



SK Holdings Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2018 and 2017
with the independent auditor's report

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Independent auditor's report

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

Opinion

We have audited the accompanying consolidated financial statements of SK Holdings Co., Ltd. and its subsidiaries, (collectively referred to as the "Group") which comprise the consolidated statements of financial position as at December 31, 2018 and 2017, respectively, the consolidated statements of comprehensive income, consolidated statements of changes in shareholders' equity and consolidated statements of cash flows, for the years then ended and the notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards (KIFRS).

Basis for opinion

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

Key Audit Matters

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

We have fulfilled the responsibilities described in the Auditor's responsibilities for the audit of the consolidated financial statements section of our report, including in relation to these matters. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the consolidated financial statements. The results of our audit procedures, including the procedures performed to address the matters below, provide the basis for our audit opinion on the accompanying consolidated financial statements.

(1) Revenue Recognition by Input Method

As discussed in Note 2 of the consolidated financial statements, if the Group can reasonably measure the progress of the performance obligation for construction contracts and system construction services, the contract revenue related to the performance obligation is recognized as revenue based on the progress of the contract activity as at the end of the reporting period. The Company measures the progress of contracts at the rate of cumulative contract costs incurred for the performance obligation divided by the estimated total contract costs, and these methods of measurement have uncertainties in accounting estimates because the measurement results are significantly affected by management's judgment.

We have selected revenue recognition as a key audit matter considering the likelihood of errors in estimating the progress rate or the likelihood of errors in profit or loss due to a intentional misstatement.

The major audit procedures we have conducted in this regard are:

- Understanding of revenue recognition accounting policy and review of changes
- Review the appropriateness of whether conditions that progress can reasonably measure are met
- Recalculation of progress estimates and review of contracts whose progress has significantly changed
- Reviewing and inspecting documents regarding the appropriateness of accounting for the estimated total contract cost and changes in the performance obligation
- Reviewing and inspecting documents regarding the cause of significant change in total contract revenue or estimated total contract cost

(2) Accounting of business combination

As described in Note 38 of the consolidated financial statements, the Group has performed the business combination accounting for Life & Security Holdings, Co., Ltd. and three of its subsidiaries, the EAA and PVDC businesses of the Dow Chemical Company during the year.

SK Telecom, a subsidiary, acquired 740,895 shares (55%) of Life & Security Holdings Co., Ltd. to strengthen its security business and expand its home customers during the year. The acquisition cost was ₩696,665 million and identified net assets of the controlling interests, including intangible assets, amounting to ₩(-)458,372 million and goodwill amounting to ₩1,155,037 million were recognized.

SK Global Chemical Co., Ltd., a subsidiary, acquired all of the EAA and PVDC businesses in the United States and Spain from The Dow Chemical Company to diversify its high value added packaging business portfolio during 2017. The acquisition cost was ₩458,900 million and the identified net assets including intangible assets amounting to ₩346,172 million and goodwill amounting to ₩112,728 million was recognized.

Accounting of business combinations in accordance with KIFRS 1103 requires the Group to recognize acquired assets and liabilities, including unrecognized intangible assets by the books of the investee and recognize them at fair value. In determining the fair value of identified intangible assets, it is necessary to use cash flow estimates and appropriate discount rates based on key assumptions such as sales growth rate, operating profit ratio, and capital expenditure estimates. There are uncertainties in accounting estimates because the measurement results are significantly affected by management's judgment to key assumptions and discount rate.

We selected the transaction price allocation accounting for the completed business combination as our key audit matters considering the significance of the amount of assets and liabilities recognized in relation to the business combination, the significance of the assumptions and judgment of management used in measuring assets and liabilities.

The major audit procedures we have conducted in this regard are:

- Understanding the business combination transactions and reviewing the business combination accounting policy of the Group.
- Evaluate the eligibility, experience and expertise and confirm objectivity and independence of the external evaluation experts of the Company
- Review fair value measurements and purchase price allocation reports for identified assets and liabilities created by external valuation experts of the Company
- Review appropriateness of evaluation method and used assumptions by using internal evaluation experts
- Review by comparison the financial forecasts used for measuring fair value with business plan approved by management
- Review the accuracy and completeness of the disclosures required by KIFRS 1103

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

Management is responsible for the preparation of the accompanying consolidated financial statements in accordance with KIFRS, and for such internal control as management determine 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 of the Group is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

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

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

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the 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 are 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, including those related to independence, and to communicate with them all 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 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 partner in charge of the audit resulting in this independent auditor's report is Bok-Han Lee



March 12, 2019

This audit report is effective as at March 12, 2019, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the date of the independent auditor's report to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.

SK Holdings Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2018 and 2017

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

Tae-Won Chey and Dong-Hyun Jang
Chief Executive Officers
SK Holdings Co., Ltd.

SK Holdings Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as at December 31, 2018 and 2017

(Korean won in millions and U.S. dollar in thousands)

	Notes	Korean won		Translation into U.S. dollar (Note 2)	
		2018	2017	2018	2017
Assets					
Current assets:					
Cash and cash equivalents	6,34,36,37	₩ 6,783,035	₩ 7,145,842	\$ 6,066,573	\$ 6,391,058
Short-term financial instruments	6,34,36	4,218,107	3,540,673	3,772,567	3,166,687
Trade accounts receivable	6,7,34,37	10,844,124	11,538,468	9,698,707	10,319,710
Other accounts receivable	6,37	1,932,335	1,991,725	1,728,231	1,781,348
Inventories	8,34	8,992,740	8,178,936	8,042,876	7,315,031
Short-term investment securities	6,9,34,37	197,717	-	176,833	-
Available-for-sale financial assets	6,9,37	-	188,603	-	168,682
Other current assets	6,19,20,31,34,36,37	3,872,992	2,091,550	3,463,904	1,870,629
Assets held for sale	30	287,347	524,117	256,996	468,757
Total current assets		<u>37,128,397</u>	<u>35,199,914</u>	<u>33,206,687</u>	<u>31,481,902</u>
Non-current assets:					
Long-term financial instruments	6,34,36	12,549	200,853	11,224	179,638
Long-term trade accounts receivable	6,7,37	11,373	12,908	10,172	11,545
Long-term other accounts receivable	6,37	313,213	337,118	280,130	301,510
Long-term investment securities	6,9,34,37	2,217,401	-	1,983,187	-
Available-for-sale financial assets	6,9,34,37	-	1,596,033	-	1,427,451
Investments in associates and joint ventures	10,34	19,218,345	14,629,502	17,188,395	13,084,252
Property, plant and equipment	11,31,34	39,715,921	41,295,452	35,520,902	36,933,594
Investment property	12,34	503,966	622,846	450,734	557,058
Goodwill	13	2,379,526	857,514	2,128,187	766,939
Intangible assets	14	13,811,199	11,473,859	12,352,383	10,261,926
Deferred income tax assets	26	694,690	734,524	621,313	656,939
Other non-current assets	6,18,19,20,31,36,37	3,450,411	2,822,940	3,085,958	2,524,765
Total non-current assets		<u>82,328,594</u>	<u>74,583,549</u>	<u>73,632,585</u>	<u>66,705,616</u>
Total assets		₩ 119,456,991	₩ 109,783,463	\$ 106,839,272	\$ 98,187,518
Liabilities and equity					
Current liabilities:					
Short-term borrowings	6,7,15,32,34,37	₩ 3,426,330	₩ 2,999,032	\$ 3,064,422	\$ 2,682,257
Trade accounts payable	6,37	9,028,488	9,588,642	8,074,848	8,575,836
Other accounts payable	6,37	3,468,375	3,610,570	3,102,026	3,229,201
Provisions	17	352,225	246,800	315,021	220,732
Current portion of long-term debt	6,15,32,33,34,37	5,024,863	6,548,146	4,494,109	5,856,494
Other current liabilities	6,19,20,31,37	8,603,819	8,230,998	7,695,035	7,361,594
Liabilities held for sale	30	103,732	143,869	92,775	128,673
Total current liabilities		<u>30,007,832</u>	<u>31,368,057</u>	<u>26,838,236</u>	<u>28,054,787</u>
Non-current liabilities:					
Bonds payable and long-term borrowings	6,15,32,34,37	28,890,533	23,359,518	25,838,953	20,892,155
Long-term other accounts payable	6,16,32,33,37	2,011,424	3,746,917	1,798,966	3,351,147
Retirement benefit obligation	18	420,227	257,783	375,840	230,555
Provisions	17	276,937	167,002	247,685	149,362
Deferred income tax liabilities	26	5,491,052	3,988,276	4,911,056	3,567,012
Other non-current liabilities	6,19,20,31,37	1,471,114	1,139,490	1,315,727	1,019,130
Total non-current liabilities		<u>38,561,287</u>	<u>32,658,986</u>	<u>34,488,227</u>	<u>29,209,361</u>
Total liabilities		<u>68,569,119</u>	<u>64,027,043</u>	<u>61,326,463</u>	<u>57,264,148</u>
Equity attributable to owners of the parent:					
Issued capital	21	15,385	15,385	13,760	13,760
Other paid-in capital	21	4,631,955	4,112,475	4,142,702	3,678,092
Retained earnings	21	12,217,319	9,837,619	10,926,857	8,798,514
Other capital components	21	(237,143)	(305,397)	(212,095)	(273,139)
Total equity attributable to owner of the parent		<u>16,627,516</u>	<u>13,660,082</u>	<u>14,871,224</u>	<u>12,217,227</u>
Non-controlling interests		<u>34,260,356</u>	<u>32,096,338</u>	<u>30,641,585</u>	<u>28,706,143</u>
Total equity		<u>50,887,872</u>	<u>45,756,420</u>	<u>45,512,809</u>	<u>40,923,370</u>
Total liabilities and equity		₩ 119,456,991	₩ 109,783,463	\$ 106,839,272	\$ 98,187,518

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

SK Holdings Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2018 and 2017

(Korean won in millions and U.S. dollar in thousands, except for earnings per share)

	Notes	Korean won		Translation into U.S. dollar (Note 2)	
		2018	2017	2018	2017
		₩	₩	\$	\$
Sales	4	<u>₩ 101,502,020</u>	<u>₩ 90,612,832</u>	<u>\$ 90,780,807</u>	<u>\$ 81,041,796</u>
Cost of sales	25	<u>91,851,225</u>	<u>79,918,869</u>	<u>82,149,383</u>	<u>71,477,389</u>
Gross profit		9,650,795	10,693,963	8,631,424	9,564,407
Selling and administrative expenses	22,25	4,962,678	4,948,936	4,438,492	4,426,202
Operating income	4	4,688,117	5,745,027	4,192,932	5,138,205
Financial income	6,23	3,924,240	2,973,220	3,509,740	2,659,172
Financial costs	6,23	4,554,737	3,284,786	4,073,640	2,937,828
Gain related to investments in associates and joint ventures, net	10	3,665,477	2,485,005	3,278,309	2,222,525
Other non-operating income	6,24	760,123	610,583	679,835	546,090
Other non-operating expenses	6,24	954,837	1,085,903	853,983	971,205
Income from continuing operations before income tax expense	4	7,528,383	7,443,146	6,733,193	6,656,959
Income tax expense from continuing operations	26	1,924,555	2,251,751	1,721,273	2,013,908
Net income from continuing operations	4	5,603,828	5,191,395	5,011,920	4,643,051
Gain (loss) from discontinued operation	29	547,313	(124,913)	489,503	(111,719)
Net income		<u>₩ 6,151,141</u>	<u>₩ 5,066,482</u>	<u>\$ 5,501,423</u>	<u>\$ 4,531,332</u>
Attributable to:					
Owners of the parent		2,253,123	1,677,432	2,015,135	1,500,252
Non-controlling interests		3,898,018	3,389,050	3,486,288	3,031,080
Other comprehensive income (loss):					
Items not to be reclassified to profit or loss in subsequent periods (net of tax):					
Remeasurement gain (loss) on defined benefit plans		(137,019)	26,707	(122,546)	23,886
Net loss on valuation of financial instruments measured at FVOCI		(152,281)	-	(136,196)	-
Items to be reclassified to profit or loss in subsequent periods (net of tax):					
Net gain on available-for-sale financial assets		-	202,311	-	180,942
Equity adjustments of investments in associates and joint ventures		51,283	(281,370)	45,866	(251,650)
Net change in valuation of cash flow hedges		35,134	(10,944)	31,423	(9,788)
Net gain (loss) on translation of foreign operations		146,709	(529,240)	131,213	(473,339)
Net gain (loss) on translation to the presentation currency		(64,671)	(7,825)	(57,840)	(6,998)
		<u>(120,845)</u>	<u>(600,361)</u>	<u>(108,080)</u>	<u>(536,947)</u>
Total comprehensive income		<u>₩ 6,030,296</u>	<u>₩ 4,466,121</u>	<u>\$ 5,393,343</u>	<u>\$ 3,994,385</u>
Attributable to:					
Owners of the parent		2,300,054	1,395,482	2,057,109	1,248,083
Non-controlling interests		3,730,242	3,070,639	3,336,234	2,746,302
Earnings per share (Korean won and U.S. dollar):	27				
Basic earnings per share		₩ 40,310	₩ 30,007	\$ 36.05	\$ 26.84
Basic earnings per share from continuing operations		33,433	30,775	29.90	27.52

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

SK Holdings Co., Ltd. and its subsidiaries
Consolidated statements of changes in shareholders' equity
for the years ended December 31, 2018 and 2017
(Korean won in millions)

	Issued capital	Other paid-in capital	Retained earnings	Other capital components	Total equity attributable to owners of the parent	Non-controlling interests	Total equity
	₩	₩	₩	₩	₩	₩	₩
As at January 1, 2017	15,385	4,741,139	8,368,122	(12,289)	13,112,357	29,214,367	42,326,724
Total comprehensive income:							
Net income	-	-	1,677,432	-	1,677,432	3,389,050	5,066,482
Remeasurement gain on defined benefit plans	-	-	11,158	-	11,158	15,549	26,707
Net gain on available-for-sale financial assets	-	-	-	62,378	62,378	139,933	202,311
Equity adjustments of investment in associates and joint ventures	-	-	-	(105,573)	(105,573)	(175,797)	(281,370)
Gain (loss) on valuation of derivative financial instruments	-	-	-	9,055	9,055	(19,999)	(10,944)
Net loss on translation of foreign operations	-	-	-	(265,151)	(265,151)	(264,089)	(529,240)
Net gain (loss) on translation to the presentation currency	-	-	-	6,183	6,183	(14,008)	(7,825)
Transaction with shareholders:							
Dividends	-	-	(208,666)	-	(208,666)	(1,150,609)	(1,359,275)
Equity transactions in consolidated entities	-	(624,635)	-	-	(624,635)	380,172	(244,463)
Changes in the scope of consolidation	-	-	-	-	-	584,881	584,881
Others	-	(4,029)	(10,427)	-	(14,456)	(3,112)	(17,568)
As at December 31, 2017	15,385	4,112,475	9,837,619	(305,397)	13,660,082	32,096,338	45,756,420
As at January 1, 2018	15,385	4,112,475	9,837,619	(305,397)	13,660,082	32,096,338	45,756,420
Effect of changes in accounting policies	-	-	485,878	(42,236)	443,642	1,265,791	1,709,433
As at January 1, 2018 (After revisions)	15,385	4,112,475	10,323,497	(347,633)	14,103,724	33,362,129	47,465,853
Total comprehensive income:							
Net income	-	-	2,253,123	-	2,253,123	3,898,018	6,151,141
Remeasurement loss on defined benefit plans	-	-	(63,559)	-	(63,559)	(73,460)	(137,019)
Net loss on valuation of financial instruments measured at FVOCI	-	-	-	(40,948)	(40,948)	(111,333)	(152,281)
Equity adjustments of investment in associates and joint ventures	-	-	-	67,515	67,515	(16,232)	51,283
Gain on valuation of derivative financial instruments	-	-	-	18,508	18,508	16,626	35,134
Net gain on translation of foreign operations	-	-	-	75,815	75,815	70,894	146,709
Net loss on translation to the presentation currency	-	-	-	(10,400)	(10,400)	(54,271)	(64,671)
Transaction with shareholders:							
Dividends	-	-	(281,971)	-	(281,971)	(1,229,101)	(1,511,072)
Equity transactions in consolidated entities	-	518,418	-	-	518,418	(1,230,442)	(712,024)
Changes in the scope of consolidation	-	-	-	-	-	(375,782)	(375,782)
Others	-	1,062	(13,771)	-	(12,709)	3,310	(9,399)
As at December 31, 2018	15,385	4,631,955	12,217,319	(237,143)	16,627,516	34,260,356	50,887,872

(Continued)

SK Holdings Co., Ltd. and its subsidiaries
Consolidated statements of changes in shareholders' equity
for the years ended December 31, 2018 and 2017 (cont'd)
(U.S. dollar in thousands)

	Issued capital	Other paid-in capital	Retained earnings	Other capital components	Total equity attributable to owners of the parent	Non-controlling interests	Total equity
	\$	\$	\$	\$	\$	\$	\$
As at January 1, 2017	13,760	4,240,353	7,484,234	(10,991)	11,727,356	26,128,582	37,855,938
Total comprehensive income:							
Net income	-	-	1,500,252	-	1,500,252	3,031,080	4,531,332
Remeasurement gain on defined benefit plans	-	-	9,979	-	9,979	13,907	23,886
Net gain on available-for-sale financial assets	-	-	-	55,789	55,789	125,152	180,941
Equity adjustments of investment in associates and joint ventures	-	-	-	(94,422)	(94,422)	(157,228)	(251,650)
Gain (loss) on valuation of derivative financial instruments	-	-	-	8,099	8,099	(17,887)	(9,788)
Net loss on translation of foreign operations	-	-	-	(237,144)	(237,144)	(236,194)	(473,338)
Net gain (loss) on translation to the presentation currency	-	-	-	5,530	5,530	(12,528)	(6,998)
Transaction with shareholders:							
Dividends	-	-	(186,626)	-	(186,626)	(1,029,075)	(1,215,701)
Equity transactions in consolidated entities	-	(558,658)	-	-	(558,658)	340,016	(218,642)
Changes in the scope of consolidation	-	-	-	-	-	523,103	523,103
Others	-	(3,603)	(9,325)	-	(12,928)	(2,785)	(15,713)
As at December 31, 2017	13,760	3,678,092	8,798,514	(273,139)	12,217,227	28,706,143	40,923,370
As at January 1, 2018	13,760	3,678,092	8,798,514	(273,139)	12,217,227	28,706,143	40,923,370
Effect of changes in accounting policies	-	-	434,557	(37,775)	396,782	1,132,091	1,528,873
As at January 1, 2018 (After revisions)	13,760	3,678,092	9,233,071	(310,914)	12,614,009	29,838,234	42,452,243
Total comprehensive income:							
Net income	-	-	2,015,135	-	2,015,135	3,486,288	5,501,423
Remeasurement loss on defined benefit plans	-	-	(56,846)	-	(56,846)	(65,701)	(122,547)
Net loss on valuation of financial instruments measured at FVOCI	-	-	-	(36,623)	(36,623)	(99,573)	(136,196)
Equity adjustments of investment in associates and joint ventures	-	-	-	60,384	60,384	(14,517)	45,867
Gain on valuation of derivative financial instruments	-	-	-	16,552	16,552	14,870	31,422
Net gain on translation of foreign operations	-	-	-	67,807	67,807	63,406	131,213
Net loss on translation to the presentation currency	-	-	-	(9,301)	(9,301)	(48,540)	(57,841)
Transaction with shareholders:							
Dividends	-	-	(252,188)	-	(252,188)	(1,099,276)	(1,351,464)
Equity transactions in consolidated entities	-	463,660	-	-	463,660	(1,100,476)	(636,816)
Changes in the scope of consolidation	-	-	-	-	-	(336,090)	(336,090)
Others	-	950	(12,315)	-	(11,365)	2,960	(8,405)
As at December 31, 2018	13,760	4,142,702	10,926,857	(212,095)	14,871,224	30,641,585	45,512,809

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

SK Holdings Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2018 and 2017

(Korean won in millions and U.S. dollar in thousands)

	Notes	Korean won		Translation into U.S. dollar (Note 2)	
		2018	2017	2018	2017
Cash flows from operating activities:					
Net income		₩ 6,151,141	₩ 5,066,482	\$ 5,501,423	\$ 4,531,332
Non-cash adjustments	32	5,625,298	6,580,676	5,031,122	5,885,588
Working capital adjustments	32	(1,736,169)	(2,559,772)	(1,552,785)	(2,289,395)
Interest received		235,557	213,774	210,676	191,194
Interest paid		(1,210,594)	(1,128,516)	(1,082,724)	(1,009,316)
Dividends received		304,499	217,572	272,336	194,591
Income tax paid		(1,513,223)	(1,460,136)	(1,353,388)	(1,305,908)
Net cash provided by operating activities		7,856,509	6,930,080	7,026,660	6,198,086
Cash flows from investing activities:					
Increase (decrease) in short-term and long-term financial instruments, net		(518,981)	693,888	(464,163)	620,596
Increase (decrease) in short-term and long-term loans, net		(48,019)	3,862	(42,947)	3,454
Increase in short-term investment securities		(49,791)	-	(44,532)	-
Proceeds from disposal of long-term investment securities		490,158	-	438,385	-
Proceeds from disposal of available-for-sale financial assets		-	252,787	-	226,086
Proceeds from disposal of investments in associates and joint ventures		139,606	17,168	124,860	15,355
Proceeds from disposal of property, plant and equipment		519,662	275,691	464,772	246,571
Proceeds from disposal of intangible assets		14,992	23,502	13,408	21,020
Proceeds from disposal of assets held for sale		100,493	516,187	89,878	461,664
Acquisition of investment securities		(577,922)	-	(516,879)	-
Acquisition of available-for-sale financial assets		-	(294,769)	-	(263,634)
Acquisition of investments in associates and joint ventures		(1,471,119)	(1,185,619)	(1,315,731)	(1,060,387)
Acquisition of property, plant and equipment		(6,275,589)	(4,971,873)	(5,612,726)	(4,446,716)
Acquisition of intangible assets		(928,053)	(382,647)	(830,027)	(342,230)
Changes in cash due to changes in the scope of consolidation		(1,796,249)	(1,388,381)	(1,606,519)	(1,241,732)
Transfer of business		179,399	299,651	160,450	268,000
Others, net		39,657	(152,306)	35,468	(136,219)
Net cash used in investing activities		(10,181,756)	(6,292,859)	(9,106,303)	(5,628,172)
Cash flows from financing activities:					
Increase in short-term borrowings, net		737,302	206,701	659,424	184,868
Increase in bonds payable and borrowings		13,278,054	6,097,851	11,875,551	5,453,762
Increase in other accounts payable		44,666	146,999	39,948	131,472
Decrease in bonds payable and borrowings		(9,239,190)	(5,623,136)	(8,263,295)	(5,029,189)
Decrease in other accounts payable		(582,532)	(751,516)	(521,002)	(672,137)
Payment of dividends		(1,511,072)	(1,356,415)	(1,351,464)	(1,213,143)
Cash inflows (outflows) from equity transactions of consolidated subsidiaries		(782,203)	1,173,381	(699,582)	1,049,442
Others, net		(15,297)	(301,863)	(13,679)	(269,978)
Net cash provided by (used in) financing activities		1,929,728	(407,998)	1,725,901	(364,903)
Net increase (decrease) in cash and cash equivalents		(395,519)	229,223	(353,742)	205,011
Net foreign exchange effects		32,712	(160,753)	29,257	(143,773)
Cash and cash equivalents included in assets held-for-sale		-	(9,585)	-	(8,573)
Cash and cash equivalents at the beginning of the year		7,145,842	7,086,957	6,391,058	6,338,393
Cash and cash equivalents at the end of the year		₩ 6,783,035	₩ 7,145,842	\$ 6,066,573	\$ 6,391,058

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

SK Holdings Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2018 and 2017

1. Corporate information

1.1 Parent

SK Holdings Co., Ltd. (the “Company”) was established on April 13, 1991 and has been engaged in providing systems integration, software design and development, information processing and consulting services, and is headquartered at 26, Jong-ro, Jongno-gu, Seoul. The Company’s ordinary shares have been listed on the Korea Exchange since November 11, 2009.

Upon the acquisition of SK Holdings Co., Ltd. by SK C&C Co., Ltd. effective on August 1, 2015, the Company added the investment business to its existing operations for the purpose of holding the securities of its subsidiaries. Furthermore, the Company changed its name to its current form as at the acquisition date.

As at December 31, 2018, the issued capital of the Company amounts to ₩15,385 million (including ₩113 million of preferred shares). Major shareholders and their equity ownership are Tae-won Chey, National Pension Service and Ki-won Choi each holding 18.44%, 8.34%, and 7.27%, respectively, as at December 31, 2018.

1.2 Consolidated subsidiaries

The Company and its subsidiaries (collectively, the “Group”) are engaged in petroleum refining, telecommunications, wholesale and retail, chemicals, construction and other industries. Subsidiaries whose accounts are included in the consolidated financial statements as at December 31, 2018 are as follows:

Subsidiary	Domicile	Principal business activity	The largest shareholders	Equity ownership (%)
SK Innovation Co., Ltd. (*2)	Korea	Resource development	SK Holdings Co., Ltd.	33.40%
SK Energy Co., Ltd.	Korea	Crude oil refining and sales	SK Innovation Co., Ltd.	100.00%
Netruck Co., Ltd.	Korea	Transportation and oil sales	SK Energy Co., Ltd.	100.00%
Jeju United FC Corporation	Korea	Sports association sponsoring	SK Energy Co., Ltd.	100.00%
SK Energy Road Investment Co., Ltd.	Cayman	Investment	SK Energy Co., Ltd.	100.00%
SK Energy Hong Kong Co., Ltd.	Hong Kong	Investment	SK Energy Co., Ltd.	100.00%
Shandong SK Hightech Oil Co., Ltd.	China	Gas station operation	SK Energy Hong Kong Co., Ltd.	51.00%
SK Energy Road Investment (HK) Co., Ltd.	Hong Kong	Investment	SK Energy Road Investment Co., Ltd.	100.00%
Ningbo SK Baoying Asphalt Storage Co., Ltd.	China	Asphalt manufacturing	SK Energy Road Investment (HK) Co., Ltd.	51.00%
Hefei SK Baoying Asphalt Co., Ltd.	China	Asphalt manufacturing	SK Energy Road Investment (HK) Co., Ltd.	51.00%
Chongqing SK Asphalt Co., Ltd.	China	Asphalt manufacturing	SK Energy Road Investment (HK) Co., Ltd.	51.00%
SK Shanghai Asphalt Co., Ltd.	China	Logistics	SK Energy Road Investment (HK) Co., Ltd.	100.00%
SK Global Chemical Co., Ltd.	Korea	Chemicals manufacturing and sales	SK Innovation Co., Ltd.	100.00%
SK Global Chemical China Holding Co., Ltd.	China	Investment	SK Global Chemical Co., Ltd.	100.00%
SK Global Chemical International Trading (Shanghai) Co., Ltd.	China	Petrochemicals sales	SK Global Chemical China Holding Co., Ltd.	100.00%
SK Golden Tide Plastics (Yantai) Co., Ltd.	China	Petrochemicals sales	SK Global Chemical International Trading (Shanghai) Co., Ltd.	51.00%
SK Global Chemical International Trading (Guangzhou) Co., Ltd.	China	Petrochemicals sales	SK Global Chemical China Holding Co., Ltd.	100.00%
SK Global Chemical Americas, Inc.	USA	Petrochemicals sales	SK Global Chemical Co., Ltd.	100.00%
SK Primacor Americas LLC	USA	Petrochemicals sales	SK Global Chemical Americas, Inc.	100.00%
SK Primacor Europe, S.L.U.	Spain	Petrochemicals sales	SK Global Chemical Americas, Inc.	100.00%
SK Saran Americas LLC	USA	Petrochemicals sales	SK Global Chemical Americas, Inc.	100.00%
SK Global Chemical China Holding Co., Ltd.	Hong Kong	Investment	SK Global Chemical Co., Ltd.	100.00%
SK Global Chemical Japan Co., Ltd.	Japan	Petrochemicals sales	SK Global Chemical Co., Ltd.	100.00%
SK Global Chemical Singapore Pte. Ltd.	Singapore	Petrochemicals sales	SK Global Chemical Co., Ltd.	100.00%
SK Global Chemical Investment Hong Kong Ltd.	Hong Kong	Investment	SK Global Chemical Co., Ltd.	100.00%
Ningbo SK Performance Rubber Co., Ltd.	China	Synthetic rubber manufacturing	SK Global Chemical Investment Hong Kong Ltd.	80.00%
SK Incheon Petrochem Co., Ltd. (*3)	Korea	Chemicals manufacturing and sales	SK Innovation Co., Ltd.	100.00%
SK Trading International Co., Ltd.	Korea	Trading business	SK Innovation Co., Ltd.	100.00%
SK Energy International Pte. Ltd.	Singapore	Trading business	SK Trading International Co., Ltd.	100.00%
SK Energy Europe, Ltd.	UK	Trading business	SK Energy International Pte. Ltd.	100.00%
SK Energy Americas, Inc.	USA	Trading business	SK Energy International Pte. Ltd.	100.00%
SK Terminal B.V.	Netherlands	Investment	SK Energy International Pte. Ltd.	100.00%
SK Lubricants Co., Ltd.	Korea	Lubricants oil manufacturing	SK Innovation Co., Ltd.	100.00%
Yubase Manufacturing Asia Corporation	Korea	Lubricants oil manufacturing and sales	SK Lubricants Co., Ltd.	70.00%
SK Energy Lubricants (Tianjin) Co., Ltd.	China	Lubricants oil manufacturing and sales	SK Lubricants Co., Ltd.	100.00%
PT. Patra SK	Indonesia	Lubricants oil manufacturing and sales	SK Lubricants Co., Ltd.	65.00%
SK Lubricants Americas, Inc.	USA	Lubricants oil sales	SK Lubricants Co., Ltd.	100.00%
SK Lubricants Europe B.V.	Netherlands	Lubricants oil sales	SK Lubricants Co., Ltd.	100.00%
SK Lubricants Japan Co., Ltd.	Japan	Lubricants oil sales	SK Lubricants Co., Ltd.	100.00%
SK Lubricants & Oils India Pvt. Ltd.	India	Lubricants oil sales	SK Lubricants Co., Ltd.	100.00%
Iberian Lube Base Oils, S.A.	Spain	Lubricants oil manufacturing and sales	SK Lubricants Co., Ltd.	70.00%
SK Lubricants Russia LLC	Russia	Lubricants oil sales	SK Lubricants Co., Ltd.	100.00%
SK Mobile Energy Co., Ltd.	Korea	Lithium battery manufacturing	SK Innovation Co., Ltd.	100.00%
SK Innovation Insurance (Bermuda), Ltd.	Bermuda	Insurance	SK Innovation Co., Ltd.	100.00%
SK USA, Inc.	USA	Management consulting services	SK Innovation Co., Ltd.	100.00%
Blue Dragon Energy Co., Ltd. (formerly, SK Battery China Holdings Co., Ltd.)	China	Investment	SK Innovation Co., Ltd.	100.00%
SK Battery Hungary Kft.	Hungary	Lithium battery manufacturing	SK Innovation Co., Ltd.	100.00%
SK Hi-Tech Battery Battery Materials(Jiang Su) Co., Ltd.	China	Separation membrane for secondary battery manufacturing	SK Innovation Co., Ltd.	100.00%
SK E&P Company	USA	Crude oil development	SK Innovation Co., Ltd.	100.00%
SK E&P America, Inc.	USA	Investment	SK Innovation Co., Ltd.	100.00%
SK Plymouth, LLC	USA	Crude oil development	SK E&P America, Inc.	100.00%

SK Holdings Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2018 and 2017

1.2 Consolidated subsidiaries (cont'd)

Subsidiary	Domicile	Principal business activity	The largest shareholders	Equity ownership (*1)
SK Permian, LLC	USA	Crude oil development	SK E&P America, Inc.	100.00%
SK E&P Operations America, LLC	USA	Crude oil development	SK E&P America, Inc.	100.00%
SK Nemaha, LLC	USA	Crude oil development	SK E&P America, Inc.	100.00%
SK Telecom Co., Ltd. (*2)	Korea	Mobile telecommunications	SK Holdings Co., Ltd.	25.22%
SK Telink Co., Ltd.	Korea	International call and MVNO business	SK Telecom Co., Ltd.	100.00%
SK Telink Vietnam Co., Ltd.	Vietnam	Resale communication business	SK Telink Co., Ltd.	100.00%
SK Broadband Co., Ltd.	Korea	Wire communications	SK Telecom Co., Ltd.	100.00%
Home&Service Co., Ltd.	Korea	Information and communication facilities management business	SK Broadband Co., Ltd.	100.00%
SK Store Co., Ltd.	Korea	Other resale communication business	SK Broadband Co., Ltd.	100.00%
PS&Marketing Corp.	Korea	Resale communication business	SK Telecom Co., Ltd.	100.00%
Serviceace Co., Ltd.	Korea	Call center and telemarketing business	SK Telecom Co., Ltd.	100.00%
Service Top Co., Ltd.	Korea	Call center and telemarketing business	SK Telecom Co., Ltd.	100.00%
Network O&S Co., Ltd.	Korea	Maintenance management	SK Telecom Co., Ltd.	100.00%
K-Net Culture & Contents Venture Fund	Korea	Investment fund	SK Planet Co., Ltd.	59.00%
One store Co., Ltd.	Korea	Telecommunication service	SK Telecom Co., Ltd.	65.54%
SK Communications Co., Ltd.	Korea	Internet portal service	SK Telecom Co., Ltd.	100.00%
SK Planet Co., Ltd.	Korea	Telecommunication service and system software development and supplying	SK Telecom Co., Ltd.	98.10%
11street Co., Ltd.	Korea	E-commerce	SK Telecom Co., Ltd.	81.81%
Life & Security Holdings Co., Ltd.	Korea	Holding Company	SK Telecom Co., Ltd.	55.00%
ADT Caps Co., Ltd.	Korea	Automatic security	Life & Security Holdings Co., Ltd.	100.00%
CAPSTEC Co., Ltd.	Korea	Manned security	Life & Security Holdings Co., Ltd.	100.00%
ADT Security Co., Ltd.	Korea	Sales and trade of anti-theft devices and surveillance devices	Life & Security Holdings Co., Ltd.	100.00%
Quantum Innovation Private Equity Joint Venture I	Korea	Holding Company	Life & Security Holdings Co., Ltd.	100.00%
Infosec Co., Ltd.	Korea	Information security service	SK Telecom Co., Ltd.	100.00%
SK M & Service Co., Ltd.	Korea	Internet website service	SK Planet Co., Ltd.	100.00%
SK Planet Japan K.K.	Japan	Digital contents sourcing and presenting	SK Planet Co., Ltd.	79.45%
SKP Global Holdings Pte. Ltd.	Singapore	Holding Company	SK Planet Co., Ltd.	100.00%
SKP America, LLC	USA	Digital contents sourcing and presenting	SK Planet Co., Ltd.	100.00%
shopkick Management Company, Inc.	USA	Investment	SKP America, LLC	100.00%
shopkick, Inc.	USA	Mileage based E-commerce App. development	shopkick Management Company, Inc.	100.00%
SK Telecom China Holding Co., Ltd.	China	Holding Company	SK Telecom Co., Ltd.	100.00%
SK Global Healthcare Business Group., Ltd.	Hong Kong	Investment	SK Telecom Co., Ltd.	100.00%
SKT Americas, Inc.	USA	Management consulting and information gathering	SK Telecom Co., Ltd.	100.00%
YTK Investment, Ltd.	Cayman	Investment	SK Telecom Co., Ltd.	100.00%
Atlas Investment, Ltd.	Cayman	Investment	SK Telecom Co., Ltd.	100.00%
SK Telecom Innovation Fund, L.P.	USA	Investment	Atlas Investment, Ltd.	100.00%
SK Telecom China Fund I L.P.	Cayman	Investment	Atlas Investment, Ltd.	100.00%
iriver Co., Ltd.	Korea	Video and audio equipment manufacturing	SK Telecom Co., Ltd.	52.60%
iriver Inc.	USA	Marketing and sales in North America	iriver Co., Ltd.	100.00%
iriver Enterprise Ltd.	Hong Kong	Chinese subsidiary management	iriver Co., Ltd.	100.00%
iriver China Co., Ltd.	China	MP3,4 production and sales	iriver Enterprise, Ltd.	100.00%
Dongguan iriver Electronics Co., Ltd.	China	Electronic book production and sales	iriver Enterprise, Ltd.	100.00%
groovers Co., Ltd.	Korea	Domestic contents and music sales	iriver Co., Ltd.	100.00%
groovers Japan Co., Ltd.	Japan	Music distribution and sales	iriver Co., Ltd.	100.00%
Life Design Company Japan Inc. (formerly, S.M.Life Design Company Japan, Inc.)	Japan	Japan goods sales	Iriver Co., Ltd.	100.00%
SK Telecom Japan Inc.	Japan	Management consulting and information gathering	SK Telecom Co., Ltd.	100.00%
id Quantique SA	Swiss	Quantum information and communication business	SK Telecom Co., Ltd.	65.64%
id Quantique Ltd.	Korea	Quantum information and communication business	id Quantique SA	100.00%
SK Networks Co., Ltd. (*2)	Korea	Distribution and trading business	SK Holdings Co., Ltd.	39.14%
SK Networks Service Co., Ltd.	Korea	Communications equipment repair service	SK Networks Co., Ltd.	86.50%
SK Pinx Co., Ltd.	Korea	Golf club operating	SK Networks Co., Ltd.	100.00%
SK Rent-a-Car Service Co., Ltd. (formerly, Car Life Service Co., Ltd.)	Korea	Business support services	SK Networks Co., Ltd.	100.00%
SK Magic Co., Ltd.	Korea	Household appliances manufacturing, sales and rent	SK Networks Co., Ltd.	100.00%
SK Magic Service Co., Ltd.	Korea	House appliances repair and others	SK Magic Co., Ltd.	100.00%
SK Magic Vietnam Company Limited	Vietnam	Household appliances sales and rent	SK Networks Co., Ltd.	100.00%
Mokgam Service	Korea	Real property lease	SK Networks Co., Ltd.	100.00%
SK Networks (China) Holdings Co., Ltd.	China	Holding Company	SK Networks Co., Ltd.	100.00%
Liaoning SK Networks Real Estate Development Co., Ltd.	China	Real estate development	SKN (China) Holdings Co., Ltd.	100.00%
Shenyang SK Bus Terminal Co., Ltd.	China	Bus terminal business	SKN (China) Holdings Co., Ltd.	75.00%
SK Networks (Liaoning) Logistics Co., Ltd.	China	Distribution and logistics	SKN (China) Holdings Co., Ltd.	100.00%
SK Networks (Dandong) Energy Co., Ltd.	China	Petroleum sales	SKN (China) Holdings Co., Ltd.	100.00%
Shenyang SK Networks Energy Co., Ltd.	China	Petroleum sales	SK Networks Co., Ltd.	100.00%
SK (GZ FreeZone) Co., Ltd.	China	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks (Shanghai) Co., Ltd.	China	Trading business	SK Networks Co., Ltd.	100.00%
POSK (Pinghu) Steel Processing Center Co., Ltd.	China	Steel processing and sales	SK Networks Co., Ltd.	80.00%
SK Networks Hong Kong Ltd.	Hong Kong	Trading business	SK Networks Co., Ltd.	100.00%
SK (Guangzhou) Metal Co., Ltd.	China	Steel processing and sales	SK Networks Hong Kong Ltd.	100.00%
SK Networks (Xiamen) Steel Processing Center Co., Ltd.	China	Steel processing and sales	SK Networks Hong Kong Ltd.	100.00%
SK Networks Japan Co., Ltd.	Japan	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks Deutschland GmbH	Germany	Trading business	SK Networks Co., Ltd.	100.00%
Daiyang SK Networks SAN. VE TIC. Ltd. STI (*4)	Turkey	Steel processing and sales	SK Networks Co., Ltd.	51.22%
SK Networks Resources Australia Pty. Ltd.	Australia	Resource development	SK Networks Co., Ltd.	100.00%
SK Networks Middle East FZE	UAE	Trading business	SK Networks Co., Ltd.	100.00%
SK Brasil LTDA	Brazil	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks Trading Malaysia Sdn Bhd	Malaysia	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks America, Inc.	USA	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks Brasil Intermediacao de Negocios LTDA.	Brazil	Trading business	SK Networks Co., Ltd.	100.00%
Networks Tejarat Pars	Iran	Trading business	SK Networks Co., Ltd.	100.00%
SK Networks Retail Malaysia Sdn. Bhd.	Malaysia	Product sales and rent	SK Networks Co., Ltd.	100.00%
SKC Co., Ltd. (*2)	Korea	Petrochemicals manufacturing	SK Holdings Co., Ltd.	41.00%
Woori Fine Chem Co., Ltd.	Korea	Petrochemicals sales	SKC Co., Ltd.	100.00%
SK Telesys Co., Ltd.	Korea	Communications equipment manufacturing and sales	SKC Co., Ltd.	79.39%
Techdream Co., Ltd.	Hong Kong	Semiconductor component manufacturing and sales	SK Telesys Co., Ltd.	100.00%
SKC Infra Service Co., Ltd.	Korea	Electrical contractor,	SK Telesys Co., Ltd.	100.00%

