

Hanwha Corporation and Subsidiaries

Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Corporation and Subsidiaries

Index

December 31, 2022 and 2021

	Page(s)
Independent Auditor's Report	1 - 4
Consolidated Financial Statements	
Consolidated Statements of Financial Position	5 - 6
Consolidated Statements of Comprehensive Income	7
Consolidated Statements of Changes in Equity	8
Consolidated Statements of Cash Flows	9
Notes to the Consolidated Financial Statements	10 - 270



Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Board of Directors and Shareholders of
Hanwha Corporation

Opinion

We have audited the accompanying consolidated financial statements of Hanwha Corporation and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2022 and 2021, and the consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2022 and 2021, 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 (Korean IFRS).

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.

Valuation of Premium Reserve

Why we determined this matter as a Key Audit Matter

As described in Note 2 to the consolidated financial statements, the Group calculates premium reserves in accordance with the premium and liability reserve calculation manual under the Regulation on Supervision of Insurance Business for settling future insurance claims arisen from the existing contracts at the end of reporting period. Estimation of premium reserve requires assumptions such as interest rate and risk rate defined under Article 6-12 of the Regulation on Supervision of the Insurance Business.

Premium reserve recognized in the consolidated statement of financial position is ₩ 104,269,190 million as at the end of reporting period. Details of premium reserve are described in Note 36.

The calculation of premium reserve might cause a misstatement due to involvement of various types of contract information and complex models, and in case there is a misstatement, the impact on the Group's profit or loss and net assets is likely to be significant. We determined valuation of premium reserve to be a Key audit matter taking into account such complexity.

How our audit addressed the Key audit matter

We performed following audit procedures to address the Key audit matter.

- We understood and assessed procedures and controls related to premium reserve calculation.
- We reviewed the accounting policy to calculate premium reserve by the management and assessed the appropriateness of calculation method.
- We examined the contracts details in insurance contract system agree to those in premium reserve calculation system.
- We compared detail of premium reserve and underlying data of premium reserve calculation to the corresponding data in reserve calculation table to determine the data is identical, and the test is performed on a sample basis.
- We assessed reserve calculation logic of reserve calculation table on a sample basis.
- We independently recalculated value of premium reserve and compared it with the presented value by the Group on a sample basis
- We assessed the accuracy of estimated interest rate and crediting rate of premium reserve, on a sample basis, by agreeing the support documents and disclosed information to inputs configured in premium reserve calculation system.
- We reconciled the premium reserve amount on the final premium reserve closing data with the one on the financial closing data.

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 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 entity'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 Jaesang Han, Certified Public Accountant.

Seoul, Korea
March 20, 2023

This report is effective as of March 20, 2023, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that 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.

Hanwha Corporation and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2022 and 2021 and January 1, 2021

<i>(in millions of Korean won)</i>	Notes	December 31, 2022	December 31, 2021	January 1, 2021
Assets				
Current assets				
Cash and cash equivalents	7,8,9,61	₩ 6,673,028	₩ 5,496,492	₩ 4,279,157
Financial assets at fair value through profit or loss	9,11,61	5,946	-	2,923
Financial assets at fair value through other comprehensive income	9,11,61	500	44	246
Financial assets at amortized cost	61	68	-	-
Other financial assets	7,9,12,13,57,61	861,747	588,450	492,571
Trade and other receivables	9,10,57	4,962,880	3,748,904	3,450,397
Other current assets	15,26	3,133,548	2,465,101	2,281,057
Inventories	14	6,557,534	5,166,955	4,114,372
Current tax assets		33,803	32,496	12,111
Assets held for sale (included assets of disposal group)	60	124,147	136,270	320,933
		<u>22,353,201</u>	<u>17,634,712</u>	<u>14,953,767</u>
Non-current assets				
Financial assets at fair value through profit or loss	9,11,61	700,441	368,075	147,424
Financial assets at fair value through other comprehensive income	9,11,61	472,345	77,129	15,622
Other financial assets	7,9,12,13, 57,61	442,756	329,529	180,660
Trade and other receivables	9,10,57	396,086	487,135	581,272
Investments in associates and joint venture	5	3,967,508	3,766,911	2,607,536
Investment property	17	1,970,935	1,041,181	903,727
Property, plant and equipment	16	15,852,298	11,324,966	11,304,941
Right-of-use assets	19	610,870	617,239	434,713
Intangible assets	18	4,101,230	3,706,148	2,477,318
Other non-current assets	15	481,734	226,133	181,764
Deferred tax assets	55	539,017	610,042	569,401
		<u>29,535,220</u>	<u>22,554,488</u>	<u>19,404,378</u>
Assets for financial business				
Cash and cash equivalents	27,28	2,542,671	1,399,454	1,253,955
Financial assets at fair value through profit or loss	27,29,30,61	31,181,201	28,796,126	26,222,269
Financial assets at fair value through other comprehensive income	27,29,30,61	31,525,161	40,492,941	34,593,236
Financial assets at amortized cost	27,28,29,30,61	55,224,262	54,299,325	57,362,991
Investments in associates and joint venture	5	534,736	352,768	270,767
Investment property	34	1,740,618	1,870,896	1,598,156
Property, plant and equipment	34	3,324,717	2,814,775	3,083,402
Right-of-use assets	35	242,672	105,067	90,102
Intangible assets	34	423,543	420,967	374,016
Derivative financial assets	27,32,61	965,980	183,949	1,496,713
Current tax assets		194,582	16,838	147,749
Deferred tax assets	55	2,857,955	438,589	28,507
Other financial assets	27,31,57	2,399,130	2,572,157	2,746,507
Other assets	33	3,733,845	3,329,165	3,181,222
Separate account assets	40	22,395,830	26,181,482	25,322,141
		<u>159,286,903</u>	<u>163,274,499</u>	<u>157,771,733</u>
Total assets		<u>₩ 211,175,324</u>	<u>₩ 203,463,699</u>	<u>₩ 192,129,878</u>

Hanwha Corporation and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2022 and 2021 and January 1, 2021

<i>(in millions of Korean won)</i>	Notes	December 31, 2022	December 31, 2021	January 1, 2021
Liabilities				
Current liabilities				
Trade and other payables	9,20,57,61	₩ 4,149,014	₩ 4,224,696	₩ 3,108,185
Borrowings and debentures	9,21,61	8,305,474	6,323,696	7,064,927
Other financial liabilities	9,13,19,22,61	1,512,974	1,072,249	938,250
Provisions	25	282,237	296,028	380,752
Other current liabilities	23,26	6,209,449	4,320,521	3,920,742
Current tax liabilities		635,483	231,771	239,260
		<u>21,094,631</u>	<u>16,468,961</u>	<u>15,652,116</u>
Non-current liabilities				
Trade and other payables	9,20,57,61	415,370	410,602	226,063
Borrowings and debentures	9,21,57,61	8,067,264	8,257,694	6,929,913
Other financial liabilities	9,13,19,22,61	1,640,192	1,228,168	956,688
Net defined benefit liabilities	24	1,546,484	1,690,833	1,699,480
Provisions	25	336,097	345,807	338,956
Other non-current liabilities	23	1,198,512	1,142,964	1,101,729
Deferred tax liabilities	55	1,527,169	1,292,930	1,279,551
		<u>14,731,088</u>	<u>14,368,998</u>	<u>12,532,380</u>
Liabilities for financial business				
Withheld liabilities	27,39	1,986,810	2,265,319	2,111,984
Insurance contract liabilities	36,37	111,098,238	108,392,795	104,937,315
Policyholder's equity adjustments	38	58,357	18,217	406,028
Current tax liabilities		129,464	66,414	19,282
Deferred tax liabilities	55	492,375	546,133	102,812
Derivative financial liabilities	27,32,61	2,295,237	989,411	453,142
Net defined benefit liabilities	41	212,841	249,896	192,937
Provisions	42	170,226	137,147	132,543
Other financial liabilities	27,35,43,61	14,860,037	11,210,739	11,432,357
Other liabilities	44	218,667	262,157	261,343
Separate account liabilities	37,40	22,948,526	26,506,862	25,364,549
		<u>154,470,778</u>	<u>150,645,090</u>	<u>145,414,292</u>
		<u>190,296,497</u>	<u>181,483,049</u>	<u>173,598,788</u>
Total liabilities				
Equity				
Share capital	45	489,550	489,550	489,550
Capital surplus	45	978,371	468,126	522,939
Capital adjustments	46	44,292	11,503	16,953
Accumulated other comprehensive loss	47	(2,957,045)	(806,368)	(272,399)
Retained earnings	48	6,673,349	5,332,223	3,951,119
Equity attributable to owners of the Parent Company		<u>5,228,517</u>	<u>5,495,034</u>	<u>4,708,162</u>
Non-controlling interest		<u>15,650,310</u>	<u>16,485,616</u>	<u>13,822,928</u>
Total equity		<u>20,878,827</u>	<u>21,980,650</u>	<u>18,531,090</u>
Total liabilities and equity		<u>₩ 211,175,324</u>	<u>₩ 203,463,699</u>	<u>₩ 192,129,878</u>

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

Hanwha Corporation and Subsidiaries
Consolidated Statements of Comprehensive Income
Years Ended December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	Notes	2022	2021
Revenue			
Revenue from non-financial business	26,49,57	₩ 28,568,270	₩ 24,319,318
Revenue from financial business	49,57	33,734,421	28,852,822
Adjustment amount for profit or loss (Overlay Adjustment)	49	<u>(24,296)</u>	<u>(336,071)</u>
		<u>62,278,395</u>	<u>52,836,069</u>
Cost of sales			
Cost of sales from non-financial business	26,50,52,57	23,732,884	20,274,863
Cost of sales from financial business	50,52,57	33,316,857	26,931,089
Adjustment amount for profit or loss (Overlay Adjustment)	50,52	<u>(684,813)</u>	<u>(74,381)</u>
		<u>56,364,928</u>	<u>47,131,571</u>
Gross profit			
		5,913,467	5,704,498
Selling and administrative expenses	51,52,57	<u>3,397,376</u>	<u>2,776,610</u>
Operating profit			
		2,516,091	2,927,888
Other income	53,57	2,449,855	1,466,458
Other expenses	53,57	2,186,811	1,109,332
Finance income	9,27,54	120,375	53,453
Finance costs	9,27,54	547,445	398,321
Share of net profit (loss) of associates and joint venture accounted for using the equity method	5	<u>(76,020)</u>	<u>276,308</u>
Profit before income tax		2,276,045	3,216,454
Income tax expense	55	<u>32,708</u>	<u>934,385</u>
Profit for the year			
		₩ 2,243,337	₩ 2,282,069
Profit is attributable to:			
Owners of the Parent Company		₩ 1,312,180	₩ 973,499
Non-controlling interests		<u>931,157</u>	<u>1,308,570</u>
		₩ 2,243,337	₩ 2,282,069
Other comprehensive loss			
<i>Items that may be reclassified subsequently to profit or loss</i>			
Loss on valuation of debt instruments at fair value through other comprehensive income		(7,077,957)	(1,697,346)
Share in other comprehensive income (loss) of associates		188,080	139,691
Loss on valuation of derivatives qualifying cash flow hedge		(697,706)	(92,479)
Translation of foreign currency financial statements		24,276	167,485
Other comprehensive income of separate accounts		(273,651)	(100,094)
Adjustment amount for profit or loss (overlay adjustment)		(384,076)	151,582
<i>Items that will not be reclassified to profit or loss</i>			
Remeasurements of net defined benefit liability		126,398	78,176
Gain (loss) on valuation of equity instruments at fair value through other comprehensive income		(221,476)	412,539
Loss on valuation of financial liabilities at fair value through profit or loss (credit risk change)		(118)	(440)
Surplus on revaluation of assets		3,053,362	33
Other comprehensive loss for the year, net of tax			
		<u>(5,262,868)</u>	<u>(940,853)</u>
Total comprehensive income for the year			
		₩ (3,019,531)	₩ 1,341,216
Total comprehensive income for the year is attributable to:			
Owners of the Parent Company		₩ (772,574)	₩ 493,013
Non-controlling interests		<u>(2,246,957)</u>	<u>848,203</u>
		₩ (3,019,531)	₩ 1,341,216
Earnings per share (in Korean won)			
Basic earnings per ordinary share	56	₩ 14,169	₩ 10,568
Basic earnings per preferred share	56	₩ 14,219	₩ 10,618
Diluted earnings per share (in Korean won)			
Basic earnings per ordinary share	56	₩ 14,158	₩ 10,562
Basic earnings per preferred share	56	₩ 14,208	₩ 10,612

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

Hanwha Corporation and Subsidiaries
Consolidated Statements of Changes in Equity
Years Ended December 31, 2022 and 2021

(in millions of Korean won)

	Share capital	Capital surplus	Capital adjustments	Accumulated other comprehensive income (loss)	Retained earnings	Non-controlling interests	Total
Balance at January 1, 2021	₩ 489,550	₩ 522,939	₩ 16,953	₩ (272,399)	₩ 3,342,091	₩ 13,618,575	₩ 17,717,709
Changes in accounting policy (Revaluation of investment property)	-	-	-	-	609,028	204,353	813,381
Restated total equity at the beginning of the financial year	489,550	522,939	16,953	(272,399)	3,951,119	13,822,928	18,531,090
Profit for the year	-	-	-	-	973,499	1,308,570	2,282,069
Other comprehensive income (loss)	-	-	-	-	-	-	-
Loss on valuation of financial assets at fair value through other comprehensive income	-	-	-	(669,137)	-	(1,028,209)	(1,697,346)
Gain on valuation of financial assets at fair value through other comprehensive income (equity instruments)	-	-	-	52,932	-	359,607	412,539
Loss on valuation of financial liabilities at fair value through profit or loss (credit risk change)	-	-	-	(75)	-	(365)	(440)
Share in other comprehensive income of associates	-	-	-	47,354	-	92,337	139,691
Loss on valuation of derivatives qualifying cash flow hedge	-	-	-	(40,049)	-	(52,430)	(92,479)
Translation of foreign currency financial statements	-	-	-	54,229	-	113,256	167,485
Remeasurements of net defined benefit liability	-	-	-	-	53,483	24,693	78,176
Other comprehensive income of separate accounts	-	-	-	(46,192)	-	(53,902)	(100,094)
Surplus on revaluation of assets	-	-	-	11	-	22	33
Adjustment amount for profit or loss (overlay adjustment)	-	-	-	66,958	-	84,624	151,582
Dividends	-	-	-	-	(65,443)	(99,434)	(164,877)
Acquisition of treasury shares	-	-	(6,685)	-	-	-	(6,685)
Grant of share options	-	6,590	-	-	-	-	6,590
Other capital transactions and others	-	(61,403)	1,235	-	28,047	1,552,519	1,520,398
Reversal of insurance contract liabilities	-	-	-	-	391,518	361,400	752,918
Balance at December 31, 2021	₩ 489,550	₩ 468,126	₩ 11,503	₩ (806,368)	₩ 5,332,223	₩ 16,485,616	₩ 21,980,650
Balance at January 1, 2022	₩ 489,550	₩ 468,126	₩ 11,503	₩ (806,368)	₩ 5,332,223	₩ 16,485,616	₩ 21,980,650
Profit for the year	-	-	-	-	1,312,180	931,157	2,243,337
Other comprehensive income (loss)	-	-	-	-	-	-	-
Loss on valuation of financial assets at fair value through other comprehensive income	-	-	-	(3,204,131)	-	(3,873,826)	(7,077,957)
Loss on valuation of financial assets at fair value through other comprehensive income (equity instruments)	-	-	-	(13,349)	-	(208,127)	(221,476)
Loss on valuation of financial liabilities at fair value	-	-	-	(12)	-	(106)	(118)
Share in other comprehensive income of associates	-	-	-	62,230	-	125,850	188,080
Loss on valuation of derivatives qualifying cash flow hedge	-	-	-	(325,156)	-	(372,550)	(697,706)
Translation of foreign currency financial statements	-	-	-	8,722	-	15,554	24,276
Remeasurements of net defined benefit liability	-	-	-	-	65,923	60,475	126,398
Other comprehensive income of separate accounts	-	-	-	(140,211)	-	(133,440)	(273,651)
Surplus on revaluation of assets	-	-	-	1,626,472	-	1,426,690	3,053,162
Adjustment amount for profit or loss (overlay adjustment)	-	-	-	(165,242)	-	(218,834)	(384,076)
Dividends	-	-	-	-	(69,877)	(95,910)	(165,787)
Acquisition of treasury shares	-	-	(9,114)	-	-	-	(9,114)
Grant of share options	-	10,390	-	-	-	-	10,390
Other capital transactions and others	-	410,342	8,937	-	32,900	1,507,561	1,959,740
Gain on disposal of treasury shares	-	89,513	32,966	-	-	-	122,479
Balance at December 31, 2022	₩ 489,550	₩ 978,371	₩ 44,292	₩ (2,957,045)	₩ 6,673,349	₩ 15,650,310	₩ 20,878,827

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

Hanwha Corporation and Subsidiaries
Consolidated Statements of Cash Flows
Years Ended December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	Note	2022	2021
Cash flows from operating activities			
Cash provided by operations	59	₩ (1,012,809)	₩ 4,327,441
Interest and dividends received from financial business		3,922,819	3,611,849
Interest paid for financial business		(267,443)	(103,361)
Income taxes paid		(769,428)	(607,808)
Net cash inflow from operating activities		<u>1,873,139</u>	<u>7,228,121</u>
Cash flows from investing activities			
Acquisition of property, plant and equipment		(1,538,174)	(1,216,319)
Proceeds from disposal of property, plant and equipment		110,569	113,768
Acquisition of intangible assets		(294,044)	(317,792)
Proceeds from disposal of intangible assets		43,449	40,863
Acquisition of investment property		(233,620)	(10,376)
Proceeds from disposal of investment property		294,352	97,871
Acquisition of investments in associates		(626,222)	(786,093)
Proceeds from disposal of investments in associates		31,261	194,193
Acquisition of financial assets at fair value through profit or loss		(5,214,906)	(4,612,926)
Proceeds from disposal of financial assets at fair value through profit or loss		3,618,713	2,962,559
Acquisition of financial assets at fair value through other comprehensive income		(3,406,298)	(10,952,524)
Proceeds from disposal of financial assets at fair value through comprehensive income		2,944,575	3,204,032
Acquisition of financial assets at amortized cost		(3,384,220)	(116,981)
Proceeds from disposal of financial assets at amortized cost		4,841,149	3,698,875
Proceeds from disposal of assets classified as held for sale		272,608	653,894
Increase in other financial assets		(2,700,095)	(859,093)
Decrease in other financial assets		910,629	474,886
Interests received		107,542	54,581
Dividends received		78,864	217,940
Increase in cash from changes in scope of consolidation		440,147	9
Decrease in cash from changes in scope of consolidation		(88,747)	(1,182,767)
Others		1,652	(6,844)
Net cash outflow from investing activities		<u>(3,790,816)</u>	<u>(8,348,244)</u>
Cash flows from financing activities			
Increase in borrowings and debentures		15,145,162	12,629,654
Repayment of borrowings and debentures		(11,238,601)	(11,042,912)
Increase in other financial liabilities		69,431	82,522
Decrease in other financial liabilities		(81,850)	(98,277)
Increase in non-controlling interests		1,855,386	1,735,391
Decrease in non-controlling interests		(799,681)	(207,456)
Interests paid		(416,057)	(321,714)
Dividends paid		(69,877)	(65,443)
Lease payments paid		(221,019)	(221,170)
Acquisition of treasury shares		(9,114)	(6,685)
Net cash inflow from financing activities		<u>4,233,780</u>	<u>2,483,910</u>
Net increase in cash and cash equivalents		2,316,103	1,363,787
Cash and cash equivalents at the beginning of the financial year		6,895,946	5,533,112
Exchange gains (losses) on cash and cash equivalents		3,650	(953)
Cash and cash equivalents at the end of the year in the consolidated statement of financial position		<u>₩ 9,215,699</u>	<u>₩ 6,895,946</u>

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

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

1. Overview of the parent company

Hanwha Corporation (the “Company”) as the parent company, in accordance with Korean International Financial Reporting Standard (Korean IFRS) 1110 *Consolidated Financial Statements* was established on October 28, 1952 and is engaged in the manufacturing and selling of explosives, trading, and construction. The Company has manufacturing facilities in the cities of Boeun, Changwon and others and several business offices. The main business areas of the construction segment are residential and commercial buildings including apartments and officetels, business complex buildings, bridges, railroad and road construction, environment facilities including water and sewage treatment plants, various plants and industrial facilities including thermal power and cogeneration plants, and petrochemical plants.

On June 24, 1976, the Company and its subsidiaries (collectively referred to as the “Group”) listed its stock on the Korea Exchange. Through several capital increases, the share capital of the Group as at December 31, 2022, amounted to ₩ 489,550 million. As at December 31, 2022, the Group’s major shareholders consist of the following:

	Ordinary share (Number of shares)	Preferred share (Number of shares)	Total (Number of shares)	Percentage of ownership (%)
Kim Seung-Youn	16,977,949	1,470,000	18,447,949	18.84
Kim Dong-Kwan	3,330,000	860,654	4,190,654	4.28
HANWHA ENERGY CORPORATION	7,272,546	1,170,479	8,443,025	8.62
Cheonan Bukil Institute and others	5,107,273	20,402	5,127,675	5.24
Treasury share	1,132,437	-	1,132,437	1.16
Others	41,138,530	19,429,759	60,568,289	61.86
Total	<u>74,958,735</u>	<u>22,951,294</u>	<u>97,910,029</u>	<u>100.00</u>

2. Significant Accounting Policies

2.1 Basis of Preparation

The Group maintains its accounting records in Korean won and prepares statutory 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 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.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

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),
- assets held for sale – measured at fair value less costs to sell, and
- defined benefit pension plans – plan assets measured at fair value
- property, plant and equipment(land) and investment property – measured at fair value

The preparation of 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 3.

Meanwhile, certain amounts in the financial statements for the year ended December 31, 2021, have been reclassified to conform to the December 31, 2022 presentation. These reclassifications have no effect on previously reported net profit or net assets.

2.2 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, 2022.

- Amendment to Korean IFRS 1116 Leases - 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. A lessee shall apply the practical expedient consistently to eligible contracts with similar characteristics and in similar circumstances. The amendment does not have a significant impact on the 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 amendment does not have a significant impact on the financial statements.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

- 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 amendment does not have a significant impact on the 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 amendment does not have a significant impact on the 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 amendment does not have a significant impact on the 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 1041 *Agriculture* – Measuring fair value

2.3 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, 2022 reporting periods and have not been early adopted by the Group.

- 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, 2024, and earlier application is permitted. The Group is in review

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

for the impact of these amendments on the 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 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 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.

Prior to the application of these amendments, the Group did not recognize deferred tax assets and deferred tax liabilities by applying the initial recognition exemption if the transaction in which the equal taxable temporary difference and deductible temporary difference gives rise is not a business combination and affects neither accounting profit nor taxable profit when recognizing assets and liabilities. The Group is in review for the impact of these amendments on the financial statements.

- Korean IFRS 1117 Insurance Contract

a) Major changes in accounting policy

Korean IFRS 1117 *Insurance Contracts* enacted on April 23, 2021 is effective for annual periods beginning on or after January 1, 2023 and will replace Korean IFRS 1104 *Insurance Contracts*.

The major features of Korean IFRS 1117 are the current value measurement of insurance liabilities, recognition of insurance revenue on an accrual basis, and the separate presentation of insurance income or expense and the investment income or expense. According to the current Korean IFRS 1104, insurance liabilities are measured using historical information (interest rate at the time of insurance sales, etc.). Also, when an insurance company receives premiums, the premiums received are recognized as insurance revenue on a cash basis, and there is no obligation to

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

present insurance income or expense and the investment income or expense separately. On the other hand, according to Korean IFRS 1117, insurance liabilities are measured at current values using discount rates applied with assumptions and risks at the measurement date, insurance revenue is recognized on an accrual basis as per services provided to policyholders by each fiscal year, and insurance financial income or expense and the investment income or expense are presented separately.

When the Group prepares financial statements by applying Korean IFRS 1117, the areas that are expected to cause significant differences from the current financial statements are as follows. These do not include all differences that may arise in the future and are subject to change according to additional analysis results in the future.

Valuation of insurance liabilities

According to Korean IFRS 1117, the Group estimates all cash flows of an insurance contract and measures insurance liabilities using discount rates applied with assumptions and risks at the measurement date.

Specifically, after identifying a portfolio of insurance contracts consisting of contracts that are exposed to similar risks and managed together, the Group classifies contracts with similar profitability within the portfolio to groups of insurance contracts. Thereafter, a group of insurance contracts is measured at the total of estimates of future cash flows (including cash flows related to insurance contract loans and reflecting the time value of money and others.), risk adjustment, and contractual service margin. With the adoption of Korean IFRS 1117, a contractual service margin account is newly introduced, which represents the unearned profit that an entity expects to earn as it provides services in the future.

Meanwhile, a reinsurance contract refers to an insurance contract issued by the reinsurer to compensate another entity for claims arising from insurance contracts issued by that other entity (underlying contracts). For the group of reinsurance contracts held, assumptions that are consistent with the groups of underlying insurance contracts are used when measuring the estimates of the present value of the future cash flows for the group of reinsurance contracts.

Recognition and measurement of financial performance

According to Korean IFRS 1117, insurance income is recognized on an accrual basis as per services (insurance coverage) provided to policyholders by each fiscal year, and investment factors (surrender values, refund at maturity, etc.) paid to the policyholder regardless of the insurance event are excluded from the insurance income. In addition, insurance 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.

The Group also recognizes insurance finance income or expenses for the effect of the time value of money, the effect of financial risk and changes in them, and should choose an accounting policy whether to disaggregate insurance finance income or expenses for the period between profit or loss and other comprehensive income or loss.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Accounting policy related to transition

According to the transition of Korean IFRS 1117, an insurance company shall apply a fully retrospective approach, modified retrospective approach or fair value approach for a group of insurance contracts issued before the transition date (January 1, 2022, the beginning of the annual reporting period immediately preceding the date of initial application) and adjust the existing historical cost-based valuation to the valuation at the measurement date.

Although an insurance company shall identify, recognize and measure a group of insurance contracts (fully retrospective approach) as if Korean IFRS 1117 had been applied before the date of transition, if it is impracticable for an entity to apply the method, the company shall apply the modified retrospective approach or the fair value approach. However, in case of a group of insurance contracts with direct participation features that meets certain conditions, the fair value approach can be applied even if the fully retrospective approach is applicable.

Meanwhile, the modified retrospective approach is a method to achieve the closest outcome to fully retrospective application as possible using reasonable and supportable information available without undue cost or effort. The fair value approach is a method of evaluating a group of insurance contracts by using the fair value evaluation amount in accordance with Korean IFRS 1113 *Fair Value Measurement*. When applying the fair value approach, the contractual service margin of the liabilities for remaining coverage is determined as the difference between the fair value of a group of insurance contracts and the fulfilment cash flows measured at the transition date.

b) Preparation status for the implementation of Korean IFRS 1117

In order to implement Korean IFRS 1117 smoothly, the Group is in the process of organizing a separate task force team, establishing an accounting system, training employees, and analyzing financial impact.

Most of all, the stability of the accounting system and the consistency of system calculations shall be secured for the adequacy of insurance liability valuation, and accounting policies and actuarial assumptions shall be set reasonably and applied consistently every period. To this end, the Group continuously verifies the system and prepares several internal control measures. In particular, the Group plans to establish and comply with the internal control over financial reporting suitable for the changed accounting environment so that reliable accounting information can be prepared and disclosed after the implementation of the new accounting standards.

The adoption of Korean IFRS 1117 will not only be a change of accounting standards, but will also affect insurance product development, sales strategies, and long-term management strategies. Accordingly, the Group re-established various management strategies after the implementation of the new accounting standards, while continually performing education for related employees, and reporting the progress status and future plans to the management.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

c) Financial impact assessment

With the implementation of Korean IFRS 1117, as the valuation method of liabilities and the method of revenue recognition have been changed, the Group expects that there will be changes in financial figures in the financial statements for the year of 2023.

The Group has been assessed insurance contract liabilities by applying a fully retrospective approach, modified retrospective approach and fair value approach, according to the issuance date of the group of insurance contracts as of the date of transition (January 1, 2022). The fair value of insurance contracts (Korean IFRS 1113) was calculated by reflecting some adjustments based on the valuation of insurance contract liabilities calculated by Korean-Insurance Capital Standard (K-ICS).

- Korean IFRS 1001 Presentation of Financial Statements - Disclosure of gain or loss on valuation of financial liabilities subject to adjustment of exercise price

If the entire or a part of financial instrument, whose exercise price is subject to change due to the issuer's share price, is classified as a financial liability, the carrying amount of the financial liability and related gains and losses shall be disclosed. 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 financial statements.

2.4 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

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

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. Unrealized losses are also eliminated unless the transaction provides evidence of an impairment of the transferred asset. Accounting policies of subsidiaries have been changed where necessary to ensure consistency with the policies adopted by the Group.

The Group treats transactions with non-controlling interests that do not result in a loss of control as transactions with equity owners of the Group. A change in ownership interest results in an adjustment between the carrying amounts of the controlling and non-controlling interest to reflect their relative interest in the subsidiary. Any difference between the amount of the adjustment to non-controlling interest and any consideration paid or received is recognized in a separate reserve within equity attributable to owners of the Parent Company.

When the Group ceases to consolidate for a subsidiary because of a loss of control, any retained interest in the subsidiary is remeasured to its fair value with the change in carrying amount recognized in profit or loss.

(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 Group 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.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(4) Business Combination

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the fair values of the assets transferred by the Group, the liabilities incurred by the Group to the former owners of the acquiree and the equity interests issued by the Group in exchange for control of the acquiree. Acquisition-related costs are generally recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and liabilities and contingent liabilities assumed are recognized at their fair value at the acquisition date, except that:

- Deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with Korean IFRS 1012 and Korean IFRS 1019, respectively.
- Liabilities or equity instruments related to share-based payment arrangements of the acquiree or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the acquiree are measured in accordance with Korean IFRS 1102 at the acquisition date.
- Assets (or disposal groups) that are classified as held for sale in accordance with Korean IFRS 1105 are measured in accordance with that standard.

Goodwill is measured as the excess of the sum of: 1) the consideration transferred and 2) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed exceeds the sum of: 1) the consideration transferred and 2) the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase.

When the consideration transferred by the Group in a business combination includes assets or liabilities resulting from a contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Changes in the fair value of the contingent consideration that qualify as measurement-period adjustments are adjusted retrospectively, with corresponding adjustments against goodwill. Measurement-period adjustments are adjustments that arise from additional information obtained during the 'measurement period' (which cannot exceed one year from the acquisition date) about facts and circumstances that existed at the acquisition date.

The subsequent accounting for changes in the fair value of the contingent consideration that do not qualify as measurement-period adjustments depends on how the contingent consideration is classified. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates, with the corresponding gain or loss being recognized in profit or loss.

When a business combination is achieved in stages, the Group's previously held equity interest in

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

the acquiree is remeasured to fair value at the acquisition date and the resulting gain or loss, if any, is recognized in profit or loss (if applicable, other comprehensive income). Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in other comprehensive income are reclassified to profit or loss where such treatment would be appropriate if those interests were disposed of.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see above), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognized at that date.

(5) Non-controlling interests

Non-controlling interests in a subsidiary are accounted for separately from the Parent Company's ownership interests in a subsidiary. Each component of net profit or loss and other comprehensive income is attributed to the owners of the Parent Company and non-controlling interest holders, even when the allocation reduces the non-controlling interest balance below to zero.

Meanwhile, non-controlling interests arising from collective investment securities and special purpose entities in consolidation are recognized as borrowing liabilities as the Group holds no unconditional right to avoid payments to counterparties in the event of liquidation of such securities. The variation of borrowing liability is recognized as profit or loss for the year.

2.5 Goodwill

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

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

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

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

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.6 Share-based Payments

The Group operates equity-settled and cash-settled share-based payment transactions as a consideration for employee services received. The share-based payments are recognized at fair value of equity instruments granted, and employee benefit expense is recognized over the vesting period. Under cash-settled share-based payment plan, the Group measures liabilities for the consideration for employee services received at fair value at initial recognition. The Group is required to remeasure the fair value of the liability at the end of each reporting period, with any changes in value recognized in profit or loss for the year.

2.7 Revenue Recognition

The Group has applied Korean IFRS 1115. According to Korean IFRS 1115, all types of contracts are recognized by applying a five-step revenue recognition model (① Contract Identification — ② Performance Obligations Identification — ③ Transaction Price Calculation — ④ Transaction Price Allocations to Performance Obligations — ⑤ Revenue Recognition When Satisfied with Performance Obligations).

(1) Identify performance obligations

1. Point in time

The Group recognizes revenue when the goods or services are transferred to the customer. In addition, the Group exports a variety of finished goods or merchandises by Incoterms Group C condition (CIF and others). Since the seller provides logistics service after passing the control to the customer, the Group identifies the relative logistics service (including insurance) as separate performance obligation.

2. Over time

Under Korean IFRS 1115, if performance obligations satisfy one or more of the three condition of paragraph 35, performance obligations would be identified as over-time, otherwise as point in time. The time of revenue recognition can be changed if the Group's performance obligations satisfy the three condition of paragraph 35.

(2) Allocate transaction price

The Group allocates the transaction price to the separate performance obligations in one contract based on the relative stand-alone selling price of each separate performance obligation. For estimating stand-alone selling price of each performance obligation, the Group uses the method of 'expected cost plus a margin approach', 'market valuation adjustment approach' and others.

(3) Variable transaction price

The price the customer promises in accordance with the contract of sale of the goods with the customer may change. In accordance with Korean IFRS 1115, the variable cost is estimated using a method that expects to be able to better anticipate the consideration to be entitled to the right to

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

receive the expected or probable price of the right to receive the right. It recognizes revenue by including the variable price in the transaction price only to the extent that it is highly unlikely that it will carry out a significant portion of the cumulative revenue amount that has already been recognized.

(4) Insurance premium

Insurance premiums received in advance are deferred as unearned revenue at the time of receipt. As the contract matures, a proportionate portion of the insurance premium is recognized as revenue over the coverage period. Overdue insurance premiums are not recognized at the end of the reporting period.

(5) Interest income

Interest income is recognized using the effective interest method according to the time passed. The effective interest method is a method of calculating the amortized cost of a financial asset or a financial liability and of allocating the interest income or interest expense over the relevant period.

The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial asset or financial liability. When calculating the effective interest rate, an entity shall estimate cash flows considering all contractual terms of the financial instrument but shall not consider future credit losses. The calculation includes all fees and points paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts. There is a presumption that the cash flows and the expected life of a group of similar financial instruments can be estimated reliably. However, in those rare cases when it is not possible to estimate reliably the cash flows or the expected life of a financial instrument, the Group uses the contractual cash flows over the full contractual term of the financial instrument.

When a loan and receivable is impaired, the Group reduces the carrying amount to its recoverable amount and continues unwinding the discount as interest income. Interest income on impaired loan and receivables is recognized using the original effective interest rate.

(6) Dividend income

Dividend income is recognized when the right to receive payment is established.

2.8 Leases

(1) Lessee accounting

The Group leases various offices, warehouses and cars. Lease contracts are typically made for fixed periods of 1 to 10 years, but may have extension options as described in (2) below.

Contracts may contain both lease and non-lease components. However, the Group applies the practical expedient which has elected not to separate non-lease components from lease components, and instead account for each lease component and any associated non-lease

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

components as a single lease component.

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 both (a) periods covered by an option to extend the lease if the lessee is reasonably certain to exercise that option; and (b) periods covered by an option to terminate the lease if the lessee is reasonably certain not 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 at 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

Lease payments to be made under reasonably certain extension options are also included in the measurement of the lease liability.

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

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

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.

Payments associated with short-term leases of equipment and vehicles 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 small items of office furniture.

(2) Extension and termination options

Extension and termination options are included in a number of property and equipment leases. These terms are used to maximize operational flexibility in terms of managing contracts. The majority of extension and termination options held are exercisable only by the Group and not by the respective lessor.

2.9 Foreign Currency Translation

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.

Foreign currency transactions are translated into the functional currency using the exchange rates at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Goodwill and fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate at the end of the reporting period.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.10 Borrowing Costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period to get ready for their intended use or sale, are added to the cost of those assets until the assets are substantially ready for their intended use or sale.

To the extent that variable-rate borrowings are used to finance a qualifying asset and are hedged in an effective cash flow hedge of interest rate risk, the effective portion of the derivative is recognized in other comprehensive income and reclassified to profit or loss when the qualifying asset impacts profit or loss. To the extent that fixed rate borrowings are used to finance a qualifying asset and are hedged in an effective fair value hedge of interest rate risk, the capitalized borrowing costs reflect the hedged interest rate.

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

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

2.11 Government Grants

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

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

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

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

2.12 Employee Benefits ,Termination Benefits and Other Long-term Retirement Benefits

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

For defined benefit retirement benefit plans, the cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each reporting period. Remeasurement, comprising the actuarial gains and losses, the effect of the changes to the asset ceiling (if applicable) and the return on plan assets (excluding interest), is

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

reflected immediately in the consolidated statements of financial position with a charge or credit recognized in other comprehensive income in the period in which it occurs. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss. Past service costs are recognized in profit or loss on the earlier of (1) the date of the plan amendment or curtailment and (2) the date that the Group recognizes restructuring-related costs. The Group recognized gains and losses on the settlement of a defined benefit plan when the settlement occurs.

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. Defined benefit costs are composed of service cost (including current service cost, past service cost as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

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

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

The Group provides long-term employee benefits that are entitled to employees with service period for ten years and above. The expected costs of these benefits are accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans. The Group recognizes service cost, net interest on other long-term employee benefits and remeasurements as profit or loss for the year. These liabilities are valued annually by an independent qualified actuary.

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

2.13 Current and Deferred Tax

Income tax expense represents the sum of the current tax and deferred tax.

(1) Current tax

The current income tax expense 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, and considers whether it is probable that a taxation authority will accept an uncertain tax treatment. The Group measures its tax balances either based on the most likely amount or the expected value, depending on which method provides a better prediction of the resolution of the uncertainty.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(2) Deferred tax

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

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent that it is probable that there will be sufficient taxable profits against which the benefits of the temporary differences can be utilized and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the assets to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset is realized based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset if, and only if, the Group has a legally enforceable right to set off current tax assets against current tax liabilities and the deferred tax assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities, which intend either to settle current tax liabilities and assets on a net basis or to realize the assets and settle the liabilities simultaneously in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

Deferred tax assets and liabilities originated from investment properties are measured under the assumption that the book amount of investment properties is to be retrieved by sales. Therefore, if there is no solid evidence to state otherwise, the measurement of deferred tax assets and liabilities reflect the tax effect from sale of investment properties. However, if the sole purpose of the investment properties is to earn economic value overtime through depreciation rather than selling, above assumption does not meet.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(3) Current and deferred taxes for the year

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

2.14 Property, Plant and Equipment

Land is shown at fair value based on valuations by external independent appraisers. Valuations are performed with sufficient regularity to ensure that the fair value of a revalued asset does not differ materially from its carrying amount.

Increases in the carrying amount arising on revaluation of land are credited to other comprehensive income and shown as other reserves in equity. Decreases that offset previous increases of the same asset are charged to other comprehensive income and debited against other reserves directly in equity; all other decreases are charged to the statement of profit or loss. However, the decrease shall be recognized in other comprehensive income to the extent of any credit balance existing in the revaluation surplus in respect of that asset.

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

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

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

	Useful lives
Buildings	5 - 65 years
Structures	5 - 55
Machinery	2 - 20
Vehicles	1 - 12
Tools and equipment	1 - 20
Others	1 - 30

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

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

The Group reviews the depreciation method, the estimated useful lives and the residual values of property, plant and equipment at the end of each annual reporting period. If expectations differ from previous estimates, the changes are accounted for as a change in an accounting estimate.

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

2.15 Investment Property

Investment properties are properties held to earn rentals or for capital appreciation.

Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are measured at fair value. In case that it is possible to measure reliably the fair value of investment property under construction, the fair value method is adopted. In case that the fair value of an investment property under construction is not reliably determinable but expected to be reliably determinable when construction is complete, the Group measures that investment property under construction at cost, net of accumulated impairment losses, until either its fair value becomes reliably determinable or construction is completed, whichever is earlier.

The fair value of investment property reflects market conditions at the end of the reporting period, with adjustment that reflects specific asset's characteristics, condition and location. The book amount for financial reporting purpose is determined based on the evaluation of the investment property by an independent valuer, who holds a recognized and relevant professional qualification and has recent experience in the location and category of the investment property being valued.

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

A gain or loss arising from a change in the fair value of investment property is recognized in profit or loss for the year in which it arises. In case that the investment property is disposed of with its fair value in an arm's length transaction, the investment property's fair value is recognized as its book amount in the current period, and the difference is recognized in the statement of profit or loss.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.16 Intangible Assets

(1) Intangible assets acquired separately

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

	Useful lives
Development costs	3 – 20 years
Others	1 – 30

(2) Internally generated intangible assets - research and development expenditure

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

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

The amount initially recognized for internally generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria. Where no internally generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred.

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses.

(3) Intangible assets acquired in a business combination

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

(4) Derecognition of intangible assets

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

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(5) Patent and Trademark

Patent and trademark are initially recognized at cost and amortized using the straight-line method over the estimated useful lives.

(6) Others

Certain intangible assets 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.

2.17 Impairment of Tangible and Intangible Assets Other Than Goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible assets other than goodwill to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual CGUs; otherwise, they are allocated to the smallest group of CGUs for which a reasonable and consistent allocation basis can be identified.

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

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

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

2.18 Inventories

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

When inventories are sold, the carrying amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

down of inventories to net realizable value and all losses of inventories are recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

2.19 Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

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

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

At the end of each reporting period, the remaining provision balance is reviewed and assessed to determine if the current best estimate is being recognized. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period.

2.20 Financial Assets

All regular way purchases or sales of financial assets are recognized and derecognized on a trade-date basis. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

All recognized financial assets are measured subsequently in their entirety at either amortized cost or fair value depending on the classification of the financial assets.

(1) Classification of financial assets

Debt instruments that meet the following conditions are measured subsequently at amortized cost:

- The financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows.

- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Debt instruments that meet the following conditions are measured subsequently at FVTOCI:

- The financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling the financial assets.
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

By default, all other financial assets are measured subsequently at FVTPL. Despite the foregoing, the Group may make the following irrevocable election or designation at initial recognition of a financial asset:

- The Group may irrevocably elect to present subsequent changes in fair value of an equity investment in other comprehensive income if certain criteria are met (see (1-3) below).
- The Group may irrevocably designate a debt investment that meets the amortized cost or FVTOCI criteria as measured at FVTPL if doing so eliminates or significantly reduces an accounting mismatch (see (1-4) below).

1-1) Amortized cost and effective interest method

The effective interest method is a method of calculating the amortized cost of a debt instrument and allocating interest income over the relevant period. For financial assets other than purchased or originated credit-impaired financial assets (i.e., assets that are credit impaired on initial recognition), the effective interest rate is the rate that exactly discounts estimated future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts), excluding ECLs, through the expected life of the debt instrument, or, where appropriate, a shorter period, to the gross carrying amount of the debt instrument on initial recognition. For purchased or originated credit-impaired financial assets, a credit-adjusted effective interest rate is calculated by discounting the estimated future cash flows, including ECLs, to the amortized cost of the debt instrument on initial recognition.

The amortized cost of a financial asset is the amount at which the financial asset is measured at initial recognition, minus the principal repayments, plus the cumulative amortization using the effective interest method of any difference between that initial amount and the maturity amount, adjusted for any loss allowance. The gross carrying amount of a financial asset is the amortized cost of the financial asset before adjusting for any loss allowance.

Interest income is recognized using the effective interest method for debt instruments measured subsequently at amortized cost and at FVTOCI. For financial assets other than purchased or originated credit-impaired financial assets, interest income is calculated by applying the effective interest rate to the gross carrying amount of a financial asset, except for financial assets that have subsequently become credit impaired (see below). For financial assets that have subsequently become credit impaired, interest income is recognized by applying the effective interest rate to the amortized cost of the financial asset. If, in subsequent reporting periods, the credit risk on the credit impaired-financial instrument improves so that the financial asset is no longer credit

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

impaired, interest income is recognized by applying the effective interest rate to the gross carrying amount of the financial asset.

For purchased credit-impaired financial assets, the Group recognizes interest income by applying the credit-adjusted effective interest rate to the amortized cost of the financial asset from initial recognition. The calculation does not revert to the gross basis even if the credit risk of the financial asset subsequently improves so that the financial asset is no longer credit impaired.

Interest income is recognized in profit or loss and is included in the "finance income - interest income according to the effective interest rate method" line item (Note 54).

1-2) Debt instruments classified as at FVTOCI

Fair value is determined using the valuation techniques described in Note 61. The corporate bonds are initially measured at fair value plus transaction costs. Subsequently, changes in the carrying amount of these corporate bonds as a result of foreign exchange gains and losses, impairment gains or losses and interest income calculated using the effective interest method are recognized in profit or loss. The amounts that are recognized in profit or loss are the same as the amounts that would have been recognized in profit or loss if these corporate bonds had been measured at amortized cost. All other changes in the carrying amount of these corporate bonds are recognized in other comprehensive income and accumulated under the heading of investments revaluation reserve. When these corporate bonds are derecognized, the cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss.

1-3) Equity instruments designated as at FVTOCI

On initial recognition, the Group may make an irrevocable election (on an instrument-by-instrument basis) to designate investments in equity instruments as at FVTOCI. Designation at FVTOCI is not permitted if the equity investment is held for trading or if it is a contingent consideration recognized by an acquirer in a business combination.

A financial asset is held for trading if:

- it has been acquired principally for the purpose of selling in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that the Group manages together and has evidence of a recent actual pattern of short-term profit taking; or
- it is a derivative (except for a derivative that is a financial guarantee contract or a designated and effective hedging instrument).

Investments in equity instruments at FVTOCI are initially measured at fair value plus transaction costs. Subsequently, they are measured at fair value, with gains and losses arising from changes in fair value recognized in other comprehensive income and accumulated in the investments . The cumulative gain or loss is not reclassified to profit or loss on disposal of the equity investments, instead it is transferred to retained earnings.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Dividends on these investments in equity instruments are recognized in profit or loss in accordance with Korean IFRS 1109, unless the dividends clearly represent a recovery of part of the cost of the investment. Dividends are included in the 'finance income' line item (Note 54) in profit or loss.

1-4) Financial assets at FVTPL

Financial assets that do not meet the criteria for being measured at amortized cost or FVTOCI are measured at FVTPL. Specifically:

- Investments in equity instruments are classified as at FVTPL, unless the Group designates an equity investment that is neither held for trading nor a contingent consideration arising from a business combination as at FVTOCI on initial recognition (see (1-3) above).

- Debt instruments that do not meet the amortized cost criteria or the FVTOCI criteria (see (1-1) and (1-2) above) are classified as at FVTPL. In addition, debt instruments that meet either the amortized cost criteria or the FVTOCI criteria may be designated as at FVTPL upon initial recognition if such designation eliminates or significantly reduces a measurement or recognition inconsistency (so called 'accounting mismatch') that would arise from measuring assets or liabilities or recognizing the gains and losses on them on different bases.

Financial assets at FVTPL are measured at fair value at the end of each reporting period, with any fair value gains or losses recognized in profit or loss to the extent they are not part of a designated hedging relationship. The net gain or loss recognized in profit or loss includes dividends earned on the financial asset in the 'other non-operating income and expenses. Meanwhile, interests on financial assets at FVTPL are recognized in 'finance income-other' (Note 54). The fair value is determined as described in Note 61.

(2) Foreign exchange gains and losses

The carrying amount of financial assets that are denominated in a foreign currency is determined in that foreign currency and translated at the spot rate at the end of each reporting period. Specifically:

- For financial assets measured at amortized cost that are not part of a designated hedging relationship, exchange differences are recognized in profit or loss in the 'other non-operating income and expenses' line item.

- For debt instruments measured at FVTOCI that are not part of a designated hedging relationship, exchange differences on the amortized cost of the debt instrument are recognized in profit or loss in the 'other non-operating income and expenses'. Other exchange differences are recognized in other comprehensive income in the investments revaluation reserve.

- For financial assets measured at FVTPL that are not part of a designated hedging relationship, exchange differences are recognized in profit or loss in the 'other non-operating income and expenses' line item.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

- For equity instruments measured at FVTOCI, exchange differences are recognized in other comprehensive income in the investments revaluation reserve.

(3) Impairment of financial assets

The Group recognizes a loss allowance for ECLs on investments in debt instruments that are measured at amortized cost or at FVTOCI, lease receivables, trade receivables and contract assets, as well as on financial guarantee contracts. The amount of ECLs is updated at each reporting date to reflect changes in credit risk since initial recognition of the respective financial instrument.

The Group always recognizes lifetime ECL for trade receivables, contract assets and lease receivables. The ECLs on these financial assets are estimated using a provision matrix based on the Group's historical credit loss experience, adjusted for factors that are specific to the debtors, general economic conditions and an assessment of both the current as well as the forecast direction of conditions at the reporting date, including time value of money where appropriate.

For all other financial instruments, the Group recognizes lifetime ECL when there has been a significant increase in credit risk since initial recognition. Lifetime ECL represents the ECLs that will result from all possible default events over the expected life of a financial instrument.

3-1) Significant increase in credit risk

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition, the Group compares the risk of a default occurring on the financial instrument at the reporting date with the risk of a default occurring on the financial instrument at the date of initial recognition. In making this assessment, the Group considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort.

In particular, the following information is taken into account when assessing whether credit risk has increased significantly since initial recognition:

- an actual or expected significant deterioration in the financial instrument's external (if available) or internal credit rating;
- significant increases in credit risk on other financial instruments of the same debtor

Despite the foregoing, the Group assumes that the credit risk on a financial instrument has not increased significantly since initial recognition if the financial instrument is determined to have low credit risk at the reporting date. A financial instrument is determined to have low credit risk if: (1) the financial instrument has a low risk of default, (2) the debtor has a strong capacity to meet its contractual cash flow obligations in the near term, and (3) adverse changes in economic and business conditions in the longer term may, but will not necessarily, reduce the ability of the borrower to fulfil its contractual cash flow obligations.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

The Group regularly monitors the effectiveness of the criteria used to identify whether there has been a significant increase in credit risk and revises them as appropriate to ensure that the criteria are capable of identifying significant increase in credit risk before the amount becomes past due.

3-2) Definition of loss event

The Group assumes to be a loss event when debtor fails to perform contractual agreements in the past experience for the purpose of internal managing credit risk.

3-3) Credit-impaired financial assets

Financial assets are impaired when detrimental evidences show that the present value of estimated future cash flow decreases. These evidences include, but not limited to:

- significant financial difficulty of issuer or obligor; or
- a breach of contract, such as a default or delinquency in interest or principal payments.

3-4) Write-off policy

The Group writes off financial assets when the assets are determined to be no longer recoverable by borrower's financial difficulty, such as bankruptcy. Financial assets written-off can be object of collectable process with adequate legal procedure.

3-5) Measurement and recognition of ECLs

The measurement of ECLs is a function of the probability of default, loss-given default (i.e., the magnitude of the loss if there is a default) and the exposure at default. The assessment of the probability of default and loss-given default is based on historical data adjusted by forward-looking information as described above. As for the exposure at default, for financial assets, this is represented by the assets' gross carrying amount at the reporting date.

For financial assets, the ECL is estimated as the difference between all contractual cash flows that are due to the Group in accordance with the contract and all the cash flows that the Group expects to receive, discounted at the original effective interest rate.

For a financial guarantee contract, as the Group is required to make payments only in the event of a default by the debtor in accordance with the terms of the instrument that is guaranteed, the expected loss allowance is the expected payments to reimburse the holder for a credit loss that it incurs, less any amounts that the Group expects to receive from the holder, the debtor or any other party.

The Group recognizes an impairment gain or loss in profit or loss for all financial instruments with a corresponding adjustment to their carrying amount through a loss allowance account, except for investments in debt instruments that are measured at FVTOCI, for which the loss allowance is recognized in other comprehensive income and accumulated in the investment revaluation reserve, and does not reduce the carrying amount of the financial asset in the separate statements of financial position.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(4) Derecognition of financial assets

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognizes its retained interest in the asset and an associated liability for amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognize the financial asset and also recognizes a collateralized borrowing for the proceeds received.

On derecognition of a financial asset measured at amortized cost, the difference between the asset's carrying amount and the sum of the consideration received and receivable is recognized in profit or loss. In addition, on derecognition of an investment in a debt instrument classified as at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is reclassified to profit or loss. In contrast, on derecognition of an investment in equity instrument which the Group has elected on initial recognition to measure at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is not reclassified to profit or loss but is transferred to retained earnings.

2.21 Financial Liabilities and Equity Instruments

(1) Classification as debt or equity

Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement and the definitions of a financial liability and an equity instrument.

(2) Equity instruments

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

Repurchase of the Group's own equity instruments is recognized and deducted directly in equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Group's own equity instruments.

(3) Compound instruments

The component parts of compound instruments are classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and equity instrument. At the date of issue, the fair value of the liability component is estimated using the prevailing market interest rate for a similar non-convertible instrument. The conversion option classified as equity is determined by deducting the amount of the liability component from the fair value of the compound instrument as a whole. This is recognized and included in equity, net of income tax effects, and is not subsequently remeasured.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(4) Financial liability

All financial liabilities are measured subsequently at amortized cost using the effective interest method or at FVTPL. However, financial liabilities that arise when a transfer of a financial asset does not qualify for derecognition or when the continuing involvement approach applies, and financial guarantee contracts are issued by the Group, are measured in accordance with the specific accounting policies set out below.

(5) Financial liabilities at FVTPL

Financial liabilities are classified as at FVTPL when a financial liability is a contingent consideration that may be paid by an acquirer as part of a business combination to which Korean IFRS 1103 applies or held for trading, or it is designated as at FVTPL.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial liability other than a financial liability held for trading or a contingent consideration that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial liability forms part of a group of financial assets or financial liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and Korean IFRS 1109 permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial liabilities at FVTPL are measured at fair value, with any gains or losses arising on changes in fair value recognized in profit or loss to the extent that they are not part of a designated hedging relationship. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the 'other income or expenses' line item.

However, for financial liabilities that are designated as at FVTPL, the amount of change in the fair value of the financial liability that is attributable to changes in the credit risk of that liability is recognized in other comprehensive income, unless the recognition of the effects of changes in the liability's credit risk in other comprehensive income would create or enlarge an accounting mismatch in profit or loss. The remaining amount of change in the fair value of liability is

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

recognized in profit or loss. Changes in fair value attributable to a financial liability's credit risk that are recognized in other comprehensive income are not subsequently reclassified to profit or loss; instead, they are transferred to retained earnings upon derecognition of the financial liability.

Gains or losses on financial guarantee contracts issued by the Group that are designated by the Group as at FVTPL are recognized in profit or loss.

(6) Financial liabilities measured subsequently at amortized cost

Financial liabilities that are not (1) contingent consideration of an acquirer in a business combination, (2) held for trading or (3) designated as at FVTPL are measured subsequently at amortized cost using the effective interest method.

