customer 1 ¹	₩	4,939,187	₩	2,874,290	Oil refining and petrochemical
					business

¹ Aramco Trading Company, Aramco Trading Singapore PTE. LTD. and Aramco Trading Fujairah FZE, related parties of the Group

7. Cash and Cash Equivalents

Cash and cash equivalents as of December 31, 2021 and 2020, consists of:

(In millions of Korean won)		2021		2020
Cash on hand	₩	45	₩	54
Checking accounts		1		9
Passbook accounts		4,634		2,002
Foreign currency deposits		854,726		224,759
Time deposits		946,000		395,000
Others		140,120		115,615
Total	₩	1,945,526	₩	737,439

Cash and cash equivalents presented in the consolidated statements of financial position and cash flows are identical as of December 31, 2021 and 2020.

8. Trade and Other Receivables

Trade and other receivables as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	20	21	20	20
	Current	Non-current	Current	Non-current
Trade receivables	₩ 1,973,705	₩ -	₩ 1,197,889	₩ -
Less : provision for impairment	(2,709)	<u>-</u> _	(1,562)	
Trade receivables, net	1,970,996		1,196,327	
Other receivables				
Non-trade receivables	109,269	-	157,103	-
Accrued income	568	-	450	-
Loans	6,452	26,915	7,406	35,194
Lease receivables (Note 35)	8,487	25,816	6,943	16,550
Guaranty deposits	<u> </u>	27,770		26,926
	124,776	80,501	171,902	78,670
Net book amount	₩ 2,095,772	₩ 80,501	₩ 1,368,229	₩ 78,670

The aging analysis of trade receivables as of December 31, 2021 and 2020, is as follows:

(In millions of Korean won)	2021			2020
Receivables not past due	₩	1,966,724	₩	1,193,449
Up to one month		6,427		3,512
One to three months		158		392
Three to six months		12		126
Six to twelve months		-		110
Over one year		384		300
Total	₩	1,973,705	₩	1,197,889

As of December 31, 2021, trade receivables of $\mbox{$W$}$ 933,990 million (2020: $\mbox{$W$}$ 408,649 million) have collateral provided by customers. Among those trade receivables, $\mbox{$W$}$ 2,426 million (2020: $\mbox{$W$}$ 2,635 million) is past due but not impaired.

The aging analysis of other receivables as of December 31, 2021 and 2020, is as follows:

(In millions of Korean won)	2	2021	2	2020
Receivables not past due	₩	205,277	₩	249,364
Up to one month		-		208
One to three months		-		-
Three to six months		<u>-</u>		1,000
Total	₩	205,277	₩	250,572

See Note 3.1 (2) b for the impairment of trade receivables, other financial assets at amortized cost and the Group's exposure to credit risk.

As of December 31, 2021, the balance of trade receivables that have been transferred but are not past due amounts to USD 192 million (2020: USD 15 million). As of December 31, 2021, the Group transferred the trade receivables to the BNP Paribas Bank and one other financial institution and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 21).

The Group holds the trade receivables with the objective to collect the contractual cash flows and, therefore, the Group's business model for managing trade receivables is to collect the contractual cash flows. When discount agreements have been made on certain types of trade receivables, judgment on the business model is assessed. If selling price is infrequently observed or individually or collectively not significant, it is probable that the judgment is consistent with the business model with the objective of collecting the contractual cash flows. Portfolio for certain types of trade receivables which are discounted are classified as business model for selling or for collection of contractual cash flows, while undiscounted portfolio is classified as business model with the objective of collection of contractual cash flows. Trade receivables that are held for selling or for collection of contractual cash flows are measured at fair value and gains or losses on valuation are recognized as other comprehensive income.

9. Other Financial Assets and Other Assets

9.1 Other financial assets fair value through profit or loss

Other financial assets fair value through profit or loss as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020			
Non-current							
Fund	₩	14,966	₩	14,469			

9.2 Other financial assets at fair value through other comprehensive income

Other financial assets at fair value through other comprehensive income as of December 31, 2021 and 2020, are as follows:

(1) Equity investments at fair value through other comprehensive income

(In millions of Korean won)	2	2021	2020		
Non-current					
Listed equity securities	₩	-	₩	290	
Non-listed equity securities		54,451		44,031	
Total	₩	54,451	₩	44,321	

As of December 31, 2021 and 2020, the fair value of unlisted equities is determined using discounted cash flow analysis based on the risk adjusted yield.

Upon disposal of these equity investments, any balance within the accumulated other comprehensive income for these equity investments is reclassified to retained earnings and is not reclassified to profit or loss.

(2) Debt investments at fair value through other comprehensive income

Debt investments at fair value through other comprehensive income comprise the following investments in bonds having solely payments of principal and interest:

(In millions of Korean won)	2021	20	20	
Government bonds Current Non-current	₩	51 15	₩	119 65
Total	₩	66	₩	184

Upon disposal of these debt investments, any balance within the accumulated other comprehensive income for these debt investments is reclassified to profit or loss.

9.3 Other financial assets at amortized cost

Other financial assets at amortized cost as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)			2021					2020					
	(Current	Non-c	urrent		Total		Current	Non-	current		Total	
Short-term financial instruments (time deposits) ¹	₩	11,000	₩	-	₩	11,000	₩	344,000	₩	-	₩	344,000	
Long-term deposit 1		-		8		8		-		10		10	
		11,000		8		11,008		344,000		10		344,010	
Less: provision for impairment		_		-		-		_		-		-	
	₩	11,000	₩	8	₩	11,008	₩	344,000	₩	10	₩	344,010	

¹ Short-term financial instruments include ₩ 5,436 million which are subject to restricted use in relation to contractual guarantee (Note 16). Long-term deposit of ₩ 8 million is subject to withdrawal restrictions.

Changes in financial assets at fair value through other comprehensive income for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021	2020		
Beginning balance	₩	44,505	₩	49,837	
Acquisition		959		1	
Disposal		(457)		(8,987)	
Other comprehensive income		9,510		3,654	
Ending balance		54,517		44,505	
Less: non-current portion		54,466		44,386	
Current portion	₩	51	₩	119	

Other assets as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		20	21			2020				
	Current		Non	-current	Cu	rrent	Non-current			
Advance payments	₩	777	₩	26,742	₩	941	₩	10,399		
Prepaid expenses		6,003		-		6,861		-		
Tax receivables		759,954		-	3	339,865		-		
Greenhouse gas emission permits (Note 36)		11,752		-		-		-		
Right-of-use assets (Note 35)		-		248,627		-		244,969		
	₩	778,486	₩	266,926	₩ 3	347,667	₩	255,368		

10. Derivative Financial Instruments

Details of derivative financial instruments as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		20	21		2020			
	Assets		Liabilities		Assets		Liabilities	
Trading purpose Forward foreign exchange Commodity swap	₩	1,174 74	₩	167 2,043	₩	5,127 209	₩ 29,273 4,304	
	₩	1,248	₩	2,210	₩	5,336	₩ 33,577	

Derivatives financial instruments held for trading purposes are classified as current assets or liabilities.

11. Financial Instruments by Category

Carrying amounts of financial assets and liabilities by category as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021										
			Fin	ancial							
			asse	ts at fair							
			٧	alue							
	F	inancial	th	rough	Fir	nancial					
		ssets at	other comprehensi		assets at fair value through		Other financial				
	a	mortized									
		cost ve incor		ncome	profi	t or loss	assets ¹		Total		
Assets											
Cash and cash equivalents	₩	1,945,526	₩	-	₩	-	₩	-	₩1,945,526		
Trade receivables		1,970,996		-		-		-	1,970,996		
Other receivables		170,974		-		-		34,303	205,277		
Other financial assets		11,008		54,517		14,966		-	80,491		
Derivative financial instruments		-		-		1,248			1,248		
Total	₩	4,098,504	₩	54,517	₩	16,214	₩	34,303	₩4,203,538		

¹ Other financial assets represent lease receivables, which are not subject to financial asset categorizations.

(In millions of Korean won)	2021									
	lia	inancial bilities at ortized cost	liabiliti value	ancial es at fair through or loss		r financial bilities ¹	Total			
Liabilities										
Trade payables	₩	3,075,770	₩	-	₩	-	₩ 3,075,770			
Other payables		540,743		-		286,992	827,735			
Borrowings		5,554,912		-		-	5,554,912			
Derivative financial instruments		-		2,210		-	2,210			
Total	₩	9,171,425	₩	2,210	₩	286,992	₩ 9,460,627			

¹ Other financial liabilities represent lease liabilities, which are not subject to financial liability categorizations.

(In millions of Korean won)					20				
	а	inancial ssets at mortized cost	s at other ized comprehensi		Financial assets at fair value through profit or loss		n financial		Total
Assets									
Cash and cash equivalents	₩	737,439	₩	-	₩	-	₩	-	₩ 737,439
Trade receivables		1,188,792		7,535		-		-	1,196,327
Other receivables		227,079		-		-		23,493	250,572
Other financial assets		344,010		44,505		14,469		-	402,984
Derivative financial instruments				_		5,336			5,336
Total	₩	2,497,320	₩	52,040	₩	19,805	₩	23,493	₩2,592,658

¹ Other financial assets represent lease receivables, which are not subject to financial asset categorizations.