SK Holdings Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2018 and 2017

1.2 Consolidated subsidiaries (cont'd)

Subsidiary	Domicile	Principal business activity	The largest shareholders	Equity Ownership (*1)
SKC Solmics Co., Ltd.	Korea	Semiconductor component manufacturing	SKC Co., Ltd.	57.70%
Solmics Taiwan Co., Ltd.	Taiwan	Semiconductor component distribution	SKC Solmics Co., Ltd.	100.00%
Solmics Shanghai Co., Ltd.	China	Semiconductor component distribution	SKC Solmics Co., Ltd.	100.00%
SKC-Eco Solution Co., Ltd. (formerly, SKW Co., Ltd.)	Korea	Film manufacturing	SKC Co., Ltd.	100.00%
SKC (Jiangsu) High tech Plastics Co., Ltd. (*5)	China	Film manufacturing	SKC Co., Ltd.	91.38%
SKC, Inc.	USA	Manufacturing	SKC Co., Ltd.	100.00%
SKC Europe GmbH	Germany	Sales	SKC Co., Ltd.	100.00%
SK Bioland Co., Ltd. (*2)	Korea	Manufacturing	SKC Co., Ltd.	27.94%
Bioland Biotech Co., Ltd.	China	Research and manufacturing	SK Bioland Co., Ltd.	100.00%
Bioland Haimen Co., Ltd.	China	Manufacturing	Bioland Biotech Co., Ltd.	100.00%
SKC Hi-Tech&Marketing Co., Ltd.	Korea	Film manufacturing	SKC Co., Ltd.	100.00%
SKC Hi-Tech&Marketing (Suzhou) Co., Ltd.	China	Film manufacturing	SKC Hi-Tech&Marketing Co., Ltd.	100.00%
SKC Hi-Tech&Marketing Taiwan Co., Ltd.	Taiwan	Film manufacturing	SKC Hi-Tech&Marketing Co., Ltd.	100.00%
SKC Hi-Tech&Marketing Polska SP.Z.O.O	Poland	Film manufacturing	SKC Hi-Tech&Marketing Co., Ltd.	100.00%
SKC Hi-Tech&Marketing USA LLC	USA	Film manufacturing	SKC Hi-Tech&Marketing Co., Ltd.	100.00%
SKC PU Specialty Co., Ltd.	Hong Kong	Special purpose company	SKC Co., Ltd.	100.00%
SKC (Nantong) PU Specialty Co., Ltd.	China	Electronic materials manufacturing	SKC PU Specialty Co., Ltd.	100.00%
SKC-ENF Electronic Materials Ltd.	Hong Kong	Special purpose company	SKC Co., Ltd.	75.10%
SKC (Nantong) Semiconductor Materials Technology Co., Ltd.	China	Electronic materials manufacturing	SKC-ENF Electronic Materials Ltd.	100.00%
SE (JIANGSU) Electronic Materials Co., Ltd.	China	Sales of raw chemical materials and chemical products related to semiconductor	SKC-ENF Electronic Materials Ltd.	100.00%
SK E&S Co., Ltd.	Korea	City gas business and power generation	SK Holdings Co., Ltd.	90.00%
Kangwon City Gas Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Yeongnam Energy Service Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Ko-one Energy Service Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Narae Energy Service Co., Ltd.	Korea	Integrated energy service	SK E&S Co., Ltd.	100.00%
Pusan City Gas Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	67.32%
Jeonbuk Energy Service Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Chonnam City Gas Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Chungcheong Energy Service Co., Ltd.	Korea	City gas business	SK E&S Co., Ltd.	100.00%
Paju Energy Service Co., Ltd.	Korea	Energy business	SK E&S Co., Ltd.	100.00%
Wirye Energy Service Co., Ltd.	Korea	Integrated energy service	SK E&S Co., Ltd.	95.17%
Yeoju Energy Service Co., Ltd.	Korea	Integrated energy service	SK E&S Co., Ltd.	100.00%
SK E&S Hong Kong Co., Ltd.	Hong Kong	City gas business	SK E&S Co., Ltd., Pusan City Gas Co., Ltd.	100.00%
SK E&S Australia Pty. Ltd.	Australia	Resource development	SK E&S Co., Ltd.	100.00%
SK E&S Americas, Inc.	USA	Holding company	SK E&S Co., Ltd.	100.00%
SK E&S LNG, LLC	USA	Liquefied natural gas sales	SK E&S Americas, Inc.	100.00%
DewBlaine Energy, LLC	USA	Resource development	SK E&S Americas, Inc.	100.00%
CAILIP Gas Marketing, LLC	USA	LNG sales and purchase	SK E&S Americas, Inc.	100.00%
Prism Energy International Pte. Ltd.	Singapore	Liquefied natural gas sales	SK E&S Co., Ltd.	100.00%
Fajar Energy International Pte. Ltd.	Singapore	Liquefied natural gas sales	Prism Energy International Pte. Ltd.	100.00%
Prism Energy International Hong Kong, Ltd.	Hong Kong	LNG trading business	Prism Energy International Pte. Ltd.	100.00%
PT SK E&S Nusantara	Indonesia	Management consulting	SK E&S Co., Ltd.	100.00%
SK E&S Dominicana S.R.L	Dominica	LNG importation	SK E&S Co., Ltd.	100.00%
SK Engineering & Construction Co., Ltd. (*2)	Korea	Construction	SK Holdings Co., Ltd.	44.48%
Seosuwon Development Company (*2)	Korea	Real estate development and construction	SK Engineering & Construction Co., Ltd.	19.90%
SK TNS Co., Ltd. (*3)	Korea	Construction and services	SK Engineering & Construction Co., Ltd.	100.00%
SKEC Nanjing Co., Ltd.	China	Construction	SK Engineering & Construction Co., Ltd.	100.00%
SKEC (Thai), Ltd.	Thailand	Construction	SK Engineering & Construction Co., Ltd.	100.00%
Thai Woo Ree Engineering Co., Ltd.	Thailand	Construction	SKEC (Thai), Ltd.	99.77%
SKEC Anadolu EC, LLC	Turkey	Construction	SK Engineering & Construction Co., Ltd.	100.00%
SK E&C Betek Corporation	USA	Real estate development and construction	SK Engineering & Construction Co., Ltd.	100.00%
Mesa Verde RE Ventures, LLC	USA	Real estate development	SK E&C Betek Corporation	100.00%
SKEC Consultores Equador, S.A	Ecuador	Construction	SK Engineering & Construction Co., Ltd.	100.00%
Sunlake Co., Ltd.	Canada	Construction and services	SK Engineering & Construction Co., Ltd.	100.00%
SK Holdco Pte. Ltd.	Singapore	Holding Company	SK Engineering & Construction Co., Ltd.	63.51%
SK Materials Co., Ltd. (*2)	Korea	Special gas manufacturing and sales	SK Holdings Co., Ltd.	49.10%
SK Materials Japan Co., Ltd.	Japan	Special gas sales	SK Materials Co., Ltd.	95.00%
SK Materials Taiwan Co., Ltd.	Taiwan	Special gas sales	SK Materials Co., Ltd.	100.00%
SK Materials (Jiangsu) Co., Ltd.	China	Special gas manufacturing and sales	SK Materials Co., Ltd.	100.00%
SK Materials (Xian) Co., Ltd.	China	Trading business and warehouse operation	SK Materials Co., Ltd.	100.00%
SK Airgas Co., Ltd.	Korea	Industrial gas sales	SK Materials Co., Ltd.	80.00%
SK Tri Chem Co., Ltd.	Korea	Manufacturing and sales of precursors and others	SK Materials Co., Ltd.	65.00%
SK Showa Denko Co., Ltd. (*6)	Korea	Sales of raw chemical materials and chemical products related to semiconductor	SK Materials Co., Ltd.	51.00%
SK Siltron Co., Ltd.	Korea	Silicon wafer for electronic industry manufacturing and sales	SK Holdings Co., Ltd.	51.00%
SK Siltron America, Inc.	USA	Silicon wafer for electronic industry manufacturing and sales	SK Siltron Co., Ltd.	100.00%
SK Siltron Japan, Inc.	Japan	Silicon wafer for electronic industry manufacturing and sales	SK Siltron Co., Ltd.	100.00%
SK Biopharmaceuticals Co., Ltd.	Korea	Medicine and life science	SK Holdings Co., Ltd.	100.00%
SK Life Science, Inc.	USA	Life science	SK Biopharmaceuticals Co., Ltd.	100.00%
SK Biotech Co., Ltd.	Korea	Drug medicine	SK Holdings Co., Ltd.	100.00%
SK Biotech Ireland Limited	Ireland	Investment	SK Biotech Co., Ltd.	100.00%
SK BIOTEK USA, Inc.	USA	Medicine and life science	SK Biotech Co., Ltd.	100.00%
SK S.E.Asia Pte. Ltd.	Singapore	Investment	SK Holdings Co., Ltd.	100.00%
Essencore Limited	Hong Kong	Manufacturing and distribution of semiconductor modules	SK S.E.Asia Pte. Ltd.	100.00%
Essencore (ShenZhen) Limited	China	Consulting for computer system integration	Essencore Limited	100.00%
SK China Company, Ltd.	Hong Kong	Consulting and investment	SK Holdings Co., Ltd.	88.13%
SKY Property Mgmt (Beijing) Co., Ltd.	China	Real estate management	SK China Company, Ltd.	100.00%
SK Bio Energy Hong Kong Co., Ltd.	Hong Kong	Biomass electricity generation	SK China Company, Ltd.	69.40%
SK Property Investment Management Co., Ltd.	Hong Kong	Real estate investment	SK China Company, Ltd.	100.00%
SK Industrial Development China Co., Ltd.	Hong Kong	Investment	SK China Company, Ltd.	100.00%
Shanghai SKY Real Estate Development Co., Ltd.	China	Real estate investment	SK Industrial Development China Co., Ltd.	100.00%
SK China Investment Management Co., Ltd.	Hong Kong	Real estate investment	SK China Company, Ltd.	100.00%
SK International Agro-Products Logistics Development Co., Ltd.	Hong Kong	Agriculture product logistics	SK China Investment Management Co., Ltd.	100.00%
SK Auto Service Hong Kong Co., Ltd.	Hong Kong	Holding Company	SK China Company, Ltd.	100.00%

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1.2 Consolidated subsidiaries (cont'd)

Subsidiary	Domicile	Principal business activity	The largest shareholders	Equity ownership (*1)
SK (Shenyang) auto rental Co., Ltd.	China	Car rental	SK Auto Service Hong Kong Co., Ltd.	100.00%
SK (Beijing) auto rental Co., Ltd.	China	Car rental	SK Auto Service Hong Kong Co., Ltd.	100.00%
SK Rent-A-Car (Qingdao) Co., Ltd.	China	Car rental	SK Auto Service Hong Kong Co., Ltd.	100.00%
Skyline Auto Financial Leasing Co., Ltd.	Hong Kong	Investment	SK Auto Service Hong Kong Co., Ltd.	100.00%
SK Financial Leasing Co., Ltd.	China	Financial lease	Skyline Auto Financial Leasing Co., Ltd.	100.00%
SK China (Beijing) Co., Ltd.	China	Consulting	SK China Company, Ltd.	100.00%
SK Beijing Investment Management Ltd.	China	Real estate fund management	SK China (Beijing) Co., Ltd.	100.00%
SKY Property Management Ltd.	Virgin Islands	Investment	SK China Company, Ltd.	100.00%
SKY Investment Co., Ltd.	China	Real estate management	SKY Property Management Ltd.	100.00%
SK China Real Estate Co., Ltd.	Hong Kong	Real estate investment	SKY Property Management Ltd.	100.00%
SK China Creative Industry Development Co., Ltd.	China	Service	SKY Property Management Ltd.	100.00%
SK C&C Beijing Co., Ltd.	China	Consulting for computer system integration and others	SK Holdings Co., Ltd.	100.00%
SK C&C Chengdu Co., Ltd.	China	Consulting for computer system integration and others	SK C&C Beijing Co., Ltd.	100.00%
SK C&C India Pvt. Ltd.	India	Consulting for computer system integration and others	SK Holdings Co., Ltd.	100.00%
S&G Technology	Saudi Arabia	Consulting for computer system integration and others	SK Holdings Co., Ltd.	51.00%
Saturn Agriculture Investment Co., Ltd.	Hong Kong	Investment	SK Holdings Co., Ltd.	100.00%
SK Investment Management Co., Ltd.	Hong Kong	Investment	SK Holdings Co., Ltd.	100.00%
SK Semiconductor Investments Co., Ltd.	Hong Kong	Investment Management	SK Investment Management Co., Ltd.	100.00%
SK Computer and Communication LLC (*7)	UAE	Computer repair service and others	SK Holdings Co., Ltd.	49.00%
Gemini Partners Pte. Ltd.	Singapore	Consulting	SK Holdings Co., Ltd., SK Innovation Co., Ltd. SK Telecom Co., Ltd., and SK E&S Co., Ltd.	80.00%
Solaris Partners Pte. Ltd.	Singapore	Consulting	Gemini Partners Pte. Ltd.	100.00%
Beijing SK Magellan Capital Advisors Co., Ltd.	China	Investment consulting	Solaris Partners Pte. Ltd.	100.00%
SK GI Management	Cayman	Investment	SK Holdings Co., Ltd.	100.00%
SK MENA Investment B.V.	Netherlands	Investment	SK Telecom Co., Ltd.	100.00%
SK Latin America Investment S.A.	Spain	Investment	SK Telecom Co., Ltd.	100.00%
Plutus Capital NY, Inc.	USA	Investment	SK Holdings Co., Ltd.	100.00%
Hudson Energy NY, LLC	USA	Investment	Plutus Capital NY, Inc.	50.13%
Hudson Energy NY II, LLC	USA	Investment	Plutus Capital NY, Inc.	100.00%
Atlas NY LLC	USA	Investment	Plutus Capital NY, Inc.	100.00%
Plutus Fashion NY, Inc.	USA	Fashion	SK Holdings Co., Ltd.	100.00%
Wonderland NY, Inc.	USA	Investment	Plutus Fashion NY, Inc.	100.00%
SK Technology Innovation Company	Cayman	Research and development	SK Telecom Co., Ltd.	96.88%
SK South East Asia Investment Pte. Ltd.	Singapore	Investment	SK Innovation Co., Ltd, SK Telecom Co., Ltd., and SK E&S Co., Ltd.	80.00%
SK Investment Vina I Pte. Ltd.	Singapore	Investment	SK South East Asia Investment Pte. Ltd.	100.00%
Alchemy Acquisition Corp.	USA	Investment	SK Holdings Co., Ltd.	100.00%
Abrasax Investment Inc.	USA	Investment	AlchemyAcquisition Corp.	100.00%
Fine Chemicals Holdings Corp.	USA	Investment	Abrasax Investment Inc.	100.00%
AMPAC Fine Chemicals, LLC	USA	Drug medicine	Fine Chemicals Holdings Corp.	100.00%
AMPAC Fine Chemicals Texas, LLC	USA	Drug medicine	AMPAC Fine Chemicals, LLC	100.00%
AMPAC Fine Chemicals Virginia, LLC	USA	Drug medicine	AMPAC Fine Chemicals, LLC	100.00%
Golden Pearl EV Solutions Limited	Hong Kong	Investment	SK Holdings Co., Ltd.	100.00%
SK Forest Co., Ltd.	Korea	Landscaping and planting business	SK Holdings Co., Ltd.	100.00%

- (*1) The equity ownership is based on ordinary shares and includes indirect investments held by the consolidated subsidiaries.
- (*2) SK Innovation Co., Ltd. and 7 other companies are included in the consolidated financial statements as the Company is able to exercise de facto control. The remaining voting rights of SK Innovation Co., Ltd. and 7 other companies are widely dispersed, so it is determined that the Company has voting rights to exercise de facto control.
- (*3) The Group owns 100% of the ordinary shares of SK Incheon Petrochem Co., Ltd. and SK TNS Co., Ltd., but holds 68.0% and 64.9% of equity ownership respectively, due to the issuance of its preferred shares having voting rights.
- (*4) The assets and liabilities of Daiyang SK Networks SAN. VE TIC. Ltd. STI are classified as assets and liabilities held for sale (see Note 30 Non-current assets and non-current liabilities classified as held for sale).
- (*5) The Group has applied the effective interest rate of 100% in preparing consolidated financial statements in accordance with shareholders' agreements such as call options to buy non-controlling shares in SKC (Jiangsu) High Tech Plastics Co., Ltd.
- (*6) In the current period, the Group acquired control of the investee by acquiring a majority of the voting rights of the Board of Directors. (see Note 38 'Business Combinations').
- (*7) The Group has classified the investee as a subsidiary as it acquired voting rights for 51% of the remaining equity interest by the shareholders' agreement.

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1.3 Changes in consolidated subsidiaries

Changes in the consolidated subsidiaries for the year ended December 31, 2018 are as follows:

December 31, 2017	Inclusion	Exclusion	December 31, 2018
309	41	(90)	260

For the year ended December 31, 2018, subsidiaries newly included in consolidation are as follows:

Subsidiary	Reasons for changes
SK Biotek USA Inc. SK E&S Dominicana S.R.L Dsic VIOC1 Shipholding S.A Dsic VIOC2 Shipholding S.A SK Telecom Japan Inc. Hudson Energy NY II, LLC SK E&P Operations America, LLC Prism Energy International Hong Kong, Ltd. SK Networks America, Inc. SK Networks Brazil Intermediacao De Negocios Ltda. Networks Tejarat Pars FSS 6th Co., Ltd. SK South East Asia Investment Pte. Ltd. SK Investment Vina I Pte. Ltd. SK Semiconductor Investments Co., Ltd Alchemy Acquisition Corp. Abrasax Investment Inc. SK Global Chemical China Limited 11street. Co., Ltd. SK Telink Vietnam Co., Ltd. SK Networks Retails Malaysia Sdn. Bhd. Atlas NY LLC Golden Pearl EV Solutions Limited SK Hi-Tech Battery Battery Materials(Jiang Su) Co.,Ltd. Yeoju Energy Service Co., Ltd. SK Magic Vietnam Company Limited id Quantique Ltd.	Establishment (27 companies)
SK Showa Denko Co., Ltd. groovers Co., Ltd. SK Nemaha, LLC id Quantique SA Fine Chemicals Holdings Corp. AMPAC Fine Chemicals, LLC AMPAC Fine Chemicals Texas, LLC AMPAC Fine Chemicals Virginia, LLC Woori Fine Chem Co., Ltd. Quantum Innovation Private Equity Joint Venture I Life & Security Holdings Co.,Ltd. ADT Caps Co., Ltd. CAPSTEC Co., Ltd. ADT Security Co., Ltd.	Acquisition (14 companies)

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1.3 Changes in consolidated subsidiaries (cont'd)

During the year ended December 31, 2018, subsidiaries excluded from consolidation are as follows:

Subsidiary	Reasons for changes
Bergaya International Pte. Ltd. SK E&C India Pvt. Ltd. With Ocean LLC SKC Hi-Tech&Marketing Japan Co., Ltd. Blueseaocean 1st LLC SK Planet Global Pte. Ltd. SK Battery Systems Co., Ltd. AMBER SHIPHOLDING S.A. APMB SHIPHOLDING S.A. CORAL SHIPHOLDING INTERNATIONAL S.A. SKT Vietnam Pte. Ltd.	Liquidation (11 companies)
Ningde Sky Beverage Co., Ltd. SK International Supply Chain Management Co., Ltd. SK Encarsales.com Ltd 11street (Thailand) Co., Ltd. Happynarae Co., Ltd. Suzhou Happynarae Co., Ltd.	Disposal (6 companies)
SK Maritime Co., Ltd. SK Tech X Co., Ltd. S.M Mobile Communication Japan Inc. NSOK Co., Ltd	Merge (4 companies)
SK Shipping Co., Ltd. and 65 other companies Hello Nature Co., Ltd and 2 other companies	Etc. (69 companies)

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1.4 Condensed financial information of significant consolidated subsidiaries

Details of condensed financial information of the significant subsidiaries as at and for the year ended December 31, 2018 are as follows (Korean won in millions):

Subsidiary	Total assets	Total liabilities	Sales	Net income (loss)
SK Innovation Co., Ltd.	₩15,846,830	₩ 2,846,728	₩ 3,679,763	₩ 1,675,000
SK Energy Co., Ltd.	13,769,959	8,015,390	34,807,660	835,574
SK Global Chemical Co., Ltd.	5,934,621	2,057,588	11,328,779	537,236
SK Incheon Petrochem Co., Ltd.	5,678,999	2,982,819	8,931,444	51,520
SK Trading International Co., Ltd.	1,812,977	1,003,267	13,586,671	152,020
SK Lubricants Co., Ltd.	2,241,260	846,176	3,056,651	307,300
SK Global Chemical Americas, Inc.	582,806	253,324	6,412	(277)
SK Global Chemical International Trading (Shanghai) Co., Ltd.	209,006	185,635	1,558,235	(1,091)
SK Global Chemical Singapore Pte. Ltd.	182,750	164,007	930,434	6,869
SK Energy International Pte. Ltd.	2,133,309	1,563,477	27,539,366	26,344
SK Energy Europe, Ltd.	565,466	481,793	5,782,114	(18,926)
SK Lubricants Americas, Inc.	282,550	230,808	671,955	2,395
SK Lubricants Europe B.V.	214,088	204,449	641,216	1,812
Iberian Lube Base Oils S.A.	469,642	190,338	544,502	16,261
SK E&P America, Inc.	570,258	78,511	-	(9,984)
SK Nemaha, LLC	437,889	42,502	25,246	976
SK Energy Americas, Inc.	284,707	215,606	974,535	(863)
SK Telecom Co., Ltd.	28,848,023	11,960,536	11,705,639	933,902
SK Telink Co., Ltd.	493,972	107,565	373,019	39,962
SK Broadband Co., Ltd.	4,266,458	2,682,236	3,158,877	154,999
PS&Marketing Corp.	432,699	216,624	1,587,203	76
SK Planet Co., Ltd.	753,630	436,501	672,648	(436,106)
11street. Co., Ltd.	1,045,946	495,907	228,000	(9,507)
Life & Security Holdings Co.,Ltd. (*1, 2)	2,595,251	2,261,456	197,487	6,038
SK Networks Co., Ltd.	6,878,643	4,662,527	12,409,359	5,027
SK Magic Co., Ltd.	601,702	401,636	643,791	15,714
SK Networks (Shanghai) Co., Ltd.	60,481	36,365	402,907	365
SK Networks Hong Kong Ltd.	82,132	28,483	300,504	1,589
SKC Co., Ltd.	2,764,203	1,215,697	1,415,180	48,496
SK Telesys Co., Ltd.	145,843	188,080	343,969	12,017
SKC, Inc.	315,819	252,400	261,765	(19,241)
SK E&S Co., Ltd.	4,626,919	2,010,201	832,978	167,542
Yeongnam Energy Service Co., Ltd.	430,702	215,339	650,849	31,412
Ko-one Energy Service Co., Ltd.	799,399	429,238	1,090,111	14,589
Narae Energy Service Co., Ltd.	670,976	511,800	305,234	(14,720)
Pusan City Gas Co., Ltd.	978,311	354,755	951,808	49,232
Chungcheong Energy Service Co., Ltd.	321,005	192,329	479,359	23,687
Paju Energy Service Co., Ltd.	1,753,053	1,064,889	1,304,144	116,447
Wirye Energy Service Co., Ltd.	786,190	531,484	366,147	31,336
Prism Energy International Pte. Ltd.	135,242	35,737	1,338,210	(2,777)
SK E&S Australia Pty. Ltd.	480,200	163,713	-	(5,517)
SK E&S Americas, Inc.	865,761	180,158	-	(13,597)
DewBlaine Energy, LLC	892,143	46,246	119,661	15,834
SK Engineering & Construction Co., Ltd.	4,648,635	3,992,077	6,478,499	81,934
SK TNS Co., Ltd.	197,256	174,649	630,261	(29,359)
SK Materials Co., Ltd. (*1)	1,398,431	995,127	687,252	123,440
SK Siltron Co., Ltd. (*1)	2,324,187	1,621,830	1,346,185	285,615
Essencore Limited (*1)	303,082	82,868	1,217,013	114,993
SK China Company, Ltd.	2,169,007	1,327	550	10,322
SKY Property Management Ltd. (*1)	613,413	31,512	58,115	15,942
SK Industrial Development China Co., Ltd.	424,327	103,068	3	(5,749)
Plutus Capital NY, Inc. (*1)	752,074	236,938	880	(3,962)

(*1) The condensed financial information is consolidated financial information.

(*2) Sales and net income are the amounts after the business combination.

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1.5 Disclosure of significant non-controlling interests in subsidiaries

Information about significant non-controlling interests in subsidiaries as at and for the year ended December 31, 2018 is as follows (Korean won in millions):

	December 31, 2018					
	SK Innovation Co., Ltd.	SK Telecom Co., Ltd.	SK Networks Co., Ltd.	SKC Co., Ltd.	SK E&S Co., Ltd.	SK Engineering & Construction Co., Ltd.
Percentage of the non-controlling ownership	64.99%	69.91%	59.64%	56.55%	10.00%	53.79%
Current assets	16,752,415	7,958,839	3,253,164	910,125	2,069,646	3,460,811
Non-current assets	19,332,969	34,410,272	4,515,878	2,923,004	7,499,868	1,804,760
Current liabilities	8,940,623	6,847,557	3,739,741	1,081,503	2,311,758	3,670,131
Non-current liabilities	7,816,778	13,172,304	1,717,431	1,056,826	3,581,907	808,130
Net assets	19,327,983	22,349,250	2,311,870	1,694,800	3,675,849	787,310
Book value of the non-controlling interests	13,240,136	15,120,278	1,447,869	1,047,465	1,357,113	589,704
Sales	54,510,898	16,873,960	13,986,475	2,767,834	6,467,575	7,503,375
Net income	1,709,984	3,131,988	7,667	141,042	439,034	61,634
Total comprehensive income (loss)	1,820,091	2,990,404	(2,154)	133,914	495,710	78,744
Net income (loss) of the non-controlling interests	1,157,194	2,234,123	(5,587)	84,323	76,911	32,589
Total comprehensive income (loss) of the non-controlling interests	1,209,823	2,093,534	(11,686)	79,326	82,562	5,979
Net cash flows from operating activities	1,728,062	4,332,580	(199,010)	231,588	421,714	473,754
Net cash flows from investing activities	(2,476,814)	(4,047,725)	(82,634)	(212,784)	(739,584)	149,159
Net cash flows from (used in) financing activities before dividends paid to the non-controlling interests	1,160,294	279,948	524,129	(14,030)	(119,966)	(434,284)
Dividends paid to the non-controlling interests	(574,215)	(518,261)	(20,329)	(20,730)	(71,687)	(7,967)
Net increase (decrease) in cash and cash equivalents	(162,673)	46,542	222,156	(15,956)	(509,523)	180,662

The aforementioned condensed financial information is consolidated financial information of each subsidiary and non-controlling interests include hybrid bonds.

2. Summary of significant accounting policies

The Group maintains its official accounting records in Korean won and prepares consolidated financial statements in conformity with the Korean International Financial Reporting Standards ("KIFRS"), in the Korean language. Accordingly, these consolidated financial statements are intended for use by those who are informed about KIFRS and Korean practices. The accompanying consolidated financial statements have been restructured and translated into English with certain expanded descriptions from the Korean language financial statements. Certain information included in the Korean language consolidated financial statements, but not required for a fair presentation of the consolidated financial position, comprehensive income, changes in shareholders' equity or cash flows of the Group, is not presented in the accompanying consolidated financial statements.

The accompanying consolidated financial statements are stated in Korean won, the currency of the country in which the Company is incorporated and operates. The translation of Korean won amounts into U.S. dollar amounts is included solely for the convenience of readers of the financial statements and has been made at the rate of ₩1,118.10 to USD 1.00, the basic exchange rate in the Seoul Money Brokerage Service for cable transfers in Korean won on the last business day of the year ended December 31, 2018. Such translations into U.S. dollar should not be construed as representations that the Korean won amounts could be converted into U.S. dollar at that or any other rate.

2.1 Basis of preparation

The Group has prepared the consolidated financial statements in accordance with KIFRS.

The significant accounting policies used for the preparation of the accompanying consolidated financial statements as at and for the year ended December 31, 2018, are the same as the accounting policies adopted for the preparation of consolidated financial statements as at and for the year ended December 31, 2017, except for adoption of new and revised KIFRSs applied in the current period, which are summarized below.

The accompanying consolidated financial statements have been prepared on a historical cost basis, except for certain non-current assets and financial instruments that are measured at fair value. Historical cost is based on the fair values of the consideration given.

The accompanying consolidated financial statements were approved at the Company's Board of Directors' meeting on February 12, 2019.

The principal accounting policies are set out below:

2.1.1 New and revised KIFRSs adopted in the current period

The Group has applied amendments to KIFRS issued that are mandatorily effective for accounting periods beginning on or after January 1, 2018.

KIFRS 1028 Investments in Associates and Joint Ventures

The amendments clarify that an entity that is a venture capital organization, or other qualifying entity, may elect, at initial recognition on an investment-by-investment basis, to measure its investments in associates and joint ventures at fair value through profit or loss. The amendments do not have any impact on the Group's financial position or management performance.

KIFRS 1040 - Investment Property (Amendment)

The amendments clarify that a transfer to, or from, investment property necessitates an assessment of whether a property meets, or has ceased to meet, the definition of investment property, supported by observable evidence that a change in use has occurred. The amendments further clarify that situations other than the ones listed in K-IFRS 1040 may evidence a change in use, and that a change in use is possible for properties under construction (i.e. a change in use is not limited to completed properties). The application of K-IFRS 1040 has not had a significant impact on the financial position and/or financial performance of the Group.

KIFRS 1102 - Share-based Payment (Amendment)

The amendments include: 1) when measuring the fair value of share-based payment, the effects of vesting and non-vesting conditions on the measurement of cash-settled share-based payment should be consistent with the measurement of equity-settled share-based payment, 2) Share-based payment transaction in which the Group settles the share-based payment arrangement net by withholding a specified portion of the equity instruments per statutory tax withholding requirements would be classified as equity-settled in its entirety, if otherwise would be classified as equity-settled without the net settlement feature, and 3) when a cash-settled share-based payment changes to an equity-settled share-based payment because of modifications of the terms and conditions, the original liability recognized is derecognized and the equity-settled share-based payment is recognized at the modification date fair value. Any difference between the carrying amount of the liability at the modification date and the amount recognized in equity at the same date would be recognized in profit and loss immediately. The application of K-IFRS 1102 has not had a significant impact on the financial position and/or financial performance of the Group.

2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

KIFRS 1109 - *Financial Instruments*

The Group applied the amendments to KIFRS 1109 and other standards for the first time for the year beginning on January 1, 2018. The Standard replaces KIFRS 1039 Financial Instruments: Recognition and Measurement. KIFRS 1109 introduces new rules for the classification and measurement of financial assets and financial liabilities, impairment of financial assets, and hedge accounting.

The Group has recognized the cumulative effect of the initial application of this standard in the opening balances in accordance with the transitional provisions of KIFRS 1109, and the comparative financial statements have not been restated. Accordingly, the comparative financial statements are presented in accordance with the previous accounting policies.

The major impact of the adoption of the standard on the Group's financial statements is as follows:

① Classification and measurement of financial assets

Classification of financial assets under KIFRS 1109 is driven by the entity's business model for managing financial assets and their contractual cash flows. This contains three principal classification categories: financial assets measured at amortized cost, fair value through other comprehensive income (FVOCI) and fair value through profit or loss (FVTPL). Derivatives embedded in contracts where the host is a financial asset are never bifurcated. Instead, the hybrid financial instrument as a whole is assessed for classification.

② Impairment of financial assets

KIFRS 1109 sets out a new 'expected credit loss' (ECL) impairment model which replaces the 'incurred loss' model under KIFRS 1039 for recognizing and measuring impairment. On the other hand, the Group measures the allowance for losses on trade and other receivables, contracts and lease receivables at amounts equivalent to the life time expected credit losses and applies a practical expedient by considering low credit risk at the reporting date as no significant increase in credit risk.

③ Hedge accounting

The new general hedge accounting requirements retain the three types of hedge accounting. However, greater flexibility has been introduced to the types of transactions eligible for hedge accounting, specifically broadening the types of instruments that qualify for hedging instruments and the types of risk components of non-financial items that are eligible for hedge accounting. In addition, the effectiveness test has been replaced with the principle of an 'economic relationship'. Retrospective assessment of hedge effectiveness is also no longer required. Enhanced disclosure requirements about the Group's risk management activities have also been introduced. The Group designates derivatives such as currency swaps as hedging instruments in order to hedge the risk of cash flow changes of foreign currency bonds and borrowing. As at 1 January 2018, the date of initial application of KIFRS 1109, derivatives designated as a hedging instrument meet the requirements for retrospective occurrence (80~125%) of the hedge accounting requirements in KIFRS 1039, as a result there is no effect of a change in accounting policy.

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2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

④ Financial effects as a result of the first application of KIFRS 1109

Changes in the basic capital of the Group as a result of the first application of KIFRS 1109 are as follows (Korean won in millions):

Amendments	Retained earnings	Other capital components	Non-controlling interests
Classification and measurement	₩ 33,946	₩ (42,236)	₩ 14,631
Impairment of financial assets	(7,549)	-	(12,507)
	₩ 26,397	₩ (42,236)	₩ 2,124

Reclassification of financial assets of the Group as at the first application of KIFRS 1109 as at January 1, 2018 is as follows (Korean won in millions):

	Classification		Book value		
	KIFRS 1039	KIFRS 1109	KIFRS 1039	KIFRS 1109	Difference
Current financial assets:					
Cash and cash equivalents	Loans and receivables	Amortized cost	₩ 5,716,311	₩ 5,716,311	₩ -
Cash and cash equivalents	Loans and receivables	FVTPL	1,429,531	1,429,531	-
Short-term financial instruments	Loans and receivables	Amortized cost	1,348,570	1,348,570	-
Short-term financial instruments	Loans and receivables	FVTPL	2,093,460	2,093,460	-
Short-term financial instruments	Financial assets at FVTPL	FVTPL	98,643	98,643	-
Short-term investment securities	Available-for-sale financial asset	FVTPL	147,119	147,119	-
Short-term investment securities	Available-for-sale financial asset	FVOCI	41,484	41,484	-
Short-term investment securities	Held-to-maturity investments	Amortized cost	45	45	-
Trade accounts receivable	Loans and receivables	Amortized cost	10,467,162	10,445,706	(21,456)
Trade accounts receivable	Loans and receivables	FVTPL	260,469	260,469	-
Other accounts receivable	Loans and receivables	Amortized cost	1,161,404	1,160,146	(1,258)
Other accounts receivable	Loans and receivables	FVTPL	830,321	830,321	-
Short-term loans	Loans and receivables	Amortized cost	123,130	122,694	(436)
Accrued income	Loans and receivables	Amortized cost	44,240	44,204	(36)
Guarantee deposits	Loans and receivables	Amortized cost	209,181	209,181	-
Derivative financial assets	Financial assets at FVTPL	FVTPL	35,319	35,319	-
Derivative financial assets	Financial assets designated as hedging instruments	Financial assets designated as hedging instruments	57,094	57,094	-
Finance lease receivables	Loans and receivables	Amortized cost	73,199	73,199	-
			24,136,682	24,113,496	(23,186)

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2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

	Classification		Book value		
	KIFRS 1039	KIFRS 1109	KIFRS 1039	KIFRS 1109	Difference
Non-current financial assets:					
Long-term financial instruments	Loans and receivables	Amortized cost	200,853	200,853	-
Long-term investment securities	Available-for-sale financial asset	FVTPL	333,430	303,946	(29,484)
Long-term investment securities	Available-for-sale financial asset	FVOCI	1,262,603	1,301,803	39,200
Long-term investment securities	Held-to-maturity investments	Amortized cost	825	825	-
Long-term trade accounts receivables	Loans and receivables	Amortized cost	12,908	12,908	-
Long-term loans	Loans and receivables	Amortized cost	378,534	376,697	(1,837)
Long-term other accounts receivables	Loans and receivables	Amortized cost	77,412	77,412	-
Long-term other accounts receivables	Loans and receivables	FVTPL	243,742	243,742	-
Long-term other accounts receivables	Financial assets at FVTPL	FVTPL	15,964	15,964	-
Guarantee deposits	Loans and receivables	Amortized cost	740,326	738,891	(1,435)
Long-term investment securities	Financial assets at FVTPL	FVTPL	-	224,795	224,795
Derivative financial assets	Financial assets at FVTPL	FVTPL	235,474	10,679	(224,795)
Derivative financial assets	Financial assets designated as hedging instruments	Financial assets designated as hedging instruments	46,755	46,755	-
Finance lease receivables	Loans and receivables	Amortized cost	168,490	168,490	-
			<u>3,717,316</u>	<u>3,723,760</u>	<u>6,444</u>
			<u>₩ 27,853,998</u>	<u>₩ 27,837,256</u>	<u>₩ (16,742)</u>

KIFRS 1115 - Revenue from Contracts with Customers

In the current year, the Group has applied K-IFRS 1115 Revenue from Contracts with Customers which is effective for an annual period that begins on or after January 1, 2018. K-IFRS 1115 introduced a 5-step approach to revenue recognition. Far more prescriptive guidance has been added in K-IFRS 1115 to deal with specific scenarios. Details of the new requirements as well as their impact on the Group's consolidated financial statements are described below.