The effective interest method is a method of calculating the amortized cost of a financial liability and allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments, including all fees and points paid or received (that form an integral part of the effective interest rate) transaction costs and other premiums or discounts through the expected life of the financial liability, or (where appropriate) a shorter period, to the net carrying amount on initial recognition.

(7) Financial guarantee contracts

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

Financial guarantee contract liabilities are initially measured at their fair values and, if not designated as at FVTPL, are subsequently measured at the higher of:

- the amount of loss allowance, as determined in accordance with Korean IFRS 1109 (see "Financial assets" above) or
- the amount initially recognized, less cumulative amortization recognized in accordance with Korean IFRS 1115.

(8) Foreign exchange gains and losses

For financial liabilities that are denominated in a foreign currency and are measured at amortized cost at the end of each reporting period, the foreign exchange gains and losses are determined based on the amortized cost of the instruments. These foreign exchange gains and losses are recognized in the 'other income or expenses' line item in consolidated statements of comprehensive income for financial liabilities that are not part of a designated hedging relationship. For those which are designated as a hedging instrument for a hedge of foreign currency risk, foreign exchange gains and losses are recognized in other comprehensive income and accumulated in a separate component of equity.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

The fair value of financial liabilities denominated in a foreign currency is determined in that foreign currency and translated at the spot rate at the end of the reporting period. For financial liabilities that are measured as at FVTPL, the foreign exchange component forms part of the fair value gains or losses and is recognized in profit or loss for financial liabilities that are not part of a designated hedging relationship.

(9) Derecognition of financial liabilities

The Group derecognizes financial liabilities when, the Group's obligations are discharged, cancelled or have expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

When the Group exchanges with the existing lender one debt instrument for another one with substantially different terms, such exchange is accounted for as an extinguishment of the original financial liability and the recognition of a new financial liability. Similarly, the Group accounts for substantial modification of terms of an existing liability or part of it as an extinguishment of the original financial liability and the recognition of a new liability.

2.22 Derivative Financial Instruments

The Group enters into a variety of derivative financial instruments to manage its exposure to interest rate and foreign exchange rate risk, including foreign exchange forward contracts, interest rate swaps and cross-currency swaps.

Derivatives are initially recognized at fair value at the date the derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in profit or loss immediately, unless the derivative is designated and effective as a hedging instrument; in such case, the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

A derivative with a positive fair value is recognized as a financial asset, and a derivative with a negative fair value is recognized as a financial liability. The Group does not offset a derivative financial instrument unless there is a legal right or intention to offset. A derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the instrument is more than 12 months and it is not expected to be realized or settled within 12 months. Other derivatives are presented as current assets or current liabilities.

The Group recognizes changes in the fair value of derivatives that are designated as hedging instruments and changes in the fair value of the hedged item in profit or loss.

Also, the effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss relating to the ineffective portion is immediately recognized as profit or loss in the consolidated statement of comprehensive income.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.23 Accounting related to the Greenhouse Gas Emission Rights Cap and Trade Scheme

The Group classifies the emission rights as intangible assets. Emission rights allowances the government allocated free of charge are measured at nil, and emission rights allowances purchased are measured at cost, which the Group paid to purchase the allowances. If emission rights the government allocated free of charge are sufficient to settle the emission rights allowances allotted for vintage year, the emission liabilities are measured at nil. However, for the emission liabilities that exceed the allowances allocated free of charge, the shortfall is measured at best estimate at the end of the reporting period.

2.24 Non-current Assets (or Disposal Group) Held for sale

Non-current assets (or disposal group) are classified as held for sale when their carrying amount will be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. The assets are measured at the lower amount between their carrying amount and the fair value less costs to sell.

2.25 Deferred Acquisition Costs

Acquisition costs arising from annuity contracts and long-duration contracts sold after April 1, 2004, excluding any excess amount over estimated acquisition costs (contracts sold after April 1, 2010, excluding the amount exceeding the standard deviation deduction amount), are deferred and amortized evenly over the premium payment period. When the period of premium payment is longer than seven years, the amortization period of deferred acquisition costs is seven years. When the contract is cancelled, any unamortized portion as at the cancellation date (or the date it becomes invalid in case the contract becomes ineffective before cancellation date) is fully amortized in the fiscal year in which such cancellation occurs. However, contracts sold after April 1, 2013, has been deferred by limit of a larger amount of paid insurance premium and standard deviation deduction amount (actual medical insurance and saving life insurance 70~100%, application by contract year, product, channel by the year ended 2017) and are unable to exceed 100% of the standard deviation deduction amount.

2.26 Classification of Insurance Contracts and Investment Contracts

A Contract under which on party (the “insurer”) accepts significant insurance risk from another party (the “policyholder”) by agreeing to compensate the policyholder if a specified uncertain future event (the “insured event”) adversely affects the policyholder is classified as insurance contract. A contract that does not expose the insurer to significant insurance risk, but exposes the financial risk, is classified as investment contract. If the contracts are classified as insurance, the contracts remain insurance contracts until all rights and obligations are extinguished or expire. After classifying the contracts by assessing its quantitative significance, insurance contracts and investment contracts in accordance with Korean IFRS 1104 *Insurance Contracts*, and investment contracts without discretionary participation feature are accounted for as financial instruments in accordance with Korean IFRS 1109 *Financial Instruments*.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.27 Insurance Contract Liabilities

The Group estimated reserves for future expense, such as premium, reserve for outstanding claims, and reserve for policyholder's dividend and others, for insurance contract. The principal contents are as follows:

(1) Premium reserve

Premium reserves represent the difference between the present value of estimated insurance benefits and the present value of net premiums to be collected after the end of reporting period for long-term and annuity insurance contracts in effect as at the end of reporting period.

(2) Reserve for outstanding claims

As at the end of reporting period, for the contract that an insured event has occurred but the amount of claims payable is not yet determined, the Group records the reserve for the estimated amounts to be paid additional expenses arising from litigation, arbitration and claim investigation, expected to be incurred in the process of resolving an insured event are included in the reserves and the expected compensation income is deducted from the reserves.

(3) Reserve for unearned premium

Reserve for unearned premium refers to the premiums due, but whose recognition is deferred

(4) Reserve for minimum guaranteed benefit

Reserve for minimum guarantee benefit refers to amounts that guarantee a certain level of insurance. It is calculated by considering the future loss in accordance with Detailed Regulation on Supervision of Insurance Business.

(5) Reserve for policyholders' dividends

In compliance with the Supervisory Regulation, the Group reserves represent amounts payable to policyholders due to mortality gains, interest gains and expense gains.

(6) Reserve for policyholders' profit dividend

Pursuant to relevant laws and contracts, the Group may provide an excess participating policyholder dividend reserve in accordance with the operating results of related insurance products. The reserve may be used to pay participating policyholder dividends or additional dividends.

(7) Reserve for losses on dividend insurance

Reserve for losses on dividend insurance can be provided within 30 percent of excess participating policyholders' dividend reserve. It covers the loss of the participating insurance within five years, and after covering the loss, the remaining reserve would be available for dividends to participating policy-holders.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

2.28 Liability Adequacy Test

The Group assesses at the end of each reporting period whether its recognized insurance liabilities are adequate, using current estimates of future cash flows for its premium reserve and unearned premium reserve. If that assessment shows that the carrying amount of its insurance liabilities is inadequate in the light of the estimated future cash flows, the entire deficiency is recognized in the consolidated statement of comprehensive income.

2.29 Claim Handling Cost

Claim handling costs are charged to income as incurred based on the estimated liability for compensation owed to contract holder or third parties damaged by the contract holders. Claims handling costs are expenses dealing with accident, and they are accompanying expenses of insurance payments. The Group accumulates expected payments of loss adjustment in the insurance contract liabilities.

2.30 Compensation Receivables

Compensation receivables are calculated by multiplying the average recovery ratio for the last three years from the prior year's reporting period date to the amount of net claims for the three years according to the Regulation on Supervision Insurance Business, based on the estimated amount collectible through sales of collateralized assets or exercise of subrogation rights or any other rights which have been acquired in the course of settling the claims already paid as at settlement of accounts.

2.31 Reinsurance Contracts

In accordance with Korean IFRS 1104 *Insurance Contracts*, the Group does not offset reinsurance assets against the related insurance liabilities and income or expense from reinsurance contracts against the expense or income from the related insurance contracts. The Group considers whether its reinsurance assets are impaired at the end of each reporting period. If a contractor's reinsurance asset is impaired, the contractor shall reduce its carrying amount accordingly and recognize that impairment loss in profit or loss.

2.32 Policyholders' Equity Adjustment

Changes in the fair value of gain or loss on valuation of financial assets, share of other comprehensive income of subsidiaries and associates, and others are allocated to policy holders' equity and shareholders' equity in accordance with Regulation on Insurance Supervisory. The amount of policyholder's equity is recorded as policyholders' equity adjustment.

2.33 Separate Account Assets and Liabilities

Separate accounts represent assets and liabilities that are maintained by an insurance entity and are established primarily for the purpose of funding fixed and variable annuity contracts, variable life insurance contracts, variable universal insurance contracts, group annuity contracts, and similar activities.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

The Insurance Business Law governs the structure of separate account, and the Regulation on Insurance Supervision has developed certain regulations with respect to separate accounts. The regulation on Insurance Supervision indicates that a separate account is legally segregated from the insurer's general account, and the assets in the separate accounts are generally restricted from being charged with liabilities arising out of any other business of the insurer.

Separate accounts are currently used to support group severance and variable insurance policies. In sponsoring a group severance insurance plan, the Group generally assumes the risk of investment gains or losses and guarantees the contract holder a specified interest rate. A variable insurance contract is contractual arrangement that combines some features of an investment company, such as when the contract holder assumes the risk of investment gains or losses, with certain traditional insurance features, such as when the insurance company assumes the risk of mortality and administrative expenses. The fair value of the contract holder's account varies with the investment experience of the specific portfolio of securities, the securities held in the separate accounts.

2.34 Reserve for Credit Losses

The Group is required to appropriate, as a reserve for credit losses, a difference between the allowance of credit losses in accordance with Korean IFRS 1109 *Financial Instruments* and that under the Supervisory Regulations on Insurance Business if the allowance in accordance with Korean IFRS is less than that in accordance with the Supervisory Regulations on Insurance Business. The reserve for credit losses is included in retained earnings and is allowed to reduce to the reserve amount required by the related financial regulation if the reserve for credit losses is over the required reserve. If there is an accumulated deficit, the reserve for credit losses is not appropriated until the undisposed accumulated deficit is disposed.

2.35 Catastrophe Reserves

The Group annually accumulates the appropriate amount not less than 35 percent not more than 100 percent of the net premium written multiplied by the adjusted rate (2~15%) for each insurance type (fire, marine, auto and casualty, guarantee and foreign direct and assumed reinsurance), within the limit 50 percent (auto insurance: 40% / guarantee insurance: 150%) of the earned premium of the reporting period in order to make up for the exceptionally large claims in the future. Meanwhile, when accumulating catastrophe reserves, the Group is required to apply 90% as a reserve ratio (however, different reserve ratio may be applied in consideration of the existing reserves, future loss ratio trend and others). The earned premium is based on the current business year, but if the earned premium in the current business year is less than that of the previous business year, it is based on the amount of the previous business year.

Also, when the combined loss ratio of each insurance product exceeds 120% (fire), 110% (marine, auto and casualty), 140% (guarantee), 80% (foreign direct, assumed reinsurance inward), respectively, and if insurance operating loss and loss for the year occur, the excess amount can be reversed within the loss for the year.

2.36 Financial Soundness Reserve

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

In accordance with Article 6-11 Clause 3 of the Supervisory Regulation on Supervision Insurance Business, the Group appropriates the financial soundness reserves for the reduced additional reserve amount if the additional reserve (the amount exceeding the reserves subject to liability adequacy test, excluding the existing additional reserve, from the valued amount calculated by the current estimate) in 2022 is less than the additional reserve for policy reserve accumulated before the current fiscal year. The excess of financial soundness reserves over the required reserve at the end of the reporting period should not be reversed. If there is an accumulated deficit, the financial soundness reserve is not appropriated until the undisposed accumulated deficit is disposed.

2.37 Changes in Accounting Policies

The Group has reviewed the accounting treatment for measurement after initial recognition for Investment property and certain type of property, plant, and equipment. Previously, the Group measured all investment property and property, plant and equipment by applying the cost model stipulated in paragraph 56 of Korean IFRS 1040 and paragraph 30 of Korean IFRS 1016. Accordingly, assets classified as investment property and property, plant and equipment are recognized at amortized cost after initial recognition.

During 2022, the Group has chosen to change the accounting treatment for all investment property and land among property, plant and equipment. The Group believes that the fair value model provides a more effective representation of the financial position of all investment property and land among property, plant and equipment, and that fair value can be more reliably measured in the real estate market in which the asset is located.

In relation to the subsequent measurement of investment property, the Group reflected the book amount as fair value. In accordance with paragraph 19 of Korean IFRS 1008, the comparative statement of financial position as at January 1, 2021 and December 31 2021, and the comparative statement of profit or loss for the year ended December 31, 2021, were retroactively restated.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

The financial impact prior to the current year due to the change in accounting policy is as follows:

(in millions of
Korean won)

	December 31, 2022			2022		
	Assets	Liabilities	Equity	Revenue	Profit for the year	Total comprehensive loss
Before adjustment	₩ 205,453,913	₩ 189,038,725	₩ 16,415,188	₩ 62,278,395	₩ 1,947,349	₩ (6,539,971)
Adjustments:						
Korean IFRS 1016 - Revaluation model in property, plant and equipment	4,246,734	1,026,817	3,219,917	-	(14,341)	3,210,110
Korean IFRS 1040 - Fair value model in investment property	1,474,677	230,954	1,243,723	-	310,330	310,330
Total	5,721,411	1,257,772	4,463,639	-	295,988	3,520,440
After adjustment	₩ 211,175,324	₩ 190,296,497	₩ 20,878,827	₩ 62,278,395	₩ 2,243,337	₩ (3,019,531)

(in millions of
Korean won)

	December 31, 2021			2021		
	Assets	Liabilities	Equity	Revenue	Profit for the year	Total comprehensive loss
Before adjustment	₩ 202,366,402	₩ 181,319,145	₩ 21,047,257	₩ 52,836,069	₩ 2,162,057	₩ 1,221,204
Adjustments:						
Korean IFRS 1040 - Fair value model in investment property	1,097,297	163,905	933,393	-	120,012	120,012
Total	1,097,297	163,905	933,393	-	120,012	120,012
After adjustment	₩ 203,463,699	₩ 181,483,050	₩ 21,980,650	₩ 52,836,069	₩ 2,282,069	₩ 1,341,216

As the accounting policy for revaluation of property, plant and equipment was applied for the first time in the current period, the carrying amount of property, plant and equipment was recognized at the fair value at the revaluation date. The previous financial statements were not reflected retrospectively in accordance with paragraph 17 of Korean IFRS 1008.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	January 1, 2021		
	Assets	Liabilities	Equity
Before adjustment	₩ 191,178,338	₩ 173,460,629	₩ 17,717,709
Adjustments:			
Korean IFRS 1040 - Fair value model in investment property	951,540	138,159	813,381
Total	951,540	138,159	813,381
After adjustment	₩ 192,129,878	₩ 173,598,788	₩ 18,531,090

As the accounting policy for revaluation of property, plant and equipment was applied for the first time in the current period, the carrying amount of property, plant and equipment was recognized at the fair value at the revaluation date. The previous financial statements were not reflected retrospectively in accordance with paragraph 17 of Korean IFRS 1008.

2.38 Approval of Issuance of the Financial Statements

The consolidated financial statements 2022 were approved for issue by the Board of Directors on February 28, 2023 and are subject to change with the approval of shareholders at their Annual General Meeting.

3. Critical Accounting Estimates and Assumptions

In the application of the Group accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

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

(1) Important decision applied in accounting policies

1) Capitalization of borrowing costs

As noted in Note 2, the Group capitalizes borrowing costs related to the acquisition, construction or production of the qualifying assets as part of the cost of such assets.

2) Evaluation of business model

The classification and measurement of financial assets is based on contractual cash flow characteristics and business model (see Note 2 'Financial Assets' section). The business model is determined to reflect how groups of financial assets are managed together to meet specific business objectives. These assessments include judgements that reflect all relevant evidence. The relevant evidences include how the performance of an asset is assessed and measured, risks

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

that could affect the performance of an asset, and the way those risks are managed, and compensation of the asset manager. When a financial asset measured at amortized cost or FVTOCI was derecognized before maturity, the Group observed to determine whether it is consistent with the objective of the business model for financial asset management. Observations are part of our ongoing assessment of whether the business model for the remaining financial assets is appropriate and if not appropriate, there has been a change in the business model and a consequent change in the classification of financial assets. No such changes were required during the indicated period.

3) Significant increase in credit risk

As described in Note 2, the loss allowance is measured for assets that have significant increase in ECLs for the whole period or have been impaired since initial recognition. Korean IFRS 1109 does not define what constitutes a significant increase in credit risk. When assessing whether the credit risk of an asset has increased significantly, the Group considers forward-looking information that is quantitatively and qualitatively reasonable and supported.

(2) Key sources of estimation uncertainty

1) Estimated goodwill impairment

The Group tests whether goodwill has suffered any impairment on an annual basis. The recoverable amount of a cash generating unit (CGU) is determined based on value-in-use calculations (Note 18).

2) Income tax

The income is 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.

3) 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 61).

4) Impairment of financial assets

The provisions for impairment for financial assets are based on assumptions about risk of default and expected loss rates. The Group uses judgement 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 61).

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

5) 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 (Notes 24 and 41).

6) Uncertainty on the estimation of the total construction revenue and total construction cost

Although total contract revenue is measured based on the contract amount initially agreed, measurement of contract revenue is subject to various uncertainties related to the outcome of future events. This is because as the contract is executed, it may decrease depending on the change of construction, compensation, incentives or delayed completion due to the Group's reasons.

The amount of construction revenues is affected by the progress measured based on the cumulative incurred contract costs. Total contract costs are based on future estimates of material costs, labor costs, overhead costs, etc, where there are uncertainties that may change.

7) Provision

The Group has recorded provision for product warranties and construction warranties at the end of each reporting period. These provisions are based on estimates based on historical experience and forecasts of future events. However, there may be a significant difference between past events and forecasts, and there are uncertainties that may cause significant differences between the estimates based on future events and actual events.

8) Impairment of non-financial assets

The Group assesses the existence of impairment on all non-financial assets at the end of each reporting period. For intangible assets with indefinite useful lives, impairment tests are carried out annually or in the event of impairment. For other non-financial assets, the Group carries out impairment tests when there are indications that the carrying amount will not be recoverable. To determine the use value, management must estimate future cash flows from the asset or CGU and choose an appropriate discount rate.

9) 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).

For leases of warehouses, retail stores and equipment, the following factors are normally the most relevant:

- If there are significant penalties to terminate (or not extend), the Group is typically reasonably certain to extend (or not terminate).

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

- If any leasehold improvements are expected to have a significant remaining value, the Group is typically reasonably certain to extend (or not terminate).

- Otherwise, the Group considers other factors including historical lease durations and the costs and business disruption required to replace the leased asset.

Most extension options in offices and vehicles leases 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.

10) Premium reserve

The Group calculates premium reserves in accordance with Regulation on Supervision of Insurance Business for settling future insurance claims arisen from the existing contracts at the end of reporting period. Estimation of premium reserve requires assumptions such as actuarial model, interest rate and risk rate (Note 36).

11) Revaluation of property, plant and equipment

Land is measured at fair value based on valuations by external independent appraisers. Revaluation is performed with sufficient regularity to ensure that the fair value of a revalued asset does not differ materially from its carrying amount. The officially assessed land price method, in which the official land value is adjusted based on the present condition of the land to calculate the fair value, was applied for the valuation.

12) Fair value measurement of investment property

Investment property is measured at fair value based on valuations by external independent valuers and the fair value evaluation is performed at the end of each reporting period.

The Group applies the officially assessed land price method, in which the official land value is adjusted based on the present condition of the land to calculate the fair value, and the sales comparison approach method, which calculates the price by comprehensively considering the normal transaction price level of similar nearby objects, for valuation.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

4. Subsidiaries

(1) Details of subsidiaries as at December 31, 2022 and 2021, are as follows:

	Percentage of ownership (%)		Location	Closing month	Main business
	2022	2021			
Gyeonggi Yongin Techno Valley Co., Ltd.	80.00	80.00	Korea	December	Real estate business
Kimhae Techno Valley Co., Ltd.	80.00	80.00	Korea	December	Real estate business
Agricultural Corporation Company Green Tomorrow	90.00	90.00	Korea	December	Processing and distribution of agricultural, livestock and forest products
Seosan Techno Valley Co., Ltd.	65.00	65.00	Korea	December	Real estate development and supply
Anseong Techno Valley Co., Ltd.	80.00	80.00	Korea	December	Real estate development and supply
Yangju Ecotec Co., Ltd.	100.00	100.00	Korea	December	Construction and operation of sewage treatment plant
Yeosu Sea World Corporation	100.00	100.00	Korea	December	Aquarium
H Valley Co., Ltd.	100.00	100.00	Korea	December	Real estate business
Eco E&O	100.00	100.00	Korea	December	Sewage treatment and environmental pollution prevention facility
Ilsan Seaworld, Co., Ltd	99.11	99.11	Korea	December	Aquarium
Hi-pass Solar Co., Ltd	100.00	100.00	Korea	December	Photovoltaic business
Hanwha 63 City Co., Ltd.	100.00	100.00	Korea	December	Real estate management service and others
Hanwha Galleria Timeworld Co., Ltd.	100.00	100.00	Korea	December	Department store
Hanwha City Development Co., Ltd	100.00	100.00	Korea	December	Sale and trading of real estate and others
Hanwha Life Lab Co., Ltd.	100.00	100.00	Korea	December	Insurance agency and brokerage
Hanwha B&B Co., Ltd.	100.00	100.00	Korea	December	Food and wholesale/retail
Hanwha Life Insurance Co., Ltd. ¹	44.99	44.99	Korea	December	Life insurance
Hanwha General Insurance Co., Ltd.	51.36	51.36	Korea	December	Insurance and pension services
Hanwha Life Insurance Investigation & Adjusting	100.00	100.00	Korea	December	Insurance and pension services
Hanwha Systems Co., Ltd. ³	46.73	46.73	Korea	December	Gunpowder services
Hanwha Aerospace Co., Ltd. ³	33.95	33.95	Korea	December	Manufacturing of aircraft engine and parts
HANWHA CONNECT CO.,LTD. (Formerly, Hanwha Station Development Co., Ltd.)	67.25	67.25	Korea	December	Leasing service
Hanwha Eagles Professional Baseball Club Co., Ltd.	90.00	90.00	Korea	December	Operation of sports club
Hanwha Asset Management Co., Ltd.	100.00	100.00	Korea	December	Asset management

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Savings Bank Co., Ltd.	100.00	100.00	Korea	December	Deposit and savings import business / Financial loan
Hanwha Precision Machinery Co., Ltd.	100.00	100.00	Korea	December	Manufacturing and sale of Chip Mounter and others
Hanwha Global Asset Corporation	100.00	100.00	Korea	December	Synthetic resin processing and others
Hanwha Compound Corporation Co., Ltd.	100.00	100.00	Korea	December	Manufacturing and sale of packaging materials
Hanwha Solutions Co., Ltd. ³	36.10	36.10	Korea	December	Manufacturing of synthetic resin and other petrochemical products
Hanwha Chemical Overseas Holdings, Co., Ltd.	100.00	100.00	Korea	December	Holding company
Hanwha Techwin Co., Ltd.	100.00	100.00	Korea	December	Manufacturing of broadcasting and wireless communication equipment
Hanwha Investment & Securities Co., Ltd. ³	45.24	45.24	Korea	December	Financial investment
Hanwha Hotel & Resort Inc.	99.36	99.36	Korea	December	Condominium operation
HANWHA NEXT CO.,LTD.	100.00	-	Korea	December	Other sports facility operation n. e. c.
Hanwha Techwin Tianjin Opto-Electronic Co., Ltd.	100.00	100.00	China	December	Manufacturing and sale of CCTV and others
Hanwha Investment Management Limited	100.00	100.00	China	December	Investment management
Hanwha Chemical Trading (Shanghai) Co., Ltd.	100.00	100.00	China	December	Trading
Hanwha International Trading (Shanghai) Co., Ltd.	100.00	100.00	China	December	Trading
Hanwha TechM (Suzhou) Co., Ltd.	100.00	100.00	China	December	Production of machine tools and power train
Hanwha Commercial Equipment Co., Ltd.	100.00	100.00	China	December	Sale of compressor and industrial equipment
Acropark Golf Corp.	100.00	100.00	Japan	December	Golf course and resort business
Alkin Enerji uretim Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Aslan Gunes Enerjisi A.s.	100.00	100.00	Turkey	December	Photovoltaic power generation
Avenir el Divisadero SpA	100.00	100.00	Chile	December	EPC Construction
Elcin Enerji uretim Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
EMBR PTY LTD	100.00	100.00	Australia	December	Supply of gunpowder products and services
Fior Gunes Enerjisi Anonim sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Fnt Gida Turizm Ic Ve Dis Ticaret Sanayi Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Garnet Solar Power Generation 1, LLC	100.00	100.00	USA	December	Photovoltaic business
Hanwha Advanced Materials America LLC	100.00	100.00	USA	December	Manufacturing of automobile parts
Hanwha Advanced Materials Beijing Co., Ltd.	100.00	100.00	China	December	Manufacturing of automobile part materials

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Advanced Materials Chongqing Co.,Ltd.	100.00	100.00	China	December	Manufacturing of automobile materials
Hanwha Advanced Materials Europe, s.r.o.	100.00	100.00	Czech Republic	December	Manufacturing of automobile part materials
Hanwha Advanced Materials Germany GmbH	100.00	100.00	Germany	December	Manufacturing of automobile parts
Hanwha Advanced Materials Holdings USA LLC	100.00	100.00	USA	December	Holding company
Hanwha Advanced Materials Mexico S. De R.L. De C.V.	100.00	100.00	Mexico	December	Manufacturing of automobile parts
Hanwha Advanced Materials Shanghai Co., Ltd.	100.00	100.00	China	December	Manufacturing
HANWHA AERO ENGINES.,LTD	100.00	100.00	Vietnam	December	Manufacturing of aircraft parts
Hanwha America Development Inc.	100.00	100.00	USA	December	Real estate business
Hanwha Asset Management (USA) Ltd.	100.00	100.00	USA	December	Domestic and foreign securities investment
HANWHA ASSET MANAGEMENT PTE. LTD.	100.00	100.00	Singapore	December	Asset management
Hanwha AZDEL, Inc.	100.00	100.00	USA	December	Manufacturing of automobile parts
Hanwha Chemical (Ningbo) Co., Ltd.	100.00	100.00	China	December	Compound manufacturing
Hanwha Chemical (Thailand) Co.,Ltd.	99.99	99.99	Thailand	December	Compound manufacturing
HANWHA CHEMICAL INDIA PRIVATE LIMITED	99.99	99.99	India	April	Sale and purchase of petrochemicals and photovoltaic products
Hanwha Chemical Malaysia Sdn. Bhd.	100.00	100.00	Malaysia	December	Sale of petrochemicals
Hanwha Europe GmbH	100.00	100.00	Germany	December	Trading
Hanwha Holdings(USA), Inc.	100.00	100.00	USA	December	Holding company
Hanwha Hong Kong Co., Ltd.	100.00	100.00	Hong Kong	December	Trading
Hanwha International (S) Pte Ltd.	100.00	100.00	Singapore	December	Trading
Hanwha International Corp.	100.00	100.00	USA	December	Holding company
HANWHA INTERNATIONAL INDIA PVT., LT	99.99	99.99	India	December	Trading
Hanwha International LLC.	100.00	100.00	USA	December	Trading
Hanwha Life Insurance Company Limited. (Vietnam)	100.00	100.00	Vietnam	December	Life insurance
Hanwha Machinery Americas, Inc.	100.00	100.00	USA	December	Sale of machine tool
Hanwha Machinery Corporation	100.00	100.00	USA	December	Holding company
Hanwha Mining Services Australia Pty., Ltd	100.00	100.00	Australia	December	Gunpowder services and explosives and blasting
Hanwha Mining Services Chile SpA	100.00	100.00	Chile	December	Gunpowder services and explosives and blasting
Hanwha Parcel O LLC	100.00	100.00	USA	December	Real estate development
Hanwha Property USA LLC	100.00	100.00	USA	December	Real estate business
Hanwha PVPLUS LLC	100.00	100.00	USA	December	Photovoltaic power generation investment
Hanwha Q CELLS America Inc.	100.00	100.00	USA	December	Sale of photovoltaic products

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Q CELLS America Project Holdings	100.00	100.00	USA	December	Photovoltaic project investment
Hanwha Q CELLS Americas Holdings. Corp.	100.00	100.00	USA	December	Photovoltaic business
Hanwha Q CELLS Australia Pty Ltd	100.00	100.00	Australia	December	Photovoltaic business
Hanwha Q CELLS Canada, Corp.	100.00	100.00	Canada	December	Sale of photovoltaic products
Hanwha Q CELLS Chile SpA	100.00	100.00	Chile	December	Construction and sale of photovoltaic power generation system
Hanwha Q CELLS Co., Ltd.	100.00	100.00	United Kingdom	December	Manufacturing and sale of photovoltaic products
Hanwha Q CELLS(Qidong) Co., Ltd.	100.00	100.00	China	December	Manufacturing of silicon ingot
Hanwha Q CELLS France SAS	100.00	100.00	France	December	Photovoltaic business
Hanwha Q CELLS Gmbh	100.00	100.00	Germany	December	Manufacturing of photovoltaic products
Hanwha Q CELLS Hong Kong Limited	100.00	100.00	Hong Kong	December	Investment and international supply
Hanwha Q CELLS Investment Co., Ltd.	100.00	100.00	United Kingdom	December	Holding company
Hanwha Q CELLS Japan Co., Ltd.	100.00	100.00	Japan	December	Trading
Hanwha Q CELLS Malaysia Sdn. Bhd.	100.00	100.00	Malaysia	December	Manufacturing of photovoltaic products
HANWHA Q CELLS SOLAR POWER SDN. BHD.	100.00	100.00	Malaysia	December	EPC business
Hanwha Q CELLS Til Uno SPA	100.00	100.00	Chile	December	Construction and sale of photovoltaic system
Hanwha Q CELLS Turkey	100.00	100.00	Turkey	December	Construction and sale of photovoltaic power generation system
Hanwha Q CELLS USA, INC.	100.00	100.00	USA	December	Photovoltaic business
Hanwha Q CELLS(Nantong) Co., Ltd.	100.00	100.00	China	December	Manufacturing and sale of photovoltaic products
Hanwha Resources (Canada) Ltd.	100.00	100.00	Canada	December	Resource development
Hanwha Resources (USA) Corporation	100.00	100.00	USA	December	Resource development
Hanwha Saudi Contracting Co., Ltd.	100.00	100.00	Saudi Arabia	December	Construction
Hanwha Solar Electric Power Engineering Co., Ltd.	100.00	100.00	China	December	Construction of photovoltaic power generation facilities
Hanwha Solar Power Kitsuki G.K. ²	1.00	1.00	Japan	December	Photovoltaic power generation
Hanwha SolarOne (Laiyang) Co., Ltd	100.00	100.00	China	December	Photovoltaic power generation
Hanwha SolarOne (Rugao) Co., Ltd	100.00	100.00	China	December	Photovoltaic power generation
Hanwha SolarOne GmbH	100.00	100.00	Germany	December	Sale of photovoltaic products
Hanwha SolarOne Investment Holding Ltd.	100.00	100.00	United Kingdom	December	Holding company
Hanwha SolarOne Power Generation (Wuxi) Co., Ltd.	100.00	100.00	China	December	Photovoltaic business
Hanwha Solarone(beipiao)Co.,Ltd	100.00	100.00	China	December	Sale of compressor and service materials

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Q CELLS Technology (Shanghai) Co., Ltd.	100.00	100.00	China	December	Sale of photovoltaic products
Hanwha Techm Hungary Zrt.	97.21	97.21	Hungary	December	Leasing service of real estate and supply of utilities
HANWHA TECHWIN AMERICA, INC.	100.00	100.00	USA	December	Sale of CCTV
Hanwha Techwin Automation Americas, Inc.	100.00	100.00	USA	December	Sale and others
HANWHA TECHWIN AUTOMATION VIETNAM CO.,LTD	100.00	100.00	Vietnam	December	Sale
Hanwha Techwin Europe Limited	100.00	100.00	United Kingdom	December	Sale of CCTV
Hanwha Techwin Middle East FZE	100.00	100.00	UAE	December	Sale
Hanwha Techwin Security Vietnam	100.00	100.00	Vietnam	December	Manufacturing
Hanwha Village Market, LLC	100.00	100.00	USA	December	Real estate development
Hanwha West Properties LLC	100.00	100.00	USA	December	Real estate development
Hiprom Enerji Yatirimlari A.s.	100.00	100.00	Turkey	December	Photovoltaic power generation
HMS AUSTRALIA OPERATIONS PTY LTD	100.00	100.00	Australia	December	Gunpowder services and explosives and blasting
HMS AUSTRALIA PROPERTY HOLDINGS PTY LTD	100.00	100.00	Australia	December	Land leasing service
HQC Rock River Solar Holdings LLC	100.00	100.00	USA	December	Photovoltaic business
HQC Rock River Solar Power Generation Station LLC	100.00	100.00	USA	December	Photovoltaic business
Huoqiu Hanrui New Energy Power Generation co. Ltd	100.00	100.00	China	December	Photovoltaic business
HW SOLAR POWER 3 G.K.	100.00	100.00	Japan	December	Photovoltaic power generation
HW SOLAR POWER 6 G.K.	100.00	100.00	Japan	December	Photovoltaic power generation
HW SOLAR POWER 8 G.K. ²	0.66	0.66	Japan	December	Photovoltaic power generation
Kartal Enerji uretim Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
KMPT Solarpark Verwaltung GmbH	100.00	100.00	Germany	December	Photovoltaic business
Las Coronadas Hive SL	100.00	100.00	Germany	December	Photovoltaic business
Guadajoz Hive SL	100.00	100.00	Germany	December	Photovoltaic business
Don Rodrigo Hive SL	100.00	100.00	Germany	December	Photovoltaic business
LDE Corporation PTY LTD	100.00	100.00	Australia	December	Mine development
LDE HOLDINGS PTY LTD	100.00	100.00	Australia	December	Holding company
LENEX Co.,Ltd.	100.00	100.00	Japan	December	Sale of photovoltaic products
LLP Zharyk Zol Company 2007	100.00	100.00	Kazakhstan	December	Investment of real estate (SPC)
Marel Bilisim Muhendislik Enerji Insaat Iletisim Turizm Gida San. Ve Dis Tic. Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Maxxsol 01 srl	100.00	100.00	Italy	December	Photovoltaic power generation

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Meva Muhendislik Bilisim Enerji Insaat Iletisim Turizm San. Ve Dis Tic. Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Moravia Enerji Sanayi ve Ticaret Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Mutlak Enerji uretim Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
PT. Bara Bumi International	100.00	100.00	Indonesia	December	Coal sales
PT. Hanwha Life Insurance Indonesia	99.61	99.61	Indonesia	December	Life insurance
PT. Hanwha Mining Services Indonesia	100.00	100.00	Indonesia	December	Gunpowder services and explosives and blasting
PV Vallenar Uno SpA	100.00	100.00	Chile	December	Holding company (SPC)
Sema Enerji uretim Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
Serimer Optik Medikal Kirtasiye Temizlik Insaat Ithalat Ihracat Sanayi Tic. Ltd. sti.	100.00	100.00	Turkey	December	Photovoltaic power generation
SFH Solarpark GmbH	100.00	100.00	Germany	December	Photovoltaic business
Techwin Engineering Center	100.00	100.00	Japan	December	Research and development of industrial equipment
Tecsol Srl	100.00	100.00	Italy	December	Photovoltaic power generation
Toprakkale Altyapi ve Malzeme Hizmetleri A.s.	100.00	100.00	Turkey	December	Photovoltaic power generation
Ulu Gunes Enerjisi Anonim sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Universal Bearings LLC.	100.00	100.00	USA	December	Bearing manufacturing
Uno Enerji A.s.	100.00	100.00	Turkey	December	Photovoltaic power generation
WSE Bradley Road Ltd	100.00	100.00	United Kingdom	December	Photovoltaic power generation
Hanwha Q CELLS USA Corp.	100.00	100.00	USA	December	Photovoltaic business
HSESM American Union LLC	100.00	100.00	USA	December	Photovoltaic business
HSESM PlanadaES LLC	100.00	100.00	USA	December	Photovoltaic business
HSESM LeGrandUHS LLC	100.00	100.00	USA	December	Photovoltaic business
HQ MEX, LLC	100.00	100.00	Mexico	December	Photovoltaic business
HQ MEXICO HOLDINGS S DE RL DE CV	100.00	100.00	Mexico	December	Photovoltaic business
HQ MEXICO Solar I S DE RL DE CV	100.00	100.00	Mexico	December	Photovoltaic business
HQ MEXICO Solar II S DE RL DE CV	100.00	100.00	Mexico	December	Photovoltaic business
Kalaeloa Renewable Energy Park, LLC	100.00	100.00	USA	December	Photovoltaic business
HSEA HVES, LLC	100.00	100.00	USA	December	Photovoltaic business
Solar Monkey 1, LLC	100.00	100.00	USA	December	Photovoltaic business
Solar Monkey 2, LLC	100.00	100.00	USA	December	Photovoltaic business
HQC Maywood, LLC	100.00	100.00	USA	December	Photovoltaic business
Hanwha Q CELLS EPC USA, LLC	100.00	100.00	USA	December	Photovoltaic business
Hanwha Q CELLS Servicios Comerciales, S DE RL DE CV	100.00	100.00	Mexico	December	Photovoltaic business
HANWHA MINING SERVICE USA INC.	100.00	100.00	USA	December	Gunpowder services and explosives and blasting

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

HANWHA DEFENSE AUSTRALIA PTY LTD	100.00	100.00	Australia	December	Military equipment
Hanwha Systems Vietnam Co., Ltd.	100.00	100.00	Vietnam	December	Integrated advisory, construction and management of computer systems
Q CELLS DO BRASIL CONSULTORIA EMPRESARIAL LTDA	100.00	100.00	Brazil	December	Photovoltaic business
LENEX Holdings Co.,Ltd.	100.00	100.00	Japan	December	Photovoltaic business
LENEX Eletric Power G.K.	100.00	100.00	Japan	December	Photovoltaic business
Carrot Co.,Ltd.	56.60	56.60	Korea	December	Insurance and pension services
Hanwha Estate Service Co.,Ltd.	100.00	100.00	Korea	December	Business facilities management and business support services
Hanwha Aerospace USA	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
EDAC Technologies Intermediate Company	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
Hanwha Aerospace USA LLC	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
EBTEC Corporation	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
APEX Machine Tool Company, Inc.	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
Gros-lte Industries Inc.	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
EDAC ND, Inc	100.00	100.00	USA	December	Manufacturing of aircraft engine and parts
Silesian Sun Energy Sp. z o.o.	100.00	100.00	Poland	December	Photovoltaic business
PV Jagodne Sp. z.o.o.	100.00	100.00	Poland	December	Photovoltaic business
INCOGNITWORLD, LDA.	100.00	100.00	Portugal	December	Photovoltaic business
Pinetree Securities Corporation	98.97	98.97	Vietnam	December	Stock brokerage
GK Summit Apollo Eleven	100.00	100.00	Japan	December	Other services
HHR Development B GK	100.00	100.00	Japan	December	Other services
Haeorum PV plant corporation	100.00	100.00	Korea	December	Photovoltaic power generation
ARBECA SOLAR SLU	100.00	100.00	Turkey	December	Photovoltaic business
REUS SOLAR SLU	100.00	100.00	Turkey	December	Photovoltaic business
CASTELLNOU SOLAR SLU	100.00	100.00	Turkey	December	Photovoltaic business
VECIANA SOLAR SLU	100.00	100.00	Turkey	December	Photovoltaic business
CASTELLDANS SOLAR SLU	100.00	100.00	Turkey	December	Photovoltaic business
Malhada Green S.A	100.00	100.00	Turkey	December	Photovoltaic business
Aceka 2 Gunes Enerjisi A.S.	100.00	100.00	Turkey	December	Photovoltaic power generation
Aceka 3 Gunes Enerjisi A.S.	100.00	100.00	Turkey	December	Photovoltaic power generation
Bilgidar 2 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Buselik 2 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Buselik 3 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Dimetoka 2 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Dimetoka 3 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Isfahan 3 Gunes Enerjisi Limited Sirketi	100.00	100.00	Turkey	December	Photovoltaic power generation
Onan 2 Gunes Enerji Uretim A.S.	100.00	100.00	Turkey	December	Photovoltaic power generation
Onan 3 Gunes Enerji Uretim A.S.	100.00	100.00	Turkey	December	Photovoltaic power generation
Jeju Ocean Science Museum Corporation	94.80	94.80	Korea	December	Operation of botanical garden and zoo
The Second Yong In Techno Valley Co., Ltd	75.00	75.00	Korea	December	Real estate business
Cheonjangsan Pung Ryeok Corporation	100.00	100.00	Korea	December	Wind power generation
H Properties TMK	100.00	100.00	Japan	December	Other services
Rippey Solar Holdings, LLC	100.00	100.00	USA	December	Photovoltaic power development
Coniglio Solar Holdings, LLC	100.00	100.00	USA	December	Photovoltaic power development
Kellam Solar Holdings, LLC	100.00	100.00	USA	December	Photovoltaic power development
HQC Solar Holdings 1, LLC	100.00	100.00	USA	December	Photovoltaic power development
GREEN RIC ENERGY, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
SILVER RIC ENERGY, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
REAL ENERGY POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
GALAXY ENERGY, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
LASTRAFI POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
HESTIA SUN, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
CAPRICORNIO ENERGY, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
SPRING POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
Seoulyeokbukbuyeoksegwon Development Co.	60.00	60.00	Korea	December	Real estate business
HANWHA PHASOR LTD.	100.00	100.00	United Kingdom	December	Manufacturing of wireless communication equipment
Pinetree Securities Pte. Ltd.	100.00	100.00	Singapore	December	Securities business
GALGO POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

LEBREL POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
PODENCO POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
West Ochang Techno Valley Co., Ltd.	78.00	78.00	Korea	December	Real estate business
Q CELLS ASSET MANAGEMENT LIMITED	100.00	100.00	United Kingdom	December	Investment advisory
HQC PORTUGAL HOLDINGS, LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 2, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 3, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 4, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 5, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 6, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
QSUN PORTUGAL 7, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
Q CELLS SPAIN HOLDINGS, S.L. (formerly, SACRAMETO DIRECTORSHIP, S.L.)	100.00	100.00	Spain	December	EPC Construction and engineering
HANWHA INTERNATIONAL VIETNAM	100.00	100.00	Vietnam	December	Trading
Hanwha Financial Technology Company Limited	100.00	100.00	Vietnam	December	Digital solutions
H FOUNDATION PTE. LTD.	100.00	100.00	Singapore	December	Holding company
VALS ENERGY POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
BOLERO ENERGY, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
Growing Energy Labs, Inc.	100.00	100.00	USA	December	Energy management system
Kellam Solar Class B, LLC	100.00	100.00	USA	December	Photovoltaic power development
INCOGNITWORLD 2, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
INCOGNITWORLD 3, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
INCOGNITWORLD 4, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
INCOGNITWORLD 5, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
MALHADA GREEN 2, UNIPessoal LDA	100.00	100.00	Portugal	December	EPC Construction and engineering
ALDGATE EAST INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
ALFAZ DIRECTORSHIP, SL	70.00	70.00	Spain	December	EPC Construction and engineering
ALQUIZAR INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

ANNAPURNA SERVICIOS EMPRESARIALES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
BENIF INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
BURETE DIRECTORSHIP, SL	70.00	70.00	Spain	December	EPC Construction and engineering
CABUYA CORPORATE SERVICES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
CANARY WHARF INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
CANNING TOWN INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
COMBA DIRECTORSHIP, SL	70.00	70.00	Spain	December	EPC Construction and engineering
CONVENT GARDEN INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
DICKSON SERVICIOS EMPRESARIALES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
EMPER INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
ENDINO SERVICIOS EMPRESARIALES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
GARDAYA INVESTMENTS, SL	70.00	70.00	Spain	December	EPC Construction and engineering
KADOK CORPORATE SERVICES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
KAMPALA CORPORATE SERVICES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
MONTALBAN DIRECTORSHIP, SL	70.00	70.00	Spain	December	EPC Construction and engineering
NEPAL SERVICIOS EMPRESARIALES, SL	70.00	70.00	Spain	December	EPC Construction and engineering
OTERO DIRECTORSHIP, SL	70.00	70.00	Spain	December	EPC Construction and engineering
CLAVE DE SOL ENERGY, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
IRON POWER ENERGY, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
LINE ENERGY, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
RIMA ENERGY, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
GAVILAN POWER, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
GERIFALTE POWER, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
HARRIER POWER, S.L.U	100.00	100.00	Spain	December	EPC Construction and engineering
PALOMA POWER, S.L.	100.00	100.00	Spain	December	EPC Construction and engineering
HAMC Holdings Corp.	100.00	100.00	USA	December	Holding company

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

H-Techno Valley Co., Ltd	80.00	80.00	Korea	December	Real estate business
Youngam Q Power Solarfarm 1Co., Ltd.	100.00	100.00	Korea	December	Photovoltaic business
Daejeon Yeokseqwon Development PFV Co.,Ltd.	60.00	60.00	Korea	December	Real estate business
AZOR POWER SL	100.00	100.00	Spain	December	EPC Construction
Espardell Directorship, SL	70.00	70.00	Spain	December	EPC Construction
Aqua planet Co.,Ltd.	100.00	100.00	Korea	December	Business support
Enterprise Blockchain Co., Ltd.	100.00	100.00	Korea	December	Data processing
HANWHA DEFENSE USA,INC.	100.00	100.00	USA	December	Selling military equipment
Yeongwol Cheonpyung Pung Ryeok Corporation	100.00	100.00	Korea	December	Wind power generation
BoryeongNokdo Offshore Windpower Corporation	100.00	-	Korea	December	Wind power generation
ANDA IDC General Private Equity Investment Trust	98.04	-	Korea	December	Development and subdividing of residential buildings
ANDA IDC General Private Equity Investment Company	56.67	-	Korea	December	Development and subdividing of residential buildings
Anseong Techno Logistics Co., Ltd.	100.00	-	Korea	December	General warehousing
HAM Holdings Corporation	52.76	-	Korea	December	Holding company
Hanwha Life Financial Service. Co, Ltd	100.00	100.00	Korea	December	Insurance agency and brokerage
Q ENEST Denki Co.,Ltd	100.00	100.00	Japan	December	Selling electricity
CONIGLIO SOLAR CLASS B, LLC	100.00	100.00	USA	December	EPC Construction
Johnson City Solar, LLC	100.00	100.00	USA	December	EPC Construction
Johnson City Storage, LLC	100.00	100.00	USA	December	EPC Construction
Plateau Solar, LLC	100.00	100.00	USA	December	EPC Construction
Plateau Storage, LLC	100.00	100.00	USA	December	EPC Construction
Purvis Solar, LLC	100.00	100.00	USA	December	EPC Construction
Purvis Storage, LLC	100.00	100.00	USA	December	EPC Construction
South Cheyenne Solar, LLC	100.00	100.00	USA	December	EPC Construction
NUN SUN POWER S.L.	100.00	100.00	Spain	December	EPC Construction
ISIS SUN POWER S.L.	100.00	100.00	Spain	December	EPC Construction
DONALLY CORPORATE SERVICES, SL	70.00	70.00	Spain	December	EPC Construction
FAIRLEAD CORPORATE SERVICES, SL	70.00	70.00	Spain	December	EPC Construction
FFNEV DESARROLLORS ESPANA I, SL	70.00	70.00	Spain	December	EPC Construction
FFNEV DESARROLLORS ESPANA II, SL	70.00	70.00	Spain	December	EPC Construction
NORWOOD CORPORATE SERVICES, S.L.	70.00	70.00	Spain	December	EPC Construction
DUCLO, INC.	100.00	100.00	USA	December	Software development
The Tastable Co., Ltd	100.00	100.00	Korea	December	Restaurant
Vanila Studio Co., Ltd.	100.00	100.00	Korea	December	Application software development and supply

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Systems USA Corporation	100.00	100.00	USA	December	Other wireless communication equipment manufacturer
HANWHA Q CELLS US O&M LLC	100.00	100.00	USA	December	Photovoltaic business
Goheung Q Power Solarfarm 1 Co., Ltd.	100.00	100.00	Korea	December	Photovoltaic business
HANWHA SOLUTIONS USA HOLDINGS	100.00	100.00	USA	December	Holding company
HSHC NAM INV LLC	100.00	100.00	USA	December	Holding company
HSHC LIBRA INV LLC	100.00	100.00	USA	December	Holding company
Hanwha Cimarron LLC	100.00	100.00	USA	December	Manufacturing
WOS Inc.	100.00	100.00	Korea	December	Manufacturing
Hanwha Advanced Materials USA Corp	100.00	100.00	USA	December	Energy management system
HSHC FF INV LLC	100.00	100.00	USA	December	EPC Construction
HES America Ltd.	100.00	100.00	USA	December	Photovoltaic business
Axia Solar Corp. (formerly, HESAL System Solutions Corp.)	100.00	100.00	USA	December	Photovoltaic business
EnFin Corp.	100.00	100.00	USA	December	Photovoltaic business
NXEF CO.,LTD.	100.00	100.00	Korea	December	E-Commerce
HAU Newington Project LLC	100.00	100.00	USA	December	Photovoltaic business
HAU Cheshire Project LLC	100.00	100.00	USA	December	Photovoltaic business
VGES Project LLC	100.00	100.00	USA	December	Photovoltaic business
HQCA Grid Equity LLC	100.00	100.00	USA	December	Photovoltaic business
HQCA Energy Solutions LLC	100.00	100.00	USA	December	Photovoltaic business
Q Energy Mediterranee . (formerly, RES Mediterranee)	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE BEL AIR SUD	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE BOIS DE L'AIGUILLE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Champs Carres S.A.R.L	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE CHAMPS PAILLE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE CHARMONSEL	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE CHAUMES DES COMMUNES	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Chesnots	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE COTE DES VAUZELLES	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE COTE RENARD	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Croix des Trois	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Croix du Picq	100.00	100.00	France	December	Wind and photovoltaic power generation

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

CEPE DE BRAQUETTE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE DE CHATILLONNAIS	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE DE L'ESCUR	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE de Mirebellois	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE des Grunes S.A.R.L	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE du Souleilla S.A.R.L	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Fleur du Nivernais S.A R.L	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE FORET DE MARSANNE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE FOSSE A LOUP	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE FRETTEs	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE GRAND CERISIER	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE GRANDS COMMUNAUX	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE HAUT PERRON	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE LA TIRROYE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE LE LANGROIS	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE LES LORETTES	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE LES VACANTS	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE MERELLEs	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE MONT DE CONDY	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE NOUVELLOIS	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE NOYER BERGER	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE ORAIN	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Plaine de Pericaud	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Plo du Laurier	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE RENOUVELLEMENT HAUT CABARDES	100.00	100.00	France	December	Wind and photovoltaic power generation

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

CEPE Sud vesoul SARL	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE TERRIERS DE LA POINTE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE TROIS PROVINCES	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE VAL D'YONNE EN FORTERRE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE Val de Vingeanne EST	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE VENTS DE LOIRE	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPES JUGE	100.00	100.00	France	December	Wind and photovoltaic power generation
Chaume Solar	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES AUCHES	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES BASSE MONTAGNE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES BOIS SOLEIL	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES BORY	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES BRECHE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CAHUZAC SUR ADOUR	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CALENTA	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CAUSSES PERIGORD	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CHAMPS DE LA COUR	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CHAPUS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES COURSIADA	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES COUSSEAU	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CRASSIER LAUDUN	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES CROUEE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES FONT DE LA LEVE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES FONTANILLE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES GANDOLLE	100.00	100.00	France	December	Wind and photovoltaic power generation

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

CPES GARDIOLE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES GENEBRE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES GRAND OUSTATOU	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES GRIFFOUL	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES HOMME DE PIERRE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES Juncarot	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LA BREDE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES la Gineste	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LAC DE CLOYES	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LAC DE LONGCHAMPS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LAC DE ROUAN	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LAROQUE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LASCOURS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LAURAGAIS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LE PLAN	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LES CROUZOURETS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LIBAROS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LUE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MAS D'EN RAMIS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MILHAT	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MONDONNE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MORAS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MORILLON	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MURES BASSES	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES OMBRIPARK	100.00	100.00	France	December	Wind and photovoltaic power generation

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

CPES PASCARATE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PAYS THIBERIEN	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PEROLERA	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PERRIERE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PEYROLE LAC	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PLACE ROYALE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES PLAN DE BANON	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES RENARDEYRE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES ROMEGUERAR	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES SABLE ROUGE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES SAINT ANGE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES SEBENS	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES SUR L 'EPINE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES TALLER	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES THUILIERES	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES TREMEGE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES VIGORDANE FLOTTANT	100.00	-	France	December	Wind and photovoltaic power generation
CPES MALAGA	100.00	-	France	December	Wind and photovoltaic power generation
CPES VILLAGE SOLAIRE	100.00	100.00	France	December	Wind and photovoltaic power generation
Cret meuron suisse	100.00	100.00	Switzerland	December	Wind and photovoltaic power generation
CSE AMPERE	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE ARMAND	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE COULOMB	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE GAULARD	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE JOULE	100.00	100.00	France	December	Wind and photovoltaic power generation

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

CSE LECLANCHE	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE PLANTE	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE TARASCON	100.00	100.00	France	December	Wind and photovoltaic power generation
CSE VOLTA	100.00	100.00	France	December	Wind and photovoltaic power generation
LASCOVENT	100.00	100.00	France	December	Wind and photovoltaic power generation
Les Eoliennes Entre Loire et Rhone	80.00	80.00	France	December	Wind and photovoltaic power generation
Q Energy France SAS (formerly, RES SAS)	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LIGNE SOLAIRE HAUTE LANDE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES MARDALOU	100.00	100.00	France	December	Wind and photovoltaic power generation
NAUTILUS ENERGIES	100.00	100.00	France	December	Wind and photovoltaic power generation
CEPE BOIS DE LA LONDE	100.00	100.00	France	December	Wind and photovoltaic power generation
CPES LANDE DE MUSSET	100.00	100.00	France	December	Wind and photovoltaic power generation
Larrey des Vignes	100.00	100.00	France	December	Wind and photovoltaic power generation
SPV LOCANERGY TWO	100.00	100.00	France	December	Wind and photovoltaic power generation
Q CELLS Germany Holdings GmbH	100.00	100.00	Germany	December	Holding company
ENVIRIA IPP DevCO1 GmbH & Co. KG	100.00	100.00	Germany	December	Photovoltaic business
Q Energy Solutions SE (formerly, Hanwha EU ENERGY Solutions SE)	100.00	100.00	Germany	December	Photovoltaic business
Q Energy Europe GmbH	100.00	-	Germany	December	Photovoltaic business
Hanwha Intelligence Co.,Ltd	100.00	100.00	Korea	December	Semiconductor sensor development
VISIONEXT CO., LTD.	100.00	100.00	Korea	December	Electronic integrated circuit manufacturer
HANWHA SYSTEMS UK LTD	100.00	100.00	United kingdom	December	Holding company
LENEX ENERGY 1 G.K.	100.00	100.00	Japan	December	Photovoltaic business
ASANBAEBANG DEVELOPMENT	70.00	70.00	Korea	December	Real estate business
Hero Claims Survey & Adjusting Co.,Ltd	85.10	-	Korea	December	Claim investigation & Adjusting
HCC HOLDINGS CO.,LTD.	51.00	-	Korea	December	Holding company
Hanwha NxMD Corporation	100.00	-	Korea	December	Manufacturing
Hanwha Advanced Materials Georgia Inc.	100.00	-	USA	December	Manufacturing
HESAL System Solutions USA LLC	100.00	-	USA	December	Photovoltaic business
HSCH NOV INV LLC	100.00	-	USA	December	Holding company
CPES MAGNILS	100.00	-	France	December	Photovoltaic business