(In millions of Korean won)	2020										
	lia	inancial bilities at ortized cost	liabilit value	iancial ies at fair through t or loss	Other financial liabilities ¹			Total			
Liabilities											
Trade payables	₩	2,003,623	₩	_	₩	-	₩	2,003,623			
Other payables		373,923		-		263,482		637,405			
Borrowings		5,809,979		-		-		5,809,979			
Derivative financial instruments				33,577		_		33,577			
Total	₩	8,187,525	₩	33,577	₩	263,482	₩	8,484,584			

¹ Other financial liabilities represent lease liabilities, which are not subject to financial liability categorizations.

Net gains or losses on each category of financial instruments for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020
Financial assets at amortized cost				
Interest income	₩	8,476	₩	11,921
Foreign currency gains (losses)		152,887		(62,538)
Reversal of provision for impairment (provision for impairment)		(1,179)		713
Assets and liabilities at fair value through profit or loss				
Derivative financial instruments gains (losses)		16,953		(69,859)
Assets at fair value through other comprehensive income				
Gains on valuation and disposal (other comprehensive income)		9,510		3,654
Interest income		2		5
Dividend income		1,152		688
Other financial assets				
Interest income		539		425
Financial liabilities at amortized cost				
Foreign currency gains (losses)		(464,484)		185,335
Interest expenses ¹		(103,098)		(150,592)
Other financial liabilities				
Interest expenses		(6,715)		(7,471)
Foreign currency gains (losses)		(9,738)		8,980

¹ Interest expenses exclude capitalized borrowing costs on qualifying assets.

12. Inventories

Inventories as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020		
Merchandise	₩	36,603	₩	17,302		
Valuation allowance for merchandise		(102)		(59)		
Finished goods		830,127		457,341		
Valuation allowance for finished goods		(25,776)		(6,201)		
Work in progress		506,049		298,008		
Valuation allowance for work in progress		(12,618)		(648)		
Raw materials and materials-in-transit		2,172,271		1,382,376		
Valuation allowance for raw materials and materials-in-transit		(6,412)		(307)		
Supplies		45,198		44,477		
Total	₩	3,545,340	₩	2,192,289		

Inventories cost that was recognized as cost of sales for the year ended December 31, 2021 amounted to $\mbox{$\forall$}$ 21,893,405 million (2020: $\mbox{$\forall$}$ 15,124,777 million). The Group recognized losses on valuation of inventories for $\mbox{$\forall$}$ 37,693 million for the year ended December 31, 2021 (2020: reversal of losses on valuation of inventories for $\mbox{$\forall$}$ 26,247 million).

13. Investments in Joint venture and Associate

Details of joint venture and associate as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won, except number of shares)

,	•	Closing	Number of	Percentage of	Acc	uisition		Book	valu	е
Investee	Location	Month	Shares	Ownership (%)	(Cost		2021	2	2020
Joint venture ¹ S-OIL TOTAL Lubricants Co., Ltd. Associate ²	Korea	December	3,500,001	50% plus one share	₩	20,134	₩	29,690	₩	31,636
FCI Co., Ltd.	Korea	December	812,299	19.08%		8,200		8,133		-
					₩	28,334	₩	37,823	₩	31,636

¹ Although the Group owns more than 50% of the voting rights of S-OIL TOTAL Lubricants Co., Ltd., it is excluded from the consolidated subsidiaries as the Group is unable to exercise controls by virtue of an agreement with other investor.

Details of adjustments from financial information of joint venture and associate to the book value of investments in joint venture and associate for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Ko	rean won)	2021										
		Net assets at the end of the year	Percentage of ownership (%)		oup's hare	gain	ealized or loss others	Book value				
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	₩ 59,550	50% plus one share	₩	29,775	₩	(85)	₩ 29,690				
Associate	FCI Co., Ltd.	15,897	19.08%		3,033		5,100	8,133				
(In millions of Ko	rean won)			20	20							
		Net assets at the end of the year	Percentage of ownership (%)		oup's hare	gain	ealized or loss others	Book value				
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	₩ 63,881	50% plus one share	₩	31,941	₩	(305)	₩ 31,636				

² The Group acquired shares of FCI Co., Ltd. during 2021, and classified it as an associate.

The table below provides summarized financial information for joint venture and associate as of and for the years ended December 31, 2021 and 2020.

(In millions of Korean won)	S-OIL TOTAL Co.,	FCI Co., Ltd.	
	2021	2020	2021
Current assets	₩ 100,455	₩ 84,663	₩ 15,026
Non-current assets	34,518	38,354	6,168
Total assets	₩ 134,973	₩ 123,017	₩ 21,194
Current liabilities	₩ 66,759	₩ 46,045	₩ 794
Non-current liabilities	8,664	13,091	4,503
Total liabilities	75,423	59,136	5,297
Total equity	₩ 59,550	₩ 63,881	₩ 15,897
Sales	₩ 311,830	₩ 255,012	₩ 2,819
Operating profit (loss)	6,183	10,348	(470)
Profit (loss) before income tax	4,497	9,938	(397)
Profit (loss) for the year	3,439	7,774	(397)
Total comprehensive income (loss) for the year	3,439	7,799	(397)

Details of valuation of investments in joint venture and associate that are accounted for using the equity method for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2020						
	Luk	L TOTAL pricants	ECL (ادا د	_	'etal	Lubi	TOTAL
	C	o., Ltd.	FCIC	co., Ltd.	'	otal	Co.	, Ltd.
Beginning balance	₩	31,636	₩	-	₩	31,636	₩	30,317
Acquisition		-		8,200		8,200		-
Share of profit (loss)		1,720		(67)		1,653		3,850
Unrealized gains (losses)		134		_		134		(144)
Dividend received		(3,800)		-		(3,800)		(2,400)
Other equity changes		-		-		-		13
Ending balance	₩	29,690	₩	8,133	₩	37,823	₩	31,636

14. Property, Plant and Equipment

Changes in property, plant and equipment for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)					2021				
	Machinery and Construction-								
	Land	Buildings	Structures	equipment	Vehicles	Others	Catalysts	in-progress	Total
At January 1, 2021									
Acquisition cost	₩ 1,807,147	₩ 530,455	₩ 2,002,885	₩ 8,164,843	₩ 14,453	₩ 796,158	₩ 638,772	₩ 966,749	₩ 14,921,462
Accumulated depreciation		(120,784)	(732,890)	(3,230,921)	(13,715)	(342,753)	(402,598)		(4,843,661)
Net book amount	₩ 1,807,147	₩ 409,671	₩ 1,269,995	₩ 4,933,922	₩ 738	₩ 453,405	₩ 236,174	₩ 966,749	₩ 10,077,801
Changes during 2021									
Beginning net book amount	₩ 1,807,147	₩ 409,671	₩ 1,269,995	₩ 4,933,922	₩ 738	₩ 453,405	₩ 236,174	₩ 966,749	₩ 10,077,801
Additions	-	100	283	1	434	46,333	116,813	112,544	276,508
Transfers	7,706	1,144	15,516	91,620	-	1,643	21,578	(284,780)	(145,573)
Disposals	(54,398)	(4,645)	(590)	-	-	(125)	(1,115)	-	(60,873)
Depreciation		(13,165)	(75,584)	(209,953)	(340)	(112,064)	(171,918)		(583,024)
Ending net book amount	₩ 1,760,455	₩ 393,105	₩ 1,209,620	₩ 4,815,590	₩ 832	₩ 389,192	₩ 201,532	₩ 794,513	₩ 9,564,839
At December 31, 2021									
Acquisition cost	₩ 1,760,455	₩ 517,631	₩ 1,967,025	₩ 8,256,057	₩ 11,264	₩ 806,572	₩ 776,048	₩ 794,513	₩ 14,889,565
Accumulated depreciation	-	(124,526)	(757,405)	(3,440,467)	(10,432)	(417,380)	(574,516)	-	(5,324,726)
Net book amount	₩ 1,760,455	₩ 393,105	₩ 1,209,620	₩ 4,815,590	₩ 832	₩ 389,192	₩ 201,532	₩ 794,513	₩ 9,564,839