The Group has applied K-IFRS 1115 in accordance with the fully retrospective transitional approach using the expedient in K-IFRS 1115 allowing both non-disclosure of the amount of the transaction price allocated to the remaining performance obligations, and an explanation of when it expects to recognize that amount as revenue for all reporting periods presented before the date of initial application, i.e. January 1, 2018.

The major impact of the adoption of the standard on the Group's financial statements is as follows:

① Identification of the separate performance of the contract

The Group is engaged in providing petroleum, chemicals and resources development, telecommunications, constructions and others

Construction projects, etc., have identified a contract that meets the combined requirements of a contract among a plurality of contracts that have a single commercial purpose and concurrently or in the near term. In this case, the multiple contracts were combined and accounted for as a single contract.

2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

② Identification of the separate performance obligations in the contract

KIFRS 1115 requires the Group to separately identify performance obligation for wireless telecommunications services and other sales of goods and services. The Group determines the timing of fulfilling each performance obligation so that revenue can be recognized thereafter. In the case that the Group provides the wireless telecommunications services and a handset to the same customer, transaction price allocated to the handset was recognized as revenue immediately while the transaction price allocated to wireless telecommunication service was recognized as revenue over a period of time specified in the contract. The Group determined that the installation services provided with the fixed-line telecommunication services are not distinguishable performance obligations from the related fixed-line telecommunication services such as high speed broadband Internet or IPTV services. Therefore, the Group included the installation fee in the fixed-line telecommunication service revenue. The installation fee will be recognized as revenue over the contract term in which the Group has to provide fixed-line telecommunication services. The Group recognized ₩23,063 million as contract liability on the consolidated statement of financial position as at January 1, 2018 due to such change in the accounting policies.

In the case of other businesses, more than one performance obligation can be identified in a single contract. In this case, the transaction price is allocated to each performance obligation and the revenue is recognized for each obligation performed.

③ Incremental costs to acquire a contract and accounting for fulfillment cost

The Group pays a commission based on the results of recruitment and renewal of customers of the Group, such as wireless telecommunications services to agencies, and it accounts for a significant portion of the commission for the operating expenses. Some of these fees are costs that would not have been spent if contracts were not signed with the customer. Under KIFRS 1115, contracted incremental costs recognized as past costs are recognized as assets and amortized over the expected term of the contract. As a result of this change, the Group recognized the amount of incremental cost of contracts as at January 1, 2018, as the prepaid expenses in the consolidated statement of financial position.

Contract costs are recognized as an expense when incurred since these costs are not clearly charged regardless of whether the contract is entered into or not. Accordingly, percentage-of-completion is recalculated for contracts that apply cost-based input method.

④ Allocation of the transaction price to the separate performance obligations

In accordance with KIFRS 1115, the Group should allocate the transaction price to each performance obligation in a contract in proportion to its stand-alone selling price. To estimate the transaction price to each performance obligation, the Group will use the adjusted market assessment approach. However, in some circumstances, the expected cost plus a margin approach will be used.

When the Group provides both handset and wireless telecommunications services to the same customer, the Group has allocated transaction prices based on the relative individual selling prices. As a result of this change, the Group recognized each transaction value of ₩112,690 million and ₩30,363 million as at January 1, 2018 as the contract asset and long-term contract asset in the consolidated statements of financial position.

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2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

⑤ Financial effects as a result of the first application of KIFRS 1115

Changes in the consolidated statements of financial position as at January 1, 2018 as a result of the first application of KIFRS 1115 are as follows (Korean won in millions):

	Before application of KIFRS 1115	Amendments	After application of KIFRS 1115
Current assets:	₩ 35,199,914	₩ 1,676,443	₩ 36,876,357
Trade accounts receivable	11,538,468	(100,114)	11,438,354
Prepaid expenses	721,801	1,603,784	2,325,585
Inventories	8,178,936	59,942	8,238,878
Other contract assets	-	112,690	112,690
Other current assets	14,760,709	141	14,760,850
Non-current assets:	74,583,549	769,911	75,353,460
Prepaid expenses	1,079,822	693,393	1,773,215
Deferred income tax assets	734,524	46,155	780,679
Other long-term contract assets	-	30,363	30,363
Other non-current assets	72,769,203	-	72,769,203
Total assets	<u>₩ 109,783,463</u>	<u>₩ 2,446,354</u>	<u>₩ 112,229,817</u>
Current liabilities	31,368,057	117,168	31,485,225
Advance received	1,947,370	(63,658)	1,883,712
Unearned revenue	255,149	(154,231)	100,918
Withholdings	1,943,249	235,414	2,178,663
Provisions	246,800	(63)	246,737
Other contract liabilities	-	114,284	114,284
Other current liabilities	26,975,489	(14,578)	26,960,911
Non-current liabilities	32,658,986	606,038	33,265,024
Unearned revenue	413,046	(7,052)	405,994
Deferred income tax liabilities	3,988,276	594,909	4,583,185
Other long-term contract liabilities	-	19,100	19,100
Other non-current liabilities	28,257,664	(919)	28,256,745
Total liabilities	<u>₩ 64,027,043</u>	<u>₩ 723,206</u>	<u>₩ 64,750,249</u>
Issued capital	15,385	-	15,385
Other paid-in capital	4,112,475	-	4,112,475
Retained earnings	9,837,619	459,481	10,297,100
Other capital components	(305,397)	-	(305,397)
Non-controlling interests	32,096,338	1,263,667	33,360,005
Total equity	<u>₩ 45,756,420</u>	<u>₩ 1,723,148</u>	<u>₩ 47,479,568</u>
Total liabilities and equity	<u>₩ 109,783,463</u>	<u>₩ 2,446,354</u>	<u>₩ 112,229,817</u>

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2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

On the other hand, changes in the consolidated statements of financial position, consolidated statements of comprehensive income and consolidated statements of cash flow as at December 31, 2018 as a result of the first application of KIFRS 1115 are as follows (Korean won in millions):

(A) Consolidated statements of financial position

	Before application of KIFRS 1115	Amendments	After application of KIFRS 1115
Current assets:	₩ 35,569,237	₩ 1,559,160	₩ 37,128,397
Trade accounts receivable	10,898,241	(54,117)	10,844,124
Prepaid expenses	749,856	1,459,876	2,209,732
Inventories	8,929,527	63,213	8,992,740
Other contract assets	-	90,154	90,154
Other current assets	14,991,613	34	14,991,647
Non-current assets:	81,458,057	870,537	82,328,594
Prepaid expenses	1,077,834	799,607	1,877,441
Deferred income tax assets	667,581	27,109	694,690
Other long-term contract assets	-	43,821	43,821
Other non-current assets	79,712,642	-	79,712,642
Total assets	<u>₩ 117,027,294</u>	<u>₩ 2,429,697</u>	<u>₩ 119,456,991</u>
Current liabilities	29,921,325	86,507	30,007,832
Advance received	2,354,393	(67,576)	2,286,817
Unearned revenue	91,020	(24,015)	67,005
Withholdings	2,030,320	45,482	2,075,802
Provisions	352,440	(215)	352,225
Other contract liabilities	-	141,338	141,338
Other current liabilities	25,093,152	(8,507)	25,084,645
Non-current liabilities	37,870,228	691,059	38,561,287
Unearned revenue	518,871	(26,067)	492,804
Deferred income tax liabilities	4,830,713	660,339	5,491,052
Other long-term contract liabilities	-	43,107	43,107
Other non-current liabilities	32,520,644	13,680	32,534,324
Total liabilities	<u>₩ 67,791,553</u>	<u>₩ 777,566</u>	<u>₩ 68,569,119</u>
Issued capital	15,385	-	15,385
Other paid-in capital	4,627,359	4,596	4,631,955
Retained earnings	11,751,781	465,538	12,217,319
Other capital components	(237,143)	-	(237,143)
Non-controlling interests	33,078,359	1,181,997	34,260,356
Total equity	<u>₩ 49,235,741</u>	<u>₩ 1,652,131</u>	<u>₩ 50,887,872</u>
Total liabilities and equity	<u>₩ 117,027,294</u>	<u>₩ 2,429,697</u>	<u>₩ 119,456,991</u>

2.1.1 New and revised KIFRSs adopted in the current period (cont'd)

(B) Consolidated statements of income

	Before application of KIFRS 1115	Amendments	After application of KIFRS 1115
Sales	₩ 101,778,762	₩ (276,742)	₩ 101,502,020
Cost of sales	91,898,326	(47,101)	91,851,225
Gross profit	9,880,436	(229,641)	9,650,795
Operating income	4,658,736	29,381	4,688,117
Non-operating income and expenses	2,859,042	(18,776)	2,840,266
Income tax expense from continuing operations	1,838,917	85,638	1,924,555
Gain from discontinued operation	541,210	6,103	547,313
Net income	6,220,071	(68,930)	6,151,141

(C) Consolidated statements of cash flow

The adoption of KIFRS 1115 does not have a significant effect on the total cash flows of each operating activities, investment activities and financial activities.

KIFRS 2122 - Foreign Currency Transactions and Advance Consideration

The interpretation clarifies that, in determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which an entity initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If advance consideration is taken at multiple times, it is necessary to determine the date of each transaction due to the advance consideration. The amendments do not have a material impact on the Group's financial position or management performance.

2.1.2 New and revised KIFRS issued, but not yet effective

KIFRS 1019 - Employee Benefits (Amendment)

The amendments to KIFRS 1019 address the accounting when a plan amendment, curtailment or settlement occurs during a reporting period. The amendments specify that when a plan amendment, curtailment or settlement occurs during the annual reporting period, an entity is required to:

- Determine current service cost for the remainder of the period after the plan amendment, curtailment or settlement, using the actuarial assumptions used to remeasure the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event
- Determine net interest for the remainder of the period after the plan amendment, curtailment or settlement using: the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event; and the discount rate used to remeasure that net defined benefit liability (asset).

The amendments also clarify that an entity first determines any past service cost, or a gain or loss on settlement, without considering the effect of the asset ceiling. This amount is recognised in profit or loss. An entity then determines the effect of the asset ceiling after the plan amendment, curtailment or settlement. Any change in that effect, excluding amounts included in the net interest, is recognised in other comprehensive income.

The amendments apply to plan amendments, curtailments, or settlements occurring on or after the beginning of the first annual reporting period that begins on or after January 1, 2019, with early application permitted. These amendments will apply only to any future plan amendments, curtailments, or settlements of the Group.

2.1.2 New and revised KIFRS issued, but not yet effective (cont'd)

KIFRS 1028 - Investments in Associates and Joint Ventures (Amendment)

The amendments clarify that an entity applies KIFRS 1109 to long-term interests in an associate or joint venture to which the equity method is not applied but that, in substance, form part of the net investment in the associate or joint venture (long-term interests). This clarification is relevant because it implies that the expected credit loss model in KIFRS 1109 applies to such long-term interests. The amendments also clarified that, in applying KIFRS 1109, an entity does not take account of any losses of the associate or joint venture, or any impairment losses on the net investment, recognised as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 Investments in Associates and Joint Ventures. The amendments should be applied retrospectively and are effective from January 1, 2019, with early application permitted. The Group reviews the effect of the amendments on the consolidated financial statements and will apply the amendments on the effective date.

KIFRS 1109 - Financial Instruments (Amendment)

Under KIFRS 1109, a debt instrument can be measured at amortised cost or at fair value through other comprehensive income, provided that the contractual cash flows are 'solely payments of principal and interest on the principal amount outstanding' (the SPPI criterion) and the instrument is held within the appropriate business model for that classification. The amendments to KIFRS 1109 clarify that a financial asset passes the SPPI criterion regardless of the event or circumstance that causes the early termination of the contract and irrespective of which party pays or receives reasonable compensation for the early termination of the contract. The amendments should be applied retrospectively and are effective from January 1, 2019, with earlier application permitted. The Group reviews the effect of the amendments on the consolidated financial statements and will apply the amendments on the effective date.

KIFRS 1116 - Leases

KIFRS 1116 Leases enacted in May 22, 2017, is effective for annual periods beginning on or after January 1, 2019. Early application is permitted, but not before an entity applies KIFRS 1115 Revenue from Contracts with Customers. This standard replaces KIFRS 1017 Leases, KIFRS 2104 Determining whether an Arrangement contains a Lease, KIFRS 2015 Operating Leases-Incentives and KIFRS 2027 Evaluating the Substance of Transactions Involving the Legal Form of a Lease.

The Group shall identify at the time of the agreement whether the contract itself is a lease or whether the contract includes a lease. However, the consolidation entity will apply KIFRS 1116 only to contracts signed (or changed) on or after the date of initial application by selecting a practical expedient.

For a contract that is, or contains a lease, the Group will account for each lease component within the contract as a lease separately from non-lease components of the contract.

A lessee will recognize an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset) and a liability representing the right to make lease payments (i.e., the lease liability). However, in case of short-term leases (i.e., leases with a lease term of 12 months or less at the commencement date) and leases of 'low-value' assets, the Group may elect to apply the exception under KIFRS 1116. As a practical expedient, a lessee may elect, by class of the underlying asset, not to separate non-lease components from lease components, and instead account for each lease component and any associated non-lease components as a single component.

Lessor accounting under KIFRS 1116 is not significantly changed from current accounting under KIFRS 1017.

In relation to sale and leaseback transactions, the Group (the seller-lessee) will apply the requirements of KIFRS 1115 to determine whether the transfer of an asset is accounted for as a sale of the asset. However, the Group does not reassess sale and leaseback transactions entered into before the date of initial application.

2.1.2 New and revised KIFRS issued, but not yet effective (cont'd)

① Lease accounting for lessees

As a lessee, the Group can either apply the KIFRS 1116 using a full retrospective approach; or modified retrospective approach. The full retrospective approach requires the Group to retrospectively apply the new standard to each prior reporting period presented, while modified retrospective approach requires the lessee to recognize the cumulative effect of initial application at the date of initial application of the new leases standard.

As at 1 January 2019, the Group will apply the cumulative catch-up transition method for initial application of KIFRS 1116. Consequently, the cumulative effect of applying KIFRS 1116 is adjusted for retained earnings at the date of initial application, and comparative financial statements will not be restated.

② Lease accounting for lessors

The lease accounting for lessors is not expected to significantly change from the current accounting treatment in KIFRS 1017 and thus have no significant effect on the consolidated financial statements of the Group.

On the other hand, as at the end of the current term, the Group enters into an operating lease contract about real estate rental and some property, plant and equipment. And the requirements of the KIFRS to recognize the license asset and the related liability are expected to have a significant effect on the amount recognized in the consolidated financial statements. Thus the Group is currently analyzing the potential effect of that Standard.

IFRIC Interpretation 2123 - *Uncertainty over Income Tax Treatment*

The Interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 and does not apply to taxes or levies outside the scope of KIFRS 1012, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The Interpretation specifically addresses the following:

- Whether an entity considers uncertain tax treatments separately
- The assumptions an entity makes about the examination of tax treatments by taxation authorities
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates
- How an entity considers changes in facts and circumstances

The Group has to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments. The approach that better predicts the resolution of the uncertainty should be followed. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, but certain transition reliefs are available.

2.2 Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities controlled by the Company and its subsidiaries. Control is achieved where the Company 1) has the power over the investee, 2) is exposed, or has rights, to variable returns from its involvement with the investee, and 3) has the ability to use its power to affect its returns. The Company reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

When the Company has less than a majority of the voting rights of an investee, it has power over the investee when the voting rights are sufficient to give it the practical ability to direct the activities of the investee unilaterally. The Company considers all relevant facts and circumstances in assessing whether or not the Company's voting rights in an investee are sufficient to give it power, including:

2.2 Basis of consolidation (cont'd)

- The size of the Company's holding of voting rights relative to the size and dispersion of holdings of the other vote holders;
- Potential voting rights held by the Company, other vote holders or other parties;
- Rights arising from other contractual arrangements; and
- Any additional facts and circumstances that indicate that the Company has, or does not have, the current ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous stockholders' meetings.

Income and expenses of subsidiaries acquired or disposed of during the year are included in the consolidated statement of comprehensive income from the date the Company gains control until the date when the Company ceases to control the subsidiary. Profit or loss and each component of OCI are attributed to the owners of the Company and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies.

All intragroup transactions and related assets and liabilities, income and expenses are eliminated in full on consolidation.

Changes in the Group's ownership interests in subsidiaries that do not result in the Group losing control over the subsidiaries are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributed to owners of the Company.

When the Group loses control of a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous carrying amount of the assets (including goodwill), and liabilities of the subsidiary and any non-controlling interests. When assets of the subsidiary are carried at revalued amounts or fair values and the related cumulative gain or loss has been recognized in OCI and accumulated in equity, the amounts previously recognized in OCI and accumulated in equity are accounted for as if the Company had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings).

2.3 Business combinations

Business combinations 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, 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.

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

2.3 Business combinations (cont'd)

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.

2.4 Foreign currencies

The individual financial statements of each entity are presented in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each entity are expressed in Korean won, which is the functional currency of the entity and the presentation currency for the consolidated financial statements.

In preparing the consolidated financial statements of the individual entities, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing 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.

Exchange differences are recognized in profit or loss in the period in which they arise, except for:

- Exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings,
- Exchange differences on transactions entered into in order to hedge certain foreign currency risks, and
- Exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in OCI and reclassified from equity to profit or loss on disposal or partial disposal of the net investment

For the purpose of presenting the consolidated financial statements, the assets and liabilities of the Group's foreign operations are expressed in Korean won using exchange rates prevailing at the end of the reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognized in OCI and accumulated in equity. On the disposal of a foreign operation, all of the accumulated exchange differences in respect of that operation attributable to the owners of the Group are reclassified to profit or loss.

2.5 Cash and cash equivalents

Cash and cash equivalents include cash, bank balances and short-term highly liquid investments with an original maturity of three months or less.

2.6 Financial assets

2.6.1 Classification

From January 1, 2018, the Group classifies its financial assets in the following measurement categories:

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

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

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

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

2.6.2 Measurement

Non-derivatives financial assets with fixed or determinable payments and fixed maturity dates that the Group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are measured at amortized cost using the effective interest method, less any impairment, with revenue recognized on an effective yield basis.

(1) Debt instruments

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

1) Financial assets measured at amortized cost

Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. A gain or loss on a debt investment that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets is included in 'finance income' using the effective interest rate method.

2) Financial assets measured at FVOCI

Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets is included in 'finance income' using the effective interest rate method. Foreign exchange gains and losses are presented in 'finance income or expenses' and impairment losses are presented in 'finance expenses'.

2.6 Financial assets (cont'd)

3) Financial assets measured at FVTPL

Assets that do not meet the criteria for amortized cost or fair value through other comprehensive income are measured at fair value through profit or loss. A gain or loss on a debt investment that is subsequently measured at fair value through profit or loss and is not part of a hedging relationship is recognized in profit or loss and presented net in the statement of profit or loss within 'finance income or expenses' in the year in which it arises.

(2) Equity instruments

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

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

2.6.3 Impairment

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

2.6.4 Recognition and Derecognition

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

If a transfer does not result in derecognition because the Group has retained substantially all the risks and rewards of ownership of the transferred asset, the Group continues to recognize the transferred asset in its entirety and recognizes a financial liability for the consideration received.

2.6.5 Offsetting of financial instruments

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

2.7 Inventories

Inventories are measured at the lower of cost and net realizable value. Cost of inventories, except for materials in in-transit and work in progress (specific identification), are measured under the gross average method, moving average method or first-in first-out 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-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.

2.8 Investments in associates and joint ventures

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

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

The results and assets and liabilities of associates or joint ventures are incorporated in these consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with KIFRS 1105, *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, an investment in an associate or a joint venture is initially recognized in the consolidated statement of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and OCI of the associate or joint venture. When the Group's share of losses of an associate or a joint venture exceeds the Group's interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture), the Group discontinues recognizing its share of further losses. Additional losses are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate or a joint venture recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment.

When the Group transacts with its associate or a joint venture, profits and losses resulting from the transactions with the associate or joint venture are recognized in the Group's consolidated financial statements only to the extent of interests in the associate or joint venture that are not related to the Group.

2.9 Interests in joint operations

A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The Group accounts for the assets, liabilities, revenues and expenses relating to its interest in a joint operation in accordance with the KIFRSs applicable to the particular assets, liabilities, revenues and expenses.

When a group entity transacts with a joint operation in which a group entity is a joint operator (such as a sale or contribution of assets), the Group is considered to be conducting the transaction with the other parties to the joint operation, and gains and losses resulting from the transactions are recognized in the Group's consolidated financial statements only to the extent of other parties' interests in the joint operation.

When a group entity transacts with a joint operation in which a group entity is a joint operator (such as a purchase of assets), the Group does not recognize its share of the gains and losses until it resells those assets to a third party.

2.10 Property, plant and equipment

Construction in progress is stated at cost, net of accumulated impairment losses, and property, plant and equipment is 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 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.

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:

<u>Description</u>	<u>Useful lives (years)</u>	<u>Description</u>	<u>Useful lives (years)</u>
Buildings	10 ~ 60	Machinery and equipment	3 ~ 40
Structures	4 ~ 50	Vehicles	1 ~ 20
Ships and vessels	6 ~ 25	Others	2 ~ 40

The Group reviews the depreciation method, the estimated useful lives and 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.

2.11 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 that is expected to benefit from the synergies of the combination.

A cash-generating unit ("CGU") to which goodwill has been allocated is tested for impairment annually, or more frequently when there is 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 the 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.

2.12 Intangible assets

Intangible assets are measured initially at cost and, subsequently, are carried at cost, less accumulated amortization and accumulated impairment losses. The cost of intangible asset acquired in a business combination, separately from goodwill, is its fair value at the acquisition date and shall be carried at its cost less any accumulated amortization and any accumulated impairment losses.

Amortization of development cost, industrial property rights and other intangible assets is calculated on a straight-line basis over the estimated useful lives of intangible assets from the date that they are available for use. The residual value is zero. Development cost for petroleum resource is amortized by the unit of production method based on the amount of proved reserves. However, intangible assets with indefinite useful lives such as membership and brand contract-related assets are not amortized as there is no foreseeable limit to the period over which the asset is expected to use.

<u>Description</u>	<u>Useful lives (years)</u>	<u>Description</u>	<u>Useful lives (years)</u>
Development costs	3 ~ 10	Developed technology	5 ~ 14
Customer-related assets	3 ~ 25	Others	3 ~ 50

The useful lives of intangible assets are assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed 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. Intangible assets with indefinite useful lives are not amortized, but are tested for impairment annually.

2.12.1 Development cost for petroleum resource

The Group accounts for expenditures with high probability of future economic benefits related to the acquisition costs of assets, exploration and evaluation, and development activities as intangible assets.

Expenditures for exploration and evaluation of oil and natural gas are related to geographical, geological, geochemical, geophysical research, and prospect for commercialization. Development expenditures are related to the construction of various production equipment and drilling oil wells. Impairment testing is performed when the carrying amount of the intangible asset exceeds the estimated recoverable amounts.

Oil-producing fields refer to those which acquired the permission of development for reserves with economic benefits. The cost of an item of oil-producing fields includes the costs directly attributable to its purchase, construction, other expenditures for production, and the estimated costs of provision for restoration. The Group amortizes oil-producing fields by the unit of production method based on the amount of proved reserves.

2.12.2 Research and development

Expenditures on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, are recognized in profit or loss as incurred. Development expenditures are capitalized only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the Group intends to and has sufficient resources to complete development and to use or sell the asset. Other development expenditures are recognized in profit or loss as incurred.

2.12.3 Subsequent expenditures

Subsequent expenditures are capitalized only when they increase the future economic benefits embodied in the specific asset to which they relate. All other expenditures, including expenditures on internally generated goodwill and brands, are recognized in profit or loss as incurred.

2.13 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 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. 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.

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 the asset may be impaired. Recoverable amount is the higher of fair value, less costs to sell and 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.

2.14 Investment property

Investment properties are properties held to earn rentals and for capital appreciation. Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are reported at cost, less accumulated depreciation and accumulated impairment losses.

Subsequent costs are recognized in carrying amount of an asset or as a separate asset if it is probable that the 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:

<u>Description</u>	<u>Useful lives (years)</u>	<u>Description</u>	<u>Useful lives (years)</u>
Buildings	10 ~ 60	Structures	4 ~ 50

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

2.15 Borrowing costs

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

2.16 Government grants

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

Government grants related to assets are presented in the statement 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 periods 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.

2.17 Non-current assets held for sale

Non-current assets (or disposal groups) are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the non-current asset (or disposal group) is available for immediate sale in its present condition. Management must be committed to the sale, which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

When the Group is committed to a sale plan involving loss of control of a subsidiary, all of the assets and liabilities of that subsidiary are classified as held for sale when the criteria described above are met, regardless of whether the Group will retain a non-controlling interest in its former subsidiary after the sale.

When the Group is committed to a sale plan involving disposal of an investment, or a portion of an investment, in an associate or joint venture, the investment or the portion of the investment that will be disposed of is classified as held for sale when the criteria described above are met, and the Group discontinues the use of the equity method in relation to the portion that is classified as held for sale. Any retained portion of an investment in an associate or a joint venture that has not been classified as held for sale continues to be accounted for using the equity method. The Group discontinues the use of the equity method at the time of disposal when the disposal results in the Group losing significant influence over the associate or joint venture.

Non-current assets (or disposal groups) classified as held for sale are measured at the lower of their previous carrying amount or fair value, less costs to sell.

2.18 Discount (premium) on bonds

Discount (premium) on bonds is presented as a direct deduction from (addition to) the nominal value of the bonds and is amortized using the effective interest rate method over the lives of the bonds.

2.19 Leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

2.19.1 The Group as a lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Group's net investment in the leases. Finance lease income is allocated to accounting periods so as to reflect a constant periodic rate of return on the Group's net investment outstanding in respect of the leases.

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognized on a straight-line basis over the lease term.

2.19.2 The Group as a lessee

Assets held under finance leases are initially recognized as assets of the Group at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the statement of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the Group's general policy on borrowing costs. Contingent rentals are recognized as expenses in the periods in which they are incurred.

2.20 Financial liabilities and equity instruments

2.20.1 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 financial liability and an equity instrument.

2.20.2 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 are received, net of direct issue 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.

2.20.3 Compound instruments

The component parts of compound instruments (convertible bonds) issued by the Group 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. Conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Group's own equity instruments is an 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. This amount is recorded as a liability on an amortized cost basis using the effective interest method until extinguished upon conversion or at the instrument's maturity date.

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. In addition, the conversion option classified as equity will remain in equity until the conversion option is exercised, in which case, the balance recognized in equity will be transferred to share premium. No gain or loss is recognized in profit or loss upon conversion or expiration of the conversion option.

Transaction costs that relate to the issue of the convertible notes are allocated to liability and equity components in proportion to the allocation of the gross proceeds. Transaction costs relating to equity component are recognized directly in equity. Transaction costs relating to the liability component are included in the carrying amount of the liability component and are amortized over the lives of the convertible notes using the effective interest method.

2.20.4 Financial liabilities

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 issued by the Group, are measured in accordance with the specific accounting policies set out below.

2.20.4.1 Financial liabilities at FVTPL

Financial liabilities are classified as at FVTPL when the financial liability is (i) contingent consideration of an acquirer in a business combination, (ii) held for trading or (iii) 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 it in the near term; or
- 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 contingent consideration of an acquirer in 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; or
- 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 K-IFRS 1109 permits the entire combined contract to be designated as at FVTPL.

2.20.4.1 Financial liabilities at FVTPL (cont'd)

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

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 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.

2.20.4.2 Financial liabilities measured at amortized cost

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

2.20.5 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 the loss allowance determined in accordance with IFRS 9 (see financial assets above); and
- The amount recognized initially less, where appropriate, cumulative amortisation recognized in accordance with the revenue recognition policies set out above.

2.20.6 Derecognition of financial liabilities

Financial liabilities are removed from the statement of financial position when it is extinguished; for example, when the obligation specified in the contract is discharged or cancelled or expired or when the terms of an existing financial liability are substantially modified. The difference between the carrying amount of a financial liability extinguished or transferred to another party and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

2.21 Retirement benefit costs

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 actuarial gains and losses, the effect of the changes to the asset ceiling (if applicable) and the return on plan assets (excluding interest), is reflected immediately in the separate statement of financial position with a charge or credit recognized in OCI in the period in which it occurs. Remeasurement recognized in OCI is reflected immediately in retained earnings and will not

2.21 Retirement benefit costs (cont'd)

be reclassified to profit or loss. Past service cost is recognized in profit or loss in the period of a plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset. Defined benefit costs are composed of service cost (including current service cost and 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, and the remeasurement component in OCI. Curtailment gains and losses are accounted for as past service costs.

2.22 Share-based payment arrangements

Equity-settled share-based payments to employees and others providing similar services are measured at the fair value of the equity instruments at the grant date.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of equity instruments that will eventually vest. At the end of each reporting period, the Group revises its estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognized in profit or loss such that the cumulative expense reflects the revised estimate, with a corresponding adjustment in other component of equity as the equity-settled employee benefits reserve.

Equity-settled share-based payment transactions with parties other than employees are measured at the fair value of the goods or services received, except where that fair value cannot be estimated reliably, in which case they are measured at the fair value of the equity instruments granted, measured at the date the entity obtains the goods or the counterparty renders the service.

For cash-settled share-based payments, a liability is recognized for the goods or services acquired, measured initially at the fair value of the liability. At the end of each reporting period until the liability is settled, and at the date of settlement, the fair value of the liability is remeasured, with any changes in fair value recognized in profit or loss for the year.

2.23 Provision

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).

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.

2.23.1 Provision for warranties

A provision for warranties is recognized when the underlying products or services are sold. The provision is based on historical warranty data and a weighting of all possible outcomes against their associated probabilities.

2.23.2 Provision for installment of handset subsidies

The Group provides lump-sum handset subsidies to customers who agree to use the Group's service for a predetermined service period and the subsidies are charged to commission paid expense as the related payments are made. When customers agree to use the Group's service for a predetermined service period and purchase handsets on an installment basis, the subsidies are paid every month over the installment period and the Group estimates a provision for handset subsidies to be paid, which is recognized as commissions expense at the time telecommunication service contracts are made.

2.23.3 Provision for service/construction warranties

If the Group has an obligation to repair the product after selling the product or providing the service, the Group estimates the warranty expense based on the repair period and the past experience rate.

2.23.4 Provision for restoration

Provision for restoration of contaminated area is recognized in the related costs in accordance with published environmental policy and appropriate legal requirements of the Group.

2.23.5 Provision for onerous contracts

A provision for onerous contracts is recognized when the expected benefits to be derived by the Group from a contract are lower than the unavoidable costs of meeting its obligations under the contract. The provision is measured at the present value of the lower of the expected cost of terminating the contract and the expected net cost of continuing with the contract. Before a provision is established, the Group recognizes any impairment loss on the assets associated with that contract.

2.23.6 Greenhouse gas emissions

The Group classifies the emission allowances that it receives from the government free of charge as intangible assets, measures them at nil ("0"), and measures any purchased emission allowances at cost. A liability (emission obligation) is measured at nil ("0") only where the allocated emission allowances by the government free of charge are enough to settle the obligation arisen from actual emissions. However, if actual emissions exceed the allocated emission allowances, the amount recognized as a liability is the best estimate of expenditures, as at the end of a reporting period, in performing emission obligations exceeding the above emission allowances.

A provision shall be used only for expenditures for which the provision was originally recognized.

2.24 Derivative financial instruments

The Group enters into foreign exchange forward contracts to manage its exposure to foreign exchange rate risk. 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.

2.24.1 Embedded derivatives

An embedded derivative is a component of a hybrid contract that also includes a non-derivative host – with the effect that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative.

Derivatives embedded in hybrid contracts with a financial asset host within the scope of K-IFRS 1109 are not separated. The entire hybrid contract is classified and subsequently measured as either amortized cost or fair value as appropriate.

Derivatives embedded in hybrid contracts with hosts that are not financial assets within the scope of K-IFRS 1109 (e.g. financial liabilities) are treated as separate derivatives when they meet the definition of a derivative, their risks and characteristics are not closely related to those of the host contracts and the host contracts are not measured at FVTPL.

2.24.2 Hedge accounting

The Group designates certain derivatives as hedging instruments in respect of foreign currency risk and interest rate risk in fair value hedges, cash flow hedges, or hedges of net investments in foreign operations. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges.

At the inception of the hedge relationship, the Group documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions.

Furthermore, at the inception of the hedge and on an ongoing basis, the Group documents whether the hedging instrument is effective in offsetting changes in fair values or cash flows of the hedged item attributable to the hedged risk, which is when the hedging relationships meet all of the following hedge effectiveness requirements:

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

2.24.3 Fair value hedges

The fair value change on qualifying hedging instruments is recognized in profit or loss except when the hedging instrument hedges an equity instrument designated at FVTOCI in which case it is recognized in other comprehensive income.

The carrying amount of a hedged item not already measured at fair value is adjusted for the fair value change attributable to the hedged risk with a corresponding entry in profit or loss. For debt instruments measured at FVTOCI, the carrying amount is not adjusted as it is already at fair value, but the hedging gain or loss is recognized in profit or loss instead of other comprehensive income. When the hedged item is an equity instrument designated at FVTOCI, the hedging gain or loss remains in other comprehensive income to match that of the hedging instrument.

Where hedging gains or losses are recognized in profit or loss, they are recognized in the same line as the hedged item.

The Group discontinues hedge accounting only when the hedging relationship (or a part thereof) ceases to meet the qualifying criteria (after rebalancing, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised. The discontinuation is accounted for prospectively. The fair value adjustment to the carrying amount of the hedged item arising from the hedged risk is amortized to profit or loss from that date.

2.24.4 Cash flow hedges

The effective portion of changes in the fair value of derivatives and other qualifying hedging instruments that are designated and qualify as cash flow hedges is recognized in other comprehensive income limited to the cumulative change in fair value of the hedged item from inception of the hedge. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss.

The Group discontinues hedge accounting only when the hedging relationship (or a part thereof) ceases to meet the qualifying criteria (after rebalancing, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised. The discontinuation is accounted for prospectively. Any gain or loss recognized in other comprehensive income and accumulated in cash flow hedge reserve at that time remains in equity and is reclassified to profit or loss when the forecast transaction occurs. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in cash flow hedge reserve is reclassified immediately to profit or loss.

2.25 Revenue recognition

From January 1, 2018, the Group has applied KIFRS 1115 *Revenue from Contracts with Customers*. The Group operates oil refining, telecommunications, wholesale and retail businesses, chemical products, and construction. When control of a good or service is transferred to the customer, the Group recognises revenue considering the variable consideration, such as return and discount, from the fair value of the consideration to which it expects to be entitled in exchange for the good or service.

2.25.1 Sale of goods

Revenue from the sale of goods is generally recognised at the time when control of the goods is transferred to the customer, i.e. at the time of delivery of the goods.

2.25.2 Rendering of services

The Group provides services such as construction contracts and system construction services. For construction contracts and system construction services, revenue is recognized over time at the rate of progress under the input method because the Group has no alternative use for completing the obligation for the assets created by the Group that have completed the performance so far, and because the Group has a enforceable right to payment for the completed performance.

In the case of providing other services, the Group is obliged to provide the customer with the related services during the contract period, so the transaction price allocated to the performance obligation is recognized as revenue over the period where the services are provided.

2.25.3 Commissions

When the Group acts in the capacity of an agent rather than as the principal in a transaction, the revenue recognized is the net amount of commission made by the Group.

2.25.4 Rental income and others

Rental income from investment property is recognized in profit or loss on a straight-line basis over the term of the lease. Lease incentives granted are recognized as an integral part of the total rental income, over the term of the lease. Rental income from subleased property is recognized as other income.

2.25.5 Contract assets and liabilities

A contract asset is the right to consideration in exchange for goods or services transferred to the customer. If the Group performs by transferring goods or services to a customer before the customer pays consideration or before payment is due, a contract asset is recognised for the earned consideration that is conditional.

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

2.26 Income tax

Income tax expense represents the sum of the tax currently payable and deferred tax. Current and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in OCI or directly in equity, in which case, the current and deferred tax are also recognized in OCI or directly in equity.

2.26.1 Current tax

The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the separate statement of profit or loss and comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

2.26.2 Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the separate financial statements and the corresponding tax bases used in the computation of taxable profit. 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 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 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 it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset 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 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 are levied by the same taxation authority on either the same taxable entity or different taxable entities that 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.

2.26.3 Current tax and deferred tax for the year

Current tax and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in OCI or directly in equity, in which case the current tax and deferred tax are also recognized in OCI 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.

2.27 Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date.

Fair value for measurement and/or disclosure purposes in these separate financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of KIFRS 1102 *Share-based Payment*, leasing transactions that are within the scope of KIFRS 1017 *Leases*; and measurements that have some similarities to fair value, but are not fair value, such as net realizable value in KIFRS 1002 *Inventories* or value in use in KIFRS 1036 *Impairment of Assets*.

In addition, for financial reporting purposes, fair value measurements are categorized into Level 1, 2 or 3, based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in its entirety, which are described as follows:

- Level 1: inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date;
- Level 2: inputs are inputs, other than quoted prices included within Level 1, that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs are unobservable inputs for the asset or liability.

3. Significant accounting judgements, estimates and assumptions

When preparing the consolidated financial statements, management is required to make judgments, estimates and assumptions that affect the reported amount of assets, liabilities, revenues and expenses. Actual results may be different from those 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.

The following are the key assumptions concerning the future, and other key sources of estimation uncertainty at the end of the reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year:

3.1 Impairment of non-financial assets

The Group assesses at each reporting date, whether there is an indication of impairment of its non-financial assets. If any indication exists, or annually, intangible assets with indefinite useful lives including brand contract-related asset are tested for impairment. Other non-financial assets are tested for impairment when there is an indication that the carrying amount of an asset is not recoverable. In assessing value in use, management estimates future cash flows of the assets or CGU and determines an appropriate discount rate to calculate the present value of the estimated future cash flows.

3.2 Valuation of financial instruments

Subsequent to initial recognition, available-for-sale financial assets are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss or OCI. Where the fair value of financial assets and financial liabilities recorded in the consolidated statements of financial position cannot be derived from active markets, the Group uses valuation techniques that require the management's judgments on the expected future cash flows and discount rates.

3.3 Bad debt allowance for trade receivables, loans and other receivables

The Group estimates a bad debt allowance for trade receivables, loans and other receivables, based on the aging of accounts receivables and past experience of bad debt, as well as observable changes in economic and industrial conditions that correlate with default on receivables.

3.4 Measurement and useful lives of tangible and intangible assets

If the Group acquires property and equipment or intangible assets from business combination, it is required to estimate the fair value of these assets at the acquisition date. For estimating the useful lives of tangible and intangible assets, significant management judgment is required.

3.5 Defined benefit plan

The Group's defined benefit obligation is determined based on the actuarial valuation carried out at the end of each annual reporting period. Actuarial assumptions are the Group's best estimates of the variables in determining the cost of providing post-retirement benefits, such as discount rates, rates of expected future salary increases and mortality rates. Significant estimation uncertainty is likely to persist in making such assumptions due to the long-term nature of post-retirement benefit plan.