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

VANI STUDIO VIETNAM COMPANY LIMITED	100.00	-	Vietnam	December	Application software development and supply
H-summit	100.00	-	Japan	December	Hotel business
Bauernenergie Solarpark Illmersdorf UG Co.KG	100.00	-	Germany	December	Photovoltaic business
Enviria IPP DevCo 2 GmbH & Co. KG	100.00	-	Germany	December	Photovoltaic business
DES Energy PV1 GmbH	100.00	-	Germany	December	Photovoltaic business
DES Energy Kom GmbH	100.00	-	Germany	December	Photovoltaic business
Aberdeen Corporate Services S.L.	100.00	-	Spain	December	Photovoltaic business
Albany Directorship, S.L.	100.00	-	Spain	December	Photovoltaic business
Amberes Corporate Services, S.L.	100.00	-	Spain	December	Photovoltaic business
Appleton Corporate Services, S.L.	100.00	-	Spain	December	Photovoltaic business
VISIONEXT AMERICA INC.	100.00	-	USA	December	Non-memory semiconductor manufacturing
DP Real Estate America LLC	100.00	-	USA	December	Investment of real estate (SPC)
HSHC ZIP INV LLC	100.00	-	USA	December	Holding company
Sportpferde Galleria GmbH	100.00	-	Germany	December	Polysilicon manufacturing
Hanwha NxMD (Thailand) Co., Ltd.	100.00	-	Thailand	December	Polysilicon manufacturing
REC Silicon ASA ³	33.33	-	Norway	December	Polysilicon manufacturing
REC Silicon AS Norway	100.00	-	Norway	December	Polysilicon manufacturing
REC Solar AS Norway	100.00	-	Norway	December	Polysilicon manufacturing
REC Silicon Pte Ltd Singapore	100.00	-	Singapore	December	Polysilicon manufacturing
REC Silicon Inc USA	100.00	-	USA	December	Polysilicon manufacturing
REC Solar Greade Silicon LLC USA	100.00	-	USA	December	Polysilicon manufacturing
REC Advanced Silicon Materials LLC USA	100.00	-	USA	December	Polysilicon manufacturing
REC Greece S.A.	100.00	-	Greece	December	Polysilicon manufacturing
Gitzeli Solar Energy Production S.A. Greece	100.00	-	Greece	December	Polysilicon manufacturing
SATREC INITIATIVE CO.,LTD. ²	20.00	-	Korea	December	Satellite system development and service
SIA CO.,LTD.	100.00	-	Korea	December	Satellite system development and service
SI IMAGING SERVICES CO., LTD	100.00	-	Korea	December	Satellite system development and service
Enterprise Blockchain Inc.	100.00	-	USA	December	Other non-financial business
Renaissanx LLC	100.00	-	USA	December	Other non-financial business
Alondra Foods Project, LLC	100.00	-	USA	December	Photovoltaic business
CPES EMOROTS	100.00	-	France	December	Renewable energy business
Deergrass Energy Storage LLC	100.00	-	USA	December	Photovoltaic power development
Ponderosa Energy Storage LLC	100.00	-	USA	December	Photovoltaic power development
Ryegrass Energy Park LLC	100.00	-	USA	December	Photovoltaic power development
CPES GARENNES	100.00	-	France	December	Renewable energy business

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

CEPE MELUSINE	100.00	-	France	December	Renewable energy business
CPES LA GRANDE GORGE	100.00	-	France	December	Renewable energy business
CPES MOUCHIT	100.00	-	France	December	Renewable energy business
CPES RADAR	100.00	-	France	December	Renewable energy business
CPES SIGNORET	100.00	-	France	December	Renewable energy business
CPES LES PLAINES de Haute Montagne	100.00	-	France	December	Renewable energy business
CPES MAS THIBERT	100.00	-	France	December	Renewable energy business
CPES CHENET	100.00	-	France	December	Renewable energy business
Petunia Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Coneflower Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Adelite Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Lavender Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Camellia Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Project Bolt Holdco LLC	100.00	-	USA	December	Photovoltaic power development
Ardesia Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
Shoshana Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
DES Energy PV 2 GmbH & Co.KG	100.00	-	Germany	December	Photovoltaic business
QCELLS ENABLE LLC	100.00	-	USA	December	Photovoltaic business
CDG BNS 136, LLC	100.00	-	USA	December	Photovoltaic business
CDG BNS Commerce, LLC	100.00	-	USA	December	Photovoltaic business
CDG Forest Mall, LLC	100.00	-	USA	December	Photovoltaic business
CDG MRP 136, LLC	100.00	-	USA	December	Photovoltaic business
WPL10 Solar, LLC	100.00	-	USA	December	Photovoltaic business
WPL4 Solar, LLC	100.00	-	USA	December	Photovoltaic business
Brainum Solar, LLC	100.00	-	USA	December	Photovoltaic business
BNS Willow Solar, LLC	100.00	-	USA	December	Photovoltaic business
Fairview Solar, LLC	100.00	-	USA	December	Photovoltaic business
CDG Innovo Queens, LLC	100.00	-	USA	December	Photovoltaic business
Carco Solar, LLC	100.00	-	USA	December	Photovoltaic business
Abbot Solar, LLC	100.00	-	USA	December	Photovoltaic business
Linden Solar, LLC	100.00	-	USA	December	Photovoltaic business
Maurice Solar, LLC	100.00	-	USA	December	Photovoltaic business
Bartlett JFK Solar, LLC	100.00	-	USA	December	Photovoltaic business
Bartlett Newark Solar, LLC	100.00	-	USA	December	Photovoltaic business
CDG Liberty Distributors, LLC	100.00	-	USA	December	Photovoltaic business
Q ENERGY (EUROPE) UK HOLDINGS LIMITED	100.00	-	United kingdom	December	Holding company

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Tomorrow Energy Ontwikkelung 31 B.V.	100.00	-	Netherlands	December	Photovoltaic business
Q ENERGY Europe NL Holdings B.V.	100.00	-	Netherlands	December	Holding company
QEE Solarpark Matzlow GmbH & Co. KG	100.00	-	Germany	December	Photovoltaic business
QEE Solarpark Garwitz GmbH & Co. KG	100.00	-	Germany	December	Photovoltaic business
CEPE Sapinois	100.00	-	France	December	Renewable energy business
CPES RIVAILLES	100.00	-	France	December	Renewable energy business
Hanwha Global Investment Corporation	100.00	-	USA	December	Manufacturing construction
Staghorn Energy Storage LLC	100.00	-	USA	December	Photovoltaic power development
CPES Volieres Charente	100.00	-	France	December	Renewable energy business
CPES Volieres Deux Sevres	100.00	-	France	December	Renewable energy business
CPES Montans	100.00	-	France	December	Renewable energy business
CPES Saint-Lys	100.00	-	France	December	Renewable energy business
Hanwha Cimarron Europe GmbH	100.00	-	Germany	December	Manufacturing
Hadong Haetpinnaum Taeyanggwangblajeon Co., Ltd	100.00	-	Korea	December	Photovoltaic business
5 CUT ROAD SOLAR PROJECT LLC	100.00	-	USA	December	Photovoltaic business
1050 DAY HILL RD PROJECT, LLC	100.00	-	USA	December	Photovoltaic business
Hanwha Solutions Insight Holdings Corporation	100.00	-	USA	December	Holding company
HSIH NHH INV LLC	100.00	-	USA	December	Non-financial others
C.P.E.S. Volieres Sarraguzan	100.00	-	France	December	Renewable energy business
Daffodil Storage Project LLC	100.00	-	USA	December	Manufacturing construction
Taormina Storage Project LLC	100.00	-	USA	December	Photovoltaic power development
HSHC AMP INV LLC	100.00	-	USA	December	Holding company
HANWHA ADVANCED MATERIALS CO.,LTD.	52.76	-	Korea	December	Synthetic resin processing and others
Hanwha Consignment Management Real Estate Investment Company Co.,Ltd.	69.17	-	Korea	December	Non-financial others
CE Cell Engineering GmbH	100.00	-	Germany	December	Photovoltaic business
LYNQTECH GmbH	64.97	-	Germany	December	Photovoltaic business
Zonnepark de Weijer B.V.	100.00	-	Netherlands	December	Photovoltaic business
Whinfield High Grange Solar Farm Limited	100.00	-	United kingdom	December	Photovoltaic business
Gobokjumin Taeyanggwangbaljeon Co.,Ltd	90.00	-	Korea	December	Photovoltaic business
Solar FlexRack LLC	80.10	-	USA	December	Photovoltaic power generation related materials and parts business
Hanwha Munitions Co.,Ltd.	100.00	-	Korea	December	Manufacturing construction
Beneficiary certificates					
Hanwha Global Infrastructure Strategy Fund III	88.00	88.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha The 3rd Gyeongin highway Fund 1 ⁴	48.19	48.19	Korea	December	Special Asset Collective Investment Vehicle

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Purple tip 1 Co., Ltd ⁵	-	-	Korea	December	Special Purpose Company (SPC)
Small Giants New Renewable Energy Innovation Fund	99.00	99.00	Korea	December	Investment Fund
ChungNam-Hanwha Small & Medium Company Growth Fund	66.67	66.67	Korea	December	Investment Fund
2018 Hanwha New Industry Global Plus-up Fund	60.00	60.00	Korea	December	Investment Fund
Kyobo AXA Bong-dam Song-san Highway Private Investment Trust	85.21	85.21	Korea	December	Special Asset Collective Investment Vehicle
Loyal MJ 1st Co., Ltd ⁵	-	-	Korea	December	Special Purpose Company (SPC)
Loyal MJ 2nd Co., Ltd ⁵	-	-	Korea	December	Special Purpose Company (SPC)
Mirae Asset UK Gas Infra Private special asset Investment Trust No.1	83.78	83.78	Korea	April, October	Special Asset Collective Investment Vehicle
Mirae Asset Global Renewable Energy Private Special Asset Investment Trust No.2	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Mirae Asset Maps Global New Recycling Energy Private special asset Investment Trust No. 1	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Blackrock Global Total Solution Investment Trust No.1	100.00	100.00	Korea	April	Security Collective Investment Vehicle
Samsung VLCC Private Investment Trust No.1	75.00	75.00	Korea	February, May, August, November	Special Asset Collective Investment Vehicle
Simone Global Venture Private Investment Special No.1	100.00	100.00	Korea	May	Special Asset Collective Investment Vehicle
Shinhan BNPP Seoul-Munsan Expressway Private Special Asset Investment Trust	93.33	93.33	Korea	December	Special Asset Collective Investment Vehicle
Asia Pacific 45 Vessel Investment Co., Ltd. ⁵	-	-	Korea	December	Vessels Investment Company
HSF 8th Co., Ltd. ⁵	-	-	Korea	September	Liquidation of Loans receivable (SPC)
Poong Cheon 2nd ⁵	-	-	Korea	May	Liquidation of Beneficiary certificates (SPC)
Hana Daol HW Landchip Private real estate feeder investment Trust No.1	98.00	98.00	Korea	26 th of each quarter	Real Estate Collective Investment Vehicle
Hanwha ASIA OPPORTUNITY Private Investment Trust No.1	100.00	100.00	Korea	May	Special Asset Collective Investment Vehicle
Hanwha GLOBAL CORPORATE PE STRATEGY Private Investment Trust No.2	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha GLOBAL CORPORATE PE STRATEGY Private Investment Trust No.1	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha GLOBAL CREDIT STRATEGY Private Investment Trust No.1	100.00	100.00	Korea	The end of each quarter	Security Collective Investment Vehicle
Hanwha GLOBAL INFRASTRUCTURE STRATEGY No.2	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha GLOBAL INFRASTRUCTURE STRATEGY No.1	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha GLOBAL REAL ESTATE STRATEGY Private Investment Trust No.1	100.00	100.00	Korea	December	Real Estate Collective Investment Vehicle

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha GLOBAL REAL ESTATE STRATEGY Private Investment Trust No.2	100.00	100.00	Korea	December	Real Estate Collective Investment Vehicle
Hanwha Lifestyle Private Investment Trust No.1	100.00	100.00	Korea	April	Special Asset Collective Investment Vehicle
Hanwha Vietnam OPPORTUNITY Private Investment Trust No.1	100.00	100.00	Korea	The end of each quarter	Security Collective Investment Vehicle
Hanwha Solar Development Private Investment Trust No.2 ⁴	50.00	50.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha AI Global Choice Private Investment Trust No.1	100.00	100.00	Korea	April	Security Collective Investment Vehicle
Hanwha AI Global Choice Private Investment Trust No.2	99.00	99.00	Korea	December	Security Collective Investment Vehicle
Hanwha DEBT STRATEGY Real Estate Trust No.6	100.00	100.00	Korea	March	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUSTDF2030 equity investment Trust C-F	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUSTDF2035 equity investment Trust C-F	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUSTDF2040 equity investment Trust C-F	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUSTDF2045 equity investment Trust C-F	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LTI Private equity investment Trust No.2[Infra]	90.57	90.57	Korea	The end of each quarter, June	Special Asset Collective Investment Vehicle
Hanwha LTI Infra Private equity investment Trust No.1	100.00	100.00	Korea	The end of each quarter, July	Special Asset Collective Investment Vehicle
Hanwha Gwangju Ringroad special asset investment trust(Infra) ⁴	50.00	50.00	Korea	The end of each quarter, June	Special Asset Collective Investment Vehicle
Hanwha Global Security Investment Trust for corporation only(Bond)C	96.10	96.10	Korea	December	Security Collective Investment Vehicle
Hanwha Vietnam Legend Security Investment trust(Stock) C-F	100.00	100.00	Korea	June	Security Collective Investment Vehicle
Hanwha Korea Legend 4th Industrial Revolution Investment trust(Stock) C-F	100.00	100.00	Korea	December	Security Collective Investment Vehicle
Hanwha SRI Fund(Equity) - Feeder Fund (Equity) C-F	100.00	100.00	Korea	December	Security Collective Investment Vehicle
Hanwha Photovoltaics Private Investment Trust No.1(Power Generation Facility) ⁴	50.00	50.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha Tricircle Infra Special Asset No.1	100.00	100.00	Korea	The end of each quarter, June	Special Asset Collective Investment Vehicle
Hanwha Tricircle Infra Special Asset No.3	95.00	95.00	Korea	The end of each quarter, July	Special Asset Collective Investment Vehicle
Hanwha Environment Love Private Investment Trust No.1 ⁴	50.00	50.00	Korea	The end of each quarter, June	Special Asset Collective Investment Vehicle
Hanwha Environment Love Private Investment Trust No.2 ⁴	40.30	40.30	Korea	The end of each quarter, July	Special Asset Collective Investment Vehicle
Hanwha AF 4 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha AF 5 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Invest Urge1 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Shinsegye1 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
First M No.9 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
First M No.10 ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hyundai invest global infra Special Asset Investment Trust 15	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha DEBT STRATEGY Private Special Asset Investment Trust Security 16	50.90	50.90	Korea	December	Special Asset Collective Investment Vehicle
ARIRANG US s-term A-rated corporate debts	65.22	65.22	Korea	December	Special Asset Collective Investment Vehicle
ARIRANG US L-term A-rated corporate debts	51.85	51.85	Korea	December	Special Asset Collective Investment Vehicle
2018 Hanwha IoT NeW Technology Venture Fund	73.33	73.33	Korea	December	Investment Fund
Hanwha Dream Fund 1	100.00	100.00	Korea	December	Investment Fund
2021 Hanwha Future Environment New Technology Venture Fund ⁴	40.09	40.09	Korea	December	Special Asset Collective Investment Vehicle
Hanwha Smart Health Care New Growth Fund No.1 ⁴	20.00	-	Korea	December	Special Asset Collective Investment Vehicle
Hanwha Co-Investments Private Fund ⁴	50.00	50.00	Korea	December	Special Asset Collective Investment Vehicle
phoenix mohyun Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha Wind-Solar Private Fund I ⁴	50.00	50.00	Korea	December	Special Asset Collective Investment Vehicle
Capstone Private Real Estate Fund 22	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUSTDF2050 equity investment Trust C-F	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha ESG Hero Securities Feeder Fund (Bond) C-w	99.82	99.82	Korea	December	Special Asset Collective Investment Vehicle
Shinhan AIM Real Estate Private Fund 10	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Hanwha DEBT STRATEGY Real Estate Private Fund 3 ⁴	50.00	50.00	Korea	December	Special Asset Collective Investment Vehicle
Meritz Real Estate Private Fund 6	99.39	99.39	Korea	December	Special Asset Collective Investment Vehicle
Shinhan AIM Real Estate Private Fund 7	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
IGIS Real Estate Private Fund 221	99.44	99.44	Korea	December	Special Asset Collective Investment Vehicle
MiraeAsset MAPS Aqua Private Special Asset Investment Trust 1	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Meritz Real Estate Private Fund 7	99.37	99.37	Korea	December	Special Asset Collective Investment Vehicle
Hanwha Global Infrastructure Strategy Private Fund 4	73.79	73.79	Korea	December	Special Asset Collective Investment Vehicle

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Asia Growth Private Fund 1	100.00	100.00	Korea	December	Special Asset Collective Investment Vehicle
Macquarie Korea Global Infrastructure Debt Fund 5	94.12	94.12	Korea	December	Special Asset Collective Investment Vehicle
Invest auto the first ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest star the first ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
YDHM Eagle 1ST CO., LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Shinhan CIP VIII PBN Professional Investment Type Private Security Investment Trust No.1(H)	99.90	99.90	Korea	December	Special Asset Collective Investment Vehicle
INVEST PYEONGTAEK 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
INVEST SEJONG 3RD CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Great Tangjung Co.,Ltd ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
YDHM Eagle 2ND CO., LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha OCIO Solution Securities Fund (Balanced-FoFs) C-F	80.58	80.58	Korea	December	Special Asset Collective Investment Vehicle
INVEST HYANGDONG 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
ASIA GAON NURI 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
NONHYEON VALUE AD 2ND CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
INVEST POHANG 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
gwangjuchumdanyoungsangangjisan1st Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Revelant First Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
MULTI FLEX SERIES 6TH CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
INVEST JUNGDONG 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
JB GANGREUNG 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
GREAT GEOJE 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
GREAT GEOJE 2ND CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
EKO CITY 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
ECO CITY SINCHEON 2ND CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
HWASEONGYUBORA 3RD CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Jadeicheon 1st Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
hudcannon1st Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Cosmo Luna Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
SLT Yeonsan Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
DIONYSOS EAGLE 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
EUROPE GAONNURI 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI NAMPO 1ST CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI BUKNAE CO.,LTD ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
T.I Bishop Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Jochiwon 1st Co., Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Eco Songjeong Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Emaster 13th CO., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Tetras CO.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
GFMIN 7TH CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
CW Deagu 2ND CO.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
THE Most Sindaebang 1ST CO., Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
THEMOSTYEONMOO 1ST CO., LTD.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
HSF NO.19 CO., LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Deokpyeong 1st Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Hyangnam 1st Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Gunsan 1st Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
ADIABC NO.1 Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Adiaeuijeon 1st Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha Global Infrastructure 2nd Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
HSF NO.23 CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Palace Green Hwaseong Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
AD ONE 8TH CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Themostsongpa 1st Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI Sipjeong Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI Cheongdam Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha Opportunistic Private Real Estate Fund I	100.00	100.00	Korea	December	Investment association
Smart Hanwha KDB Gyeonggi Carbon Neutral ESG Fund ⁴	38.83	-	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LIFEPLUS TIF Mixed Asset Feeder Fund (Balanced-FoFs)	100.00	-	Korea	December	Special Asset Collective Investment Vehicle
Hanwha LifeStyle Private Fund II	100.00	-	Korea	December	Special Asset Collective Investment Vehicle
Eugene Pomona Secondary Hedge Fund I	66.67	-	Korea	December	Special Asset Collective Investment Vehicle
Hanwha GLOBAL CORPORATE PE/VC STRATEGY Private Fund ³	90.00	-	Korea	December	Special Asset Collective Investment Vehicle
VALUESYSTEM ESG INVESTMENT-PRIVATE INVESTMENT FUND	84.10	-	Korea	December	Special Asset Collective Investment Vehicle
Invest Unseo 1st Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Aloha 1st Co., Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Greatyaem3rd Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Adiagodeok 1st Co.,Ltd ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI AEWOL Co.,Ltd ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
SKY TOWER Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI SEWOON Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TS GOLD Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
HSF 25TH CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
HSF 26TH CO.,LTD. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Royal WM ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
TI LIPJANG Co.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Hanwha Global Infrastructure 3rd CO.,Ltd. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

JH SUWON 1 Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
JH SUWON 2 Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Eco YaEum 2nd Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Yangsan 1st CO.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)
Invest Yusa 1st Co.,Ltd.. ⁵	-	-	Korea	December	Liquidation of Beneficiary certificates (SPC)

¹ Considering the situation where the feasibility of potential voting rights is remote, the Company is considered to have control since it is able to exercise the majority of voting rights in its decision-making process as the percentage of voting rights exceeds 50%.

² Although the percentage of ownership is less than 50%, the Company is considered to have control since it is able to exercise the majority of voting rights in its decision-making process as the percentage of voting rights exceeds 50%.

³ Although the percentage of ownership is less than 50%, the Company is considered to have control as the majority of the remaining shareholders are widely dispersed, each holding less than 1% of ownership, and the Company is able to exercise its majority voting rights in the decision-making process considering the past attendance rate at the General Meeting.

⁴ Although the percentage of ownership does not exceed 50%, it is included in the subsidiary in accordance with Korean IFRS 1110, taking into account the percentage of ownership and the de facto agent relationship.

⁵ Although the Company does not have ownership interest, it is included in the scope of consolidation, considering contractual arrangements, exposures to variable returns and others.

(2) Consus Incheon Sewer Private Equity Investment Trust 1 and other twenty-seven beneficiary certificates were excluded from the consolidated subsidiaries because the Group has failed to make practical decision on related activities of investees even though the Group has a majority of the ownership ratio for the year ended December 31, 2022.

(3) Subsidiaries newly included in the consolidation for the year ended December 31, 2022, are as follows:

Subsidiary	Reason
Hero Claims Survey & Adjusting Co.,Ltd	Newly established
HCC HOLDINGS CO.,LTD.	Newly established
Hanwha NxMD Corporation	Newly established
Hanwha Advanced Materials Georgia Inc.	Newly established
HESAL System Solutions USA LLC	Newly established
HSCH NOV INV LLC	Newly established
CPES MAGNILS	Newly established
VANI STUDIO VIETNAM COMPANY LIMITED	Newly established

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

H-summit	Newly established
Bauernenergie Solarpark Illmersdorf UG Co.KG	Newly acquired
Enviria IPP DevCo 2 GmbH & Co. KG	Newly acquired
DES Energy PV1 GmbH	Newly acquired
DES Energy Kom GmbH	Newly acquired
Aberdeen Corporate Services S.L.	Newly acquired
Albany Directorship, S.L.	Newly acquired
Amberes Corporate Services, S.L.	Newly acquired
Appleton Corporate Services, S.L.	Newly acquired
SATREC INITIATIVE CO.,LTD.	Newly acquired
SIA CO.,LTD.	Newly acquired
SI IMAGING SERVICES CO., LTD	Newly acquired
Invest Jochiwon 1st Co., Ltd.	Newly acquired
Eco Songjeong Co.,Ltd.	Newly acquired
Emaster 13th CO., Ltd.	Newly acquired
Tetras CO.,Ltd.	Newly acquired
GFMIN 7TH CO.,LTD.	Newly acquired
CW Deagu 2ND CO.,Ltd.	Newly acquired
THE Most Sindaebang 1ST CO., Ltd.	Newly acquired
THEMOSTYEONMOO 1ST CO., LTD.	Newly acquired
HSF NO.19 CO., LTD.	Newly acquired
HANWHA NEXT CO.,LTD.	Newly established
VISIONEXT AMERICA INC.	Newly established
BoryeongNokdo Offshore Windpower Corporation	Newly established
ANDA IDC General Private Equity Investment Trust	Newly established
ANDA IDC General Private Equity Investment Company	Newly established
DP Real Estate America LLC	Newly established
HSHC ZIP INV LLC	Newly established
Anseong Techno Logistics Co., Ltd.	Newly established
HAM HOLDINGS CORPORATION	Newly established
Sportpferde Galleria GmbH	Newly established
Hanwha NxMD (Thailand) Co., Ltd.	Newly acquired
Chequen Solar SpA	Newly acquired
REC Silicon ASA	Newly acquired
REC Silicon AS Norway	Newly acquired
REC Solar AS Norway	Newly acquired
REC Silicon Pte Ltd Singapore	Newly acquired
REC Silicon Inc USA	Newly acquired

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

REC Solar Greade Silicon LLC USA	Newly acquired
REC Advanced Silicon Materials LLC USA	Newly acquired
REC Greece S.A.	Newly acquired
Gitzeli Solar Energy Production S.A. Greece	Newly acquired
Q Energy Europe GmbH	Newly established
C.P.E.S. VIGORDANE FLOTTANT	Newly established
CPES MALAGA	Newly established
Hanwha Smart Health Care New Growth Fund No.1	Newly acquired
Invest Deokpyeong 1st Co.,Ltd.	Newly acquired
Invest Hyangnam 1st Co.,Ltd.	Newly acquired
Invest Gunsan 1st Co.,Ltd.	Newly acquired
ADIABC NO.1 Co.,Ltd.	Newly acquired
Adiaeuijeon 1st Co.,Ltd.	Newly acquired
Hanwha Global Infrastructure 2nd Co., Ltd.	Newly acquired
TI Sipjeong Co.,Ltd.	Newly acquired
TI Cheongdam Co.,Ltd.	Newly acquired
HSF NO.23 CO.,LTD.	Newly acquired
Palace Green Hwaseong Co.,Ltd.	Newly acquired
AD ONE 8TH CO.,LTD.	Newly acquired
Themostsongpa 1st Co.,Ltd.	Newly acquired
Enterprise Blockchain Inc.	Newly established
Renaissanx LLC	Newly established
Smart Hanwha KDB Gyeonggi Carbon Neutral ESG Fund	Newly established
Alondra Foods Project, LLC	Newly established
CPES EMOROTS	Newly established
Deergrass Energy Storage LLC	Newly established
Ponderosa Energy Storage LLC	Newly established
Ryegrass Energy Park LLC	Newly established
CPES GARENNES	Newly established
CEPE MELUSINE	Newly established
CPES LA GRANDE GORGE	Newly established
CPES MOUCHIT	Newly established
CPES RADAR	Newly established
CPES SIGNORET	Newly established
CPES LES PLAINES de Haute Montagne	Newly established
CPES MAS THIBERT	Newly established
CPES CHENET	Newly established
Petunia Storage Project LLC	Newly established

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Coneflower Storage Project LLC	Newly established
Adelite Storage Project LLC	Newly established
Lavender Storage Project LLC	Newly established
Camellia Storage Project LLC	Newly established
Project Bolt Holdco LLC	Newly established
Ardesia Storage Project LLC	Newly established
Shoshana Storage Project LLC	Newly established
DES Energy PV 2 GmbH & Co.KG	Newly acquired
QCELLS ENABLE LLC	Newly acquired
CDG BNS 136, LLC	Newly acquired
CDG BNS Commerce, LLC	Newly acquired
CDG Forest Mall, LLC	Newly acquired
CDG MRP 136, LLC	Newly acquired
WPL10 Solar, LLC	Newly acquired
WPL4 Solar, LLC	Newly acquired
Brainum Solar, LLC	Newly acquired
BNS Willow Solar, LLC	Newly acquired
Fairview Solar, LLC	Newly acquired
CDG Innovo Queens, LLC	Newly acquired
Carco Solar, LLC	Newly acquired
Abbot Solar, LLC	Newly acquired
Linden Solar, LLC	Newly acquired
Maurice Solar, LLC	Newly acquired
Bartlett JFK Solar, LLC	Newly acquired
Bartlett Newark Solar, LLC	Newly acquired
CDG Liberty Distributors, LLC	Newly acquired
Caldera Solar Spa	Newly acquired
Q ENERGY (EUROPE) UK HOLDINGS LIMITED	Newly established
Hanwha LIFEPLUS TIF Mixed Asset Feeder Fund (Balanced-FoFs)	Newly established
Hanwha LifeStyle Private Fund II	Newly established
Eugene Pomona Secondary Hedge Fund I	Newly established
VALUESYSTEM ESG INVESTMENT-PRIVATE INVESTMENT FUND	Newly established
Invest Unseo 1st Co., Ltd.	Newly established
Invest Aloha 1st Co., Ltd.	Newly established
Greatyaeum3rd Co.,Ltd.	Newly established
Adiagodeok 1st Co.,Ltd.	Newly established
HANWHA GLOBAL INFRASTRUCTURE 4TH CO.,LTD.	Newly established

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

TI AEWOL Co.,Ltd	Newly established
SKY TOWER Co.,Ltd.	Newly established
TI SEWOON Co.,Ltd.	Newly established
TS GOLD Co.,Ltd.	Newly established
HSF 25TH CO.,LTD.	Newly established
HSF 26TH CO.,LTD.	Newly established
Royal WM	Newly established
Tomorrow Energy Ontwikkelung 31 B.V.	Newly established
Q ENERGY Europe NL Holdings B.V.	Newly established
QEE Solarpark Matzlow GmbH & Co. KG	Newly established
QEE Solarpark Garwitz GmbH & Co. KG	Newly established
CEPE Sapinois	Newly established
CPES RIVAILLES	Newly established
Hanwha Global Investment Corporation	Newly established
Staghorn Energy Storage LLC	Newly established
CPES Volieres Charente	Newly established
CPES Volieres Deux Sevres	Newly established
CPES Montans	Newly established
CPES Saint-Lys	Newly established
Hanwha Cimarron Europe GmbH	Newly established
Hadong Haetpinnaum Taeyanggwangbalkeon Co., Ltd.	Newly established
5 CUT ROAD SOLAR PROJECT LLC	Newly established
1050 DAY HILL RD PROJECT, LLC	Newly established
Hanwha Solutions Insight Holdings Corporation	Newly established
HSIH NHH INV LLC	Newly established
C.P.E.S. Volieres Sarraguzan	Newly established
Daffodil Storage Project LLC	Newly established
Taormina Storage Project LLC	Newly established
SHSC AMP INV LLC	Newly established
HANWHA ADVANCED MATERIALS CO.,LTD.	Newly established
Hanwha Consignment Management Real Estate Investment Company Co.,Ltd.	Newly acquired
CE Cell Engineering GmbH	Newly acquired
LYNQTECH GmbH	Newly acquired
Zonnepark de Weijer B.V.	Newly acquired
Whinfield High Grange Solar Farm Limited	Newly acquired
Gobokjumin Taeyanggwangbaljeon Co., Ltd.	Newly acquired
Solar FlexRack LLC	Newly acquired
Hanwha Munitions Co.,Ltd.	Business split-off

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

TI LIPJANG Co.,Ltd.	Newly established
Hanwha Global Infrastructure 3rd CO.,Ltd.	Newly established
JH SUWON 1 Co.,Ltd.	Newly established
JH SUWON 2 Co.,Ltd.	Newly established
Eco YaEum 2nd Co.,Ltd.	Newly established
Invest Yangsan 1st CO.,Ltd.	Newly established
Invest Yusa 1st Co.,Ltd.	Newly established
Hanwha GLOBAL CORPORATE PE/VC STRATEGY Private Fund 3	Newly established

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Subsidiaries excluded from the consolidation for the year ended December 31, 2022, are as follows:

Subsidiary	Reason
Hanwha Advanced Materials Holdings USA Inc.	Merged
KAES Co., Ltd.	Sold
Phoenix Yulbuk 1st Co., Ltd.	Sold
Phoenix Tangjung 1st Co., Ltd.	Sold
Shinhan BNPP Global Solar Energy Private Equity Special Asset Investment Trust	Sold
Hanwha Global Mega Trend EMP Securities Fund (Equity-FoFs) C-f	Sold
CPES SOLEIL ROUGE	Sold
Recon Co., Ltd.	Repayment
Pine Tree sol Three Private equity investment Trust No.3	Sold
Invest guro the first	Sold
Phoenix Kyomoon 1st Co., Ltd	Sold
Phoenix Kyomoon 2nd Co., Ltd	Sold
K LAND MARK 4TH CO.,LTD	Sold
Lodges Lions Park No. 1	Sold
NONHYEON VALUE AD 1ST CO.,LTD.	Sold
Hanwha Power System Co., Ltd.	Disposal
Hanwha Power Systems Americas, Inc.	Disposal
Hanwha Power Systems (Shanghai) Co.,LTD	Disposal
Hanwha Power Systems Service Middle East LLC	Disposal
HANWHA POWER SYSTEMS VIETNAM COMPANY LIMITED	Disposal
GELI Australia Pty Ltd.	Liquidated
KTB Global CREDEBT Real Estate Private Fund 6	Liquidated
Hanwha Global Untact Securities Feeder Fund (UH) (Equity) C-F	Liquidated
GREAT YAEUM CO.,LTD	Liquidated
GREAT YAEUM 2ND CO.,LTD	Liquidated
Logis Icheon 1ST Co., Ltd.	Liquidated
World corporation	Sold
TAWASUL AL-EZDIHAR Co., Ltd	Sold
Hanwha Engineering and Construction Corp.	Merged
H-P&D Co., Ltd	Merged
Hanwha Defense Systems Corp.	Merged
HaeSaRang Solar Co., Ltd	Merged

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

HAEMAJI SOLAR CORPORATION	Merged
YoungAm TechnoSolar Co., Ltd	Merged
YoungAm HaeOReumSolar Co., Ltd	Merged
Cabrero Solar SPA	Sold
Centauro Solar SPA	Sold
Draco Solar SPA	Sold
Chequen Solar SPA	Sold
Caldera Solar SPA	Sold
Hanwha Q CELLS Peru S.A.C	Sold
CEPE Croix de Bertault	Sold
CEPE Croix de l'Ercle	Sold
CAMPANA ENERGY, S.L	Sold
DIONISIO SUN S.L.	Sold
BT Cunningham Storage, LLC	Sold
HANWHA TECHM USA LLC	Liquidated
Hanwha CONSUMER CREDIT Private Investment Trust No.1	Repayment
Hanwha Ssolssolhan Korea Bond Securities Feeder Fund (Bond) C-F	Partial disposal (consolidation → FVPL)
Hanwha Korea Legend Dividend Securities Feeder Fund (Equity) C-F	Repayment
Daishin Asia Direct Lending Professional Investment Type Private Equity Fund	Disposal
Hanwha Global Business Fund	Disposal
INVEST CHEONGRA 1ST CO.,LTD.	Repayment
INVEST CHEONGRA 2ND CO.,LTD.	Repayment
ECOYAEUM CO.,LTD.	Repayment
Hanwha Global Infrastructure Strategy Private Fund 4	Repayment

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(5) Summary of financial information of subsidiaries as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

Type Name of entity	2022						
	Current assets	Non-current assets	Assets for financial business	Current liabilities	Non-current liabilities	Liabilities for financial business	Total equity
Hanwha Life Insurance Co., Ltd. ¹	₩ -	₩ -	₩ 126,934,916	₩ -	₩ -	₩ 122,903,603	₩ 4,031,313
Hanwha General Insurance Co., Ltd. ²	-	-	20,169,107	-	-	19,906,746	262,361
Hanwha Solutions Co., Ltd.	4,356,438	14,850,750	-	4,773,393	4,632,500	-	9,801,295
Hanwha Investment & Securities Co., Ltd. ³	-	-	12,013,180	-	-	10,463,483	1,549,697
Hanwha Aerospace Co., Ltd.	3,514,318	5,192,020	-	4,235,521	1,815,335	-	2,655,481
Hanwha Systems Co., Ltd.	2,208,442	1,998,401	-	1,608,723	299,466	-	2,298,654
Hanwha Q CELLS Co., Ltd. ⁴	558,032	1,573,551	-	526,449	-	-	1,605,134
Hanwha Hotel & Resort Inc.	145,331	2,520,689	-	453,871	1,176,840	-	1,035,309
Hanwha Savings Bank Co., Ltd.	-	-	1,624,027	-	-	1,440,862	183,165
Hanwha Asset Management Co., Ltd.	-	-	1,400,676	-	-	48,004	1,352,673
Hanwha Global Asset Corporation	118,443	785,337	-	1,399	14,714	-	887,667
Hanwha Life Financial Service. Co.,Ltd.	-	-	1,162,546	-	-	661,243	501,303
Hanwha Q CELLS Malaysia Sdn. Bhd.	454,796	411,852	-	210,369	361,354	-	294,925
Hanwha Q CELLS GmbH	572,022	234,927	-	491,109	108,203	-	207,637
Hanwha Life Insurance Company Limited. (Vietnam)	-	-	856,716	-	-	621,633	235,083
Hanwha Q CELLS Investment Co., Ltd.	79,367	674,273	-	100,003	-	-	653,636
Hanwha Chemical (Ningbo) Co., Ltd.	225,621	173,971	-	32,584	-	-	367,008
Hanwha Techwin Co., Ltd.	377,140	227,218	-	212,430	91,427	-	300,501
HANWHA CONNECT CO.,LTD.	30,420	445,543	-	97,892	233,645	-	144,426
Hanwha Galleria Timeworld Co.,Ltd.	49,575	329,896	-	113,027	40,552	-	225,893
Hanwha Q CELLS Americas Holdings.	2,556,515	540,534	-	1,933,540	331,981	-	831,529

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Corp. ⁵							
Hanwha Holdings(USA), Inc. ⁶	184,904	145,682	-	136,247	11,307	-	183,033
Hanwha Q CELLS Japan Co., Ltd.	378,984	111,636	-	269,478	51,553	-	169,589
Hanwha Precision Machinery Co.,Ltd.	279,479	80,588	-	196,004	53,031	-	111,032
Seoulyeokbukbuyeoksegwon Development Co.	461,601	792	-	374,287	472	-	87,634
Hanwha Aerospace USA	155,842	105,988	-	33,961	131,551	-	96,318
HANWHA AERO ENGINES.,LTD	124,752	149,543	-	179,092	75,046	-	20,158
HANWHA TECHWIN AMERICA, INC.	280,349	25,336	-	228,762	-	-	76,923
Carrot General Insurance	-	-	354,490	-	-	171,482	183,008
PT. Hanwha Life Insurance Indonesia	-	-	165,995	-	-	16,708	149,287
HANWHA SOLUTIONS USA HOLDINGS CORPORATION	4,684	175,124	-	128	-	-	179,680
Hanwha Advanced Materials Europe, s.r.o.	73,252	90,230	-	50,187	-	-	113,295
HQC PORTUGAL HOLDINGS, LDA	11,121	144,040	-	3,297	155,622	-	-3,758
ASANBAEBANG DEVELOPMENT CO.,LTD.	202,123	5,552	-	121,305	91,295	-	-4,925
Hanwha America Development Inc. ⁷	210,137	195,097	-	203,995	41,495	-	159,744
Hanwha Techwin Security Vietnam	104,648	31,295	-	77,928	12,684	-	45,332
Hanwha Europe GmbH ⁸	112,377	17,327	-	96,620	958	-	32,125
Pinetree Securities Corporation	-	-	136,394	-	-	57,047	79,347
H Properties TMK	175,838	3	-	41,036	86,644	-	48,162
Jeju Ocean Science Museum Corporation	17,267	81,182	-	9,267	60,789	-	28,392
HANWHA CITY DEVELOPMENT CO.,LTD	4,329	178,293	-	1,093	21,716	-	159,812
Hanwha Compound Corporation	51,945	54,204	-	26,091	8,540	-	71,518
Hanwha Chemical Overseas Holdings, Co., Ltd.	32,689	67,307	-	8,570	-	-	91,426
Hanwha Dream Fund 1	-	-	83,434	-	-	425	83,009
PT. Hanwha Mining Services Indonesia	74,582	46,433	-	102,019	776	-	18,220
Q Energy Mediterranee ⁹	127,995	91,493	-	136,403	10,693	-	72,392

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

DP Real Estate America LLC	15,973	199,157	-	2,807	-	-	212,323
HANWHA DEFENSE AUSTRALIA PTY LTD	124,707	36,669	-	184,533	16,564	-	-39,722
HANWHA SYSTEMS UK LTD	3,764	268,614	-	770	-	-	271,607
Hanwha Asset Management (USA) Ltd.	-	-	270,967	-	-	4,566	266,401
Hanwha Cimarron LLC	49,160	66,341	-	22,572	63,440	-	29,490
Hanwha Systems USA Corporation	58,672	106,385	-	4	-	-	165,052
Hanwha Techwin Europe Limited	78,606	2,665	-	48,096	2,100	-	31,075
Q Energy Europe GmbH	332,846	108,296	-	28,859	268,399	-	143,884
Q Energy Solutions SE	52,704	1,376,372	-	6,433	242,437	-	1,180,206
REC Silicon ASA	212,314	193,042	-	203,174	125,652	-	76,530
HCC HOLDINGS CO.,LTD.	58,686	413,579	-	5,361	-	-	466,905
HAM HOLDINGS CORPORATION	52,872	371,347	-	76	11,157	-	412,986
WOS CO.,LTD.	108,686	13,373	-	2,011	107	-	119,941
HANWHA NEXT CO.,LTD.	27,973	193,815	-	4,839	8,992	-	207,958
Hanwha NxMD Corporation	98,970	30,916	-	12,469	9,596	-	107,821
Hanwha Consignment Management Real Estate Investment Company Co.,Ltd.	30,429	695,630	-	233,978	253,322	-	238,758
HANWHA ADVANCED MATERIALS CO.,LTD.	343,433	331,439	-	101,427	75,915	-	497,530
SATREC INITIATIVE CO.,LTD.	194,271	70,029	-	56,828	81,454	-	126,018
WEST OCHANG TECHNO VALLEY CO.,LTD.	91,094	718	-	79,741	17,000	-	-4,929
Anseong Techno Valley Co.,Ltd.	87,603	431	-	52,162	40,000	-	-4,128
DaejeonYeoksegwon Development PFV Co., Ltd.	98,699	-	-	17,624	-	-	81,075
Hanwha Munitions Co.,Ltd.	1,589,749	1,200,789	-	1,730,937	368,224	-	691,378

¹ Financial information of Hanwha Life Insurance Co., Ltd., which includes 63 beneficiary certificates as at December 31, 2022.

² Financial information of Hanwha General Insurance Co., Ltd., which includes 2 beneficiary certificates as at December 31, 2022.

³ Consolidated financial information of Hanwha Investment & Securities Co., Ltd., which includes

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

82 SPCs and 4 beneficiary certificates as at December 31, 2022.

⁴ Consolidated financial information of Hanwha Q CELLS Co., Ltd., which includes the financial information of 12 subsidiaries.

⁵ Consolidated financial information of Hanwha Q CELLS Americas Holdings. Corp., which includes the financial information of 79 subsidiaries.

⁶ Consolidated financial information of Hanwha Holdings (USA) Inc., which includes the financial information of 9 subsidiaries.

⁷ Consolidated financial information of Hanwha America Development Inc., which includes the financial information of 5 subsidiaries.

⁸ Consolidated financial information of Hanwha Europe GmbH, which includes the financial information of 2 subsidiaries.

⁹ Consolidated financial information of Q Energy Mediterranee, which includes the financial information of 143 subsidiaries.

(in millions of Korean won)

Type Name of entity	2021						
	Current assets	Non-current assets	Assets for financial business	Current liabilities	Non-current liabilities	Liabilities for financial business	Total equity
Seoulyeokbukbyeokse gwon Development Co.	₩ 307,865	₩ 482	₩ -	₩ 87	₩ 219,352	₩ -	₩ 88,908
H-P&D Co., Ltd	1,265	230	-	98	155	-	1,242
Jeju Ocean Science Museum Corporation	8,191	85,191	-	6,735	65,331	-	21,316
Hanwha Galleria Timeworld Co., Ltd.	89,555	285,862	-	153,562	38,228	-	183,627
Hanwha Engineering and Construction Corp.	2,172,959	3,064,617	-	2,590,512	1,980,599	-	666,465
Hanwha City Development Co., Ltd	6,618	84,285	-	1,375	-	-	89,528
Hanwha Savings Bank Co., Ltd.	-	-	1,402,477	-	-	1,242,982	159,495
Small Giants New Renewable Energy Innovation Fund	-	-	52,905	-	-	511	52,394
Carrot General Insurance	-	-	201,365	-	-	115,194	86,171
Hanwha Global Asset Corporation	138,846	932,677	-	3,239	19,720	-	1,048,564
Hanwha Defense Systems Corp.	1,148,026	764,565	-	1,130,910	221,139	-	560,542
Hanwha Life Insurance Co., Ltd. ¹	-	-	129,876,319	-	-	120,510,502	9,365,817
Hanwha General Insurance Co., Ltd. ²	-	-	20,097,570	-	-	18,684,332	1,413,238
Hanwha Solutions Co., Ltd.	3,256,682	12,039,641	-	3,662,884	3,870,904	-	7,762,535

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Systems Co., Ltd.	2,652,387	1,262,226	-	1,358,175	286,977	-	2,269,461
Hanwha Aerospace Co., Ltd.	1,377,090	3,491,774	-	1,257,499	1,687,823	-	1,923,542
Hanwha Station Development Co., Ltd.	24,933	470,087	-	93,327	261,416	-	140,277
Hanwha Asset Management Co., Ltd.	-	-	1,158,270	-	-	316,768	841,502
Hanwha Precision Machinery Co., Ltd.	246,772	72,896	-	101,873	63,584	-	154,211
Hanwha Compound Corporation Co., Ltd.	53,928	33,798	-	28,477	6,621	-	52,628
Hanwha Chemical Overseas Holdings, Co., Ltd.	18,514	67,307	-	2,933	-	-	82,888
Hanwha Techwin Co., Ltd.	314,020	211,653	-	177,801	63,735	-	284,137
Hanwha Investment & Securities Co., Ltd. ³	-	-	11,744,353	-	-	9,878,055	1,866,298
Hanwha Power System Co., Ltd.	199,495	63,207	-	106,474	31,944	-	124,284
Hanwha Hotel & Resort Inc.	79,236	2,129,754	-	749,284	1,023,706	-	436,000
Hanwha Advanced Materials Europe, s.r.o.	63,100	90,496	-	47,747	-	-	105,849
HANWHA AERO ENGINES.,LTD	60,701	143,141	-	62,590	124,116	-	17,136
Hanwha Aerospace USA	137,173	101,162	-	41,046	121,768	-	75,521
Hanwha America Development Inc.	43,219	76,039	-	356	855	-	118,047
Hanwha Chemical (Ningbo) Co., Ltd.	435,665	194,852	-	224,081	-	-	406,436
Hanwha Europe GmbH ⁴	97,189	18,148	-	85,329	2,850	-	27,158
Hanwha Holdings(USA), Inc. ⁵	347,964	335,255	-	335,055	75,888	-	272,276
Hanwha Life Insurance Company Limited. (Vietnam)	-	-	780,199	-	-	498,984	281,215
Hanwha Q CELLS Americas Holdings. Corp. ⁶	410,005	398,046	-	380,891	91,792	-	335,368
Hanwha Q CELLS Co., Ltd. ⁷	1,362,260	1,820,304	-	1,558,984	1,605	-	1,621,975
Hanwha Q CELLS GmbH	493,613	385,430	-	347,819	177,793	-	353,431
Hanwha Q CELLS Investment Co., Ltd.	3,028	767,197	-	15,010	80,241	-	674,974
Hanwha Q CELLS Japan Co., Ltd.	223,362	98,679	-	171,522	2,407	-	148,112
Hanwha Q CELLS Malaysia Sdn. Bhd.	447,374	418,806	-	340,746	357,755	-	167,679

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Solar Power Kitsuki G.K.	19,093	53,204	-	4,545	33,881	-	33,871
HANWHA TECHWIN AMERICA, INC.	184,323	17,455	-	146,955	-	-	54,823
Hanwha Techwin Security Vietnam	82,117	33,505	-	75,318	19,092	-	21,212
PT. Hanwha Life Insurance Indonesia	-	-	168,604	-	-	13,020	155,584

¹ Financial information of Hanwha Life Insurance Co., Ltd., which includes 63 beneficiary certificates as at December 31, 2021.

² Financial information of Hanwha General Insurance Co., Ltd., which includes 2 beneficiary certificates as at December 31, 2021.

³ Consolidated financial information of Hanwha Investment & Securities Co., Ltd., which includes 57 SPCs and 3 beneficiary certificates as at December 31, 2021.

⁴ Consolidated financial information of Hanwha Europe GmbH, which includes the financial information of 2 subsidiaries.

⁵ Consolidated financial information of Hanwha Holdings (USA) Inc., which includes the financial information of 14 subsidiaries.

⁶ Consolidated financial information of Hanwha Q CELLS Americas Holdings. Corp., which includes the financial information of 33 subsidiaries.

⁷ Consolidated financial information of Hanwha Q CELLS Co., Ltd., which includes the financial information of 19 subsidiaries.

(6) Summary of business performance of subsidiaries for the years ended December 31, 2022 and 2021, is as follows:

Type Name of entity		2022								
		Sales	Operating profit (loss)	Profit (loss) for the year	Other comprehensive income (loss)	Total comprehensive income (loss)				
Hanwha Life Insurance Co., Ltd. ¹	₩	22,696,593	₩	363,192	₩	650,335	₩	(4,958,885)	₩	(4,308,550)
Hanwha General Insurance Co., Ltd. ²		8,087,925		390,113		313,033		(1,896,979)		(1,583,946)
Hanwha Solutions Co., Ltd.		9,686,399		915,779		1,031,882		1,035,526		2,067,408
Hanwha Investment & Securities Co., Ltd. ³		2,102,960		48,411		(46,128)		(227,385)		(273,513)
Hanwha Aerospace Co., Ltd.		1,955,523		146,879		308,892		217,668		526,560
Hanwha Systems Co., Ltd.		2,187,406		93,680		80,170		(21,648)		58,522
Hanwha Q CELLS Co., Ltd. ⁴		2,794,851		52,532		47,678		(43,575)		4,103
Hanwha Hotel & Resort Inc.		548,446		(16,918)		37,374		515,597		552,970
Hanwha Savings Bank Co., Ltd.		90,456		20,798		17,117		(1,963)		15,154
Hanwha Asset		143,926		36,964		2,708		4,235		6,943

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Management Co., Ltd.					
Hanwha Global Asset Corporation	-	(1,382)	(3,555)	77	(3,479)
Hanwha Life Financial Service. Co.,Ltd.	896,067	(75,604)	(59,644)	4,652	(54,993)
Hanwha Q CELLS Malaysia Sdn. Bhd.	950,529	74,437	50,974	(1,247)	49,727
Hanwha Q CELLS Gmbh	1,269,157	14,480	19,740	3,443	23,182
Hanwha Life Insurance Company Limited. (Vietnam)	293,461	34,658	27,714	(73,847)	(46,132)
Hanwha Q CELLS Investment Co., Ltd.	-	547	1,348	60,277	61,625
Hanwha Chemical (Ningbo) Co., Ltd.	502,116	34,479	34,616	(14,581)	20,035
Hanwha Techwin Co., Ltd.	825,560	113,630	89,199	17,164	106,363
HANWHA CONNECT CO.,LTD.	152,273	29,901	12,161	171	12,332
Hanwha Galleria Timeworld Co.,Ltd.	137,105	14,269	6,580	34,416	40,997
Hanwha Q CELLS Americas Holdings. Corp. ⁵	2,308,559	163,727	107,043	20,601	127,644
Hanwha Holdings(USA), Inc. ⁶	371,683	(5,752)	(10,648)	21,488	10,839
Hanwha Q CELLS Japan Co., Ltd.	570,798	4,473	3,733	(11,649)	(7,916)
Hanwha Precision Machinery Co.,Ltd.	517,594	28,209	21,500	2,984	24,484
Seoulyeokbukbuyeoksegun Development Co.	-	(1,637)	(1,273)	-	(1,273)
Hanwha Aerospace USA	225,502	15,853	15,956	4,006	19,963
HANWHA AERO ENGINES.,LTD	115,002	17,525	2,563	459	3,023
HANWHA TECHWIN AMERICA, INC.	591,673	27,014	18,662	3,438	22,100
Carrot General Insurance	442,524	(78,524)	(78,503)	169	(78,334)
PT. Hanwha Life Insurance Indonesia	21,680	(1,188)	(1,231)	(5,065)	(6,296)
HANWHA SOLUTIONS USA HOLDINGS CORPORATION	-	(2,608)	(24,179)	11,230	(12,950)
Hanwha Advanced Materials Europe, s.r.o.	98,394	4,309	3,739	3,707	7,446
HQC PORTUGAL HOLDINGS, LDA	-	(64)	(1,394)	(17)	(1,411)
ASANBAEBANG DEVELOPMENT CO.,LTD.	33,649	(7,252)	(7,588)	-	(7,588)
Hanwha America Development Inc. ⁷	473,743	27,566	14,901	4,319	19,220

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Hanwha Techwin Security Vietnam	351,959	33,384	24,097	23	24,120
Hanwha Europe GmbH ⁸	364,523	6,467	4,809	158	4,967
Pinetree Securities Corporation	11,992	745	678	2,327	3,004
H Properties TMK	-	(1,838)	(1,850)	(3,979)	(5,829)
Jeju Ocean Science Museum Corporation	30,244	12,542	7,077	-	7,077
HANWHA CITY DEVELOPMENT CO.,LTD	-	(2,511)	5,407	64,878	70,285
Hanwha Compound Corporation	204,458	3,624	2,672	16,217	18,889
Hanwha Chemical Overseas Holdings, Co., Ltd.	-	(92)	36,637	-	36,637
Hanwha Dream Fund 1	1,902	120	120	-	120
PT. Hanwha Mining Services Indonesia	77,571	4,691	(3,906)	(323)	(4,230)
Q Energy Mediterranee ⁹	88,642	(12,683)	(10,431)	567	(9,864)
DP Real Estate America LLC	150	(2,288)	(2,164)	(5,237)	(7,401)
HANWHA DEFENSE AUSTRALIA PTY LTD	59,445	(12,053)	(585)	46	(539)
HANWHA SYSTEMS UK LTD	-	(625)	2,529	(93,705)	(91,176)
Hanwha Asset Management (USA) Ltd.	8,834	2,669	2,521	(3,870)	(1,348)
Hanwha Cimarron LLC	8,865	(16,586)	(17,918)	3,430	(14,488)
Hanwha Systems USA Corporation	-	(1,193)	(67,606)	13,206	(54,400)
Hanwha Techwin Europe Limited	119,449	1,245	642	(1,473)	(831)
Q Energy Europe GmbH	35,105	1,026	(3,628)	(1,129)	(4,758)
Q Energy Solutions SE	11,891	(1,312)	(3,730)	(4,396)	(8,126)
REC Silicon ASA	146,213	(69,829)	(100,955)	17,898	(83,058)
HCC HOLDINGS CO.,LTD.	-	(702)	53,758	-	53,758
HAM HOLDINGS CORPORATION	-	(44)	(6,366)	-	(6,366)
WOS CO.,LTD.	345	(7,101)	(4,711)	-	(4,712)
HANWHA NEXT CO.,LTD.	9,873	(3,444)	(2,990)	71,247	68,257
Hanwha NxMD Corporation	20,405	(23,247)	(6,908)	(211)	(7,118)
Hanwha Consignment Management Real Estate Investment Company Co.,Ltd.	-	-	-	-	-
HANWHA ADVANCED MATERIALS CO.,LTD.	48,361	(4,124)	(5,753)	55,467	49,714
SATREC INITIATIVE CO.,LTD.	92,192	(4,172)	2,887	(297)	2,590
WEST OCHANG TECHNO	-	(2,320)	(2,014)	-	(2,014)

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

VALLEY CO.,LTD.					
Anseong Techno Valley Co.,Ltd.	-	(1,198)	(1,192)	-	(1,192)
DaejeonYeoksegwon Development PFV Co., Ltd.	-	(834)	(829)	-	(829)
Hanwha Munitions Co.,Ltd.	412,644	27,730	15,557	210,814	226,370

¹ Financial information of Hanwha Life Insurance Co., Ltd., which includes 63 beneficiary certificates as at December 31, 2022.