				2020				
		Construction-						
Land	Buildings	Structures	equipment	Vehicles	Others	Catalysts	in-progress	Total
₩ 1,820,917	7 ₩ 531,792	₩ 1,805,274	₩ 8,131,084	₩ 14,827	₩ 1,027,921	₩ 870,361	₩ 932,888 ₩	15,135,064
	(108,839)	(662,602)	(3,013,736)	(13,600)	(602,005)	(595,143)		(4,995,925)
₩ 1,820,917	7 ₩ 422,953	₩ 1,142,672	₩ 5,117,348	₩ 1,227	₩ 425,916	₩ 275,218	₩ 932,888 ₩	10,139,139
₩ 1,820,917	7 ₩ 422,953	₩ 1,142,672	₩ 5,117,348	₩ 1,227	₩ 425,916	₩ 275,218	₩ 932,888 ₩	10,139,139
-	- 48	169	1	5	44,972	104,661	383,564	533,420
-	- 737	204,067	33,758	-	87,560	16,454	(349,703)	(7,127)
(13,770)	(743)	(5,294)	-	-	(3,666)	(279)	-	(23,752)
	(13,324)	(71,619)	(217,185)	(494)	(101,377)	(159,880)	<u> </u>	(563,879)
₩ 1,807,147	7 ₩ 409,671	₩ 1,269,995	₩ 4,933,922	₩ 738	₩ 453,405	₩ 236,174	₩ 966,749 ₩	10,077,801
₩ 1,807,147	7 ₩ 530,455	₩ 2,002,885	₩ 8,164,843	₩ 14,453	₩ 796,158	₩ 638,772	₩ 966,749 ₩	14,921,462
	(120,784)	(732,890)	(3,230,921)	(13,715)	(342,753)	(402,598)	<u> </u>	(4,843,661)
₩ 1,807,147	7 ₩ 409,671	₩ 1,269,995	₩ 4,933,922	₩ 738	₩ 453,405	₩ 236,174	₩ 966,749 ₩	10,077,801
	 ₩ 1,820,917 ₩ 1,820,917 ₩ 1,820,917 ₩ 1,820,917 ₩ 1,807,147 ₩ 1,807,147 	₩ 1,820,917 ₩ 531,792 - (108,839) ₩ 1,820,917 ₩ 422,953 ₩ 1,820,917 ₩ 422,953 - 48 - 737 (13,770) (743) - (13,324) ₩ 1,807,147 ₩ 409,671 ₩ 1,807,147 ₩ 530,455 - (120,784)	₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 - (108,839) (662,602) ₩ 1,820,917 ₩ 422,953 ₩ 1,142,672 + 48 169 - 737 204,067 (13,770) (743) (5,294) - (13,324) (71,619) ₩ 1,807,147 ₩ 409,671 ₩ 1,269,995 ₩ 1,807,147 ₩ 530,455 ₩ 2,002,885 - (120,784) (732,890)	₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 ₩ 8,131,084 - (108,839) (662,602) (3,013,736) ₩ 1,820,917 ₩ 422,953 ₩ 1,142,672 ₩ 5,117,348 Ψ 1,820,917 ₩ 422,953 ₩ 1,142,672 ₩ 5,117,348 - 48 169 1 - 737 204,067 33,758 (13,770) (743) (5,294) - - (13,324) (71,619) (217,185) ₩ 1,807,147 ₩ 409,671 ₩ 1,269,995 ₩ 4,933,922 ₩ 1,807,147 ₩ 530,455 ₩ 2,002,885 ₩ 8,164,843 - (120,784) (732,890) (3,230,921)	Land Buildings Structures Machinery and equipment Vehicles ₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 ₩ 8,131,084 ₩ 14,827 - (108,839) (662,602) (3,013,736) (13,600) ₩ 1,820,917 ₩ 422,953 ₩ 1,142,672 ₩ 5,117,348 ₩ 1,227 - 48 169 1 5 - 737 204,067 33,758 - (13,770) (743) (5,294) - - - (13,324) (71,619) (217,185) (494) ₩ 1,807,147 ₩ 409,671 ₩ 1,269,995 ₩ 4,933,922 ₩ 738 ₩ 1,807,147 ₩ 530,455 ₩ 2,002,885 ₩ 8,164,843 ₩ 14,453 - (120,784) (732,890) (3,230,921) (13,715)	Land Buildings Structures Machinery and equipment Vehicles Others ₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 ₩ 8,131,084 ₩ 14,827 ₩ 1,027,921 - (108,839) (662,602) (3,013,736) (13,600) (602,005) ₩ 1,820,917 ₩ 422,953 ₩ 1,142,672 ₩ 5,117,348 ₩ 1,227 ₩ 425,916 - 48 169 1 5 44,972 - 737 204,067 33,758 - 87,560 (13,770) (743) (5,294) - - (3,666) - (13,324) (71,619) (217,185) (494) (101,377) ₩ 1,807,147 ₩ 409,671 ₩ 1,269,995 ₩ 4,933,922 ₩ 738 ₩ 453,405 ₩ 1,807,147 ₩ 530,455 ₩ 2,002,885 ₩ 8,164,843 ₩ 14,453 ₩ 796,158 - (120,784) (732,890) (3,230,921) (13,715) (342,753)	Land Buildings Structures Machinery and equipment Vehicles Others Catalysts ₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 ₩ 8,131,084 ₩ 14,827 ₩ 1,027,921 ₩ 870,361 - (108,839) (662,602) (3,013,736) (13,600) (602,005) (595,143) ₩ 1,820,917 ₩ 422,953 ₩ 1,142,672 ₩ 5,117,348 ₩ 1,227 ₩ 425,916 ₩ 275,218 - 48 169 1 5 44,972 104,661 - 737 204,067 33,758 - 87,560 16,454 (13,770) (743) (5,294) - - (3,666) (279) - (13,324) (71,619) (217,185) (494) (101,377) (159,880) ₩ 1,807,147 ₩ 409,671 ₩ 1,269,995 ₩ 4,933,922 ₩ 738 ₩ 453,405 ₩ 236,174 ₩ 1,807,147 ₩ 530,455 ₩ 2,002,885 ₩ 8,164,843 ₩ 14,453 ₩ 796,158 ₩ 638,772 - (120,784) (732,890) (3,230,921) (13,715)	Land Buildings Structures Machinery and equipment Vehicles Others Catalysts Construction-in-progress ₩ 1,820,917 ₩ 531,792 ₩ 1,805,274 ₩ 8,131,084 ₩ 14,827 ₩ 1,027,921 ₩ 870,361 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 1,227 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 1,227 ₩ 425,916 ₩ 275,218 ₩ 932,888 ₩ 1,227 ₩ 44,972 104,661 383,564 № 1,333,758 - 87,560 16,454 (349,703) (13,770)

Depreciation expense of \forall 552,145 million (2020: \forall 528,335 million) was charged to cost of sales, \forall 26,786 million (2020: \forall 26,441 million) to selling expenses and \forall 4,093 million (2020: \forall 9,103 million) to administrative expense.

As of December 31, 2021, a certain portion of property, plant and equipment is pledged as collateral for various borrowings and guarantees (Note 16).

During the year, the Group has capitalized borrowing costs amounting to $\mbox{$W$}$ 327 million (2020: $\mbox{$W$}$ 3,138 million) on property, plant and equipment that are qualifying assets. The capitalization rate of borrowings used to determine the amount of borrowing costs to be capitalized is 1.45% (2020: 1.96%) for general borrowings.

As of December 31, 2021, construction-in-progress consists of purchases related to facilities installation and land.

15. Intangible Assets

Changes in intangible assets for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021													
	,						Greenh	ouse gas						
	Facility usage				Membership		emission permit							
	R	ights	C	Others	r	ights	(No	te 36)	Go	odwill		Total		
At January 1, 2021														
Acquisition cost	₩	10,794	₩	101,611	₩	20,392	₩	-	₩	57,080	₩	189,877		
Accumulated amortization		(6,753)		(82,204)		(2,150)		_		-		(91,107)		
Net book amount	₩	4,041	₩	19,407	₩	18,242	₩	-	₩	57,080	₩	98,770		
Changes during 2021														
Beginning net book amount	₩	4,041	₩	19,407	₩	18,242	₩	-	₩	57,080	₩	98,770		
Additions		-		23		3		13,275		-		13,301		
Transfers		-		4,875		-		-		-		4,875		
Decreases		-		(4)		(751)		-		-		(755)		
Amortization		(518)		(7,321)		-		-		-		(7,839)		
Effect of foreign currency rate changes		_		18		-		-		-		18		
Ending net book amount	₩	3,523	₩	16,998	₩	17,494	₩	13,275	₩	57,080	₩	108,370		
At December 31, 2021														
Acquisition cost	₩	10,794	₩	113,500	₩	19,279	₩	13,275	₩	57,080	₩	213,928		
Accumulated amortization ¹		(7,271)		(96,520)		(1,785)		-		-		(105,576)		
Effect of foreign currency rate changes		-		18		-		-		-		18		
Net book amount	₩	3,523	₩	16,998	₩	17,494	₩	13,275	₩	57,080	₩	108,370		

¹ The amounts include accumulated impairment losses.

(In millions of Korean won)	n) 2020									
	Fac	ility usage			nbership					
		Rights	(Others	r	ights	G	oodwill	To	otal
At January 1, 2020										
Acquisition cost	₩	10,794	₩	94,543	₩	22,746	₩	57,080	₩ 1	85,163
Accumulated amortization		(6,208)		(75,155)		(2,471)		_	3)	33,834)
Net book amount	₩	4,586	₩	19,388	₩	20,275	₩	57,080	₩ 1	01,329
Changes during 2020										
Beginning net book amount	₩	4,586	₩	19,388	₩	20,275	₩	57,080	₩ 1	01,329
Additions		-		362		-		-		362
Transfers		-		7,127		-		-		7,127
Decreases		-		(421)		(2,033)		-	((2,454)
Amortization		(545)		(7,049)						(7,594)
Ending net book amount	₩	4,041	₩	19,407	₩	18,242	₩	57,080	₩	98,770
At December 31, 2020										
Acquisition cost	₩	10,794	₩	101,611	₩	20,392	₩	57,080	₩ 1	89,877
Accumulated amortization ¹		(6,753)		(82,204)		(2,150)		-	(9	91,107)
Net book amount	₩	4,041	₩	19,407	₩	18,242	₩	57,080	₩	98,770

¹ The amounts include accumulated impairment losses.