3.6 Deferred tax assets

Recognition and measurement of deferred tax assets and liabilities requires significant management judgment. Especially, when determining if deferred tax assets will be realizable or not in the future, it involves significant management assumptions and judgment on the Group's future performance.

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4. Operating segments

(1) Overview of operating segments

The Group makes decisions on resources to be allocated to business segments and divides the business segments based on the internal reports which the chief operating decision maker periodically reviews to evaluate the performances of the sales segments. As SK Holdings Co., Ltd. was acquired during the current reporting period, details of changes to segment operations of each segment are as follows:

Operating segments	Business
SK Innovation Co., Ltd.	Refining, chemical, and resources development
SK Telecom Co., Ltd.	Telecommunication
SK Networks Co., Ltd.	Network, information communication, trade, and energy marketing
SKC Co., Ltd.	Chemical, film, and information communication
SK E&S Co., Ltd.	Gas and energy
SK Engineering & Construction Co., Ltd.	Civil engineering, housing, plant and others
Others	IT services, security service, special gas manufacturing and sale, medicine and life science and others

(2) Details of financial information for each operating segment as at and for the years ended December 31, 2018 and 2017 are as follows (Korean won in billions):

	As at and for the year ended December 31, 2018								
	SK Innovation Co., Ltd.	SK Telecom Co., Ltd.	SK Networks Co., Ltd.	SKC Co., Ltd.	SK E&S Co., Ltd.	SK Engineering & Construction Co., Ltd.	Others	Consolidation adjustments (*1)	Total
Total sales	₩ 54,511	₩ 16,874	₩ 13,986	₩ 2,768	₩ 6,468	₩ 7,503	₩ 6,638	₩ (7,246)	₩101,502
Internal sales	(1,850)	(89)	(2,054)	(424)	(69)	(799)	(1,961)	7,246	-
Net sales	52,661	16,785	11,932	2,344	6,399	6,704	4,677	-	101,502
Income (loss) from continuing operations before income tax expense	2,402	3,976	60	182	558	161	2,254	(2,065)	7,528
Net income (loss) from continuing operations	1,697	3,132	25	141	439	62	2,005	(1,897)	5,604
Total assets	36,085	42,369	7,769	3,833	9,570	5,266	33,144	(18,579)	119,457
Total liabilities	16,757	20,020	5,457	2,138	5,894	4,478	11,980	1,845	68,569
Depreciation	846	2,451	239	119	359	27	1,188	(691)	4,538
Amortization	93	833	13	8	4	5	130	247	1,333

	As at and for the year ended December 31, 2017								
	SK Innovation Co., Ltd.	SK Telecom Co., Ltd.	SK Networks Co., Ltd.	SKC Co., Ltd.	SK E&S Co., Ltd.	SK Engineering & Construction Co., Ltd.	Others	Consolidation adjustments (*1)	Total
Total sales	₩ 46,163	₩ 17,520	₩ 19,593	₩ 2,654	₩ 5,535	₩ 7,316	₩ 4,934	₩ (13,102)	₩ 90,613
Internal sales	(4,490)	(88)	(4,461)	(423)	(54)	(804)	(2,782)	13,102	-
Net sales	41,673	17,432	15,132	2,231	5,481	6,512	2,152	-	90,613
Income (loss) from continuing operations before income tax expense	3,224	3,403	214	181	464	256	959	(1,258)	7,443
Net income (loss) from continuing operations	2,147	2,658	162	136	374	147	959	(1,392)	5,191
Total assets	34,250	33,429	7,227	3,667	9,343	5,541	33,141	(16,815)	109,783
Total liabilities	14,941	15,399	4,879	2,074	5,583	4,634	14,677	1,840	64,027
Depreciation	791	2,445	235	117	311	30	191	198	4,318
Amortization	109	803	13	5	6	7	20	361	1,324

(*1) Consolidation adjustments of the parent company, excluding consolidation adjustments of each subsidiary.

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4. Operating segments (cont'd)

(3) Details of financial information by geographical region as at and for the years ended December 31, 2018 and 2017 are as follows (Korean won in billions):

	As at and for the year ended December 31, 2018							
	Korea	Asia	Europe	North America	South America	Others	Consolidation adjustments	Total
Total sales	₩ 129,476	₩ 36,913	₩ 7,719	₩ 2,565	₩ -	₩ 82	₩ (75,253)	₩ 101,502
Operating income	7,901	230	27	(30)	-	29	(3,469)	4,688
Income (loss) from continuing operations before income tax expense	8,251	480	(7)	(115)	-	(103)	(978)	7,528
Net income (loss)	6,472	451	(17)	(117)	-	(503)	(682)	5,604
Total assets	138,289	10,019	2,530	7,997	360	1,283	(41,021)	119,457
Total liabilities	64,397	3,354	1,480	2,344	318	154	(3,478)	68,569

	As at and for the year ended December 31, 2017							
	Korea	Asia	Europe	North America	South America	Others	Consolidation adjustments	Total
Total sales	₩ 116,554	₩ 29,321	₩ 5,266	₩ 1,655	₩ -	₩ 96	₩ (62,279)	₩ 90,613
Operating income	8,455	208	28	(19)	-	27	(2,954)	5,745
Income (loss) from continuing operations before income tax expense	8,050	201	44	(130)	-	41	(763)	7,443
Net income (loss)	6,519	166	40	(133)	-	136	(1,537)	5,191
Total assets	131,648	9,814	2,108	4,566	739	1,241	(40,333)	109,783
Total liabilities	60,098	4,266	1,403	1,469	701	230	(4,140)	64,027

(4) Details of financial information by revenue from contracts with customers for the years ended December 31, 2018 are as follows (Korean won in billions):

	As at and for the year ended December 31, 2018								
	SK Innovation Co., Ltd.	SK Telecom Co., Ltd.	SK Networks Co., Ltd.	SKC Co., Ltd.	SK E&S Co., Ltd.	SK Engineering & Construction Co., Ltd.	Others	Consolidation adjustments	Total
1. Total sales	₩ 54,511	₩ 16,874	₩ 13,986	₩ 2,768	₩ 6,468	₩ 7,503	₩ 6,638	₩ (7,246)	₩ 101,502
2. Revenue from contracts with customers	54,477	16,872	13,035	2,768	6,460	7,489	5,701	(6,360)	100,442
Categories:									
Service sales	186	15,392	473	94	-	7,473	2,034	(1,407)	24,245
Finished goods sales	52,669	32	508	2,069	2,884	-	2,612	(2,721)	58,053
Merchandise sales	189	1,448	12,049	543	3,504	16	946	(2,115)	16,580
Other sales	1,433	-	5	62	72	-	109	(117)	1,564
	<u>54,477</u>	<u>16,872</u>	<u>13,035</u>	<u>2,768</u>	<u>6,460</u>	<u>7,489</u>	<u>5,701</u>	<u>(6,360)</u>	<u>100,442</u>
Timing of revenue recognition:									
Recognition at a point in time	54,291	1,480	12,562	2,674	138	16	3,667	729	75,557
Recognition over a period of time	186	15,392	473	94	6,322	7,473	2,034	(7,089)	24,885
	<u>54,477</u>	<u>16,872</u>	<u>13,035</u>	<u>2,768</u>	<u>6,460</u>	<u>7,489</u>	<u>5,701</u>	<u>(6,360)</u>	<u>100,442</u>
3. Revenue from other sources	34	2	951	-	8	14	937	(886)	1,060

5. Acquisitions and disposals of subsidiaries and non-controlling interest

5.1 Acquisitions of significant subsidiaries

Acquisitions of significant subsidiaries during the current reporting period are as follows:

1) Acquisition of shares of Fine Chemicals Holdings Corp.

The Company acquired 100.0% shares with voting rights of Fine Chemicals Holdings Corp., the parent company of AMPAC, a U.S. CMO company, and gained control of investee to promote synergy in bio industry. Consequently, Fine Chemicals Holdings Corp. and its three subsidiaries were included in the consolidation.

2) Acquisition of additional shares of Life & Security Holdings Co.,Ltd.

Subsidiary SK Telecom Co., Ltd. signed an agreement on May 8, 2018 to acquire 740,895 shares of Life & Security Holdings Co., Ltd. for ₩696,665 million in order to strengthen its security business and expand its home customers, and SK Telecom Co., Ltd. completed the acquisition on October 1st to hold 55% equity ownership of Life & Security Holdings Co., Ltd. Consequently, SK Telecom Co., Ltd. has gained control of Life & Security Holdings Co.,Ltd., its subsidiary ADT Caps Co., Ltd., and other two subsidiaries.

3) Acquisition of additional shares of Longfellow Nemaha, LLC

Subsidiary SK E&P America, Inc. acquired a full shares of Longfellow Nemaha, LLC during the current term and changed the company's name to SK Nemaha, LLC after the acquisition. The share in the production mine acquired through the acquisition of shares is 50% of the production mine in Oklahoma.

5.2 Disposal of subsidiaries

1) Loss of control of SK Shipping Co., Ltd.

SK Shipping Co., Ltd. issued 61,392,448 common shares and 4,977,766 convertible shares on a third-party allocation date on December 27, 2018 in accordance with the board's resolution on October 8, 2018. SK Shipping Co., Ltd. was excluded from our consolidated subsidiaries as all of the shares were acquired by Han&Co Tanker Holdings Limited and Han&Co Tanker Holdings Limited acquired a 69.81% shares of SK Shipping Co. (based on common shares).

2) Sale of shares of SK Encarsales.com Ltd.

On January 19, 2018, the Company sold its entire stock of SK Encarsales.com Ltd. shares (common stock 250,001 shares, with a 50.01% stake) to Casales Holdings Pty, Ltd. As a result, SK Encarsales.com Ltd. was excluded from our consolidated subsidiaries.

3) Sale of shares of Happynarae Co., Ltd.

Subsidiaries SK Innovation Co. and SK Telecom Co. each sold 720,000 shares of Happy Nara (45% of shares and 28,416 million won of sales) to SK Hynix Inc. on December 21, 2018. As a result, Happynarae Co., Ltd. was excluded from our consolidated subsidiaries.

5.3 Other significant capital transaction

1) Share issuance of SK Biopharmaceuticals Co., Ltd.

The Company has invested ₩150,000 million in mid- and long-term growth financing for SK Biopharmaceuticals Co., Ltd. with an investment of 9 March 2018. As a result, there is no change in the parent's equity interest rate.

2) Acquisition of treasury stock of SK Innovation Co., Ltd.

Subsidiary SK Innovation Co., Ltd. acquired 4,980,972 shares during the current term with the aim of enhancing shareholder value through stable stock prices, increasing the effective equity interest rate of the Company's SK Innovation Co., Ltd. by 1.87% and reducing the non-controlling interest in the Group by ₩1,005,100 million.

5.3 Other significant capital transaction (cont'd)

3) Acquisition of treasury stock of SK Materials Co., Ltd.

Subsidiary SK Materials Co., Ltd. acquired 530,000 shares during the current term with the aim of enhancing shareholder value through stable stock prices, increasing the effective equity interest rate of the Company's SK Materials Co., Ltd. by 2.89% and reducing the non-controlling interest in the Group by ₩60,307 million.

4) Stock exchange transaction under common control of SK Infosec Co., Ltd.

On October 31, 2018, the parent entered into a comprehensive stock exchange contract in which treasury stock of SK Telecom Co., Ltd. (1,260,668 shares of SK Telecom) were transferred instead of transferring all of its shares of SK Infosec Co., Ltd. to subsidiary SK Telecom Co., Ltd. This contract is designed to create synergy between the security business of subsidiary SK Telecom Co., Ltd. The exchange rate of the shares was 1:0.0997678, and on December 27, 2018, when the share exchange was completed, SK Infosec Co., Ltd. was incorporated as a subsidiary of SK Telecom Co., Ltd.

6. Financial instruments

6.1 Financial assets

Details of financial assets as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018				
	Financial assets measured at FVTPL	Financial assets measured at FVOCI	Financial assets measured at amortized	Financial assets designated as hedging instruments	Total
Current assets					
Cash and cash equivalents	₩ 1,279,887	₩ -	₩ 5,503,148	₩ -	₩ 6,783,035
Short-term financial instruments	2,583,003	-	1,635,104	-	4,218,107
Trade accounts receivable (*1)	284,882	-	9,946,944	-	10,231,826
Other accounts receivable	224,390	-	1,707,945	-	1,932,335
Short-term loans	-	-	97,093	-	97,093
Accrued income	-	-	112,492	-	112,492
Short-term investment securities	197,672	-	45	-	197,717
Guarantee deposits	-	-	246,008	-	246,008
Derivative financial assets	81,899	-	-	25,517	107,416
	<u>4,651,733</u>	<u>-</u>	<u>19,248,779</u>	<u>25,517</u>	<u>23,926,029</u>
Non-current assets					
Long-term financial instruments	-	-	12,549	-	12,549
Long-term trade accounts receivables	-	-	11,373	-	11,373
Long-term other accounts receivables	282,151	-	31,062	-	313,213
Long-term loans	-	-	477,742	-	477,742
Long-term investment securities	688,134	1,528,093	1,174	-	2,217,401
Guarantee deposits	-	-	801,500	-	801,500
Derivative financial assets	24,173	-	-	71,730	95,903
	<u>994,458</u>	<u>1,528,093</u>	<u>1,335,400</u>	<u>71,730</u>	<u>3,929,681</u>
	<u>₩ 5,646,191</u>	<u>₩ 1,528,093</u>	<u>₩ 20,584,179</u>	<u>₩ 97,247</u>	<u>₩ 27,855,710</u>

(*1) Contract assets (unbilled receivables) amounting to ₩612,298 million as at December 31, 2018 are not included in the financial assets.

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6.1 Financial assets (cont'd)

	December 31, 2017					
	Financial assets at FVTPL	Held-to-maturity investments	Loans and receivables	Available-for-sale financial assets	Financial assets designated as hedging instruments	Total
Current assets:						
Cash and cash equivalents	₩ -	₩ -	₩ 7,145,842	₩ -	₩ -	₩ 7,145,842
Short-term financial instruments	98,643	-	3,442,030	-	-	3,540,673
Trade accounts receivable (*1)	-	-	10,727,631	-	-	10,727,631
Other accounts receivable	-	-	1,991,725	-	-	1,991,725
Short-term loans	-	-	123,130	-	-	123,130
Accrued income	-	-	44,240	-	-	44,240
Available-for-sale financial assets	-	-	-	188,603	-	188,603
Held-to-maturity investments	-	45	-	-	-	45
Guarantee deposits	-	-	209,181	-	-	209,181
Derivative financial assets	35,319	-	-	-	57,094	92,413
Finance lease receivables	-	-	73,199	-	-	73,199
	<u>133,962</u>	<u>45</u>	<u>23,756,978</u>	<u>188,603</u>	<u>57,094</u>	<u>24,136,682</u>
Non-current assets:						
Long-term financial instruments	-	-	200,853	-	-	200,853
Long-term trade accounts receivable	-	-	12,908	-	-	12,908
Long-term other accounts receivable	15,964	-	321,154	-	-	337,118
Long-term loans	-	-	378,534	-	-	378,534
Available-for-sale financial assets	-	-	-	1,596,033	-	1,596,033
Held-to-maturity investments	-	825	-	-	-	825
Guarantee deposits	-	-	740,326	-	-	740,326
Derivative financial assets	235,474	-	-	-	46,755	282,229
Finance lease receivables	-	-	168,490	-	-	168,490
	<u>251,438</u>	<u>825</u>	<u>1,822,265</u>	<u>1,596,033</u>	<u>46,755</u>	<u>3,717,316</u>
	<u>₩ 385,400</u>	<u>₩ 870</u>	<u>₩ 25,579,243</u>	<u>₩ 1,784,636</u>	<u>₩ 103,849</u>	<u>₩ 27,853,998</u>

(*1) Unbilled receivables amounting to ₩810,837 million as at December 31, 2017 are not included in the financial assets.

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6.2 Financial liabilities

Details of financial liabilities as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018			
	Financial liabilities measured at FVTPL	Other financial liabilities	Financial liabilities designated as hedging instruments	Total
Current liabilities:				
Short-term borrowings	₩ -	₩ 3,426,330	₩ -	₩ 3,426,330
Trade accounts payable	-	9,028,488	-	9,028,488
Other accounts payable	-	3,468,375	-	3,468,375
Current portion of long-term debt	-	5,024,863	-	5,024,863
Accrued expenses	-	3,109,033	-	3,109,033
Dividends payable	-	3,851	-	3,851
Leasehold deposits received	-	127,307	-	127,307
Derivative financial liabilities	62,775	-	6,083	68,858
Finance lease liabilities	-	4,459	-	4,459
Finance guarantee liabilities	-	389	-	389
	<u>62,775</u>	<u>24,193,095</u>	<u>6,083</u>	<u>24,261,953</u>
Non-current liabilities:				
Bonds payable and long-term borrowings	61,813	28,828,720	-	28,890,533
Long-term other accounts payable	-	2,011,424	-	2,011,424
Leasehold deposits received	-	320,354	-	320,354
Derivative financial liabilities	246,798	-	14,912	261,710
Finance lease liabilities	-	16,935	-	16,935
Financial guarantee liabilities	-	15,882	-	15,882
	<u>308,611</u>	<u>31,193,315</u>	<u>14,912</u>	<u>31,516,838</u>
	<u>₩ 371,386</u>	<u>₩ 55,386,410</u>	<u>₩ 20,995</u>	<u>₩ 55,778,791</u>
	December 31, 2017			
	Financial liabilities at FVTPL	Other financial liabilities	Financial liabilities designated as hedging instruments	Total
Current liabilities:				
Short-term borrowings	₩ -	₩ 2,999,032	₩ -	₩ 2,999,032
Trade accounts payable	-	9,588,642	-	9,588,642
Other accounts payable	-	3,610,562	-	3,610,562
Current portion of long-term debt	-	6,548,146	-	6,548,146
Accrued expenses	-	2,875,130	-	2,875,130
Dividends payable	-	1,423	-	1,423
Leasehold deposits received	-	162,965	-	162,965
Derivative financial liabilities	105,042	-	42,243	147,285
Finance lease liabilities	-	1,676	-	1,676
Finance guarantee liabilities	-	50	-	50
	<u>105,042</u>	<u>25,787,626</u>	<u>42,243</u>	<u>25,934,911</u>
Non-current liabilities:				
Bonds payable and long-term borrowings	60,278	23,299,240	-	23,359,518
Long-term other accounts payable	-	3,746,917	-	3,746,917
Leasehold deposits received	-	310,050	-	310,050
Derivative financial liabilities	21,379	-	12,323	33,702
Finance lease liabilities	-	10	-	10
Financial guarantee liabilities	-	11,933	-	11,933
	<u>81,657</u>	<u>27,368,150</u>	<u>12,323</u>	<u>27,462,130</u>
	<u>₩ 186,699</u>	<u>₩ 53,155,784</u>	<u>₩ 54,566</u>	<u>₩ 53,397,049</u>

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6.3 Gain and loss by category of financial instruments

Details of gain and loss by category of financial instruments for the years ended in December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						
	Dividends income	Interest income	Interest expense	Gain (loss) on foreign currency	Gain (loss) on derivatives instruments	Reversal (impairment) and gain (loss) on disposals	Total
Financial assets measured at FVTPL	₩ 5,813	₩ 57,634	₩ -	₩ -	₩ 366,423	₩ 68,368	₩ 498,238
Financial assets measured at FVOCI	26,877	1,854	-	(25)	-	-	28,706
Financial assets measured at amortized	-	174,378	-	118,698	-	(155,167)	137,909
Financial assets designated as hedging instruments	-	-	-	-	(48,423)	-	(48,423)
Financial liabilities measured at FVTPL	-	-	-	(32,676)	(18,096)	-	(50,772)
Other financial liabilities	-	-	(1,067,949)	(277,109)	-	-	(1,345,058)
Financial liabilities designated as hedging instruments	-	-	-	-	18,096	-	18,096
	<u>₩ 32,690</u>	<u>₩ 233,866</u>	<u>₩(1,067,949)</u>	<u>₩179,307</u>	<u>₩ 89,198</u>	<u>₩ (186,441)</u>	<u>₩ (591,178)</u>
	For the year ended December 31, 2017						
	Dividends income	Interest income	Interest expense	Gain (loss) on foreign currency	Gain (loss) on derivatives instruments	Reversal (impairment) and gain (loss) on disposals	Total
Financial assets at FVTPL	₩ -	₩ -	₩ -	₩ -	₩ 604,593	₩ (36,282)	₩ 568,311
Held-to-maturity investments	-	3,033	-	(1,236)	-	-	1,797
Loans and receivables	-	198,010	-	(506,917)	-	(31,927)	(340,834)
Available-for-sale financial assets	21,666	7,597	-	(575)	-	(152,868)	(124,180)
Financial assets designated as hedging instruments	-	-	-	-	229,696	-	229,696
Financial liabilities at FVTPL	-	-	-	-	(663,243)	-	(663,243)
Other financial liabilities	-	-	(783,530)	690,015	-	-	(93,515)
Financial liabilities designated as hedging instruments	-	-	-	(2,474)	(82,471)	-	(84,945)
	<u>₩ 21,666</u>	<u>₩ 208,640</u>	<u>₩(783,530)</u>	<u>₩ 178,813</u>	<u>₩ 88,575</u>	<u>₩ (221,077)</u>	<u>₩ (506,913)</u>

6.4 Fair values of financial instruments by hierarchy level

1) Fair values and book values of financial instruments as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
	Book value	Fair value	Book value	Fair value
Bonds payable	₩ 25,820,473	₩ 25,132,494	₩ 23,484,876	₩ 23,588,353
Borrowings	11,521,253	12,209,764	9,421,820	9,028,223

The fair value of bonds payable and borrowings was measured as the present value of the contractually determined stream of future cash flows discounted at the market interest rate (2.06%~3.55%) regarding residual market risks. As the book values of other financial assets and other financial liabilities are reasonable approximations to fair values, the fair values have not been disclosed.

6.4 Fair values of financial instruments by hierarchy level (cont'd)

2) Details of fair values of financial instruments by hierarchy level as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets measured at FVTPL	₩ 3,557,954	₩ 1,072,489	₩ 909,676	₩ 5,540,119
Financial assets measured at FVOCI	672,586	24,509	830,998	1,528,093
Derivative financial assets	6,762	196,557	-	203,319
	<u>₩ 4,237,302</u>	<u>₩ 1,293,555</u>	<u>₩ 1,740,674</u>	<u>₩ 7,271,531</u>
Financial liabilities:				
Financial liabilities measured at FVTPL	₩ -	₩ 61,813	₩ -	₩ 61,813
Derivative financial liabilities	-	90,399	240,169	330,568
	<u>₩ -</u>	<u>₩ 152,212</u>	<u>₩ 240,169</u>	<u>₩ 392,381</u>
	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at FVTPL	₩ 706	₩ 160,249	₩ 224,445	₩ 385,400
Available-for-sale financial assets (*1)	818,615	96,487	127,124	1,042,226
Financial assets designated as hedging instruments	-	103,849	-	103,849
	<u>₩ 819,321</u>	<u>₩ 360,585</u>	<u>₩ 351,569</u>	<u>₩ 1,531,475</u>
Financial liabilities:				
Financial liabilities at FVTPL	₩ 2,131	₩ 184,568	₩ -	₩ 186,699
Financial liabilities designated as hedging instruments	-	54,566	-	54,566
	<u>₩ 2,131</u>	<u>₩ 239,134</u>	<u>₩ -</u>	<u>₩ 241,265</u>

(*1) This does not include available-for-sale financial assets, which are measured at cost because their fair values could not be reliably measured.

3) Valuation techniques and inputs

The description of the valuation techniques and inputs used to measure the fair value of financial instruments using fair value measurements as at the end of the current term and the end of the prior term, in which the Group is classified as Level 2 or Level 3 is as follows:

A. Currency forward and currency swap

The fair value of the currency forward and the currency swap was measured in principle based on the forward exchange rate disclosed in the market as at the end of the current term for the period consistent with the remaining period of the currency swap. If the forward exchange rate for a period consistent with the remaining period of the currency forward and the currency swap is not disclosed in the market, the forward exchange was measured by estimating the forward exchange rate for a period similar to the remaining period of the currency swap by applying interpolation to each period. The discount rate used to measure the fair value of the currency forward and the currency swap was determined using the yield curve derived from the rate quoted in the market as at the end of the current term.

B. Commodity swap

In principle, the fair value of the commodity swap was measured on the basis of the spot transaction price disclosed in the market as at the end of the current term for the period consistent with the remaining period of the spot swap being measured. In addition, the discount rate used to measure the fair value of the spot swap was determined using the yield curve derived from the rate quoted in the market as at the end of the reporting period.

6.4 Fair values of financial instruments by hierarchy level (cont'd)

C. Interest rate swap

The fair value of the interest rate swap was measured in principle based on the interest rate swap rate disclosed in the market as at the end of the current term for the period consistent with the remaining period of the interest rate swap. If the interest rate swap for a period consistent with the remaining period of the interest rate swap is not disclosed in the market, the interest rate swap rate was measured by estimating the interest rate swap rate for a period similar to the remaining period of the interest rate swap by applying interpolation to each period.

D. Debt securities

The fair value of debt securities is measured by discounting the future cash flows of debt securities by applying the market interest rate applied to companies with similar creditworthiness as the issuer of debt securities.

E. Unlisted stocks

The fair value of unlisted stocks is measured by using a cash flow discount model and some assumptions are used that are not based on observable market prices or ratios, such as assumptions or estimates of sales growth, pre-tax operating profit rates, weighted average capital costs, etc. to estimate future cash flows. The weighted average capital expense used to discount future cash flows was determined by applying CAPM. The Group determined that the effect of the major assumptions and estimates that is mentioned above on the fair value of unlisted stocks was significant, so the fair value measurement of unlisted stock was categorised within Level 3 of the fair value hierarchy.

F. Convertible debt securities

The fair value of convertible debt securities was measured by adding the fair value of the ordinary bond component that does not include conversion rights and the fair value of the conversion right, which is an embedded derivative (purchase call option). The fair value of the non-convertible general bond component was measured by discounting the future cash flows of the bond using the market interest rate applied to entities with similar creditworthiness as the issuer of the convertible bond, and the fair value of the conversion right was measured using an option pricing model. Stock price volatility, a significant input used to measure the fair value of conversion rights, was estimated based on past stock price changes. The consolidation entity considered that the fair value of the right to convert was a significant proportion of the total fair value of the convertible debt securities and classified the fair value measurement of the entire convertible debt securities into Level 3 of the fair value hierarchy.

G. Conditional price

The fair value of the conditional price is estimated by the net profit before subtracting interest and corporate tax by scenarios and based on these estimates, the Group measures the present value of the expected future receivables weighted on the probability of each scenario.

H. Inter-shareholder contract

The fair value of the Inter-shareholder contract is based on Monte-Carlo Simulation. It generates the discrete path of the future interest rate, estimates the point of time when the buyout option is exercised, calculates the present value, and repeatedly executes it to calculate the fair value as the average value of the calculated value. On the other hand, unlisted shares subject to the purchase option were measured in accordance with the fair value assessment method of unlisted shares, and the fair value measurement of inter-share contracts was classified as Level 3 in the fair value hierarchy as the main assumptions and estimates used to assess the fair value of unlisted shares were considered to have a significant effect on their fair value.

6.4 Fair values of financial instruments by hierarchy level (cont'd)

I. The valuation techniques and input variables used for major financial instruments classified as Level 3 are as follows (Korean won in millions):

	December 31, 2018					
	Valuation amount		Valuation techniques	Level 3 inputs	Input variations	
SK Shipping Co., Ltd.	Assets	₩ 204,675	DCF model	Permanent growth rate WACC	0.0%~1.0% 8.5%	
KRAFTON, Inc.	Assets	₩ 138,000	DCF method	Permanent growth rate WACC	-1.0%~1.0% 11.5%	
Contract between share holders	Liabilities	₩ 240,169	Monte-Carlo simulation	Term structure of interest rate WACC	2.0%~2.4% 5.3%~18.1%	

Among the inputs used to measure the fair value of a financial instrument, if the permanent growth rate increase (decrease), the fair value increases (decreases) and if the weighted average cost of capital increases (decrease), the fair value decreases (increases). There is no change in valuation techniques used to measure fair value of financial instruments classified as Level 2 and Level 3.

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7. Trade accounts receivable

(1) Details of trade accounts receivable as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Trade accounts receivable:				
Trade accounts receivable	₩ 10,831,643	₩ 13,727	₩ 11,230,420	₩ 14,669
Contract assets (unbilled receivables) (*1)	612,298	-	810,837	-
Allowance for doubtful accounts:				
Trade accounts receivable	(599,817)	(2,354)	(502,789)	(1,761)
	<u>₩ 10,844,124</u>	<u>₩ 11,373</u>	<u>₩ 11,538,468</u>	<u>₩ 12,908</u>

(*1) Unbilled receivables at the end of the previous reporting period are those applicable to KIFRS 1011.

(2) The contract assets and liabilities related with contracts with customers, and the aggregate costs and cumulative gains and losses related to construction contracts in progress as at December 31, 2018 and January 1, 2018 are as follows (Korean won in millions):

	December 31, 2018		January 1, 2018	
Contract assets: (*1)				
Construction business	₩ 515,483	₩ 695,260		
Telecommunication business	133,893	143,053		
Others	96,814	140,618		
	<u>₩ 746,190</u>	<u>₩ 978,931</u>		
Contract liabilities: (*2)				
Construction business	₩ 1,750,851	₩ 1,608,332		
Telecommunication business	183,813	133,384		
Others	919,096	505,972		
	<u>₩ 2,853,760</u>	<u>₩ 2,247,688</u>		

(*1) Contract assets are included in trade receivables and other assets.

(*2) Contract liabilities are included in trade payables, advances and other liabilities. The amount recognised as revenue in the current period in relation to the contract liabilities in the beginning of the current term is ₩1,302,865 million and there is no revenue recognised in the current period in relation to the performance obligation satisfied in the prior term.

	December 31, 2017				
	Accumulated cost and profit	Progress billings	Unbilled receivables	Overbilled receivables	Provision for construction losses
SK Engineering & Construction Co., Ltd. and its subsidiaries	₩ 38,385,591	₩ 38,373,380	₩ 757,326	₩ 745,115	₩ 37,714
Others	216,101	177,563	53,511	14,793	-
	<u>₩ 38,601,692</u>	<u>₩ 38,550,943</u>	<u>₩ 810,837</u>	<u>₩ 760,088</u>	<u>₩ 37,714</u>

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7. Trade accounts receivable (cont'd)

(3) Details of construction profit variation by changes of accounting estimates related to construction contracts as at December 31, 2018 are as follows (Korean won in millions):

	December 31, 2018				
	Change in estimated construction revenue	Change in estimated cost	Impact on current period profit (loss)	Impact on future period profit	Change in unbilled (overbilled) receivables
SK Engineering & Construction Co., Ltd. and its subsidiaries	₩ 1,326,635	₩ (1,391,808)	₩ (91,481)	₩ 26,308	₩ (91,481)
Others	15,184	(14,114)	(106)	1,176	(106)
	<u>₩ 1,341,819</u>	<u>₩ (1,405,922)</u>	<u>₩ (91,587)</u>	<u>₩ 27,484</u>	<u>₩ (91,587)</u>

Impact on profit of current and future period has been calculated by the estimated construction costs based on the situations which occurred from the inception of construction contracts to current reporting period and the estimated construction revenue as at current reporting period. Estimated construction costs and revenue can be changed in the future period.

(4) Details of the construction contracts where the contract revenue exceeds 5% of the preceding year's revenue under the percentage-of-completion method as at December 31, 2018 are as follows (Korean won in millions):

Subsidiary	Project	Contract date	Completion date	Percentage (%)	Unbilled receivables		Trade accounts receivable (*1)	
					Amount	Impairment	Amount	Allowance for doubtful accounts
SK Engineering & Construction Co., Ltd.	RRE Project	2009.12	2016.05	99.9	₩ -	₩ -	₩ 14,370	₩ -
	Goseong High Fire power Construction	2014.07	2021.07	32.1	-	-	-	-

(*1) It refers to amounts of billed receivables.

(5) The amount includes the carrying amount of trade receivables accounted for secured borrowing (₩539,977 million as at December 31, 2018 and ₩300,621 million as at December 31, 2017) when financial assets were transferred by trade receivables factoring and asset securitization, but are not derecognized, in entirety or in part.

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8. Inventories

Details of inventories as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018			December 31, 2017		
	Cost	Valuation		Cost	Valuation	
		allowance	Book value		allowance	Book value
Merchandise	₩ 1,246,748	₩ (25,208)	₩ 1,221,540	₩ 944,645	₩ (23,603)	₩ 921,042
Finished goods	2,439,524	(173,148)	2,266,376	2,067,617	(35,884)	2,031,733
Semifinished goods and work in progress	1,054,235	(106,597)	947,638	935,047	(28,893)	906,154
Raw materials and sub-materials	2,050,836	(80,340)	1,970,496	1,499,412	(13,864)	1,485,548
Materials in transit	2,267,490	-	2,267,490	2,562,226	-	2,562,226
Supplies	229,050	(3,909)	225,141	264,640	(5,383)	259,257
Uncompleted contracts	80,574	-	80,574	26	-	26
Others	13,621	(136)	13,485	13,627	(677)	12,950
	<u>₩ 9,382,078</u>	<u>₩ (389,338)</u>	<u>₩ 8,992,740</u>	<u>₩ 8,287,240</u>	<u>₩ (108,304)</u>	<u>₩ 8,178,936</u>

9. Investment securities and available-for-sale financial assets

Details of investment securities as at December 31, 2018 and available-for-sale financial assets as at December 31, 2017 are as follows (Korean won in millions):

	December 31, 2018			Total
	Financial assets measured at FVTPL	Financial assets measured at FVOCI (*1)	Financial assets measured at amortized	
Equity instruments:				
Marketable equity instruments	₩ -	₩ 672,586	₩ -	₩ 672,586
Non-marketable equity instruments	<u>35,471</u>	<u>828,156</u>	-	<u>863,627</u>
	<u>35,471</u>	<u>1,500,742</u>	-	<u>1,536,213</u>
Bond instruments:				
Beneficiary securities and others	683,862	663	-	684,525
Debt securities	<u>166,473</u>	<u>26,688</u>	<u>1,219</u>	<u>194,380</u>
	<u>850,335</u>	<u>27,351</u>	<u>1,219</u>	<u>878,905</u>
	<u>₩ 885,806</u>	<u>₩ 1,528,093</u>	<u>₩ 1,219</u>	<u>₩ 2,415,118</u>
Current investment securities	₩ 197,672	₩ -	₩ 45	₩ 197,717
Non-current investment securities	688,134	1,528,093	1,174	2,217,401

(*1) The Group has applied the irrevocable option to designate the equity instruments held for strategic investment, not for held-for-trading purpose, at the date of initial application, as items measured at FVOCI.

	December 31, 2017
Marketable equity instruments	₩ 818,615
Non-marketable equity instruments	759,063
Corporate and government bonds	69,248
Others (*1)	<u>137,710</u>
	<u>₩ 1,784,636</u>
Current available-for-sale financial assets	₩ 188,603
Non-current available-for-sale financial assets	1,596,033

(*1) They include beneficiary certificates.

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10. Investments in associates and joint ventures

(1) Investments in associates and joint ventures

Details of investments in associates and joint ventures as at December 31, 2018 and 2017 are as follows (Korean won in millions):

Company	Domicile	Equity ownership (*1)	December 31, 2018		December 31,
			Acquisition cost	Book value	2017
					Book value
Associates:					
SK Hynix Inc.	Korea	20.1%	₩ 5,420,310	₩ 10,922,882	₩ 7,976,784
China Gas Holdings Ltd. (*2, *6)	Hong Kong	15.4%	1,597,222	1,814,603	1,687,587
ESR Cayman Limited (*2)	Cayman Islands	12.5%	493,627	616,364	382,040
Eureka Midstream Holdings	USA	40.0%	465,582	469,202	434,164
Daehan Oil Pipeline Corporation	Korea	41.0%	311,372	339,664	334,331
Peru LNG Company, LLC	Peru	20.0%	331,144	293,027	274,738
Hana Card Co., Ltd. (*2)	Korea	15.0%	253,707	288,457	280,988
Korea IT Fund (*3)	Korea	63.3%	242,170	281,684	257,003
NHIP II Bison Holdings, LLC	USA	24.2%	275,075	279,525	-
Eurasia Tunnel	Turkey	50.0%	112,726	226,198	198,645
Beijing BESK Technology Co., Ltd.	China	49.0%	154,317	143,198	28,487
Xe-Pian Xe-Namnoy Power Company	Laos	26.0%	85,129	88,235	53,159
Canakkale Highway And Bridge	Turkey	25.0%	96,520	80,270	22,160
Socar, Inc.	Korea	23.9%	91,800	79,782	82,720
SM Core, Inc.	Korea	26.7%	75,948	74,646	75,500
NanoEnTek, Inc.	Korea	28.9%	72,176	64,117	61,861
SM Culture & contents	Korea	23.4%	65,341	63,801	64,965
Korea Ras Laffan LNG Limited (*2)	Bermuda	8.0%	65,435	61,519	58,081
Rails International LLC	USA	34.4%	58,085	59,025	-
TSK Water Co., Ltd. (*4)	Korea	-	-	-	61,926
Others				912,193	475,769
				<u>17,158,392</u>	<u>12,810,908</u>
Joint ventures (*5):					
Sinopec-SK (Wuhan) Petrochemical Co., Ltd.	China	35.0%	488,809	775,577	681,901
Mitsui Chemicals & SKC Polyurethanes Co., Ltd.	Korea	50.0%	349,942	481,199	430,170
Hana Land Chip PEF 33 (*3)	Korea	65.2%	196,001	263,792	221,081
Boryeong LNG Terminal Co., Ltd.	Korea	50.0%	108,323	117,543	105,117
SKC-Kolon PI Co., Ltd.	Korea	27.0%	83,753	97,649	94,730
SABIC SK Nexlene Company Pte. Ltd.	Singapore	50.0%	112,670	88,680	91,907
Others				235,513	193,688
				<u>2,059,953</u>	<u>1,818,594</u>
				<u>₩ 19,218,345</u>	<u>₩ 14,629,502</u>

(*1) The equity ownership includes indirect investments held by consolidated subsidiaries.

(*2) The Group retains significant influence on the associate despite having less than 20% equity interests.

(*3) These companies were not included as consolidated subsidiaries as the Group does not have power over more than half of the voting rights by agreements.

(*4) As a result of the loss of significant influence over an investee through a partial sale of share in the investee, the Group reclassified its remaining interests from investment in associate to investment securities measured at fair value through other comprehensive income from the current period.

(*5) All joint arrangements that the Group has joint control over are structured by a consolidated entity. The parties that have joint control with respect to the joint agreements hold the rights to the net assets of the agreements and accordingly, they are classified as joint ventures and accounted for using the equity method of accounting.

(*6) As we were unable to obtain the financial statements for December 31, 2018, we used the financial statements for September 30, 2018 and examined the effect of significant transactions and events during the three months.