² Financial information of Hanwha General Insurance Co., Ltd., which includes 2 beneficiary certificates as at December 31, 2022.

³ Consolidated financial information of Hanwha Investment & Securities Co., Ltd., which includes 82 SPCs and 4 beneficiary certificates as at December 31, 2022.

⁴ Consolidated financial information of Hanwha Q CELLS Co., Ltd., which includes the financial information of 12 subsidiaries.

⁵ Consolidated financial information of Hanwha Q CELLS Americas Holdings. Corp., which includes the financial information of 79 subsidiaries.

⁶ Consolidated financial information of Hanwha Holdings (USA), Inc., which includes the financial information of 9 subsidiaries.

⁷ Consolidated financial information of Hanwha America Development Inc., which includes the financial information of 5 subsidiaries.

⁸ Consolidated financial information of Hanwha Europe GmbH., which includes the financial information of 2 subsidiaries.

⁹ Consolidated financial information of Q Energy Mediterranee, which includes the financial information of 143 subsidiaries.

(in millions of Korean won)

2021

Type Name of entity	Sales	Operating profit (loss)	Profit (loss) for the year	Other comprehensive income (loss)	Total comprehensive income (loss)
Seoulyeokbukbuyeoksegwon Development Co..	₩ -	₩ (815)	₩ (497)	₩ -	₩ (497)
H-P&D Co., Ltd	285,390	56,022	39,270	-	39,270
Jeju Ocean Science Museum Corporation	19,381	4,695	1,849	-	1,849
Hanwha Galleria Timeworld Co., Ltd.	140,432	20,880	42,866	15,724	58,590
Hanwha Engineering and Construction Corp.	2,633,456	118,388	77,281	13,889	91,170
Hanwha City Development Co., Ltd	3,142	(2,002)	2,357	1,124	3,481
Hanwha Savings Bank Co., Ltd.	69,152	25,964	20,364	1,715	22,079
Small Giants New Renewable Energy	9,519	3,448	3,448	-	3,448

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Innovation Fund					
Carrot General Insurance	235,611	(64,951)	(64,961)	11	(64,950)
Hanwha Global Asset Corporation	-	(2,623)	92,283	(177)	92,106
Hanwha Defense Systems Corp.	1,428,413	115,599	84,105	(289)	83,816
Hanwha Life Insurance Co., Ltd. ¹	18,252,781	979,312	802,491	(1,364,969)	(562,478)
Hanwha General Insurance Co., Ltd. ²	7,828,845	207,527	161,962	(495,169)	(333,207)
Hanwha Solutions Co., Ltd.	7,395,685	558,108	535,802	14,427	550,229
Hanwha Systems Co., Ltd.	2,089,501	135,721	131,286	(2,426)	128,860
Hanwha Aerospace Co., Ltd.	1,224,760	(17,755)	119,344	6,708	126,052
Hanwha Station Development Co., Ltd.	134,857	5,365	2,768	255	3,023
Hanwha Asset Management Co., Ltd.	133,982	36,908	22,400	83,154	105,554
Hanwha Precision Machinery Co., Ltd.	559,152	78,350	63,948	2,337	66,285
Hanwha Compound Corporation Co., Ltd.	176,852	2,569	2,129	(24)	2,105
Hanwha Chemical Overseas Holdings, Co., Ltd.	-	(24)	19,750	-	19,750
Hanwha Techwin Co., Ltd.	620,157	109,785	89,042	1,577	90,619
Hanwha Investment & Securities Co., Ltd. ³	1,899,181	210,528	141,598	468,536	610,134
Hanwha Power System Co., Ltd.	246,304	16,772	17,610	1,046	18,656
Hanwha Hotel & Resort Inc.	473,780	(46,795)	(53,208)	18,058	(35,150)
Hanwha Advanced Materials Europe, s.r.o.	85,855	2,404	8	4,257	4,265
HANWHA AERO ENGINES.,LTD	57,248	458	(1,423)	1,724	301
Hanwha Aerospace USA	195,068	21,968	19,200	5,763	24,963
Hanwha America Development Inc.	-	(626)	489	9,514	10,003
Hanwha Chemical (Ningbo) Co., Ltd.	573,084	141,190	107,775	24,232	132,007
Hanwha Europe GmbH ⁴	263,238	5,041	4,082	39	4,121
Hanwha Holdings(USA), Inc. ⁵	672,073	4,812	(11,601)	29,575	17,974
Hanwha Life Insurance Company Limited. (Vietnam)	243,037	9,981	7,951	33,641	41,592
Hanwha Q CELLS Americas Holdings. Corp. ⁶	800,176	40,604	8,313	20,182	28,495
Hanwha Q CELLS Co., Ltd. ⁷	1,714,017	(5,919)	161,831	(64,515)	97,316

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Hanwha Q CELLS Gmbh	1,023,586	(9,550)	(9,795)	(463)	(10,258)
Hanwha Q CELLS Investment Co., Ltd.	-	(3)	5,586	47,367	52,953
Hanwha Q CELLS Japan Co., Ltd.	657,266	9,963	7,382	(2,875)	4,507
Hanwha Q CELLS Malaysia Sdn. Bhd.	601,168	(25,212)	(59,956)	8,952	(51,004)
Hanwha Solar Power Kitsuki G.K.	10,828	5,233	3,297	(786)	2,511
HANWHA TECHWIN AMERICA, INC.	317,878	10,212	7,175	4,157	11,332
Hanwha Techwin Security Vietnam	224,587	2,345	1,270	1,965	3,235
PT. Hanwha Life Insurance Indonesia	20,797	2,590	2,582	10,532	13,114

¹ Financial information of Hanwha Life Insurance Co., Ltd., which includes 63 beneficiary certificates as at December 31, 2021.

² Financial information of Hanwha General Insurance Co., Ltd., which includes 2 beneficiary certificates as at December 31, 2021.

³ Consolidated financial information of Hanwha Investment & Securities Co., Ltd., which includes 57 SPCs and 3 beneficiary certificates as at December 31, 2021.

⁴ Consolidated financial information of Hanwha Europe GmbH, which includes the financial information of 2 subsidiaries.

⁵ Consolidated financial information of Hanwha Holdings (USA) Inc., which includes the financial information of 14 subsidiaries.

⁶ Consolidated financial information of Hanwha Q CELLS Americas Holdings. Corp., which includes the financial information of 33 subsidiaries.

⁷ Consolidated financial information of Hanwha Q CELLS Co., Ltd., which includes the financial information of 19 subsidiaries.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

5. Investments in Associates and Joint Venture

(1) Details of major investments in associates and joint venture as at December 31, 2022 and 2021, are as follows:

Name of entity	Percentage of ownership (%)		Location	Closing month	Business
	2022	2021			
Joint venture					
Yeochun NCC Co., Ltd.	50.00	50.00	Korea	December	Manufacture of basic compound
Associate					
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	47.93	47.93	Korea	December	Manufacture of petrochemicals

(2) Changes in investments in associates and joint venture for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022						
	Beginning	Acquisitions	Disposals	Share of profit or loss of associates and joint venture	Other comprehensive income	Others ¹	Ending
Yeochun NCC Co., Ltd.	₩ 572,792	₩ -	₩ -	₩ (153,943)	₩ 105,775	₩ -	₩ 524,624
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	1,961,813	-	-	48,361	97,180	106,370	2,213,724
Others	1,585,074	452,215	(31,067)	29,562	(17,133)	(254,755)	1,763,896
Total	₩ 4,119,679	₩ 452,215	₩ (31,067)	₩ (76,020)	₩ 185,822	₩ (148,385)	₩ 4,502,244

¹ Others include changes in scope of consolidation and receipts of dividends from associates.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of
Korean won)

	2021						
	Beginning	Acquisitions	Disposals	Share of profit or loss of associates and joint venture	Other comprehensive income	Others ¹	Ending
Yeochun NCC Co., Ltd.	₩ 609,635	₩ -	₩ -	₩ 132,062	₩ -	₩ (168,905)	₩ 572,792
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	1,262,222	485,964	-	123,553	138,316	(48,242)	1,961,813
Others	1,006,446	651,333	(103,118)	20,693	30,535	(20,815)	1,585,074
Total	₩ 2,878,303	₩ 1,137,297	₩ (103,118)	₩ 276,308	₩ 168,851	₩ (237,962)	₩ 4,119,679

¹ Others include changes in scope of consolidation and receipts of dividends from associates.

(3) Summary of financial information of major associates and joint venture as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022			
	Current assets	Non-current assets	Current liabilities	Non-current liabilities
Yeochun NCC Co., Ltd.	₩ 1,343,195	₩ 2,002,329	₩ 1,094,966	₩ 1,135,673
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	1,906,919	4,558,077	1,166,693	678,585

(in millions of Korean won)

	2021			
	Current assets	Non-current assets	Current liabilities	Non-current liabilities
Yeochun NCC Co., Ltd.	₩ 1,689,759	₩ 1,823,941	₩ 1,081,321	₩ 1,181,319
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	1,520,838	3,624,171	607,580	510,760

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Summary of business performance of major associates and joint venture for the years ended December 31, 2022 and 2021, is as follows:

	2022				
	Revenue	Gain from continuing operations	Other comprehensive income	Total comprehensive income	Receipts of dividends from associates
Yeochun NCC Co., Ltd.	₩ 6,856,876	₩ (347,724)	₩ 211,549	₩ (136,175)	₩ -
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	2,533,514	112,613	450,705	563,318	-
	2021				
	Revenue	Gain from continuing operations	Other comprehensive loss	Total comprehensive income	Receipts of dividends from associates
Yeochun NCC Co., Ltd.	₩ 6,471,965	₩ 270,023	₩ -	₩ 270,023	₩ 170,000
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	1,530,752	322,847	333,863	656,710	-

(5) Details of adjustments from financial information of major associates and joint venture to the book amount of investments in associates and joint venture for the years ended December 31, 2022 and 2021, are as follows:

	2022	
	Yeochun NCC Co., Ltd.	Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.) ¹
Net assets (A)	₩ 1,114,885	₩ 4,618,665
Percentage of ownership (B)	50	48
Interests in net assets (A×B)	557,443	2,213,811
(+) Goodwill	-	24,775
(-) Intercompany transactions	(32,819)	(24,862)
Book amount	₩ 524,624	₩ 2,213,724

¹ The information is based on consolidated financial statements, and the Group has reflected net assets attributed to owners of the parent within the entity's consolidated financial statements.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021	
	Yeochun NCC Co., Ltd.	Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.) ¹
Net assets (A)	₩ 1,251,060	₩ 4,026,185
Percentage of ownership (B)	50	48
Interests in net assets (A×B)	625,530	1,929,826
(+) Goodwill	-	24,775
(-) Intercompany transactions	(52,738)	7,212
Book amount	₩ 572,792	₩ 1,961,813

¹ The information is based on consolidated financial statements, and the Group has reflected net assets attributed to owners of the parent within the entity's consolidated financial statements.

(6) Unrecognized accumulated loss as discontinued use of equity method for the years ended December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022	2021
Galleriaforet Corp.	₩ -	₩ 16,206
Daehan 5 Newstay Consignment Management real estate Investment Co., Ltd.	-	28,828
Burdur Enerji A.S.	3,870	3,541
The Ulsan Harbour Bridge	2,700	684
Gulf Advanced Cables Insulation Company	13,012	11,303

Investments in associates are provided as collateral for payables of the Group as at December 31, 2022 (Note 57).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

6. Segment Information

(1) The Group's reportable segments and details are as follows

Segment	Main business
Explosives and production	Manufacturing and selling of explosives
Trading and wholesale retails	Trading and retails
Petrochemical production	Manufacturing and selling of petrochemicals
Construction	Engineering and construction services for building, plant and environment facilities, and others
Leisure and service	Operating athletic facilities, tourism, hotel and catering businesses
Photovoltaic business	Manufacturing and selling of product related to sunlight and photovoltaic power generation
Financial business	Insurance business and management of deposits and instalment savings
Others	Manufacturing and selling of others

(2) A profit or loss by each segment for the years ended December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022				
	Explosives and Production	Trading and Wholesale retails	Petrochemical production	Construction	Leisure and Service
Revenue	₩ 9,205,613	₩ 3,876,391	₩ 7,016,364	₩ 4,799,976	₩ 1,430,460
Operating profit (loss)	543,146	147,658	485,515	266,267	(33,543)
Finance income (costs) and others	285,655	(48,439)	238,865	(143,846)	(10,172)
Profit (loss) for the year	828,801	99,219	724,380	122,421	(43,715)

(in millions of Korean won)

	2022				
	Photovoltaic business	Financial business	Others	Consolidation adjustment	Total
Revenue	₩ 11,202,244	₩ 34,961,470	₩ 708,727	₩ (10,922,850)	₩ 62,278,395
Operating profit (loss)	648,426	729,468	2,365	(273,211)	2,516,091
Finance income (costs) and others	(295,364)	85,968	(17,317)	(368,104)	(272,754)
Profit (loss) for the year	353,062	815,436	(14,952)	(641,315)	2,243,337

(in millions of Korean won)

	2021				
	Explosives and Production	Trading and Wholesale retails	Petrochemical production	Construction	Leisure and Service
Revenue	₩ 8,490,114	₩ 4,012,804	₩ 6,275,783	₩ 2,960,591	₩ 1,360,038
Operating profit (loss)	545,258	126,230	1,033,428	164,891	(13,417)
Finance income (costs) and others	12,396	120,494	34,055	(89,239)	6,477
Profit (loss) for the year	557,654	246,724	1,067,483	75,652	(6,940)

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021				
	Photovoltaic business	Financial business	Others	Consolidation adjustment	Total
Revenue	₩ 6,755,527	₩ 29,169,590	₩ 983,756	₩ (7,172,134)	₩ 52,836,069
Operating profit (loss)	(412,418)	1,250,350	9,342	224,224	2,927,888
Finance income (costs) and others	43,541	(314,693)	(13,377)	(445,472)	(645,819)
Profit (loss) for the year	(368,877)	935,657	(4,035)	(221,248)	2,282,069

(3) The details of the Group's depreciation and amortization for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	₩		₩	
Explosives and production	₩	327,871	₩	291,604
Trading and wholesale retails		29,327		36,843
Petrochemical production		541,803		445,079
Construction		37,157		44,574
Leisure and service		67,199		71,835
Photovoltaic business		156,204		173,502
Financial business		207,606		220,998
Others		16,731		34,730
Consolidation adjustment		(26,794)		(74,886)
Total	₩	1,357,104	₩	1,244,279

(4) Segment assets and liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Reportable segment asset	Investments in associates	Changes in non-current assets	Reportable segment liability
Explosives and production	₩ 23,115,083	₩ 8,029,028	₩ 1,943,415	₩ 14,476,327
Trading and wholesale retails	3,643,611	278,764	18,588	2,156,014
Petrochemical production	14,056,112	5,511,789	2,735,802	4,424,105
Construction	6,605,091	471,703	(1,127,126)	6,369,376
Leisure and service	4,541,529	617,215	1,097,305	2,246,677
Photovoltaic business	19,018,236	8,358,677	747,605	9,906,379
Financial business	165,402,969	5,062,585	2,873,368	156,329,133
Others	3,898,880	1,187,939	1,610,492	1,483,168
Consolidation adjustment	(29,106,187)	(25,015,454)	(3,151,240)	(7,094,681)
Total	₩ 211,175,324	₩ 4,502,244	₩ 6,748,209	₩ 190,296,498

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Reportable segment asset	Investments in associates	Changes in non-current assets	Reportable segment liability
Explosives and production	₩ 19,381,160	₩ 7,334,121	₩ 1,302,468	₩ 10,756,461
Trading and wholesale retails	3,383,428	270,179	149,559	2,020,896
Petrochemical production	10,621,890	4,489,825	1,126,441	3,301,733
Construction	6,377,655	1,675,240	(72,080)	6,234,545
Leisure and service	3,617,196	278,094	(55,492)	2,359,619
Photovoltaic business	15,774,181	7,486,711	3,289,395	8,732,620
Financial business	166,795,630	3,527,642	1,406,025	151,726,227
Others	1,947,204	323,152	(45,370)	1,130,871
Consolidation adjustment	(24,434,645)	(21,265,286)	(3,273,166)	(4,779,922)
Total	₩ 203,463,699	₩ 4,119,679	₩ 3,827,780	₩ 181,483,050

(5) The Group's sales for the years ended December 31, 2022 and 2021, and the book amount of non-current assets as at December 31, 2022 and 2021, by regional groups, are as follows:

(in millions of Korean won)

	Sales		Non-current assets ¹	
	2022	2021	2022	2021
Domestic	₩ 49,293,089	₩ 43,513,796	₩ 23,333,169	₩ 18,221,326
America	4,136,506	2,095,229	2,471,073	2,065,639
Asia	3,732,095	3,820,120	1,228,013	1,595,937
Others	5,116,705	3,406,924	5,736,871	4,138,016
Total	₩ 62,278,395	₩ 52,836,069	₩ 32,769,126	₩ 26,020,918

¹ Financial instruments, deferred tax assets and others are excluded from 'Non-current assets'.

(6) No single customer accounts for more than 10% of consolidated sales for the years ended December 31, 2022 and 2021.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

7. Restricted-to-use and Secured Financial Assets (Non-financial Business)

Restricted-to-use and secured financial assets as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Description	2022		2021	
Cash and cash equivalents ¹	Guarantees for transaction and others	₩	98,681	₩	113,693
Short-term financial instruments	Guarantees for borrowings and transaction		152,799		95,277
Long-term financial instruments	Guarantees for deposit for opening of checking account and others		13,698		32,871
	Total	₩	265,178	₩	241,841

¹ Includes restricted deposits for trust accounts related to the Group's own business as at December 31, 2022, such as an apartment house in Jangan, Suwon.

8. Cash and Cash Equivalents (Non-financial Business)

Details of cash and cash equivalents as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Cash on hand	₩	604,001	₩	400,642
Cash in bank		2,132,300		2,382,252
Other cash and cash equivalents		3,936,727		2,713,598
Total	₩	6,673,028	₩	5,496,492

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

9. Financial Instruments by Category (Non-financial Business)

(1) Categorizations of financial assets as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Hedging derivative financial instruments	Financial assets at fair value through other comprehensive income	Total
Current assets:					
Cash and cash equivalents	₩ 6,042,633	₩ 630,395	-	-	₩ 6,673,028
Financial assets at fair value through profit or loss	-	5,946	-	-	5,946
Financial assets at fair value through other comprehensive income	-	-	-	500	500
Trade and other receivables	4,960,682	2,198	-	-	4,962,880
Other financial assets	707,785	152,076	1,954	-	861,815
Non-current assets:					
Financial assets at fair value through profit or loss	-	700,441	-	-	700,441
Financial assets at fair value through other comprehensive income	-	-	-	472,345	472,345
Trade and other receivables	396,086	-	-	-	396,086
Other financial assets	288,206	150,303	4,247	-	442,756
Total	<u>₩ 12,395,392</u>	<u>₩ 1,641,359</u>	<u>₩ 6,201</u>	<u>₩ 472,845</u>	<u>₩ 14,515,797</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Hedging derivative financial instruments	Financial assets at fair value through other comprehensive income	Total
Current assets:					
Cash and cash equivalents	₩ 4,850,432	₩ 646,060	₩ -	₩ -	₩ 5,496,492
Financial assets at fair value through profit or loss	-	-	-	-	-
Financial assets at fair value through other comprehensive income	-	-	-	44	44
Trade and other receivables	3,745,068	3,836	-	-	3,748,904
Other financial assets	472,976	115,118	356	-	588,450
Non-current assets:					
Financial assets at fair value through profit or loss	-	368,075	-	-	368,075
Financial assets at fair value through other comprehensive income	-	-	-	77,129	77,129
Trade and other receivables	487,135	-	-	-	487,135
Other financial assets	268,032	59,725	1,772	-	329,529
Total	₩ 9,823,643	₩ 1,192,814	₩ 2,128	₩ 77,173	₩ 11,095,758

(2) Categorizations of financial liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Hedging derivative financial instruments	Total
Current liabilities:				
Trade and other payables	₩ 4,149,014	₩ -	₩ -	₩ 4,149,014
Borrowings and debentures	8,305,473	-	-	8,305,473
Other financial liabilities ¹	1,316,234	10,645	19,219	1,346,098
Non-current liabilities:				
Trade and other payables	415,370	-	-	415,370
Borrowings and debentures	8,067,264	-	-	8,067,264
Other financial liabilities ²	810,456	159,748	-	970,204
Total	₩ 23,063,811	₩ 170,393	₩ 19,219	₩ 23,253,423

¹ The amount excludes lease liabilities amounting to ₩ 166,876 million.

² The amount excludes lease liabilities amounting to ₩ 669,988 million.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Hedging derivative financial instruments	Total
Current liabilities:				
Trade and other payables	₩ 4,224,696	₩ -	₩ -	₩ 4,224,696
Borrowings and debentures	6,323,696	-	-	6,323,696
Other financial liabilities ¹	900,853	9,986	1,294	912,133
Non-current liabilities:				
Trade and other payables	410,602	-	-	410,602
Borrowings and debentures	8,257,694	-	-	8,257,694
Other financial liabilities ²	528,865	179	1,391	530,435
Total	<u>₩ 20,646,406</u>	<u>₩ 10,165</u>	<u>₩ 2,685</u>	<u>₩ 20,659,256</u>

¹ The amount excludes lease liabilities amounting to ₩ 160,116 million.

² The amount excludes lease liabilities amounting to ₩ 697,733 million.

(3) Net gains or losses on each category of financial instruments for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022	2021
Financial assets and liabilities at fair value through profit or loss:		
Gain (loss) on transactions	₩ 50,905	₩ (43,793)
Gain (loss) on valuation	(74,684)	232,187
Loss on valuation (other comprehensive income and loss) ¹	(697,707)	(92,479)
Financial assets and liabilities at amortized cost:		
Loss on transactions	(6,826)	(881)
Interest income	108,817	47,674
Interest expenses ²	(501,215)	(371,945)
Loss on valuation	(20,514)	(19,377)
Loss on foreign currency translation	(180,500)	(114,347)
Gain on foreign currency transaction	62,045	15,719
Financial assets at fair value through other comprehensive income:		
Loss on valuation (other comprehensive income and loss) ³	(7,299,551)	(1,285,247)
Loss on transactions	(164)	(82)
Dividend income	11,484	5,779

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

¹ Gain (loss) on valuation of hedging derivative financial instruments in financial business is included and the amount is after tax effect.

² Interest expenses that are directly attributable to qualifying asset are capitalized as part of the acquisition cost for the years ended December 31, 2022 and 2021 (Note 54).

³ Gain (loss) on valuation of financial assets and liabilities at fair value through other comprehensive income in financial business is included and the amount is after tax effect.

10. Trade and Other Receivables (Non-financial Business)

(1) Details of trade and other receivables as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Current	Non-current	Current	Non-current
Trade receivables	₩ 4,953,541	₩ 341,040	₩ 3,806,046	₩ 430,238
Less: provisions for impairment	(290,457)	(48,110)	(265,566)	(58,726)
Less: present value discounts	(11)	(135)	(31)	(306)
Other receivables	337,638	106,128	399,882	118,567
Less: provisions for impairment	(37,831)	(2,486)	(191,427)	(2,226)
Less: Present value discounts	-	(351)	-	(412)
Total	₩ 4,962,880	₩ 396,086	₩ 3,748,904	₩ 487,135

(2) Credit risk and provisions for impairment

The Group always recognizes lifetime ECL for trade receivables. The ECLs on these trade receivables are estimated using a provision matrix based on the adjusted for factors that are specific to the debtors, general economic conditions and an assessment of both the current as well as the forecast direction of conditions at the reporting date, including time value of money where appropriate.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Changes in provisions for impairment of trade and other receivables for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning balance	₩	517,945	₩	539,454
Increase (decrease) in loss allowance recognized in profit or loss during the year		64,296		(72,154)
Receivables written off during the year as uncollectible		(156,879)		(51,355)
Unused amounts reversed		(7,929)		(3,455)
Others ¹		(38,549)		105,455
Ending balance ²	₩	<u>378,884</u>	₩	<u>517,945</u>

¹ Others include the effects of changes in exchange rate and others.

² As at December 31, 2022 and 2021, the Group applies the simplified approach, which requires expected lifetime credit losses to be recognized in accordance with Korean IFRS 1109.

(3) The aging analysis of the trade and other receivables as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Receivables not past due	₩	3,480,786	₩	2,643,099
		<u>3,480,786</u>		<u>2,643,099</u>
Past due but not impaired				
Less than 3 months		633,845		424,204
Between 3 months and 6 months		141,688		118,574
Between 6 months and 1 year		45,426		152,974
More than 1 year		999,766		917,824
Subtotal		<u>1,820,725</u>		<u>1,613,576</u>
Impaired				
Less than 3 months		23,470		11,123
Between 3 months and 6 months		23,619		2,615
Between 6 months and 1 year		33,161		719
More than 1 year		356,587		483,601
Subtotal		<u>436,837</u>		<u>498,058</u>
Total	₩	<u>5,738,348</u>	₩	<u>4,754,733</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Details of transferred financial assets that are not derecognized in their entirety as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Trade receivables			
		2022		2021
Book amount of transferred financial assets	₩	76,335	₩	316,802
Related liabilities ¹		(76,335)		(316,802)

¹ The Group transferred trade receivables to banks and collected cash. The Group has responsibility of recourse as at December 31, 2022. In addition, the related liabilities are recognized as collateralized borrowing (Note 21).

11. Financial Assets Measured at Fair Value (Non-financial Business)

(1) Details of financial assets measured at fair value as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>		2022		2021
Financial assets at fair value through profit or loss	₩	706,388	₩	368,075
Financial assets at fair value through other comprehensive income		472,845		77,173
Total	₩	<u>1,179,233</u>	₩	<u>445,248</u>

(2) Details of financial assets measured at fair value through profit or loss as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>		2022		2021
Equity securities				
Listed securities	₩	9,700	₩	4,822
Unlisted securities		91,665		35,221
Subtotal		<u>101,365</u>		<u>40,043</u>
Debt securities				
Unlisted debt securities		506,121		312,243
Subtotal		<u>506,121</u>		<u>312,243</u>
Beneficiary certificates				
		98,902		15,789
Total	₩	<u>706,388</u>	₩	<u>368,075</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Details of financial assets measured at fair value through other comprehensive income as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Equity securities				
Listed securities	₩	134,474	₩	56
Unlisted securities		338,371		76,965
Subtotal		472,845		77,021
Debt securities				
Public bonds		-		152
Subtotal		-		152
Total	₩	472,845	₩	77,173

12. Other Financial Assets (Non-financial Business)

(1) Details of other financial assets as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022				2021			
	Current		Non-current		Current		Non-current	
Long and short-term financial instruments	₩	520,371	₩	22,608	₩	413,677	₩	17,620
Accrued income		92,674		-		5,795		-
Loans		146,299		461,493		130,594		425,922
Less: provision for impairment		(15,475)		(375,053)		(15,571)		(376,141)
Less: present value discounts		(627)		(1,925)		(881)		(2,122)
Guarantee deposits		40,080		205,971		23,137		233,997
Less: provision for impairment		-		(333)		-		(333)
Less: present value discounts		(579)		(30,496)		(555)		(30,591)
Derivative financial instruments		62,961		154,050		18,202		61,177
Others		16,111		6,441		14,052		-
Total	₩	861,815	₩	442,756	₩	588,450	₩	329,529

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

13. Derivative Financial Instruments (Non-financial Business)

Details of derivative financial assets and liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Assets	Liabilities	Assets	Liabilities
Trading				
Currency forward	₩ 45,368	₩ 23,785	₩ 4,332	₩ 8,595
Currency swap	77,580	12,308	38,412	1,238
Interest swap	560	400	560	9
Others ^{1,2}	87,303	133,900	33,948	-
Fair value hedge				
Currency forward	283	3,498	338	-
Others	-	5,222	-	-
Physical derivatives	-	10,443	71	209
Cash flow hedge				
Currency swap	1,930	-	1,718	2,777
Interest swap	3,987	56	-	23
Total	₩ 217,011	₩ 189,612	₩ 79,379	₩ 12,851

¹ Details of other derivative financial instruments as at December 31, 2022, is as follows:

	Details
Underlying assets	Residual equity of P&W NGPF Manufacturing Company Singapore PTE.Ltd (70%)
Striking price of call option	70% of P&W NGPF Manufacturing Company Singapore PTE.Ltd 's net asset value plus \$11,800,000 at the time of the exercise
Striking period of call option	November 30, 2024
Owner of call option	Hanwha Aerospace Co., Ltd.
Discount rate	Singapore Government bond interest rate curve

² The Group recognizes derivative financial liabilities according to Shareholders' agreement and others (Note 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

14. Inventories (Non-financial Business)

(1) Details of inventories as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Finished goods	₩	1,561,819	₩	967,664
Less: valuation allowance		(56,072)		(50,226)
Merchandise		579,737		471,852
Less: valuation allowance		(70,599)		(23,057)
Semifinished goods		344,706		310,597
Less: valuation allowance		(2,742)		(11,668)
Work in progress		1,473,210		1,054,451
Less: valuation allowance		(7,777)		(5,372)
Raw materials		1,839,483		1,707,132
Less: valuation allowance		(53,194)		(38,492)
Supplies		239,464		212,459
Less: valuation allowance		-		-
Materials in transit		709,499		571,615
Total	₩	<u>6,557,534</u>	₩	<u>5,166,955</u>

The cost of inventories recognized as expense and included in 'cost of sales' amounts to ₩ 15,159,340 million (2021: ₩ 14,086,034 million) for the year ended December 31, 2022. The Group recognized loss on inventory valuation of ₩ 19,215 million (2021: ₩ 8,106 million) for the year ended December 31, 2022. The amount of loss on inventory has been included in 'cost of sales'. In addition, the Group recognized obsolescence loss on inventory amounting to ₩ 2,183 million (2021: ₩ 1,068 million) for the year ended December 31, 2022. The amount of loss on inventory has been included in 'other expenses'.

(2) The inventories are provided as collateral in relation to liabilities as at December 31, 2022 (Note 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

15. Other Assets (Non-financial Business)

(1) Details of other assets as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Current	Non-current	Current	Non-current
Advance payments	₩ 2,018,226	₩ -	₩ 1,543,609	₩ -
Less: provisions for impairment	(119,020)	-	(122,096)	-
Contract execution cost ¹	10,992	-	20,090	-
Prepaid expense	184,400	233,366	130,794	96,498
Prepaid VAT	108,415	-	90,277	-
Contract assets	927,469	-	798,108	-
Refund asset	72	-	90	-
Long-term advance payments	-	222,372	-	19,941
Others	2,994	25,996	4,229	109,693
Total	₩ 3,133,548	₩ 481,734	₩ 2,465,101	₩ 226,132

¹ Includes the amount of prepaid construction costs.

(2) Details of contract assets as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
Due from customers for contract work	₩	927,469	₩	798,108
Prepaid construction costs		10,993		20,091
Others		71		89
Total	₩	938,533	₩	818,288

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

16. Property, Plant and Equipment (Non-financial Business)

(1) Details of property, plant and equipment as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Cost	Accumulated depreciation	Accumulated impairment	Government grants	Book amount
Land	₩ 7,214,637	₩ -	₩ (18,429)	₩ -	₩ 7,196,208
Buildings	4,542,208	(1,648,082)	(47,591)	(776)	2,845,759
Structures	1,018,435	(505,446)	(5,474)	(54)	507,461
Machinery	9,524,330	(5,267,375)	(140,042)	(3,597)	4,113,316
Vehicles	104,022	(89,065)	(37)	-	14,920
Tools and equipment	1,097,540	(817,159)	(5,101)	(50)	275,230
Construction in progress	846,590	-	-	(321)	846,269
Others	320,518	(267,382)	(1)	-	53,135
Total	<u>₩ 24,668,280</u>	<u>₩ (8,594,509)</u>	<u>₩ (216,675)</u>	<u>₩ (4,798)</u>	<u>₩ 15,852,298</u>

(in millions of Korean won)

	2021				
	Cost	Accumulated depreciation	Accumulated impairment	Government grants	Book amount
Land	₩ 3,929,274	₩ -	₩ (13,528)	₩ -	₩ 3,915,746
Buildings	4,187,045	(1,471,058)	(51,250)	(2,573)	2,662,164
Structures	999,175	(472,805)	(2,325)	(59)	523,986
Machinery	8,431,553	(4,813,986)	(360,121)	(1,446)	3,256,000
Vehicles	109,002	(88,735)	(6)	-	20,261
Tools and equipment	1,004,291	(761,795)	(3,652)	(62)	238,782
Construction in progress	659,765	-	(661)	(205)	658,899
Others	296,254	(247,113)	(13)	-	49,128
Mining properties in development	12,682	-	(12,682)	-	-
Total	<u>₩ 19,629,041</u>	<u>₩ (7,855,492)</u>	<u>₩ (444,238)</u>	<u>₩ (4,345)</u>	<u>₩ 11,324,966</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Changes in property, plant and equipment for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022						
	Beginning	Acquisitions	Disposals	Depreciation	Others ¹	Revaluation	Ending
Land	₩ 3,915,746	₩ 101,021	₩ (125,426)	₩ -	₩ 167,855	₩ 3,137,012	₩ 7,196,208
Buildings	2,662,164	98,787	(63,825)	(157,290)	305,923	-	2,845,759
Structures	523,986	13,714	(13,246)	(40,325)	23,332	-	507,461
Machinery	3,256,000	225,467	(18,269)	(574,412)	1,224,530	-	4,113,316
Vehicles	20,261	2,889	(4,752)	(9,182)	5,704	-	14,920
Tools and equipment	238,782	40,723	(9,445)	(101,898)	107,068	-	275,230
Construction in progress	658,899	999,326	(7,067)	-	(804,889)	-	846,269
Others	49,128	35,489	(8,521)	(12,513)	(10,448)	-	53,135
Total	₩ 11,324,966	₩ 1,517,416	₩ (250,551)	₩ (895,620)	₩ 1,019,075	₩ 3,137,012	₩ 15,852,298

¹ Others include changes in scope of consolidation, the change from transfer, the effects of changes in exchange rate and impairment loss on property, plant and equipment.

(in millions of Korean won)

	2021					
	Beginning	Acquisitions	Disposals	Depreciation	Others ¹	Ending
Land	₩ 4,069,770	₩ 5,016	₩ (14,493)	₩ -	₩ (144,547)	₩ 3,915,746
Buildings	2,590,593	51,890	(16,359)	(140,217)	176,257	2,662,164
Structures	475,517	2,427	(924)	(37,117)	84,083	523,986
Machinery	3,191,660	153,752	(11,917)	(529,519)	452,024	3,256,000
Vehicles	31,011	3,042	(3,585)	(9,806)	(401)	20,261
Tools and equipment	239,580	34,361	(3,099)	(82,981)	50,921	238,782
Construction in progress	651,091	923,594	(3,924)	-	(911,862)	658,899
Others	55,719	22,738	(1,234)	(11,130)	(16,965)	49,128
Total	₩ 11,304,941	₩ 1,196,820	₩ (55,535)	₩ (810,770)	₩ (310,490)	₩ 11,324,966

¹ Others include changes in scope of consolidation, the change from transfer, the effects of changes in exchange rate and impairment loss on property, plant and equipment.

Depreciation expense of ₩ 741,950 million (2021: ₩ 715,751 million) was charged to 'cost of sales' and ₩ 153,670 million (2021: ₩ 95,019 million) to 'selling and administrative expenses'.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Certain property, plant and equipment are provided as collateral for borrowings as at December 31, 2022 (Note 58).

(3) During the year ended December 31, 2022, the Group revalued land through an external valuation firm. (Evaluation date: October 31, 2022) For fair value evaluation, land and buildings were evaluated collectively, and the evaluation amount of the target land was calculated according to the distribution ratio. The valuation method was determined by applying the officially assessed land price method and reviewing the final amount by comparing the trial price calculated by the sales comparison approach and reviewing the rationality. The book value of land using revaluation model and historical cost model as of December 31, 2022, is as follows:

<i>(in millions of Korean won)</i>	<u>Revaluation model</u>		<u>Cost model</u>	
Land	₩	7,196,208	₩	4,059,196

Meanwhile, due to the above land revaluation, gain and loss on revaluation recognized for the year ended December 31, 2022, were ₩ 3,141,547 million (before tax) and ₩ 4,535 million (before tax), respectively.

(4) Fair value hierarchy classifications of the land that are measured at fair value as at December 31, 2022, are as follows:

<i>(in millions of Korean won)</i>	<u>2022</u>			
	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Land	₩	-	₩	-
			₩ 7,196,208	₩ 7,196,208

17. Investment Property (Non-financial Business)

(1) Details of investment property as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	<u>2022</u>		<u>2021</u>	
Land	₩	1,140,531	₩	509,368
Buildings		829,602		530,966
Others		803		847
Total	₩	<u>1,970,936</u>	₩	<u>1,041,181</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Changes in investment property for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022						
	Beginning	Acquisitions	Disposals	Gain (loss) from changes in fair value	Others ¹	Ending	
Land	₩ 509,368	₩ 99,381	₩ (14,288)	₩ 41,926	₩ 504,144	₩ 1,140,531	
Buildings	530,966	113,694	-	23,681	161,261	829,602	
Others	847	-	-	-	(44)	803	
Total	₩ 1,041,181	₩ 213,075	₩ (14,288)	₩ 65,607	₩ 665,361	₩ 1,970,936	

¹ Others include changes in scope of consolidation, the change from transfer and the effects of changes in exchange rate.

(in millions of Korean won)

	2021						
	Beginning	Acquisitions	Disposals	Gain (loss) from changes in fair value	Others ¹	Ending	
Land	₩ 407,906	₩ -	₩ (354)	₩ 36,758	₩ 65,058	₩ 509,368	
Buildings	494,934	12,008	-	19,399	4,625	530,966	
Others	887	-	-	-	(40)	847	
Total	₩ 903,727	₩ 12,008	₩ (354)	₩ 56,157	₩ 69,643	₩ 1,041,181	

¹ Others include changes in scope of consolidation, the change from transfer and the effects of changes in exchange rate.

Certain investment property is provided as collateral for borrowings as at December 31, 2022 (Note 58).

(3) Rental income and maintenance expenses from investment property for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022	2021
Rental income	₩ 82,562	₩ 66,716
Maintenance expenses	(44,589)	(48,675)

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Application of the fair value model in investment property

Investment property is subsequently measured at fair value. The fair value of investment property was determined based on the value measured by an independent appraisal agency that has experience in appraising real estate similar to the investment property subject to evaluation and has professional qualifications. In accordance with Articles 14, 15 and 16 of the 'Rules on Appraisal and Evaluation', the officially assessed land price method, sales comparison approach, and cost method were applied to the land and buildings subject to appraisal. Fair value hierarchy classifications of investment property that is measured at fair value as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Level 1	Level 2	Level 3	Total
Land	₩ -	₩ -	₩ 1,140,531	₩ 1,140,531
Buildings	-	-	829,602	829,602
Others	-	-	803	803
Total	₩ -	₩ -	₩ 1,970,936	₩ 1,970,936

(in millions of Korean won)

	2021			
	Level 1	Level 2	Level 3	Total
Land	₩ -	₩ -	₩ 509,368	₩ 509,368
Buildings	-	-	530,966	530,966
Others	-	-	847	847
Total	₩ -	₩ -	₩ 1,041,181	₩ 1,041,181

18.Intangible Assets (Non-financial Business)

(1) Details of intangible assets as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Cost	Accumulated amortization	Accumulated impairment	Government grants	Book amount
Goodwill	₩ 2,317,615	₩ -	₩ (59,250)	₩ -	₩ 2,258,365
Development costs	669,074	(122,404)	(32,365)	-	514,305
Membership rights	40,457	(1,342)	(886)	-	38,229
Others	1,913,783	(550,524)	(21,114)	(51,814)	1,290,331
Total	₩ 4,940,929	₩ (674,270)	₩ (113,615)	₩ (51,814)	₩ 4,101,230

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021				
	Cost	Accumulated amortization	Accumulated impairment	Government grants	Book amount
Goodwill	₩ 2,141,866	₩ -	₩ (35,428)	₩ -	₩ 2,106,438
Development costs	611,139	(103,145)	(32,365)	-	475,629
Membership rights	13,492	(1,185)	(905)	-	11,402
Others	1,666,051	(468,798)	(21,856)	(62,718)	1,112,679
Total	₩ 4,432,548	₩ (573,128)	₩ (90,554)	₩ (62,718)	₩ 3,706,148

(2) Changes in intangible assets for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022					
	Beginning	Acquisitions	Disposals	Amortization	Others ¹	Ending
Goodwill	₩ 2,106,438	₩ -	₩ -	₩ -	₩ 151,927	₩ 2,258,365
Development costs	475,629	88,109	(422)	(35,107)	(13,904)	514,305
Membership rights	11,402	11,608	(15,765)	(157)	31,141	38,229
Others	1,112,679	113,387	(2,880)	(105,704)	172,849	1,290,331
Total	₩ 3,706,148	₩ 213,104	₩ (19,067)	₩ (140,968)	₩ 342,013	₩ 4,101,230

¹ Others include changes in scope of consolidation, the change from transfer and the effects of changes in exchange rate.

(in millions of Korean won)

	2021					
	Beginning	Acquisitions	Disposals	Amortization	Others ¹	Ending
Goodwill	₩ 1,246,611	₩ -	₩ -	₩ -	₩ 859,827	₩ 2,106,438
Development costs	385,421	109,584	(2,963)	(29,087)	12,674	475,629
Membership rights	5,565	15,877	(13,530)	(181)	3,671	11,402
Others	839,721	64,744	(7,608)	(97,621)	313,443	1,112,679
Total	₩ 2,477,318	₩ 190,205	₩ (24,101)	₩ (126,889)	₩ 1,189,615	₩ 3,706,148

¹ Others include changes in scope of consolidation, the change from transfer and the effects of changes in exchange rate.

Amortization of ₩ 72,988 million (2021: ₩ 64,508 million) is included in 'cost of sales' and ₩ 67,981 million (2021: ₩ 62,381 million) is included in 'selling and administrative expenses' for

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

the year ended December 31, 2022.

The Group recognized R&D expenses amounting to ₩ 737,059 million (2021: ₩ 533,622 million) for the year ended December 31, 2022.

Certain intangible asset is provided as collateral for borrowings as at December 31, 2022 (Note 58).

(3) Details on non-chargeable allocation of emission permits held by the Group according to the enforcement of the Act on the Allocation and Trading of Greenhouse Gas Emission Permits, are as follows:

<i>(Unit: KAU)</i>	2021	2022	2023	2024	2025	Total
Emission permits	2,669,639	2,669,639	2,669,639	2,644,636	2,644,636	13,298,189

A. Changes in emission permits quantities and the carrying amounts for the years ended December 31, 2022 and 2021, are as follows.

<i>(in millions of Korean won, KAU)</i>	2022		2021	
	Quantity	Amount	Quantity	Amount
At January 1	2,782,608	₩ 4,306	2,867,968	₩ 4,441
Increase	131,098	1,889	571	8
Decrease	(2,680,846)	(3,221)	(2,754,999)	(143)
At December 31	232,860	₩ 2,974	113,540	₩ 4,306

B. Details of emission obligations for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won, KAU)</i>	2022		2021	
	Quantity	Amount	Quantity	Amount
At January 1	-	₩ -	-	₩ -
Increase	127,637	443	154,677	2,444
Decrease	(127,637)	(443)	(154,677)	(2,444)
At December 31	-	₩ -	-	₩ -

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Impairment tests for goodwill

A. Goodwill is monitored by the management at the CGU or group of CGUs level. The following is a summary of goodwill allocation for each CGU or group of CGUs, and the Group used the same goodwill allocation method as at December 31, 2022 and 2021:

<i>(in millions of Korean won)</i>	2022		2021	
Hanwha General Insurance Co., Ltd.	₩	160,187	₩	160,187
Hanwha Aerospace Co., Ltd. (LS)		272,825		272,825
Hanwha Systems Co., Ltd.(System)		127,333		127,333
Hanwha Systems Co., Ltd.(ICT)		331,757		331,757
Hanwha Q CELLS Co., Ltd.		213,843		246,142
Hanwha Aerospace USA		177,812		166,335
Q Energy Mediterranee		800,856		794,489
Others		341,982		193,497
Total ¹	₩	2,426,595	₩	2,292,565

¹ Includes the distribution of goodwill of financial services.

B. The recoverable amounts of CGUs have been determined based on value-in-use calculations. The key assumptions used for value-in-use calculations as at December 31, 2022, are as follows:

Key assumptions	Hanwha Aerospace Co., Ltd. (Land defense system)	Hanwha Systems Co., Ltd.(System)	Hanwha Systems Co., Ltd.(ICT)	Hanwha Q CELLSCo., Ltd.	Hanwha Aerospace USA	Q Energy Mediterranee
Operating profit ratio ¹	7.92%	6.51%	7.05%	5.60%	11.39%	15.10%
Growth rate ²	17.34%	15.59%	7.37%	0.00%	19.44%	1.00%
Perpetual growth rate	1.00%	1.00%	1.00%	0.00%	1.00%	0.00%
Discount rate	10.54%	10.54%	10.90%	12.30%	10.05%	7.30%

¹ Operating profit ratio is a weighted-average operating profit-to-revenue ratio used to extrapolate cash flows for certain budget period.

² Growth rate is a compounded annual growth rate used to extrapolate cash flows for certain budget period.

Key assumptions	Hanwha General Insurance Co., Ltd.
Investment earnings rate ¹	4.00%
Discount rate	9.00%

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

¹ Investment earnings rate is for calculating expected cash flow for certain prospective budget period.

C. The impairment test suggests that the carrying amount of cash generating units (group) of the goodwill of the hydrogen tank business of the chemical division and the FM business of the chemical division exceed the recoverable amount and the entire amount was recognized as impairment loss. In addition, as a result of the impairment test, impairment loss amounting to ₩ 22,160 million was recognized for Satrec Initiative Co.,Ltd, where the carrying amount of the cash generating unit (group) is expected to exceed the recoverable amount.

19. Leases (Non-financial Business)

(1) Changes in right-of-use assets for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Land	Buildings	Structures	Machinery
Beginning balance	₩ 51,395	₩ 420,473	₩ 6,515	₩ 64,384
Acquisitions	21,920	58,104	1,758	59,819
Disposals	(2,593)	(80,896)	(506)	(216)
Depreciation	(6,523)	(44,815)	(2,684)	(11,369)
Others ¹	6,435	(636)	-	(1,184)
Ending balance	<u>₩ 70,634</u>	<u>₩ 352,230</u>	<u>₩ 5,083</u>	<u>₩ 111,434</u>

(in millions of Korean won)

	2022			
	Vehicles	Tools and equipment	Others	Total
Beginning balance	₩ 19,601	₩ 5,708	₩ 49,163	₩ 617,239
Acquisitions	28,216	224	37,061	207,102
Disposals	(2,872)	(1)	(1,344)	(88,428)
Depreciation	(13,613)	(1,391)	(32,515)	(112,910)
Others ¹	(1,782)	8	(14,974)	(12,133)
Ending balance	<u>₩ 29,550</u>	<u>₩ 4,548</u>	<u>₩ 37,391</u>	<u>₩ 610,870</u>

¹ Others include changes in scope of consolidation, changes in exchange rate and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Land	Buildings	Structures	Machinery
Beginning balance	₩ 62,572	₩ 249,527	₩ 8,851	₩ 67,221
Acquisitions	4,054	336,026	530	4,098
Disposals	(13,175)	(128,200)	(15)	(286)
Depreciation	(2,290)	(35,518)	(2,773)	(6,247)
Others ¹	234	(1,362)	(78)	(402)
Ending balance	₩ 51,395	₩ 420,473	₩ 6,515	₩ 64,384

(in millions of Korean won)

	2021			
	Vehicles	Tools and equipment	Others	Total
Beginning balance	₩ 16,754	₩ 6,959	₩ 22,829	₩ 434,713
Acquisitions	12,545	63	55,853	413,169
Disposals	(1,027)	(10)	(4,190)	(146,903)
Depreciation	(10,527)	(1,336)	(26,930)	(85,621)
Others ¹	1,856	32	1,601	1,881
Ending balance	₩ 19,601	₩ 5,708	₩ 49,163	₩ 617,239

¹ Others include changes in scope of consolidation, changes in exchange rate and others.

(2) Details of lease liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022	2021
Current	₩ 166,876	₩ 160,116
Non-current	669,989	697,733

(3) The consolidated statement of comprehensive income shows the following amounts relating to leases:

(in millions of Korean won)

	2022	2021
Depreciation of right-of-use assets	₩ 112,910	₩ 85,621
Interest expense relating to lease liabilities	43,498	25,170
Expense relating to short-term leases	16,293	8,031
Expense relating to leases of low-value assets	11,875	4,257
Expense relating to variable lease payments not included in lease liabilities	21,382	14,436
Income from subleasing right-of-use assets	8,134	3,496

The total cash outflow for leases in 2022 was ₩ 206,347 million.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

20. Trade and Other Payables (Non-financial Business)

Details of trade and other payables as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Current	Non-current	Current	Non-current
Trade payables	₩ 3,281,344	₩ 285,280	₩ 2,933,022	₩ 116,858
Other payables	867,670	130,090	1,291,674	293,744
Total ¹	₩ 4,149,014	₩ 415,370	₩ 4,224,696	₩ 410,602

¹ It includes the amount paid for purchase of raw materials and others using purchasing card, and the Group pays to the credit card company at the end of the credit period according to the credit card agreement. The Group uses the purchasing credit card upon agreement with the supplier. The amount paid to the credit card company is presented in cash flows from operating activities, as the original nature is to purchase goods or services in the normal course of business, the payment to the credit card company is due within the normal course of business, and no collateral is provided in relation to the agreement. Changes in liabilities related to the purchasing card for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022	2021
Beginning balance	₩ 289,393	₩ 29,736
Changes (cash flows from operating activities)	51,750	259,657
Ending balance	₩ 341,143	₩ 289,393

21. Borrowings and Debentures (Non-financial Business)

(1) Borrowings and debentures as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Current	Non-current	Current	Non-current
Short-term borrowings	₩ 4,876,601	₩ -	₩ 3,665,249	₩ -
Long-term borrowings	1,683,974	4,229,070	1,291,669	4,348,282
Debentures	1,745,791	3,845,067	1,367,910	3,920,657
Convertible bonds	-	5,236	-	-
Less: discount on bonds	(893)	(12,109)	(1,132)	(11,245)
Total	₩ 8,305,473	₩ 8,067,264	₩ 6,323,696	₩ 8,257,694

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Details of bank borrowings as at December 31, 2022 and 2021, are as follows:

A. Short-term borrowings (including current portion of long-term borrowings)

<i>(in millions of Korean won)</i>	Creditor	Interest rate (%)	2022	2021
Bank overdraft	Woori Bank	5.94	₩ 256	₩ -
Usance	Shinhan Bank and others	0.90 ~ 5.85	191,016	267,049
Collateralized borrowings ¹	Shinhan Bank and others	1.07 ~ 6.34	76,335	316,802
Project finance	Korea Development Bank and others	6.66	106,520	-
General borrowings	Korea Development Bank and others	0.30 ~ 9.50	4,502,474	3,081,398
Add: Current portion			<u>1,683,974</u>	<u>1,291,669</u>
	Total		<u>₩ 6,560,575</u>	<u>₩ 4,956,918</u>

¹ The Group transferred trade receivables to banks and collected cash. This transaction is accounted for as a collateralized borrowing (Note 10).

B. Long-term borrowings

<i>(in millions of Korean won)</i>	Creditor	Interest rate (%)	2022	2021
General loan (long-term)	Shinhan Bank and others	0.21 ~ 6.94	₩ 4,768,045	₩ 4,350,851
Loan for industrial facilities	Korea Development Bank and others	2.00 ~ 4.59	429,656	525,899
Project financing ("PF")	Woori Bank and others	3.27 ~ 8.55	452,130	268,472
Loan for special operating funds	NH bank	2.00	47,233	246,716
ABL	Woori Bank	-	-	200,000
Fund for energy	Woori Bank	-	-	85
Facility for foreign currencies	Woori Bank and others	2.59 ~ 3.94	215,980	47,928
	Subtotal		<u>5,913,044</u>	<u>5,639,951</u>
	Less: Current portion		<u>(1,683,974)</u>	<u>(1,291,669)</u>
	Total		<u>₩ 4,229,070</u>	<u>₩ 4,348,282</u>

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

In addition, the Group provided property, plant and equipment and others as collateral in relation to the above long- and short-term borrowings (Note 58).