Amortization expense of $\mbox{$W$}$ 3,102 million (2020: $\mbox{$W$}$ 3,053 million) is included in cost of sales, $\mbox{$W$}$ 836 million (2020: $\mbox{$W$}$ 739 million) in selling expenses and $\mbox{$W$}$ 3,901 million (2020: $\mbox{$W$}$ 3,802 million) in administrative expense.

The Group recognized total research and development costs of ₩ 14,250 million (2020: ₩ 11,355 million) as expenses.

16. Assets Pledged as Collateral

As of December 31, 2021, assets pledged as collateral are as follows:

(In millions of Korean won and millions of other foreign currencies)

Pledged Assets as Collateral	Secured Amount	Creditors	Related Borrowings/ Guarantees	Balance of Borrowings
Land, Buildings, BTX facilities and others	₩ 19,350 USD 144 FRF 155 JPY 11,781	The Korea Development Bank	Usance Borrowings and others	₩ 652,006 (USD 550)
Time deposits ¹	₩ 809	Korea Railroad Corporation	Contractual Guarantee	-
Time deposits ¹	₩ 4,627	Korea Industrial Complex Corporation Total	Contractual Guarantee	₩ 652,006

17. Trade Payables, Other Payables and Other Liabilities

Trade payables and other payables as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	202	1	2020					
	Current	Non-current	Current	Non-current				
Trade payables	₩ 3,075,770	₩ -	₩ 2,003,623	₩ -				
Other payables								
Non-trade payables	491,474	-	325,566	-				
Accrued expenses	8,435	-	11,068	-				
Dividend payables	60	-	62	-				
Lease liabilities (Note 35)	72,417	214,575	55,056	208,426				
Leasehold deposit received		40,774		37,227				
	572,386	255,349	391,752	245,653				
Total	₩ 3,648,156	₩ 255,349	₩ 2,395,375	₩ 245,653				

Other liabilities as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021				2020				
	С	Current Non-current		urrent C		Current		rrent	
Advances from customers	₩	199,301	₩	-	₩	125,507	₩	-	
Withholdings		4,593		-		3,951		-	
Tax payables		1,672,587		-		1,367,573		-	
Total	₩	1,876,481	₩	-	₩	1,497,031	₩	-	

18. Borrowings

Details of borrowings as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020		
Current						
Short-term borrowings in won currency	₩	-	₩	200,000		
Banker's usance		2,358,921		1,675,586		
Current maturities of debentures		459,904		739,791		
		2,818,825		2,615,377		
Non-current		_		_		
Debentures		2,736,087		3,194,602		
		2,736,087		3,194,602		
Total	₩	5,554,912	₩	5,809,979		

Details of carrying amount of borrowings as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	Creditor	Maturity date	Interest rates (%) Dec. 31, 2021	2021	2020
Short-term borrowings					
Short-term borrowings in	The Korea	_	_	₩ -	₩ 200.000
won currency	Development Bank			••	77 200,000
	The Korea	Jan. 5, 2022 and			
Banker's usance	Development Bank and others	others	0.27~0.55	2,358,921	1,675,586
Total				₩ 2,358,921	₩ 1,875,586

Details of carrying amount of debentures as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	Issuance date	Maturity Date	Interest Rates (%) Dec. 31, 2021	2021			2020
Public bonds (45-3)	Aug. 28, 2012	Aug. 28, 2022	3.530	₩	50,000	₩	50,000
Public bonds (46-2)	Jun. 26, 2014	Jun. 26, 2021	3.234		-		110,000
Public bonds (46-3)	Jun. 26, 2014	Jun. 26, 2024	3.468		70,000		70,000
Public bonds (47-2)	Nov. 27, 2014	Nov. 27, 2021	2.706		-		80,000
Public bonds (47-3)	Nov. 27, 2014	Nov. 27, 2024	2.990		130,000		130,000
Public bonds (48-2)	Oct. 29, 2015	Oct. 29, 2022	2.391		70,000		70,000
Public bonds (48-3)	Oct. 29, 2015	Oct. 29, 2025	2.657		100,000		100,000
Public bonds (49-1)	Apr. 18, 2016	Apr. 18, 2021	1.930		-		230,000
Public bonds (49-2)	Apr. 18, 2016	Apr. 18, 2023	2.101		60,000		60,000
Public bonds (49-3)	Apr. 18, 2016	Apr. 18, 2026	2.225		60,000		60,000
Public bonds (50-1)	Sep. 2, 2016	Sep. 2, 2021	1.646		-		210,000
Public bonds (50-2)	Sep. 2, 2016	Sep. 2, 2023	1.722		80,000		80,000
Public bonds (50-3)	Sep. 2, 2016	Sep. 2, 2026	1.932		60,000		60,000
Public bonds (51-1)	Feb. 22, 2017	Feb. 22, 2022	2.197		230,000		230,000
Public bonds (51-2)	Feb. 22, 2017	Feb. 22, 2024	2.438		110,000		110,000
Public bonds (51-3)	Feb. 22, 2017	Feb. 22, 2027	2.559		60,000		60,000
Public bonds (52-2)	Sep. 19, 2017	Sep. 19, 2022	2.317		110,000		110,000
Public bonds (52-3)	Sep. 19, 2017	Sep. 19, 2024	2.531		60,000		60,000
Public bonds (53-1)	Jul. 3, 2018	Jul. 3, 2021	2.442		-		110,000
Public bonds (53-2)	Jul. 3, 2018	Jul. 3, 2023	2.617		110,000		110,000
Public bonds (53-3)	Jul. 3, 2018	Jul. 3, 2025	2.708		80,000		80,000
Public bonds (54-1)	Jun. 7, 2019	Jun. 7, 2024	1.762		110,000		110,000
Public bonds (54-2)	Jun. 7, 2019	Jun. 7, 2026	1.769		100,000		100,000
Public bonds (54-3)	Jun. 7, 2019	Jun. 7, 2029	1.860		190,000		190,000
Public bonds (55-1)	Nov. 4, 2019	Nov. 4, 2024	1.904		160,000		160,000
Public bonds (55-2)	Nov. 4, 2019	Nov. 4, 2026	1.926		40,000		40,000
Public bonds (55-3)	Nov. 4, 2019	Nov. 4, 2029	2.102		60,000		60,000
Public bonds (56-1)	Mar. 10, 2020	Mar. 10, 2025	1.492		440,000		440,000
Public bonds (56-2)	Mar. 10, 2020	Mar. 10, 2027	1.549		70,000		70,000
Public bonds (56-3)	Mar. 10, 2020	Mar. 10, 2030	1.648		170,000		170,000
Public bonds (57-1)	Aug. 28, 2020	Aug. 28, 2023	1.401		340,000		340,000
Public bonds (57-2)	Aug. 28, 2020	Aug. 28, 2025	1.639		40,000		40,000
Public bonds (57-3)	Aug. 28, 2020	Aug. 28, 2030	1.817		40,000		40,000
Less: Present value discount			_		(4,009)		(5,607)
Sub total					3,195,991		3,934,393
Less: Current maturities					(459,904)		(739,791)
Total			-	₩	2,736,087	₩	3,194,602

As of December 31, 2021 and 2020, a certain portion of property, plant and equipment and others are pledged as collateral for various borrowings (Note 16).

19. Provisions and Contract Liabilities

Details and changes in provisions for other liabilities and charges for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021						2020	
			Prov	ision for				
	Enviro	Environmental Emission					Environmental	
	Rest	oration	Ob	ligation		Total	Rest	oration
Beginning balance	₩	2,875	₩	-	₩	2,875	₩	3,594
Additional provision		-		11,752		11,752		-
Used during year		-		-		-		(719)
Ending balance	₩	2,875	₩	11,752	₩	14,627	₩	2,875

Changes in contract liabilities for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2	021	2020		
Beginning balance	₩	20,668	₩	21,601	
Additions		5,570		8,594	
Used during year		(7,807)		(9,527)	
Ending balance	₩	18,431	₩	20,668	

Contract liabilities arise from customer loyalty program are adjusted from revenue.

20. Net Defined Benefit Assets/Liabilities

The majority of the plans are final salary pension plans, which provide benefit to employees in the form of a guaranteed level of pension payable for life. The level of benefits provided depends on employees' length of severance and their salary in the final years leading up to retirement. The majority of benefit payments are from trustee administered funds; however, there are also a number of unfunded plans. Plan assets held in trusts are governed by local regulations and practice in each country.

Details of net defined benefit liabilities (assets) recognized in the consolidated statements of financial position as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020
Present value of defined benefit obligations	₩	432,416	₩	453,221
Fair value of plan assets ¹		475,821		450,608
Net defined benefit liabilities (assets)	₩	(43,405)	₩	2,613

¹ The contributions to the National Pension Fund of ₩ 342 million are included in the fair value of plan assets as of December 31, 2021 (2020: ₩ 390 million).