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10. Investments in associates and joint ventures (cont'd)

(2) Changes in carrying amount of investments in associates and joint ventures

Changes in investments in associates and joint ventures accounted for using the equity method for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018							Ending balance
	Beginning balance	Acquisitions	Disposals	Equity profit or losses on investments	Other capital movements	Dividends received	Others (*1)	
Associates:								
SK Hynix Inc.	₩ 7,976,784	₩ -	₩ -	₩ 3,105,837	₩ (13,639)	₩(146,100)	₩ -	₩10,922,882
China Gas Holdings Ltd.	1,687,587	-	-	149,705	1,342	(39,160)	15,129	1,814,603
ESR Cayman Limited	382,040	115,200	-	72,734	75,409	-	(29,019)	616,364
Eureka Midstream Holdings	434,164	-	-	17,211	-	-	17,827	469,202
Daehan Oil Pipeline Corporation	334,331	-	-	10,662	(533)	(4,796)	-	339,664
Peru LNG Company, LLC	274,738	-	-	(26,526)	44,815	-	-	293,027
Hana Card Co., Ltd.	280,988	-	-	14,581	(7,112)	-	-	288,457
Korea IT Fund	257,003	-	-	38,099	(9,919)	(3,499)	-	281,684
NHIP II Bison Holdings, LLC	-	275,075	-	-	-	-	4,450	279,525
Eurasia Tunnel	198,645	-	-	18,234	-	-	9,319	226,198
Beijing BESK Technology Co., Ltd.	28,487	118,758	-	(2,728)	(1,319)	-	-	143,198
Xe-Pian Xe-Namnoy Power	53,159	13,205	-	18,762	3,109	-	-	88,235
Canakkale Highway And Bridge	22,160	73,507	-	4,472	(21,917)	-	2,048	80,270
Socar, Inc.	82,720	-	-	(11,402)	501	-	7,963	79,782
SM Core, Inc.	75,500	-	-	(570)	(18)	(266)	-	74,646
NanoEnTek, Inc.	61,861	3,180	-	(116)	(808)	-	-	64,117
SM Culture & contents	64,965	-	-	(909)	(255)	-	-	63,801
Korea Ras Laffan LNG Limited	58,081	-	-	8,377	3,457	(8,396)	-	61,519
Rails International LLC	-	58,085	-	-	-	-	940	59,025
TSK Water Co., Ltd.	61,926	-	(27,698)	7,317	-	-	(41,545)	-
Others	475,769	173,139	(1,906)	19,290	(5,504)	(24,036)	275,441	912,193
	<u>12,810,908</u>	<u>830,149</u>	<u>(29,604)</u>	<u>3,443,030</u>	<u>67,609</u>	<u>(226,253)</u>	<u>262,553</u>	<u>17,158,392</u>
Joint ventures:								
Sinopec-SK (Wuhan) Petrochemical Co., Ltd.	681,901	-	-	105,805	(12,129)	-	-	775,577
Mitsui Chemicals & SKC Polyurethanes Co., Ltd.	430,170	-	-	48,944	4,409	(2,100)	(224)	481,199
Hana land chip PEF 33	221,081	-	-	58,738	-	(16,027)	-	263,792
Boryeong LNG Terminal Co., Ltd.	105,117	-	-	12,426	-	-	-	117,543
SKC-Kolon PI Co., Ltd.	94,730	-	-	9,541	-	(6,351)	(271)	97,649
SABIC SK Nexlene Company Pte. Ltd.	91,907	-	-	2,531	(5,758)	-	-	88,680
Others	193,688	15,034	(76)	(15,538)	(3,686)	-	46,091	235,513
	<u>1,818,594</u>	<u>15,034</u>	<u>(76)</u>	<u>222,447</u>	<u>(17,164)</u>	<u>(24,478)</u>	<u>45,596</u>	<u>2,059,953</u>
	<u>₩14,629,502</u>	<u>₩ 845,183</u>	<u>₩ (29,680)</u>	<u>₩ 3,665,477</u>	<u>₩ 50,445</u>	<u>₩(250,731)</u>	<u>₩ 308,149</u>	<u>₩19,218,345</u>

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10. Investments in associates and joint ventures (cont'd)

	For the year ended December 31, 2017							Ending balance
	Beginning balance	Acquisitions	Disposals	Equity profit or losses on investments	Other capital movements	Dividends received	Others (*1)	
Associates:								
SK Hynix Inc.	₩ 6,088,485	₩ -	₩ -	₩ 2,066,307	₩ (90,348)	₩ (87,660)	₩ -	₩ 7,976,784
China Gas Holdings Ltd.	1,621,030	-	-	125,174	(30,506)	(28,111)	-	1,687,587
Eureka Midstream Holdings	-	465,582	-	3,977	-	(11,308)	(24,087)	434,164
ESR Cayman Limited	-	378,427	-	1,656	-	-	1,957	382,040
Daehan Oil Pipeline Corporation	327,066	-	-	12,203	596	(5,534)	-	334,331
Peru LNG Company, LLC	314,425	-	-	(4,231)	(35,456)	-	-	274,738
Korea IT Fund	263,850	-	-	(8,815)	3,371	(1,403)	-	257,003
Hana Card Co., Ltd.	265,798	-	-	15,494	(304)	-	-	280,988
Yemen LNG Company Ltd.	12,936	-	-	(4,857)	659	-	(8,738)	-
Eurasia Tunnel	173,273	17,432	-	30,149	-	-	(22,209)	198,645
Springvale SK Kores Pty. Ltd.	107,093	-	-	181	6,991	-	(114,265)	-
Socar, Inc.	54,680	32,940	-	(4,900)	-	-	-	82,720
SM Core, Inc.	-	75,948	-	(492)	44	-	-	75,500
Korea Ras Laffan LNG Limited	77,284	-	-	6,526	(17,481)	(8,248)	-	58,081
NanoEnTek, Inc.	62,657	-	-	(733)	(63)	-	-	61,861
SKC Hi-Tech&Marketing Co., Ltd.	63,171	-	-	(4,567)	(1,160)	-	(57,444)	-
TSK Water Co., Ltd.	54,392	-	-	8,039	-	-	(505)	61,926
SM Culture & contents	-	65,341	-	(376)	-	-	-	64,965
Xe-Pian Xe-Namnoy Power Company	47,423	17,620	-	(4,262)	(7,622)	-	-	53,159
Others	<u>426,839</u>	<u>147,132</u>	<u>(17,539)</u>	<u>(1,591)</u>	<u>(22,258)</u>	<u>(33,332)</u>	<u>27,165</u>	<u>526,416</u>
	9,960,402	1,200,422	(17,539)	2,234,882	(193,537)	(175,596)	(198,126)	12,810,908
Joint ventures:								
Sinopec-SK (Wuhan) Petrochemical Co., Ltd.	565,226	-	-	156,748	(40,073)	-	-	681,901
Mitsui Chemicals & SKC Polyurethanes Co., Ltd.	378,870	-	-	61,857	(8,363)	(2,100)	(94)	430,170
Hana land chip PEF 33	196,897	-	-	39,985	-	(15,801)	-	221,081
Boryeong LNG Terminal Co., Ltd.	97,703	-	-	7,414	-	-	-	105,117
SKC-Kolon PI Co., Ltd.	90,079	-	-	8,877	-	(3,572)	(654)	94,730
SABIC SK Nexlene Company Pte. Ltd.	76,946	-	-	(2,969)	17,930	-	-	91,907
Others	<u>193,776</u>	<u>70,124</u>	<u>(27,900)</u>	<u>(18,956)</u>	<u>(7,275)</u>	<u>(1,001)</u>	<u>(15,080)</u>	<u>193,688</u>
	<u>1,599,497</u>	<u>70,124</u>	<u>(27,900)</u>	<u>252,956</u>	<u>(37,781)</u>	<u>(22,474)</u>	<u>(15,828)</u>	<u>1,818,594</u>
	<u>₩11,559,899</u>	<u>₩1,270,546</u>	<u>₩(45,439)</u>	<u>₩2,487,838</u>	<u>₩(231,318)</u>	<u>₩(198,070)</u>	<u>₩(213,954)</u>	<u>₩14,629,502</u>

(*1) Others include the effects of changes in scope of consolidation, net foreign currency differences and others.

(3) Details of unrecognized changes in equity method caused by discontinuing the application of equity method as at December 31, 2018 are as follows (Korean won in millions):

	Beginning balance	Changes	Ending balance
Pentaport Development Co., Ltd.	₩ 57,042	₩ 14,250	₩ 71,292
Harmony Country Club	4,774	656	5,430
SK Telesys Corporation	3,960	-	3,960
Wave City Development Co., Ltd.	2,100	4,434	6,534
Daehan Kanggun BcN Co., Ltd. and others	5,316	10,094	15,410

(4) Details of the fair value of marketable investments in associates and joint ventures as at December 31, 2018 are as follows (Korean won in millions):

	Fair value
SK Hynix Inc.	₩ 8,839,050
China Gas Holdings Ltd.	3,110,359
SKC-Kolon PI Co., Ltd.	263,565
SM Core, Inc.	46,155
SM Culture & contents	44,508
NanoEnTek, Inc.	32,189

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10. Investments in associates and joint ventures (cont'd)

(5) Details of reconciliation from net assets of investments of associates and joint ventures to book value of investments in associates and joint ventures as at December 31, 2018 are as follows (Korean won in millions):

	December 31, 2018					Book value
	Net assets	Equity ownership	Net assets attributable to the ownership interests	Cost-book value differentials	Internal transactions and others	
Associates:						
SK Hynix Inc. (*1)	₩ 46,852,331	21.4%	₩ 10,007,467	₩ 935,728	₩ (20,313)	₩ 10,922,882
China Gas Holdings Ltd.	4,955,927	15.4%	763,213	1,202,410	(151,020)	1,814,603
ESR Cayman Limited	2,573,665	12.5%	322,223	323,891	(29,750)	616,364
Eureka Midstream Holdings	505,872	40.0%	202,349	254,998	11,855	469,202
Daehan Oil Pipeline Corporation	782,807	41.0%	320,951	22,878	(4,165)	339,664
Peru LNG Company, LLC	1,465,982	20.0%	293,196	-	(169)	293,027
Hana Card Co., Ltd.	1,575,422	15.0%	236,313	52,144	-	288,457
Korea IT Fund	444,764	63.3%	281,669	-	15	281,684
NHIP II Bison Holdings, LLC	186,805	24.2%	45,169	-	234,356	279,525
Eurasia Tunnel	436,748	50.0%	218,374	26,628	(18,804)	226,198
Beijing BESK Technology Co., Ltd.	289,610	49.0%	141,909	1,290	-	143,199
Xe-Pian Xe-Namnoy Power Company	312,826	26.0%	81,335	-	6,900	88,235
Canakkale Highway And Bridge	321,082	25.0%	80,270	-	-	80,270
Socar, Inc.	74,795	23.9%	17,854	73,361	(11,433)	79,782
SM Core, Inc.	75,609	26.7%	20,150	50,580	3,916	74,646
Korea Ras Laffan LNG Limited	768,991	8.0%	61,519	-	-	61,519
Joint ventures:						
Sinopec-SK (Wuhan) Petrochemical Co., Ltd.	2,120,608	35.0%	742,213	37,067	(3,703)	775,577
Mitsui Chemicals & SKC Polyurethanes Co., Ltd.	1,002,690	50.0%	501,345	-	(20,146)	481,199
Hana land chip PEF 33	404,571	65.2%	263,821	-	(29)	263,792
Boryeong LNG Terminal Co., Ltd.	197,062	50.0%	98,531	28,736	(9,724)	117,543
SKC-Kolon PI Co., Ltd.	258,714	27.0%	69,930	28,215	(496)	97,649
Sabic SK Nexlene Company Pte. Ltd.	268,701	50.0%	134,350	-	(45,670)	88,680

(*1) The equity ownership presented is the ownership of the number of shares issued by the investee, and the effective equity ratio of 21.36% was applied to the equity method evaluation.

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10. Investments in associates and joint ventures (cont'd)

(6) Condensed financial informations of significant investments in associates and joint ventures as at December 31, 2018 are as follows (Korean won in millions).

As at and for the year ended December 31, 2018							
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Sales	Net income (loss)	Total comprehensive income (loss)
Associates:							
SK Hynix Inc.	₩ 19,894,146	₩ 43,764,189	₩ 13,031,852	₩ 3,774,152	₩ 40,445,066	₩15,577,413	₩ 15,600,930
China Gas Holdings Ltd.	4,845,597	8,505,690	4,782,522	3,612,838	7,382,209	931,867	1,340,234
ESR Cayman Limited	1,011,528	3,888,257	475,226	1,850,894	276,778	225,573	225,573
Eureka Midstream Holdings	28,658	752,686	26,695	248,777	-	60,169	117,632
Daehan Oil Pipeline Corporation	142,352	911,217	34,054	236,708	161,460	31,631	30,300
Peru LNG Company, LLC	348,860	2,526,235	244,329	1,164,784	1,041,065	(146,044)	(58,204)
Hana Card Co., Ltd.	7,781,888	202,251	1,122,538	5,286,179	1,642,133	106,675	102,331
Korea IT Fund	118,024	326,740	-	-	57,430	45,110	31,688
NHIP II Bison Holdings, LLC	27,950	395,902	46,523	190,524	72,280	45,025	45,025
Eurasia Tunnel	134,931	1,365,835	128,939	935,079	13,600	47,052	47,052
Beijing BESK Technology Co.,Ltd	269,107	24,441	3,938	-	91	(6,080)	(6,080)
Xe-Pian Xe-Namnoy Power Company	33,316	981,697	25,488	676,699	-	(1,214)	(1,214)
Canakkale Highway And Bridge	18,128	1,290,247	30,053	957,240	561,942	17,888	17,888
Socar, Inc.	40,363	207,840	75,190	98,218	159,368	(39,434)	(39,434)
SM Core, Inc.	78,142	27,417	27,614	2,336	93,475	961	621
Korea Ras Laffan LNG Limited	730	790,566	95	22,210	107,294	104,719	104,719
Joint ventures:							
Sinopec-SK (Wuhan) Petrochemical Co., Ltd.	447,617	2,052,807	379,704	112	2,851,082	312,693	294,502
Mitsui Chemicals & SKC Polyurethanes Co., Ltd.	548,450	874,263	343,416	76,607	1,231,952	100,634	110,307
Hana land chip PEF 33	8,737	711,400	1,083	314,483	101,046	90,083	90,083
Boryeong LNG Terminal Co., Ltd.	198,790	1,191,018	109,029	1,083,717	125,315	27,223	27,168
SKC-Kolon PI Co., Ltd.	105,904	266,461	58,764	54,887	245,473	34,984	33,988
SABIC SK Nexlene Company Pte. Ltd.	173,228	557,896	126,417	336,006	347,876	1,729	24,998

11. Property, plant and equipment

(1) Details of property, plant and equipment as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018	December 31, 2017
Acquisition cost	₩ 51,614,987	₩ 49,607,477
Accumulated depreciation and accumulated impairment loss	(11,899,066)	(8,312,025)
	₩ 39,715,921	₩ 41,295,452

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

(2) Changes in property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						Ending balance
	Beginning balance	Business combination	Acquisitions	Disposals	Depreciation	Others (*1)	
Land	₩ 9,745,857	₩ 71,759	₩ 55,602	₩ (203,171)	₩ -	₩ (42,488)	₩ 9,627,559
Buildings	3,831,087	62,470	22,218	(133,838)	(176,785)	438,668	4,043,820
Structures	1,571,893	2,704	27,019	(19,187)	(111,180)	140,363	1,611,612
Ships and vessels	2,308,484	-	1,724	(4,882)	(126,015)	(2,178,468)	843
Machinery and equipment	17,166,820	302,028	905,013	(127,337)	(3,322,559)	3,042,557	17,966,522
Vehicles	771,997	575	55,888	(18,941)	(137,835)	(65,361)	606,323
Others	3,124,891	124,327	1,222,012	(38,364)	(655,990)	68,368	3,845,244
Construction-in-progress	2,774,423	37,234	4,195,169	(6,848)	-	(4,985,980)	2,013,998
	<u>₩ 41,295,452</u>	<u>₩ 601,097</u>	<u>₩ 6,484,645</u>	<u>₩ (552,568)</u>	<u>₩ (4,530,364)</u>	<u>₩ (3,582,341)</u>	<u>₩ 39,715,921</u>

	For the year ended December 31, 2017						Ending balance
	Beginning balance	Business combination	Acquisitions	Disposals	Depreciation	Others (*1)	
Land	₩ 9,994,777	₩ 116,329	₩ 29,026	₩ (462,002)	₩ -	₩ 67,727	₩ 9,745,857
Buildings	3,365,986	401,849	12,945	(23,299)	(155,939)	229,545	3,831,087
Structures	1,313,084	35,823	56,654	(24,026)	(106,340)	296,698	1,571,893
Ships and vessels	2,671,277	-	1,442	-	(127,209)	(237,026)	2,308,484
Machinery and equipment	15,680,963	324,176	700,040	(73,552)	(3,157,036)	3,692,229	17,166,820
Vehicles	825,012	2,867	52,907	(17,468)	(19,323)	(71,998)	771,997
Others	3,029,187	11,007	1,017,824	(41,668)	(743,189)	(148,270)	3,124,891
Construction-in-progress	4,152,219	86,168	3,541,049	(9,844)	-	(4,995,169)	2,774,423
	<u>₩ 41,032,505</u>	<u>₩ 978,219</u>	<u>₩ 5,411,887</u>	<u>₩ (651,859)</u>	<u>₩ (4,309,036)</u>	<u>₩ (1,166,264)</u>	<u>₩ 41,295,452</u>

(*1) Other movements includes exclusion in the scope of consolidation, impairment losses, transfer of construction-in-progress to depreciable assets and investment property, net translation differences and others.

(3) Borrowing costs capitalized

Borrowing costs capitalized and capitalization rates for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
Property, plant and equipment and intangible assets	₩	26,728	₩	27,100
Capitalization rate		2.6% ~ 5.4%		2.4% ~ 4.7%

12. Investment property

(1) Details of investment property as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
Acquisition cost	₩	549,023	₩	659,702
Accumulated depreciation and accumulated impairment loss		(45,057)		(36,856)
	<u>₩</u>	<u>503,966</u>	<u>₩</u>	<u>622,846</u>

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12. Investment property (cont'd)

(2) Changes in investment property for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						Ending balance
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1)		
Land	₩ 307,436	₩ 213	₩ (101,277)	₩ -	₩ (5,159)	₩	201,213
Buildings	314,736	535	(4,043)	(7,885)	(1,218)		302,125
Structures	674	-	-	(46)	-		628
	<u>₩ 622,846</u>	<u>₩ 748</u>	<u>₩ (105,320)</u>	<u>₩ (7,931)</u>	<u>₩ (6,377)</u>	<u>₩</u>	<u>503,966</u>

	For the year ended December 31, 2017						Ending balance
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1)		
Land	₩ 384,725	₩ 285	₩ (1,758)	₩ -	₩ (75,816)	₩	307,436
Buildings	341,449	3,968	(815)	(9,054)	(20,812)		314,736
Structures	1,609	-	-	(67)	(868)		674
	<u>₩ 727,783</u>	<u>₩ 4,253</u>	<u>₩ (2,573)</u>	<u>₩ (9,121)</u>	<u>₩ (97,496)</u>	<u>₩</u>	<u>622,846</u>

(*1) This includes net translation differences, transferred amounts to property, plant and equipment and others.

(3) Details of profit or loss recognized for the year ended December 31, 2018 with regards to investment property are as follows (Korean won in millions):

	December 31, 2018	
Rental revenue	₩	69,512
Depreciation		(7,931)
	<u>₩</u>	<u>61,581</u>

The Group does not distinguish between rental revenue and related operating expenses.

(4) As at December 31, 2018, the fair value of investment property is ₩575,463 million.

13. Goodwill

(1) Changes in goodwill for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Beginning balance	₩ 857,514	₩ 575,233
Business combination (*1)	1,538,585	319,934
Others (*2)	(16,573)	(37,653)
Ending balance	<u>₩ 2,379,526</u>	<u>₩ 857,514</u>

(*1) The amount of business combination for the year ended December 31, 2018 consists of goodwill resulting from acquiring shares of Life & Security Holdings Co.,Ltd., and others (see Note 38 Business Combination).

(*2) Others include net translation differences, transferred amounts to an asset held for sale and others.

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13. Goodwill (cont'd)

(2) Impairment testing of goodwill

1) Goodwill of each operating segment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
SK Holdings Co., Ltd.	₩ 616,006	₩ 277,227
Group of SK Innovation Co., Ltd.	112,247	108,797
Group of SK Telecom Co., Ltd.	1,225,949	53,911
Group of SK Networks Co., Ltd.	253,048	253,004
Group of SK Engineering & Construction Co., Ltd.	144,116	144,116
Others	28,160	20,459
	<u>₩ 2,379,526</u>	<u>₩ 857,514</u>

As a result of goodwill impairment test, there is no operating segment of which the carrying amount exceeds the recoverable amount, so there is no impairment loss recognized during the current reporting period.

2) Significant assumptions to estimate the recoverable amounts reflected the management's expectation of future trend considered with external and internal (historical) information.

Significant assumptions used in impairment testing of goodwill for the year ended 2018 are as follows:

	Recoverable amount	Growth rate (*1)	Discount rate (*2)
SK Holdings Co., Ltd	Value in use	1.0% ~ 2.5%	10.6% ~ 11.1%
Group of SK Innovation Co., Ltd.	Value in use	2.0%	11.6% ~ 13.2%
Group of SK Telecom Co., Ltd.	Value in use and Third party intention price	0.0% ~ 2.0%	9.5% ~ 14.4%
Group of SK Networks Co., Ltd.	Value in use	1.0%	9.2%
Group of SK Engineering & Construction Co., Ltd.	Value in use	0.0%	9.9%

(*1) Future cash flows for additional periods after the estimated period are estimated using a fixed growth rate.

(*2) The discount rate used to determine the recoverable amount of each operating segment is based on the weighted-average cost of capital.

14. Intangible assets

(1) Details of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						
	Beginning balance	Business combination	Acquisitions	Disposals	Amortization	Others (*2)	Ending balance
Development costs	₩ 94,548	₩ 244	₩ 50,402	₩ (2,963)	₩ (23,018)	₩ 3,077	₩ 122,290
Facility usage rights	58,391	-	2,239	(50)	(8,723)	2,015	53,872
Industrial property rights	114,868	-	6,855	(1,749)	(8,203)	(20,856)	90,915
Frequency usage rights	2,176,940	-	1,366,926	-	(403,888)	-	3,139,978
Customer-related assets	1,822,290	851,469	213	-	(165,478)	(109,805)	2,398,689
Membership (*1)	226,021	700	21,166	(12,581)	-	(5,981)	229,325
Development costs for petroleum resource	1,768,834	315,782	310,565	-	(72,364)	31,891	2,354,708
Brand-related assets (*1)	2,204,405	392,579	-	-	-	(373,872)	2,223,112
Developed technology	1,175,916	55,877	-	-	(143,412)	(2,159)	1,086,222
Others (*3)	<u>1,831,646</u>	<u>15,050</u>	<u>170,076</u>	<u>(11,240)</u>	<u>(507,745)</u>	<u>614,301</u>	<u>2,112,088</u>
	<u>₩ 11,473,859</u>	<u>₩ 1,631,701</u>	<u>₩ 1,928,442</u>	<u>₩ (28,583)</u>	<u>₩ (1,332,831)</u>	<u>₩ 138,611</u>	<u>₩ 13,811,199</u>

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14. Intangible assets (cont'd)

	For the year ended December 31, 2017						Ending balance
	Beginning balance	Business combination	Acquisitions	Disposals	Amortization	Others (*2)	
Development costs	₩ 77,867	₩ 518	₩ 43,224	₩ (404)	₩ (22,793)	₩ (3,864)	₩ 94,548
Facility usage rights	54,435	7,050	7,287	(1,091)	(8,615)	(675)	58,391
Industrial property rights	126,524	4	3,168	(148)	(7,863)	(6,817)	114,868
Frequency usage rights	2,580,828	-	-	-	(403,888)	-	2,176,940
Customer-related assets	1,439,745	539,969	1,054	-	(151,214)	(7,264)	1,822,290
Membership (*1)	222,513	17,560	21,985	(16,022)	-	(20,015)	226,021
Development costs for petroleum resource	1,775,135	-	225,183	-	(98,547)	(132,937)	1,768,834
Brand-related assets (*1)	2,185,119	19,747	-	-	-	(461)	2,204,405
Developed technology	1,039,213	285,488	-	-	(131,835)	(16,950)	1,175,916
Others (*3)	1,695,778	8,140	152,777	(21,393)	(498,757)	495,101	1,831,646
	<u>₩ 11,197,157</u>	<u>₩ 878,476</u>	<u>₩ 454,678</u>	<u>₩ (39,058)</u>	<u>₩ (1,323,512)</u>	<u>₩ 306,118</u>	<u>₩ 11,473,859</u>

- (*1) Membership and brand-related assets are classified as intangible assets with infinite useful lives and are not amortized.
(*2) This includes impairment loss, net translation differences, transfer to intangible assets from construction-in-progress and others.
(*3) This comprises intangible assets recognized through business combination, software, usable and profitable donation assets and others.

(2) Impairment testing of brand-related assets

The Company has estimated the recoverable amount of brand-related assets with indefinite useful lives for the impairment test. Significant assumptions to estimate the recoverable amounts reflected the management's expectation of future trend considered with external and internal (historical) information.

Significant assumptions used in impairment testing of brand-related assets as at December 31, 2018 are as follows:

Value in use	Growth rate (*1)	Discount rate (*2)
	1.00%	11.5% ~ 14.8%

- (*1) Future cash flows for additional periods after the estimated period are estimated using a fixed growth rate.
(*2) The discount rate was estimated by adding risk premium to weighted average cost of capital.

As a result of goodwill impairment test of brand-related assets, the carrying amount does not exceed the recoverable amount, so there is no impairment loss recognized during the current reporting period.

15. Borrowings and bonds payable

(1) Details of borrowings and bonds payable as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Short-term borrowings (*1)	₩ 3,426,330	₩ -	₩ 2,999,032	₩ -
Bonds and long-term borrowings:				
Bonds payable	3,889,861	21,930,612	5,290,911	18,193,965
Long-term borrowings	1,135,002	6,959,921	1,257,235	5,165,553
	<u>5,024,863</u>	<u>28,890,533</u>	<u>6,548,146</u>	<u>23,359,518</u>
	<u>₩ 8,451,193</u>	<u>₩ 28,890,533</u>	<u>₩ 9,547,178</u>	<u>₩ 23,359,518</u>

- (*1) It includes transferred accounts receivable that has not been removed and borrowings collateralized for accounts receivable amounting to ₩539,977 million and ₩300,621 million as at December 31, 2018 and 2017, respectively.

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15. Borrowings and bonds payable (cont'd)

(2) Details of bonds payable as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018	December 31, 2017
SK Holdings Co., Ltd.	₩ 6,210,000	₩ 6,060,000
SK Innovation Co., Ltd.	1,319,050	634,990
SK Energy Co., Ltd.	2,380,000	1,730,000
SK Global Chemical Co., Ltd.	910,000	490,000
SK Incheon Petrochem Co., Ltd.	1,450,000	1,230,000
SK Lubricants Co., Ltd.	480,000	300,000
SK Telecom Co., Ltd.	5,743,533	5,470,238
SK Broadband Co., Ltd.	1,745,430	1,631,420
iriver Co., Ltd.	5,479	5,558
SK Networks Co., Ltd.	1,240,000	1,160,000
SK Magic Co., Ltd.	110,000	40,000
SKC Co., Ltd.	730,000	680,000
SKC Solmics Co., Ltd.	52,362	59,000
SK Telesys Co., Ltd.	30,000	40,000
SK Shipping Co., Ltd.	-	517,428
SK E&S Co., Ltd.	740,000	1,040,000
Paju Energy Service Co., Ltd.	650,000	500,000
Wirye Energy Service Co., Ltd.	385,000	385,000
Narae Energy Service Co., Ltd.	40,000	80,000
SK Engineering & Construction Co., Ltd.	710,000	795,000
SK Materials Co., Ltd.	340,000	200,000
SK Siltron Co., Ltd.	390,000	180,000
	<u>25,660,854</u>	<u>23,228,634</u>
Addition: premium on bonds payable	159,619	256,242
Less: current portion	<u>(3,889,861)</u>	<u>(5,290,911)</u>
	<u>₩ 21,930,612</u>	<u>₩ 18,193,965</u>

(3) Details of long-term borrowings as at December 31, 2018 and 2017 are as follows (Korean won in millions):

Financial institution	Description	Interest rate (%)	December 31, 2018	December 31, 2017
Korea Development Bank and others	General	0.75 ~ 4.60	₩ 3,216,081	₩ 1,493,559
Korea Development Bank and others (*1)	Fund for facility	0.75 ~ 5.37	2,523,160	1,939,243
Korea Eximbank	Foreign borrowings	3.47 ~ 6.00	789,766	496,621
Korea Energy Agency (*2)	Fund for mine exploration	0.00 ~ 7.00	88,278	81,757
Econg 1st Co., Ltd. and others	Callable preferred share	4.25 ~ 6.40	250,000	450,000
Korea Development Bank and others	Fund for operation	2.20 ~ 2.78	149,000	499,741
Kookmin Bank and others	Fund for supply pipeline	1.75	8,544	12,512
Kookmin Bank	Fund for catalyzing information	-	-	717
KEB Hana Bank and others	Fund for reasonable energy consumption	1.75 ~ 1.80	5,267	6,245
NH Bank	Fund for safety management	1.75	680	1,121
Citibank and others (*3)	Takeover	LIBOR(3M) + 1.00	212,439	203,566
MD Prime 1st Co., Ltd. and others	Others	3.07, 3.20	<u>846,906</u>	<u>1,231,906</u>
Sub-total			8,090,121	6,416,988
Addition: premium			4,802	5,800
Less: current portion			<u>(1,135,002)</u>	<u>(1,257,235)</u>
Total			<u>₩ 6,959,921</u>	<u>₩ 5,165,553</u>

15. Borrowings and bonds payable (cont'd)

- (*1) The borrowings from Korea Development Bank amounting to ₩109,897 million of SK Global Chemical Co., Ltd., a subsidiary of the Company, are related to the facility borrowings of Ulsan Aromatics Co., Ltd., which is accounted for as joint operation, and the amount of the Group's repayment obligation according to the cash deficiency support agreement is recorded as borrowings as at December 31, 2018.
- (*2) As at December 31, 2018 and 2017, the Group holds loans from Korea Energy Agency for the purpose of oil exploration and development in which there is no repayment obligation in case for failure in exploration for ₩53,544 million and ₩45,693 million, respectively.
- (*3) SK Global Chemical Co., Ltd., one of the subsidiaries, has a repayment obligation for borrowings of SK Global Chemical Americas, Inc. in the event of default. The purpose of the borrowings of SK Global Chemical Americas, Inc. was to acquire The Dow Chemical Company's EAA business domiciled in the US and Spain and its tangible-intangible assets.

Long-term borrowings presented above are to be repaid either in installments or all at once at maturity. Financial instruments and other assets of the Group are pledged as detailed in Note 34.

16. Long-term other accounts payable

Details of long-term other accounts payable as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018			
	Nominal value	Discount on long-term other payable	Current portion	Long-term other accounts payable
Frequency usage right	2,476,738	(103,874)	(423,884)	1,948,980
Others	62,971	(168)	(359)	62,444
	<u>₩ 2,539,709</u>	<u>₩ (104,042)</u>	<u>₩ (424,243)</u>	<u>₩ 2,011,424</u>
	December 31, 2017			
	Nominal value	Discount on long-term other payable	Current portion	Long-term other accounts payable
Bare Boat Charter Hire Purchase contract (*1)	₩ 2,988,380	₩ (326,262)	₩ (312,086)	₩ 2,350,032
Frequency usage right	1,710,255	(61,048)	(301,751)	1,347,456
Others	50,948	(346)	(1,173)	49,429
	<u>₩ 4,749,583</u>	<u>₩ (387,656)</u>	<u>₩ (615,010)</u>	<u>₩ 3,746,917</u>

- (*1) Under the Bare Boat Charter Hire Purchase contracts, if certain requirements are met, creditors have reimbursement recourse options that allow an early redemption of the bond before the due date. Most of the Bare Boat Charter Hire Purchase contracts are based on the contracts of affreightment with Korea Gas Corporation and others.

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17. Provisions

Changes in the provisions for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						
	Beginning balance	Business combination	Increase	Decrease	Ending balance	Current	Non-current
Provision for sale warranties	₩ 65,372	₩ -	₩ 8,267	₩ (3,260)	₩ 70,379	₩ 3,525	₩ 66,854
Provision for handset subsidy	3,874	-	-	(3,874)	-	-	-
Provision for service / construction warranties	61,576	-	38,145	(21,253)	78,468	78,468	-
Provision for restoration	114,921	4,944	11,414	(3,747)	127,532	48,652	78,880
Provision for losses on contracts	27,596	-	143,003	(71,123)	99,476	99,476	-
Others (*1)	140,463	89	190,005	(77,250)	253,307	122,104	131,203
	<u>₩ 413,802</u>	<u>₩ 5,033</u>	<u>₩ 390,834</u>	<u>₩ (180,507)</u>	<u>₩ 629,162</u>	<u>₩ 352,225</u>	<u>₩ 276,937</u>

(*1) Other provisions include greenhouse gas emissions provision of ₩64,757 million, and the provision is recognized only when actual emissions exceed the emission rights granted and still held. Permitted greenhouse gas emissions were 11,871,167 KAU, and estimated greenhouse gas emissions were 13,340,497 KAU in 2018.

	For the year ended December 31, 2017						
	Beginning balance	Business combination	Increase	Decrease	Ending balance	Current	Non-current
Provision for sale warranties	₩ 16,036	₩ 1,413	₩ 56,656	₩ (8,733)	₩ 65,372	₩ 3,535	₩ 61,837
Provision for handset subsidy	24,711	-	2	(20,839)	3,874	3,874	-
Provision for service / construction warranties	57,561	-	20,659	(16,644)	61,576	61,576	-
Provision for restoration	116,019	-	14,948	(16,046)	114,921	41,898	73,023
Provision for losses on contracts	155,154	418	54,401	(182,377)	27,596	27,596	-
Others	155,653	-	89,139	(104,329)	140,463	108,321	32,142
	<u>₩ 525,134</u>	<u>₩ 1,831</u>	<u>₩ 235,805</u>	<u>₩ (348,968)</u>	<u>₩ 413,802</u>	<u>₩ 246,800</u>	<u>₩ 167,002</u>

18. Retirement benefit obligation

(1) Details of retirement benefit obligation as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018	December 31, 2017
Present value of defined benefit obligation	₩ 2,741,488	₩ 2,260,864
Fair value of plan assets (*1)	(2,353,187)	(2,049,033)
Total	<u>₩ 388,301</u>	<u>₩ 211,831</u>

(*1) The Group has recognized ₩31,926 million and ₩45,952 million as defined benefit assets as at December 31, 2018 and 2017, respectively.

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18. Retirement benefit obligation (cont'd)

(2) Changes in the retirement benefit obligation for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	<u>For the year ended December 31, 2018</u>		
	<u>Present value of defined benefit obligation</u>	<u>Fair value of plan assets</u>	<u>Total</u>
Beginning balance	₩ 2,260,864	₩ (2,049,033)	₩ 211,831
Business combination	123,943	(28,880)	95,063
Provision for pension benefits:			
Current service cost	361,812	-	361,812
Past service cost	965	-	965
Net interest expense (income)	70,299	(61,785)	8,514
Remeasurement:			
Return on plan assets	-	30,797	30,797
(excluding amounts included in net interest expenses)			
Actuarial changes arising from changes in financial assumptions and others	150,131	-	150,131
Contributions by employer directly to plan assets	-	(428,883)	(428,883)
Benefit paid	(193,893)	166,068	(27,825)
Others	(32,633)	18,529	(14,104)
Ending balance	<u>₩ 2,741,488</u>	<u>₩ (2,353,187)</u>	<u>₩ 388,301</u>

	<u>For the year ended December 31, 2017</u>		
	<u>Present value of defined benefit obligation</u>	<u>Fair value of plan assets</u>	<u>Total</u>
Beginning balance	₩ 1,961,251	₩ (1,770,247)	₩ 191,004
Business combination	131,744	(93,050)	38,694
Provision for pension benefits:			
Current service cost	336,925	-	336,925
Past service cost	1,734	-	1,734
Net interest expense (income)	52,144	(46,717)	5,427
Remeasurement:			
Return on plan assets	-	17,224	17,224
(excluding amounts included in net interest expenses)			
Actuarial changes arising from changes in financial assumptions and others	(52,745)	-	(52,745)
Contributions by employer directly to plan assets	-	(347,420)	(347,420)
Benefit paid	(221,029)	191,306	(29,723)
Others	50,840	(129)	50,711
Ending balance	<u>₩ 2,260,864</u>	<u>₩ (2,049,033)</u>	<u>₩ 211,831</u>

(3) As at December 31, 2018 and 2017, 52.24% and 66.03% of the plan assets, respectively, consist of cash and cash equivalents and debt instruments.

(4) The principal assumptions used in actuarial calculation as at December 31, 2018 and 2017 are as follows:

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Discount rate for defined benefit obligations	2.08% ~ 3.75%	2.00% ~ 4.03%
Expected rate of salary increase	1.50% ~ 5.22%	2.60% ~ 5.93%

18. Retirement benefit obligation (cont'd)

(5) The sensitivity analysis for significant actuarial assumptions as at December 31, 2018 is as follows (Korean won in millions).

	Sensitivity level	Impact on the defined benefit obligation	
		Increase	Decrease
Discount rate for defined benefit obligations	0.5% point	₩ (120,995)	₩ 131,503
Expected rate of salary increase	0.5% point	125,958	(117,635)

The sensitivity analysis above has been done under the assumption that all other variables remain unchanged. However, actual results may change through the interaction among other variables.

19. Other assets and liabilities

(1) Details of other assets as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
Current assets:				
Short-term loans	₩	97,093	₩	123,130
Accrued income		112,492		44,240
Advance payments		969,326		793,180
Prepaid expenses		2,209,732		721,801
Held-to-maturity investments		-		45
Guarantee deposits		246,008		209,181
Derivative financial assets		107,416		92,413
Finance lease receivables		-		73,199
Other contract assets		90,154		-
Other assets		40,771		34,361
	₩	<u>3,872,992</u>	₩	<u>2,091,550</u>
Non-current assets:				
Long-term prepaid expenses	₩	1,877,441	₩	1,079,822
Long-term loans		477,742		378,534
Held-to-maturity investments		-		825
Guarantee deposits		801,500		740,326
Derivative financial assets		95,903		282,229
Finance lease receivables		-		168,490
Other long-term contract assets		43,821		-
Defined benefit assets (*1)		31,926		45,952
Other assets		122,078		126,762
	₩	<u>3,450,411</u>	₩	<u>2,822,940</u>

(*1) The excess amount of certain plans in the Group has not been offset because the amount was not entitled and intended to settle the defined benefit obligation of other plans (see Note 18).