(3) Details of debentures as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Creditor	Maturity date	Annual interest rate (%)	2022	2021
Hanwha Corporation	224th Non-guaranteed Public subscription bond	2022.02.01	-	₩ -	₩ 150,000
	225-1st Non-guaranteed Public subscription bond	2022.04.18	-	-	70,000
	225-2nd Non-guaranteed Public subscription bond	2024.04.18	2.35	80,000	80,000
	226-1st Non-guaranteed Public subscription bond	2022.09.17	-	-	90,000
	226-2nd Non-guaranteed Public subscription bond	2024.09.13	2.19	60,000	60,000
	227-1st Non-guaranteed Public subscription bond	2023.01.30	1.89	80,000	80,000
	227-2nd Non-guaranteed Public subscription bond	2025.01.30	2.11	70,000	70,000
	228th Non-guaranteed Public subscription bond	2023.06.09	2.39	97,000	97,000
	229th FRN	2023.11.30	5.83	38,019	35,565
	230-1st Non-guaranteed Public	2024.02.05	1.50	100,000	100,000

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

subscription bond				
230-2nd Non-guaranteed Public	2026.02.05	1.88	50,000	50,000
subscription bond				
231-1st Non-guaranteed Public	2024.05.07	1.68	85,000	85,000
subscription bond				
231-2nd Non-guaranteed Public	2026.05.07	2.25	65,000	65,000
subscription bond				
232th FRN	2025.01.25	2.34	35,131	-
233-1st Non-guaranteed	2025.02.07	3.10	100,000	-
233-2nd Non-guaranteed	2027.02.05	3.41	50,000	-
234th Private subscription bond	2025.06.27	4.88	100,000	-
235th Non-guaranteed	2023.02.13	3.21	93,000	93,000
236 Non-guaranteed	2023.05.29	3.90	40,000	40,000
237th Private subscription bond	2023.12.02	3.14	30,000	30,000
238th Non-guaranteed	2023.02.16	2.17	120,000	120,000
239-1st Non-guaranteed	2023.04.30	2.03	40,000	40,000
239-2nd Non-guaranteed	2024.04.30	2.44	120,000	120,000
240th FRN	2024.07.19	5.13	38,019	35,565
241-1st Private subscription bond	2023.07.26	2.50	20,000	20,000
241-2nd Private subscription bond	2023.07.26	2.50	20,000	20,000
242-1st Private subscription bond	2023.08.25	2.50	35,000	35,000
242-2nd Private subscription bond	2023.08.25	2.50	5,000	5,000
243-1st Non-	2024.02.17	3.72	66,000	-

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

	guaranteed					
	243-2nd Non-guaranteed	2025.02.17	4.11	64,000		-
	244th Private subscription bond	2025.04.13	4.10	10,000		-
	245-1st Private subscription bond	2023.10.28	3.88	80,000		-
	245-2nd Private subscription bond	2023.10.28	3.88	20,000		-
Hanwha Engineering and Construction Corp.	101-2nd Public subscription bond	2022.05.30	-	-		70,000
	102-2nd Public subscription bond	2022.09.20	-	-		45,000
	105th Private subscription bond	2022.04.13	-	-		10,000
	106-1st Public subscription bond	2022.05.29	-	-		60,000
Hanwha Aerospace CO.,LTD.Co., Ltd.	119th Private subscription bond	2023.03.15	3.50	20,000		20,000
	120-2nd Public subscription bond	2023.05.02	3.18	55,000		55,000
	121-2nd Public subscription bond	2023.11.05	2.98	40,000		40,000
	122-1st Public subscription bond	2022.04.29	-	-		100,000
	122-2nd Public subscription bond	2024.04.30	2.30	100,000		100,000
	123-1st Public subscription bond	2022.09.30	-	-		70,000
	123-2nd Public subscription bond	2024.10.02	2.10	80,000		80,000
	124th Public subscription bond	2023.04.28	2.37	150,000		150,000
	FRN Private subscription bond in foreign currency	2023.10.20	LIBOR 3M +1.8	63,365		59,275

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

	125-1st Public subscription bond	2024.04.28	1.62	260,000	260,000
	125-2nd Public subscription bond	2026.04.28	2.19	140,000	140,000
	FRN Private subscription bond in foreign currency	2025.08.12	Compounded SOFR 3M + 1.05	38,019	-
	2nd Defense Private subscription bond	2024.03.27	2.76	50,000	50,000
Hanwha Defense Systems Corp.	3rd Private subscription bond	2022.10.11	-	-	20,000
Hanwha Systems Co., Ltd.	3-1st Non-guaranteed private subscription bond	2022.04.13	-	-	30,000
	3-2nd Non-guaranteed private subscription bond	2024.07.05	2.10	30,000	30,000
Hanwha Hotel & Resort Inc.	45th Public subscription bond	2022.02.28	-	-	35,000
	46th Private subscription bond	2022.02.22	-	-	10,000
Hanwha Solutions Co., Ltd.	254-2nd Public subscription bond	2023.11.29	2.50	90,000	90,000
	255th Public subscription bond	2024.01.31	2.31	150,000	150,000
	256th FRN	2022.04.04	-	-	237,100
	257th FRN	2022.10.11	-	-	59,275
	258th FRN	2022.10.11	-	-	59,275
	259th FRN	2022.10.11	-	-	59,275
	260-1st Public subscription bond	2022.10.24	-	-	110,000
	260-2nd Public subscription bond	2024.10.24	1.98	80,000	80,000
	260-3rd Public subscription bond	2026.10.24	2.28	60,000	60,000

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

	269-1st Public subscription bond	2023.01.20	1.83	140,000	140,000
	269-2nd Public subscription bond	2025.01.22	2.04	140,000	140,000
	270th Public subscription bond	2023.04.21	2.38	210,000	210,000
	271st Public subscription bond	2023.06.30	2.63	40,000	40,000
	273rd FRN	2022.07.19	-	-	35,565
	Green bond	2024.04.19	3.00	181,440	186,260
	275-1st (green bond) Public subscription bond	2024.06.17	1.70	70,000	70,000
	275-2nd (green bond) Public subscription bond	2026.06.17	2.06	30,000	30,000
	276th FRN	2026.10.07	3M EL+1.20	135,120	134,234
	277th FRN	2024.11.23	3ML+1.04	126,730	118,550
	278th FRN	2024.12.30	3ML+0.81	88,711	82,985
	280th Kimchi bond	2025.03.31	3M Term SOFR + 1.50	63,365	-
	279-1st Public subscription bond	2025.01.24	2.77	275,000	-
	279-2nd Public subscription bond	2027.01.22	3.03	105,000	-
	281th Private subscription bond	2025.05.07	3M Term SOFR+1.42	101,384	-
	282th Private subscription bond	2025.05.13	3M Term SOFR+1.50	63,365	-
	283th Private subscription bond	2025.10.14	3M Term SOFR+1.13	126,730	-
	284th Private subscription bond	2025.10.17	3M Term SOFR+1.18	63,365	-
	285-1st Public subscription bond	2024.10.25	6.04	100,000	-
	285-2nd Public subscription bond	2025.10.27	6.18	50,000	-
Hanwha Q CELLS	FRN	2022.01.10	-	-	47,420

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Co., Ltd.						
Hanwha Q CELLS Investment Co., Ltd.	1st Private subscription bond	2023.06.16	1.70	80,004	79,993	
Hanwha Q CELLS Malaysia Sdn. Bhd.	1st Public subscription bond	2024.08.30	3.05	42,735	42,200	
H Properties TMK	Private subscription bond	2025.12.31	1.70	953	1,030	
REC Silicon ASA	Subordinated secured bond	2023.04.01	11.50	139,403	-	
	Subtotal			<u>5,590,858</u>	<u>5,288,567</u>	
	Less: present value discount			(13,002)	(12,377)	
	Less: current portion (including discount on bonds)			<u>(1,744,899)</u>	<u>(1,366,777)</u>	
	Total			<u>₩ 3,832,957</u>	<u>₩ 3,909,413</u>	

Meanwhile, some borrowings and debentures are contracted to comply with credit ratings, debt ratios and EBITDA rates.

22. Other Financial Liabilities (Non-financial Business)

(1) Details of other financial liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
	Current	Non-current	Current	Non-current
Derivatives	₩ 29,865	₩ 159,747	₩ 11,280	₩ 1,571
Deposits received	179,806	776,747	289,642	625,336
Less: present value discounts	(3,670)	(223,542)	(1,637)	(220,283)
Accrued expenses	1,130,133	193,120	605,372	55,822
Financial guarantee contract liabilities ¹	9,964	65,599	7,476	61,396
Others	166,876	668,521	160,116	704,326
Total	<u>₩ 1,512,974</u>	<u>₩ 1,640,192</u>	<u>₩ 1,072,249</u>	<u>₩ 1,228,168</u>

¹ The Group provides credit guarantees for developers on housing project loans and others as at December 31, 2022 (Note 58).

(2) Book amount and fair value of non-current deposits received of non-financial business as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
	Book amount	Fair value	Book amount	Fair value
Non-current deposits received	₩ 553,205	₩ 568,255	₩ 405,053	₩ 456,825

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

23. Other Liabilities (Non-financial Business)

(1) Details of other liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
	Current	Non-current	Current	Non-current
Advances received	₩ 3,956,930	₩ 141,055	₩ 2,643,987	₩ 152,019
Withholdings	115,019	-	103,703	-
VAT payables	51,126	-	43,966	-
Unearned revenues ¹	96,402	252,900	36,522	251,119
Refund liabilities	1,352	-	1,457	-
Contract liabilities ²	1,988,620	804,557	1,490,886	739,826
Total	₩ 6,209,449	₩ 1,198,512	₩ 4,320,521	₩ 1,142,964

¹ Unearned revenues include a portion of the balance of contract liabilities.

² Due to customers for contract work is included.

(2) Details of contract liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Due to customers for contract work	₩ 1,444,212	₩ 1,038,008
Advances received	1,306,989	936,083
Membership, etc.	281,855	266,256
Customer loyalty	39,541	32,599
Others	2,435	5,482
Total	₩ 3,075,032	₩ 2,278,428

24. Post-employment Benefits (Non-financial Business)

(1) Details of net defined benefit liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Present value of defined benefit obligations	₩ 1,708,435	₩ 1,828,285
Fair value of plan assets	(161,951)	(137,452)
Total	₩ 1,546,484	₩ 1,690,833

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Movements in the defined benefit obligations for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning balance	₩	1,828,285	₩	1,817,299
Current service cost		192,552		215,614
Interest expense		61,608		57,759
Past service cost		11		1
Remeasurements:				
Actuarial gain from changes in demographic assumptions		(60,597)		(1,824)
Actuarial gain from change in financial assumptions		(200,587)		(74,811)
Actuarial loss (gain) from experience adjustments		60,957		(8,819)
Actuarial gain arising from changes in adjustment of retirement age		(158)		(6,945)
Payments from plans:				
Benefit payments		(147,044)		(169,809)
Others ¹		(26,592)		(180)
Ending balance	₩	<u>1,708,435</u>	₩	<u>1,828,285</u>

¹ Others include the impact of changes in consolidations scope, changes in exchange rate and transfer to and from affiliates.

(3) Movements in the fair value of plan assets for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning balance	₩	137,452	₩	117,818
Interest income		10,607		10,495
Remeasurements ¹		(5,352)		(5,335)
Contributions		57,506		70,608
Benefit payments		(27,777)		(26,457)
Others ²		(10,485)		(29,677)
Ending balance	₩	<u>161,951</u>	₩	<u>137,452</u>

¹ Excluded the amount that is included in interest income.

² Others include the impact of changes in consolidations scope, changes in exchange rate and transfer to and from affiliates.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Amounts recognized in the consolidated statements of comprehensive income for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Current service cost	₩	192,563	₩	215,614
Net Interest expense		51,000		47,265
Expense included in employee benefit	₩	243,563	₩	262,879

Amount of ₩ 144,507 million (2021: ₩ 165,024 million) is included in 'cost of manufacturing' and ₩ 98,371 million (2021: ₩ 96,903 million) in 'selling and administrative expenses'. ₩ 685 million (2021: ₩ 952 million) is transferred to construction-in-progress included in property, plant and equipment.

(5) Defined benefit plan

The Group operates defined contribution retirement pension for employees have rendered service entitling them to the contribution. Plan assets are operated in the form of funds independently from the Group's other assets by the control of fiduciary. If an employee leaves the Group before meeting the qualification to obtain vested rights, his contribution benefit will be decreased due to the early retirement. This also leads to the decrease of contribution benefit payables to the employee by the same amount from the early retirement.

The actual expenses on defined contribution retirement pension for the years ended December 31, 2022 and 2021, are ₩ 35,321 million and ₩ 9,010 million, respectively.

(6) Other long-term employee benefits

The Group provide long-term employee benefits that are entitled to employees with certain level of service periods. The expected cost of these benefits is accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans. The re-measurement amount derived from change is actuarial assumptions and the difference between actuarial assumption and the actual result is recognized as a profit and loss. This benefit is assessed by an independent and qualified actuary at the end of every year end.

As at and for the year ended December 31, 2022, the Group recognizes liabilities of ₩ 108,547 million (2021: ₩ 125,292 million) and expense of ₩ 7,660 million (2021: ₩ 22,652 million) in connection with the long-term employee benefits.

(7) The significant actuarial assumptions as at December 31, 2022 and 2021, are as follows:

<i>(in percentage, %)</i>	2022		2021	
Discount rate	1.10 ~ 6.38		3.07 ~ 3.99	
Salary growth rate	2.08 ~ 4.84		2.99 ~ 4.84	

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

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

	Changes in principal assumption	Effect on defined benefit obligations
Discount rate	Increase of 1%	6.92% decrease
	Decrease of 1%	8.00% increase
Salary growth rate	Increase of 1%	8.24% increase
	Decrease of 1%	7.15% decrease

Because there is a correlation between actuarial assumptions, the sensitivity analysis above will not show actual changes in the defined benefit obligation, as changes in assumptions will not occur independently. Also, in the above sensitivity analysis, the present value of the defined benefit obligation was measured using the projected unit credit method applied to measure the defined benefit obligation in the consolidated financial statements.

(9) Plan assets as at December 31, 2022 and 2021, consist of:

(in millions of Korean won)

	2022		2021	
	Amount	Composition	Amount	Composition
Principal guaranteed financial instruments	₩ 156,376	96.56%	₩ 132,200	96.18%
Transferred to National Pension Fund and others	325	0.20%	496	0.36%
Others	5,250	3.24%	4,756	3.46%
Total	<u>₩ 161,951</u>	<u>100.00%</u>	<u>₩ 137,452</u>	<u>100.00%</u>

(10) The weighted average duration of the defined benefit obligation is 1.19~10.23 years.

25.Provisions (Non-financial Business)

(1) Details of provisions as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Current	Non-current	Current	Non-current
Provision for construction warranties	₩ 13,011	₩ 86,899	₩ 4,079	₩ 95,052
Provision for product warranties	68,230	118,701	70,041	104,989
Provision for construction losses	92,534	-	26,182	22,267
Others	108,463	130,497	195,726	123,499
Total	<u>₩ 282,238</u>	<u>₩ 336,097</u>	<u>₩ 296,028</u>	<u>₩ 345,807</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Changes in the provisions for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Provision for construction warranties	Provision for product warranties	Provision for construction losses	Others	Total
Beginning	₩ 99,131	₩ 175,030	₩ 48,449	₩ 319,225	₩ 641,835
Increase	17,104	46,504	49,796	58,635	172,039
Used during year	(4,785)	(31,668)	(43,862)	(46,906)	(127,221)
Reversal	(3,004)	(33)	(29,636)	(14,704)	(47,377)
Others ¹	(8,536)	(2,902)	67,787	(77,290)	(20,941)
Ending	₩ 99,910	₩ 186,931	₩ 92,534	₩ 238,960	₩ 618,335

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

(in millions of Korean won)

	2021				
	Provision for construction warranties	Provision for product warranties	Provision for construction losses	Others	Total
Beginning	₩ 85,824	₩ 164,542	₩ 60,686	₩ 408,656	₩ 719,708
Increase	29,311	62,824	20,427	278,521	391,083
Used during year	(10,154)	(13,712)	(7,971)	(168,497)	(200,334)
Reversal	(4,116)	(3,303)	(25,116)	(119,510)	(152,045)
Others ¹	(1,734)	(35,321)	423	(79,945)	(116,577)
Ending	₩ 99,131	₩ 175,030	₩ 48,449	₩ 319,225	₩ 641,835

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

26. Construction Contract (Non-financial Business)

(1) Changes in construction contract balance for the year ended December 31, 2022, are as follows:

(in millions of Korean won)

	2022			
	Beginning	Changes	Recognized construction revenue	Ending
Domestic architecture construction	₩ 2,587,797	₩ 138,746	₩ (1,308,551)	₩ 1,417,992
Domestic development construction	8,027,098	2,073,560	(1,649,099)	8,451,559
Domestic civil construction	1,838,250	563,363	(317,005)	2,084,608
Domestic plant construction	938,844	286,292	(553,900)	671,236
Overseas subcontract ¹	7,041,309	321,317	(81,628)	7,280,998
Aviation engine division	275,755	328,177	(261,806)	342,126
Defense division	4,466,887	2,536,290	(1,416,967)	5,586,210
Photovoltaic	172,571	639,327	(384,592)	427,306
Others	803,550	655,150	(626,145)	832,555
Total	<u>₩ 26,152,061</u>	<u>₩ 7,542,222</u>	<u>₩ (6,599,693)</u>	<u>₩ 27,094,590</u>

¹ Regarding the construction of Bismayah New City and social infrastructure, which the Group was carrying out in Iraq, the Group notified the contract cancellation on October 7, 2022, as NIC, the customer of this construction, breached the contract by delaying and not paying progress payment. As a result, the contract cancellation took effect on October 29, 2022.

Subsequently, the Group negotiated with NIC a revised contract for the purpose of resuming the entire construction of Bismayah New Town and social infrastructure, and agreed to partially resume the above construction under the condition of paying some unpaid progress payment. The agreement was virtually completed as at December 31, 2022, and it was agreed to partially resume construction on January 3, 2023.

As at December 31, 2022, the Group's assets and liabilities recognized in relation to the Iraqi Bismayah New Town and social infrastructure construction are ₩129.57 billion and ₩106.21 billion, respectively.

However, even after the agreement to partially resume construction, the Group continues to negotiate with NIC the amended contract to resume the full construction of Bismayah New Town and social infrastructure with the main content of the maintaining the existing contract terms. As the result of negotiations on the amended contract between the Group and NIC is currently uncertain, the amount cannot be reasonably estimated and is therefore not reflected in the current financial statements.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Details of accumulated contract gains and losses in relation to construction contract in progress as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Accumulated contract revenue	Accumulated contract cost of sales	Accumulated profit or loss	Retention
Domestic architecture construction	₩ 2,154,977	₩ 1,968,257	₩ 186,720	₩ -
Domestic development construction	3,095,617	2,685,260	410,357	-
Domestic civil construction	2,130,185	1,998,024	132,161	-
Domestic plant construction	1,220,609	1,123,936	96,673	-
Overseas subcontract	7,556,841	6,492,491	1,064,350	91,972
Aviation engine division	503,680	487,545	16,135	-
Defense division	4,200,783	3,932,273	268,510	-
Photovoltaic	426,313	409,077	17,236	-
Others	1,053,458	939,870	113,588	-
Total	<u>₩ 22,342,463</u>	<u>₩ 20,036,733</u>	<u>₩ 2,305,730</u>	<u>₩ 91,972</u>

(in millions of Korean won)

	2021			
	Accumulated contract revenue	Accumulated contract cost of sales	Accumulated profit or loss	Retention
Domestic architecture construction	₩ 1,410,287	₩ 1,239,658	₩ 170,629	₩ -
Domestic development construction	3,159,622	2,751,946	407,676	-
Domestic civil construction	2,014,189	1,889,770	124,419	-
Domestic plant construction	1,337,123	1,184,604	152,519	-
Overseas subcontract	7,175,311	6,219,718	955,593	88,144
Aviation engine division	459,306	434,605	24,701	-
Defense division	2,853,067	2,723,522	129,545	-
Photovoltaic	150,869	141,110	9,759	-
Others	731,800	622,315	109,485	-
Total	<u>₩ 19,291,574</u>	<u>₩ 17,207,248</u>	<u>₩ 2,084,326</u>	<u>₩ 88,144</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Details of contract assets and contract liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Contract assets		Contract liabilities	
Domestic architecture construction	₩	169,756	₩	31,886
Domestic development construction		128,147		325,719
Domestic civil construction		122,972		50,859
Domestic plant construction		11,969		48,736
Overseas subcontract ¹		4,758		945,724
Aviation engine division		75,969		225,713
Defense division		97,236		862,469
Photovoltaic		58,956		9,297
Others		255,607		27,188
Total	₩	<u>925,370</u>	₩	<u>2,527,591</u>

¹ Certain fees related to overseas subcontract were received as payment for construction work in advance and accounted for advances receivable. Billings are made according to certain milestone; thus, contract assets can be increased prior to the milestone.

(in millions of Korean won)

	2021			
	Contract assets		Contract liabilities	
Domestic architecture construction	₩	65,150	₩	85,052
Domestic development construction		113,565		150,541
Domestic civil construction		77,902		22,072
Domestic plant construction		28,125		5,986
Overseas subcontract ¹		9,427		1,125,252
Aviation engine division		107,113		81,962
Defense division		143,936		499,957
Photovoltaic		35,456		34,011
Others		208,563		35,645
Total	₩	<u>789,237</u>	₩	<u>2,040,478</u>

¹ Certain fees related to overseas subcontract were received as payment for construction work in advance and accounted for advances receivable. Billings are made according to certain milestone; thus, contract assets can be increased prior to the milestone.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Amount of effect on current and future profits or losses caused by changes in construction contract in progress for the years ended December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

		2022													
		Provision for construction losses		Changes in estimated total contract revenue		Changes in estimated total contract cost of sales		Effect on current profit or losses		Effect on future profits and losses		Changes in contract assets		Changes in contract liabilities	
Domestic architecture construction	₩	-	₩	33,915	₩	31,255	₩	2,572	₩	88	₩	5,402	₩	(2,830)	
Domestic development construction		1,218		8,218		(5,754)		20,959		(6,987)		25,894		(4,935)	
Domestic civil construction		630		36,472		29,943		2,687		3,842		2,806		(119)	
Domestic plant construction		-		35,363		33,016		43		2,304		43		-	
Overseas subcontract		572		-		(9,631)		9,631		-		9,631		-	
Aviation engine division		9,644		10,360		11,438		(716)		(362)		1,128		(1,844)	
Defense division		38,981		22,297		29,411		(2,672)		(4,442)		34,406		(37,078)	
Photovoltaic		-		4,632		3,927		486		219		1,066		(580)	
Others		7,480		33,505		56,918		(9,922)		(13,491)		16,896		(26,818)	
total	₩	58,525	₩	184,762	₩	180,523	₩	23,068	₩	(18,829)	₩	97,272	₩	(74,204)	

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of
Korean won)

		2021										
		Provision for construction losses	Changes in estimated total contract revenue	Changes in estimated total contract cost of sales	Effect on current profit or losses	Effect on future profits and losses	Changes in contract assets	Changes in contract liabilities				
Domestic architecture construction	₩	-	₩ 975,400	₩ 847,462	₩ 3,333	₩ 124,605	₩ 3,333	₩	-			
Domestic development construction		661	56,639	(15,812)	59,705	12,746	59,705		-			
Domestic civil construction		1,788	71,632	52,442	12,069	7,121	12,069		-			
Domestic plant construction		-	117,246	81,121	34,659	1,466	34,659		-			
Overseas subcontract		3,492	723	2,236	(2,010)	497	3,330		(5,340)			
Aviation engine division		3,787	492	10,754	(9,303)	(959)	-		(9,303)			
Defense division		38,071	102,124	147,101	(9,073)	(35,904)	31,378		(40,451)			
Photovoltaic		-	33	(1,151)	1,184	-	1,185		(1)			
Others		238	13,648	9,060	3,491	1,097	15,770		(12,279)			
total	₩	48,037	₩ 1,337,937	₩ 1,133,213	₩ 94,055	₩ 110,669	₩ 161,429	₩	(67,374)			

(5) Details of construction contract in progress for which the amount of contract revenue is more than 5% of total revenue as at December 31, 2022 and 2021, are as follows:

(in millions of
Korean won)

		2022							
		Contract	Date of contract	Due date	Rate of progress (%)	Contract assets		Receivables of construction	
						Total amount	Provision	Total amount	Provision
Overseas subcontract	₩	BNCP	2012-05-30	2027-12-31	46.70%	₩ -	₩ -	₩ 592,635	₩ 11,982

(in millions of
Korean won)

		2021							
		Contract	Date of contract	Due date	Rate of progress (%)	Contract assets		Receivables of construction	
						Total amount	Provision	Total amount	Provision
Overseas subcontract	₩	BNCP	2012-05-30	2027-12-31	44.83%	₩ -	₩ -	₩ 551,905	₩ 20,651

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

27. Financial Instruments by Category (Financial Business)

(1) Categorizations of financial instruments as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Hedging derivative financial instruments	Financial assets at fair value through other comprehensive income	Total
Cash and cash equivalents	₩ 2,542,671	₩ -	₩ -	₩ -	₩ 2,542,671
Deposits	1,746,376	17,664	-	130,867	1,894,907
Securities	21,316,129	30,477,905	-	30,738,213	82,532,247
Loans and other receivables	32,161,757	685,632	-	656,081	33,503,470
Derivative financial assets	-	539,616	426,364	-	965,980
Other financial assets	2,399,130	-	-	-	2,399,130
Total	<u>₩ 60,166,063</u>	<u>₩ 31,720,817</u>	<u>₩ 426,364</u>	<u>₩ 31,525,161</u>	<u>₩ 123,838,405</u>

(in millions of Korean won)

	2021				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Hedging derivative financial instruments	Financial assets at fair value through other comprehensive income	Total
Cash and cash equivalents	₩ 1,399,454	₩ -	₩ -	₩ -	₩ 1,399,454
Deposits	1,167,679	-	-	159,835	1,327,514
Securities	22,513,398	28,166,232	-	39,514,897	90,194,527
Loans and other receivables	30,618,248	629,894	-	818,209	32,066,351
Derivative financial assets	-	147,755	36,194	-	183,949
Other financial assets	2,572,157	-	-	-	2,572,157
Total	<u>₩ 58,270,936</u>	<u>₩ 28,943,881</u>	<u>₩ 36,194</u>	<u>₩ 40,492,941</u>	<u>₩ 127,743,952</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Categorizations of financial liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Financial liabilities at fair value through profit or loss	Hedging derivative financial instruments	Financial liabilities at amortized cost	Total
Deposit liabilities	₩ -	₩ -	₩ 1,986,810	₩ 1,986,810
Derivative financial liabilities	524,749	1,770,488	-	2,295,237
Other financial liabilities	2,769,310	-	12,090,726	14,860,036
Total	<u>₩ 3,294,059</u>	<u>₩ 1,770,488</u>	<u>₩ 14,077,536</u>	<u>₩ 19,142,083</u>

(in millions of Korean won)

	2021			
	Financial liabilities at fair value through profit or loss	Hedging derivative financial instruments	Financial liabilities at amortized cost	Total
Deposit liabilities	₩ -	₩ -	₩ 2,265,319	₩ 2,265,319
Derivative financial liabilities	277,904	711,507	-	989,411
Other financial liabilities	1,356,666	-	9,854,073	11,210,739
Total	<u>₩ 1,634,570</u>	<u>₩ 711,507</u>	<u>₩ 12,119,392</u>	<u>₩ 14,465,469</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Net gains or losses on each category of financial instruments for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)	2022						
	Interest income	Dividend income	Commission income	Interest expense	Gain (loss) on valuation and transaction	Gain (loss) on foreign currency transaction and translation	Total
Financial assets at fair value through profit or loss	₩ 255,074	₩ 210,154	₩ 790	₩ -	₩ (456,481)	₩ (19,763)	₩ (10,226)
Financial assets at fair value through other comprehensive income	915,096	30,307	-	-	(8,390)	268,701	1,205,714
Financial assets at amortized cost	2,311,408	-	15,079	-	(30,158)	476,980	2,773,309
Derivative financial instruments	-	-	-	-	(1,249,673)	-	(1,249,673)
Financial liabilities at amortized cost	-	-	-	(286,173)	-	(72,923)	(359,096)
Financial liabilities at fair value through profit or loss	-	-	-	(938)	(8,589)	-	(9,527)
Total	₩ 3,481,578	₩ 240,461	₩ 15,869	₩ (287,111)	₩ (1,753,291)	₩ 652,995	₩ 2,350,501

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(in millions of
Korean won)

	2021										
	Interest income	Dividend income	Commission income	Interest expense	Gain (loss) on valuation and transaction	Gain (loss) on foreign currency transaction and translation	Total				
Financial assets at fair value through profit or loss	₩ 193,992	₩ 200,912	₩ 3,353	₩ -	₩ 473,054	₩ 710,232	₩ 1,581,543				
Financial assets at fair value through other comprehen- sive income	830,347	23,505	-	-	178,105	218,358	1,250,315				
Financial assets at amortized cost	2,166,677	-	18,241	-	280,497	832,432	3,297,847				
Derivative financial instruments	-	-	-	-	(1,212,783)	-	(1,212,783)				
Financial liabilities at amortized cost	-	-	-	(111,192)	-	21	(111,171)				
Financial liabilities at fair value through profit or loss	-	-	-	85	(31,586)	-	(31,501)				
Total	₩ 3,191,016	₩ 224,417	₩ 21,594	₩ (111,107)	₩ (312,713)	₩ 1,761,043	₩ 4,774,250				

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

28. Cash and Cash Equivalents and Deposits (Financial Business)

(1) Details of cash and cash equivalents and deposits as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Cash and cash equivalents				
Cash and demand deposits	₩	2,542,671	₩	1,399,454
Deposits				
Term deposits		1,187,634		598,238
Others		707,298		729,286
Provision for impairment		(25)		(10)
Subtotal		<u>1,894,907</u>		<u>1,327,514</u>
Total	₩	<u>4,437,578</u>	₩	<u>2,726,968</u>

(2) Details of restricted to use deposits as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021		Reason for restrictions
Deposits					
The Korea Securities Finance Corporation and others	₩	543,269	₩	476,697	Collateral for transactions and others
Vietinbank and others		5,376		13,025	Collateral for overdraft
The Korea Securities Finance Corporation		1,077		-	Investor's deposit
Korea Federation of Savings Banks and others		55,255		50,079	Others
Total	₩	<u>604,976</u>	₩	<u>539,801</u>	

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

29. Securities (Financial Business)

(1) Details of securities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Financial assets at fair value through profit or loss	₩	30,477,905	₩	28,166,231
Financial assets at fair value through other comprehensive income		30,738,213		39,514,897
Financial assets at amortized cost		21,316,130		22,513,399
Total	₩	<u>82,532,248</u>	₩	<u>90,194,527</u>

(2) Details of financial assets at fair value through profit or loss as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Equity securities				
Stocks	₩	947,605	₩	1,569,761
Investments		208,932		149,731
Subtotal		<u>1,156,537</u>		<u>1,719,492</u>
Debt securities				
Stocks		103,425		92,546
Government and public bonds		449,248		261,113
Special bonds		2,456,748		2,254,098
Financial bonds		690,376		295,199
Corporate bonds		2,344,965		2,163,204
Subtotal		<u>6,044,762</u>		<u>5,066,160</u>
Beneficiary certificates		10,886,793		8,726,648
Overseas securities		10,243,785		9,110,931
Other securities		2,146,028		3,543,000
Total	₩	<u>30,477,905</u>	₩	<u>28,166,231</u>

In addition, the Group provides certain of its financial assets at fair value through profit or loss as collateral for repurchase agreements (Note 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Details of financial assets at fair value through other comprehensive income as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Equity securities				
Stocks	₩	758,358	₩	1,127,618
Investments		904		604
Subtotal		<u>759,262</u>		<u>1,128,222</u>
Debt securities				
Government and public bonds		13,699,232		18,558,262
Special bonds		3,962,014		5,428,545
Financial bonds		274,081		428,978
Corporate bonds		2,654,782		3,650,675
Overseas securities		5,890,185		8,618,386
Others ¹		2,920,319		1,371,075
Subtotal		<u>29,400,613</u>		<u>38,055,921</u>
Other securities		<u>578,338</u>		<u>330,754</u>
Total	₩	<u>30,738,213</u>	₩	<u>39,514,897</u>

¹ Transfer transactions that do not meet the derecognition requirements in accordance with Korean IFRS 1109. The Group receives the commission through the loan of financial assets currently held in the Korea Securities Depository as at December 31, 2022.

In addition, the Group provides certain of its financial assets at fair value through other comprehensive income as collateral for repurchase agreements (Note 58).

(4) Changes in carrying amount of financial assets at fair value through other comprehensive income (debt securities) for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
	12 months expected credit losses measurement		Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	38,055,921	₩	-	₩	-	₩	38,055,921
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit-impaired financial assets		-		-		-		-
Additions(+)		2,709,926		-		-		2,709,926
Repayments(-)		(2,695,980)		-		-		(2,695,980)
Others ¹		(8,669,254)		-		-		(8,669,254)
Ending balance	₩	<u>29,400,613</u>	₩	-	₩	-	₩	<u>29,400,613</u>

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	2021						
		12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets	Total
Beginning balance	₩	32,850,961	₩	-	₩	-	₩ 32,850,961
Transfer to 12-month ECLs		-		-		-	-
Transfer to lifetime ECLs		-		-		-	-
Transfer to credit- impaired financial assets		-		-		-	-
Additions(+)		10,805,206		-		-	10,805,206
Repayments(-)		(3,735,722)		-		-	(3,735,722)
Others ¹		(1,864,524)		-		-	(1,864,524)
Ending balance	₩	38,055,921	₩	-	₩	-	₩ 38,055,921

¹ Others include valuation of fair value, foreign currency translation and others.

(5) Changes in provision for impairment on financial assets at fair value through other comprehensive income (debt securities) for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022						
		12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets	Total
Beginning balance	₩	2,991	₩	-	₩	-	₩ 2,991
Transfer to 12-month ECLs		-		-		-	-
Transfer to lifetime ECLs		-		-		-	-
Transfer to credit- impaired financial assets		-		-		-	-
Reversal		(449)		-		-	(449)
Written off and others		-		-		-	-
Others ¹		-		-		-	-
Ending balance	₩	2,542	₩	-	₩	-	₩ 2,542

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	2021			
	12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total
Beginning balance	₩ 3,510	₩ -	₩ -	₩ 3,510
Transfer to 12-month ECLs	-	-	-	-
Transfer to lifetime ECLs	-	-	-	-
Transfer to credit- impaired financial assets	-	-	-	-
Increase in provision	15	-	-	15
Written off and others	(534)	-	-	(534)
Others ¹	-	-	-	-
Ending balance	₩ 2,991	₩ -	₩ -	₩ 2,991

¹ Others include valuation of fair value, foreign currency translation and others.

(6) Details of financial assets at amortized cost as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Debt securities		
Government and public bonds	₩ 7,747,308	₩ 7,368,497
Special bonds	7,632,364	7,972,580
Corporate bonds	758,633	798,516
Overseas securities	5,178,467	6,374,438
Subtotal	21,316,772	22,514,031
Provision for impairment	(642)	(632)
Total	₩ 21,316,130	₩ 22,513,399

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(7) Changes in carrying amount of financial assets at amortized cost for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	22,514,031	₩	-	₩	-	₩	22,514,031
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Additions(+)		3,175,748		-		-		3,175,748
Repayments(-)		(5,180,936)		-		-		(5,180,936)
Others ¹		807,929		-		-		807,929
Ending balance	₩	21,316,772	₩	-	₩	-	₩	21,316,772

¹ Others include valuation of fair value, foreign currency translation and others.

<i>(in millions of Korean won)</i>	2021							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	25,272,723	₩	-	₩	-	₩	25,272,723
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Additions(+)		-		-		-		-
Repayments(-)		(3,338,233)		-		-		(3,338,233)
Others ¹		579,541		-		-		579,541
Ending balance	₩	22,514,031	₩	-	₩	-	₩	22,514,031

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(8) Changes in provision for impairment on financial assets at amortized cost for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
	12 months expected credit losses measurement		Overall period expected credit losses		Credit-impaired financial assets	Total		
Beginning balance	₩	632	₩	-	₩	-	₩	632
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Increase in provision		10		-		-		10
Written off and others		-		-		-		-
Others ¹		-		-		-		-
Ending balance	₩	642	₩	-	₩	-	₩	642

¹ Others include valuation of fair value, foreign currency translation and others.

<i>(in millions of Korean won)</i>	2021							
	12 months expected credit losses measurement		Overall period expected credit losses		Credit-impaired financial assets	Total		
Beginning balance	₩	931	₩	-	₩	-	₩	931
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Reversal		-		-		-		-
Written off and others		(299)		-		-		(299)
Others ¹		-		-		-		-
Ending balance	₩	632	₩	-	₩	-	₩	632

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

30. Loans and Receivables (Financial Business)

(1) Details of loans and receivables as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022			
	Loan at fair value through profit or loss	Loan at fair value through other comprehensive income	Loan at amortized cost	Total
Call loan	₩ -	₩ -	₩ 24	₩ 24
Policy loans	-	-	8,616,170	8,616,170
Loans secured by securities	-	-	132,464	132,464
Loans secured by real estate	1,500	-	9,477,890	9,479,390
Unsecured loan	684,094	-	8,739,025	9,423,119
Loans secured by third-party guarantee	-	-	651,724	651,724
Loans secured by deposit and instalment savings	-	-	190	190
Other loans	37	656,151	4,683,593	5,339,781
Subtotal	685,631	656,151	32,301,080	33,642,862
Deferred loan origination cost and fee	-	-	20,692	20,692
Present value discount	-	-	(235)	(235)
Provision for impairment	-	(70)	(159,780)	(159,850)
Total	₩ 685,631	₩ 656,081	₩ 32,161,757	₩ 33,503,469

<i>(in millions of Korean won)</i>	2021			
	Loan at fair value through profit or loss	Loan at fair value through other comprehensive income	Loan at amortized cost	Total
Policy loans	₩ -	₩ -	₩ 8,200,475	₩ 8,200,475
Loans secured by securities	-	-	175,655	175,655
Loans secured by real estate	3,114	-	9,892,860	9,895,974
Unsecured loan	626,744	-	8,189,196	8,815,940
Loans secured by third-party guarantee	-	-	590,784	590,784
Loans secured by deposit and instalment savings	-	-	132	132
Other loans	37	818,208	3,684,765	4,503,010
Subtotal	629,895	818,208	30,733,867	32,181,970
Deferred loan origination cost and fee	-	-	32,176	32,176
Present value discount	-	-	(658)	(658)
Provision for impairment	-	-	(147,138)	(147,138)
Total	₩ 629,895	₩ 818,208	₩ 30,618,247	₩ 32,066,350

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Changes in carrying amount of loan at fair value through other comprehensive income before provision for impairment for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
	12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets		Total	
Beginning balance	₩	818,318	₩	-	₩	-	₩	818,318
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Exercise(+)		72,874		-		-		72,874
Repayments(-)		(109,142)		-		-		(109,142)
Others ¹		(125,899)		-		-		(125,899)
Ending balance	₩	656,151	₩	-	₩	-	₩	656,151

¹ Others include valuation of fair value, foreign currency translation and others.

<i>(in millions of Korean won)</i>	2021							
	12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets		Total	
Beginning balance	₩	888,346	₩	-	₩	-	₩	888,346
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Exercise(+)		-		-		-		-
Repayments(-)		(26,044)		-		-		(26,044)
Others ¹		(43,984)		-		-		(43,984)
Ending balance	₩	818,318	₩	-	₩	-	₩	818,318

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Changes in provision for impairment on loan at fair value through other comprehensive income for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
	12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets		Total	
Beginning balance	₩	110	₩	-	₩	-	₩	110
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Reversal		(40)		-		-		(40)
Written off and others		-		-		-		-
Others ¹		-		-		-		-
Ending balance	₩	70	₩	-	₩	-	₩	70

¹ Others include unwinding effect, recovery of impairment loss, exchange rate fluctuations and others.

<i>(in millions of Korean won)</i>	2021							
	12 months expected credit losses measurement		Lifetime expected credit losses		Credit-impaired financial assets		Total	
Beginning balance	₩	113	₩	-	₩	-	₩	113
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs		-		-		-		-
Transfer to credit- impaired financial assets		-		-		-		-
Increase in provision		-		-		-		-
Written off and others		(3)		-		-		(3)
Others ¹		-		-		-		-
Ending balance	₩	110	₩	-	₩	-	₩	110

¹ Others include unwinding effect, recovery of impairment loss, exchange rate fluctuations and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Changes in carrying amount of loan at amortized cost before provision for impairment for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	29,666,258	₩	924,866	₩	142,743	₩	30,733,867
Transfer to 12-month ECLs		468,226		(467,935)		(291)		-
Transfer to lifetime ECLs		(303,501)		305,368		(1,867)		-
Transfer to credit-impaired financial assets		(62,321)		(18,878)		81,199		-
Exercise(+)		4,980,141		64,672		12,526		5,057,339
Repayments(-)		(3,294,298)		(247,885)		(33,225)		(3,575,408)
Others ¹		75,381		40,702		(30,802)		85,281
Ending balance	₩	<u>31,529,886</u>	₩	<u>600,910</u>	₩	<u>170,283</u>	₩	<u>32,301,080</u>

¹ Others include valuation of fair value, foreign currency translation and others.

<i>(in millions of Korean won)</i>	2021							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	29,878,570	₩	949,580	₩	155,418	₩	30,983,568
Transfer to 12-month ECLs		337,104		(337,078)		(26)		-
Transfer to lifetime ECLs		(486,082)		486,442		(360)		-
Transfer to credit-impaired financial assets		(55,137)		(17,218)		72,355		-
Exercise(+)		10,454,192		106,515		3,386		10,564,093
Repayments(-)		(10,529,894)		(263,371)		(48,574)		(10,841,839)
Others ¹		67,505		(4)		(39,456)		28,045
Ending balance	₩	<u>29,666,258</u>	₩	<u>924,866</u>	₩	<u>142,743</u>	₩	<u>30,733,867</u>

¹ Others include valuation of fair value, foreign currency translation and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(5) Changes in provision for impairment on loan at amortized cost for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	76,373	₩	21,902	₩	48,863	₩	147,138
Transfer to 12-month ECLs		8,255		(8,236)		(19)		-
Transfer to lifetime ECLs		(2,802)		3,334		(532)		-
Transfer to credit- impaired financial assets		(2,943)		(1,383)		4,326		-
Increase in provision		4,893		4,378		30,261		39,532
Written off and others		(1,446)		1,324		(31,852)		(31,974)
Others ¹		(4,031)		(4,807)		13,922		5,084
Ending balance	₩	78,299	₩	16,512	₩	64,969	₩	159,780

¹ Others include unwinding effect, recovery of impairment loss, exchange rate fluctuations and others.

<i>(in millions of Korean won)</i>	2021							
		12 months expected credit losses measurement	Lifetime expected credit losses	Credit-impaired financial assets	Total			
Beginning balance	₩	93,523	₩	20,426	₩	59,003	₩	172,952
Transfer to 12-month ECLs		6,531		(6,528)		(3)		-
Transfer to lifetime ECLs		(4,478)		4,483		(5)		-
Transfer to credit- impaired financial assets		(1,198)		(952)		2,150		-
Increase in provision		3,709		4,473		17,171		25,353
Written off and others		(23,412)		-		(39,240)		(62,652)
Others ¹		1,698		-		9,787		11,485
Ending balance	₩	76,373	₩	21,902	₩	48,863	₩	147,138

¹ Others include unwinding effect, recovery of impairment loss, exchange rate fluctuations and others.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

31. Other Financial Assets (Financial Business)

(1) Details of other financial assets as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Insurance receivables	₩	522,487	₩	411,057
Other accounts receivable		620,352		1,067,471
Accrued income		1,219,161		1,066,934
Deposit received for guarantee		139,655		126,445
Others		9,046		5,430
Present value discount		(8,208)		(1,653)
Provision for impairment		(103,363)		(103,527)
Total	₩	2,399,130	₩	2,572,157

(2) Changes in provision for impairment on other financial assets for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning	₩	103,527	₩	103,841
Increase in provision		153		1,304
Written off and others		(3,141)		(3,009)
Others ¹		2,824		1,391
Ending	₩	103,363	₩	103,527

¹ Others include unwinding effect and recovery of impairment loss.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

32. Derivative Financial Instruments (Financial Business)

(1) Details of derivative financial instruments as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Trading		Hedging	
	Assets	Liabilities	Assets	Liabilities
Currency				
Currency forward ¹	₩ 182,607	₩ -	₩ 247,002	₩ 168,235
Currency swap ¹	49,536	59,667	175,469	320,601
Stock index				
Stock index option	1,015	5,356	-	-
Credit				
Credit derivative	16,384	3,155	-	-
Derivatives-combined securities				
Stock warrants and conversion rights	627	-	-	-
Interest rate				
Interest rate swap ¹	57,856	114,383	-	27,803
Others				
Option and swap ¹	231,592	342,189	3,892	1,253,848
Total	<u>₩ 539,617</u>	<u>₩ 524,750</u>	<u>₩ 426,363</u>	<u>₩ 1,770,487</u>

¹ The Group has entered into derivative contracts to hedge the exposure to fluctuations in receivables' future fair value and cash flows. The maximum exposure period is March 15, 2039.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>	2021							
	Trading				Hedging			
	Assets		Liabilities		Assets		Liabilities	
Currency								
Currency forward	₩	13,981	₩	-	₩	7,187	₩	140,795
Currency swap ¹		-		163,256		27,539		357,670
Stock index								
Stock index option		2,461		7,765		-		-
Credit								
Credit derivative		6,708		557		-		-
Derivatives-combined securities								
Stock warrants and conversion rights		1,529		-		-		-
Interest rate								
Interest rate swap		13,742		26,846		-		4,398
Others								
Option and swap		109,334		79,482		1,468		208,642
Total	₩	<u>147,755</u>	₩	<u>277,906</u>	₩	<u>36,194</u>	₩	<u>711,505</u>

¹ The Group has entered into currency swap contracts to hedge the exposure to fluctuations in foreign currency receivables' future fair value and cash flows. The maximum exposure period is March 15, 2039.

(2) Details of gains and losses from derivative financial instruments for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022				2021			
	Trading		Hedging		Trading		Hedging	
	Currency							
Currency forward	₩	192,682	₩	(186,600)	₩	(347,766)	₩	(350,863)
Currency swap		-		(1,063,073)		(95,096)		(861,966)
Stock index								
Stock index option		(13,063)		-		22,960		-
Credit								
Credit derivative		17,671		-		17,560		26
Derivatives-combined securities								
Stock warrants and conversion rights		194		-		1,689		-
Interest rate								
Interest rate swap		-		-		27,906		20
Total	₩	<u>197,484</u>	₩	<u>(1,249,673)</u>	₩	<u>(372,747)</u>	₩	<u>(1,212,783)</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) The securities are provided as collateral for derivative instrument transactions of the Group (Note 58).

33. Other Assets (Financial Business)

(1) Details of other assets as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Reinsurance assets	₩	724,357	₩	685,608
Deferred policy acquisition costs		2,371,562		2,316,587
Prepaid expenses		502,821		243,222
Prepaid VAT		488		213
Advance payments		97,038		55,440
Compensation receivables		24,556		25,736
Others		13,023		2,359
Total	₩	<u>3,733,845</u>	₩	<u>3,329,165</u>

(2) Changes in deferred policy acquisition costs for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022						
	Individual insurance			Group insurance	Long term	Pension	Total
	Annuity	Whole life, Term life	Endowment				
Beginning	₩ 73,454	₩ 1,438,117	₩ 6,517	₩ 1,140	₩ 796,713	₩ 646	₩ 2,316,587
Increase	28,695	918,759	62,572	605	399,329	246	1,410,206
Decrease	(44,910)	(803,059)	(66,823)	(637)	(439,239)	(563)	(1,355,231)
Ending	₩ 57,239	₩ 1,553,817	₩ 2,266	₩ 1,108	₩ 756,803	₩ 329	₩ 2,371,562

<i>(in millions of Korean won)</i>	2021						
	Individual insurance			Group insurance	Long term	Pension	Total
	Annuity	Whole life, Term life	Endowment				
Beginning	₩ 99,520	₩ 1,464,919	₩ 14,109	₩ 1,232	₩ 865,996	₩ 1,012	₩ 2,446,788
Increase	28,962	708,387	7,852	491	410,767	376	1,156,835
Decrease	(55,028)	(735,189)	(15,444)	(582)	(480,050)	(743)	(1,287,036)
Ending	₩ 73,454	₩ 1,438,117	₩ 6,517	₩ 1,141	₩ 796,713	₩ 645	₩ 2,316,587

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

34. Property, Plant and Equipment, Investment Property and Intangible Assets (Financial Business)

(1) Details of property, plant and equipment, investment property and intangible assets as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

		2022			
		Acquisition cost	Accumulated depreciation/ amortization	Accumulated impairment losses	Book amount
Property, plant and equipment	Land	₩ 2,148,571	₩ -	₩ (1,238)	₩ 2,147,333
	Buildings	1,648,984	(607,770)	(14,255)	1,026,959
	Structures	589	(349)	(54)	186
	Vehicles	904	(900)	-	4
	Tools and equipment	481,990	(375,246)	-	106,744
	Others	70,237	(38,584)	(9,331)	22,322
	Construction in progress	21,171	-	-	21,171
	Subtotal	<u>4,372,446</u>	<u>(1,022,849)</u>	<u>(24,878)</u>	<u>3,324,719</u>
Investment property	Land	1,331,480	-	-	1,331,480
	Buildings	409,139	-	-	409,139
	Subtotal	<u>1,740,619</u>	<u>-</u>	<u>-</u>	<u>1,740,619</u>
Intangible assets	Goodwill	279,766	-	(111,535)	168,231
	Development costs	452,029	(314,420)	-	137,609
	Membership rights	28,864	-	-	28,864
	Others	391,887	(288,720)	(14,328)	88,839
	Subtotal	<u>1,152,546</u>	<u>(603,140)</u>	<u>(125,863)</u>	<u>423,543</u>
	Total	<u>₩ 7,265,610</u>	<u>₩ (1,625,989)</u>	<u>₩ (150,741)</u>	<u>₩ 5,488,881</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

		2021			
		Acquisition cost	Accumulated depreciation/ amortization	Accumulated impairment losses	Book amount
Property, plant and equipment	Land	₩ 1,451,469	₩ -	₩ (18,626)	₩ 1,432,843
	Buildings	1,946,631	(661,594)	(16,901)	1,268,136
	Structures	589	(335)	(54)	200
	Vehicles	906	(890)	-	16
	Tools and equipment	442,409	(347,579)	-	94,830
	Others	59,421	(32,904)	(9,330)	17,187
	Construction in progress	1,563	-	-	1,563
	Subtotal	<u>3,902,988</u>	<u>(1,043,302)</u>	<u>(44,911)</u>	<u>2,814,775</u>
Investment property	Land	1,336,400	-	-	1,336,400
	Buildings	534,496	-	-	534,496
	Structures	-	-	-	-
Subtotal	<u>1,870,896</u>	<u>-</u>	<u>-</u>	<u>1,870,896</u>	
Intangible assets	Goodwill	278,926	-	(92,799)	186,127
	Development costs	411,122	(286,748)	-	124,374
	Membership rights	19,063	-	-	19,063
	Others	374,019	(268,289)	(14,327)	91,403
Subtotal	<u>1,083,130</u>	<u>(555,037)</u>	<u>(107,126)</u>	<u>420,967</u>	
Total	<u>₩ 6,857,014</u>	<u>₩ (1,598,339)</u>	<u>₩ (152,037)</u>	<u>₩ 5,106,639</u>	

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(2) Changes in property, plant and equipment, investment property and intangible assets for the years ended December 31, 2022 and 2021, are as follows:

(in millions of
Korean won)

		2022									
		Beginning	Acquisitions	Disposals	Depreciation and amortization	Valuation of fair value	Revaluation	Others ¹	Ending		
Property, plant and equipment											
Land	₩	1,432,843	₩ 732	₩ (48,940)	₩ -	₩ -	₩ 938,632	₩ (175,934)	₩	2,147,333	
Buildings		1,268,136	486	(55,529)	(26,189)	-	-	(159,945)		1,026,959	
Structures		200	-	-	(3)	-	-	(11)		186	
Vehicles		16	-	-	(12)	-	-	-		4	
Tools and equipment		94,830	33,291	(268)	(44,845)	-	-	23,736		106,744	
Others		17,187	1,308	(127)	(6,133)	-	-	10,087		22,322	
Construction in progress		1,563	5	-	-	-	-	19,603		21,171	
Subtotal		<u>2,814,775</u>	<u>35,822</u>	<u>(104,864)</u>	<u>(77,182)</u>	<u>-</u>	<u>938,632</u>	<u>(282,465)</u>		<u>3,324,719</u>	
Investment property											
Land		1,336,400	9,778	(132,117)	-	214,344	-	(96,925)		1,331,480	
Buildings		534,496	962	(62,717)	-	(28,932)	-	(34,670)		409,139	
Subtotal		<u>1,870,897</u>	<u>10,740</u>	<u>(194,834)</u>	<u>-</u>	<u>185,412</u>	<u>-</u>	<u>(131,596)</u>		<u>1,740,619</u>	
Intangible assets											
Goodwill		186,127	-	-	-	-	-	(17,896)		168,231	
Development costs		124,374	33,537	-	(27,444)	-	-	7,142		137,609	
Membership rights		19,063	1,101	(6,604)	(3)	-	-	15,307		28,864	
Others		91,403	28,109	(520)	(33,852)	-	-	3,699		88,839	
Subtotal		<u>420,967</u>	<u>62,747</u>	<u>(7,124)</u>	<u>(61,299)</u>	<u>-</u>	<u>-</u>	<u>8,252</u>		<u>423,543</u>	
Total	₩	<u>5,106,639</u>	₩ <u>109,309</u>	₩ <u>(306,822)</u>	₩ <u>(138,481)</u>	₩ <u>185,412</u>	₩ <u>938,632</u>	₩ <u>(405,809)</u>	₩	<u>5,488,881</u>	

¹ Others include changes in scope of consolidation, the effect of changes in exchange rate and change in transfer.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of
Korean won)

	2021							
	Beginning	Acquisitions	Disposals	Depreciation and amortization	Valuation of fair value	Others ¹	Ending	
Property, plant and equipment								
Land	₩ 1,589,626	₩ 2	₩ (5,779)	₩ -	₩ -	₩ (151,006)	₩ 1,432,843	
Buildings	1,370,462	11,830	(4,294)	(53,234)	-	(56,628)	1,268,136	
Structures	21	-	-	(4)	-	183	200	
Vehicles	30	-	-	(15)	-	1	16	
Tools and equipment	79,024	61,588	(825)	(38,836)	-	(6,121)	94,830	
Others	23,524	3,945	(347)	(5,782)	-	(4,153)	17,187	
Construction in progress	20,715	9,086	-	-	-	(28,238)	1,563	
Subtotal	3,083,402	86,451	(11,245)	(97,871)	-	(245,962)	2,814,775	
Investment property								
Land	1,123,275	-	(19,961)	-	64,322	168,765	1,336,400	
Buildings	474,688	217	(38,417)	-	25,279	72,730	534,497	
Structures	194	-	-	-	-	(194)	-	
Subtotal	1,598,156	217	(58,378)	-	89,601	241,301	1,870,896	
Intangible assets								
Goodwill	186,127	-	-	-	-	-	186,127	
Development costs	96,898	64,499	-	(31,688)	-	(5,335)	124,374	
Membership rights	39,286	6,361	(9,437)	(3)	-	(17,144)	19,063	
Others	51,705	51,398	-	(21,104)	-	9,404	91,403	
Subtotal	374,016	122,258	(9,437)	(52,795)	-	(13,075)	420,967	
Total	₩ 5,055,574	₩ 208,926	₩ (79,060)	₩ (150,666)	₩ 89,601	₩ (17,736)	₩ 5,106,639	

¹ Others include changes in scope of consolidation, the effect of changes in exchange rate and change in transfer.