Changes in the defined benefit obligations for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020
Beginning balance	₩	453,221	₩	409,063
Current service cost		50,671		46,555
Interest expense		12,790		11,345
Remeasurements:				
Actuarial gains arising from change in financial assumptions		(26,412)		(3,128)
Actuarial gains arising from change in demographic assumptions		(4,893)		-
Actuarial losses (gains) from experience adjustments		(24,859)		9,881
Benefits payments		(28,110)		(20,495)
Foreign currency rate changes		8		-
Ending Balance	₩	432,416	₩	453,221

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

(In millions of Korean won)		2021		2020
Beginning balance	₩	450,608	₩	397,506
Interest income		11,989		10,377
Remeasurements:				
Return on plan assets		(7,202)		(4,308)
Contributions		48,000		67,111
Benefits payments		(27,574)		(20,078)
Ending balance	₩	475,821	₩	450,608

Plan assets as of December 31, 2021 and 2020, consist of financial assets including deposits.

The significant actuarial assumptions as of December 31, 2021 and 2020, are as follows:

	2021	2020
Discount rate	3.40%	2.87%
Salary growth rate	5.08%	5.32%

The sensitivity of the defined benefit obligation to changes in the principal assumptions is:

	Changes in	Impact on defined benefit obligation				
	assumption	2021	2020			
Salary growth rate	One percent increase One percent decrease	9.22% increase 8.04% decrease	10.45% increase 9.05% decrease			
Discount rate	One percent increase One percent decrease	7.92% decrease 9.26% increase	8.98% decrease 10.58% increase			

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. The sensitivity of the defined benefit obligation to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized on the consolidated statement of financial position. The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to the prior period.

The Group reviews the funding level on an annual basis and has a policy of eliminating deficit from the fund.

The weighted average duration of the defined benefit obligation is 8.59 years and expected contributions to post-employment benefit plans for the year ending December 31, 2022 are \forall 59,573 million.

The expense and others recognized in the current period in relation to defined contribution plan was \forall 11,519 million (2020: \forall 8,581 million).

21. Contingencies and Commitments

As of December 31, 2021, the Group has overdraft agreements of up to $\mbox{$W$}$ 23,000 million and USD 582 million with Shinhan Bank and three other banks and general loan agreements of up to $\mbox{$W$}$ 14,750 million with Woori Bank.

As of December 31, 2021, the Group has banker's usance agreements and imported credit agreements of up to a maximum of USD 4,450 million with the Korea Development Bank and 17 other banks.

As of December 31, 2021, Shinhan Bank has provided guarantees up to \forall 30,000 million for the Group's obligation for repayment of remaining bonus points.

As of December 31, 2021, KEB Hana Bank has provided guarantees up to ₩ 2,163 million for the restoration responsibilities of Onsan National Industrial Complex.

As of December 31, 2021, the Group offered one blank check to Korea National Oil Corporation as payment guarantee.

As of December 31, 2021, the balance of trade receivables that have been transferred but are not past due amounts to USD 192 million (2020: USD 15 million). As of December 31, 2021, the Group transferred the trade receivables to the BNP Paribas Bank and one other financial institution and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 8).

As of December 31, 2021, the Group has Stand-by credit line agreements with the Korea Development Bank and one other financial institution up to $\mbox{$W$}$ 350,000 million and has imported credit agreements up to USD 110 million with Shinhan Bank and two other financial institutions.

As of December 31, 2021, the Group has been provided performance guarantee and others amounting to \forall 11,413 million by Seoul Guarantee Insurance.

As of December 31, 2021, there is no significant pending litigation.

As of December 31, 2021, the amount of commitment in relation to the Group's purchase of property, plant and equipment is \forall 11,933 million.

22. Share Capital and Share Premium

Share capital and share premium as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won, except number of shares)	Number of issued ordinary shares	Number of issued preferred shares	Share capital (Ordinary share)	Share capital (Preferred share)	Share premium	Total
December 31, 2020	112,582,792	4,021,927	₩ 281,457	₩ 10,055	₩ 379,190	₩ 670,702
December 31, 2021	112,582,792	4,021,927	₩ 281,457	₩ 10,055	₩ 379,190	₩ 670,702

Under its Articles of Incorporation, the Company is authorized to issue 60 million cumulative, participating preferred shares that are non-voting and entitled to a minimum cash dividend at 9% of par value. As all of the preferred share as of December 31, 2021, was issued before March 27, 1998, it receives 1% more dividends over ordinary share under the Articles of Incorporation.

The Company is authorized to issue non-voting convertible share up to 4 million shares. Each share of this non-voting convertible share was converted to one ordinary share. As of December 31, 2021, there is no outstanding convertible share issued by the Company.

The Company may grant options to purchase the Company's ordinary share to key employees or directors. The grant limit of the options is 15% of outstanding shares and the options may be granted with the special resolution of the shareholders. As of December 31, 2021, no option has been granted.

The Company is authorized to issue 180,000,000 ordinary shares with a par value of $\mbox{$W$}$ 2,500 per share and 112,582,792 ordinary shares are issued. The Company is authorized to issue 60,000,000 preferred shares with par value of $\mbox{$W$}$ 2,500 per share and 4,021,927 preferred shares are issued.

23. Treasury Share

As of December 31, 2021, the Company holds 184,080 treasury share of preferred shares amounting to \forall 1,876 million and is deducted from shareholders' equity. The Company intends to dispose of the treasury share depending on the market conditions.

24. Retained Earnings

Retained earnings as of December 31, 2021 and 2020, consist of:

(In millions of Korean won)	2021			2020		
Legal reserve						
Earned surplus reserve ¹	₩	145,756	₩	145,756		
Discretionary reserve						
Reserve for improvement of financial structure		55,700		55,700		
Reserve for business rationalization		103,145		103,145		
Reserve for market development		2,731,898		3,536,498		
		2,890,743		3,695,343		
Revaluation reserve		984,648		984,648		
Retained earnings(deficit) before appropriation		1,312,595		(790,040)		
	₩	5,333,742	₩	4,035,707		

¹ The Commercial Code of the Republic of Korea requires the Company to appropriate, as a legal reserve, an amount equal to a minimum of 10% of annual cash dividends paid, until such reserve equals 50% of its issued share capital. As the Company's reserve exceeds 50% of its issued share capital, additional reserve is unnecessary. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit.

Year-end cash dividends for 2020 amounting to $\forall 96$ million for preferred share were paid out in April 2021 (Dividends paid in 2020: $\forall 11,258$ million for ordinary share and $\forall 480$ million for preferred share).

In accordance with the Articles of Incorporation, on July 29, 2021, the Board of Directors declared interim cash dividends of \forall 1,000 per share with dividend date on June 30, 2021.

(In millions of Korean won, except number of shares)	Number of shares	Share capital amount		Dividend rate		Cash idends
Ordinary shares	112,582,792	₩	281,457	40%	₩	112,583
Preferred shares ¹	3,837,847		9,595	40%		3,838
	116,420,639	₩	291,052	_	₩	116,421

¹ The number of treasury share are excluded from the number of shares issued.

A dividend in respect of the year ended December 31, 2021, of $\mbox{$W$}$ 2,825 per preferred share and $\mbox{$W$}$ 2,800 per ordinary share, amounting to total dividend of $\mbox{$W$}$ 326,074 million, is to be proposed to shareholders at the annual general meeting on March 22, 2022. These consolidated financial statements do not reflect this dividend payable.

25. Reserves

Changes in reserves for the years ended December 31, 2021 and 2020, are as follows:

					:	2021				
(In millions of Korean won)	Gains (losses) on valuation of financial assets at fair value through Gains on disposal of treasury share Gains (losses) on valuation of financial assets at fair value through comprehensive income (loss)		on valuation o financial assets at fair value through Gains on disposal of on valuation o financial assets at fair value through comprehensive			rehensive me (loss)	tran gains on	ealized Islation (losses) foreign eration		Total
Balance at January 1, 2021 Gains on valuation of	₩	952,311	₩	17,599	₩	(65)	₩	8,099	₩	977,944
financial assets at fair value through other comprehensive income Reclassification due to		-		6,884		-		-		6,884
disposal of financial assets at fair value through other comprehensive income		-		455		-		-		455
Foreign currency translation adjustments		-		-		-		191		191
Balance at December 31, 2021	₩	952,311	₩	24,938	₩	(65)	₩	8,290	₩	985,474
						2020				
Balance at January 1, 2020 Gains on valuation of	₩	952,311	₩	19,188	₩	(74)	₩	8,204	₩	979,629
financial assets at fair value through other comprehensive income Reclassification due to		-		3,541		-		-		3,541
disposal of financial assets at fair value through other comprehensive income				(5,130)						(5,130)
Foreign currency translation adjustments		-		-		-		(105)		(105)
Share of other comprehensive income in joint venture		-		-		9		-		9
Balance at December 31, 2020	₩	952,311	₩	17,599	₩	(65)	₩	8,099	₩	977,944

26. Cost of Sales

Cost of sales for the years ended December 31, 2021 and 2020, consists of:

(In millions of Korean won)		2021		2020
Beginning balance of merchandise and finished goods	₩	468,384	₩	684,362
Purchases of merchandise		2,174,333		1,477,493
Manufacturing cost for the year		25,343,364		17,555,606
Transfer from other accounts		2,681		6,643
Transfer to other accounts		(1,761,109)		(1,284,787)
Ending balance of merchandise and finished goods		(840,852)		(468,383)
Adjustments		(691,609)		(604,730)
Total	₩	24,695,192	₩	17,366,204

27. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		Selling expenses				Administrative expenses				
,	2021			2020		2021		2020		
Salaries	₩	67,631	₩	69,544	₩	35,968	₩	32,545		
Post-employment benefits		12,236		11,603		6,665		6,381		
Employee benefits		58,551		17,399		26,168		9,416		
Training expenses		17		19		1,903		1,570		
Travel expenses		1,628		1,604		402		501		
Miscellaneous administrative expenses		166		177		442		543		
Communication expenses		2,341		2,495		1,210		1,300		
Vehicles maintenance expenses		371		379		239		284		
Utility expenses		1,586		1,726		369		855		
Rental expenses		2,498		3,004		1,261		1,245		
Service expenses for oil storages		15,809		20,682		-		-		
Service fees		12,088		11,159		892		1,309		
Business promotion expenses		966		709		1,213		869		
Export expenses		96,270		91,702		-		-		
Repairs and maintenance expenses		4,422		3,954		810		2,855		
Supplies expenses		220		341		1		47		
Chemicals expenses		453		536		-		-		
IT operating expenses		2,311		2,558		6,418		5,471		
Professional service expenses		3,470		3,963		4,331		4,318		
General service expenses		6,908		6,646		2,909		2,784		
Promotional and advertising expenses		15,180		11,598		6,491		6,504		
Freight expenses		153,528		151,364		-		-		
Insurance premium		1,652		1,347		96		165		
Taxes and dues		8,172		5,658		10,163		7,788		
Depreciation expenses		26,786		26,441		4,093		9,103		
Amortization expenses		836		739		3,901		3,802		
Depreciation of right-of-use assets		10,354		11,939		3,205		3,715		
Provision for impairment losses on receivables (reversal)		1,179		(713)		-		-		
Others		274		282		731		398		
Total	₩	507,903	₩	458,855	₩	119,881	₩	103,768		

28. Other Income and Expenses

Other income and expenses for the years ended December 31, 2021 and 2020, are as follows:

Other income

(In millions of Korean won)		2021	2020		
Gains on disposal of property, plant and equipment	₩	115,729	₩	5,757	
Dividend income		1,152		688	
Others		51,856		52,186	
Gains on foreign currency transactions		195,096		231,496	
Gains on foreign currency translation		10,411		45,250	
Gains on derivative transactions		84,489		53,759	
Gains on valuation of derivatives		1,248		5,337	
Total	₩	459,981	₩	394,473	

Other expenses

(In millions of Korean won)		2021	2020		
Losses on disposal of property, plant and equipment	₩	1,325	₩	5,693	
Donations		17,733		17,757	
Others		9,252		17,725	
Losses on foreign currency transactions		374,093		244,105	
Losses on foreign currency translation		22,836		10,355	
Losses on derivative transactions		66,574		95,377	
Losses on valuation of derivatives		2,210		33,577	
Losses on redemption of borrowings		-		6,020	
Total	₩	494,023	₩	430,609	

29. Finance Income and Costs

Finance income and costs for the years ended December 31, 2021 and 2020, consist of:

Finance income

(In millions of Korean won)	2021			2020		
Interest income	₩	9,017	₩	12,351		
Gains on foreign currency transactions		119,195		303,580		
Gains on foreign currency translation		847		100,463		
Total	₩	129,059	₩	416,394		

Finance costs

(In millions of Korean won)	2021			2020
Interest expenses ¹	₩	109,813	₩	158,080
Losses on foreign currency transactions		224,433		294,422
Losses on foreign currency translation		25,480		113
Total	₩	359,726	₩	452,615

¹ Interest expenses exclude capitalized borrowing costs on qualifying assets (Note 14).

30. Tax Expense (Benefit) and Deferred Tax

Income tax expense (benefit) for the years ended December 31, 2021 and 2020, consists of:

2020
6 ₩ 1,279
- (40,512)
6 (39,233)
(332,456)
⁷⁹ ₩ (371,689)
3

Reconciliation between actual income tax expense (benefit) and amount computed by applying the statutory tax rates to profit before income (loss) tax for the years ended December 31, 2021 and 2020 are follows:

(In millions of Korean won)		2021		2020
Profit (loss) before income tax	₩	1,878,020	₩	(1,167,797)
Tax at statutory tax rates applicable to profits (losses) in the respective countries	₩	505,893	₩	(321,144)
Non-taxable income		(684)		(10,571)
Non-deductible expenses		18,736		8,442
Adjustments in respect of prior years		-		(40,512)
Tax credit and others		(24,466)		(7,904)
Income tax expense (benefit)	₩	499,479	₩	(371,689)

The weighted average applicable tax rate of the Group was 26.94% (2020: 27.50%).

The tax effect relating to components of other comprehensive income (expenses) for the years ended December 31, 2021 and 2020, is as follows:

(In millions Korean won)	2021							
	Befo	ore Tax	Tax effect		After tax			
Gains on valuation of financial assets at fair value through other comprehensive income	₩	9,509	₩	(2,625)	₩	6,884		
Share of other comprehensive income of joint venture and associate		-		-		-		
Remeasurements of net defined benefit liabilities		48,962		(12,496)		36,466		
Foreign currency translation adjustments		264		(73)		191		
Total	₩	58,735	₩	(15,194)	₩	43,541		
(In millions Korean won)				2020				
	Befo	ore Tax	Ta	x effect	Aft	er tax		
Gains on valuation of financial assets at fair value through other comprehensive income	₩	3,654	₩	(113)	₩	3,541		
Share of other comprehensive income of joint venture and associate		13		(4)		9		
Remeasurements of net defined benefit liabilities		(11,056)		1,308		(9,748)		
Foreign currency translation adjustments		(145)		40		(105)		
Total	₩	(7,534)	₩	1,231	₩	(6,303)		

The analysis of deferred tax assets and liabilities as of December 31, 2021 and 2020, is as follows:

(In millions of Korean won)		2021		2020
Deferred tax assets				
Deferred tax asset to be recovered after more than 12 months	₩	51,982	₩	323,767
Deferred tax asset to be recovered within 12 months		47,179		91,847
		99,161		415,614
Deferred tax liabilities		_		_
Deferred tax liability to be recovered after more than 12 months		(274,247)		(287,837)
Deferred tax liability to be recovered within 12 months		(33,644)		(34,980)
		(307,891)		(322,817)
Deferred tax assets (liabilities), net	₩	(208,730)	₩	92,797

Changes in deferred tax for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020
Beginning balance	₩	92,797	₩	(240,890)
Deferred income tax charged to income		(286,333)		332,456
Deferred income tax charged to equity		(15,194)		1,231
Ending balance	₩	(208,730)	₩	92,797

Changes in deferred tax assets and liabilities for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021								
						Other			
	Beg	inning	Statement of		comprehensive		Ending		
	Ba	lance	pro	profit or loss		income		Balance	
Depreciation	₩	5,407	₩	(1,032)	₩	_	₩	4,375	
Losses on impairment of investments		960		(414)		_		546	
Salaries and wages payable		2,900		41,194		_		44,094	
Bonus card point and etc.		6,760		2,234		-		8,994	
Subsidiary and joint ventures		(1,259)		222		-		(1,037)	
Losses on valuation of derivative instruments		1,039		(519)		-		520	
Losses on impairment of property, plant and equipment		1,218		19		-		1,237	
Customs duties receivable		(31,951)		13		-		(31,938)	
Accrued interest income		(110)		(39)		-		(149)	
Net defined benefit liabilities		(6,298)		(11,272)		-		(17,570)	
Employee benefits		8,206		226		-		8,432	
Revaluation of lands		(202,117)		9,448		-		(192,669)	
Annual overhaul and others		(68,266)		21,535		-		(46,731)	
Tax loss carryforwards and tax credits		350,098		(347,536)		-		2,562	
Currency translation differences and share of other		(2,485)		(252)		(73)		(2,810)	
comprehensive income of associate and joint venture	(2, 700)		()		(. 5)		(=, - : -)		
Gains on valuation of financial assets at fair value		(6,250)		(160)		(2,625)		(9,035)	
through other comprehensive income		, ,		(/		, ,			
Remeasurements of net defined benefit liabilities		34,945				(12,496)		22,449	
Total	₩	92,797	₩	(286,333)	₩	(15,194)	₩	(208,730)	

(In millions of Korean won)	n millions of Korean won) 2020							
						Other		_
	Beginning Statement of		comprehensive		Ending			
	В	alance	profit or loss		income		Ва	alance
Depreciation	₩	4,567	₩	840	₩	-	₩	5,407
Losses on impairment of investments		1,146		(186)		-		960
Salaries and wages payable		8,005	(5,105)) -			2,900
Bonus card point and etc.		7,381	(621)		(621)			6,760
Subsidiary and joint ventures		(1,362)	103		.3			(1,259)
Losses on valuation of derivative instruments		744	295		295			1,039
Losses on impairment of property, plant and equipment		1,491	(273)		-			1,218
Customs duties receivable		(34,799)	2,848		-			(31,951)
Accrued interest income		(373)		263		-		(110)
Net defined benefit liabilities		(4,301)		(1,997)		-		(6,298)
Employee benefits		8,229		(23)		-		8,206
Revaluation of lands		(214,639)		12,522		-		(202,117)
Annual overhaul and others		(65,579)		(2,687)		-		(68,266)
Tax loss carryforwards and tax credits		24,764		325,334		-		350,098
Currency translation differences and share of other comprehensive income of associate and joint venture		(2,521)		-		36		(2,485)
Gains on valuation of financial assets at fair value		(7,280)		1,143		(113)		(6,250)
through other comprehensive income		22 627				1 200		24.045
Remeasurements of net defined benefit liabilities	14/	33,637	١٨/	- 222 452	\\\	1,308	14/	34,945
Total	₩	(240,890)	₩	332,456	₩	1,231	₩	92,797