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19. Other assets and liabilities (cont'd)

(2) Details of other liabilities as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Current liabilities:		
Accrued expenses	₩ 3,109,033	₩ 2,875,130
Dividends payable	3,851	1,423
Advance received	2,286,817	1,947,370
Unearned revenue	67,005	255,149
Withholdings	2,075,802	1,943,249
Leasehold deposits received	127,307	162,965
Income tax payable	676,952	895,672
Derivative financial liabilities	68,858	147,285
Finance lease liabilities	4,459	1,676
Finance guarantee liabilities	389	50
Other contract liabilities	141,338	-
Others	42,008	1,029
	<u>₩ 8,603,819</u>	<u>₩ 8,230,998</u>
Non-current liabilities:		
Long-term unearned revenue	₩ 492,804	₩ 413,046
Leasehold deposits received	320,354	310,050
Derivative financial liabilities	261,710	33,702
Finance lease liabilities	16,935	10
Financial guarantee liabilities	15,882	11,933
Other long-term contract liabilities	43,107	-
Others (*1)	320,322	370,749
	<u>₩ 1,471,114</u>	<u>₩ 1,139,490</u>

(*1) Includes long-term employee benefits amounting to ₩59,423 million and ₩54,679 million as at December 31, 2018 and 2017, respectively.

(3) The details of incremental costs of obtaining a contract as at December 31, 2018 and January 1, 2018 are as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>January 1, 2018</u>
Current incremental costs of obtaining a contract	₩ 1,606,137	₩ 1,718,628
Non-current incremental costs of obtaining a contract	825,222	714,735
	<u>₩ 2,431,359</u>	<u>₩ 2,433,363</u>

The Group pays fees to its dealers based on the performance of customer recruitment and contract renewal relating to telecommunication services, etc., and among these fees, costs that would not have been incurred if there were no contract with the customer is recognized as prepaid expenses. In the prior period such costs were expensed when incurred. The asset is amortized on a straight-line basis over the estimated contract period with the related customer. On the other hand, the incremental cost of obtaining a contract recognised as an asset for the current period is ₩2,032,432 million and is recognised as a payment fee on the consolidated statement of comprehensive income.

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20. Derivative financial assets and liabilities

(1) Details of derivative financial assets and liabilities as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Firm contracts	₩ 19,249	₩ 4,640	₩ 9,320	₩ -
Swap contracts	10,527	(181,955)	(77,784)	41,234
Forward contracts	415	(5,895)	13,182	(17,502)
Futures contracts	8,367	306	420	-
Options contracts	-	17,097	(10)	-
Embedded derivative	-	-	-	224,795
	<u>₩ 38,558</u>	<u>₩ (165,807)</u>	<u>₩ (54,872)</u>	<u>₩ 248,527</u>
Derivative financial assets	₩ 107,416	₩ 95,903	₩ 92,413	₩ 282,229
Derivative financial liabilities	(68,858)	(261,710)	(147,285)	(33,702)

(2) The Group has entered into derivatives (such as foreign exchange forwards, foreign exchange swap and interest swap) contracts in order to avoid exchange rate risk of foreign currency assets and liabilities and the interest rate risk associated with debts. As at December 31, 2018, significant derivative financial instruments that the Group holds as a hedge or held-for-trading are as follows:

Segments	Purpose of transaction	Classification	Financial institutes
SK Holdings Co., Ltd.	Hedge of foreign currency exchange risk of foreign currency denominated contract and others	Foreign exchange forwards and shareholder agreement	KEB Hana Bank
SK Innovation Co., Ltd.	Cash flow hedge of forecasted sales of products and the risk of changes in market interest rates	Merchandise derivative and interest swaps	Societe Generale, DBS Bank and others
SK Telecom Co., Ltd.	Hedge of foreign currency exchange risk of foreign currency denominated bond, hedge of currency exchange, interest rate risk of floating rate foreign currency denominated bond and the risk of changes in market interest rates and others	Foreign exchange swaps and interest swaps	Korea Development Bank, DBS Bank and others
SK Networks Co., Ltd.	Hedge of foreign currency exchange risk of foreign currency denominated debt and bond	Foreign exchange forwards and others	KEB Hana Bank, Kookmin Bank and others
SKC Co., Ltd.	Hedge of foreign currency exchange risk of foreign currency denominated debt and bond and others	Foreign exchange forwards and others	KEB Hana Bank, Standard Chartered Bank, NH Bank, Kookmin Bank and others
SK E&S Co., Ltd.	Hedge of foreign currency exchange risk of foreign currency denominated borrowings and hedge of interest rate of floating rate borrowings	Foreign exchange forwards and interest rate swaps	Korea Development Bank and Woori Bank
SK Engineering & Construction Co., Ltd.	Price change hedge of natural gas purchase contract	Merchandise swaps	Barclays Bank and JP Morgan
	Hedge of changes in revenue from construction contract denominated in foreign currency	Foreign exchange forwards	JP Morgan, Credit Agricole and others
	Hedge of changes in construction cost of construction contract denominated in foreign currency and others	Foreign exchange forwards	Standard Chartered Bank, Kookmin Bank and others

21. Equity

(1) Details of issued capital as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	December 31, 2018	December 31, 2017
Number of shares authorized for issue	400,000,000	400,000,000
Per share (Korean won)	₩ 200	₩ 200
Number of shares issued:		
Ordinary share	70,360,297	70,360,297
Preferred share	566,135	566,135
Issued capital:		
Ordinary share	₩ 15,272	₩ 15,272
Preferred share	113	113
	<u>₩ 15,385</u>	<u>₩ 15,385</u>

The Company retired 6,000,000 shares of its treasury share (par value: ₩1,200 million) by reducing retained earnings, which resulted in a difference between total par value of ordinary shares and issued capital.

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21. Equity (cont'd)

(2) Details of other paid-in capital as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Paid-in surplus (*1)	₩ 5,605,831	₩ 5,605,831
Treasury shares (*2)	(904,493)	(904,491)
Others	(69,383)	(588,865)
	<u>₩ 4,631,955</u>	<u>₩ 4,112,475</u>

(*1) During the year ended December 31, 2015, the Company repurchased treasury shares of ₩3,369,310 million from merger with SK Holdings Co., Ltd. which was recognized as a contra-equity account on additional paid-in capital.

(*2) As at December 31, 2018, treasury stock consists of those acquired to increase the enterprise value and to stabilize share price (3,514,276 ordinary shares), and those acquired from repurchase of shares from dissenting shareholders on business combination and shares arising from odd lot shares (11,021,674 ordinary shares and 1,818 preferred shares) during the 2015 reporting period. Out of those shares, 5 ordinary shares are acquired during the current reporting period.

(3) Details of retained earnings as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Legal reserve (*1)	₩ 7,693	₩ 7,693
Voluntary reserve	65,230	71,563
Unappropriated retained earnings	12,144,396	9,758,363
	<u>₩ 12,217,319</u>	<u>₩ 9,837,619</u>

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

(4) Details of dividends proposed for approval at the annual ordinary shareholders' meeting for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended			
	<u>December 31, 2018</u>		<u>December 31, 2017</u>	
	<u>Ordinary share</u>	<u>Preferred share</u>	<u>Ordinary share</u>	<u>Preferred share</u>
Number of shares (*1)	55,824,347	564,317	55,824,352	564,317
Par value per share (Korean won) ₩	200	200	200	200
Dividend rate	2.000%	2.025%	2.000%	2.025%
Dividends	<u>₩ 223,297</u>	<u>₩ 2,286</u>	<u>₩ 223,297</u>	<u>₩ 2,286</u>

(*1) The total number of shares was calculated from the number of issued shares excluding treasury shares.

SK Holdings Co., Ltd. and its subsidiaries
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21. Equity (cont'd)

(5) Details of other capital components as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Net loss on valuation of financial assets measured at FVOCI	₩ (22,860)	₩ -
Net gain on valuation of available-for-sale financial assets	-	60,324
Changes in equity in equity method	(86,248)	(153,763)
Net gain (loss) on valuation of cash flow hedges	10,756	(7,752)
Net loss on translation of foreign operation	(138,791)	(214,606)
Net gain on foreign currency translation	-	10,400
	<u>₩ (237,143)</u>	<u>₩ (305,397)</u>

(6) Upon resolution by the shareholders and the Board of Directors, the Group established a stock option program that entitles key management personnel an option to purchase ordinary shares. The terms and conditions related to the grants of the stock options granted under the share option program are as follows:

1) SK Holdings Co., Ltd.

	<u>1-1</u>	<u>1-2</u>	<u>1-3</u>
Grant date	2017-03-24		
Type of shares to be issued	Ordinary shares		
Grant method	Reissue of treasury shares, but if the stock option's exercise price is lower than the stock's real price (evaluated based on exercise date), the Group may settle the difference in cash or with treasury stock equivalent to the difference amount.		
Number of shares (shares)	41,429	41,430	41,431
Exercise price (Korean won)	₩ 226,290	₩ 244,400	₩ 263,950
Contractual life of options	2019.03.25 ~ 2022.03.24	2020.03.25 ~ 2023.03.24	2021.03.25 ~ 2024.03.24
Vesting conditions	2 year service from the grant date	3 year service from the grant date	4 year service from the grant date

Share compensation expense recognized during the current reporting period is ₩1,586 million (total : ₩2,806 million), and the remaining share compensation expense to be recognized in later periods is ₩1,481 million.

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21. Equity (cont'd)

The Group used the binomial option pricing model, and the inputs used in the measurement of the fair values at the grant date of the share-based payment plans are as follows (Korean won):

	1-1	1-2	1-3
Risk-free interest rate	1.86%	1.95%	2.07%
Life of the options	5 Years	6 Years	7 Years
Expected price (closing price on the preceding)	₩ 236,000	₩ 236,000	₩ 236,000
Expected volatility	16.78%	16.78%	16.78%
Rate of returns	1.60%	1.60%	1.60%
Exercise price	₩ 226,290	₩ 244,400	₩ 263,950
Fair value per share	₩ 38,317	₩ 34,200	₩ 30,962

2) Subsidiaries of the Company established a stock option program that entitles key management personnel an option to purchase ordinary shares. Share-based compensation expenses recognized under the share option program are as follows (Korean won in millions):

	Current	Accumulated	Remaining	Total
Subsidiaries of SK Innovation Co., Ltd.	₩ 668	₩ 668	₩ 1,227	₩ 1,895
Subsidiaries of SK Telecom Co., Ltd.	789	1,203	804	2,007
Subsidiaries of SK Networks Co., Ltd.	253	253	494	747
Subsidiaries of SKC Co., Ltd.	479	479	806	1,285
Subsidiaries of SK E&S Co., Ltd.	199	348	162	510
Others	230	230	596	826
	₩ 2,618	₩ 3,181	₩ 4,089	₩ 7,270

22. Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Salaries	₩ 1,219,103	₩ 1,112,987
Provision for pension benefits	116,368	123,217
Employee welfare benefits	243,381	201,983
Travel	72,088	59,901
Bad debt expenses	148,009	17,710
Communications	8,945	9,737
Utilities	35,991	39,869
Taxes and dues	95,421	70,377
Supplies	30,000	20,082
Rents	177,283	168,967
Depreciation	223,111	206,599
Amortization	181,573	158,725
Repairs	24,485	25,437
Insurance	30,183	28,874
Advertising	637,994	697,760
Research and development	380,465	403,219
Education and examination	89,104	72,967
Outsourcing technology services	699,021	669,098
Transport	380,818	668,801
Others	169,335	192,626
	₩ 4,962,678	₩ 4,948,936

SK Holdings Co., Ltd. and its subsidiaries
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23. Financial income and costs

Details of financial income and costs for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Financial income:		
Interest income	₩ 233,866	₩ 208,640
Gain on foreign currency transactions	987,803	1,269,447
Gain on foreign currency translation	227,796	402,222
Gain on transactions of derivatives	1,523,271	678,034
Gain on valuation of derivatives	826,045	414,839
Others	125,459	38
	<u>₩ 3,924,240</u>	<u>₩ 2,973,220</u>
Financial costs:		
Interest expenses	₩ 1,067,949	₩ 783,530
Loss on foreign currency transactions	1,172,121	1,207,306
Loss on foreign currency translation	234,590	285,550
Loss on transactions of derivatives	1,001,024	780,895
Loss on valuation of derivatives	1,030,292	223,403
Others	48,761	4,102
	<u>₩ 4,554,737</u>	<u>₩ 3,284,786</u>

24. Other non-operating income and expenses

(1) Details of other non-operating income for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Other non-operation income:		
Dividend income	₩ 32,690	₩ 21,666
Rental income	630	250
Gain on disposal of investments in subsidiaries and associates	99,108	196,361
Gain on disposal of property, plant and equipment	215,057	50,491
Gain on disposal of intangible assets	3,265	2,303
Gain on disposal of investment property	12,121	861
Others	397,252	338,651
	<u>₩ 760,123</u>	<u>₩ 610,583</u>

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24. Other non-operating income and expenses (cont'd)

(2) Details of other non-operating expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Other non-operation expenses:		
Loss on disposal of trade accounts receivable	₩ 7,140	₩ 14,216
Loss on impairment of available-for-sale financial assets	-	126,513
Loss on disposal of investments in subsidiaries and associates	59,366	98,096
Loss on impairment of investments in associates	3,214	10,049
Loss on disposal of property, plant and equipment	170,106	97,925
Loss on impairment of property, plant and equipment	74,402	150,993
Loss on disposal of intangible assets	12,809	17,777
Loss on impairment of intangible assets	90,814	52,671
Loss on impairment of other investment property	4,685	13,093
Donations	194,583	174,304
Others	337,718	330,266
	<u>₩ 954,837</u>	<u>₩ 1,085,903</u>

25. Expense classified based on nature of expense

Details of classification based on nature of expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Employee benefits	₩ 6,168,026	₩ 5,656,674
Depreciation and amortization	5,471,411	5,619,783
Network connection	815,369	879,767
Transport	479,990	800,623
Advertising	630,420	709,599
Operating lease payments and rents	857,144	843,920
Others	17,499,112	14,864,095
Use of raw materials and purchase of finished goods and merchandise	64,982,315	55,622,815
Changes in finished goods and semi-finished goods	(89,884)	(129,471)
	<u>₩ 96,813,903</u>	<u>₩ 84,867,805</u>

26. Income taxes

(1) Components of income tax expense for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Current income tax	₩ 1,288,185	₩ 1,533,873
Adjustments in respect of current income tax of prior year	(3,519)	(102,839)
Origination and reversal of temporary difference	723,634	759,801
Income tax related to other capital components	70,503	(11,547)
Others	13,982	233
Income tax expense	<u>₩ 2,092,785</u>	<u>₩ 2,179,521</u>
Income tax expense from continuing operation	₩ 1,924,555	₩ 2,251,751
Income tax expense (benefits) from discontinued operation	168,230	(72,230)

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26. Income taxes (cont'd)

(2) Details of tax effect on temporary difference charged or credited directly to shareholders' equity for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Remeasurement gain on defined benefit plan	₩ 34,962	₩ 8,814
Gain (loss) on valuation of available-for-sale financial assets	55,586	(74,251)
Equity adjustments of investments in associates and joint ventures	(106)	7,152
Gain (loss) on valuation of derivatives	(13,939)	(5,177)
Others	(6,000)	51,915
	<u>₩ 70,503</u>	<u>₩ (11,547)</u>

(3) Reconciliations of income before income tax at the Korea statutory tax rate to income tax expense at the effective income tax rate of the Group for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Income before income tax expense	₩ 8,243,926	₩ 7,246,003
Income before income tax expense from continuing operations	7,528,383	7,443,146
Income (loss) before income tax expense from discontinued operations	715,543	(197,143)
Applied tax rates (*1)	24.2%	24.2%
Income tax at statutory income tax rate	1,995,030	1,753,532
Non-taxable income	(261,814)	(329,462)
Non-deductible expenses	77,887	196,156
Tax credit	(43,134)	(16,316)
Unrecognized deferred income tax	(72,262)	77,439
Effect of changes in tax rates	(3,973)	100,059
Others (*1)	401,051	398,113
Income tax expense	<u>₩ 2,092,785</u>	<u>₩ 2,179,521</u>
Income tax expense from continuing operations	₩ 1,924,555	₩ 2,251,751
Income tax benefits from discontinued operations	168,230	(72,230)
Effective tax rate	25.6%	30.3%

(*1) The Company is subject to corporate income tax of Republic of Korea where the parent company is located. For the year ended December 31, 2018, the difference between the Korean tax burdens and the foreign tax burdens on foreign subsidiaries amounting to ₩448,328 million is included in others.

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26. Income taxes (cont'd)

(4) Significant changes in deferred tax assets (liabilities) for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018					
	Beginning balance	Business combination	Recognized directly in loss	Recognized directly in equity	Others	Ending balance
Temporary differences	₩ (3,626,425)	₩ (297,967)	₩ (847,594)	₩ 70,503	₩ (553,927)	₩ (5,255,410)
Tax loss carryforward	353,080	12,971	27,000	-	12,243	405,294
Tax credits carryforward	19,593	1,931	26,457	-	5,773	53,754
	<u>₩ (3,253,752)</u>	<u>₩ (283,065)</u>	<u>₩ (794,137)</u>	<u>₩ 70,503</u>	<u>₩ (535,911)</u>	<u>₩ (4,796,362)</u>
Deferred tax assets (*1)	₩ 734,524					₩ 694,690
Deferred tax liabilities (*1)	(3,988,276)					(5,491,052)

	For the year ended December 31, 2017					
	Beginning balance	Business combination	Recognized directly in loss	Recognized directly in equity	Others	Ending balance
Temporary differences	₩ (2,799,806)	₩ (170,922)	₩ (669,900)	₩ (11,547)	₩ 25,750	₩ (3,626,425)
Tax loss carryforward	345,820	55,033	(25,831)	-	(21,942)	353,080
Tax credits carryforward	67,069	5,124	(52,523)	-	(77)	19,593
	<u>₩ (2,386,917)</u>	<u>₩ (110,765)</u>	<u>₩ (748,254)</u>	<u>₩ (11,547)</u>	<u>₩ 3,731</u>	<u>₩ (3,253,752)</u>
Deferred tax assets (*1)	₩ 711,591					₩ 734,524
Deferred tax liabilities (*1)	(3,098,508)					(3,988,276)

(*1) The Group offsets tax assets and liabilities if, and only if, it has a legally enforceable right to set off current tax assets and current tax liabilities and the deferred tax assets and deferred tax liabilities related to income taxes are levied by the same tax authority.

(5) The expected expiration schedule of tax loss carryforward and tax credits carryforward for which deferred tax assets are not recognized as at December 31, 2018 is as follows (Korean won in millions):

	Tax loss carryforward	Tax credits carryforward
1 year or less	₩ 83,287	₩ 2,599
1 year ~ 2 years	129,905	17,993
2 year ~ 3 years	66,624	1,256
More than 3 years	587,808	10,049
	<u>₩ 867,624</u>	<u>₩ 31,897</u>

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27. Earnings per share

(1) Basic earnings per share for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions, except per share and weighted-average number of ordinary shares outstanding):

	For the years ended	
	December 31, 2018	December 31, 2017
Net income attributable to owners of the Company	₩ 2,253,123	₩ 1,677,432
Less: preferred share dividends	(2,850)	(2,285)
Net income attributable to ordinary share owners of the Company	₩ 2,250,273	₩ 1,675,147
Weighted-average number of ordinary share outstanding (*1)	55,824,350	55,824,357
Basic earnings per share (in Korean won) (*2)	₩ 40,310	₩ 30,007

(*1) The weighted-average number of common share outstanding is calculated by multiplying the number of shares issued by the portion of the reporting period those shares covered. The treasury shares held until the disposal date, after the date of acquisition, are excluded from the number of common shares outstanding.

(*2) Basic earnings per share are net income attributable to share owners of the parent per ordinary share.

The basis of calculating weighted-average number of ordinary shares for the years ended December 31, 2018 and 2017 is as follows:

	For the years ended	
	December 31, 2018	December 31, 2017
Weighted-average number of issued shares outstanding	70,360,297	70,360,297
Weighted-average number of treasury shares	(14,535,947)	(14,535,940)
Weighted-average number of ordinary shares outstanding	55,824,350	55,824,357

(2) Basic earnings per share from continuing operations

Basic earnings per share from continuing operations for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions, except basic earnings per share and weighted-average number of common shares outstanding):

	For the years ended	
	December 31, 2018	December 31, 2017
Net income attributable to owners of the Company	₩ 2,250,273	₩ 1,675,147
Addition: gain (loss) from discontinued operations	383,906	(42,827)
Income from continuing operations attributable to owners of the Company	₩ 1,866,367	₩ 1,717,974
Weighted-average number of ordinary shares outstanding	55,824,350	55,824,357
Basic earnings per share from continuing operations (in Korean won)	₩ 33,433	₩ 30,775

(3) Basic earnings per share from discontinued operations for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions, except basic losses per share and weighted-average number of ordinary shares outstanding):

	For the years ended	
	December 31, 2018	December 31, 2017
Gain (loss) from discontinued operations	₩ 383,906	₩ (42,827)
Weighted-average number of ordinary shares outstanding	55,824,350	55,824,357
Basic losses per share from discontinued operations (in Korean won)	₩ 6,877	₩ (768)

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28. Transactions with related parties

Balances on transactions arising from intercompany transactions within the Group were eliminated in preparing the consolidated financial statements as at and for the years ended December 31, 2018 and 2017.

(1) Details of significant transactions with the related parties for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	Company name	December 31, 2018		
		Revenue	Expenses	
Other related parties	Daehan Oil Pipeline Corporation	₩ 28,622	₩ 52,819	
	SABIC SK Nexlene Company Pte. Ltd.	3,182	158,720	
	F&U Credit Information Co., Ltd.	2,990	55,906	
	SK Wyverns Baseball Club Co., Ltd.	1,344	23,132	
	Hana Card Co., Ltd.	15,046	15,387	
	SK Hynix Inc.	4,032,327	6,255	
	SK Hynix Semiconductor (China) Ltd.	596,773	2,630	
	SK Hynix Semiconductor (Chongqing) Ltd.	53,084	22	
	SK Hynix Semiconductor HK Ltd.	-	900,772	
	SK Hystec Inc.	47,343	2,333	
	SK Hyeng Inc.	39,975	5,683	
	SK Hynix System IC	72,363	-	
	SKC Evonik Peroxide Korea Co., Ltd.	2,910	48,299	
	Mitsui Chemicals & SKC Polyurethanes, Inc.	239,923	20,705	
	Boryeong LNG Terminal Co., Ltd.	49,103	83,389	
	Eurasia Tunnel	6,332	-	
	Xe-Pian Xe-Namnoy Power Company	80,763	-	
	Hana land chip PEF 33	16,027	35,430	
	Others	64,764	68,128	
	Others (*1)	SABIC SK Nexlene Company Pte. Ltd.	174,914	217
		AnTS Co., Ltd.	309	57,282
		SK Discovery Co., Ltd.	1,102	-
		(Formerly, SK Chemicals Co., Ltd.) (*2)		
SK Chemicals Co., Ltd. (*3)		205,280	130,005	
SK Gas Co., Ltd. (*4)		480,764	362,463	
SK Advanced Co., Ltd.		3,703	7,911	
SK Gas International Pte. Ltd.		7,357	830	
SK Securities Co., Ltd.		15,072	13	
Others		16,314	23,668	
Total	₩ 6,257,686	₩ 2,061,999		

SK Holdings Co., Ltd. and its subsidiaries
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28. Transactions with related parties (cont'd)

		December 31, 2017		
Company name		Revenue	Expenses	
Other related parties	Daehan Oil Pipeline Corporation	₩ 41,562	₩ 50,624	
	SABIC SK Nexlene Company Pte. Ltd.	2,755	151,137	
	F&U Credit Information Co., Ltd.	3,441	55,293	
	SK Wyverns Baseball Club Co., Ltd.	2,394	19,539	
	Hana Card Co., Ltd.	18,283	15,124	
	SK Hynix Inc.	2,572,345	18,088	
	SK Hynix Semiconductor (China) Ltd.	110,858	723	
	SK Hynix Semiconductor (Chongqing) Ltd.	26,108	260	
	SK Hynix Semiconductor HK Ltd.	-	744,048	
	SK Hystec Inc.	28,467	2,251	
	SK Hyeng Inc.	25,342	33,604	
	SK Hynix System IC	25,115	-	
	SKC Evonik Peroxide Korea Co., Ltd.	1,111	45,272	
	Mitsui Chemicals & SKC Polyurethanes, Inc.	226,357	17,750	
	Boryeong LNG Terminal Co., Ltd.	43,473	95,001	
	Eurasia Tunnel	71,206	-	
	Xe-Pian Xe-Namnoy Power Company	143,736	-	
	Hana land chip PEF 33	15,796	33,996	
	Others	9,361	58,069	
	Others (*1)	SABIC SK Nexlene Company Pte. Ltd.	124,111	717
		AnTS Co., Ltd.	221	63,890
		SK Discovery Co., Ltd.	89,948	102,962
		(Formerly, SK Chemicals Co., Ltd.) (*2)		
SK Chemicals Co., Ltd. (*3)		84,492	15,512	
SK Gas Co., Ltd. (*4)		397,586	407,444	
SK Advanced Co., Ltd.		10,616	14,940	
SK Gas International Pte. Ltd.		19,520	-	
SK Securities Co., Ltd.		25,023	212	
Others		49,520	41,523	
Total	₩ 4,168,747	₩ 1,987,979		

(*1) Although, not designated as related parties as defined in KIFRS 1024, the entity belongs to the same conglomerate affiliates under monopoly regulation and the fair trade law.

(*2) As at December 1, 2017, SK Discovery Co., Ltd. (formerly, SK Chemicals Co., Ltd.) has been split into SK Discovery Co., Ltd. and SK Chemicals Co., Ltd.

(*3) SK Chemicals Co., Ltd. merged with SK Petrochemical Co., Ltd. on May 1, 2018. The transaction amount of SK Petrochemical Co., Ltd. is included in SK Chemicals Co., Ltd.

(*4) SK Gas Co., Ltd. merged with G.Hub Co., Ltd. on December 24, 2018. The transaction amount of G.Hub Co., Ltd. is included in SK Gas Co., Ltd.

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28. Transactions with related parties (cont'd)

(2) Details of significant outstanding balances of receivables and payables with the related parties as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	Company name	December 31, 2018		December 31, 2017	
		Receivables		Receivables	
		(*1)	Payables	(*1)	Payables
Other related parties	Daehan Oil Pipeline Corporation	₩ 3,188	₩ 663	₩ 578	₩ 787
	SABIC SK Nexlene Company Pte. Ltd.	6,881	34,797	2,803	32,597
	Korea Consortium Kazakh B.V. (*2)	146,170	-	146,170	-
	F&U Credit Information Co., Ltd.	104	5,801	45	1,723
	SK Wyverns Baseball Club Co., Ltd.	113	21	835	17
	Wave City Development Co., Ltd.	69,745	-	72,696	-
	Hana Card Co., Ltd.	541	11,311	1,427	11,107
	SK Hynix Inc.	748,912	166,584	463,490	343,939
	SK Hynix Semiconductor (China) Ltd.	109,248	1,099	24,417	138
	SK Hynix Semiconductor (Chongqing) Ltd.	25,927	7,289	2,663	38
	SK Hynix Semiconductor HK Ltd.	-	71,673	-	90,367
	SK Hystec Inc.	4,657	369	7,073	348
	SK Hyeng Inc.	7	1,174	3,455	7,628
	SK Hynix System IC	8,901	-	8,080	-
	Happyarae Co., Ltd.	11,247	35,726	-	-
	SKC Evonik Peroxide Korea Co., Ltd.	-	3,585	-	4,571
	Mitsui Chemicals & SKC Polyurethanes, Inc.	6,627	4,481	10,626	2,575
	Boryeong LNG Terminal Co., Ltd.	12,386	-	5,104	-
	Pentaport Development Co., Ltd.	79,534	-	97,807	3
	Eurasia Tunnel	32,001	-	15,147	-
	SK E&C JURONG Investment Singapore Pte. Ltd. (*2)	59,914	-	59,914	-
	Xe-Pian Xe-Namnoy Power Company	49,629	28,009	29,925	30,558
	Others	36,215	8,277	6,312	7,460
Others (*3)	Korea Nexlene Company	16,316	52	15,451	19
	AnTS Co., Ltd.	5	16,561	5	15,307
	SK Discovery Co., Ltd. (Formerly, SK Chemicals Co., Ltd.)	408	-	-	2
	SK Chemicals Co., Ltd.	40,679	9,828	34,489	9,807
	SK Gas Co., Ltd.	36,374	62,935	62,462	74,047
	SK Advanced Co., Ltd.	238	1,274	578	1,294
	SK Gas International Pte. Ltd.	-	-	1,058	-
	SK Securities Co., Ltd.	-	-	3,394	-
	SK Shipping Co., Ltd.	20,971	17,613	-	-
	Others	501	3,623	5,602	13,302
Total		₩ 1,527,439	₩ 492,745	₩ 1,081,606	₩ 647,634

(*1) The Company recognized bad debt expense amounting to ₩42,987 million and ₩23,512 million for the years ended December 31, 2018 and 2017, respectively. The Company recognized losses from write-off and others amounting to ₩(-)46,656 million for the years ended December 31, 2018. The Company recognized the allowance for losses amounting to ₩295,247 million and ₩298,916 million as at December 31, 2018 and 2017, respectively.

(*2) As at the end of the current term and the prior term, a full loss allowance has been calculated for the related bonds.

(*3) Although, not designated as related parties as defined in KIFRS 1024, the entity belongs to the same conglomerate affiliates under monopoly regulation and the fair trade law.

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28. Transactions with related parties (cont'd)

(3) Details of significant treasury transactions with related-parties for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

Company	Currency	December 31, 2018		December 31, 2017	
		Loans	Collection	Loans	Collection
Yemen LNG Company Ltd.	USD	7,263	-	6,479	-
SK E&C USA, Inc.	KRW	-	-	-	2,420
Eurasia Tunnel	KRW	24,659	11,369	11,369	-
Pentaport Development Co., Ltd.	KRW	-	-	-	2,233
SK Wyverns Baseball Club Co., Ltd.	KRW	-	204	-	202
SK E&C Jurong Investment Singapore Pte. Ltd.	KRW	-	-	-	93
Springvale SK Kores Pty. Ltd.	AUD	-	-	9,000	3,000
SKC Hi-Tech&Marketing Co., Ltd. (*1)	KRW	-	-	4,900	3,900
Xian Tianlong Science and Technology Co., Ltd. (*2)	KRW	-	7,032	-	-

(*1) For the years ended December 31, 2017, SKC Co., Ltd., a subsidiary, acquired 51% equity ownership of SKC Hi-Tech & Marketing Co., Ltd. and has classified it as a subsidiary.

(*2) Excluded from affiliates during the years ended December 31, 2018 as the entire equity was sold.

(4) During the current reporting period, there were additional investment transactions for subsidiaries, associates and joint ventures (see Note 10 'Investments in associates and joint ventures').

(5) Compensation for key management personnel of the Company.

Benefits for key management consist of registered executives who are responsible for the planning, operation and control of the Company's business activities. Details of compensation for them for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Salaries	₩ 9,773	₩ 5,339
Provision for pension benefits	2,332	1,821
Share compensation expense	1,586	1,220
	<u>₩ 13,691</u>	<u>₩ 8,380</u>

29. Discontinued operations

The Company elected to discontinue its operation of used car sales business to close down its non-core business and to secure investment resources. The sale of SK Encarsales.com Ltd., for the online used car sales business was completed in January 2018, and the sale of assets and liabilities of offline Encar used car sales business segment was completed in April 3, 2018.

SK Innovation Co., Ltd., a subsidiary of the Group, decided to cease its operation of the flexible-copper-clad-laminate (FCCL) business in this period in order to focus on core business such as the exploration and development of oil and the production of batteries.

SK Innovation Co., Ltd., a subsidiary, reflected the gain or loss on discontinued operations which occurred from disposal of a portion of the assets of an optical material (TAC) business classified as discontinued operation prior to the current period.

SK Shipping Co., Ltd. issued 61,392,448 common shares and 4,977,766 convertible shares on a third-party allocation date on December 27, 2018 in accordance with the board's resolution on October 8, 2018. SK Shipping Co., Ltd. was excluded from our consolidated subsidiaries as all of the shares were acquired by Han&Co Tanker Holdings Limited and Han&Co Tanker Holdings Limited acquired a 69.81% shares of SK Shipping Co., Ltd. (based on common shares).

The Group sold its entire stake in Happy Narae Co., Ltd. to SK Hynix Inc. on December 21, 2018 to wind up its noncore business.

SK Networks, Co., Ltd., a subsidiary of the Group, elected to close down its fashion business and duty-free business in 2016, resources business and business in Shenyang and Dandong in the current year to strengthen its financial soundness and secure investment resources. SK Networks Co., Ltd. completed the sale of its fashion business in February 2017, and cleared the assets and liabilities of the duty-free business in 2017. In addition, the resources business and businesses in Shenyang and Dandong are in the process of disposing of the legal entity and assets.

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29. Discontinued operations (cont'd)

(2) Income and expenses from discontinued operations

Income and expenses from the discontinued operation for the years ended December 31, 2018 and 2017 are as follows (in millions of Korean won):

	For the year ended December 31, 2018						
	Used car Business in SK Holdings Co., Ltd.	SK Encarsales .com Ltd.	FCCL business and others in SK Innovation Co., Ltd.	Shipping Industry in SK Shipping Co., Ltd.	HappyNarae Co., Ltd.	Resource business and others in SK Networks Co., Ltd.	Total
Revenue	₩ 321,401	₩ 180,884	₩ 79,829	₩ 2,258,120	₩ 1,118,608	₩ 48,855	₩ 4,007,697
Expenses	281,262	-	61,808	1,800,998	1,079,347	68,739	3,292,154
Gain (loss) before income tax expense	40,139	180,884	18,021	457,122	39,261	(19,884)	715,543
Income tax benefit (expense)	9,202	43,774	4,956	102,885	9,735	(2,322)	168,230
Gain (loss) from discontinued operations attributable to Owners of the Company	₩ 30,937	₩ 137,110	₩ 13,065	₩ 354,237	₩ 29,526	₩ (17,562)	₩ 547,313
Non-controlling interests	₩ 30,937	₩ 137,110	₩ 4,574	₩ 212,733	₩ 5,276	₩ (6,724)	₩ 383,906
	-	-	8,491	141,504	24,250	(10,838)	163,407

	For the year ended December 31, 2017						
	Used car Business in SK Holdings Co., Ltd.	SK Encarsales .com Ltd.	FCCL business and others in SK Innovation Co., Ltd.	Shipping Industry in SK Shipping Co., Ltd.	HappyNarae Co., Ltd.	Resource business and others in SK Networks Co., Ltd.	Total
Revenue	₩ 931,416	₩ 41,006	₩ 99,042	₩ 1,618,134	₩ 1,051,134	₩ 168,414	₩ 3,909,146
Expenses	920,787	22,743	101,895	1,641,869	1,039,455	379,540	4,106,289
Gain (loss) before income tax expense	10,629	18,263	(2,853)	(23,735)	11,679	(211,126)	(197,143)
Income tax benefit (expense)	2,611	4,004	(690)	4,050	2,326	(84,531)	(72,230)
Gain (loss) from discontinued operations attributable to Owners of the Company	₩ 8,018	₩ 14,259	₩ (2,163)	₩ (27,785)	₩ 9,353	₩ (126,595)	₩ (124,913)
Non-controlling interests	₩ 8,018	₩ 14,259	₩ (717)	₩ (15,899)	₩ 2,609	₩ (51,097)	₩ (42,827)
	-	-	(1,446)	(11,886)	6,744	(75,498)	(82,086)

(3) Details of cash flows relating to discontinued operation for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018						
	Used car Business in SK Holdings Co., Ltd.	SK Encarsales .com Ltd.	FCCL business and others in SK Innovation Co., Ltd.	Shipping Industry in SK Shipping Co., Ltd.	HappyNarae Co., Ltd.	Resource business and others in SK Networks Co., Ltd.	Total
Cash flows from operating activities	₩ 24,976	₩ -	₩ 49,408	₩ 156,992	₩ 23,417	₩ 5,849	₩ 260,642
Cash flows from investing activities	187,661	182,606	(89,506)	(127,113)	38,113	(1,786)	189,975
Cash flows from financing activities	(16)	-	-	227,284	-	(8,644)	218,624

	For the year ended December 31, 2017						
	Used car Business in SK Holdings Co., Ltd.	SK Encarsales .com Ltd.	FCCL business and others in SK Innovation Co., Ltd.	Shipping Industry in SK Shipping Co., Ltd.	HappyNarae Co., Ltd.	Resource business and others in SK Networks Co., Ltd.	Total
Cash flows from operating activities	₩ 3,848	₩ 16,711	₩ 11,152	₩ (3,807)	₩ 8,328	₩ (23,830)	₩ 12,402
Cash flows from investing activities	(10,968)	(19,919)	(2,053)	(108,149)	514	304,557	163,982
Cash flows from financing activities	47	(10,458)	-	136,176	-	(24,886)	100,879

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30. Non-current assets and non-current liabilities classified as held for sale

Details of non-current assets and non-current liabilities held for sale as at December 31, 2018 are as follows (Korean won in millions):

		December 31, 2018	
		Assets	Liabilities
Subsidiaries	Daiyang SK Networks San. VE TIC. Ltd. STI	₩ 765	₩ 654
Business segment	Resources business segment and others (*1)	221,082	103,078
Property, plant and equipment	Land and buildings (*2)	65,500	-
		<u>₩ 287,347</u>	<u>₩ 103,732</u>

(*1) SK Networks Co., Ltd., a subsidiary, decided to discontinue resources business segment and others during the prior reporting period. The Group classified related assets and liabilities as held-for-sale, and measured at the lower of their carrying amount and fair value less costs to sell.

(*2) SK Innovation Co., Ltd., a subsidiary, classified related assets as assets held for sale as the entity signed a contract for sale of the land in Seoknam-dong, western Incheon, and the entity measures it at the lower of its fair value less costs to sell and carrying amount.

31. Leases

(1) Assets under finance lease as at December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Property, plant and equipment	₩ 22,690	₩ 5

(2) The Group has entered into lease agreements for various purposes, and minimum lease payments of the Group as a lessee as at December 31, 2018 are as follows (Korean won in millions):

	1 year or less	1 year- 5 years	More than 5 years	Total
Finance leases:				
Future minimum lease payments	₩ 7,788	₩ 16,485	₩ 13,796	₩ 38,069
Less: interests paid	3,329	7,512	5,834	16,675
Present value (*1)	<u>₩ 4,459</u>	<u>₩ 8,973</u>	<u>₩ 7,962</u>	<u>₩ 21,394</u>
Operating leases	₩ 434,402	₩ 727,287	₩ 118,302	₩ 1,279,991

(*1) Finance lease liabilities are classified as other current and non-current liabilities.