Certain property, plant and equipment, intangible asset and investment property are provided as collateral for borrowings as at December 31, 2022 (Note 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Rental income and maintenance expenses from investment property for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Rental income	₩	13,773	₩	66,718
Maintenance expenses		(4,614)		(37,752)

(4) Application of revaluation method in property, plant and equipment

During the year ended December 31, 2022, the Group revalued land through an external valuation firm. (Evaluation date: October 31, 2022) For fair value evaluation, land and buildings were evaluated collectively, and the evaluation amount of the target land was calculated according to the distribution ratio. The valuation method was determined by applying the officially assessed land price method and reviewing the final amount by comparing the trial price calculated by the sales comparison approach and reviewing the rationality. The book value of land using revaluation model and historical cost model as of December 31, 2022, is as follows:

<i>(in millions of Korean won)</i>	<u>Revaluation model</u>		<u>Cost model</u>	
Land	₩	2,147,333	₩	1,208,701

Meanwhile, due to the above land revaluation, the gain on revaluation recognized for the year ended December 31, 2022, is ₩ 938,632 million (before tax).

(5) Application of the fair value model

Land of property, plant and equipment and investment property are subsequently measured at fair value. The fair value of land of property, plant and equipment and investment property was determined based on the value measured by an independent appraisal agency that has experience in appraising real estate similar to the investment property subject to evaluation and has professional qualifications. In accordance with Articles 14, 15 and 16 of the 'Rules on Appraisal and Evaluation', the officially assessed land price method, sales comparison approach, and cost method were applied to the land and buildings subject to appraisal. Fair value hierarchy classifications of property, plant and equipment and investment property that are measured at fair value as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022			
	Level 1	Level 2	Level 3	Total
Land of property, plant and equipment	₩ -	₩ -	₩ 2,147,333	₩ 2,147,333
Land of investment property	-	-	1,331,480	1,331,480
Buildings of investment property	-	-	409,139	409,139
Total	<u>₩ -</u>	<u>₩ -</u>	<u>₩ 3,887,952</u>	<u>₩ 3,887,952</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Level 1	Level 2	Level 3	Total
Land of investment property	₩ -	₩ -	₩ 1,336,400	₩ 1,336,400
Buildings of investment property	-	-	534,496	534,496
Total	₩ -	₩ -	₩ 1,870,896	₩ 1,870,896

35. Leases (Financial Business)

(1) Changes in right-of-use assets for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Buildings	Vehicles	Tools and equipment	Leased facilities	Total
Beginning balance	₩ 16,344	₩ 1,842	₩ 410	₩ 86,471	₩ 105,067
Acquisitions	22,521	3,381	7,579	288,508	321,989
Disposals	(6,306)	(889)	(3,237)	(94,291)	(104,723)
Depreciation	(10,381)	(1,189)	(2,458)	(55,097)	(69,125)
Others ¹	1,308	-	-	(11,844)	(10,536)
Ending balance	₩ 23,486	₩ 3,145	₩ 2,294	₩ 213,747	₩ 242,672

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

(in millions of Korean won)

	2021				
	Buildings	Vehicles	Tools and equipment	Leased facilities	Total
Beginning balance	₩ 16,155	₩ 1,413	₩ 856	₩ 71,678	₩ 90,102
Acquisitions	11,108	1,744	5	105,447	118,304
Disposals	(5,795)	(555)	(26)	(43,899)	(50,275)
Depreciation	(16,796)	(1,143)	(982)	(51,411)	(70,332)
Others ¹	11,672	383	557	4,656	17,268
Ending balance	₩ 16,344	₩ 1,842	₩ 410	₩ 86,471	₩ 105,067

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

(2) Details of lease liabilities as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022	2021
Financial liabilities	₩ 241,802	₩ 99,333

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) The consolidated statement of comprehensive income shows the following amounts relating to leases:

<i>(in millions of Korean won)</i>	2022	2021
Depreciation of right-of-use assets	₩ 69,125	₩ 70,332
Interest expense relating to lease liabilities	2,733	1,206
Expense relating to short-term leases	671	159
Expense relating to leases of low-value assets	970	369
Expense relating to variable lease payments not included in lease liabilities	843	-
Income from subleasing right-of-use assets	9	23

The total cash outflow for leases in 2022 was ₩ 66,706 million.

36. Insurance Contract Liabilities (Financial Business)

(1) Details of insurance contract liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Premium reserve	₩ 28,210,908	₩ 28,398,663
Annuity	47,850,919	45,681,933
Whole life, Term life	11,604,200	10,955,383
Endowment	696,396	654,515
Group	15,906,767	15,361,438
Long term	<u>104,269,190</u>	<u>101,051,932</u>
Subtotal		
Reserve for outstanding claims	705,417	584,242
Annuity	708,267	701,461
Whole life, Term life	807,830	852,934
Endowment	28,551	28,356
Group	1,171,006	1,188,342
IBNR	328,358	293,477
General	199,069	171,341
Automobile	254,602	235,878
Long term	<u>4,203,100</u>	<u>4,056,031</u>
Subtotal		
Reserve for unearned premium	1,879	961
Annuity	203	449
Whole life, Term life	12	30
Endowment	4,659	4,283
Group	245,394	231,164
General	484,356	480,005
Automobile		

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>		2022	2021
	Long term	66,916	53,725
	Subtotal	803,419	770,617
Reserve for minimum guaranteed benefit	Annuity	(13,679)	31,922
	Whole life, Term life	1,388,509	2,036,149
	Endowment	199	(244)
	Subtotal	1,375,029	2,067,827
Reserve for policyholders' dividends	Annuity	265,939	263,551
	Whole life, Term life	30,291	33,673
	Endowment	1,585	1,743
	Group	816	892
	Long term	24,618	22,404
	Subtotal	323,249	322,263
Reserve for policyholders' profit dividends		84,686	87,595
Reserve for losses on dividend insurance		39,565	36,530
	Total	₩ 111,098,238	₩ 108,392,795

(2) Contracts subject to liability adequacy test

The Group has performed the adequacy test for premium reserve and unearned premium reserve as at December 31, 2022. Premium reserves are net premium reserves after deducting deferred acquisition cost and policy loans (excluding policy loans of invalid contract and variable insurance).

(3) Assumptions used for test are as follows:

1) Life insurance

		Applied assumptions	
		At December 31, 2022	At December 31, 2021
Discount rate		-2.55% ~ 20.60%	-3.00% ~ 18.97%
Business expense rates	Acquisition costs	24% ~ 388%	30% ~ 128%
	Maintenance costs	₩ 7,046 ~ 22,098	₩ 14,300 ~ 25,600
Lapse ratio		0.75% ~ 76.0%	1.0% ~ 75.0%
Risk ratio		1% ~ 4,671%	9% ~ 175%

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Description	Basis
Discount rate	The scenario prepared by Korean Financial Supervisory Service.
Business expense rates	
Acquisition costs	Calculated to be paid in the future based on the actual data for the recent one year by channels, products and payment methods in accordance with the relevant provisions.
Maintenance costs	Calculated by channels using the actual statistical data for the recent one year based on the number of contracts held, premium revenue, etc.
Lapse ratio	Calculated by payment methods, channels, product groups and elapsed time based on our experience in the recent five years.
Risk ratio	Calculated as a ratio by life tables, product groups, dividend types and elapsed time based on the actual statistical data for the recent five years as a ratio of risk insurance premium to insurance paid.

2) Non-life insurance

Description	Basis
Discount rate	Risk free interest rate plus risk spread in accordance with 200 scenarios prepared by Korean Financial Supervisory Service. ¹
Business expense rates	Calculated to be paid in the future based on the actual statistical data for the recent one year.
Lapse ratio	Calculated by payment methods, channels, product groups and elapsed time based on our experience in the recent five years.
Risk ratio	Calculated as a ratio based on the actual statistical data for recent seven years as a ratio of risk insurance premium to insurance paid.

¹ In accordance with transitional provisions, 80% of the industrial risk spread was applied.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Liability adequacy test is performed by insurance contract types, and insurance contract types were classified into insurance with fixed rate insurance, floating rate insurance and variable life insurance. Surplus and deficiency by insurance types and result of liability adequacy test as at December 31, 2022 and 2021, are as follows:

1) Life insurance

(in millions of Korean won)

		Surplus (deficiency)	
		2022	2021
Fixed-rate insurance			
Participating	₩	(5,187,931)	₩ (9,057,529)
Non-participating		10,855,604	3,996,174
Floating rate insurance			
Participating		(276,023)	(666,946)
Non-participating		13,128,391	9,510,322
Variable life insurance			
		4,455,186	4,049,535
Total	₩	<u>22,975,227</u>	<u>₩ 7,831,556</u>

As a result of liability adequacy test, as at December 31, 2022, no additional insurance premium reserve has been generated.

2) Non-life insurance

(in millions of Korean won)

		Surplus (deficiency)	
		2022	2021
Premium reserve and reserve for unearned premium	₩	8,278,702	₩ 6,050,957

As a result of liability adequacy test, as at December 31, 2022, no additional insurance premium reserve has been generated.

37. Insurance Contract Liabilities and Investment Contract Liabilities (Financial Business)

Details of insurance contract liabilities and investment contract liabilities as at December 31, 2022 and 2021, are as follows:

		2022	2021
General account	Insurance contract liabilities	₩ 111,098,238	₩ 108,392,795
Separate account	Insurance contract liabilities	14,461,192	16,531,329
	Investment contract liabilities	8,412,832	8,854,911
	Subtotal	<u>22,874,024</u>	<u>25,386,240</u>
	Total	<u>₩ 133,972,262</u>	<u>₩ 133,779,035</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

38. Policyholders' Equity Adjustment (Financial Business)

Details of policyholders' equity adjustment as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Changes in fair value of financial assets at fair value through other comprehensive income	₩	(142,436)	₩	(66,117)
Gain on revaluation of property and equipment ¹		200,793		84,334
Total	₩	<u>58,357</u>	₩	<u>18,217</u>

¹ Gain on revaluation of property and equipment is the distributed amount according to the percentage of policyholders of the revaluation of property assets, which is revalued based on deemed cost as of date of transition to Korean IFRS.

39. Withheld Liabilities (Financial Business)

Details of withheld liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Interest rate (%)	2022		2021	
Ordinary deposits	0.00~0.10	₩	1,215	₩	3,054
Time deposits	1.20~6.30		1,358,705		1,165,817
Installment deposits	1.30~7.00		3,640		25,844
Customers' deposits	-		619,119		1,069,463
Guarantee deposits	-		3,757		149
Others	1.90~4.90		374		992
Total		₩	<u>1,986,810</u>	₩	<u>2,265,319</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

40. Separate Account (Financial Business)

(1) Separate account assets and liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Separate account assets before netting	₩ 24,372,593	₩ 27,136,785
Separate account payables before netting	(1,976,763)	(955,303)
Separate account assets after netting	<u>₩ 22,395,830</u>	<u>₩ 26,181,482</u>
Separate account liabilities before netting	₩ 24,672,120	₩ 27,165,682
Separate account receivables before netting	(1,723,594)	(658,820)
Separate account liabilities after netting	<u>₩ 22,948,526</u>	<u>₩ 26,506,862</u>
Accumulated other comprehensive income of separate accounts	₩ (299,527)	₩ (28,897)

(2) Statements of financial position of separate accounts as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Assets		
Cash and deposits	₩ 381,478	₩ 729,138
Securities	19,192,502	22,828,426
Loans	2,469,580	2,242,381
Other assets	2,329,033	1,336,840
Assets Total	<u>₩ 24,372,593</u>	<u>₩ 27,136,785</u>
Liabilities		
Other liabilities	₩ 1,798,096	₩ 1,779,442
Insurance contract liabilities	14,461,192	16,531,329
Investment contract liabilities	8,412,832	8,854,911
Liabilities Total	<u>24,672,120</u>	<u>27,165,682</u>
Accumulated other comprehensive income	(299,527)	(28,897)
Liabilities and accumulated other comprehensive income	<u>₩ 24,372,593</u>	<u>₩ 27,136,785</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Statements of profit or loss for separate accounts for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Guaranteed interest contracts	Investment-linked fund	Guaranteed interest contracts	Investment-linked fund
Revenues				
Premium income	₩ -	₩ 1,351,124	₩ -	₩ 1,612,146
Interest income	183,458	222,291	153,955	198,463
Gain on transaction and valuation of securities	15,399	259,883	8,664	771,198
Gain on transaction and valuation of derivatives	13,027	193,071	3,489	222,693
Gain on foreign currency transaction	17,759	32,854	17,889	5,882
Other income	5,716	193,718	3,226	104,667
Total	₩ 235,359	₩ 2,252,941	₩ 187,223	₩ 2,915,049
Expenses				
Change in reserves for insurance contracts and investment contracts	₩ 161,226	₩ (2,067,263)	₩ 120,949	₩ (847,612)
Insurance claims paid	5,435	1,270,490	6,253	1,773,299
Separate account commission	26,796	752,322	35,351	833,192
Commission expense	-	24,472	-	28,749
Taxes and dues	-	8,612	-	14,208
Loss on transaction and valuation of securities	36,275	1,886,561	8,019	777,712
Loss on transaction and valuation of derivatives	30,608	279,943	21,539	231,491
Loss on foreign currency transaction	17	7,998	29	1,566
Other expenses	(24,998)	89,806	(4,917)	102,444
Total	₩ 235,359	₩ 2,252,941	₩ 187,223	₩ 2,915,049

Revenue and expenses on performance-based trust accounts (variable insurance contract) are not reflected in the consolidated statements of comprehensive income of general account. However, revenue and expenses on trust accounts guaranteeing the repayment of principal are accounted for as separate account revenue and expenses in the revenue/cost from financial business of the consolidated statements of comprehensive income of general account.

(4) As at December 31, 2022, equity securities of ₩ 16,875 million (2021: ₩ 41,398 million) and debt securities of ₩ 546,592 million (2021: ₩ 1,601,429 million), out of separate accounts assets, are pledged as collateral in relation to derivative transactions of separate accounts (Note 58)

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(5) In accordance with the regulations under the Capital Market and Financial Investment Business act, the Group differentiates trust assets from the Group's identifiable assets, and recognizes trust commission as operating income when receiving trust commission. As at December 31, 2022, the amount of the trust fund under the contract with the Group is ₩ 1,534,409 million.

(6) Restricted separate account assets as at December 31, 2022, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
	Stocks	Bonds	Stocks	Bonds
Total	₩ 16,875	₩ 546,592	₩ 41,398	₩ 1,601,429

Restricted separate account assets are provided as collateral in relation to derivative transactions of separate account.

41. Post-employment Benefits (Financial Business)

(1) Details of net defined benefit liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Present value of defined benefit obligations	₩	468,009	₩	500,314
Fair value of plan assets		(255,168)		(250,418)
Post-employment Benefits	₩	212,841	₩	249,896

(2) Movements in the defined benefit obligations for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning balance	₩	500,314	₩	531,408
Current service cost		49,277		53,669
Interest expense		16,209		15,554
Remeasurements:				
Actuarial loss from change in demographic assumptions		1,022		-
Actuarial gain from change in financial assumptions		(53,611)		(26,936)
Actuarial loss from experience adjustments		19,601		832
Benefit payments		(64,434)		(73,278)
Others ¹		(369)		(935)
Ending balance	₩	468,009	₩	500,314

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

¹ Others include the impact of changes in consolidations scope, changes in exchange rate and transfer to and from affiliates.

(3) Movements in the fair value of plan assets for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning balance	₩	250,418	₩	338,471
Interest income		13,665		12,783
Remeasurements ¹		(9,278)		(9,444)
Contributions		87,687		68,838
Benefit payments		(75,031)		(71,240)
Others ²		(12,293)		(88,990)
Ending balance	₩	<u>255,168</u>	₩	<u>250,418</u>

¹ Excluded the amount that is included in interest income.

² Others include the impact of changes in consolidations scope, changes in exchange rate and transfer to and from affiliates.

(4) Amounts recognized in the consolidated statements of comprehensive income for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Current service cost	₩	49,277	₩	53,669
Net interest expense		2,544		2,771
Expense included in employee benefit ¹	₩	<u>51,821</u>	₩	<u>56,440</u>

¹ Entire expenses are included in 'cost of sales'.

(5) Defined benefit plan

The Group operates defined contribution retirement pension for employees have rendered service entitling them to the contribution. Plan assets are operated in the form of funds independently from the Group's other assets by the control of fiduciary. If an employee leaves the Group before meeting the qualification to obtain vested rights, his contribution benefit will be decreased due to the early retirement. This also leads to the decrease of contribution benefit payables to the employee by the same amount from the early retirement.

The actual expenses on defined contribution retirement pension for the years ended December 31, 2022 and 2021, are ₩ 2,750 million and ₩ 17,938 million, respectively.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(6) Other long-term employee benefits

The Group provide long-term employee benefits that are entitled to employees with certain level of service periods. The expected cost of these benefits is accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans. The re-measurement amount derived from change is actuarial assumptions and the difference between actuarial assumption and the actual result is recognized as a profit and loss. This benefit is assessed by an independent and qualified actuary at the end of every year end.

As at and for the year ended December 31, 2022, the Group recognizes liabilities of ₩ 44,920 million (2021: ₩ 47,690 million) and expense of ₩ 1,670 million (2021: ₩ 3,646 million) in connection with the long-term employee benefits.

(7) The significant actuarial assumptions as at December 31, 2022 and 2021, are as follows:

<i>(in percentage, %)</i>	2022	2021
Discount rate	3.37 ~6.15	3.10~4.13
Salary growth rate	3.10 ~4.81	2.19~4.58

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

	Changes in principal assumption	Effect on defined benefit obligations
Discount rate	Increase of 1%	5.52% decrease
	Decrease of 1%	6.04% increase
Salary growth rate	Increase of 1%	6.36% increase
	Decrease of 1%	5.88% decrease

Because there is a correlation between actuarial assumptions, the sensitivity analysis above will not show actual changes in the defined benefit obligation, as changes in assumptions will not occur independently. Also, in the above sensitivity analysis, the present value of the defined benefit obligation was measured using the projected unit credit method applied to measure the defined benefit obligation in the consolidated financial statements.

(9) Plan assets as at December 31, 2022 and 2021, consist of:

	2022		2021	
	Amount	Composition	Amount	Composition
Principal guaranteed financial instruments	₩ 254,861	99.88%	₩ 249,730	99.72%
Transferred to National Pension Fund and others	307	0.12%	688	0.28%
Total	₩ 255,168	100.00%	₩ 250,418	100.00%

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(10) The weighted average duration of the defined benefit obligation is 4.71 ~ 7.02 years.

42.Provisions (Financial Business)

Changes in the provisions for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Provision for restoration	Provision for unused credit limit	Provision for others	Total
Beginning	₩ 15,567	₩ 59,142	₩ 62,438	₩ 137,147
Increase	7,305	-	65,949	73,254
Used during year	(5,652)	(20,070)	(4,439)	(30,161)
Reversal	(2,619)	(34)	(11,593)	(14,246)
Others ¹	4,434	(2)	(200)	4,232
Ending	₩ 19,035	₩ 39,036	₩ 112,155	₩ 170,226

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

(in millions of Korean won)

	2021			
	Provision for restoration	Provision for unused credit limit	Provision for others	Total
Beginning	₩ 18,607	₩ 59,256	₩ 54,680	₩ 132,543
Increase	8,052	1	15,273	23,326
Used during year	(4,956)	-	(2,748)	(7,704)
Reversal	(5,761)	(116)	(3,958)	(9,835)
Others ¹	(375)	1	(809)	(1,183)
Ending	₩ 15,567	₩ 59,142	₩ 62,438	₩ 137,147

¹ Others include changes in scope of consolidation and the effect of changes in exchange rate.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

43. Other Financial Liabilities (Financial Business)

(1) Details of other financial liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Borrowings and debentures	₩	9,156,434	₩	6,986,797
Insurance benefits payable		476,381		420,628
Other payable		657,866		985,878
Accrued expenses		545,496		467,534
Leasehold deposits received		76,188		93,912
Other financial liabilities		910,320		778,884
Lease liabilities		241,802		99,333
Financial liabilities at fair value through profit or loss		2,769,310		1,356,666
Dividend payable		241		236
Liabilities attributable to non-controlling interest		25,998		20,871
Total	₩	14,860,036	₩	11,210,739

(2) Details of borrowings as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>		Annual interest rate (%)	2022		2021	
Description	Creditor					
Bonds sold under repurchase agreements	The Korea Securities Finance Corporation and others	0.35~5.99	₩	4,001,844	₩	3,224,350
Borrowings under securities finance	The Korea Securities Finance Corporation and others	3.78~4.90		562,993		429,135
Corporate paper and electronic short-term bond	KTB Investment & Securities Co., Ltd. and others	2.31~9.80		1,888,848		2,227,857
Loans on land and buildings	Samsung Fire & Marine Insurance Co. Ltd. and others	2.52~3.30		61,891		59,048
	Total		₩	6,515,576	₩	5,940,390

In addition, the Group provided property, plant and equipment and others as collateral for the above borrowings (Note 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Repayment schedules of borrowings as at December 31, 2022, are as follows:

<i>(in millions of Korean won)</i>	Less than 1 year	Between 1 and 5 years	More than 5 years	Total
Expected repayment amount	₩ 6,473,686	₩ 41,890	₩ -	₩ 6,515,576

(4) Details of debentures as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	Description	Date of issue	Date of maturity	Interest rate (%)	2022	2021
Hanwha Life Insurance Co., Ltd.	Overseas ESG subordinated bond	2022.02.04	2032.02.04	3.38	₩ 950,184	₩ -
	3rd Non-guaranteed subordinated bond	2022.06.17	2032.06.17	5.30	400,000	-
Hanwha General Insurance Co., Ltd.	8th Public subscription bond	2016.06.07	2023.06.07	4.35	128,000	128,000
	11th Public subscription bond	2018.10.31	2028.10.31	4.50	350,000	350,000
	12th Public subscription bond	2022.03.07	2032.03.07	4.90	250,000	-
Hanwha Investment & Securities Co., Ltd.	Unregistered, cum coupon, unsecured subordinated bond	2019.10.18	2022.10.18	-	-	220,000
	Unregistered, cum coupon, unsecured bond	2019.10.18	2024.10.18	2.56	30,000	30,000
	Unregistered, cum coupon, unsecured bond	2021.04.09	2024.04.09	1.85	220,000	220,000
	Unregistered, cum coupon, unsecured bond	2021.04.09	2026.04.09	2.43	100,000	100,000
	Unregistered, cum coupon, unsecured bond	2022.09.16	2024.09.13	5.30	130,000	-
	Unregistered, cum coupon, unsecured bond	2022.09.16	2025.09.16	5.41	91,000	-
	Total				<u>2,649,184</u>	<u>1,048,000</u>
	Less: Present value discounts				<u>(8,326)</u>	<u>(1,593)</u>
	Net amount				<u>₩ 2,640,858</u>	<u>₩ 1,046,407</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

44. Other Liabilities (Financial Business)

Details of other liabilities as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
VAT payables	₩	10,972	₩	5,270
Advance receipts		26,581		17,551
Unearned revenues		40,728		34,407
Unearned insurance income		90,595		162,119
Others		49,791		42,810
Total	₩	218,667	₩	262,157

45. Share Capital and Capital Surplus

(1) Share capital as at December 31, 2022 and 2021, is as follows:

<i>(in millions of Korean won and in number of shares)</i>	Number of authorized shares	Number of shares issued	Par value (in Korean won)	2022	2021
Ordinary shares		74,958,735	5,000 ₩	374,794 ₩	374,794 ₩
1 st preferred shares ¹	200,000,000	479,294	5,000 ₩	2,396 ₩	2,396 ₩
3 rd preferred shares ²		22,472,000	5,000 ₩	112,360 ₩	112,360 ₩
Total				₩ 489,550 ₩	₩ 489,550 ₩

¹ The 1st preferred share, which is non-cumulative, is eligible to receive cash dividends, if declared, equal to that declared for ordinary shares plus an additional 1%.

² In October 2016, the Company increased paid-in capital as preferred share without voting rights (22,472,000 shares).

(2) Capital surplus as at December 31, 2022 and 2021, is as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Share premium	₩	342,536	₩	342,536
Revaluation reserve		19,552		21,999
Other capital surplus		616,283		103,591
Total	₩	978,371 ₩	₩	468,126 ₩

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(3) Share-based payment

Certain executives of the Group have been granted restricted stock units (“RSUs”) with the resolution of the Board of Directors during the year ended December 31, 2022, and the details are as follows:

	Details
Type of shares issued through share option	Ordinary shares of Hanwha Corporation
Total grant amount (in Korean won)	₩ 17,101,698,600
Equity-settled share options	297,939 shares
Equity-linked cash (in Korean won)	₩ 8,550,849,300 (Grant base stock price: ₩ 28,700, equivalent to 297,939 shares in total)
Exercise price (in Korean won)	Nil (No exercise price exists under the existing share-based payment plan)
Grant date	2022-01-26
Vesting condition	If employees and executives have worked for more than six months in the position in the fiscal year, the RSUs granted will not be adjusted.
Exercisable timing	The effect of payment on RSUs occurs in January 2029 or January 2032 depending on each employees and executives, regardless of whether the employees and executives are employed (however, the Company may execute the payment to the executives in case where interim payment condition is satisfied).

Certain employees and executives of the Company have been granted restricted stock units (“RSUs”) with the resolution of the Board of Directors during the year ended December 31, 2022, and the details are as follows:

	Details
Type of shares issued through share option	Ordinary shares of Hanwha Corporation
Total grant amount (in Korean won)	₩ 3,677,543,100
Equity-settled share options	71,687 shares
Equity-linked cash (in Korean won)	₩ 1,838,771,550 (Grant base stock price: ₩ 25,650, equivalent to 71,687 shares in total)
Exercise price (in Korean won)	Nil (No exercise price exists under the existing share-based payment plan)
Grant date	2022-12-31
Vesting condition	If employees and executives have worked for more than six months in the position in the fiscal year, the RSUs granted will not be adjusted.
Exercisable timing	The effect of payment on RSUs occurs in December 2027 or December 2029, December 2032 depending on each employees and executives, regardless of whether the employees and executives are employed (however, the Company may execute the payment to the

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

employees and executives in case where interim payment condition is satisfied).

Certain executives of the Group have been granted restricted stock units (“RSUs”) with the resolution of the Board of Directors during the year ended December 31, 2021, and the details are as follows:

	Details
Type of shares issued through share option	Ordinary shares of Hanwha Corporation
Total grant amount (in Korean won)	₩ 13,179,125,000
Equity-settled share options	210,866 shares
Equity-linked cash (in Korean won)	₩ 6,589,562,500 (Grant base stock price: ₩ 31,250, equivalent to 210,866 shares in total)
Exercise price (in Korean won)	Nil (No exercise price exists under the existing share-based payment plan)
Grant date	2021-01-19
Vesting condition	If executives have worked for more than six months in the position in the fiscal year, the RSUs granted will not be adjusted.
Exercisable timing	The effect of payment on RSUs occurs in January 2028 or January 2031 depending on each executives, regardless of whether the executives are employed (however, the Company may execute the payment to the executives in case where interim payment condition is satisfied).

Changes in the number of equity-settled share options outstanding for the years ended December 31, 2022 and 2021, are as follows:

<i>(in shares)</i>	Number of options	
	2022	2021
Beginning balance	390,878	180,012
Granted	369,626	210,866
Ending balance	<u>760,504</u>	<u>390,878</u>
Exercisable at the end of the reporting period	-	-

The weighted average remaining contractual maturity of share options outstanding at the end of the reporting period is 7.9 years and the exercise prices are nil per share.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Changes in the number of cash-settled share options outstanding for the years ended December 31, 2022 and 2021, are as follows:

<i>(in shares)</i>	Number of options	
	2022	2021
Beginning balance	390,878	180,012
Granted	369,626	210,866
Effects of a Business Combination	202,631	-
Ending balance	963,135	390,878
Exercisable at the end of the reporting period	-	-

The weighted average remaining contractual maturity of share options outstanding at the end of the reporting period is 7.9 years and the exercise prices are nil per share.

Book amount of liabilities and intrinsic value recognized in relation to equity-linked cash are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Book amount of liabilities ¹	₩	24,704	₩	12,274
Intrinsic value ²		25,650		31,400

¹ During the year ended December 31, 2022, it includes ₩ 5,197 million of book amount of the construction division included through the merger.

² The Group assessed intrinsic value based on the market price of the share which is publicly traded in securities market at the end of every reporting period.

Share-based payments recognized as expenses for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Equity-settled ¹	₩	10,390	₩	6,590
Equity-linked cash		7,476		7,179
Total	₩	17,866	₩	13,769

The fair value of equity-settled share options is based on the market price of the shares at the grant date.

¹ During the year ended December 31, 2022, the amount recognized as an expense among share-based compensation for the construction division included through the merger is ₩ 243 million.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

46. Capital Adjustment

Details of capital adjustment as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Treasury share ¹	₩	(6,867)	₩	(30,720)
Other capital adjustments		51,159		42,223
Total	₩	<u>44,292</u>	₩	<u>11,503</u>

¹ The number of treasury shares as at December 31, 2022 and 2021, is 1,132,437 shares and 6,270,878 shares, respectively. Treasury shares do not have voting rights according to the commercial law.

47. Accumulated Other Comprehensive Income

Details of accumulated other comprehensive income as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Loss on valuation of debt instruments at fair value through other comprehensive income	₩	(3,611,696)	₩	(407,565)
Loss on valuation of equity instruments at fair value through other comprehensive income		(345,342)		(331,993)
Gain on valuation of financial liabilities designated at fair value through profit or loss (self-credit)		49		61
Gain (loss) on valuation of investment in associates		45,773		(16,457)
Loss on valuation of derivatives qualifying cash flow hedge		(426,215)		(101,058)
Loss on translation of foreign currency financial statements		(91,420)		(100,142)
Accumulated other comprehensive income of separate accounts		(154,238)		(14,028)
Surplus on revaluation of assets		1,626,484		11
Adjustment amount for profit or loss (overlay adjustment)		(440)		164,803
Total	₩	<u>(2,957,045)</u>	₩	<u>(806,368)</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

48.Retained Earnings

Details of retained earnings as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Legal reserves ¹	₩ 79,500	72,500
Discretionary reserves	1,217,800	1,217,800
Retained earnings before appropriation	5,376,049	4,041,923
Total	₩ 6,673,349	5,332,223

¹ The Commercial Code of the Republic of Korea requires the Company to appropriate for each financial period, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit in accordance with a resolution of the shareholders' meeting.

49.Revenue

(1) Details of non-financial business's revenue for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Finished goods and merchandise	₩ 19,794,909	₩ 17,528,218
Construction	6,599,694	5,227,357
Service and others	2,173,667	1,563,743
Total	₩ 28,568,270	₩ 24,319,318

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Details of financial business's revenue for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Insurance income		
Annuity	₩ 2,504,382	₩ 2,379,858
Term insurance	6,295,860	6,110,849
Endowment insurance	5,568,446	1,736,351
General	545,377	511,099
Motor vehicles	941,344	850,111
Long term	4,892,769	4,736,084
Group insurance	108,414	96,374
Subtotal	<u>20,856,592</u>	<u>16,420,726</u>
Reinsurance income	1,378,988	1,270,851
Other income		
Commission income	325,219	390,419
Investment operation income	9,166,240	8,974,589
Adjustment amount for profit or loss (overlay adjustment)	(24,296)	(336,071)
Other financial income	1,902,050	1,744,007
Others	105,332	52,230
Subtotal	<u>11,474,545</u>	<u>10,825,174</u>
Total	<u>₩ 33,710,125</u>	<u>₩ 28,516,751</u>

50. Cost of Sales

(1) Details of non-financial business's cost of sales for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Finished goods and merchandise	₩ 15,399,804	₩ 13,895,908
Construction	5,837,341	4,478,621
Service and others	2,495,739	1,900,334
Total	<u>₩ 23,732,884</u>	<u>₩ 20,274,863</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Details of financial business's cost of sales for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Insurance claims paid	₩ 17,979,166	₩ 12,915,522
Business expenses	1,755,599	1,589,515
Responsibility reserve	2,650,948	4,380,267
Others	10,931,145	8,045,785
Adjustment amount for profit or loss (overlay adjustment)	(684,813)	(74,381)
Total	<u>₩ 32,632,045</u>	<u>₩ 26,856,708</u>

(3) Insurance claims paid of financial business for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Insurance expenses	₩ 7,294,019	₩ 4,681,938
Refund expenses	10,637,526	8,188,843
Dividend expenses	47,621	44,741
Total	<u>₩ 17,979,166</u>	<u>₩ 12,915,522</u>

(4) Business expenses of financial business for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Deferred policy acquisition costs	₩ 636,697	₩ 479,868
Wages and salaries	546,469	540,451
Post-employment benefits	92,683	57,003
Employee benefits	97,233	106,333
General administrative expense	327,714	287,091
Others	54,803	118,769
Total	<u>₩ 1,755,599</u>	<u>₩ 1,589,515</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

51. Selling and Administrative Expenses

Details of selling and administrative expenses for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Salaries	₩	1,163,205	₩	918,127
Impairment loss		13,626		16,987
Freight and storage expenses		341,406		324,907
Commission expenses		301,191		224,005
Rental expenses		22,459		35,195
Depreciation		153,670		95,019
Amortization		67,981		62,381
Depreciation of right-of-use assets		28,343		26,009
Employee benefits		160,415		124,911
Post-employment benefits		102,491		98,486
Sales commission expenses		47,045		37,222
Advertising expenses		107,559		78,117
Taxes and dues		70,671		78,923
Entertainment expenses		23,482		18,990
Transportation fees		57,714		28,256
Outsourcing fees		82,771		67,549
Overseas branch maintenance fees		2,057		2,940
Others		651,290		538,586
Total	₩	3,397,376	₩	2,776,610

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

52. Breakdown of Expenses by Nature

Details of expenses by nature for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Changes in inventories ¹	₩ (1,245,925)	₩ (368,361)
Raw materials and supplies used	15,376,700	13,658,408
Merchandise purchased	3,232,770	3,559,815
Salaries and wages ²	3,771,000	3,610,336
Employee benefits	597,340	615,745
Rental expenses	55,806	60,571
Depreciation of property, plant and equipment	972,802	908,641
Amortization	202,267	179,685
Depreciation of right-of-use assets	182,035	155,953
Taxes and dues	360,228	373,881
Research and development expenses	149,336	34,097
Responsibility reserve	2,650,948	4,380,267
Refund expenses	10,637,526	8,188,843
Other expenses	22,819,471	14,550,300
Total	<u>₩ 59,762,304</u>	<u>₩ 49,908,181</u>

¹ Changes in raw materials and supplies are excluded.

² Post-employment benefits are included.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

53. Other Income and Expenses

(1) Details of other income for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Gain on foreign currency transaction and translation	₩	1,042,774	₩	415,246
Gain on transaction of derivatives		132,941		123,821
Gain on valuation of derivatives		197,893		195,064
Gain on valuation of financial assets measured at fair value through profit or loss		25,981		48,073
Gain on disposal of financial assets measured at fair value through profit or loss		-		17
Gain on disposal of measured at fair value through other comprehensive income		-		43
Gain on disposal of investments in associates		241,583		115,703
Gain on valuation of fair value of investment property		440,453		145,757
Others		368,230		422,734
Total	₩	2,449,855	₩	1,466,458

(2) Details of other expenses for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Loss on foreign currency transaction and translation	₩	1,161,229	₩	513,874
Loss on transaction of derivatives		82,015		167,616
Loss on valuation of derivatives		210,096		5,878
Loss on valuation of financial assets measured at fair value through profit or loss		88,462		5,072
Loss on disposal of financial assets measured at fair value through profit or loss		22		15
Loss on disposal of financial assets measured at fair value through other comprehensive income		164		125
Loss on disposal of financial assets at amortized cost		6,826		881
Loss on disposal of investments in associates		61,379		10,396
Loss on valuation of fair value of investment property		189,434		-
Others		387,184		405,475
Total	₩	2,186,811	₩	1,109,332

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

54. Finance Income and Costs

(1) Details of finance income for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Interest income according to the effective interest rate method				
Financial assets at amortized cost and others	₩	5,712	₩	7,686
Interest income - others				
Cash and cash equivalents, advance deposit and others		72,628		29,214
Financial assets at amortized cost and others		15,077		5,617
Interest income of lease		74		473
Others		15,400		4,684
Dividend income		11,484		5,779
Total	₩	120,375	₩	53,453

(2) Details of finance costs for the years ended December 31, 2022 and 2021, are as follows:

1) Finance costs (interest expense)

<i>(in millions of Korean won)</i>	2022		2021	
Interest expense				
Borrowings and debentures	₩	453,682	₩	314,021
Others		85,428		65,127
Loss on valuation of liabilities attributable to non-controlling interest		(1,020)		3,792
		538,090		382,940
Less: Amounts on qualifying assets capitalized ¹		(17,197)		(10,309)
Total	₩	520,893	₩	372,631

¹ During the year ended December 31, 2022, the Group has capitalized borrowing costs on qualifying assets. The capitalization rate of borrowings used to determine the amount of borrowing costs to be capitalized is 2.52% ~ 5.30% (2021: is 1.78% ~ 5.30%).

2) Finance costs (amortization expense on financial liabilities)

<i>(in millions of Korean won)</i>	2022		2021	
Amortization expense on financial liabilities	₩	26,552	₩	25,690

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

55. Income Tax Expense

(1) Income tax expense for the years ended December 31, 2022 and 2021, consists of the following

<i>(in millions of Korean won)</i>	2022		2021	
Current tax:				
Current tax on profits for the year	₩	1,140,615	₩	430,638
Adjustments in respect of prior years		4,056		(1,775)
Total current tax		<u>1,144,671</u>		<u>428,863</u>
Deferred tax:				
Increase (decrease) of temporary differences		<u>(2,630,178)</u>		<u>(55,957)</u>
Total deferred tax		<u>(2,630,178)</u>		<u>(55,957)</u>
Income tax effect charged directly to equity		<u>1,518,215</u>		<u>561,479</u>
Income tax expense	₩	<u>32,708</u>	₩	<u>934,385</u>

(2) The income taxes charged or credited directly to equity for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022			2021		
	Before tax	Tax effect	After tax	Before tax	Tax effect	After tax
Gain (loss) on valuation of financial assets at fair value through other comprehensive income	₩ (9,565,107)	₩ 2,265,674	₩ (7,299,433)	₩ (1,863,875)	₩ 579,069	₩ (1,284,806)
Gain (loss) on valuation of investments in associates	190,232	(2,152)	188,080	159,661	(19,970)	139,691
Gain (loss) on valuation of derivatives qualifying cash flow hedge	(893,277)	195,570	(697,707)	(136,909)	44,430	(92,479)
Gain (loss) on translation of foreign currency financial statements	17,548	6,726	24,274	213,226	(45,741)	167,485
Remeasurements of the net defined benefit liability	191,726	(65,328)	126,398	101,882	(23,707)	78,175
Other comprehensive income of separate accounts	(357,007)	83,356	(273,651)	(146,991)	46,897	(100,094)
Gain (loss) on valuation of financial liabilities at fair value through profit or loss (credit risk fluctuation)	(203)	85	(118)	(656)	216	(440)
Surplus on revaluation of assets	4,080,181	(1,026,817)	3,053,364	-	-	-
Adjustment amount for profit or loss (overlay adjustment)	(445,176)	61,101	(384,075)	171,296	(19,715)	151,581
Total	<u>₩ (6,781,083)</u>	<u>₩ 1,518,215</u>	<u>₩ (5,262,868)</u>	<u>₩ (1,502,366)</u>	<u>₩ 561,479</u>	<u>₩ (940,887)</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) An explanation of the relationship between income tax expense and profit before tax for the years ended December 31, 2022 and 2021, is as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Profit before tax	₩	2,276,045	₩	3,216,454
Tax calculated at domestic tax rates applicable to profits in the respective countries ¹		731,253		992,709
Adjustments:				
Income not subject to tax		(89,391)		(94,936)
Expenses not deductible for tax purposes		53,030		26,392
Tax credit and tax reduction		(16,022)		(56,482)
Impact of change in tax rate		(5,955)		1,195
Others		(640,207)		65,510
Income tax expense	₩	32,708	₩	934,388
Effective tax rate		1.44%		29.05%

¹ It is calculated as statutory tax rate which is applied differently for each tax authorities to the Group's profits at the end of reporting period.

(4) The movements in deferred tax assets and liabilities for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022				
	Beginning	Profit or loss	Other comprehensive income	Others	Ending
Trade receivables	₩ 329,604	₩ 29,508	₩ -	₩ (1,297)	₩ 357,815
Accumulated deficit and others	95,270	(60,683)	-	-	34,587
Appropriated retained earnings	867,104	(365,151)	-	-	501,953
Inventories	27,919	(17,335)	-	-	10,584
Securities	57,346	(790,847)	2,265,673	-	1,532,172
Revaluation reserve	(185,434)	637,617	-	-	452,183
Accrued income	(54,341)	(33,710)	-	4	(88,047)
Gain on business split-off	(38,198)	38,198	-	-	-
Investments in subsidiaries and others	(1,338,757)	841,347	88,929	(533,991)	(942,472)
Investment property	(148,743)	(56,639)	-	-	(205,382)
Surplus on revaluation of assets	-	-	(1,026,817)	-	(1,026,817)
Others	(402,202)	889,658	190,430	72,967	750,853
Total	₩ (790,432)	₩ 1,111,963	₩ 1,518,215	₩ (462,317)	₩ 1,377,429

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

			2021							
			Beginning	Profit or loss	Other comprehensive income	Others	Ending			
<i>(in millions of Korean won)</i>										
Trade receivables	₩	326,514	₩	3,090	₩	-	₩	-	₩	329,604
Accumulated deficit and others		116,616		(21,346)		-		-		95,270
Appropriated retained earnings		805,321		61,783		-		-		867,104
Inventories		17,200		10,719		-		-		27,919
Securities		(210,252)		(311,471)		579,069		-		57,346
Revaluation reserve		(159,677)		(25,757)		-		-		(185,434)
Accrued income		(52,921)		(1,420)		-		-		(54,341)
Gain on business split-off		(38,198)		-		-		-		(38,198)
Investments in subsidiaries and others		(1,374,925)		(53,852)		90,020		-		(1,338,757)
Investment property		(122,998)		(25,745)		-		-		(148,743)
Others		(91,136)		(141,521)		(107,610)		(61,935)		(402,202)
Total	₩	(784,456)	₩	(505,520)	₩	561,479	₩	(61,935)	₩	(790,432)

(5) Details of unrecognized deductible (taxable) temporary differences as deferred tax as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Investment in subsidiaries and associates ¹	₩ 1,921,761	₩ 1,372,664
Unused losses ²	184,352	397,876
Others	189,704	22,341

¹ Temporary differences for investments in subsidiaries and associates that are not probable to be reversed.

² The maturity of unused losses is as follows:

<i>(in millions of Korean won)</i>	2022
2023	₩ 61
2024	100
2025	2,294
2026	114
2027	133
2028	26
2029	115
After 2031	181,510

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

56. Earnings per Share

(1) Profits attributable to ordinary shares and 1st preferred shares for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Profit for the year	₩	1,312,179	₩	973,499
Dividend to third preferred share		(319,535)		(238,603)
Profit attributable to ordinary shares and first preferred shares	₩	992,644	₩	734,896

(2) Basic earnings per share for the years ended December 31, 2022 and 2021, are as follows: Basic earnings per share is calculated by dividing the profit attributable to equity holders of the company by the weighted average number of ordinary shares outstanding during the financial year excluding treasury shares.

<i>(in millions of Korean won)</i>	2022				2021			
	Ordinary shares		1st preferred shares ²		Ordinary shares		1st preferred shares ²	
Profit attributable to equity holders of the Company	₩	985,829	₩	6,815	₩	729,807	₩	5,089
Weighted-average number of ordinary shares in issue ³		69,575,262		479,294		69,059,446		479,294
Basic earnings per share ¹ (in Korean won)	₩	14,169	₩	14,219	₩	10,568	₩	10,618

¹ Basic earnings per share from continuing operations of 2022 and 2021 are identical to basic earnings per share.

² Preferred shares were issued under the former commercial law before amendments in 1997. These preferred shares hold the same priority as ordinary shares in terms of dividends payout and distribution of residual- properties, thus earnings per share were calculated accordingly. Dividends are paid by adding 1% of par value of ordinary shares to dividends per ordinary shares.

³ There were changes in the weighted average number of outstanding shares due to the acquisition of 297,939 treasury shares and the disposal of 5,436,380 treasury shares in 2022 and the acquisition of 210,886 treasury shares in 2021, and the operation of the share-based compensation plan.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) The calculation of diluted earnings per share for the years ended December 31, 2022 and 2021, is as follows. Diluted earnings per share is calculated by adjusting the weighted average number of ordinary shares outstanding to assume conversion of all dilutive potential ordinary shares.

(in millions of Korean won)

	2022		2021	
	Ordinary shares	1 st preferred shares ²	Ordinary shares	1 st preferred shares ²
Profit attributable to equity holders of the Company	₩ 986,087	₩ 6,810	₩ 729,944	₩ 5,086
Weighted-average number of ordinary shares in issue ³	69,648,727	479,294	69,111,440	479,294
Diluted earnings per share ¹ (in Korean won)	₩ 14,158	₩ 14,208	₩ 10,562	₩ 10,612

¹ Diluted earnings per share from continuing operations of 2022 and 2021 are identical to basic diluted earnings per share.

² Preferred shares were issued under the former commercial law before amendments in 1997. These preferred shares hold the same priority as ordinary shares in terms of dividends payout and distribution of residual- properties, thus earnings per share were calculated accordingly. Dividends are paid by adding 1% of par value of ordinary shares to dividends per ordinary shares.

³ In 2022 and 2021, dilutive potential ordinary shares include share options. The share options, a calculation is done to determine the number of shares that could have been acquired at fair value (determined as the average annual market share price of the Group's shares) based on the monetary value of the subscription rights attached to outstanding share options. The number of shares calculated as above is compared with the number of shares that would have been issued assuming the share options are exercised.

57.Related Party Transactions

(1) The Group's related parties as at December 31, 2022, are as follows:

Classification	Name of entity
Associates and joint venture	Yeochun NCC Co., Ltd., Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.), Gulf Advanced Cables Insulation Company and others
Large-scale business group affiliates ¹	Hanwha Energy Corporation ² , Hanwha TotalEnergies Petrochemical Co., Ltd. and others

¹ A large-scale business group affiliate (other related parties) does not correspond to the related parties defined in paragraph 9 of Korean IFRS 1024. However, the large-scale business group affiliation designated by the Fair Trade Commission is company classified as a related party in accordance with the resolution of the Securities and Futures Commission and in accordance with the substantive relationship stipulated in paragraph 10 of Korean IFRS 1024.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

² In 2021, it merged with H-Solution Corporation.

(2) Outstanding balances arising from sales/purchases of goods and services with related parties, including large-scale business group affiliates, as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022					
	Receivables ¹			Payables		
	Trade receivables	Other receivables	Loans ²	Trade payables	Other payables	
Associates and joint venture						
KB Busan Osiria Hotel REITs	₩	-	₩ 1,800	₩	-	₩ 25,044
HANA TRUST REIT FIVE CO., Ltd.		-	1,080		-	16,123
Gulf Advanced Cables Insulation Company		-	2,807		16,216	-
International Polymers Company		-	2,231		-	28,197
OVERAIR, INC.		-	3,965		105,273	-
Yeochun NCC Co., Ltd.		4,615	1,536		-	229,018
Hanwha Impact Co., Ltd.		6,116	115		-	1,672
LUXROBO CO.,LTD. ³		-	12,658		-	-
LAMBDA256 CO.,LTD. ³		-	36,313		-	-
Others		4,898	22,898		163,235	2,157
Large-scale business group affiliates						
Hanwha Energy Co., Ltd.		1,816	11		-	20,413
Hanwha TotalEnergies Petrochemical Co., Ltd. (formerly, Hanwha Total Petrochemical Co., Ltd.)		6,353	6,183		-	24,365
Hanwha Energy Corporation Japan		8	48		8,579	-
Hanwha Energy USA Holdings Corporation		758	142		-	-
Hanwha Power Systems Co.,Ltd.		56	3,014		-	2,846
Others		258	867		1,867	4,335
Total	₩	24,878	₩ 95,668	₩	295,170	₩ 313,003
						₩ 350,580

¹ As at December 31, 2022, the Group recognized provision for impairment on receivables of related parties amounting to ₩ 19,965 million.

² Accrued revenue for the loan is included.

³ Convertible bonds and redeemable convertible preferred shares are included.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(in millions of Korean won)

	2021									
	Receivables ¹			Payables						
	Trade receivables	Other receivables	Loans ²	Trade payables	Other payables					
Associates and joint venture										
Yeochun NCC Co., Ltd.	₩	3,656	₩	365	₩	-	₩	331,602	₩	37,829
Hanwha Impact Co., Ltd.		2,340		106		-		6,574		45,571
Gulf Advanced Cables Insulation Company		-		1,680		16,216		-		-
International Polymers Company		-		1,844		-		44,848		-
Luxbon Solar S.A.		-		3,182		-		-		-
HANA TRUST REIT FIVE CO., Ltd.		-		1,080		-		-		17,659
Satrec Initiative Co.,Ltd.		-		50,000		-		-		-
P&W NGPF Manufacturing company Singapore.Ltd		-		-		-		14,354		-
Others		301		20,722		215,237		1,807		7,819
Large-scale business group affiliates										
Hanwha Energy Co., Ltd.		1,614		12		-		16,327		5,347
Hanwha TotalEnergies Petrochemical Co., Ltd. (formerly, Hanwha Total Petrochemical Co., Ltd.)		16,401		2,375		-		33,742		167,725
Hanwha Energy Corporation Japan		-		36		11,333		-		6
Hanwha Energy USA Holdings Corporation		2,541		-		-		-		-
Others		280		9		-		23		33
Total	₩	27,133	₩	81,411	₩	242,786	₩	449,277	₩	281,989

¹ As at December 31, 2021, the Group recognized provision for impairment on receivables of related parties amounting to ₩ 19,965 million.

² Accrued revenue for the loan is included.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Sales and purchases with related parties, including large-scale business group affiliates, for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Sales and others		Purchases and others	
	Sales	Other income	Purchases	Other expenses
Associates and joint venture				
DEOKYANG ENERGEN CORPORATION	₩ 25,152	₩ -	₩ 2,082	₩ 13
Sermatech Korea Co., Ltd. ¹	22	647	17,921	195
KB Busan Osiria Hotel REITs	-	21,102	1,625	-
International Polymers Company ²	-	-	238,825	-
P&W NGPF Manufacturing company Singapore.Ltd ³	-	7,549	44,747	-
Marston No.141 Yongin Baekam PFV Co.,Ltd.	6,193	-	-	-
A&D Credit Information Co., Ltd.	4	-	8,813	-
Yeochun NCC Co., Ltd.	56,559	4	2,135,408	613
Daehan 5 Newstay Consignment Managemnet real estate Investment Co., Ltd.	53	-	10	-
Hanwha Impact Co., Ltd.	67,946	214	34,658	1,440
Others ⁴	13,644	10,993	2,288	819
Large-scale business group affiliates				
Hanwha Energy USA Holdings Corporation	444	-	-	185
Daesan Green Energy Co. Ltd.	296	-	-	-
Hanwha Energy Corporation ⁵	15,519	2	187,923	106
HANWHA CONVERGENCE CO., LTD.	2,620	-	-	819
Hanwha TotalEnergies Petrochemical Co., Ltd. (formerly, Hanwha Total Petrochemical Co., Ltd.)	186,751	1,270	289,115	73
Hanwha Power Systems Co.,Ltd.	1,092	381	6,708	340
Others ⁶	2,438	603	5,115	4,276
Total	₩ 378,733	₩ 42,765	₩ 2,975,238	₩ 8,879

¹ Dividends received from Sermatech Korea Co., Ltd. during the year ended December 31, 2022, amount to ₩ 1,851 million.

² Dividends received from International Polymers Company during the year ended December 31, 2022, amount to ₩ 49,379 million.

³ Dividends received from P&W NGPF Manufacturing company Singapore.Ltd during the year ended December 31, 2022, amount to ₩ 8,004 million.

⁴ In addition, dividends received from KoreaRasLaffan LNG, HANA TRUST REIT FIVE CO., Ltd. and Korea-Seoul Life Science Fund during the year ended December 31, 2022, amount to ₩ 5,150 million, ₩ 200 million and ₩ 470 million, respectively.

⁵ Dividends paid to Hanwha Energy Corporation, large-scale business group affiliates, during the year ended December 31, 2022, amount to ₩ 10,259 million.

⁶ Dividends paid to Hanwha Energy Corporation Japan, large-scale business group affiliates, during the year ended December 31, 2022, amount to ₩ 3,248 million.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Sales and others		Purchases and others	
	Sales	Other income	Purchases	Other expenses
Associates and joint venture				
International Polymers Company ³	₩ 24	₩ -	₩ 234,324	₩ -
Sermatech Korea Co., Ltd. ¹	24	630	15,060	70
Daehan 5 Newstay Consignment Managemnet real estate Investment Co., Ltd.	788	-	-	-
A&D Credit Information Co., Ltd.	4	-	4,251	9
Yeochn NCC Co., Ltd. ²	290,703	3	1,943,762	607
Hanwha Impact Co., Ltd. (formerly, Hanwha General Chemical Co., Ltd.)	21,203	180	32,807	1,353
HANA TRUST REIT FIVE CO., Ltd.	-	-	-	650
P&W NGPF Manufacturing company Singapore.Ltd	657	-	31,760	-
Others ⁴	15,471	14,461	43	-
Large-scale business group affiliates				
Hanwha Energy USA Holdings Corporation	754	8	-	-
Hanwha TotalEnergies Petrochemical Co., Ltd. (formerly, Hanwha Total Petrochemical Co., Ltd.)	190,985	1,275	278,738	102
Hanwha Energy Corporation	17,875	3	161,585	119
Daesan Green Energy Co. Ltd.	246	1	-	-
SIT Co., Ltd.	1,004	2	1,910	64
Others	12,709	408	517	3,740
Total	₩ 552,447	₩ 16,971	₩ 2,704,757	₩ 6,714

¹ Dividends received from Sermatech Korea Co., Ltd. during the year ended December 31, 2021, amount to ₩ 2,608 million.

² Dividends received from Yeochn NCC Co., Ltd. during the year ended December 31, 2021, amount to ₩ 170,000 million.

³ Dividends received from International Polymers Company during the year ended December 31, 2021, amount to ₩ 35,668 million.

⁴ In addition, dividends received from HSP TW TE, LLC, KoreaRasLaffan LNG, HANA TRUST REIT FIVE CO., Ltd. and Korea-Seoul Life Science Fund during the year ended December 31, 2021, amount to ₩ 284 million, ₩ 2,995 million ₩ 194 million and ₩ 5,890 million, respectively.

⁵ Dividends paid to Hanwha Energy Corporation and Hanwha Energy Corporation Japan, large-scale business group affiliates, during the year ended December 31, 2021, amount to ₩ 6,457 million and ₩2,683 million respectively.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Changes in loans to related parties, including large-scale business group affiliates, for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022				
	Beginning	Increase	Decrease	Others ¹	Ending
Associates and joint venture					
Gulf Advanced Cables Insulation Company ²	₩ 16,216	₩ -	₩ -	₩ -	₩ 16,216
Crystal Solar ²	1,867	-	-	-	1,867
Wonju Green Corp. ²	1,882	-	-	-	1,882
OVERAIR, INC.	35,565	148,155	(102,773)	24,326	105,273
Others	175,923	890	(20,132)	4,672	161,353
Large-scale business group affiliates					
Hanwha Energy Corporation Japan	11,333	-	(1,982)	(772)	8,579

¹ Others include accrued interest income and fluctuation of foreign exchange rate.