31. Breakdown of Expenses by Nature

Expenses by nature for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021		2020
Raw materials and merchandises used	₩	22,461,945	₩	14,783,816
Changes in inventories of finished goods, work in-progress and merchandise		(568,540)		340,961
Employee benefit expense		388,894		368,549
Utility expenses		1,548,909		1,171,198
Depreciation and amortization		590,863		571,473
Depreciation of right-of-use assets		60,940		59,789
Freight expenses		248,276		229,427
Advertising costs		10,511		8,357
Other expenses		581,178		395,257
Total cost of sales, selling and administrative expenses	₩	25,322,976	₩	17,928,827

32. Earnings (Loss) per Share

Basic earnings (loss) per ordinary share is calculated by dividing the profit (loss) attributable to ordinary shareholders of the Group by the weighted average number of ordinary shares during the financial year. As the Group's preferred shares are participating shares with right to participate in distribution of earnings, earnings (loss) per share on preferred share is also calculated.

Basic earnings (loss) per ordinary share for the years ended December 31, 2021 and 2020, is calculated as follows:

(In millions of Korean won, except per share data)		2021		2020
Profit (loss) for the year	₩	1,378,541	₩	(796, 108)
Adjustments:				
Dividends for preferred share		(96)		(96)
Additional dividends for preferred share		(45,441)		26,247
Profit (loss) attributable to ordinary share shareholders		1,333,004		(769,957)
Weighted average number of shares of ordinary share		112,582,792		112,582,792
Basic earnings (loss) per ordinary share	₩	11,840	₩	(6,839)

Basic earnings (loss) per preferred share for the years ended December 31, 2021 and 2020, is calculated as follows:

(In millions of Korean won, except per share data)		2021		2020
Profit (loss) attributable to preferred share shareholders	₩	45,537	₩	(26,151)
Weighted average number of shares of preferred share ¹		3,837,847		3,837,847
Basic earnings (loss) per preferred share	₩	11,865	₩	(6,814)

¹ The 184,080 treasury shares are excluded in calculating weighted average number of shares of preferred share.

As there are no dilutive items outstanding, diluted earnings (loss) per share is identical to basic earnings (loss) per share.

33. Related Party Transactions

Details of related parties as of December 31, 2021 and 2020, are as follows:

2021 2020

Ultimate parent company	Saudi Arabian Oil Company ¹	Saudi Arabian Oil Company ¹
Parent company	Aramco Overseas Co., B.V.	Aramco Overseas Co., B.V.
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	S-OIL TOTAL Lubricants Co., Ltd.
Associate	FCI Co., Ltd.	-
Other related parties who have transactions with the Company	Aramco Trading Company ²	Aramco Trading Company ²
	Aramco Trading Singapore PTE. LTD. ²	Aramco Trading Singapore PTE. LTD.2
	Aramco Asia Singapore PTE Limited ²	Aramco Asia Singapore PTE Limited ²
	Saudi Aramco Base Oil Company –	Saudi Aramco Base Oil Company –
	Luberef Saudi Arabia ²	Luberef Saudi Arabia ²
	Saudi Basic Industries Corporation ²	-
	-	Aramco Chemicals Company ²
	Aramco Trading Fujairah FZE ²	Aramco Trading Fujairah FZE ²
	Aramco Asia Japan K.K. ²	-
	Motiva Enterprises LLC ²	Motiva Enterprises LLC ²
	Motiva Trading LLC ²	-
	The National Shipping Company of	The National Shipping Company of
	Saudi Arabia ³	Saudi Arabia ³
	Hyundai Oilbank Co., Ltd. ³	Hyundai Oilbank Co., Ltd. ³

¹ The ultimate parent of Aramco Overseas Co., B.V.

² Subsidiaries of Saudi Arabian Oil Company.

³ Associates of Saudi Arabian Oil Company.

Aramco Overseas Co., B.V.

Aramco Trading Company

Hyundai Oilbank Co., Ltd.²

S-OIL TOTAL Lubricants Co., Ltd.

Aramco Trading Singapore PTE. LTD.

Total

Joint venture

Others

Other related parties

Significant transactions with related parties for the years ended December 31, 2021 and 2020, and the related receivables and payables as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	Sales a	nd others	Purchases and ot		
	2021	2020	2021	2020	
Ultimate parent company					
Saudi Arabian Oil Company ¹	₩ -	₩ -	₩ 16,147,536	₩ 9,605,427	
Parent company					
Aramco Overseas Co., B.V.	-	-	977	461	
Joint venture					
S-OIL TOTAL Lubricants Co., Ltd.	124,301	69,347	38,648	27,393	
Other related parties					
Aramco Trading Company	3,246	-	2,366,544	1,415,325	
Aramco Trading Singapore PTE. LTD.	4,935,989	2,862,458	1,285,918	741,127	
Hyundai Oilbank Co., Ltd. ²	517,845	279,692	451,667	268,377	
Others	306,259	45,519	668,797	555,141	
Total	₩ 5,887,640	₩ 3,257,016	₩ 20,960,087	₩ 12,613,251	
(In millions of Korean won)	Receivables and others		Payables a	and others	
	2021	2020	2021	2020	
Ultimate parent company					
Saudi Arabian Oil Company ¹	₩ -	₩ -	₩ 2,555,961	₩ 1,696,768	
Parent company					

459

3,277

126,945

11,847

77,671

₩ 1,916,967

3,201

149,025

36,012

4,622

81,092

2,829,913

5,813

222,946

12,601

20,153

261,513

3,775

229,718

4,017

1,986

239,496

Financial transactions with related parties for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		Investme	nt in cash		Dividends received			Dividends paid			t	
		2021	202	0	202	<u>!</u> 1	20	20		2021	2	2020
Parent company												
Aramco Overseas Co., B.V.	₩	-	₩	-	₩	-	₩	-	₩	71,748	₩	7,183
Joint venture												
S-OIL TOTAL Lubricants		_		_	•	3.800		2.400				
Co., Ltd.		-		-		,,000		2,400		_		_
Associate												
FCI Co., Ltd. ¹		8,200				-						
Total	₩	8,200	₩	-	₩ 3	,800	₩	2,400	₩	71,748	₩	7,183

¹ The Group acquired shares issued by FCI Co., Ltd., and classified it as an associate for the year ended December 31, 2021.

¹ The Group is under a long-term purchasing agreement with Saudi Arabian Oil Company in relation with crude oil purchase as of December 31, 2021.

² This is the inventory exchange transaction and others with Hyundai Oilbank Co., Ltd.

The compensation to key management for employee services for the years ended December 31, 2021 and 2020, consists of:

(In millions of Korean won)	2	021	2	2020
Short-term employee benefits	₩	1,806	₩	1,361
Post-employment benefits		202		205
Total	₩	2,008	₩	1,566

Key management consists of registered executive officers who have the authority and responsibility in the planning, directing and control over the Group's operations.

34. Cash Generated From Operations

Cash generated from operations for the years ended December 31, 2021 and 2020, is as follows:

(In millions of Korean won)	2021	2020
Profit (loss) for the year	₩ 1,378,54	H1 ₩ (796,108)
Adjustments:		
Income tax expense (benefit)	499,47	' 9 (371,689)
Depreciation expense of property, plant and equipment	583,02	24 563,879
Amortization expense	7,83	7,594
Depreciation of right-of-use assets	60,94	•
Post-employment benefits	51,47	
Provision for impairment losses on receivables (reversal)	1,17	` ,
Interest expense	109,81	•
Losses on foreign currency translation	48,31	
Losses on derivative transactions	66,57	
Losses on valuation of derivatives	2,21	•
Losses on disposal of property, plant and equipment	1,32	-
Losses on valuation of inventories (reversal)	37,69	,
Share of profit	(1,78	,
Interest income	(9,01	,
Gains on foreign currency translation	(11,16	,
Gains on disposal of property, plant and equipment	(115,72	,
Gains on derivative transactions	(84,48	,
Gains on valuation of derivatives	(1,24	, , ,
Dividend income	(1,15	
Others	2,98	35 2,229
Changes in net working capital:		
Trade receivables	(772,20	
Other receivables	47,00	
Other current assets	(419,06	
Inventories	(1,390,74	4) 1,029,990
Trade payables	1,066,23	•
Other payables	161,61	
Other current liabilities	379,44	
Net defined benefit liabilities	(48,50	
Provisions for other liabilities and charges	11,75	
Contract liabilities	(2,23	
Cash generated from operations	₩ 1,660,09	<u>₩</u> 1,745,149