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32. Cash flow information

(1) Details of non-cash adjustments for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Provision for pension benefits	₩ 371,291	₩ 344,086
Depreciation	4,538,295	4,318,157
Amortization	1,332,831	1,323,512
Bad debt expenses	163,308	16,487
Valuation loss on inventories	280,275	25,288
Interest expenses	1,248,371	928,004
Loss on foreign currency translation	245,185	311,892
Loss on valuation of derivatives	1,039,748	261,745
Loss on disposal of trade accounts receivable	7,140	14,216
Loss on disposal of available-for-sale financial assets	-	36,331
Loss on impairment of available-for-sale financial assets	-	126,513
Loss on disposal of investments in subsidiaries and associates	59,366	98,096
Loss on impairment of investments in subsidiaries and associates	-	10,049
Loss on disposal of property, plant and equipment	170,727	138,785
Loss on impairment of property, plant and equipment	74,402	150,993
Loss on disposal of intangible assets	12,817	20,618
Loss on impairment of intangible assets	91,192	52,912
Income tax expense	2,092,785	2,179,521
Gain related to investments in associates and joint ventures	(3,667,928)	(2,488,020)
Interest income	(251,492)	(219,346)
Dividends income	(32,924)	(23,551)
Gain on foreign currency translation	(237,780)	(418,517)
Gain on valuation of derivatives	(826,681)	(415,665)
Gain on disposal of available-for-sale financial assets	-	(7,005)
Gain on disposal of investments in subsidiaries and associates	(816,291)	(196,361)
Gain on disposal of property, plant and equipment	(231,235)	(50,595)
Gain on disposal of intangible assets	(3,303)	(2,465)
Others	(34,801)	44,996
	<u>₩ 5,625,298</u>	<u>₩ 6,580,676</u>

(2) Details of working capital adjustments for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Inventories	₩ (1,070,936)	₩ (2,184,365)
Trade accounts receivable	315,418	(1,378,979)
Other accounts receivable	148,505	(246,741)
Trade accounts payable	(539,666)	965,063
Other accounts payable	(26,818)	378,919
Advance received	243,352	182,213
Defined benefit obligation	(226,526)	(170,189)
Plan assets	(244,286)	(156,243)
Others	(335,212)	50,550
	<u>₩ (1,736,169)</u>	<u>₩ (2,559,772)</u>

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32. Cash flow information (cont'd)

(3) Significant non-cash transactions for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Increase in other accounts payable due to acquisition of property, plant and equipment and others	₩ 1,245,304	₩ 309,929

(4) Details of changes of liabilities from financing activities for the year ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the year ended December 31, 2018					
	Beginning balance	Cash flows from financing activities	Changes of fair value	Changes of exchange rate	Others	Ending balance
Short-term borrowings	₩ 2,999,032	₩ 737,302	₩ -	₩ (1,185)	₩ (308,819)	₩ 3,426,330
Bonds Payable and long-term borrowings	29,907,664	4,038,864	1,911	109,626	(142,669)	33,915,396
Long-term account payable	3,746,917	(543,990)	-	-	(809,900)	2,393,027
Dividends payable	1,423	(1,511,072)	-	-	1,513,500	3,851
	<u>₩ 36,655,036</u>	<u>₩ 2,721,104</u>	<u>₩ 1,911</u>	<u>₩ 108,441</u>	<u>₩ 252,112</u>	<u>₩ 39,738,604</u>

	For the year ended December 31, 2017					
	Beginning balance	Cash flows from financing activities	Changes of fair value	Changes of exchange rate	Others	Ending balance
Short-term borrowings	₩ 2,614,117	₩ 206,701	₩ -	₩ (7,005)	₩ 185,219	₩ 2,999,032
Bonds Payable and long-term borrowings	28,763,083	474,715	(4,658)	(340,639)	1,015,163	29,907,664
Long-term account payable	4,601,776	(604,517)	-	-	(250,342)	3,746,917
Dividends payable	614	(1,356,415)	-	-	1,357,224	1,423
	<u>₩ 35,979,590</u>	<u>₩ (1,279,516)</u>	<u>₩ (4,658)</u>	<u>₩ (347,644)</u>	<u>₩ 2,307,264</u>	<u>₩ 36,655,036</u>

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33. Commitments and contingencies

(1) Guarantees provided for the Group as at December 31, 2018 are as follows (Korean won in millions and foreign currencies in thousands):

Guarantee	Guarantor	Currency	Amount	Description of guarantee
SK Holdings Co., Ltd.	Korea Trade Insurance Corporation	USD	695	Guarantee of payment
	Korea Eximbank	USD	1,225	Performance guarantees for contract and others
	Korea Software Financial Cooperative	KRW	244,882	Performance guarantees for contract and others
SK Materials Co., Ltd.	Seoul Guarantee Insurance	KRW	1,071	Performance guarantees for contract and others
	Korea Industrial Bank	USD	3,000	Guarantee of debt
	Seoul Guarantee Insurance	KRW	37,790	Performance guarantees
SK Engineering & Construction Co., Ltd.	HSBC and others	USD	887,811	Performance guarantees for overseas construction and others
		SGD	52,040	Performance guarantees for overseas construction and others
		KWD	101,712	Performance guarantees for overseas construction and others
		QAR	549,111	Performance guarantees for overseas construction and others
		TRY	44,094	Performance guarantees for overseas construction and others
		SAR	246,219	Performance guarantees for overseas construction and others
		THB	398,398	Performance guarantees for overseas construction and others
		CAD	50,000	Performance guarantees for overseas construction and others
		KZT	123,344	Performance guarantees for overseas construction and others
		VND	747,425,156	Performance guarantees for overseas construction and others
		HKD	20,061	Performance guarantees for overseas construction and others
		IQD	2,860,000	Performance guarantees for overseas construction and others
		AED	10,625	Performance guarantees for overseas construction and others
	KEB Hana Bank	USD	125,515	Performance guarantees for overseas construction and others
		EUR	222,614	Performance guarantees for overseas construction and others
	Shinhan Bank	USD	5,749	Performance guarantees for overseas construction and others
	Korea Eximbank	USD	269,451	Performance guarantees for overseas construction and others
		SAR	128,276	Performance guarantees for overseas construction and others
		VND	14,077,332	Performance guarantees for overseas construction and others
		EUR	60,750	Performance guarantees for overseas construction and others
	Korea Housing Guarantee Co., Ltd.	KRW	2,925,440	Housing guarantees and others
	Seoul Guarantee Insurance	KRW	467,760	Performance guarantees for domestic construction and others
	Engineering Financial Cooperative	KRW	1,381,924	Domestic construction contract
	Information & Communication Financial Cooperative	KRW	162,609	Domestic construction contract and others
	Construction Guarantee Cooperative	KRW	2,763,945	Performance guarantees for domestic construction and others
SK Forest Co., Ltd.	Construction Guarantee Cooperative	KRW	18,222	Performance guarantees for contract and others
Iberian Lube Base Oils S.A.	Seoul Guarantee Insurance	KRW	18,360	Performance guarantees for contract and others
SK E&S Co., Ltd.	REPSOL Petroleo	EUR	7,500	Guarantee of debt
Yeongnam energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	1,423	Performance guarantees for contract and others
Chonnam energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	1,198	Guarantee of warranties and approval
Pusan City Gas Co., Ltd.	Seoul Guarantee Insurance	KRW	111	Performance guarantees for contract and approval
Jeonbuk energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	2,168	Community energy service facility management, consignment operating agreement and others
Chungcheong energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	109	Performance guarantees and guarantee of warranties
Ko-one energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	1,195	Performance guarantees for construction and others
Paju energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	1,166	Performance guarantees for contract
		KRW	477	Deposits for safety management and others

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33. Commitments and contingencies (cont'd)

<u>Guarantee</u>	<u>Guarantor</u>	<u>Currency</u>	<u>Amount</u>	<u>Description of guarantee</u>
Narae energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	76	Performance guarantees for contract
Wirye energy service Co., Ltd.	Seoul Guarantee Insurance	KRW	3,384	Deposits for safety management and others
Kangwon City Gas Co., Ltd.	Seoul Guarantee Insurance	KRW	1,333	Performance guarantees for contract and others
SK Telesys Co., Ltd.	Seoul Guarantee Insurance	KRW	8,645	Guarantee of warranties and contract
SK Bioland Co., Ltd.	Seoul Guarantee Insurance	KRW	158	Guarantee of payment
SKC Solmics Co., Ltd.	Shinhan Bank	USD	20,000	Guarantee of FRN issue
SKC Hightech & Marketing Co., Ltd.	KEB Hana Bank	USD	27,000	Guarantee of FRN issue
SK Networks Co., Ltd.	KEB Hana Bank	KRW	2,000	Performance guarantees for contract
	Seoul Guarantee Insurance	KRW	14,313	Performance guarantees for contract
	Woori Bank	KRW	34,547	Performance guarantees for sales
SK Networks Service Co., Ltd.	Seoul Guarantee Insurance	KRW	8,070	Performance guarantees for sales
SK Magic Co., Ltd.	Seoul Guarantee Insurance	KRW	14,375	Performance insurances for warranties and others
	Machinery Financial Cooperative	KRW	3,944	Performance insurances for warranties and others
SK Magic Service Co., Ltd.	Seoul Guarantee Insurance	KRW	514	Guarantee of home-shopping payment and others
SK Pinx Co., Ltd.	Seoul Guarantee Insurance	KRW	233	Performance guarantees for sales
SK Telink Co., Ltd.	KB Insurance Co., Ltd.	KRW	1,930	Performance guarantees for contract
	Seoul Guarantee Insurance	KRW	12,759	Performance guarantees for contract
SK Planet Co., Ltd.	Seoul Guarantee Insurance	KRW	2,373	Guarantee for E-commerce and others
	KEB Hana Bank	KRW	3,503	Performance guarantees for contract and others
SK Broadband Co., Ltd.	Kookmin Bank and others	KRW	28,810	Guarantee of warranties-contract and others
SK M & Service Co., Ltd.	Seoul Guarantee Insurance and others	KRW	20	Guarantee of payment and others
PS&Marketing Corp.	Seoul Guarantee Insurance	KRW	191	Performance guarantees
iriver Co., Ltd.	Seoul Guarantee Insurance	KRW	287	Performance guarantees for contract
One store Co., Ltd.	KEB Hana Bank	KRW	100	Guarantee of Korean won payment method
Home&Service Co., Ltd.	Seoul Guarantee Insurance	KRW	21	Performance guarantees for contract
SK Store Co., Ltd.	Kookmin Bank	KRW	100	Specific debt guarantee
11street Co., Ltd.	KEB Hana Bank	KRW	950	Performance guarantees and others
	Seoul Guarantee Insurance	KRW	394	Guarantee of deposit on lease and others
SK Biotek Co., Ltd.	Seoul Guarantee Insurance	KRW	6,033	Performance guarantees and others
SK Infosec Co., Ltd.	Korea Software Financial Cooperative	KRW	43,538	Guarantee of bid payment and others

In addition, SK Engineering & Construction Co., Ltd., a subsidiary of the Group, has performance guarantees for domestic construction by other construction companies amounting to ₩427,999 million as at December 31, 2018.

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33. Commitments and contingencies (cont'd)

(2) Guarantees provided to others as at December 31, 2018 are as follows (Korean won in millions and foreign currencies in thousands):

Guarantee	Guarantor	Currency	Amount	Description of guarantee	
SK Engineering & Construction Co., Ltd.	SBC General Trading & Contracting Co. WLL and others	KWD	5,844	Performance guarantees for contract and others	
	Pohang Clean Water Co., Ltd. and others	USD	1,301	Performance guarantees for contract and others	
		KRW	594,316	Supplementing funds for principal and interest of loan	
		Hwaseong Jungnam General Industrial Complex Co., Ltd.	KRW	36,400	Guarantee of project financing payment
		Howon elementary school area redevelopment maintenance business association	KRW	97,972	Guarantees for reconstruction project financing
		Gwacheon area II housing reconstruction maintenance business association	KRW	29,890	Guarantees for reconstruction project financing
		Ahyeon area II housing reconstruction maintenance business association	KRW	92,366	Guarantees for reconstruction project financing
		Bugae-seocho bridge north side redevelopment maintenance business association	KRW	113,682	Guarantees for reconstruction project financing
		Paldal area VIII housing redevelopment maintenance business association and others	KRW	25,795	Guarantees for reconstruction project financing
		Gwonseon area VI housing redevelopment maintenance business association	KRW	18,586	Guarantees for reconstruction project financing
		Pohang Dooho housing reconstruction maintenance business association	KRW	19,500	Guarantees for reconstruction project financing
		Customers of Seongsoo station SK V1 Tower	KRW	4,560	Guarantee of payment
		Customers of Kwangkyo SK view Lake	KRW	183,972	Guarantee of payment
		Customers of Songdo SK view	KRW	185,650	Guarantee of payment
		Customers of Anyang SK V1	KRW	61,416	Guarantee of payment
		Customers of Dongtan SK V1	KRW	99,960	Guarantee of payment
		Baekryunsan SK view and others	KRW	7,579	Guarantee of payment
		Sungnam SK V1 tower	KRW	57,439	Guarantee of payment
		Boramae SK view	KRW	13,721	Guarantee of payment
		Moonrae SK V1 center and others	KRW	52,325	Guarantee of payment
		Suwon SK V1 Motors	KRW	19,453	Guarantee of payment
		Gwacheon Weaver Field	KRW	9,664	Guarantee of payment
		Giheung ICT Valley SK V1	KRW	21,840	Guarantee of payment
		Seongsoo SK V1 Center	KRW	57,910	Guarantee of payment
		Gongdeok SK leaders view	KRW	6,577	Guarantee of payment
		Ansan La Primo	KRW	13,224	Guarantee of payment
		Misa Gangbyeon SK V1 center	KRW	45,600	Guarantee of payment
		Lu 1 City SK leaders view and others	KRW	1,611,260	Guarantee of completion
		Member of employee stock ownership association	KRW	5,404	Guarantee of payment
	SK Innovation Co., Ltd.	Callable preferred share investor	KRW	351,000	Cash deficiency support agreement
		Petro Peru and others	USD	1,020	Performance guarantee for mandatory work and others
	SK Global Chemical Co., Ltd.	Sabic SK Nexlene Company Pte. Ltd.	USD	190,000	Guarantee of debt
		Iberian Lube Base Oils S.A.	EUR	355	Guarantees for construction
SK E&S Co., Ltd.	Railway Administration and others	EUR	274	Guarantee for installing facilities and others	
	Boryeong LNG Terminal Co., Ltd.	KRW	360,000	Guarantee of debt	
SKC Co., Ltd.	SKC-Kolon PI Co., Ltd.	USD	8,100	Guarantee for litigation	
SK Telink Co., Ltd.	Mobile phone agencies and others	KRW	381	Performance guarantees for contract	
SK M & Service Co., Ltd.	Seoul Guarantee Insurance	KRW	7,220	Performance guarantees for transaction	
SK Networks Co., Ltd.	PT. SK Networks Indonesia	USD	1,500	Standing surety for investee	
SK Siltron Co., Ltd.	SIL 1st LLC	KRW	120,000	Asset backed debt	

In addition, SK Engineering & Construction Co., Ltd., a subsidiary of the Group, provides other construction companies with performance guarantees for domestic construction, and the amount of the guarantees is ₩730,012 million as at December 31, 2018.

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33. Commitments and contingencies (cont'd)

(3) Pending litigations

The Group's significant pending litigations as at December 31, 2018, in which the Group is a plaintiff are as follows (Korean won in millions and foreign currencies in thousands):

Plaintiff	Defendant	Description	Claim	Status
SK Telesys Co., Ltd.	Alcatel-lucent Korea and others	Claim for payment	KRW 1,582	Third trial in progress and others
SK E&S Co., Ltd.	Head of the customhouse, Seoul	Claim for cancellation of custom duties (*1)	KRW 2,252	Third trial in progress
	Head of the customhouse, Gwangju	Claim for cancellation of value add tax and others (*2)	KRW 159,921	Tax refree trial in progress
Ko-one Energy Service Co., Ltd.	Individual and others	Claim for payment	KRW 79	Second trial in progress
SK Networks Co., Ltd.	Individual and others	Claim for payment and others	KRW 2,855	First trial in progress and others
SK Magic Co., Ltd.	Careswater Co., Ltd. and others	Claim for payment and others	KRW 571	First trial in progress
PS&Marketing Corp.	Individual and others	Claim for provisional attachment and others	KRW 412	First trial in progress and others
SK Engineering & Construction Co., Ltd.	K-Water Resources Corporation	Claim for payment of construction	KRW 4,919	Third trial in progress
	Korea Railroad Corporation	Litigation for affirmation of non-existence of debt	KRW 2,371	Third trial in progress
	Korea Rail Network Authority	Claim for payment and others	KRW 16,865	Second trial in progress and others
	Fair Trade Commission	Claim related to Seohae line double track train	KRW 4,422	Second trial in progress
	Korea Specialty Contractor	Claim for deposit of construction performance and others	KRW 3,304	First trial in progress and others
	Finanacial Cooperative	Claim for payment	KRW 12,728	Second trial in progress
	Dream Hub PFV	Claim for payment	KRW 5,704	Second trial in progress
	Plant & Mechanical Contractors	Claim for payment	KRW 5,704	Second trial in progress and others
	Financial Cooperative and others	Claim for payment of construction	KRW 8,930	Second trial in progress
	Busan Metropolitan City	Claim for payment of construction	KRW 8,930	Second trial in progress
	Hyundai Construction Co., Ltd.	Claim for payment and others	KRW 88,554	First trial in progress and others
	Korea Housing & Urban Guarantee Corporation	Claim for transfer of ownership right	KRW 2,791	Second trial in progress
	Republic of Korea and others	Claim for payment of construction and others	KRW 38,729	Second trial in progress and others
	Korea Highway Corporation	Claim for tool overhead and others	KRW 21,960	First trial in progress and others
	Korea National Oil Corporation	Claim for construction costs	KRW 13,141	First trial in progress
	Korea Land & Housing Corporation and others	Claim for Yeongdeungpo facility PF business and others	KRW 4,765	Second trial in progress
	Korea Gas Corporation	Claim related to Jangrim Jinhae	KRW 3,693	First trial in progress
	Head of the customhouse, Busan	Claim for custom duty cancellation	KRW 10,185	First trial in progress
	Individual and others	Claim related to performance guarantee and others	KRW 7,391	First trial in progress

(*1) On January 17, 2019, the Group won the case for the entire value of the lawsuit.

(*2) SK E&S Co., Ltd., a subsidiary of the Group, was imposed ₩161,919 million from tax authorities, including the value added tax related to LNG import price during the prior reporting period. The Group recognized the amount as other accounts payable and of those, recognized ₩159,921 million as advance payments.

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33. Commitments and contingencies (cont'd)

The Group's significant pending litigations as at December 31, 2018, in which the Group is a defendant are as follows (Korean won in millions and foreign currencies in thousands):

Plaintiff	Defendant	Description	Claim	Status
Korea Minting, Security Printing & ID Card operating Corp.	SK Holdings Co., Ltd.	Claim for damages	KRW 2,000	Second trial in progress
Alcatel lucent Korea Co., Ltd. and others	SK Telesys Co., Ltd.	Claim for payment and others	KRW 2,572	Third trial in progress and others
Home Plus Co., Ltd. and others	SKC Co., Ltd.	Claim for damages	KRW 380	First trial in progress
Individual and others		Claim for damages and others	KRW 2,893	Arbitration in progress
Seoul City and others	Ko-one Energy Service Co., Ltd.	Claim for penalty and others	KRW 31	First trial in progress and others
Busan Green Energy Co., Ltd. and others	Busan City Gas Co., Ltd.	Claim for return of unfair benefit and others	KRW 696	First trial in progress
BBS. LLC	Jeonbuk Energy Service Co., Ltd.	Claim for return of unfair benefit and others	KRW 278	First trial in progress
Yulim Engineering Co., Ltd.	Chonnam City Gas Co., Ltd.	Claim for payment of construction	KRW 92	First trial in progress
Smartro Co., Ltd. and others	SK Networks Co., Ltd.	Claim for patent infringement and others	KRW 25,418	First trial in progress and others
Hanwha Insurance and others	SK Magic Co., Ltd. and others	Claim for water purifier fire compensation and others	KRW 958	First trial in progress
Individual and others	PS&Marketing Corp.	Litigation for affirmation of non-existence of debt and others	KRW 252	First trial in progress
K-Water Resources Corporation and others	SK Engineering & Construction Co., Ltd.	Claim for damages and others	KRW 4,125	Second trial in progress and others
Incheon Metropolitan City		Damage for bid fixing of area 705 and 706	KRW 35,820	Third trial in progress
Youn jong, Suh and 333 others		Claim for apartment	KRW 22,408	Third trial in progress
Samjung Construction Co., Ltd.		Claim for payment	KRW 5,940	Second trial in progress
Hyundai Construction Co., Ltd.		Claim for share of defect cost	KRW 432	First trial in progress
Suseong Leaders view residents' Representative and others		Claim for Daegu Suseong leaders view defection and others	KRW 8,187	Second trial in progress and others
Korea Rural Community Corporation		Claim for counterindemnity	KRW 8,036	First trial in progress
Republic of Korea		Claim for compensation	KRW 10,000	Third trial in progress
Korea Gas Corporation		Claim for compensation related to main gas pipe	KRW 35,981	First trial in progress
		Claim for compensation related to LNG price	KRW 11,314	First trial in progress
Korea Rail Network Authority		Claim for compensation and others	KRW 32,351	First trial in progress
Korea Land & Housing Corporation		Claim for compensation	KRW 1,565	Second trial in progress
Busan Transportation Corporation		Claim for compensation and others	KRW 9,579	First trial in progress and others
Individual and others		Claim for apartment and others	KRW 20,946	First trial in progress and others

33. Commitments and contingencies (cont'd)

(4) Commitments

- 1) In accordance with the Commercial Code of the Republic of Korea, the Company, SK Innovation Co., Ltd., SK Energy Co., Ltd., SK Global Chemical Co., Ltd., SK Lubricants Co., Ltd., SK Incheon Petrochem Co., Ltd. and SK Trading International Co., Ltd. are collectively responsible for any obligations of the Company arising before the spin-off. The Company and SK Biopharmaceuticals Co., Ltd. are collectively responsible for any obligations of the Company that occurred before the spin-off on April 1, 2011.
- 2) The Company entered into a contract to lease the headquarters building from National Agricultural Cooperative Federation ("NACF"), the trustee of Hana Daol Fund Management. Under the terms of the lease, the lease period is until March 27, 2021, and the Company has the preemptive right to purchase the building at the fair value when the lessor elects to dispose the property.
- 3) The Company holds IT outsourcing and IT system maintenance agreements to provide hardware and information systems maintenance and development service entered into between the Company and SK Group companies and others.
- 4) The Company entered into a contract with Gyeonggi province on May 31, 2011 to purchase land located in Pangyo Land Development District. The total agreement amount is ₩82,964 million (the Company's portion: ₩45,536 million (54.9%)), which will be used for the construction of urban infrastructure facilities ("designated purpose" of the land). The contract includes requirements to be complied with and restrictions in transfer of ownership of the land. Should there be non-compliance, the contract may be terminated or cancelled.
- 5) The Company has stock sale and purchase agreements in regards to SK Shipping Co., Ltd.'s issuance of ordinary shares and sale of existing shares, and details are as follows:

	<u>Subscription of new shares</u>	<u>Sale of existing shares</u>
Investor	Special Situation 1 st Fund and others	Corporate Turnaround 1 st Fund
Number of shares	6,548,672	4,808,259
Contract date	April 11, 2017	May 11, 2017
Expiry date	April 10, 2022	May 10, 2022
Settlement	The Company and the investors make a cash settlement of the amount that deducts the issue price from the net selling price. If the amount is positive, the investor pays to the Company, and if the amount is negative, the Company pays to the investor. In case where the sale is not complete, the selling price of the shares is considered to be nil.	
Premium	The Company pays to the investor the amount equivalent to 3.14% of the total shares held by the investor annually. When the investor receives dividends on the shares held, the amount is paid to the Company.	
Call option	The Company has the right to purchase the shares held by the investor at the issued price of the ordinary shares with certain level of additional charges.	

33. Commitments and contingencies (cont'd)

- 6) The Group entered into a shareholder agreement with ordinary shareholders of SK Siltron Co., Ltd., one of the subsidiaries. Details are as follows.

	Shareholder agreement
Investor	Warmachine Sixth Co., Ltd. and others
Number of shares	13,143,440
Contract date	August 25, 2017
Expiry date	August 24, 2022
Settlement	The Company and the investors are to settle the amount that deducts the issue price from the net selling price. If the amount is positive, the investor pays to the Company, and if the amount is negative, the Company pays to the investor. In case where the sale is not complete, the selling price of the shares is considered to be nil.
Premium	The Company is to pay 0.5% of the initial contract amount at the closing date of the transaction and pay to the investor the amount equivalent to 3.20% of the total shares held by the investors annually. When the investor receives dividends on the shares held, the amount is paid to the Company.
Call option	On a three-month basis from the closing date of sale ("the quarterly payment day"), the Company has the right to purchase the shares held by the investor at the initial contract price of the ordinary shares with a certain level of additional charges.

As at the end of the year ended December 31, 2018, the value of the agreements amounting to ₩169,131 million is recognized in long-term borrowings (see Note 15).

- 7) The Group entered into a shareholder agreement with ordinary shareholders of SK E&S Co., Ltd., one of the subsidiaries. Details are as follows.

	Shareholder agreement
Investor	MD Prime 1st Co., Ltd. and others
Number of shares	4,640,199
Contract date	November 14, 2017
Expiry date	November 13, 2022
Settlement	The Company and the investors are to settle the amount that deducts the issue price from the net selling price. If the amount is positive, the investor pays to the Company, and if the amount is negative, the Company pays to the investor. In case where the sale is not complete, the selling price of the shares is considered to be nil.
Premium	The Company is to pay to the investor the amount equivalent to 3.07% of the total shares held by the investors annually. When the investor receives dividends on the shares held, the amount is paid to the Company.
Call option	On a three-month basis from the closing date of sale ("the quarterly payment day"), the Company has the right to purchase the shares held by the investor at the initial contract price of the ordinary shares with a certain level of additional charges.

As at the end of the year ended December 31, 2018, the value of the agreements amounting to ₩677,775 million is recognized in long-term borrowings (see Note 15).

- 8) The Company entered into a cash deficiency support agreement with Hudson Energy NY, LLC, a subsidiary of Plutus Capital NY, Inc., to lend funds for the shortfall of payment for loans and credit limit of USD 226,000 thousand.

33. Commitments and contingencies (cont'd)

9) The Company entered into a cash deficiency support agreement with Abrasax Investment Inc., a subsidiary of Alchemy Acquisition Corp., which was included in the consolidation as at August 8, 2018, to lend funds for the shortfall of payment for loans and credit of up to USD 315,000 thousand.

10) As at December 31, 2018, the Company and SK Innovation Co., Ltd., a subsidiary, have provided a performance guarantee contract amount of ₩53,782 million for the acquisition of SK Shipping's BBCHP. At the end of the reporting period, SK E&S Co., Ltd. and Prism Energy International Pte., Ltd., subsidiaries of the Group, also provided a performance guarantee contract amount of ₩289,122 million in connection with the BBCHP. However, considering the fair value of SK Shipping Co., Ltd.'s vessel provided as collateral for the BBCHP contract, the Group determines that there is no actual guarantee amount

11) SK E&S LNG, LLC, one of the subsidiaries, is scheduled to receive the liquefaction service from FLNG Liquefaction 3, LLC, amounting to 115 million MMBtu per year for 20 years, which plans to operate natural gas liquefaction plants in Texas starting from 2019. As at December 31, 2018, SK E&S Co., Ltd., one of the Group's subsidiaries, is responsible for a performance guarantee in case SK E&S LNG, LLC defaults on payments for the service or for claims against breach of obligation. In regard to this, the Company provides a performance guarantee for SK E&S Co., Ltd.'s guarantee.

12) As at December 31, 2018, details of contracts of the subsidiaries of SK E&S Co., Ltd. are as follows:

Description of contract	Name of subsidiaries	Counterparty	Term of contract
Contract for the supply of natural gas (*1)	Kangwon City Gas Co., Ltd. and seven subsidiaries	Korea Gas Corporation	-
Contract of supply for natural gas	SK E&S Co., Ltd.	Tanggung PSC Contractor Parties	2006.01 ~ 2026.07
Contract for the repair and maintenance of gas turbine	SK E&S Co., Ltd.	GE International Inc.	2004.06 ~ 2026.12 (estimated)
Contract for the storage and vaporization service of natural gas	SK E&S Co., Ltd.	POSCO Co., Ltd.	2005.06 ~ 2025.12
Rental contract of the plant and tower site	SK E&S Co., Ltd.	POSCO Co., Ltd.	2003.08 ~ 2028.12
Contract for the long term maintenance program	Paju Energy Service Co., Ltd.	Siemens AG and others	2014.06 ~ 2031.06 (estimated)
Contract for the long term maintenance program	Wirye Energy Service Co., Ltd.	Siemens AG and others	2015.01 ~ 2032.01 (estimated)
Contract for the long term maintenance program	Narae Energy Service Co., Ltd.	Doosan Heavy Industries & Construction Co., Ltd.	12 years from 2012
Contract for the liquefaction and storage of natural gas	SK E&S LNG, LLC	FLNG Liquefaction 3, LLC	20 years from 2019
Contract for the use plumbing system	Wirye Energy Service Co., Ltd. and Paju Energy Service Co., Ltd.	Korea Gas Corporation Co., Ltd.	20 years from 2017
Contract for the use pipeline of natural gas	SK E&S LNG, LLC	Kinder Morgan, Inc.	20 years from 2019
Contract for the storage and vaporization service of natural gas	SK E&S Co., Ltd., Wirye Energy Service Co., Ltd. and Paju Energy Service Co., Ltd.	Boryeong LNG Terminal Co., Ltd.	20 years from 2017
Contract of supply for natural gas	Prism Energy International Pte. Ltd.	Chevron Australia Pty Ltd. and others	2017.01 ~ 2022.03
Time charter contract	Prism Energy International Pte. Ltd.	SK Shipping Co., Ltd.	20 years from ship delivery date
Contract for operation and maintenance	Narae Energy Service Co., Ltd.	Jeonbuk Co-generation, Gimcheon Energy Service Co., Ltd.	2015.01 ~ 2025.01
Contract for supply for LNG Win-win agreement business	Narae Energy Service Co., Ltd. Paju Energy Service Co., Ltd.	Korea Gas Corporation SK Engineering & Construction Co., Ltd.	20 years from 2015 May 2018.05 ~ 2019.10

(*1) The Company has signed a contract with Korea Gas Corp. for natural gas supply for 20 years.

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33. Commitments and contingencies (cont'd)

- 13) As at December 31, 2018, details of construction contracts about the subsidiaries of SK E&S Co., Ltd. are as follows (Korean won in millions):

Description of contract	Name of subsidiaries	Contract opponent	Term of contract	Contract amount
Contract for heat piping and others	Narae Energy Service Co., Ltd.	Eulmyo general construction Co., Ltd. and others	2017.05 ~ 2019.03	₩ 7,747
Contract for the transmission access construction	Wirye Energy Service Co., Ltd.	Dalim Construction Co., Ltd. Corporation	2018.05 ~ 2019.04	₩ 2,948

- 14) As at December 31, 2018, details of material contracts of resource development by the subsidiaries of SK E&S Co., Ltd. are as follows (Foreign currencies in thousands):

Description of contract	Name of subsidiaries	Counterparty	Equity ownership	Contract amount	Executive amount
Barossa-Caldita, Australia	SK E&S Australia Pty. Ltd.	Conoco Phillips Company and others	37.5%	USD 310,000	USD 280,000
Woodford, USA	DewBlaine Energy, LLC	Continental Resources, Inc.	49.9%	USD 360,000	USD 324,948

SK E&S Co., Ltd., a subsidiary of the Group, has an obligation to pay for the development costs based on the equity ownership.

- 15) On July 16, 2013, SK Incheon Petrochem Co., Ltd., one of the subsidiaries, issued new preferred shares by the third-party allocation method to Shinhan Stonebridge Petro Private Equity Fund (the "Investor"). In regard to the new issuance of preferred shares, the agreement between SK Innovation Co., Ltd. and the Investor includes the following commitments:

- The investors' drag-along right and tag-along right
- SK Innovation Co., Ltd.'s pre-emption right for the exercised investors' drag-along right
- Restriction on disposal of shares under certain conditions

SK Incheon Petrochem Co., Ltd., one of subsidiaries, securitized ₩268,000 million of SK Incheon Petrochem Co., Ltd.'s trusts accounts receivable for SK Energy Co., Ltd., and SK Global Chemical Co., Ltd., the other subsidiaries of the Group, to Industrial Bank of Korea. IPC Limited Company 1, which underwrites the first right to benefit issued by Industrial Bank of Korea, issues securitized commercial paper.

- 16) SK Telecom Co., Ltd., a subsidiary of the Group, sells its mobile handsets to customers on an installment payment plan through agents. SK Telecom Co., Ltd. entered into transfer agreements with the agents for the receivables of handset's installment payments, under which all the rights and obligations of the receivables are transferred to SK Telecom Co., Ltd. Then, SK Telecom Co., Ltd. entered into an asset securitization contract with a special purpose company for the receivables, and accordingly, the balance of the receivables as at the end of the current reporting period is ₩612,779 million which is recorded as other accounts receivable and long-term other accounts receivable.
- 17) SK Materials Co., Ltd., a subsidiary, transferred trade receivables for SK Energy Co., Ltd. and SKC Co., Ltd. to trust account of KDB in September 2018. In the same year, SK Materials Co., Ltd. entered into trade receivables securitization contract with KDB in which ABCP is issued at par value of ₩25,000 million on a three-month basis based on type 1 beneficiary certificate. As at December 31, 2018 and December 31, 2017, trade receivables transferred to trust account are ₩3,768 million and ₩6,096 million, respectively.
- 18) SK Materials Co., Ltd., a subsidiary, trusted the trade receivable that may incur from project, of which the investment was in progress in September 2017, to the trust account of KEB Hana Bank. With this trusted amount as collateral, SK Materials Co., Ltd. entered into borrowing commitment for the facility for up to ₩120,000 million. As at December 31, 2018 and 2017, trade receivables transferred to trust account are ₩13,628 million and nil, respectively.

33. Commitments and contingencies (cont'd)

(5) In July 2018, Xe-Pian Xe-Namnoy Hydropower dam under construction by SK E&C, a subsidiary, was flooded resulting in a loss of Saddle D and auxiliary dam and a flashflood through villages downstream. SK Engineering & Construction Co., Ltd. reflected the costs associated with the restoration work and the costs incurred during the current period due to relief and damage recovery activities for the victims in its financial statements. Furthermore, while the cause of the accident investigation is underway as at the end of the current term, SK Engineering & Construction Co., Ltd. estimated the expected additional cost in relation to the damage recovery, and calculated ₩56,028 million as a loss allowance.

(6) Others

As at December 31, 2018, 82 notes (including 78 blank notes) and 50 blank checks are provided to financial institutions as collateral for borrowings.

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34. Pledged assets

The following assets were pledged as collateral for the Group's borrowings and others as at December 31, 2018 (Korean won in millions and foreign currencies in thousands):

<u>Company</u>	<u>Asset</u>	<u>Currency</u>	<u>Collateralized amount (*1)</u>	<u>Provided to</u>	<u>Description</u>
SK Innovation Co., Ltd.	Investments in associates	KRW	-	Yemen LNG Company and others	Collateral for project financing
	Property, plant and equipment	KRW	3,300	Seosan city	Location deposits
Netruck Co., Ltd.	Property, plant and equipment	KRW	4,500	Shinhan Bank	Collateral for borrowing
Seosuwon Development Company	Investment property and others	KRW	234,000	New West Village and others	Collateral for borrowing
SK Engineering & Construction Co., Ltd.	Investment securities and others	KRW	244,066	Korea Housing Guarantee Co., Ltd. and others	Collateral for borrowing and others
	Property, plant and equipment	KRW	142,000	Kookmin Bank and others	Collateral for borrowing
SKC Co., Ltd.	Property, plant and equipment and others	KRW	216,100	Korea Development Bank and others	Collateral for borrowing and others
SK Telesys Co., Ltd.	Property, plant and equipment	KRW	19,500	KDB Capital Corporation and others	Collateral for borrowing
SKC Solmics Co., Ltd.	Property, plant and equipment	KRW	85,100	Korea Development Bank and others	Collateral for borrowing
SK Bioland Co., Ltd.	Property, plant and equipment	KRW	40,500	Korea Development Bank	Collateral for borrowing
Woori Fine Chem Co., Ltd.	Property, plant and equipment	KRW	5,160	Kookmin Bank and others	Collateral for borrowing
SKC, Inc.	Inventories and trade accounts receivable	USD	19,000	Korea Development Bank and others	Collateral for borrowing
	Property, plant and equipment	USD	50,000	Standed Chartered Bank	Collateral for borrowing
SK Networks Co., Ltd.	Property, plant and equipment	KRW	392,138	Korea Development Bank and others	Collateral for sales and others
SK Magic Co., Ltd.	Property, plant and equipment	KRW	123,500	NH Bank and others	Collateral for borrowing
SK E&S Co., Ltd.	Investments in joint ventures	KRW	118,701	Woori Bank and others	Collateral for PF
	Investments in associates	KRW	12,321	Shinhan Bank and others	Collateral for PF
	Investments in subsidiaries	KRW	159,175	Korea Development Bank and others	Collateral for borrowing
Kangwon City Gas Co., Ltd.	Property, plant and equipment	KRW	5,705	Korea Development Bank	Collateral for borrowing
Pusan City Gas Co., Ltd.	Investment property	KRW	3,990	Megamart and others	Leasehold deposits
Paju Energy Service Co., Ltd.	Property, plant and equipment	KRW	360,000	Kookmin Bank and others	Collateral for borrowing
Chonnam City Gas Co., Ltd.	Property, plant and equipment	KRW	81	CJ Hello Co., Ltd.	Collateral for deposits received
Wirye Energy Service Co., Ltd.	Property, plant and equipment	KRW	84,000	Kookmin Bank and others	Collateral for borrowing
Narae Energy Service Co., Ltd.	Property, plant and equipment and others	KRW	505,000	Korea Development Bank and others	Collateral for borrowing
SK Broadband Co., Ltd.	Property, plant and equipment	KRW	3,868	Lessor	Restricted real rights for office lease
	Short-term financial instruments	KRW	11	KEB Hana Bank and others	Collateral for loan
SK China Company, Ltd.	Others	USD	43,915	Shinhan Bank and others	Collateral for borrowing
SK Industrial Development China Co., Ltd.	Others	CNY	2,000,000	Bank of China communications	Collateral for borrowing
SK Materials Co., Ltd.	Property, plant and equipment	KRW	20,378	LG Display Co., Ltd.	Collateral for advance received
		KRW	137,000	Korea Development Bank	Collateral for borrowing
		USD	3,500	Korea Development Bank	Collateral for borrowing
		JPY	3,690,000	Korea Development Bank	Collateral for borrowing
		JPY	315,000	Hyakugo Bank	Collateral for borrowing
		TWD	20,000	Mega Bank	Collateral for borrowing
		KRW	1,075	Yeongju city and Gyeongsang Buk-do	Government subsidy
SK Airgas Co., Ltd.	Property, plant and equipment and others	KRW	356,312	Kyungnam Bank and others	Collateral for borrowing
SK Tri Chem Co., Ltd.	Property, plant and equipment	KRW	24,000	Korea Development Bank	Collateral for borrowing
SK Siltron Co., Ltd.	Property, plant and equipment and others	KRW	259,645	Korea Development Bank and others	Collateral for borrowing

(*1) The carrying amount of investment securities provided as collaterals for PF loans and facility borrowings is included.