² As at December 31, 2022, the Group sets up a full provision against loans.

(in millions of Korean won)

	2021				
	Beginning	Increase	Decrease	Others ¹	Ending
Associates and joint venture					
Gulf Advanced Cables Insulation Company ²	₩ 15,941	₩ -	₩ -	₩ 275	₩ 16,216
Crystal Solar ²	1,867	-	-	-	1,867
Daehan 5 Newstay Consignment Management real estate Investment Co., Ltd.	35,544	-	(35,544)	-	-
Wonju Green Corp. ²	-	1,882	-	-	1,882
OVERAIR, INC.	-	35,565	-	-	35,565
Others	230,969	4,742	(59,735)	(53)	175,923
Large-scale business group affiliates					
Hanwha Energy Corporation Japan	14,367	-	(3,041)	7	11,333

¹ Others include accrued interest income and fluctuation of foreign exchange rate.

² As at December 31, 2021, the Group sets up a full provision against loans.

³ In addition to the above, the Group acquired convertible bonds of Satrec Initiative Co.,Ltd for ₩ 50,000 million during the year ended December 31, 2021.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(5) Changes in borrowings to related parties for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022					
	Beginning	Increase	Decrease	Others	Ending	
Associates and joint venture						
Hanwha-Incus Plus 1st New Technology Business Investment Fund	₩	-	₩	-	₩	-

(in millions of Korean won)

	2021					
	Beginning	Increase	Decrease	Others	Ending	
Associates and joint venture						
Hanwha-Incus Plus 1st New Technology Business Investment Fund	₩	-	₩ 19,225	₩ (19,225)	₩	-

(6) Changes in lease liabilities for related parties, including large-scale business group affiliates, for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Beginning	Changes	Ending	
Associates and joint venture				
HANA TRUST REIT FIVE CO., Ltd.	₩	17,659	₩ (1,536)	₩ 16,123
KB Busan Osiria Hotel REITs		-	25,044	25,044
Large-scale business group affiliates				
Hanwha TotalEnergies Petrochemical Co., Ltd. (formerly, Hanwha Total Petrochemical Co., Ltd.)		67	(67)	-
Hanwha Energy Co., Ltd.		1	8	9

(in millions of Korean won)

	2021			
	Beginning	Changes	Ending	
Associates and joint venture				
HANA TRUST REIT FIVE CO., Ltd.	₩	19,759	₩ (2,100)	₩ 17,659
Large-scale business group affiliates				
Hanwha Total Petrochemical Co., Ltd.		134	(67)	67
Hanwha Energy Co., Ltd.		38	(37)	1

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(7) Equity contributions in cash to related parties, for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	Transaction	Related parties		2022	
Associates and joint venture	Capital increase	AI Alliance LLC	₩	3,143	
		Mirae Asset Global Innovation Grwoth Fund No. 1		3,000	
		VIRNECT CO.,LTD.		27	
		Shinhan AIM Infrastructure Fund 9		163	
		Envisioning Climate Solution Fund		1,500	
		KDB Asia Private equity investment		8,636	
		Toss Bank Co., Ltd		80,000	
		ZIP Fund I, L.P.		7,000	
		Premium Hirafu Properties TMK		1,722	
		Capital decrease	Golden Gate Ventures x Hanwha Growth Fund GP, LLC		204
			KB Sunjin Asia Real Asset Credit Specialized Investment Private Equity Trust No.1		723
			Shinhan AIM Infrastructure Fund 9		1,495
			Pangyo SD2 Co., Ltd.		6,701
			JR Specialized Investment Private Equity Estate Investment Trust No.15		2,540
	Hanwha Sbi Special Purpose Acquisition Co., Ltd.			10	
		KoFC POSCO HANWHA KB Shared Growth No.2. Private Equity Fund		21	

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	Transaction	Related parties	2021	
Associates and joint venture	Capital increase	AI Alliance LLC	₩ 2,688	
		CONIGLIO TAX EQUITY PARTNERSHIP, LLC	116,782	
		Golden Gate Ventures x Hanwha Growth Fund GP, LLC	44	
		Gulf Advanced Cables Insulation Company	9,335	
		Kellam Tax Equity Partnership, LLC	53,295	
		Wonju Green Corp.	3,167	
		KDB Asia Private equity investment	14,494	
		Toss Bank Co., Ltd. (Formerly, Toss Innovation Co., LTD.)	41,250	
		Hashed Venture Fund I	15,000	
		Capital decrease	KB Sunjin Asia Real Asset Credit Specialized Investment Private Equity Trust No.1	2,076
			KoFC POSCO HANWHA KB Shared Growth No.2. Private Equity Fund	11,615
			NINGBO ZHONGHUA JIAN HANWHA CHEMICAL	126
			Seoul Global Biomedical future growth engines fund	3,264
			JR Specialized Investment Private Equity Estate Investment Trust No.15	3,006
	Pangyo SD2 Co., Ltd.		115,135	
	Hanwha Short-Term Corporate Bond Securities Self-Investment Trust	20,000		
	Hanwha-Incus Plus 1st New Technology Business Investment Fund	1,000		

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(8) Payment guarantees to related parties, including large-scale business group affiliates, as at December 31, 2022, are as follows:

(in millions of Korean won and in thousands of US dollars and Japanese yen)

	Guarantee	Guaranteed amount	Purpose of payment guarantee
Associates and joint venture	Burdur Enerji A.S.	USD 9,302	Financial institution borrowings
Large-scale business group affiliates	HW Solar Power 1 G.K.	JPY 273,330	Financial institution borrowings
	HW Solar Power 4 G.K.	JPY 490,003	
	HW Solar Power 7 G.K.	JPY 144,314	Lease guarantee
	HW Solar Power 9 G.K.	JPY 233,155	
	HW Solar Power 10 G.K.	JPY 160,009	
	HW Solar Power 12 G.K.	JPY 900,759	
	HW Solar Power 13 G.K.	JPY 77,101	
HW Solar Power 26 G.K.	JPY 267,034		

(9) Details of collateral and payment guarantees provided by related parties including Large-scale business group affiliates as at December 31, 2022, are as follows:

(in millions of Korean won)

	Name of entity	Pledged item	Amount
Associates and joint venture	HANA TRUST REIT FIVE CO., Ltd.	Beneficiary right of real estate trust	₩ 1,296
	KB Busan Osiria Hotel REITs	Beneficiary right of real estate trust	1,800

¹ As at December 31, 2022, the Group is provided with collateral for the purpose of returning the leasehold deposits of HANA TRUST REIT FIVE CO., Ltd. and KB Busan Osiria Hotel REITs.

(10) Details of collateral provided by the Group for the funding sources of related parties as at December 31, 2022, are as follows:

(in millions of Korean won)

	Pledged asset	Book amount	Maximum collateral	Mortgagee
Associates and joint venture	Gyungbook Eco, Edu Co., Ltd	Shares ₩ 362	₩ 49,598	KB Life Insurance Company and others
	Ulsan Harbor Bridge Co., Ltd.	Shares -	345,800	KBTL
	Wonju Green Corp.	Shares -	24,281	Kookmin Bank and others
	EaglesEnergy Co.,Ltd	Shares 3,716	21,301	Consus New Energy Private Fund Special Asset Trust No.1

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(11) As at December 31, 2022, the Group is required to provide funds for the amount that is insufficient to repay the principal of the loan with termination payable or purchase value if the agreement is terminated or a purchase claim is made from the competent authority in connection with SOC projects by the related parties below

		Type of business
Associates and joint venture	Gyungbook Eco, Edu Co., Ltd	SOC
	Wonju Green Corp.	SOC

(12) The key management compensation for the years ended December 31, 2022 and 2021, consists of the following:

<i>(in millions of Korean won)</i>	2022		2021	
Salaries and other short-term employee benefits ¹	₩	297,321	₩	242,894
Post-employment benefits		40,977		30,561
Other long-term benefits		484		207

¹ Include cash-settled and equity-settled shared-based payments amounting to ₩ 50,776 million (2021: ₩ 34,542 million) and ₩ 34,542 million (2021: ₩ 26,386 million), respectively.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

58. Commitment and Contingencies

(1) The outstanding borrowing agreements with banks as at December 31, 2022, are as follows:

(in millions of Korean won and in thousands of foreign currency)

	Limit	
	Currency	Amount
Bank overdraft	KRW	560,175
	USD	15,000
	EUR	8,000
	CZK	119,086
Import-related usance	USD	1,164,483
	EUR	50,000
	JPY	2,000,000
	THB	30,000
Export-related D/A, D/P, Local and foreign trade bills	KRW	74,000
	USD	1,310,157
	EUR	297,800
	IRN	30,000
	THB	40,000
	AUD	42,560
Other borrowings	KRW	6,455,428
	USD	1,922,052
	EUR	511,454
	JPY	26,100,000
	CNY	2,230,000
	THB	70,000
	CZK	459,674
	AUD	80,000
	MYR	812,730
VND	90,000,000	

(2) As at December 31, 2022, 5 blank promissory notes and 18 blank checks and 5 promissory notes amounting to ₩ 42,489 million have been provided as collaterals for short-term and long-term debts, agreements for discounting notes receivable and performance guarantees and others.

(3) Other agreements as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
Loan agreement	₩	2,956,718	₩	3,635,462
Contribution agreement		4,836,492		5,363,428
Total	₩	7,793,210	₩	8,998,890

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(4) Payment guarantees provided for others (other than related parties) as at December 31, 2022, are as follows:

(in millions of Korean won and in thousands of foreign currency)

Guarantees received	Breakdown of guarantee	Amount	
Vendee in lot sale contracts	Joint surety of loan	KRW	1,367,575
Operation developers	Developer's lot sale guarantee	KRW	5,626,628
Competent authorities of private business places and others	Performance guarantee	KRW	405,433
Commercial banks	Payment guarantee and others	KRW	27,008
Zia Guclu	Payment guarantee	USD	68,577
Competent city and relevant government office	Deposits guaranteed for restoration due to forest conversion and others	KRW	25,103

¹ The maximum exposure to credit risk is identical to the maximum amount of guarantee provided as at December 31, 2022.

² The Group has provided financial guarantee and others for related parties as at December 31, 2022 (Note 57).

In addition to above guarantees, the Group invested in S-Y Highway Co., Ltd. and 51 investees for private sector investment projects and environmental water-treatment projects under the Act on Private Investment for Social Overhead Capital. As at December 31, 2022, the Group provides financial instruments at fair value through profit or loss of ₩ 60,214 million as the right of pledge to the lenders of investees. Further, the Group provides investment securities in associates as collateral for financing related parties (Note 57).

(5) On August 19, 2021, the Group obtained the control by acquiring 100% shares of WOS Inc. from Wave Electronics Co., Ltd. In relation to the transfer consideration, an additional earn-out clause amounting to ₩ 40 billion is included, and the Group will pay the amount in installments up to ₩40 billion from 2024 to 2026 when the order and sales targets are achieved.

(6) As at December 31, 2022, the Group guarantees a compensation for damages to Bayerische Motoren Werke AG ("BMW") and its affiliates for losses that may be incurred to BMW due to a breach of the Group's contractual obligations in the course of transactions with BMW. The guarantee period is 15 years from the date of submission of the guarantee to the date of the last order under the last project contract with BMW, and the guaranteed amount is unlimited.

(7) As at December 31, 2022, the Group assumes obligations including performance guarantee of constructing a solar thermal power station and construction warranty for Korea Hydro & Nuclear Power and others.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(8) Credit guarantees and payment guarantees provided to others on construction business

1) Details of credit guarantees provided by the Group to developers for their borrowings as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Guarantee balances	Loan balances	Guarantee balances	Loan balances
Private equity bond	₩ 6,000	₩ 5,000	₩ 11,500	₩ 10,500
ABCP	5,760	4,800	6,000	5,000
ABSTB	46,320	38,600	21,100	20,600
Other PF loan	294,861	250,631	172,163	150,164
Total	₩ 352,941	₩ 299,031	₩ 210,763	₩ 186,264

2) Loans to developers related to the Group's project as at December 31, 2022, are as follows:

(in millions of Korean won)

Developer	Creditors	Type	PF balances	Guarantee limits	Guarantee	Loan period	Progress	Description
Dabok village Housing Redevelopment and Maintenance business Cooperative	Bank of China/ Korean Federation of Community Credit Cooperatives /Tongyang Life Insurance Co., Ltd. and others	Loan	₩ 125,879	₩ 151,054	Joint guarantee	2021.10.13~ 2024.06.12	Start of construction	New loan
Inspire Integrated Resort	Beyond Yeongjong 3rd Co.,Ltd./ Beyond Yeongjong 4th Co.,Ltd.	ABSTB	27,600	33,120	Joint guarantee	2021.09.24~ 2025.09.24	Start of construction	New loan
Michu 8 District Housing Redevelopment and Maintenance Business Association	Shinhan Bank/Woori Bank/ Nonghyup Bank/Bank of China/Industrial and Commercial Bank of China	Loan	2,253	2,253	Joint guarantee	2021.04.21~ 2027.06.30	Construction not yet started	New loan
Yonginjoongsim Inc.	Eco fine tree 3rd Co.,Ltd	Private equity bond	5,000	6,000	Joint guarantee	2021.08.06~ 2023.08.07	Construction not yet started	New loan
Gamjung 4 Development Co.,Ltd.	EternalGK 1ST CO.,LTD.	ABSTB	5,800	6,960	Joint guarantee	2022.11.03~ 2023.02.03	Construction not yet started	New loan
Gamjung 4 Development Co.,Ltd.	BeyondGK 1ST CO.,LTD.	ABSTB	5,200	6,240	Joint guarantee	2021.11.24~ 2023.02.24	Construction not yet started	Repayment
Gamjung 4 Development Co.,Ltd.	BEYOND GAMJEONG 5TH CO.,LTD.	ABCP	4,800	5,760	Joint guarantee	2022.12.30~ 2023.04.28	Construction not yet started	New loan
Daeyeon District 3 Reconstruction and Maintenance Business Association	Woori Bank	Loan	2,832	2,832	Joint guarantee	2021.04.30~ 2024.09.30	Construction not yet started	New loan
Daeyeon District 3 Reconstruction and Maintenance Business Association	KDB CAPITAL CORPORATION	Loan	7,000	7,000	Joint guarantee	2021.07.30~ 2024.10.31	Construction not yet started	New loan

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Gojan District 9 Housing Reconstruction and Maintenance Business Association	Kookmin Bank	Loan	3,358	3,358	Joint guarantee	2021.08.25~2024.12.31	Construction not yet started	New loan
Wondang District 1 Housing Redevelopment and Maintenance Business Association	Richgate Wondang CO.,LTD.	Loan	6,470	6,470	Joint guarantee	2021.12.23~2026.06.23	Construction not yet started	New loan
Wondang District 1 Housing Redevelopment and Maintenance Business Association	Bank of China / IBK CAPITAL CORPORATION	Loan	8,300	10,790	Joint guarantee	2022.04.28~2027.01.28	Construction not yet started	New loan
Domabeon-dong District 9 Reconstruction and Maintenance Business Association	Kookmin Bank	Loan	4,391	4,391	Joint guarantee	2022.03.15~2026.09.30	Construction not yet started	New loan
SANGINCHEON PRIMARY SCHOOL HOUSING REDEVELOPMENT MAINTENANCE BUSINESS ASSOCIATION	Woori Bank / KEB Hana Bank / Shinhan Bank	Loan	61,728	74,074	Joint guarantee	2022.06.30~2027.05.30	Construction not yet started	New loan
SANGINCHEON PRIMARY SCHOOL HOUSING REDEVELOPMENT MAINTENANCE BUSINESS ASSOCIATION	NH CAPITAL CO.,LTD./ Synergy 1ST CO.,LTD	Loan	21,096	25,316	Joint guarantee	2022.06.30~2027.05.30	Construction not yet started	New loan
Dang-ri District 2 Housing Reconstruction and Maintenance Business Association	Kyongnam Bank	Loan	7,323	7,323	Joint guarantee	2022.12.29~2027.08.31	Construction not yet started	New loan
Total			<u>₩ 299,031</u>	<u>₩ 352,941</u>				

3) The Group provides conditioned-level debt acquisition agreements or compensation for damages agreements within the contract limit of ₩ 6,500,573,024 thousand for 40 business builders, including YEOJU JB Logistics Center Co.,Ltd. on the way to completion of the liability completion of ₩ 3,979,866,285 thousand for the year ended December 31, 2022. In addition, the Group provides joint guarantees of ₩ 352,941,223 thousand within the limit of ₩ 706,482,976 thousand for Korea Housing & Urban Guarantee Corporation and 7 other business builders and provides cash deficiency support agreement within the limit of ₩ 75,000,000 thousand for SEOUL STATION NORTH 1ST CO.,LTD. However, no amount has incurred as at December 31, 2022.

4) As at December 31, 2022, the Group has entered into 28 loan agreement with a limit of ₩ 779,023 million and ₩ 614,033 million with the redevelopment/reconstruction cooperative and developers for the maintenance business and subcontract business including Airport market station construction. In relation to this, the Group recognizes loans of ₩ 155,290 million as other financial assets. In addition, the Group has entered into a loan agreement with a developer for the wind power business. In relation to this, there is no recognized loans.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(9) Guarantees provided to the Group by others (other than related parties) as at December 31, 2022, are as follows:

(in millions of Korean won and in thousands of foreign currency)

Guarantor	Breakdown of guarantee	Amount	
Kookmin Bank	BOND Guarantees about overseas construction and others	USD	10,159
		KWD	1,917
KEB Hana Bank	Payment guarantees in foreign currency and others	KRW	29,500
		USD	172,624
		KWD	1,521
		SAR	47,667
Standard Chartered Bank Korea Limited	Performance guarantees	KRW	48,675
Construction Guarantee Cooperative	Guarantees for construction and housing sale	KRW	7,423,775
Korea Development Bank	BOND Guarantees about overseas construction and others	USD	230,367
Societe Generale	Performance guarantees	USD	328,989
Seoul Guarantee Insurance Co., Ltd.	Performance guarantees and others	KRW	9,633,530
		EUR	69,058
The Export-Import Bank of Korea	BOND Guarantees about overseas construction and others	USD	1,376,141
		EUR	297,800
		KWD	15,135
		INR	30,000
Shinhan Bank	Payment guarantees for debentures and others	USD	182,382
		EUR	126,000
Engineering Guarantee Insurance	Construction performance guarantees and others	KRW	566,891
		USD	3,478
Woori Bank	Payment guarantees in foreign currency	USD	39,319
		KRW	6,508
Korea Specialty Contractor Financial Cooperative	Performance guarantees and others	KRW	1,303
Korea Housing & Urban Guarantee Corporation.	Guarantees for construction and housing sale	KRW	675,468
Korea Federation of Small and Medium Business	Performance guarantees	KRW	11,332
Korea Defense Industry association	Contract. defect performance guarantee and others	KRW	8,816,325
Korea Software Financial Cooperative	Performance guarantees	KRW	1,108,828
Arab Bank Singapore	Debt payment guarantees	USD	2,248
First Abu Dhabi Bank	Contract performance guarantees and others	USD	140,818

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won and in thousands of foreign currency)

Guarantor	Breakdown of guarantee	Amount	
CGIF	Payment guarantees in foreign currency and others	CNY	1,000,000
Others	Performance guarantees and others	KRW	759

(10) Details of assets provided as collateral for the Group's liabilities as at December 31, 2022, are as follows:

(in millions of Korean won and in thousands of foreign currency)

	Book amount	Mortgage amount	Mortgagee	Classification	
Inventories	KRW	201,749	250,864	The Korea Development Bank and others	
	USD	25,283	25,283	The Korea Development Bank and others	
	MYR	281,687	135,282	Minister of Finance, Malaysia	
	JPY	2,683,095	2,000,000	Mizuho Bank	
Property, plant and equipment	KRW	2,969,195	1,862,054	The Korea Development Bank and others	
	USD	1,077,942	168,603	Woori Bank and others	
	CNY	930,421	831,421	Bank of China and others	
	MYR	1,398,661	671,718	Minister of Finance, Malaysia	
	GBP	602,582	84,480	The Korea Development Bank	
Investment property	KRW	287,578	468,652	Lotte Shopping Co., Ltd. and others	Collateral for borrowings and others
Intangible assets	KRW	15,084	11,738	The Korea Development Bank and others	
	CNY	51,545	51,545	Bank of China and others	
Financial assets	KRW	6,314,276	6,313,866	The Korea Development Bank and others	
	USD	63,990	63,990	The Korea Development Bank and others	
	JPY	102,081	102,081	Fuyo General Lease and others	
	CNY	578,455	578,455	Agricultural Bank of China and others	
	EUR	8,179	8,179	Commerzbank AG and others	
	MYR	12,019	12,019	Minister of Finance, Malaysia	
Other assets	KRW	17,571	17,571	KEB Hana Bank and others	

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Shares of Hanwha Life Insurance Co., Ltd. and the Group's subsidiaries are provided as collateral for trading purposes, such as borrowings, as at December 31, 2022. The maximum amount of guarantee provided by collateral amounts to ₩ 635,169 million.

(11) As at December 31, 2022, equity securities of ₩ 16,875 million (2021: ₩ 41,398 million) and debt securities of ₩ 546,592 million (2021: ₩ 1,601,429 million) of separate account assets are provided as collateral in relation to derivative transactions of separate account and bonds sold under repurchase agreement.

(12) Financial assets at fair value through profit or loss amounting to ₩ 3,651,204 million (2021: ₩ 3,302,350 million) and financial asset at amortized cost amounting to ₩ 1,376,561 million are provided as collateral in relation to bonds sold under repurchase agreement as at December 31, 2022 and 2021. This transaction is a financial instrument that has not met the derecognition conditions due to an agreement to repurchase the securities at a certain price at the contract termination date upon sale, and the bonds sold under repurchase agreement as at December 31, 2022 and 2021, amount to ₩ 3,946,374 million (2021: ₩ 2,945,483 million).

(13) Certificate of beneficial interest in investor's deposit (trust) at Kookmin Bank in relation to replacement services of net settlement is provided as collateral for amounts of ₩ 47,000 million as at December 31, 2022.

(14) Related to trading finance and collateral loans, ₩ 1,191,271 million of securities that are received or pledged as collaterals are provided to KSFC as at December 31, 2022.

(15) As at December 31, 2022, the Group has 2,046 pending cases. The Group is the plaintiff in 1,034 cases aggregating to ₩ 517,714 million, USD 10 million, EUR 14 million and CNY 252 million and the defendant in 1,012 cases aggregating to ₩ 441,601 million, USD 1 million, EUR 54 million and CNY 85 million. Management believes that the outcome of these cases will not materially affect the Group's consolidated financial statements.

(16) Grant of stock options to financial investors

As at December 31, 2022, the Group granted stock options (put back options) to the financial investors of the following developers.

	Ulsan Green Co., Ltd.
Exercise period	From the start to the end of business operation
Share to be purchased	Entire equity capital invested by the financial investors
Exercise price	Face value (₩ 3,507 million)
Condition for exercise	1) From the start date of business operation ~ 5 years: under 90% of the expected revenue 2) 5 ~ 10 years: under 85% of the expected revenue

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

3) After 10 years: under 80% of the expected revenue

Jeju Ecotech Co., Ltd.

Exercise period	From the start to the end of business operation
Share to be purchased	Entire equity capital invested by the financial investors
Exercise price	Face value (₩ 898 million)
Condition for exercise	1) Cancel the designated participant or revoke the agreement 2) Whole or the part of PF agreement is ineffective due to the fault of the business and construction investors 3) Declare the loss of profit within period based on the agreement

(17) As at December 31, 2022, in connection with the SOC project, the Group provides cash deficiency support agreements of up to ₩ 394,960 million with the investors of the construction and operation of the project for the shortfall of the loan, which is borne by 9 SOC corporations including Kyeonggi East-west Circulation Corp. In addition, the Group provides cash deficiency support agreements (limit: equivalent to the shortage) in the event of a shortage of interest payments for ₩ 300,000 million of mid-tier loan principal among the PF loans of developer in relation to the development project of Inspire Integrated Resort. In connection with the SOC project, the construction investors have a contract to provide the deficit fund if the agreement is terminated or the purchase request from the competent administrative agency is insufficient to repay the loan with refund upon cancellation or the purchase price.

(18) On July 30, 2021, the Group acquired shares of Hanwha Impact Co., Ltd. from Samsung C&T Corporation and Samsung SDI Co., Ltd. Out of ₩ 479,319 million of the acquisition cost and interest, ₩ 191,727 million has been paid first and the second payments amounting to ₩ 143,796 million has been paid. The third payment amounting to ₩ 143,796 million will be paid by July 2023. Some of the acquired shares have been pledged as collateral to secure the 3rd payment.

(19) In order to develop new products, the Group has entered into a technology introduction contract with General Electric Company of USA and others.

(20) The Group entered into Risk and revenue Sharing program (RSP) with Pratt & Whitney in the USA and others to promote engine parts business and expand the mid- to long-term business model. Through RSP, the Group is allocated with benefits and risks from business including development, mass production, and aftermarket sales of airplane engines in proportion to its participation. Pratt & Whitney and others, who are Consortium leaders (OEM, Original Equipment Manufacturer) of the agreement, have been providing products and services to aircraft manufacturers such as Airbus and others and transportation service company such as Korean Air and others. The Group bears rights and obligations up to the proportion of its participation (1~3% for each program classified by types of engines supplied by the Group) according to the

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

agreement.

Revenues in relation to the agreement mostly occur through supply of designated products, and some of the revenues occur by providing engine repair and other services. Also, costs of the agreement include manufacturing cost to supply products, business participation cost agreed to pay for participation in business, development cost to enhance capability of engines, program management cost, sales promotion cost paid to customers, and others.

In addition, the Group has been distributed with arrangements such as borrowing limits provided by the program in accordance with the agreement up to its percentage of shares. According to the agreement, the Group has provided ₩ 134,752 million of borrowing limits to Indigo Airline, Delta Airline, and others.

(21) As at December 31, 2022, the Group entered into an agreement for mutual growth of large and small business with Woori Bank, Korea Development Bank and others. In accordance with the agreement, the Woori Bank, Korea Development Bank and others support small business that cooperates with the Group, where Woori Bank, Korea Development Bank and others additionally set up a special fund based on the deposit of ₩ 46.2 billion from the Group.

(22) Details of securities borrowed as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Counter-party	2022	2021
Listed shares	Korea Securities Depository	₩ 1,312,836	₩ 280,358
Government bond/municipal bond	The Korea Securities Finance Corporation	770,000	151,000
	Total	₩ 2,082,836	₩ 431,358

(23) Securities in custody received from customers as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Trustor securities in custody	₩ 18,694,245	₩ 20,001,170
Beneficial securities in custody	29,964,321	28,882,355
Other securities in custody	61,600	134,500
	₩ 48,720,167	₩ 49,018,025

(24) Accounts receivable from the companies, which are under the court receivership, as at December 31, 2022, are as follows:

<i>(in millions of Korean won)</i>	Amount
Companies under legal management and commencement of	₩ 686

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

composition	
Loss allowance ¹	686

¹ According to the plan for collection of the receivables, the Group recognized ₩ 686 million as provision for impairment after discounting at present value. However, recoverable amount of above receivables can be changed since corresponding companies are currently under the court receivership. The consolidated financial statements for the year ended December 31, 2022 were not reflected with these adjustments due to uncertainty.

(25) Credit derivatives

As at December 31, 2022, the Group has entered into 51 credit derivative contracts, including CDS contracts, with the outstanding amount of ₩ 764 billion of asset position(13 credit derivative contracts) and ₩ 1,237.7 billion of liability position(38 credit derivative contracts). The contracts consist of derivatives contracts for related credit risks of domestic and foreign governments and corporations. In accordance with the contracts, in the event of a specific credit event, the Group is obliged to repay debts equivalent to the face value of guaranteed short position minus the recovery rate amount.

(26) Commitment of allowance for loss in relation to distribution of cooperative assets

Association is regulating commitment of provision for loss in relation to distribution of association assets. Investment is distributed to the Group, the general partner of each association, after provision for loss in accordance with commitment has been set. Since this commitment is affecting valuation of investments in partnership, details of commitment of provision for loss that is finalized at liquidation are as follows:

Project related to

Seoul Global Bio-medical New Growth Engine Investment Fund ¹	When the amounts after deducting operating expenses are under the total amount invested in capital, a provision is set for loss within ₩2.5 billion.
KoFC Value-up Private Equity Fund ²	When the amounts after deducting operating expenses are under the total amount invested in capital, a provision is set for loss within ₩2.5 billion.

¹ As principal of investments which was previously allocated exceeds the total investments, no primary loss allowance will occur.

² KoFC Value-up Private Investment Equity Fund was sold to Hanwha Asset Management Co., Ltd., a related party, during the year ended December 31, 2015. However, deposits for Woori Bank was pledged as collateral upon the request from buyer (Note 28).

As at December 31, 2022, the maximum allowance for doubtful receivables related to the contract

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

is ₩ 5,000 million, and the Group recognizes provisions amounting to ₩ 2,500 million for the case of assuming losses.

(27) Among the financial assets at fair value through profit or loss of the Group in the consolidated statement of financial position as at December 31, 2022, the fund operated by GEN2 PARTNERS amounts to ₩ 68.5 billion and its repurchase has been temporarily suspended due to the recent outbreak of COVID 19. However, since the Group issued derivatives-combined securities using the fund as an underlying asset and the fair value of the securities is linked to the underlying asset, the impact of net profit or loss arising from the changes in fair value up to the end of the current period on the consolidated financial statements is not material.

(28) As at December 31, 2022, the Group has discharged its obligation of offset trading agreement related to export of K9 self-propelled howitzer to Norway. In accordance with the agreement, Hanwha Defense Co., Ltd. is required to perform the obligation until 2030. Due to the nature of the offset trading agreement, specific performance obligations have not been expressed and as a result, the Group does not recognize provisions since necessary expenses are not reliably measured.

(29) As at December 31, 2022, the Group has entered into outwards agreements for CI insurance, cancer insurance, and health insurance for the sick with Reinsurance Group of America, Korean Reinsurance Co., Ltd., Munich Reinsurance Company and 9 other global reinsurers.

Details of outwards and inwards agreements the Group has entered into for general, long-term and automobile insurance of Hanwha General Insurance Co., Ltd., a subsidiary, as at December 31, 2022, are as follows:

	Reinsurance company	Ratio	Insurance product
Proportional	Korean Reinsurance Company	10~30% of VaR	Automobile insurance (excluding joint risk)
	Korean Reinsurance Company and others	15~70% of VaR	Fire insurance
	Korean Reinsurance Company and others	15~70% of VaR	Marine insurance
	Korean Reinsurance Company and others	20~90% of VaR	Special insurance
	Korean Reinsurance Company	25~65% of VaR	Long-term insurance (property, accident, disease and others)
	SCOR RE and others	5~60% of VaR	Long-term insurance (accident, disease and others)
Excessive	Korean Reinsurance Company and others	₩ 0.875 billion ~ Infinite,	Automobile insurance (personal indemnification)
	Korean Reinsurance Company	₩ 1.26 billion ~ ₩ 5.75 billion	Automobile insurance (Automobile - collateralization)
	Korean Reinsurance	₩ 0.6 billion ~ ₩ 98 billion	Long-term insurance

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Company		(property and accident)
SWISS RE and others	0~100% of excess amount	Other general

(30) During the year ended December 31, 2022, the Group entered into a sales contract with DS Networks Co., Ltd. to purchase 138 rooms on the lower floors and ancillary facilities, which are part of a total of 690 living accommodation facilities in a 48-story accommodation complex located in Anyang-si, Gyeonggi-do. After the completion of the construction, the Group will enter into the sales contract. The expected payment for the lump-sum purchase is ₩ 34 billion.

(31) The Group has entered into a put option agreement with the existing largest shareholders of Satrec Initiative Co.,Ltd. through shareholders' agreement related to the acquisition of new shares of Satrec Initiative Co.,Ltd. According to the agreement, the existing largest shareholders of Satrec Initiative Co.,Ltd. have a put option in which they can claim for the Group to acquire a certain number of shares every year from 2027 to 2031.

(32) On September 26, 2022, the Group decided to participate in the capital increase through third-party allotment of Daewoo Shipbuilding & Marine Engineering Co., Ltd. The Group has entered into a basic agreement with Korea Development Bank, which is the largest shareholder of Daewoo Shipbuilding & Marine Engineering Co., Ltd., in relation to the shareholders' agreement and others which determine the operation of Daewoo Shipbuilding & Marine Engineering Co., Ltd., rights and obligation of the parties.

(33) The property, plant and equipment, intangible assets and investment property contracted for, but not yet acquired at the end of the reporting period amount to ₩ 446,156 million.

59. Cash Flow Information

(1) Details of cash provided by operations for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Profit for the year	₩	2,276,045	₩	3,216,454
Addition of expenses not involving cash outflows:				
Finance income (non-financial business)		(120,375)		(53,453)
Finance cost (non-financial business)		547,445		398,321
Finance income (financial business)		(3,722,039)		(3,415,433)
Finance cost (financial business)		287,111		111,107
Impairment loss		48,970		46,034
Depreciation of property, plant and equipment		972,802		908,641
Amortization		202,267		179,684
Depreciation of right of use assets		182,035		155,953
Post-employment benefit		349,289		319,319
Provision		183,670		252,529

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Loss on foreign currency translation	751,341	336,818
Gain on foreign currency translation	(1,294,132)	(1,717,912)
Share of profit (loss) of associates and joint ventures	76,020	(276,308)
Loss on valuation of financial instruments	330,070	53,539
Loss on disposal of financial instruments	1,333,707	84,465
Overlay adjustment	(660,517)	261,690
Reserves	2,650,948	4,380,267
Others	539,811	645,880
Changes in working capital:		
Trade receivables	(1,843,934)	15,743
Other receivables	(112,733)	(18,616)
Inventories	(669,864)	(960,822)
Loan receivables and other receivables	(1,252,774)	312,536
Financial assets at fair value through profit or loss	(849,310)	705,878
Financial assets at fair value through other comprehensive income	(108,897)	(129)
Other financial assets	209,764	967,860
Other assets	(1,424,941)	(448,234)
Trade payables	(474,092)	673,713
Other payables	(264,589)	210,524
Defined benefit liabilities	(285,163)	(171,130)
Provisions	(163,710)	(174,742)
Other financial liabilities	(245,478)	(2,394,137)
Other liabilities	3,257,931	540,505
Separate assets	3,425,999	(1,007,095)
Separate liabilities	(3,468,882)	1,179,998
Deferred policy acquisition costs	(1,410,206)	(1,156,835)
Other withheld liabilities	(274,675)	138,566
Others	8,277	26,263
Cash provided by (used in) operations	₩ (1,012,809)	4,327,441

(2) The significant non-cash transactions for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Increase(decrease) in other payables due to acquisition of property, plant and equipment	₩ 15,064	₩ 66,952
Increase (decrease) in other receivables due to disposal of property, plant and equipment	5,980	(35,491)
Increase (decrease) in other payables due to acquisition of intangible assets	(18,193)	(5,329)
Non-cash transaction in relation to securities trading	24,174	202,499

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Share exchange between treasury shares and third party shares	156,840	-
---	---------	---

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

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

(in millions of Korean won)

	2022			
	Beginning	Changes resulting from financing activities	Others ¹	Ending
Bank borrowings and debentures ²	₩ 18,622,704	₩ 3,906,561	₩ (946,469)	₩ 21,582,796
Other financial liabilities	878,693	(9,929)	(63,235)	805,529
Lease liabilities	957,183	(221,018)	342,501	1,078,666
Liabilities resulting from financing activities	<u>₩ 20,458,580</u>	<u>₩ 3,675,614</u>	<u>₩ (667,203)</u>	<u>₩ 23,466,991</u>

¹ Others include interest expense and gain and loss on foreign currency translation.

² Bank borrowings exclude bond sold under repurchase agreements classified as cash flows generated from operation.

(in millions of Korean won)

	2021			
	Beginning	Changes resulting from financing activities	Others ¹	Ending
Bank borrowings and debentures ²	₩ 20,026,826	₩ 1,586,741	₩ (2,990,863)	₩ 18,622,704
Other financial liabilities	739,899	(14,656)	153,450	878,693
Lease liabilities	660,595	(221,170)	517,758	957,183
Liabilities resulting from financing activities	<u>₩ 21,427,320</u>	<u>₩ 1,350,915</u>	<u>₩ (2,319,655)</u>	<u>₩ 20,458,580</u>

¹ Others include interest expense and gain and loss on foreign currency translation.

² Bank borrowings exclude bond sold under repurchase agreements classified as cash flows generated from operation.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

60. Assets Held for Sale

Assets held for sale as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	Predicted date of sale	2022		2021	
Assets held for sale					
Land	In 2023	₩	86,242	₩	60,663
Buildings	In 2023		37,086		58,083
Construction in progress	In 2023		-		14,697
Others	In 2023		819		2,827
Subtotal		₩	124,147	₩	136,270

61. Risk Management

(1) Financial risk management of non-financial business

The Group's activities expose it to a variety of financial risks: market risk (including currency risk and interest rate risk), credit risk and liquidity risk. The Group's overall risk management program seeks to minimize potential adverse effects on the Group's financial performance.

The objects of financial risk management are financial assets, including cash and cash equivalents, financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income, financial assets at amortized cost, and trade receivables and other receivables, and financial liabilities, including trade and other payables, borrowings, and debentures.

1) Market risk

① Foreign exchange risk

Foreign exchange risk of the Group arises when future commercial transactions or recognized assets or liabilities are denominated in a currency that is not the Group's functional currency. The Group is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to USD, EUR, JPY and CNY. The Group operates hedging policies for each company within the Group, considering the nature of business and the existence of instruments to cope with the risks of exchange rate fluctuation. Additionally, the Group periodically evaluates and handles such risks exposed through managing system for receivables and payables denominated in foreign currencies, and reports the results to the management.

The impacts of weakened/strengthened Korean won by 10% against foreign currencies, with all other variables held constant, on the profit before income tax for the year ended December 31, 2022, are as follows:

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

<i>(in millions of Korean won)</i>		10% increase		10% decrease
USD	₩	29,532	₩	(29,532)
EUR		(6,199)		6,199
JPY		930		(930)
CNY		3,998		(3,998)

The above sensitivity analysis is performed based on monetary assets and liabilities denominated in a currency that is not the Group's functional currency.

② Interest rate risk

The Group's interest rate risk arises mainly from borrowings. Borrowings issued at variable rates expose the Group to cash flow interest rate risk, which is partially offset by currency swap. Also, fixed-rate borrowings expose the Group to fair value interest rate risk. The Group analyzes and manages its interest rate exposure through various manners, such as to share excess cash within the Group to minimize external borrowings, to avoid high rate borrowings, to reform capital structure, to manage an appropriate ratio of fixed-rate borrowings and variable rate borrowings and to monitor a fluctuation of domestic and foreign interest rates.

The impact of 1% higher/lower of interest rate (on floating rate borrowings) with all other variables held constant on the Group's profit before income tax for the year ended December 31, 2022, would have been ₩ 76,176 million lower/higher.

2) Credit risk

Credit risk is managed on a group basis. Credit risk arises from cash and cash equivalents, derivative financial instruments and deposits with banks and financial institutions, as well as credit exposures to wholesale and retail customers, including outstanding receivables and committed transactions. In order to manage credit risk, the Group opens and maintains its business only with customers whose credit qualities exceed a required minimum rating and periodically reevaluates credit qualities of customers to amend a credit limit, if necessary. As at December 31, 2022, management does not expect any significant losses from non-performance by counterparties. As at December 31, 2022, the Group is exposed to credit risk related to financial guarantees provided by the Group to related parties and others (Notes 57 and 58).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

3) Liquidity risk

The Group monitors rolling forecasts of its 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. The Group's treasury department invests surplus cash in time deposits and interest-bearing money market deposits, choosing instruments with appropriate maturities or sufficient liquidity to provide sufficient headroom.

Details of the Group's liquidity risk analysis as at December 31, 2022 and 2021, are as follows. The amounts disclosed in the table are the contractual undiscounted cash flows.

(in millions of Korean won)

	2022			
	Less than 1 year	Between 1 and 5 years	More than 5 years	Total
Bank borrowings ¹	₩ 6,829,604	₩ 3,813,056	₩ 741,932	₩ 11,384,592
Debentures ¹	1,887,505	3,990,514	-	5,878,019
Trade and other payables	4,149,014	298,158	127,394	4,574,566
Derivative financial liabilities ²	29,865	159,748	-	189,613
Other financial liabilities ³	1,193,828	774,666	1,038,996	3,007,490
Total	<u>₩ 14,089,816</u>	<u>₩ 9,036,142</u>	<u>₩ 1,908,322</u>	<u>₩ 25,034,280</u>

¹ Cash flows of related interest expenses are included.

² Cash flows of derivative financial instruments include time value and others.

³ Cash flows of accrued interest expenses are excluded.

(in millions of Korean won)

	2021			
	Less than 1 year	Between 1 and 5 years	More than 5 years	Total
Bank borrowings ¹	₩ 5,276,507	₩ 3,690,190	₩ 839,383	₩ 9,806,080
Debentures ¹	1,465,921	4,020,285	2,205	5,488,411
Trade and other payables	4,224,794	309,293	110,648	4,644,735
Derivative financial liabilities ²	11,301	1,570	-	12,871
Other financial liabilities ³	1,042,645	65,511	1,507,856	2,616,012
Total	<u>₩ 12,021,168</u>	<u>₩ 8,086,849</u>	<u>₩ 2,460,092</u>	<u>₩ 22,568,109</u>

¹ Cash flows of related interest expenses are included.

² Cash flows of derivative financial instruments include time value and others.

³ Cash flows of accrued interest expenses are excluded.

The Group has entered into both financial guarantee contracts and performance guarantee contracts, which are not considered in the above table. If a principal debtor fails to meet an obligation, additional cash outflows from the Group may be incurred within a year (Note 58).

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(2) Fair value measurement of non-financial businesses

Assets measured at fair value or for which the fair value is disclosed are categorized within the fair value hierarchy and the defined levels are as follows:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1).
- Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (that is, prices) or indirectly (that is, derived from prices) (Level 2).
- Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs) (Level 3).

Fair value hierarchy classifications of the financial assets and the financial liabilities that are measured at fair value or their fair value is disclosed as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Level 1	Level 2	Level 3	Total
Recurring fair value measurements				
Assets				
Financial assets at fair value through profit or loss				
Cash and cash equivalents	₩ -	₩ 630,395	₩ -	₩ 630,395
Trade and other receivables	-	2,198	-	2,198
Other financial assets	-	91,569	-	91,569
Equity securities	9,700	3,099	88,566	101,365
Beneficiary certificates	-	-	98,902	98,902
Debt securities	-	-	506,120	506,120
Financial assets at fair value through other comprehensive income				
Equity securities	134,474	17,396	320,974	472,844
Debt securities	-	-	-	-
Derivative financial assets	-	129,709	87,303	217,012
Total	<u>₩ 144,174</u>	<u>₩ 874,366</u>	<u>₩ 1,101,865</u>	<u>₩ 2,120,405</u>
Liabilities				
Derivative financial liabilities	₩ -	₩ 40,047	₩ 149,566	₩ 189,613
Total	<u>₩ -</u>	<u>₩ 40,047</u>	<u>₩ 149,566</u>	<u>₩ 189,613</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021			
	Level 1	Level 2	Level 3	Total
Recurring fair value measurements				
Assets				
Financial assets at fair value through profit or loss				
Cash and cash equivalents	₩ -	₩ 646,060	₩ -	₩ 646,060
Trade and other receivables	-	3,836	-	3,836
Other financial assets	-	97,592	-	97,592
Equity securities	4,822	2,823	32,398	40,043
Beneficiary certificates	-	17	15,772	15,789
Debt securities	-	-	312,243	312,243
Financial assets at fair value through other comprehensive income				
Equity securities	56	-	76,965	77,021
Debt securities	-	152	-	152
Derivative financial assets	-	45,432	33,947	79,379
Total	<u>₩ 4,878</u>	<u>₩ 795,912</u>	<u>₩ 471,325</u>	<u>₩ 1,272,115</u>
Liabilities				
Derivative financial liabilities	₩ -	₩ 12,851	₩ -	₩ 12,851
Total	<u>₩ -</u>	<u>₩ 12,851</u>	<u>₩ -</u>	<u>₩ 12,851</u>

Changes in Level 3 of the fair value hierarchy for the recurring fair value measurements for the years ended December 31, 2022 and 2021 are as follows:

(in millions of Korean won)

	2022	2021
Beginning	₩ 471,325	₩ 176,963
Purchase	690,697	227,533
Sales	(13,647)	(19,395)
Gain and loss recognized in profit or loss	(49,775)	46,385
Gain and loss recognized in other comprehensive income	(129,013)	4,486
Others	(17,288)	35,353
Ending	<u>₩ 952,299</u>	<u>₩ 471,325</u>

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Valuation techniques and inputs

Valuation techniques and inputs used in the fair value measurements categorized within Level 2 and Level 3 of the fair value hierarchy as at December 31, 2022, are as follows:

- Derivatives (currency forward, currency swap, interest rate swap)

The fair value of the foreign currency forward contracts is measured principally on the basis of the forward exchange rates disclosed in the market at the end of the reporting period for the periods in which they are consistent with the remaining period of the currency forward. If the forward exchange rate of the period consistent with the remaining period of the forward exchange contract is not disclosed in the market, the Group measures its value according to estimating forward exchange rate by applying interpolation method with each period of forward rate disclosed in the market, and in this case, period similar to the remaining period of forward exchange contracts is used. For currency forward, currency swap and interest rate swap for which forward exchange rate is not disclosed, the present value is measured based on evaluation reports received by financial institutions. The fair value measurement for the derivatives is categorized within Level 2 as inputs used for valuation are derived from observable market forward rate and others at the reporting period.

Details of derivative financial assets categorized as Level 3 are as follows:

Details

Underlying assets	Residual equity of P&W NGPF Manufacturing Company Singapore. Ltd (70%)
Exercise price of call option	70% of P&W NGPF Manufacturing Company Singapore. Ltd.'s net asset value plus \$11,800,000 at the time of the exercise
Exercise period of call option	November 30, 2024
Owner of call option	Hanwha Aerospace Co., Ltd.
Discount rate	Singapore Government bond interest rate curve

The Group recognizes derivative financial liabilities according to Shareholders' agreement and others, other than the above derivative financial instruments (Note 58).

- Government and public bonds

The fair value of government and public bonds is calculated by discounting the future cash flow at the market interest rate that is applied to other companies that have similar credit ratings as the issuer of debt security. Therefore, the Group categorized the fair value measurement of government and public bonds as Level 2 in fair value hierarchy.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

- Unlisted securities

The fair value of unlisted shares is measured using discounted cash flow model. To estimate future cash flows, certain assumptions which are not based on observable market price or ratio, such as revenue growth rate, pre-tax operating profit rate and discount rate, are used. WACC used to discount future cash flows are calculated by applying Capital Asset Pricing Model (CAPM) from similar listed corporations. The Group determined that key assumptions and estimation described above have significant impact on the fair value of unlisted shares and categorized the fair value measurement of unlisted shares as Level 3 in fair value hierarchy.

(3) Financial risk management of financial business

1) Risk management policy

Insurance Business

The Group does its best to make stable growth and profit for shareholders and policyholders in managing insurance risk, interest rate risk, credit risk, market risk, liquidity risk and operation risk in accordance with its principle of the risk management.

① Objectives of the risk management

The Group's objectives of the risk management are to maximize its value and sustain its stable growth by preventing, evaluating and managing uncertainty and possibility of loss.

② Risk management strategy

In the short term, the Group establishes and manages maximum permissible limit to maintain entire risk level below or within a certain level of available capital. In addition, the Group operates the risk management process for investment activity and insurance product development.

In the middle and long term, the Group seeks to maximize its value and profit-oriented business strategy, which reflects asset and liability management ("ALM") investment strategy (the characteristics of insurance asset management strategy) in its management plan and asset management plan. Also, risk management organization and management's reporting system maintain independence and principle of checks and balances.

③ Structure and function of the risk management organization

The Group has the risk management committee, the risk management action officers committee for insurance division, investment division and common division and the risk management team. The Group operates asset management committee, quoted interest rate committee, product development committee, operating expense management committee, reinsurance management committee and variable insurance guarantee risk management committee with regard to worksite operations.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

(i) Risk management committee

The risk management committee is composed of more than three directors who are elected at the board of directors. The risk management committee establishes standards and measures of the risk management and approves the permissible risk limit and others.

(ii) Risk management action officers committee

Risk management action officers committee is composed of members who are managers of each risk management department. The committee performs checking running state of the committee's decision, deliberation on detailed regulations for risk management, matters delegated by Risk management committee and others.

Categories and function of subcommittees:

Name of sub-committee	Major function
Asset management committee	Deliberation of quarterly asset management strategy and target portfolio, transaction of investment and loan, choice of asset management companies and others
Quoted interest rate committee	Deliberation of quoted interest rate
Product development committee	Deliberation of development and sale of insurance product and development of other product
Operating expense management committee	Discussion between divisions for operating expense and management of operating expense
Reinsurance management committee	Management of reinsurance ceded and assumed, selection of reinsurer, analysis for reinsurance transaction and others
Variable insurance guarantee risk management committee	Deliberation of management instruction, hedging strategy of guarantee risk of variable insurance and others and report on results of hedging

④ Internal capital adequacy assessment and management procedures

The Group complies with the Risk-based capital (RBC) ratio required by the Financial Supervisory Service. The purpose of RBC ratio system is to reserve stockholders' equity enough to cover the unforeseen losses of an insurance company. This is for the insurance company to maintain its ability to pay to the customers.

Risk-based capital (RBC) ratio is the total available capital of the Group divided by the Group's required capital (standard solvency margin amount). Available capital consists of share capital, reserves, and retained earnings. Required capital is calculated based on the diversification of insurance, interest rate, credit, market and operation risks.

Financial Supervisory Service requires RBC ratio of over 100%. When RBC ratio is below 100%, worsening of deficiency is prevented by timely corrections on each RBC ratio. The purpose of RBC ratio system is to reserve stockholders' equity enough to cover the unforeseen losses of an

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

insurance company. This is for the insurance company to maintain its ability to pay to the customers.

Risk-based capital (RBC) ratio	Complementary Measures
Recommend business improvement 50% - 100%	Recommend increase / decrease of equity capital, restrict any new business, and others
Demand business improvement 0% - 50%	Demand change of management members, suspend of partial operations, and others
Recommend business improvement Below 0%	Cancellation of share, operation transfer, merger, contract transfer and others

The Group divides risk into insurance, interest rate, credit, market and operation risk for the calculation of risk-based capital. The Group takes RBC influence into consideration for portfolio strategy. The Group measures the level of internal risk using internal risk model for insurance, interest rate, credit and market risk.

Investment and Securities Business

The Group is exposed to various financial risks while engaged in the operating activities; the types include credit risk, liquidity risk, market risk and operational risk. The purpose of the Group's overall risk management policy is to maximize revenue compared to the risk management within the appropriate level, and for that purpose, the Group performs awareness and definition of the danger, measurement and evaluation and control and reporting.

① Basic principles

Basic principles of the risk management are as follows:

- Risk management is the final responsibility of the board of directors, and the risk management objectives and policies are the core of the business strategy.
- Clear understanding of the risks of various types and appropriate system for risk management should be established.
- Risk management should be accomplished in all teams and shall be performed independent of the sales activities.
- The risk management organization in charge of comprehensive risk management and control functions should be formed and manage risks that may occur in various management activities.
- The Group operates the risk management committee, the working-level risk management committee and the risk management department for risk management.

② Board of Directors

As the top body of the risk management organization, the Board of Directors performs to appoint and dismiss the risk management committee, to deliberate and vote the establishment of risk management policy; and to be reported business planning, results and implementation of risk management.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

③ Risk management committee

Installed in the board of directors, the risk management committee exercises overall rights in the risk management. The risk management committee performs to establish the risk management policy and strategy and to set the overall company risk limits.

④ Risk management execution committee

As the decision-making party installed in the risk management committee, the risk management execution committee performs to set and allocate departmental risk limits, to introduce computerized systems of risk management and to deliberate and vote such transactions above a certain size.

⑤ Investment Assessment Risk Management Committee

As the working-level decision-making party, the working-level risk management committee performs to approve the risk management measurements and review adequacy and to deliberate and vote such transactions above a certain size, which are not raised up to the risk management execution committee.

⑥ Risk management team

The risk management team performs various practices, such as implementation of the risk management policy and strategy decisions in the committee, measurement and reporting of the individual risks to support committee, etc.

2) Insurance risk management

Insurance Business

① Concept

Insurance risk is the risk, other than financial risk, transferred from the holder of a contract to the issuer. It is composed of insurance value risk and reserve risk. Insurance value risk is the risk of loss due to difference between premium that is received from policyholders and actual claims paid. Reserve risk is the risk of loss due to difference between reserve for outstanding claims and actual claims paid in the future. In general, reserve risk is for general non-life insurance contracts of non-life insurance companies. Insurance price risk is measured and managed since coverage of life insurance is generally paid in fixed rate, fluctuation of reserve amount is low and the time period between an accident and the payment is short.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

② Status of exposure of insurance risk

Insurance risk is the probability of loss due to the difference between the insurance premium received from the policyholder and the actual payment. Exposure pursuant to the RBC standard as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Life insurance				
Death	₩	661,104	₩	634,901
Disability		53,498		49,765
Hospitalization		353,914		343,575
Operation/diagnosis		954,812		900,565
Medical expense		346,692		302,313
Other life insurance		102,268		90,454
Total	₩	<u>2,472,288</u>	₩	<u>2,321,573</u>

<i>(in millions of Korean won)</i>	2022		2021	
Non-life insurance				
General insurance	₩	274,972	₩	265,896
Long-term insurance		1,256,716		1,142,543
Automobile insurance		675,836		639,263
Total	₩	<u>2,207,524</u>	₩	<u>2,047,702</u>

③ Status of exposure of reserve risk

Exposure pursuant to the RBC standard as at December 31, 2022 and 2021, is as follows:

<i>(in millions of Korean won)</i>	2022		2021	
General insurance	₩	184,880	₩	165,098
Automobile insurance		186,043		186,312
Total	₩	<u>370,923</u>	₩	<u>351,411</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

④ Development of claim paid for insurance

The Group's development of claim paid for general insurance as at December 31, 2022, is as follows:

<i>(in millions of Korean won)</i>	1 years	2 years	3 years	4 years	5 years
Accumulated insurance claim paid					
FYD-4	₩ 100,286	₩ 164,270	₩ 175,916	₩ 179,939	₩ 182,026
FYD-3	98,947	156,235	171,566	176,843	-
FYD-2	86,408	148,398	161,597	-	-
FYD-1	103,372	156,050	-	-	-
FYD	119,735	-	-	-	-
Estimated insurance claim paid					
FYD-4	167,279	194,296	194,762	195,457	189,339
FYD-3	158,090	181,911	187,148	187,859	-
FYD-2	146,853	175,330	175,624	-	-
FYD-1	146,534	175,918	-	-	-
FYD	184,596	-	-	-	-
Differences	64,862	19,868	14,027	11,016	7,313

The Group's development of claim paid for automobile insurance as at December 31, 2022, is as follows:

<i>(in millions of Korean won)</i>	1 years	2 years	3 years	4 years	5 years
Accumulated insurance claim paid					
FYD-4	₩ 514,378	₩ 603,964	₩ 619,847	₩ 625,722	₩ 630,061
FYD-3	542,137	644,745	656,796	663,046	-
FYD-2	478,704	543,181	552,177	-	-
FYD-1	424,826	478,723	-	-	-
FYD	407,244	-	-	-	-
Estimated insurance claim paid					
FYD-4	599,717	623,589	633,192	637,841	636,198
FYD-3	641,678	667,013	672,161	674,564	-
FYD-2	558,396	567,647	569,498	-	-
FYD-1	498,834	501,554	-	-	-
FYD	486,212	-	-	-	-
Differences	78,968	22,831	17,320	11,518	6,137

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

The Group's development of claim paid for long-term insurance as at December 31, 2022, is as follows:

<i>(in millions of Korean won)</i>	1 years	2 years	3 years	4 years	5 years
Accumulated insurance claim paid					
FYD-4	₩ 953,368	₩ 1,321,450	₩ 1,357,998	₩ 1,371,354	₩ 1,375,769
FYD-3	1,163,810	1,561,034	1,603,866	1,619,103	-
FYD-2	1,244,066	1,662,540	1,706,716	-	-
FYD-1	1,396,110	1,836,054	-	-	-
FYD	1,431,024	-	-	-	-
Estimated insurance claim paid					
FYD-4	998,566	1,329,081	1,364,083	1,375,592	1,378,333
FYD-3	1,209,395	1,570,839	1,610,319	1,623,604	-
FYD-2	1,301,501	1,671,639	1,713,269	-	-
FYD-1	1,455,728	1,850,126	-	-	-
FYD	1,502,865	-	-	-	-
Differences	71,841	14,072	6,552	4,501	2,564

⑤ Measurement method

Both standard measurement method and internal model are used to measure the insurance risk. Standard measurement method (Article 7-2 Clause 2 of the Regulation on Supervision of Insurance Business) means calculation of insurance risk by the RBC standard provided by Korean Financial Services Commission ("FSC"). Reserve risk is calculated on non-life insurance contracts under Article 1-2 item 11 of the Regulation on Supervision of Insurance Business and therefore it reflects risk quantity of Hanwha General Insurance.