Significant transactions not affecting cash flows for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021	2020	
Reclassification of construction in-progress to property, plant and equipment and intangible assets	₩ 284,780	₩ 349,704	
Current portion of long-term borrowings and debentures	459,793	1,101,621	
Current portion of long-term loans receivable	11,809	8,407	
Other payables related to acquisition of property, plant and equipment	4,213	(16,816)	
Acquisition of right-of-use assets	64,555	9,412	

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

(In millions of Korean won)				20	21				
	Changes in non-cash transaction								
	Beginning balance	Cash flows from financing activities	Current portion	Interest expense	Increase in lease liabilities	Changes in foreign exchange rates	Reclassific- ation from retained earnings	Ending balance	
Short-term borrowings and banker's usance	₩ 1,875,586	₩ 458,602	₩ -	₩ -	₩ -	₩ 24,733	₩ -	₩ 2,358,921	
Current maturities of debentures	739,791	(740,000)	459,793	320	-	-	-	459,904	
Debentures	3,194,602	-	(459,793)	1,278	-	-	-	2,736,087	
Dividend payables	62	(116,519)	-	-	-	-	116,517	60	
Current other payables (lease liabilities)	55,056	(68,217)	85,578	-	-	-	-	72,417	
Other payables (lease liabilities)	208,426	-	(85,578)	-	81,989	9,738	-	214,575	
	₩ 6,073,523	₩ (466,134)	₩ -	₩ 1,598	₩ 81,989	₩ 34,471	₩ 116,517	₩ 5,841,964	

(In millions of Korean won)	won)							
				Changes	in non-cash tr	ansaction		
	Beginning balance	Cash flows from financing activities	Current portion	Interest expense	Increase in lease liabilities	Changes in foreign exchange rates	Reclassific- ation from retained earnings	Ending balance
Short-term borrowings and banker's usance	₩ 2,319,738	₩ (343,707)	₩ -	₩ -	₩ -	₩ (100,445)	₩ -	₩ 1,875,586
Current maturities of debentures	359,813	(360,000)	739,647	331	-	-	-	739,791
Current maturities of long- term borrowings	145,561	(507,982)	361,974	447	-	-	-	-
Debentures	2,835,495	1,097,361	(739,647)	1,393	-	-	-	3,194,602
Long-term borrowings	719,310	(359,643)	(361,974)	2,307	-	-	-	-
Dividend payables	66	(11,742)	-	-	-	-	11,738	62
Current other payables (lease liabilities)	68,235	(62,975)	49,796	-	-	-	-	55,056
Other payables (lease liabilities)	244,538		(49,796)	-	22,664	(8,980)		208,426
	₩ 6,692,756	₩ (548,688)	₩ -	₩ 4,478	₩ 22,664	₩ (109,425)	₩ 11,738	₩ 6,073,523

35. Leases

35.1 Amounts recognized in the consolidated statement of financial position

The consolidated statement of financial position show the following amounts relating to leases:

(In millions of Korean won)		2021		2020
Right-of-use assets ¹				
Vessels	₩	105,559	₩	136,130
Gas station and charging station		15,860		21,884
Storage and other facilities		127,208		86,955
	₩	248,627	₩	244,969
(In millions of Korean won)		2021		2020
Lease liabilities ²				
Current	₩	72,417	₩	55,056
Non-current		214,575		208,426
	₩	286,992	₩	263,482
(In millions of Korean won)		2021		2020
Lease receivables ³				
Current	₩	8,487	₩	6,943
Non-current		25,816		16,550
	₩	34,303	₩	23,493

¹ Included in 'Other assets' in the consolidated statement of financial position.

² Included in 'Other payables' in the consolidated statement of financial position.

³ Included in 'Other receivables' in the consolidated statement of financial position.

35.2 Amounts recognized in the consolidated statements of comprehensive income

The consolidated statements of comprehensive income show the following amounts relating to leases:

(In millions of Korean won)		2021		2020
Depreciation of right-of-use assets				
Vessels	₩	30,571	₩	32,402
Gas station and charging station		5,245		5,168
Storage and other facilities		25,124		22,219
	₩	60,940	₩	59,789
Interest expense relating to lease liabilities (included in finance cost)	₩	6,715	₩	7,471
Interest income relating to lease receivables (included in finance income)	₩	(539)	₩	(425)
Expense relating to short-term leases ¹	₩	16,892	₩	39,546
Expense relating to leases of low-value assets that are not short-term leases ¹	₩	743	₩	816
Expense relating to variable lease payments not included in lease liabilities ¹	₩	65,637	₩	66,372
Foreign currency translation gains and losses for lease liabilities	₩	9,738	₩	(8,980)

¹ Included in 'Cost of sales' and 'Selling and administrative expenses' in the consolidated statement of profit or loss.

Total cash outflow and inflow with respect to leases amount to \forall 158,203 million (2020: \forall 177,180 million) and \forall 8,234 million (2020: \forall 6,945 million), respectively in 2021.

35.3 Changes in asset and liabilities related to lease

Changes in right-of-use assets during the years ended December 31, 2021 and 2020, are as follows:

	2021		2020
₩	244,969	₩	295,345
	64,555		9,413
	(60,940)		(59,789)
	43		_
₩	248,627	₩	244,969
		₩ 244,969 64,555 (60,940) 43	₩ 244,969 ₩ 64,555 (60,940) 43

Changes in lease liabilities during the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)	2021			2020
Beginning net book amount	₩	263,482	₩	312,773
Increase		81,989		22,664
Interest expenses		6,715		7,471
Foreign currency rate changes		9,738		(8,980)
Repayments of lease liabilities		(74,932)		(70,446)
Ending net book amount	₩	286,992	₩	263,482

Changes in lease receivables during the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021	2020		
Beginning net book amount	₩	23,493	₩	16,157	
Additions		18,504		13,856	
Interest income		540		425	
Received		(8,234)		(6,945)	
Ending net book amount	₩	34,303	₩	23,493	

36. Greenhouse Gas Emission Permits and Obligations

Quantities of emission permits which are allocated free of charge for the 3rd plan period (2021~2025) as of December 31, 2021, are as follows:

(In thousands of tCO2-eq)	2021	2022	2023	2024	2025	Total
Allocation with free of charge	8,583	8,583	8,583	8,502	8,502	42,753

Changes in emission permits quantities and the carrying amounts for the years ended December 31, 2021 and 2020, are as follows.

(In millions of	s of												
Korean won, In	2	020	2	021	2022		20)23	2	024	2025		
thousands of tCO2-eq)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
At January 1	1,437	₩ -	172	₩ -	-	₩ -	-	₩ -	-	₩ -	-	₩ -	
Allocation with nil consideration ¹	6,588	-	8,583	-	8,583	-	8,583	-	8,502	-	8,502	-	
Purchase ²	-	-	1,034	11,752	450	13,275	-	-	-	-	-	-	
Disposal ²	(1,534)	(15,523)	-	-	-	-	-	-	-	-	-	-	
Withdrawal to the government ³	(6,319)	-	(9,789)	(11,752)	-	-	-	-	-	-	-	-	
Borrowing (carrying forward)	(172)	-	-		<u>-</u>	-	-	-	-	-	-	-	
At December 31		₩ -	_	₩ -	9,033	₩ 13,275	8,583	₩ -	8,502	₩ -	8,502	₩ -	

¹ Additional allocation for the year ended December 31, 2021 is included.

² The quantity for swap and disposal of emission permits driven by the government's restriction on carry forward is included.

³ Withdrawal to the government for the year 2021 is the estimate as of December 31, 2021 and subject to change with the result of submission to government.

	2020							
(In millions of Korean won, In thousands of	202	20						
tCO2-eq, except quantities)	Quantity	Amount						
At January 1 and allocation with nil consideration	6,865	₩	-					
Purchase (disposal)	(150)		(3,450)					
Withdrawal to the government ¹	(6,219)		-					
Borrowing (carrying forward)	(496)		<u>-</u>					
At December 31	-	₩						

¹ The estimate as of December 31, 2020.

There are no emission permits pledged as collateral.

As of December 31, 2021, emission are estimated at 9,789 thousand tons (tCO2-eq).

Details of emission obligations for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won, In	20)21	2020			
thousands of tCO2-eq, except quantities)	Quantity	Amount	Quantity	Amount		
At January 1	-	₩ -	-	₩ -		
Addition	1,035	11,752	-	-		
Reversed						
At December 31	1,035	₩ 11,752		₩ -		

37. Investment Property

Details of investment property as of December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021											
		Cost	Accumulate depreciation			Book amount		Cost		Accumulate depreciation		Book amount	
Land	₩	136,065	₩	-	₩	136,065	₩		-	₩	-	₩	-

Changes in investment property for the years ended December 31, 2021 and 2020, are as follows:

(In millions of Korean won)		2021	2020			
Beginning balance	₩	-	₩	-		
Transfer from property, plant and equipment ¹		136,065				
Ending balance	₩	136,065	₩			

¹ Reclassified from construction in progress to investment property.

There was no rental income generated from the investment property and no direct operating expenses related to the investment property were incurred during the year ended December 31, 2021.

Fair value of investment property as of December 31, 2021, is \(\psi\) 193,128 million. The fair value of investment property was measured by reflecting the appraisal value of land in 2020, valuated by an independent appraisal firm that holds a publically certified professional qualification according to the Official Land Price Standards Act and reflecting the growth rate of official land price in 2021, which is classified as Level 3 in the fair value hierarchy.