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35. Guarantees provided among the Group entities

Guarantees provided among the Group entities as at December 31, 2018 are as follows (Korean won in millions and foreign currencies in thousands):

Guarantor	Guarantee	Currency	Amount	Description of guarantee	
SK Holdings Co., Ltd.	Abrasax Investment Inc.	USD	315,000	Guarantee of debt	
	Hudson Energy NY, LLC	USD	226,000	Guarantee of debt	
SK Innovation Co., Ltd.	SK E&P America, Inc.	USD	70,000	Guarantee of debt	
SK Global Chemical Co., Ltd.	SK Ningbo Performance Rubber Co., Ltd.	USD	10,000	Guarantee of payment for license agreement	
	SK Global Chemical Americas, Inc.	USD	190,000	Guarantee of payment for principal of debt	
SK Lubricants Co., Ltd.	Iberian Lube Base Oils, S.A.	EUR	17,500	Guarantee of debt	
SK Engineering & Construction Co., Ltd.	Seosuwon Development Company	KRW	189,553	Guarantees for project financing	
	SKEC Anadolu LLC	EUR	138,563	Performance guarantees for contract and others	
SKC Co., Ltd.		TRY	25,077	Guarantee of W/H Tax	
	Sunlake Co., Ltd.	CAD	33,000	Guarantee of financial obligation	
	SKC, Inc.	USD	147,500	Guarantee of payment	
	SKC (Jiangsu) High Tech Plastics Co., Ltd.		USD	81,450	Guarantee of payment
			CNY	274,000	Guarantee of payment
	SK Telesys Co., Ltd.	KRW	30,000	Guarantee of financial obligation	
	SKC Solmics Co., Ltd.	KRW	30,000	Guarantee for operation fund	
	SKC (Natong) PU Specialty Co., Ltd.	CNY	80,000	Guarantee of payment	
	SKC (Natong) Semiconductor Materials Technology Co., Ltd.		USD	26,000	Guarantee of payment
SKC Hi-Tech & Marketing Co., Ltd.	SKC Hi-Tech&Marketing (Suzhou) Co., Ltd.	KRW	22,985	Guarantee of debt	
SK Networks Co., Ltd.	SK Networks Deutschland GmbH	EUR	10,000	Standing surety for investee	
	SK Networks Hong Kong Ltd.	USD	141,600	Standing surety for investee	
	SK Networks (Shanghai) Co., Ltd.		USD	116,400	Standing surety for investee
			CNY	54,000	Standing surety for investee
	SK Networks Japan Co., Ltd.	JPY	1,800,000	Standing surety for investee	
	SK Networks America, Inc	USD	20,000	Standing surety for investee	
	SK (Guangzhou) Metal Co., Ltd.	CNY	60,000	Standing surety for investee	
	SK Networks (Xiamen) Steel Processing Center Co., Ltd.		CNY	68,000	Standing surety for investee
	SK E&S Co., Ltd.	SK Networks Resources Australia Pty. Ltd.	AUD	35,000	Standing surety for investee
Cailip Gas Marketing, LLC		USD	91,000	Guarantee for derivative hedge and others	
SK E&S Australia Pty. Ltd.		USD	450,000	Guarantee for borrowings and others	
Paju energy service Co., Ltd.		KRW	500,000	Guarantee for borrowings and others	
Wirye energy service Co., Ltd.		KRW	280,000	Guarantee for borrowings and others	
Narae energy service Co., Ltd.		KRW	20,000	Deficiency support agreement for borrowings	
Dew Blaine Energy, LLC		USD	360,000	Performance for contracts and others	
SK E&S Americas, Inc.		USD	160,000	Guarantee for borrowings	
Prism Energy International Pte. Ltd.		USD	430,000	Guarantee for derivative hedge	
SK E&S LNG, LLC		USD	15,000	Guarantee for derivative hedge and others	
SK Materials Co., Ltd.	SK Materials (Jiangsu) Co., Ltd.	CNY	60,000	Guarantee for borrowings	
		USD	31,000	Guarantee for borrowings	
	SK Materials Taiwan Co., Ltd.	USD	3,000	Guarantee for borrowings	
SK China Company, Ltd.	SK Materials Japan Co., Ltd.	JPY	276,000	Guarantee for borrowings	
	SK (Beijing) auto rental Co., Ltd.	USD	20,399	Guarantee for borrowings	
	SK (Shenyang) auto rental Co., Ltd.	USD	10,199	Guarantee for borrowings	
	SK Rent-A-Car (Qingdao) Co., Ltd.	USD	8,946	Guarantee for borrowings	
	SK Financial Leasing	USD	4,371	Guarantee for borrowings	
SK Biotek Co., Ltd.	SK Biotek Ireland Limited.	USD	50,000	Guarantee for credit limit	
SK Telink Co., Ltd.		EUR	10,000	Performance guarantees for contract	
	SK Broadband Co., Ltd.	KRW	3	Performance guarantees for contract and others	

36. Deposits restricted

Deposits restricted for the use as at December 31, 2018 and 2017 are as follows (Korean won in millions):

Account	Classification	Institution	December 31, 2018	December 31, 2017	Description of restriction
Cash and cash equivalents	Deposits relating to letter of credit and others	Suntrust bank and others	₩ 1,045	₩ 79,985	Deposits and others
Short-term financial instruments	Charitable fund and others	Industrial Bank of Korea and others	167,183	284,747	Pledged on collateral and others
Long-term financial instruments	CO2 emission allowances fund and others	Samsung Securities and others	7,396	8,057	Deposits and others
Other non-current assets	Refund guarantee and others	Korea Software Financial Cooperative and others	4,956	3,653	Deposits and others
			<u>₩ 180,580</u>	<u>₩ 376,442</u>	

37. Financial risk management

Regarding financial instruments, the Group is exposed to a variety of financial risks: credit, liquidity and market. This note presents information related to risk exposures of the Group and the main objective, strategy, evaluation of risk, management process and capital management. Additional quantitative information is stated throughout the condensed consolidated financial statements.

37.1 Financial risk management

37.1.1 Risk management activities

The board of directors has overall responsibility for the establishment and oversight of the Group's risk management framework. The board of directors has established the risk management committee, which is responsible for developing and monitoring the Group's risk management policies. The risk management committee reports regularly to the board of directors on its activities. The Group audit committee is assisted in its oversight role by internal audit.

Internal audit undertakes both regular and ad hoc reviews of risk management controls and procedures, the results of which are reported to the Group audit committee. The Group's risk management policies are established to identify and analyze the risks faced by the Group, to set appropriate risk limits and controls and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Group's activities. The Group, through its training and management standards and procedures, aims to develop a disciplined and constructive control environment in which all employees understand their roles and obligations.

37.1.2 Credit risk

Credit risk is the risk of financial loss of the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations. In addition, the maximum exposure to credit risk as at December 31, 2018 and 2017 is as follows (Korean won in millions):

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Financial assets at FVTPL	₩ 4,926,858	₩ 385,400
Financial assets at FVOCI	26,688	-
Financial assets at amortized cost	20,584,179	-
Derivatives designated as hedging instruments	97,247	103,849
Held-to-maturity investments	-	870
Loans and receivables	-	25,579,243
Available-for-sale financial assets	-	69,248
	<u>₩ 25,634,972</u>	<u>₩ 26,138,610</u>

On the other hand, the Group has provided payment guarantees for others including related parties, associates and others. The Group, due to its payment guarantees, is exposed to credit risk (See Note 33).

37.1.2.1 Trade and other accounts receivable

The Group enters into transactions only with customers that are credit worthy. Credit quality of a customer is assessed based on an extensive credit rating scored and individual credit limits are defined in accordance with this assessment. Outstanding customer receivables are regularly monitored and credit quality may be adjusted to reflect the appropriate appetite of credit risk in accordance with the Group's risk management policies.

The Group applies a simplification method that recognises lifetime expected credit losses as a loss allowance for trade and other receivables. To measure expected credit losses, sales receivables and contract assets were divided based on credit risk characteristics and past due dates.

As at December 31, 2018 and 2017, the aging of trade receivables and others for which an allowance for doubtful accounts has not been made, as the allowance is deemed to be recoverable from a customer or counterparty later although the amount is past due, are as follows (Korean won in millions):

	December 31, 2018		December 31, 2017	
	Trade accounts receivable	Other receivables	Trade accounts receivable	Other receivables
Less than one month	₩ 321,506	₩ 46,073	₩ 768,165	₩ 80,644
One~three months	416,522	35,041	135,290	27,565
Three~six months	87,591	19,338	43,271	12,308
More than six months	343,385	368,339	328,435	148,615
	<u>₩ 1,169,004</u>	<u>₩ 468,791</u>	<u>₩ 1,275,161</u>	<u>₩ 269,132</u>

Changes in the allowance for doubtful accounts for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Beginning balance	₩ 716,879	₩ 777,198
Effect of changes in accounting policies	26,459	-
Bad debt expense	163,308	16,386
Write-off	(234,304)	(160,011)
Others (*1)	118,278	83,306
Ending balance	<u>₩ 790,620</u>	<u>₩ 716,879</u>

(*1) Others include net foreign currency translation differences, changes in the scope of consolidation and others.

37.1.2.2 Guarantee

SK Engineering & Construction Co., Ltd., one of the subsidiaries, offers payment guarantees for loans of project financing. The financing liabilities related to the payment guarantees recognized amounts of ₩15,161 million as at December 31, 2018. The Group recognizes the financial guarantee liabilities related to the payment guarantees contracted with the Group, such as SK Engineering & Construction Co., Ltd., as at December 31, 2018.

	December 31, 2018	December 31, 2017
SK Innovation Co., Ltd.	₩ 721	₩ 1,131
SK Engineering & Construction Co., Ltd.	15,161	10,433
SK Shipping Co., Ltd.	-	50
SK Biotek Co., Ltd.	389	369
	<u>₩ 16,271</u>	<u>₩ 11,983</u>

In addition, the Group has provided payment guarantees for others, including subsidiaries and others. (See Notes 33 and 35).

37.1.2.3 Other financial assets

Credit risk arising from other financial assets consists of long-term and short-term financial instruments, occurrence of trade opponent arising from the bankruptcy, etc. In this case, the credit risk exposure of the Group will be the same as the book value of the maximum applicable financial instruments. On the other hand, the management of the Group's credit rating, because it is excellent to deal with financial institutions, is judged to have limited impact on the credit risk of the financial institutions of the Group.

37.1.3 Liquidity risk

Liquidity risk is the risk that the Group encounters difficulty in meeting the obligations of the financial liabilities. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Group's reputation.

The contractual maturity of financial liabilities as at December 31, 2018 is as follows. Amounts include interests paid and presented at gross amounts (Korean won in millions):

	Book value	Contractual cash flow	Less than 3 months	3~12 months	1~5 years	More than 5 years
Loans and borrowings	₩ 11,521,253	₩ 12,389,326	₩ 3,585,306	₩ 2,138,405	₩ 6,155,331	₩ 510,284
Bonds	25,820,473	28,468,821	845,016	3,646,253	17,703,340	6,274,212
Derivative financial liabilities	330,568	330,568	60,399	8,459	260,613	1,097
Trade accounts payable	9,028,488	9,028,488	8,823,818	204,670	-	-
Other liabilities	9,078,009	10,515,524	6,907,583	985,264	1,774,763	847,914
	<u>₩ 55,778,791</u>	<u>₩ 60,732,727</u>	<u>₩ 20,222,122</u>	<u>₩ 6,983,051</u>	<u>₩ 25,894,047</u>	<u>₩ 7,633,507</u>

37.1.4 Market risk

Market risk is the fluctuating risk in fair value of the financial instruments or future cash flows caused by the changes in market price. Market risk consists of currency risk, interest rate risk, crude oil and petroleum product price risk, and others. The fundamental goal of market price management is the maximization of the profit and the limit of the exposure to market risk within an acceptable level. The Group sells and purchases financial derivatives and financial instruments or financial liabilities for the purpose of controlling the market risk. In general, the Group applies hedge accounting in order to minimize the volatility of profit.

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37.1.4.1 Currency risk

The Group is exposed to foreign currency risk arising from sales and purchases denominated in currencies other than functional currency. Main currencies used for these transactions are USD, JPY, CNY and EUR.

Details of foreign currencies and liabilities as at December 31, 2018 and 2017 are as follows (Korean won in millions and foreign currencies in thousands):

	Currency	December 31, 2018		December 31, 2017	
		Foreign currencies	Korean won equivalent	Foreign currencies	Korean won equivalent
Assets	USD	6,428,714	₩ 7,187,945	7,854,281	₩ 8,415,077
	JPY	19,169,337	194,220	21,745,852	206,392
	CNY	1,937,077	315,279	2,295,359	375,636
	EUR	233,106	298,180	141,881	181,502
	Others		337,851		117,318
			₩ 8,333,475		₩ 9,295,925
Liabilities	USD	9,424,582	₩ 10,537,626	10,426,763	₩ 11,171,234
	JPY	5,009,387	50,754	6,935,029	65,821
	CNY	1,983,852	322,892	780,156	127,672
	EUR	188,265	240,821	148,624	190,127
	Others		142,968		82,194
			₩ 11,295,061		₩ 11,637,048

Should the exchange rate of the aforementioned currencies fluctuate by 10%, the effects on equity would be as follows (Korean won in millions):

Currency	December 31, 2018		December 31, 2017	
	Increase by 10%	Decrease by 10%	Increase by 10%	Decrease by 10%
USD	₩ (334,968)	₩ 334,968	₩ (275,616)	₩ 275,616
JPY	14,347	(14,347)	14,057	(14,057)
CNY	(761)	761	24,796	(24,796)
EUR	5,736	(5,736)	(863)	863

The Group is hedging currency risk by using derivative financial instruments such as currency swaps, currency forwards and others (See Note 20).

37.1.4.2 Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt obligations with floating interest rates. As at December 31, 2018, floating-rate bonds and floating-rate borrowings are ₩3,483,101 million (as at December 31, 2017: ₩4,732,561 million). The Group's management has entered into the foreign currency swap and interest rate swap contracts to manage its interest rate risk (See Note 20).

When all other variables are fixed and the interest rates are changed for the years ended December 31, 2018 and 2017, the effects of interest expense by fluctuated interest-bearing loan are as follows (Korean won in millions):

	For the years ended	
	December 31, 2018	December 31, 2017
Interest expenses	100 basis point increase ₩ 34,831	100 basis point increase ₩ 47,326

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37.1.4.3 Crude oil and petroleum product price risk

Crude oil and petroleum product price risk is the risk that profit or cash flow will fluctuate because of changes in international market prices of crude oil and petroleum products. The Group manages these risks to maintain stable margins through the use of fixed-price contracts with customers and derivative contracts of fluctuations in fair values according to changes in international market prices. Key management of the Group determined that the risk from changes in the price of crude oil and petroleum products and the risk to fluctuations in fair values are approximately managed.

37.1.5 Enforceable master netting agreement or similar agreement

Carrying amount of financial instruments recognized for which offset agreements are applicable as at December 31, 2018 and 2017 is as follows (Korean won in millions):

	December 31, 2018					
	Gross financial instruments recognized	Gross offset financial instruments recognized	Net financial instruments presented in the consolidated statement of financial position	Relevant amount not offset in the consolidated statement of financial position		Net amount
				Financial instruments	Cash collaterals received	
Financial assets:						
Derivatives (*1)	₩ 1,867	₩ -	₩ 1,867	₩ (1,107)	₩ -	₩ 760
Trade accounts receivable and other receivables	95,990	(95,920)	70	-	-	70
	<u>₩ 97,857</u>	<u>₩ (95,920)</u>	<u>₩ 1,937</u>	<u>₩ (1,107)</u>	<u>₩ -</u>	<u>₩ 830</u>
Financial liabilities:						
Derivatives (*1)	₩ 1,107	₩ -	₩ 1,107	₩ (1,107)	₩ -	₩ -
Other accounts payable and other liabilities	95,920	(95,920)	-	-	-	-
	<u>₩ 97,027</u>	<u>₩ (95,920)</u>	<u>₩ 1,107</u>	<u>₩ (1,107)</u>	<u>₩ -</u>	<u>₩ -</u>
	December 31, 2017					
	Gross financial instruments recognized	Gross offset financial instruments recognized	Net financial instruments presented in the consolidated statement of financial position	Relevant amount not offset in the consolidated statement of financial position		Net amount
Financial assets:						
Derivatives (*1)	₩ 26,645	₩ -	₩ 26,645	₩ (19,875)	₩ -	₩ 6,770
Trade accounts receivable and other receivables	93,146	(92,409)	737	-	-	737
	<u>₩ 119,791</u>	<u>₩ (92,409)</u>	<u>₩ 27,382</u>	<u>₩ (19,875)</u>	<u>₩ -</u>	<u>₩ 7,507</u>
Financial liabilities:						
Derivatives (*1)	₩ 19,875	₩ -	₩ 19,875	₩ (19,875)	₩ -	₩ -
Other accounts payable and other liabilities	92,409	(92,409)	-	-	-	-
	<u>₩ 112,284</u>	<u>₩ (92,409)</u>	<u>₩ 19,875</u>	<u>₩ (19,875)</u>	<u>₩ -</u>	<u>₩ -</u>

(*1) Derivatives are subject to enforceable master netting arrangement in accordance with ISDA (International Swap and Derivative Association).

37.2 Capital risk management

The fundamental goal of capital management is to keep a sound financial structure. The Group is using the debt ratio, calculated as total debt divided by total amount of capital, as an indicator of capital management. The Group maintains a debt ratio of 134.7% as at December 31, 2018. The maturity of the debt is dispersed in the long term; so, debt-repayments are not demanding.

The Group's debt ratio as at December 31, 2018 and 2017 is as follows: (Korean won in millions)

	December 31, 2018		December 31, 2017	
Total liabilities	₩	68,569,119	₩	64,027,043
Total equity		50,887,872		45,756,420
Debt ratio		134.7%		139.9%

38. Business combination

38.1 2018

38.1.1 Dow Chemical EAA Business

In accordance with the resolution of the Board of Directors on February 1, 2017, SK Global Chemical Co., Ltd., one of the subsidiaries, acquired all of the Dow Chemical Company's EAA businesses in U.S. and Spain and the related tangible and intangible assets and completed the acquisition during the year ended December 31, 2017, for diversifying its business portfolio into a higher value-added packaging field. At the date of acquisition, the fair value of tangible and intangible assets was determined provisionally because the independent valuation was not completed. For the years ended December 31, 2018, the Group subsequently adjusted the amount of its identifiable net assets recognized at the date of acquisition by obtaining new information on the pertinent fact and circumstances that existed on the date of acquisition. The details of the business combination for the Dow Chemical EAA project are as follows:

(1) Fair value of consideration transferred in the business combination is as follows (Korean won in millions):

	Before <u>adjustment</u>	Adjustment	After <u>adjustment</u>
Cash	₩ 394,463	₩ (1,792)	₩ 392,671

(2) Identifiable assets acquired and liabilities assumed due to merger are as follows (Korean won in millions):

	Before <u>adjustment</u>	Adjustment	After <u>adjustment</u>
Fair value of identifiable assets	₩ 294,183	₩ 10,246	₩ 304,429
Current assets	43,862	252	44,114
Trade accounts receivable and other accounts receivable	12,742	-	12,742
Inventories	31,120	252	31,372
Non-current assets	250,321	9,994	260,315
Property, plant and equipment	56,683	(364)	56,319
Intangible assets	193,638	10,358	203,996
Fair value of identifiable liabilities	-	-	-
Fair value of identifiable net assets	<u>₩ 294,183</u>	<u>₩ 10,246</u>	<u>₩ 304,429</u>

(3) Goodwill arising from business combination is as follows (Korean won in millions):

	Before <u>adjustment</u>	Adjustment	After <u>adjustment</u>
a. The total consideration transferred	₩ 394,463	₩ (1,792)	₩ 392,671
b. Fair value of the net identifiable assets	<u>(294,183)</u>	<u>(10,246)</u>	<u>(304,429)</u>
c. Goodwill	<u>₩ 100,280</u>	<u>₩ (12,038)</u>	<u>₩ 88,242</u>

(4) Outflow of net cash from business combination is as follows (Korean won in millions):

	Before <u>adjustment</u>	Adjustment	After <u>adjustment</u>
Payment by cash	₩ 394,463	₩ (1,792)	₩ 392,671
Acquisition of cash and cash equivalents	-	-	-
Out flow of net cash	<u>₩ 394,463</u>	<u>₩ (1,792)</u>	<u>₩ 392,671</u>

38.1.2 Dow Chemical PVDC Business

SK Global Chemical, one of the subsidiaries, decided to acquire the entire PVDC business in the United States owned by The Dow Chemical Company and all its tangible and intangible assets in order to diversify its packaging business portfolio. On the acquisition date, the fair value of tangible and intangible assets was determined provisionally because the independent valuation was not completed. For the years ended December 31, 2018, the Group subsequently adjusted the amount of its identifiable net assets recognized at the date of acquisition by obtaining new information on the pertinent fact and circumstances that existed on the date of acquisition. The details of the business combination for the Dow Chemical PVDC project are as follows:

(1) Fair value of consideration transferred in the business combination is follows (Korean won in millions):

	Before adjustment	Adjustment	After adjustment
Cash	₩ 82,193	₩ -	₩ 82,193
Conditional price	-	(15,964)	(15,964)
Total	<u>₩ 82,193</u>	<u>₩ (15,964)</u>	<u>₩ 66,229</u>

(2) Identifiable assets acquired and liabilities assumed due to merger are as follows (Korean won in millions):

	Before adjustment	Adjustment	After adjustment
Fair value of identifiable assets	₩ 26,071	₩ 22,216	₩ 48,287
Current assets	11,881	85	11,966
Trade accounts receivable and other accounts receivable	3,365	(917)	2,448
Inventories	8,516	1,002	9,518
Non-current assets	14,190	22,131	36,321
Property, plant and equipment	14,190	11,091	25,281
Intangible assets	-	11,040	11,040
Fair value of identifiable liabilities	-	(6,544)	(6,544)
Accounts payable	-	(8)	(8)
Long-term accounts payable	-	(6,536)	(6,536)
Fair value of identifiable net assets	<u>₩ 26,071</u>	<u>₩ 15,672</u>	<u>₩ 41,743</u>

(3) Goodwill arising from business combination is as follows (Korean won in millions):

	Before adjustment	Adjustment	After adjustment
a. The total consideration transferred	₩ 82,193	₩ (15,964)	₩ 66,229
b. Fair value of the net identifiable assets	(26,071)	(15,672)	(41,743)
c. Goodwill	<u>₩ 56,122</u>	<u>₩ (31,636)</u>	<u>₩ 24,486</u>

(4) Outflow of net cash from business combination is as follows (Korean won in millions):

	Before adjustment	Adjustment	After adjustment
Payment by cash	₩ 82,193	₩ -	₩ 82,193
Acquisition of cash and cash equivalents	-	-	-
Out flow of net cash	<u>₩ 82,193</u>	<u>₩ -</u>	<u>₩ 82,193</u>

38.1.3 SK Showa Denko Co., Ltd. and others

(1) General information

The Group acquired control of the investee by holding a majority of the voting rights of corporation and the board of directors of SK Showa Denko Co., Ltd. during the current period. The acquisition is accounted for using the acquisition method. The quarterly consolidated financial statements include the financial results of SK Showa Denko Co., Ltd. from the acquisition date to the end of the current period.

During the year ended December 31, 2018, the Group acquired additional 41,157,506 shares which resulted in the Group obtaining control over id Quantique SA with 44,157,506 shares in cash of ₩55,249 million and 58.1% ownership of the outstanding shares, in aggregate. Taking control of id Quantique SA will enable the Group to increase its corporate value as the leading mobile telecommunication operator in Korea and to generate profit in overseas markets by utilizing quantum cryptographic security. In addition, the Group acquired 16,666,666 additional shares with a spot investment of ₩5,672 million in assets during the current period. The equity ratio has increased to 65.6% due to this spot investment. The quarterly consolidated financial statements include the financial results of id Quantique SA from the acquisition date to the end of the current period.

SK E&P America, Inc., a subsidiary of the Group, acquired all of the shares of Longfellow Nemaha, LLC for the year ended December 31, 2018 and changed its name to SK Nemaha, LLC after the acquisition. The shares acquired are 50% of the shares of production oil field which is located in Oklahoma. The Group completed the acquisition on June 5, 2018 and total acquisition cost of ₩310,682 million (USD 290 million) was paid by cash. Further, goodwill did not occur in the business combination and the initial accounting was provisionally determined as at December 31, 2018.

The Group acquired 100% equity shares in Fine Chemicals Holdings Corp., the parent company of AMPAC (Contract Manufacturing Organization or CMO), in order to increase the synergy effect in the bio business for the year ended December 31, 2018. The acquisition was accounted for using the acquisition method, and the consolidated financial statements include the financial performance of Fine Chemicals Holdings Corp. from the acquisition date to December 31, 2018.

On May 8, 2018, SK Telecom Co., Ltd. entered into an agreement to acquire 740,895 shares of Life and Security Holdings Co., Ltd., at ₩696,665 million to strengthen its security business as well as to expand the residential customer base. On October 1, upon completion of share acquisition, SK Telecom Co., Ltd. acquired 55% equity share in Life and Security Holdings Co., Ltd.. Also, SK Telecom Co., Ltd. has acquired control over ADT Caps Co., Ltd., security service provider and two other subsidiaries of Life and Security Holdings Co., Ltd.. The consolidated financial statements include the financial results of Life and Security Holdings Co., Ltd. from the acquisition date to the end of the current period.

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38. Business combination (cont'd)

(2) Identifiable assets acquired and liabilities assumed due to merger is as follows (Korean won in millions):

	SK Showa Denko Co., Ltd.	id Quantique SA	Longfellow Nemaha, LLC (*1)	AMPAC LLC (*1)	Life & Security Holdings Co., Ltd.
Current assets:	₩ 10,137	₩ 17,276	₩ -	₩ 143,346	₩ 148,378
Cash and cash equivalents	6,332	1,538	-	24,322	101,896
Trade accounts receivable and other accounts receivable	1,375	13,609	-	91,128	40,241
Inventories	501	2,003	-	25,529	2,440
Other current assets	1,929	126	-	2,367	3,801
Non-current assets:	17,244	8,302	315,836	450,274	1,447,410
Property, plant and equipment	17,242	415	-	155,688	427,752
Intangible assets	-	7,566	315,782	288,850	1,019,503
Other non-current assets	2	321	54	5,736	155
Current liabilities:	6,495	2,801	551	97,550	368,543
Trade accounts payable and other accounts payable	6,492	1,569	-	12,858	296,660
Other current liabilities	3	1,232	551	84,692	71,883
Non-current liabilities:	1	1,648	4,603	208,591	2,060,205
Retirement benefit obligation	1	-	-	16,853	78,209
Deferred income tax liabilities	-	1,648	-	52,210	229,207
Other non-current liabilities	-	-	4,603	139,528	1,752,789
Fair value of identifiable net assets	<u>₩ 20,885</u>	<u>₩ 21,129</u>	<u>₩ 310,682</u>	<u>₩ 287,479</u>	<u>₩ (832,960)</u>

(*1) As at December 31, 2018, the assessment of fair values of assets acquired and liabilities assumed for Longfellow Nemaha, LLC and AMPAC was not completed and thus the fair values were determined as provisional amounts.

(3) Goodwill arising from business combination is as follows (Korean won in millions):

	SK Showa Denko Co., Ltd.	id Quantique SA	Longfellow Nemaha, LLC (*1)	AMPAC LLC (*1)	Life & Security Holdings Co., Ltd.
a. The total consideration transferred					
Consideration transferred	₩ 10,651	₩ 55,249	₩ 310,682	₩ 623,652	₩ 696,665
Fair value of the share holding transferred	-	3,965	-	-	-
	<u>10,651</u>	<u>59,214</u>	<u>310,682</u>	<u>623,652</u>	<u>696,665</u>
b. Fair value of proportionate share of acquired net assets					
Fair value of the net identifiable assets	₩ 20,885	₩ 21,129	₩ 310,682	₩ 287,479	₩ (832,960)
Non-controlling interests (*1)	(10,234)	(9,290)	-	-	374,588
	<u>10,651</u>	<u>11,839</u>	<u>310,682</u>	<u>287,479</u>	<u>(458,372)</u>
C. Goodwill	<u>₩ -</u>	<u>₩ 47,375</u>	<u>₩ -</u>	<u>₩ 336,173</u>	<u>₩ 1,155,037</u>

(*1) Non-controlling interests arised from the merger are measured in proportion to the non-controlling interests in net identifiable assets of the merged company.

(4) The details of the Group's prior term tangible and intangible assets that have been retroactively adjusted for a business combination are as follows (Korean won in millions):

	Before adjustment	Adjustment	After adjustment
Property, plant and equipment:			
Land	₩ 9,745,857	₩ -	₩ 9,745,857
Buildings	3,831,393	(306)	3,831,087
Structures	1,569,763	2,130	1,571,893
Equipments	17,158,469	8,351	17,166,820
Others	3,126,126	(1,235)	3,124,891
Construction in progress	2,774,425	(2)	2,774,423
Intangible assets:			
Goodwill	₩ 899,213	₩ (41,699)	₩ 857,514
Customer-related assets	1,822,205	85	1,822,290
Brand-related assets	2,194,226	10,179	2,204,405
Developed technology	1,169,702	6,214	1,175,916
Others	1,825,881	5,765	1,831,646

38.2 2017

38.2.1 General information

On January 11, 2017, the Group acquired, at ₩39,419 million, 26.65% of ordinary shares with voting rights of SM Core, Inc., which is engaged in the production and sales of logistics automation system that includes goods handling equipment, automated conveyors and loading equipment. This acquisition is to develop the smart factory and logistics business in the ICT integrated field. In addition, this transaction was accounted for by using the acquisition method.

As at June 30, 2017, SKC Co., Ltd., a subsidiary, acquired 51% equity ownership of SKC Hi-Tech & Marketing Co., Ltd. (formerly, SK Haas Display Film Co., Ltd.) for a consideration of ₩81,187 million. The equity ownership of the Group increased from 49% to 100%, thereby giving control to the Group. The purpose of the acquisition is to enhance synergy of film business through value chain expansion. This transaction was accounted for by using the acquisition method. The consolidated financial statements comprise financial performance of SKC Hi-Tech & Marketing Co., Ltd. (formerly, SK Haas Display Film Co., Ltd.) for the period from the acquisition date to the end of reporting period.

On August 17, 2017, the Company acquired 51% shares with voting rights of SK Siltron Co., Ltd. (formerly, LG Siltron Co., Ltd.), which manufactures and sells silicon thin-film for the electronics industry, at ₩620,000 million. The purpose of the acquisition of the shares was to expand the semiconductor material business by entering into the manufacturing and sales business of silicon wafer. The acquisition was accounted for by using the acquisition method. The consolidated financial statements comprise financial performance of SK Siltron Co., Ltd., for the period from the acquisition date to the end of the reporting period.

In accordance with a resolution of the Board of Directors on February 1, 2017, SK Innovation Co., Ltd., a subsidiary, elected to acquire all of the US and Spain EAA businesses and their tangible/intangible assets owned by The Dow Chemical Company and completed the acquisition during the year ended December 31, 2017. The acquisition was made to diversify its business portfolio into high value-added packaging by entering the EAA business. The acquisition was accounted for by using the acquisition method, and the consolidated financial statements comprise financial performance of the Dow Chemical EAA business for the period from the acquisition date to the end of the reporting period.

On September 1, 2017, iriver Inc., a subsidiary, acquired all of the shares and control of Life Design Company Japan Inc. (formerly, S.M. Life Design Company Japan Inc.), which was held by SM Entertainment Japan Co., Ltd., to maximize overseas business expansion and business synergy. In addition, the transaction was accounted for using the acquisition method and the consolidated financial statements comprise financial performance of Life Design Company Japan Inc. (formerly, S.M. Life Design Company Japan Inc.) for the period from the acquisition date to the end of the reporting period.

On October 1, 2017, iriver Inc., a subsidiary, merged SM Mobile Communications Co., Ltd. to enter contents business and enhance competitiveness of its device business. As a result of merger, iriver Inc. obtained controls over S.M. Mobile Communications Japan Inc., which was wholly owned by SM Mobile Communications Co., Ltd. The transaction was accounted for using the acquisition method.

As at December 31, 2017, SK Biotek Ireland Limited, subsidiary, completed the acquisition of tangible assets, inventories, contracts and others of Bristol-Myers Squibb Company (BMS)'s Swords operation. The acquisition is for the purpose of business expansion of raw materials consignment production and the transaction is accounted for using the acquisition method.

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38.2.2 Identifiable assets acquired and liabilities assumed

1) Identifiable assets acquired and liabilities assumed due to merger is as follows (Korean won in millions):

	SM Core Co., Ltd.	SKC Hi-Tech &Marketing Co., Ltd.	SK Silton Co., Ltd.	Dow Chemical EAA business	Dow Chemical PVDC	S.M. Life Design Company Japan Inc.	S.M. Mobile Com- munications Co., Ltd.	BMS Swords and others
Current assets:	₩ 74,987	₩ 144,166	₩ 493,803	₩ 44,114	₩ 11,958	₩ 6,784	₩ 4,349	₩ 162,617
Cash and cash equivalents	45,463	15,835	105,400	-	-	3,434	4,112	-
Trade accounts receivable and other accounts receivable	27,364	83,882	118,367	12,742	2,440	1,471	237	-
Inventories	342	44,449	223,187	31,372	9,518	1,879	-	156,265
Other current assets	1,818	-	46,849	-	-	-	-	6,352
Non-current assets:	43,953	109,955	1,371,378	260,315	36,321	6,681	7,797	76,458
Investment Securities	-	-	1,986	-	-	-	-	-
Property, plant and equipment	20,249	62,620	736,977	56,319	25,281	4	311	76,458
Intangible assets	22,168	35,552	591,598	203,996	11,040	6,677	7,445	-
Deferred income tax assets	-	3,503	-	-	-	-	-	-
Other non-current assets	1,536	8,280	40,817	-	-	-	41	-
Current liabilities:	16,448	35,809	501,986	-	-	2,563	815	16,433
Trade accounts payable and other accounts payable	13,533	35,809	143,516	-	-	2,563	815	8,106
Short-term borrowings	500	-	355,169	-	-	-	-	-
Other current liabilities	2,415	-	3,301	-	-	-	-	8,327
Non-current liabilities:	7,357	76,645	422,539	-	6,536	2,650	154	25,625
Bonds payable and long-term borrowings	-	62,900	225,398	-	-	-	-	-
Retirement benefit obligation	2,272	12,644	23,778	-	-	-	-	-
Deferred income tax liabilities	5,085	-	100,531	-	-	2,324	-	6,328
Other non-current liabilities	-	1,101	72,832	-	6,536	326	154	19,297
Fair value of identifiable net assets	<u>₩ 95,135</u>	<u>₩ 141,667</u>	<u>₩ 940,656</u>	<u>₩ 304,429</u>	<u>₩ 41,743</u>	<u>₩ 8,252</u>	<u>₩ 11,177</u>	<u>₩ 197,017</u>

2) Used valuation techniques for remeasurement at fair value of acquired significant assets and liabilities is as follow:

Acquired Assets	Measurement of fair value
<i>Property, plant and equipment</i>	Market approach or cost approach: The Company determines the fair value reflecting on the created price in the available market transactions of similar assets or on the replacement cost considering the appropriate functional and economic obsolescence as well as the physical deterioration degree.
<i>Intangible assets</i>	Relief from royalty method or multi-period excess earnings method: The Company determines the fair value of intangible assets by using relief from royalty method considering the royalty discount that is expected to be avoided by the retention of the patents or trademarks directly. And the Company also determines the fair value of intangible by using multi-period excess earnings method considering the present value of net cash flows that is expected to be generated from the customer relationship.
<i>Inventories</i>	The Company determines the fair value on the basis of a reasonable profit based on the effort required to complete or sell inventories and the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale.
<i>Bonds payable and borrowings</i>	The Company determines the fair value by discounting future cash flows at an effective interest rate that consider current credit rating at assessment date and spread applied to recently issued.

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38.2.3 Goodwill

Goodwill arising from business combination is as follows (Korean won in millions):

	SM Core Co., Ltd.	SKC Hi-Tech &Marketing Co., Ltd.	SK Silton Co., Ltd.	Dow Chemical EAA business	Dow Chemical PVDC	S.M. Life Design Company Japan Inc.	S.M. Mobile Com -munications Co., Ltd.	BMS Swords and others
a. The total consideration transferred:								
Consideration transferred	₩ 39,419	₩ 81,187	₩ 620,000	₩ 392,671	₩ 66,229	₩ 30,000	₩ 24,650	₩ 167,529
Fair value of share holding transferred	-	78,003	-	-	-	-	-	-
	<u>₩ 39,419</u>	<u>₩ 159,190</u>	<u>₩ 620,000</u>	<u>₩ 392,671</u>	<u>₩ 66,229</u>	<u>₩ 30,000</u>	<u>₩ 24,650</u>	<u>₩ 167,529</u>
b. Fair value of proportionate share of acquired net assets:								
Fair value of the net identifiable assets	₩ 95,135	₩ 141,667	₩ 940,656	₩ 304,429	₩ 41,743	₩ 8,252	₩ 11,177	₩ 197,017
Non-controlling interests (*1)	(69,906)	-	(460,928)	-	-	-	-	-
	<u>₩ 25,229</u>	<u>₩ 141,667</u>	<u>₩ 479,728</u>	<u>₩ 304,429</u>	<u>₩ 41,743</u>	<u>₩ 8,252</u>	<u>₩ 11,177</u>	<u>₩ 197,017</u>
c. Goodwill (c=a-b)	<u>₩ 14,190</u>	<u>₩ 17,523</u>	<u>₩ 140,272</u>	<u>₩ 88,242</u>	<u>₩ 24,486</u>	<u>₩ 21,748</u>	<u>₩ 13,473</u>	<u>₩ (29,488)</u>

(*1) Non-controlling interests occurred due to the merger are measured in proportion to the non-controlling interest in net identifiable assets of the merged company.

39. Subsequent events

39.1 Acquisition of additional shares of AJ Rent Car Co., Ltd.

SK Networks Co., Ltd., a subsidiary, acquired 9,353,660 common shares (equity ratio 42.24%) of AJ Rent Car Co., Ltd. as at January 2, 2019, in accordance with the board's resolution on September 21, 2018 to enhance the competitiveness of its future mobility business and accelerate growth through the reorganization of the rental industry.

39.2 Additional capital increasement of SK South East Asia Investment Pte. Ltd.

The Group has decided to increase additional capital to SK South East Asia Investment Pte. Ltd. The estimated investment amount will be USD 100 million for SK Holdings Co., Ltd., SK Innovation Co., Ltd, SK Telecom Co., Ltd., and SK E&S Co., Ltd., respectively, and the capital increase will commence during 2019.

39.3 Physical division of material business of SK Innovation Co., Ltd.

SK Innovation Co., Ltd., a subsidiary, decided to physically separate its material business according to a board resolution on February 27, 2019, in order to enhance its expertise and original competitiveness in the material business. The division date is April 1, 2019, and the division plan will be finalized at SK Innovation's shareholders' meeting scheduled for March 21, 2019.