The amount of insurance risk, calculated using an internal model, is calculated by estimating risk insurance premium for the next 10 years, which is applied by experimental statistics to contracts held during measurement of insurance risk, which is the difference between maximum probability and average level of insurance claims paid and applying value at risk ("VaR"), which applies experimental scenario.

⑥ Management method

The Group operates ALM system and insurance risk measurement system to measure the amount of insurance risk. The amount of insurance risk, which is calculated quarterly, is reported to the risk management committee in a risk analysis report.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑦ Reinsurance policy

The Group manages reinsurance for improving ability to pay claims at concerned risk exposure level and effective diversification of risks.

The concentration level to top 5 reinsurers as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022			
	More than AA-	A+ ~ A-	Below BBB+	Others
Premium for reinsurance ceded	₩ 1,494,209	₩ -	₩ -	₩ -

(in millions of Korean won)

	2021			
	More than AA-	A+ ~ A-	Below BBB+	Others
Premium for reinsurance ceded	₩ 1,370,721	₩ -	₩ -	₩ -

Premium for reinsurance ceded for reinsurer category as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022			
	More than AA-	A+ ~ A-	Below BBB+	Others
Premium for reinsurance ceded	₩ 1,608,075	₩ 988	₩ -	₩ 10,074

(in millions of Korean won)

	2021			
	More than AA-	A+ ~ A-	Below BBB+	Others
Premium for reinsurance ceded	₩ 1,464,764	₩ 331	₩ (377)	₩ 7,631

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑧ The amount of guarantee risk to variable insurance

Details of guarantee risk to variable insurance as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022			
	Premium income	Policyholder's reserve	Reserve for guaranteed benefit	Amount of risk to minimum guaranteed benefit
Variable whole life insurance	₩ 63,881	₩ 466,756	₩ 181,623	₩ -
Variable annuity life insurance	378,156	5,867,520	(13,681)	-
Variable universal indemnity life insurance	589,885	2,580,748	175,277	-
Variable universal savings life insurance	86,613	909,071	199	-
Others	519,504	4,529,813	799,070	204,134
Total	₩ 1,638,039	₩ 14,353,908	₩ 1,142,488	₩ 204,134

(in millions of Korean won)

	2021			
	Premium income	Policyholder's reserve	Reserve for guaranteed benefit	Amount of risk to minimum guaranteed benefit
Variable whole life insurance	₩ 73,177	₩ 498,050	₩ 254,711	₩ 23,934
Variable annuity life insurance	552,156	7,095,076	31,916	47,895
Variable universal indemnity life insurance	667,710	2,803,717	303,243	83,994
Variable universal saving life insurance	98,899	1,127,917	(244)	262
Others	586,709	4,890,244	1,299,062	206,166
Total	₩ 1,978,650	₩ 16,415,003	₩ 1,888,688	₩ 362,251

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑨ The analysis of insurance contract liability in relation to its remaining maturity is as follows:

(in millions of Korean won)	2022				
	Less than 1 year	Between 1 and 5 years	Between 5 and 10 years	More than 10 years	Total
Premium reserves ¹	₩ 2,132,704	₩ 11,316,290	₩ 4,327,256	₩ 83,644,163	₩ 101,420,413

¹ Premium reserve is calculated based on surrender value.

(in millions of Korean won)	2021				
	Less than 1 year	Between 1 and 5 years	Between 5 and 10 years	More than 10 years	Total
Premium reserves ¹	₩ 3,802,120	₩ 9,040,357	₩ 4,582,148	₩ 80,982,945	₩ 98,407,570

¹ Premium reserve is calculated based on surrender value.

3) Interest rate risk management

Insurance Business

① Concept

Interest rate risk is the risk of economic loss due to changes in future market interest rates and differences in the maturity structure of assets and liabilities, which could lead to net asset decrease of the Group.

② Measurement method

Both standard measurement method and internal model are used to measure the interest rate risk. Under standard measurement method (Article 7-2 Clause 3 of the Regulation on Supervision of Insurance Business), interest risk is measured by RBC standard provided from KFSC.

Internal model is subject to assets and liabilities of general accounts, pension savings and unit linked insurance. For the calculation of the amount of interest rate, the Group reflects the new plan requirements (K-ICS) by applying shock and crisis scenarios to the structure of the interest period to reassess the value of assets and liabilities and then to measure the decline of net asset value.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

③ Management method

(i) The Group measures the amount of interest risk on a quarterly basis by establishing its maximum permissible limit and the monitoring results are managed by reporting them to the risk management committee.

(ii) The Group establishes duration gap limit of assets/liabilities and does its best to expand safe assets such as long-term treasury bonds and others in the middle and long term and reduce the mismatch of duration of assets and liabilities by managing sales ratio of floating-rate type product.

(iii) The Group sets portfolios for medium-and long-term goal through ALM investment strategy reflected cash flow of insurance liabilities, and sets interest rate guidelines for insurance products using market interest rates.

(iv) ALM investment strategy is determined by risk management committee. Standard interest rates for public announcement and guidelines of interest rates for public announcement and application (includes guaranteed minimum interest rate of floating-rate type products) are determined by the person with official decision-making authority referred in decision-making regulations after being examined by risk management council.

(v) According to the guidelines, product development committee determines interest rates for application (includes guaranteed minimum interest rate of floating-rate type products), and standard interest rates for public announcement are determined by the person with official decision-making authority referred in decision-making regulations after being examined by quoted interest rate committee.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

④ Status of floating-rate-type liabilities for minimum guaranteed interest rate

Exposure of floating-rate-type liabilities for minimum guaranteed interest rate level by the RBC standard as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)	2022					Total
	Below 0% ¹	0% ~ 2%	2% ~ 3%	3% ~ 4%	More than 4%	
Floating-rate-type liabilities ²	₩ 10,115,947	₩ 27,662,053	₩ 4,599,463	₩ 12,591,934	₩ 5,130,268	₩ 60,099,665

¹ Liabilities without minimum guarantee option, are presented as "Below 0%."

² Liabilities that are fixed rate type and floating rate type are classified as the type at the time of closing date of the fiscal year.

(in millions of Korean won)	2021					Total
	Below 0% ¹	0% ~ 2%	2% ~ 3%	3% ~ 4%	More than 4%	
Floating-rate-type liabilities ²	₩ 9,272,235	₩ 27,091,218	₩ 7,148,629	₩ 14,547,252	₩ 4,988,222	₩ 63,047,556

¹ Liabilities without minimum guarantee option, are presented as "Below 0%".

² Liabilities that are fixed rate type and floating rate type are classified as the type at the time of closing date of the fiscal year.

4) Credit risk management

① Concept

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation.

② Measurement method

Insurance Business

Both standard measurement method and internal model are used to measure the credit risk. Standard measurement method (Article 7-2 Clause 4 of the Regulation on Supervision of Insurance Business) means calculation of credit risk by the RBC standard provided from FSC. If the Group uses an internal model, it calculates portfolio credit risk using Credit Manager (Credit Metrics measurement method), which is a credit risk measurement engine provided by MSCI. Approximately 20 global companies such as JP Morgan, Moody's, S&P, KMV, Royal Bank of Canada and 250 other companies all over the world use Credit Manager to calculate their risk.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Investment and Securities Business

(i) Recognition and measurement of expected credit losses

The Group recognizes expected credit losses considering all reasonable and supportable information that is available without undue cost and effort since initial recognition of financial instruments.

The Group classifies credit risk into three different stages according to changes in credit risk indicators and occurrence of impairment events since initial recognition of financial instruments. As a result of this classification, the Group applies 12-month expected credit losses for those whose credit risk has not increased significantly (Stage 1), and lifetime expected credit losses for those whose credit risk has increased significantly (Stage 2) and those which are credit-impaired (Stage 3). For the purpose of this classification, the Group compares the risk of a default occurring on the financial instrument as at the reporting date with the risk of a default occurring on the financial instrument as at the date of initial recognition. If the significant increase of credit risk on a financial instrument subject to lifetime expected credit losses in the previous reporting period, is determined to be no longer present, such instrument shall be measured using 12-month credit losses at the current reporting date. The Group can apply a simplified approach and apply lifetime expected credit losses without evaluating increase of credit risk for some other financial assets.

For financial assets at amortized cost, off-balance-sheet item (loans commitment and financial guarantee contracts), the credit risk is considered to have increased significantly since initial recognition if any of the following indicators are present.

<Financial Assets Measured at Amortized Cost>

- Deposits: For deposits at financial institutions whose external credit ratings are within the investment qualification grade, credit risk is considered low. In addition, the credit risk is considered to have increased significantly if the number of days past due for principal or interest on a financial asset is 30 days or more.
- Credit contribution: The entity sets up a sufficient percentage of collateral for normal bond recovery at initial execution, so if the collateral ratio is satisfied as at the end of the reporting period, the credit risk is considered low. The credit risk is considered to have increased significantly for bonds subject to closed-trading because their collateral ratio is less than 140%.
- Consignor account receivable: In the case of a normal consignor account receivable, the Group determines that the credit risk is low because it establishes a sufficient percentage of collateral for normal bond recovery during initial execution. The credit risk is considered to have increased significantly in the case of sales of security due to insufficient payment in the customer account at the date of settlement of the securities transaction.
- Other financial assets: For bonds that do not result in a delay in principal or interest on a financial asset, credit risk is considered low. The credit risk is considered to have increased significantly if the number of days past due on principal or interest is 30 days or more

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

<Off-balance Account (Loan Commitments and Financial Guarantee Contracts)>

For loan commitments and financial guarantee contracts, credit risk is considered to have increased significantly if the number of days past due on principal or interest of the related financial asset is 30 days or more. In addition, the criteria for classifying asset soundness under the Financial Investment Business Regulations are considered to have increased credit risk significantly for loan commitments and financial guarantee contracts that are blacklist. Credit risk is considered low if there is no delay in principal or interest on the related financial assets and if the rating is rated as normal on the basis of the classification of asset soundness under the Financial Investment Business Regulations.

(ii) Financial assets defaulted and credit-impaired

The Group defines a financial asset as default if it has an objective reason to reduce reliably estimated future cash flows since its initial acquisition. These objective reasons are as follows:

- If a default is expected due to a continuation of principal and interest deferral (including an unquestionable 90 days or more in arrears)
- A deterioration in credit standing, with checking transactions suspended.
- The bankruptcy or bankruptcy of a debtor.
- The occurrence of a major lawsuit or claim of indemnity that could have effect on the existence of a debtor.
- In case the project itself is on the verge of being abolished due to a delay in the project schedule due to important factors at stake in the project's success or not, and the debtor's financial situation is not good.
- The occurrence of other events that may have a significant effect on the solvency of the debtor.
- In case of non-recoverable balance occurring after execution of security sales (in case of credit contribution and consignor account receivable)
- In case the external credit rating assessed by a credit rating agency has dropped significantly.

In addition, the definition of default is identical to 'bankruptcy (impairment)' stated in the regulatory capital management policy and therefore, the Group considers that the best estimates will be used in measurement of impairment of financial assets.

(iii) A method of organizing a set when measuring ECLs

The Group assesses credit risk by considering the product attributes, size and condition of the assets measured for ECLs according to significant increases in credit risk and calculates the loss provision individually and collectively accordingly. If the ECLs are separately identifiable among the assets from which the impairment (Stage 3) occurred and the assets with significant increases in credit risk, the ECLs are calculated by estimating the future cash flows of the individual assets. The target assets, excluding individual targets, are classified into groups of assets managed by a similar credit risk and are collectively assessed. The asset group consisted of similar or homogeneous assets considering the nature of the credit risk and types of products that could occur. ECLs on a group of financial assets are calculated using a formalized approach defined by

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

the credit risk management index used to identify the group of assets.

(iv) The write-off financial asset

The Group will write-off any or all portions of the loan or debt securities that it deems to be impracticable to collect the principal and interest on the principal. Generally, when a borrower is deemed to have no sufficient resources or income to cover the principal and interest payments, the write-off is made in accordance with the Group internal regulations, but with approval from an external authority, if necessary. The Group may continue to exercise its right of recovery in accordance with its own recovery policy even after the financial assets are discharged. Subsequent assets recovered are deducted from ECLs in the income statement.

(v) Assumptions and techniques and input variables used to measure ECLs

The credit risk measurement factors were estimated externally from the credit rating, and from the statistical techniques developed internally and past experience data, and they were adjusted through the reflection of forward-looking information.

For financial assets subject to individual assessment, ECLs are calculated by considering estimates of future cash flows of individual assets and collateral or other credit enhancements. For financial assets such as credit contribution and consignor account receivable subject to collective evaluation, ECLs are calculated by taking into account the cumulative recovery rate of the past.

On the other hand, the credit risk measurement component is applied as follows when applying the expected loss calculation methodology of Basel when measuring ECLs.

- Probability of default (PD)

The Group apply the default rate obtained from the credit rating agency. Based on the statistical model, the PD was estimated to reflect the characteristics of the counterparty and the exposure.

- Loss Given default (LGD)

LGD means the degree of loss expected in the event of bankruptcy. In general, the Group uses a 45% loss rate for bankruptcy and a 75% loss rate for unsecured and subordinate financial assets.

- Exposure at default (EAD)

EAD means the expected exposure at the time of bankruptcy. EAD of a financial asset is the same as the total carrying amount of the asset and the exposure to default on loan commitments and financial guarantee contracts is calculated as the sum of the amount of use and the amount expected to be further used.

- Expiration

When measuring ECLs on a financial asset, the Group reflects the period over which the ECLs are measured based on the contractual maturity.

- Reflection of forward-looking information

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

The Group reflects forward-looking information based on various information when measuring expected credit losses. To predict such forward-looking information, the Group utilizes economic forecasts disclosed by domestic and foreign research institutes or government and public organizations.

③ Management method

Insurance Business

(i) Management by permissible limit

The Group calculates VaR on a monthly basis, which is the maximum unsuspected loss (99% confidence level) to investment portfolio due to the deterioration of credit rating or bankruptcy of lender and investment instrument. The Group manages to keep VaR less than the available capital by providing permissible limit to the VaR.

(ii) Management by individual evaluation to lender and investment instrument

When operating an asset, the Group evaluates individual lender and investment instrument at asset RM division. As a result of the evaluation, the Group invests in lender and investment instrument.

(iii) Management by diversified investment and operating limit

The Group manages limits for industry, group, lender and product to prevent concentration risk and for low grade assets which have high risk.

(iv) Overlapping management to high-risk assets

When the Group invests in high-risk assets (derivative and alternative investment), it conducts more intensive analysis than low-risk assets. The risk management team analyzes credit risk, and the asset RM division analyzes capability to repay the principal and pay interest.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

④ Maximum exposure to credit risk

The maximum exposure to credit risk related to financial instruments as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022	2021
Insurance Business		
Cash equivalents	₩ 1,940,703	₩ 963,509
Deposits	604,621	306,744
Financial assets at fair value through profit or loss	7,332,195	7,705,011
Financial assets at fair value through other comprehensive income	29,167,175	38,043,749
Financial assets at amortized cost	21,258,076	22,419,735
Loans	29,532,512	30,392,957
Other financial assets	2,376,757	1,462,620
Derivative financial assets	657,163	50,176
Total	₩ 92,869,202	₩ 101,344,501

<i>(in millions of Korean won)</i>	2022	2021
Investment and Securities Business		
Financial assets at fair value through profit or loss	₩ 5,525,213	₩ 5,744,827
Derivative financial assets	307,473	126,036
Financial assets at amortized cost		
Cash equivalents	236,329	194,825
Deposits	465,367	581,286
Loans	2,960,951	1,837,730
Other financial assets	504,941	987,517
Subtotal	4,167,588	3,601,358
Off-balance account		
Purchase agreement amount ¹	20,000	18,400
Commitment of loan on collateral and underwriting debenture ¹	-	23,000
Subtotal	20,000	41,400
Total	₩ 10,020,275	₩ 9,513,621

¹ The Group has obligation of provision for loss related to distribution of association's assets.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑤ Status of exposure for credit rating

Exposure of bonds, loans and OTC derivatives by credit rating as at December 31, 2022 and 2021, are as follows:

Insurance Business

(i) Bonds

(in millions of
Korean won)

	2022					
	Risk free	AAA	AA+ ~ AA-	A+ ~ BBB-	Others	Total
Securities at fair value through profit or loss						
Stage 1	₩ 58,130	₩ 755,932	₩ 1,014,918	₩ -	₩ 1,068,206	₩ 2,897,185
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>58,130</u>	<u>755,932</u>	<u>1,014,918</u>	<u>-</u>	<u>1,068,206</u>	<u>2,897,185</u>
Securities at fair value through other comprehensive income						
Stage 1	18,499,383	7,406,561	2,930,542	360,904	325,749	29,523,139
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>18,499,383</u>	<u>7,406,561</u>	<u>2,930,542</u>	<u>360,904</u>	<u>325,749</u>	<u>29,523,139</u>
Securities at amortized cost						
Stage 1	11,722,404	8,658,639	877,676	-	-	21,258,719
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>11,722,404</u>	<u>8,658,639</u>	<u>877,676</u>	<u>-</u>	<u>-</u>	<u>21,258,719</u>
Total	<u>₩ 30,279,917</u>	<u>₩ 16,821,132</u>	<u>₩ 4,823,136</u>	<u>₩ 360,904</u>	<u>₩ 1,393,955</u>	<u>₩ 53,679,043</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of
Korean won)

	2021					
	Risk free	AAA	AA+ ~ AA-	A+ ~ BBB-	Others	Total
Securities at fair value through profit or loss						
Stage 1	₩ 1,458,335	₩ 120,135	₩ 979,772	₩ -	₩ 1,014,406	₩ 3,572,648
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>1,458,335</u>	<u>120,135</u>	<u>979,772</u>	<u>-</u>	<u>1,014,406</u>	<u>3,572,648</u>
Securities at fair value through other comprehensive income						
Stage 1	22,215,144	9,191,371	3,679,822	431,886	227,223	35,745,446
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>22,215,144</u>	<u>9,191,371</u>	<u>3,679,822</u>	<u>431,886</u>	<u>227,223</u>	<u>35,745,446</u>
Securities at amortized cost						
Stage 1	13,198,138	8,137,734	1,083,863	-	-	22,419,735
Stage 2	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-
Subtotal	<u>13,198,138</u>	<u>8,137,734</u>	<u>1,083,863</u>	<u>-</u>	<u>-</u>	<u>22,419,735</u>
Total	<u>₩ 36,871,617</u>	<u>₩ 17,449,241</u>	<u>₩ 5,743,457</u>	<u>₩ 431,886</u>	<u>₩ 1,241,627</u>	<u>₩ 61,737,828</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(ii) Loans

(in millions of Korean won)	2022							
	Risk free	AAA	AA+ ~ AA-	A+ ~ BBB-	Below BBB-	Non-rating	Others	Total
Call loans, unsecured loans, CP, loans secured by third- party guarantee								
Stage 1	₩ 1,914,922	₩ 54,288	₩ 436,299	₩ 69,215	₩ -	₩ 4,636,513	₩ 2,066,574	₩ 9,177,813
Stage 2	-	1,694	-	-	-	-	165,491	167,184
Stage 3	-	-	-	-	-	38,652	41,488	80,140
Subtotal	1,914,922	55,982	436,299	69,215	-	4,675,165	2,273,553	9,425,137
Loans secured by real estate								
Stage 1	-	233,616	-	-	-	2,598,994	5,881,557	8,714,169
Stage 2	-	25,292	-	-	-	-	273,223	298,515
Stage 3	-	-	-	-	-	-	12,908	12,908
Subtotal	-	258,908	-	-	-	2,598,994	6,167,688	9,025,591
Policy loans								
Stage 1	-	-	-	-	-	-	8,599,569	8,599,569
Stage 2	-	-	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	8,599,569	8,599,569
Other loans								
Stage 1	2,033,525	100,000	214,303	72,531	-	156,889	4,782	2,582,030
Stage 2	-	-	-	-	-	-	10	10
Stage 3	-	-	-	-	-	-	-	-
Subtotal	2,033,525	100,000	214,303	72,531	-	156,889	4,792	2,582,040
Total	₩ 3,948,447	₩ 414,889	₩ 650,602	₩ 141,746	₩ -	₩ 7,431,049	₩ 17,045,602	₩ 29,632,337

¹ The amount is classified on the basis of principal of loans.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of
Korean won)

	2021							
	Risk free	AAA	AA+ ~ AA-	A+ ~ BBB-	Below BBB-	Non-rating	Others	Total
Call loans, unsecured loans, CP, loans secured by third- party guarantee								
Stage 1	₩ 1,940,873	₩ 49,489	₩ 436,299	₩ 71,330	₩ -	₩ 4,241,337	₩ 1,817,560	₩ 8,556,888
Stage 2	-	5,931	-	-	-	-	261,888	267,819
Stage 3	-	-	-	-	-	41,272	32,666	73,938
Subtotal	1,940,873	55,420	436,299	71,330	-	4,282,609	2,112,114	8,898,645
Loans secured by real estate								
Stage 1	-	274,438	-	-	-	3,324,259	5,380,365	8,979,062
Stage 2	-	40,010	-	-	-	-	444,432	484,442
Stage 3	-	-	-	-	-	-	7,776	7,776
Subtotal	-	314,448	-	-	-	3,324,259	5,832,573	9,471,280
Policy loans								
Stage 1	-	-	-	-	-	-	8,190,143	8,190,143
Stage 2	-	-	-	-	-	-	-	-
Stage 3	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	8,190,143	8,190,143
Other loans								
Stage 1	2,224,193	100,000	192,536	18,331	66,000	2,382	1,301	2,604,743
Stage 2	-	-	-	-	-	44,278	117	44,395
Stage 3	-	-	-	-	-	-	-	-
Subtotal	2,224,193	100,000	192,536	18,331	66,000	46,660	1,418	2,649,138
Total	₩ 4,165,066	₩ 469,868	₩ 628,835	₩ 89,661	₩ 66,000	₩ 7,653,528	₩ 16,136,248	₩ 29,209,206

¹ The amount is classified on the basis of principal of loans.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Investment and Securities Business

(i) The credit risk of financial assets measured at amortized cost

The exposure of financial assets measured at amortized cost and off-balance agreement by credit risk rating as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	2022			
	12 months expected credit losses measurement	Lifetime Expected credit losses		Total
		Significant increase in credit risk	Credit-impaired financial assets	
Cash and cash equivalents				
AA- to AAA+	₩ 236,329	₩ -	₩ -	₩ 236,329
A- to A+	-	-	-	-
BBB- to BBB+	-	-	-	-
Subtotal	<u>236,329</u>	<u>-</u>	<u>-</u>	<u>236,329</u>
Deposits				
AA- to AAA+	465,367	-	-	465,367
A- to A+	-	-	-	-
BBB- to BBB+	-	-	-	-
Subtotal	<u>465,367</u>	<u>-</u>	<u>-</u>	<u>465,367</u>
Other loans				
AA- to AAA+	1,116,121	-	-	1,116,121
A- to A+	240,300	-	-	240,300
BBB- to BBB+	1,540,799	39,950	43,565	1,624,314
Subtotal	<u>2,897,220</u>	<u>39,950</u>	<u>43,565</u>	<u>2,980,735</u>
Other financial assets				
AA- to AAA+	-	-	-	-
A- to A+	-	-	-	-
BBB- to BBB+	504,941	-	5,766	510,707
Subtotal	<u>504,941</u>	<u>-</u>	<u>5,766</u>	<u>510,707</u>
Loan agreement and purchase agreement				
AA- to AAA+	-	-	-	-
A- to A+	-	-	-	-
BBB- to BBB+	20,000	-	-	20,000
Subtotal	<u>20,000</u>	<u>-</u>	<u>-</u>	<u>20,000</u>
Payment guarantee and purchase commitment				
AA- to AAA+	-	-	-	-
A- to A+	-	-	-	-
BBB- to BBB+	-	-	-	-
Subtotal	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total	<u>₩ 4,123,858</u>	<u>₩ 39,950</u>	<u>₩ 49,331</u>	<u>₩ 4,213,138</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(in millions of Korean won)

	2021					
	12 months expected credit losses measurement		Lifetime Expected credit losses		Total	
			Significant increase in credit risk	Credit-impaired financial assets		
Cash and cash equivalents						
AA- to AAA+	₩	194,825	₩	-	₩ 194,825	
A- to A+		-		-	-	
BBB- to BBB+		-		-	-	
Subtotal		194,825		-	194,825	
Deposits						
AA- to AAA+		581,286		-	581,286	
A- to A+		-		-	-	
BBB- to BBB+		-		-	-	
Subtotal		581,286		-	581,286	
Other loans						
AA- to AAA+		-		-	-	
A- to A+		22,509		-	22,509	
BBB- to BBB+		1,792,760	14	35,491	1,828,264	
Subtotal		1,815,269	14	35,491	1,850,774	
Other financial assets						
AA- to AAA+		-		-	-	
A- to A+		-		-	-	
BBB- to BBB+		982,118		5,399	987,517	
Subtotal		982,118		5,399	987,517	
Loan agreement and purchase agreement						
AA- to AAA+		-		-	-	
A- to A+		-		-	-	
BBB- to BBB+		18,400		-	18,400	
Subtotal		18,400		-	18,400	
Payment guarantee and purchase commitment						
AA- to AAA+		-		-	-	
A- to A+		-		-	-	
BBB- to BBB+		23,000		-	23,000	
Subtotal		23,000		-	23,000	
Total	₩	3,614,898	₩	14	₩ 40,890	₩ 3,655,802

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Changes in provision for impairment on financial assets at amortized cost and off-balance agreement for the years ended December 31, 2022 and 2021, are as follows:

(In millions of Korean won)

	2022							
	12 months expected credit losses	Lifetime expected credit losses			Total			
		Expected credit losses	Significant increase in credit risk					
Beginning balance	₩	2,358	₩	-	₩	16,101	₩	18,459
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs (significant increase in credit risk)		-		-		-		-
Transfer to lifetime ECLs (credit-impaired financial assets)		-		-		-		-
Written off		-		-		-		-
Provision		1,791		480		4,957		7,228
Others		-		-		-		-
Ending balance	₩	4,149	₩	480	₩	21,058	₩	25,686

(In millions of Korean won)

	2021							
	12 months expected credit losses	Lifetime expected credit losses			Total			
		Significant increase in credit risk	Credit-impaired financial assets					
Beginning balance	₩	1,308	₩	4,292	₩	16,068	₩	21,668
Transfer to 12-month ECLs		-		-		-		-
Transfer to lifetime ECLs (significant increase in credit risk)		-		-		-		-
Transfer to lifetime ECLs (credit-impaired financial assets)		-		-		-		-
Written off		-		(3,329)		-		(3,329)
Provision (reversal)		924		(963)		33		(6)
Others		126		-		-		126
Ending balance	₩	2,358	₩	-	₩	16,101	₩	18,459

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(ii) The credit risk of debt securities

The exposure of debt securities at fair value through profit or loss by credit risk rating as at December 31, 2022 and 2021, is as follows:

(in millions of Korean won)

	Financial assets at fair value through profit or loss			
	2022		2021	
AAA	₩	2,946,970	₩	2,329,431
AA+ ~ BBB-		1,404,336		1,939,340
BB		1,808		5,076
Non-rating ¹		441,180		475,241
Total	₩	<u>4,794,294</u>	₩	<u>4,749,088</u>

¹ The bonds did not receive any external evaluation. It does not imply a bond with a significant credit risk.

The credit quality of securities was classified using credit ratings calculated by credible credit rating agencies such as Korea Investors Service, Inc. (KIS), Korea Asset Pricing Corporation (KAP), NICE P&I Co., Ltd., and FN Asset Evaluation Co., Ltd.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑥ Concentration level for industry

The concentration level by industries of bonds and loans as at December 31, 2022 and 2021, is as follows:

Insurance Business

(in millions of Korean won)	2022						
	Governmental and Public Institutions (Government and Municipal bonds)	Financial and Insurance	Electricity, Gas, Steam and Water Supply	Construction	Real Estate and Leasing Service	Others	Total
Debt securities	₩ 29,236,890	₩ 8,232,205	₩ 3,327,372	₩ 1,436,444	₩ 1,270,881	₩ 8,521,567	₩ 52,025,358
Loans ¹	-	2,851,451	1,267,764	515,213	3,650,508	21,478,403	29,763,339
Total	₩ 29,236,890	₩ 11,083,656	₩ 4,595,136	₩ 1,951,657	₩ 4,921,389	₩ 29,999,969	₩ 81,788,697

¹ Loans are classified by principal amount.

(in millions of Korean won)	2021						
	Governmental and Public Institutions (Government and Municipal bonds)	Financial and Insurance	Electricity, Gas, Steam and Water Supply	Construction	Real Estate and Leasing Service	Others	Total
Debt securities	₩ 32,417,134	₩ 12,129,919	₩ 4,278,682	₩ 3,007,705	₩ 1,394,696	₩ 8,718,208	₩ 61,946,344
Loans ¹	-	3,110,339	1,241,614	479,343	3,397,236	20,986,896	29,215,428
Total	₩ 32,417,134	₩ 15,240,258	₩ 5,520,296	₩ 3,487,048	₩ 4,791,932	₩ 29,705,104	₩ 91,161,772

¹ Loans are classified by principal amount.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Investment and Securities Business

The configuration details by industries of debt securities (including corporate bill securities) and loans as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Amount	Ratio (%)	Amount	Ratio (%)
Financial assets at fair value through profit or loss (financial assets held for trading)				
Government and government-investment institutions	₩ 2,183,787	28.09	₩ 2,047,763	30.99
Finance and insurance industries	1,441,936	18.55	1,088,547	16.47
Others ¹	1,168,572	15.03	1,612,778	24.41
Financial assets at amortized cost (loans)				
Finance and insurance industries	90,773	1.17	120,226	1.82
Others ¹	2,889,963	37.17	1,738,727	26.31
Total	₩ 7,775,030	100.00	₩ 6,608,041	100.00

¹ All non-financial and non-government classifications and loans with an individual counterpart were classified as others.

The configuration details by country of debt securities (including corporate bill securities) and loans as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	2022		2021	
	Amount	Ratio (%)	Amount	Ratio (%)
Financial assets at fair value through profit or loss (financial assets held for trading)				
Republic of Korea	₩ 4,623,204	59.46	₩ 4,486,294	67.89
Others	171,091	2.20	262,794	3.98
Financial assets at amortized cost (loans)				
Republic of Korea	2,933,567	37.73	1,770,813	26.80
Others	47,169	0.61	88,140	1.33
Total	₩ 7,775,030	100.00	₩ 6,608,041	100.00

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

5) Market risk management

① Concept

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices.

② Measurement method

Insurance Business

Both standard measurement method and internal model are used to measure the market risk. Under the standard measurement method (Article 7-2 Clause 5 of the Regulation on Supervision of Insurance Business), both general market risk and variable annuity insurance guarantee risk are measured using risk index by the RBC standard. If the Group uses an internal model, it calculates credit risk by Credit Manager (Credit Metrics measurement method), which is a credit risk measurement engine provided by MSCI.

③ Management method

Insurance Business

(i) Management by permissible limit of VaR

The Group calculates VaR daily, which is maximum unsuspected loss (99% confidence level) to investment portfolio due to fluctuation of stock prices, interest rate and exchange rate. The Group manages to keep VaR less than the available capital as providing permissible limit to the VaR.

(ii) Management by loss limit

The Group establishes loss limit for trading assets and high-risk assets. If loss from the trading assets and the high risk assets is exceeding the limit, the Group sells them to prevent additional loss. The Group manages to keep loss from the trading assets and the high-risk assets less than the loss limit.

(iii) Management by operating limit

The Group establishes operating limit for investment category to prevent excessive investment on specific investment category.

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

Investment and Securities Business

For the management of market risk, the Group measures ongoing market risk over the entire assets and liabilities, which are changed according to fluctuations in the market factors. Market risk is measured and managed in accordance with standard methods on the financial investment industry standards regulation and the VaR calculated by the amount of risk by the internal model. In addition, the Group manages the market risk by setting the sensitivity limits and the loss limits, including the operating limits. The Group's VaR is calculated in 99% of trust level-based retention period of one day, and it means that the actual loss in excess of the calculated VaR causes one day of 100 business days on average.

④ VaR of market

Investment and Securities Business

The details of VaR of current market are as follows:

<i>(in millions of Korean won)</i>	2022¹		2021¹	
Existing goods	₩	3,116	₩	18,823
Bond ¹		29,034		9,227
Beneficiary certificate		30		79
Foreign exchange		23,955		-
KRX derivatives		10,156		14,340
OTC derivatives		29,261		7,611
Deposits and others ¹		-		11

¹ 10-day VaR is calculated on the basis of the retention period of one day.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

⑤ Sensitivity analysis to risk factors

The Group operates daily, weekly, monthly and quarterly sensitive analysis for 50 scenarios, which are historical scenarios, user-designated scenarios, etc. The result of sensitive analysis which was performed based on exchange rate, interest rate, and stock prices to analyze the effect of the scenario test is as follows:

<i>(in millions of Korean won)</i>	Effect on		Effect on equity²	
	profit or loss²			
Exchange rate ¹				
₩100 increase against won-dollar exchange rate	₩	84,700	₩	16,308
₩100 decrease against won-dollar exchange rate		(84,700)		(16,308)
Interest rate				
100bp increase		(1,037,906)		(5,621,745)
100bp decrease		1,217,016		6,749,221
Stock index				
10% increase		259,415		24,983
10% decrease		(259,415)		(24,983)

¹ Sensitivity to fluctuation of exchange rate includes effects on profit and equity from fluctuation of assets and liabilities denominated in foreign currency and derivatives.

² The Group separately manages the owned assets where financial assets at fair value through profit or loss, derivatives held for trading are managed at income level and financial assets at fair value through other comprehensive income is managed at equity level.

6) Liquidity risk management

① Concept

Liquidity risk is the risk of unexpected losses due to an excess or deficiency of liquid funds due to a mismatch in the maturity structure of assets and liabilities or rapid fluctuations in cash flows.

② Management method

Insurance Business

The Group manages liquidity by considering the total monthly cash flows of daily insurance cash flows.

Investment and Securities Business

The Group manages liquidity risk for all assets, liabilities and off-balance transactions related to investment securities business. Cash flow distributed by assets- and liabilities-backed sector liquid

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

gap and liquid ratio is measured to manage enterprise-wide liquidity risk. By setting the limits to the departments, funds are managed not to exceed the appropriate scale of financing.

③ The details of the remaining maturity of liabilities including the interest amount as at December 31, 2022, are as follows.

(in millions of Korean won)	2022					Total
	Less than 1 year	Between 1 and 5 years	Between 5 and 10 years	More than 10 years		
Other financial liabilities	₩ 5,660,908	₩ 1,557,572	₩ 2,250,363	₩ -	₩ 9,468,843	
Borrowings and debentures	3,483,894	68,528	21,042	-	3,573,464	
Derivative financial liabilities	1,044,159	789,835	-	31,532	1,865,526	
Total	₩ 10,188,961	₩ 2,415,935	₩ 2,271,405	₩ 31,532	₩ 14,907,833	

7) Operating risk management

Insurance Business

① Concept

Operating risk is the risk of financial risk and non-financial risk due to inappropriate internal processes, manpower, external events, reputation and regulations. Operating risk management improves safety and soundness of the Group by identifying weaknesses in the internal process and systematic complement.

② Management method

The Group collects data by event types, causes and task types. Based on the accumulated data, the Group measures Op-VaR and reports to the risk management committee. In addition, the Group monitors the KRI-like unqualified contract index, incomplete selling rate, number of internal complaints and others and reports these to the risk management committee on a quarterly basis.

(4) Fair value hierarchy (financial business)

Assets measured at fair value or for which the fair value is disclosed are categorized within the fair value hierarchy and the defined levels are as follows:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1).
- Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (that is, prices) or indirectly (that is, derived from prices) (Level 2).

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

- Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs) (Level 3).

Fair value hierarchy classifications of the financial assets and the financial liabilities that are measured at fair value or their fair value is disclosed as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022			
	Level 1	Level 2	Level 3	Total
Financial assets				
Financial assets at fair value through profit or loss	₩ 1,631,949	₩ 11,846,154	₩ 17,685,433	₩ 31,163,536
Financial assets at fair value through other comprehensive income	16,442,582	12,926,030	2,025,682	31,394,294
Derivative financial assets	1,015	817,060	147,905	965,980
Financial assets Total	<u>₩ 18,075,546</u>	<u>₩ 25,589,244</u>	<u>₩ 19,859,020</u>	<u>₩ 63,523,810</u>
Financial liabilities				
Financial liabilities at fair value through profit or loss	₩ 287,065	₩ -	₩ 2,482,245	₩ 2,769,310
Derivative financial liabilities	5,356	2,008,965	280,915	2,295,236
Financial liabilities Total	<u>₩ 292,421</u>	<u>₩ 2,008,965</u>	<u>₩ 2,763,160</u>	<u>₩ 5,064,546</u>
<i>(in millions of Korean won)</i>	2021			
	Level 1	Level 2	Level 3	Total
Financial assets				
Financial assets at fair value through profit or loss	₩ 2,047,601	₩ 10,203,390	₩ 16,545,135	₩ 28,796,126
Financial assets at fair value through other comprehensive income	21,740,492	16,936,429	1,816,020	40,492,941
Derivative financial assets	2,493	130,390	51,066	183,949
Financial assets Total	<u>₩ 23,790,586</u>	<u>₩ 27,270,209</u>	<u>₩ 18,412,221</u>	<u>₩ 69,473,016</u>
Financial liabilities				
Financial liabilities at fair value through profit or loss	₩ 238,832	₩ -	₩ 1,117,834	₩ 1,356,666
Derivative financial liabilities	7,765	932,731	48,915	989,411
Financial liabilities Total	<u>₩ 246,597</u>	<u>₩ 932,731</u>	<u>₩ 1,166,749</u>	<u>₩ 2,346,077</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Changes in Level 3 of the fair value hierarchy for the recurring fair value measurements are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Beginning	₩	17,245,472	₩	13,287,632
Purchase		5,490,897		7,177,098
Sales		(5,724,526)		(5,252,951)
Transfer out of Level 3		(507,862)		(41,469)
Transfer into Level 3		-		-
Others ¹		580,064		328,858
Gains recognized in profit or loss		429,412		1,139,763
Gains and losses recognized in other comprehensive income		(417,597)		606,541
Ending	₩	<u>17,095,860</u>	₩	<u>17,245,472</u>

¹ The impact of changes in consolidations scope is included.

(5) Capital risk management

The purpose of the consolidation entity's capital management is to maintain an optimal capital structure to protect its ability as a continuing entity to provide benefits to shareholders and stakeholders and to reduce capital costs.

The consolidation entity manages capital based on the capital procurement ratio, as is the case with other companies in the same industry. The capital procurement ratio is calculated by dividing the net debt into total capital. The net debt is the amount of cash and cash equivalents deducted from the gross borrowings (borrowings and debentures in the consolidated statement of financial position) and the total capital is the sum of the net debt added to the "total equity" of the consolidated statement of financial position.

The gearing ratios as at December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022		2021	
Total borrowings	₩	25,529,172	₩	21,568,187
Less: cash and cash equivalents		(9,215,699)		(6,895,946)
Net debt (A)		<u>16,313,473</u>		<u>14,672,241</u>
Total equity (B)		20,878,827		21,980,650
Total capital (A+B)	₩	<u>37,192,300</u>	₩	<u>36,652,891</u>
Gearing ratio (A/(A+B))		43.86%		40.03%

Hanwha Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2022 and 2021

62. Information about Non-controlling Interests

(1) Changes in accumulated non-controlling interests

The profit or loss allocated to non-controlling interests and accumulated non-controlling interests of subsidiaries that are material to the Group for the years ended December 31, 2022 and 2021, is as follows:

<i>(in millions of Korean won)</i>	2022						
	Percentage of ownership (%)	Percentage of voting rights (%)	Accumulated non-controlling interests at the beginning of the year	Profit or loss allocated to non-controlling interests	Dividends paid to non- controlling interests	Others	Accumulated non-controlling interests at the end of the year
Hanwha Life Insurance Co., Ltd.	55.0	48.0	₩ 6,235,092	₩ 481,555	₩ (31,601)	₩ (3,470,766)	₩ 3,214,280
Hanwha Solutions Co., Ltd.	63.9	63.2	5,188,061	385,392	-	1,761,829	7,335,282
Hanwha Aerospace Co., Ltd.	66.0	66.0	2,152,219	193,271	(23,366)	50,907	2,373,031

<i>(in millions of Korean won)</i>	2021						
	Percentage of ownership (%)	Percentage of voting rights (%)	Accumulated non-controlling interests at the beginning of the year	Profit or loss allocated to non-controlling interests	Dividends paid to non- controlling interests	Others	Accumulated non-controlling interests at the end of the year
Hanwha Life Insurance Co., Ltd.	55.0	48.0	₩ 6,433,667	₩ 553,561	₩ (56,891)	₩ (695,245)	₩ 6,235,092
Hanwha Solutions Co., Ltd.	63.9	63.6	3,815,970	356,391	-	1,015,700	5,188,061
Hanwha Aerospace Co., Ltd.	66.0	66.0	1,951,877	172,983	(20,052)	47,411	2,152,219

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(2) Summarized financial information on subsidiaries

The summarized financial information for each subsidiary with non-controlling interests that are material to the Group before intercompany eliminations is as follows:

1) Summarized consolidated statements of financial position as at December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	Hanwha Life Insurance Co., Ltd.	
	2022	2021
Assets for financial business	₩ 161,235,542	₩ 163,591,373
Liabilities for financial business	153,220,384	150,171,792
Equity	8,015,158	13,419,581

(in millions of Korean won)

	Hanwha Solutions Co., Ltd.	
	2022	2021
Current assets	₩ 8,573,295	₩ 6,073,960
Non-current assets	13,634,375	12,523,570
Assets for financial business	1,624,027	1,410,042
Current liabilities	6,808,491	5,787,890
Non-current liabilities	5,685,432	4,774,478
Liabilities for financial business	1,440,862	1,243,957
Equity	9,896,912	8,201,247

(in millions of Korean won)

	Hanwha Aerospace Co., Ltd.	
	2022	2021
Current assets	₩ 8,589,056	₩ 6,283,538
Non-current assets	6,568,246	4,762,293
Current liabilities	8,270,094	4,330,103
Non-current liabilities	2,963,424	2,784,169
Equity	3,923,784	3,931,559

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

2) Summarized consolidated statements of comprehensive income for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	Hanwha Life Insurance Co., Ltd.			
	2022		2021	
Operating revenue	₩	33,701,386	₩	27,173,625
Profit for the year		816,451		1,249,160

(in millions of Korean won)

	Hanwha Solutions Co., Ltd.			
	2022		2021	
Operating revenue	₩	13,653,948	₩	10,725,192
Profit for the year		366,023		616,328
Other comprehensive income		218,809		273,269
Total comprehensive income		584,832		889,597

(in millions of Korean won)

	Hanwha Aerospace Co., Ltd.			
	2022		2021	
Operating revenue	₩	6,539,606	₩	5,541,389
Profit for the year		152,028		301,762
Other comprehensive income		(43,152)		54,923
Total comprehensive income		108,876		356,685

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

3) Summarized consolidated statements of cash flows for the years ended December 31, 2022 and 2021, are as follows:

(in millions of Korean won)

	Hanwha Life Insurance Co., Ltd.	
	2022	2021
Cash flows from operating activities	₩ 636,903	₩ 5,560,986
Cash flows from investing activities	(1,472,124)	(5,431,371)
Cash flows from financing activities	2,044,291	151,636
Net increase in cash and cash equivalents	1,209,070	281,251
Cash and cash equivalents at the beginning of year	1,336,124	1,051,931
Exchange gains (losses) on cash and cash equivalents	(7,663)	2,942
Cash and cash equivalents at the end of year	₩ 2,537,531	₩ 1,336,124

(in millions of Korean won)

	Hanwha Solutions Co., Ltd.	
	2022	2021
Cash flows from operating activities	₩ 115,717	₩ 990,891
Cash flows from investing activities	(1,476,581)	(1,654,953)
Cash flows from financing activities	2,322,307	1,076,305
Net increase in cash and cash equivalents	961,443	412,243
Cash and cash equivalents at the beginning of year	1,651,530	1,199,837
Exchange gains on cash and cash equivalents	3,195	39,450
Cash and cash equivalents at the end of year	₩ 2,616,168	₩ 1,651,530

(in millions of Korean won)

	Hanwha Aerospace Co., Ltd.	
	2022	2021
Cash flows from operating activities	₩ 1,524,327	₩ 990,006
Cash flows from investing activities	(1,224,903)	(607,074)
Cash flows from financing activities	216,124	813,147
Net increase in cash and cash equivalents	515,549	1,196,079
Cash and cash equivalents at the beginning of year	2,528,070	1,330,706
Exchange gains on cash and cash equivalents	26,211	7,699
Cash and cash equivalents included in the assets held for sale	(26,651)	(6,414)
Cash and cash equivalents at the end of year	₩ 3,043,179	₩ 2,528,070

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

(3) Major transactions with non-controlling interests

Effects arising from transactions with non-controlling interests on the equity attributable to owners of the parent for the years ended December 31, 2022 and 2021, are as follows:

<i>(in millions of Korean won)</i>	2022¹		2021²	
Carrying amount of the non-controlling interests decreased	₩	386,665	₩	(40,515)
Cash outflow (inflow)		1,128,914		48,871
Excess of consideration paid recognized in parent's equity	₩	(742,249)	₩	8,356

¹ Major transactions with non-controlling interests for the year ended December 31, 2022, are redemption of hybrid securities of Hanwha Life Insurance Co., Ltd., acquisition of treasury shares of Hanwha Solutions Co., Ltd., issuance of hybrid securities of Hanwha General Insurance Co., Ltd. and disposal of shares of HANWHA ADVANCED MATERIALS CO.,LTD.

² Major transactions with non-controlling interests for the year ended December 31, 2021, are acquisition of treasury shares of Hanwha Solutions Co., Ltd. and Hanwha Systems Co., Ltd.

63. Unconsolidated Structured Entities

(1) The Group is involved in structured entities by investing SOC, asset securitization, structured finance and investment funds. Details of structured entities' major information are as follows:

Business	Description	Remarks (nature, purpose, activities and others)
Non-financial business	SOC	The private sector investor ('SOC') which is classified as unconsolidated structured entity constructs and transfers the infrastructure for public services such as roads, ports, railroads, schools and environmental infrastructure to the public sector and is paid for the operating and maintaining the infrastructure to return the construction cost in accordance with service concession arrangement. In other words, the private investor sector is a special purpose company (SPC) that is designed to handle the construction and operation of the private investment business, and the investors in this special purpose company recover the investment from operation income. After obtaining construction rights for structured financing, the Group generates investments and profits by construction service provision and equity investment.
Financial business	Asset-backed securitization	Unconsolidated structured entities classified as 'asset securitization' are engaged in issuing asset-backed securities based on securitized assets as underlying assets and distributes principals and dividends of the

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Business	Description	Remarks (nature, purpose, activities and others)
		asset-backed securities with sources such as borrowings or proceeds from management, operation and disposition of the securitized asset. The Group transfers risks related to issuance of asset-backed securities with purchase agreements of asset-backed securities or credit offerings. In relation to this, the Group recognizes interest income or commission income. Although an entity that provides funds and arrangements such as assuming conditional liabilities exists prior to the Group's financial support, if the unconsolidated structured entities fail to refinance, the Group could be exposed to the risks of having to purchase the financial assets that had been issued.
	Structured finance	<p>The entity was incorporated as a separate real estate project financing investment entity to efficiently carry out the Company's business. The funds are raised through channels such as equity investments, loans from financial institutions and participating organizations.</p> <p>Project financing investment entity is a way of funding large scale businesses with risks. The project financing investment company invests in qualifying companies not based on credit or physical collateral of the entity leading the project, but the economic feasibilities of the specific project. Investors of the entity benefit from the income arising from the ongoing projects and the Group recognizes interest income, income from valuation of equity investments and dividend income.</p> <p>Although an entity that provides funds, joint guarantees, unsubordinated credit offerings and others exists prior to the Group's financial support, if the funds are not collected by the predetermined schedule or if circumstances such as cessation of a project occurs, the Group could be exposed to principal losses due to decrease in value of equity investments or losses arising from uncollectible loans.</p>
	Investment fund	<p>The entity, an investment trust company, delegates investment and management to fund managers according to the trust agreement and distributes operating profit to the investors.</p> <p>The Group, an investee of the investment trust, recognizes income from valuation of equity investments and dividend income in proportion to its share ratio. If the value of investment trust decreases, the Group will be exposed to the risk of principal losses.</p>
	Investment association	The entity, an investment trust association, delegates investment and management to managing partner

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Business	Description	Remarks (nature, purpose, activities and others)
----------	-------------	--

according to the trust agreement and distributes operating profit to the limited liability managing partner.

The Group, as an investor in investment association, recognizes income (loss) on valuation of equity investments and dividend income in proportion to its share ratio. If the value of investment association decreases, the Group will be exposed to the risk of principal losses.

(3) Details of unstructured entities' scale and the Group's risks to unstructured entities as at December 31, 2022 are as follows:

(in millions of Korean won)

	2022							Total
	SOC	Asset securitization	Structured finance	Investment funds	Investment association	Others		
Assets in the consolidated statement of financial position								
Cash and cash equivalents	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	-
Trade and other receivables	18,552	-	-	-	-	-	-	18,552
Securities	18,022	3,188,572	552,547	17,352,583	63,775	1,589,753		22,765,252
Investments in associates	969	-	39,051	146,053	22,586	86,040		294,699
Loans	-	1,489,483	7,393,143	1,336,344	-	905,494		11,124,464
Total	₩ 37,543	₩ 4,678,055	₩ 7,984,741	₩ 18,834,980	₩ 86,361	₩ 2,581,287	₩	₩ 34,202,967
Liabilities in the consolidated statement of financial position								
Other provisions	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	-
Total	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	-
Maximum exposure to loss ¹	₩ 432,503	₩ 4,592,657	₩ 8,483,245	₩ 16,760,838	₩ 92,762	₩ 3,640,381	₩	₩ 34,002,386

¹ Financial assets and financial liabilities are measured based on the book value; financial guarantee contracts, loan commitments and financing arrangements are measured based on the contractual limit amount. In addition, the maximum exposure to loss amount above is the total amount that does not reflect the effect of the Group's hedging activities to reduce the risk of exposure to unconsolidated entities.

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

64. Business Combination

(1) Generals of business combination

1) Generals of business combination

On May 6, 2022, the Group acquired 33.33% of shares in REC Silicon ASA located in Norway for the purpose of stable securing of poly silicon for solar energy, and acquired the investee company and its 8 subsidiaries.

Fair value of the consideration transferred for business acquisition as of business acquisition date is as follows:

<i>(in millions of Korean won)</i>	Amount	
Cash and cash equivalents	₩	189,066
Fair value of equity instruments of acquiree before the business combination		153,214
Transfer Price	₩	<u>342,280</u>

Fair value of acquired assets acquired at the acquisition date is as follows:

<i>(in millions of Korean won)</i>	Amount	
Fair value of identifiable assets		
Current assets	₩	303,790
Cash and cash equivalents		215,474
Other financial assets		2,375
Trade receivables and other receivables		31,638
Inventories		47,345
Other current assets		6,958
Non-current assets		1,205,548
Property, plant and equipment		1,002,059
Intangible assets		166,743
Other non-current assets		36,746
Fair value of identifiable liabilities		
Current liabilities		44,815
Trade payables and other payables		24,091
Borrowings		752
Other current liabilities		19,972
Non-current liabilities		544,470
Long-term borrowings		137,038
Other non-current liabilities		117,466
Net defined benefit liabilities		15,898
Deferred tax liabilities		274,068
Total	₩	<u>920,053</u>

Hanwha Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2022 and 2021

Goodwill for business acquisition as of business acquisition date is as follows:

<i>(in millions of Korean won)</i>	Amount	
I. The consideration transferred	₩	342,280
II. Fair value of identifiable net asset		920,054
III. Amount of any non-controlling interests		615,766
Goodwill (I - II + III)	₩	<u>37,992</u>

Cash outflows for business acquisition as of business acquisition date are as follows:

<i>(in millions of Korean won)</i>	Amount	
The consideration transferred in cash and cash equivalents	₩	(189,066)
Cash and cash equivalents of acquiree		215,474
Net cash inflow from business acquisition	₩	<u>26,408</u>

The revenue and net loss for the year of REC Silicon ASA after the acquisition date, which are included in the consolidated income statement, are ₩ 90,808 million and ₩ 75,119 million, respectively. If REC Silicon ASA was consolidated on January 1, 2022, the revenue and net loss for the year in the consolidated income statement would have been ₩ 146,213 million and ₩ 100,955 million, respectively, for the year ended December 31, 2022.

65. Events after the Reporting Period

Hanwha Life Financial Service. Co, Ltd, a subsidiary of the Group, acquired 97.7% of shares in PEOPLELIFE CO., LTD on January 2, 2023, and classified it as a subsidiary. Hanwha Life Financial Service. Co, Ltd. borrowed ₩ 100,000 million from Shinhan Bank and on January 2, 2023, for the purpose of financing the acquisition. In relation to this, real estate and insured assets are pledged as collateral.