KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES

CONSOLIDATED FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

ATTACHMENT: INDEPENDENT AUDITORS' REPORT

KOREA WATER RESOURCES CORPORATION

Contents

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INDEPENDENT AUDITORS' REPORT

English Translation of Independent Auditors' Report Originally Issued in Korean on February 27, 2018.

To the Shareholders and the Board of Directors of
Korea Water Resources Corporation and its Subsidiaries:

Report on the Consolidated Financial Statements

We have audited the accompanying consolidated financial statements of Korea Water Resources Corporation and its subsidiaries (the "Group"), which comprise the consolidated statements of financial position as of December 31, 2017 and 2016, respectively, and the related consolidated statements of comprehensive income (loss), consolidated statements of changes in shareholders' equity and consolidated statements of cash flows, all expressed in Korean won, for the years ended December 31, 2017 and 2016, respectively, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Korean Government-owned and Quasi-government Accounting Regulations and Standards and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an audit opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Korean Standards on Auditing ("KSAs"). Those standards require that we comply with ethical requirements and plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2017 and 2016, respectively, and its financial performance and its cash flows for the years ended December 31, 2017 and 2016, respectively, in accordance with Korean Government-owned and Quasi-government Accounting Regulation and Standards.

Emphasis of Matter

The following matters may be helpful to the readers in their understanding of the consolidated financial statements:

1. Uncertainty in the Gyeong-in Canal Project

   As other matter does not have any impact on our audit conclusion, the readers of the report need to pay attention to Note 44.

   As described in Note 44 to the consolidated financial statements, in accordance with the government's resolution at the National Policy Coordination Conference (December 11, 2008), the Group invested a sum of ₩15,043 hundred million (book value) as of December 31, 2017, in the Gyeong-in Canal Project, which is currently recognized as intangible assets.

   As of December 31, 2017, as a result of the resolution at the National Policy Coordination Conference (May 22, 2014), the Group is negotiating with the Ministry of Maritime Affairs and Fisheries to settle the procedures of progressing property rights and the changes in business plans in accordance with the Port Act, as a support measure for the Gyeong-in Canal Project, whose recoverable amount of the major waterway investment cost could fluctuate significantly depending on the outcome of the negotiation. As the negotiation (December 2017 with current government) has not been confirmed, there is a significant uncertainty related to impairment of the intangible assets.

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2. Adaption of Korean Government-owned and Quasi-government Accounting Regulations and Standards

   As described in Note 2 to the consolidated financial statements, if there is no accounting treatment for certain transactions specified under Korean Government-owned and Quasi-government Accounting Regulations and Standards, the Group accounts for such transactions in accordance with Korean International Financial Reporting Standards.

Deloitte Anjin LLC

February 27, 2018

Notice to Readers

This report is effective as of February 27, 2018, the auditors' report date. Certain subsequent events or circumstances may have occurred between the auditors' report date and the time the auditors' report is read. Such events or circumstances could significantly affect the consolidated financial statements and may result in modifications to the auditors' report.

KOREA WATER RESOURCES CORPORATION
AND SUBSIDIARIES (the “Group”)

CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE YEARS ENDED
DECEMBER 31, 2017 AND 2016

The accompanying consolidated financial statements, including all footnote disclosures, were prepared by, and are the responsibility of, the Group.

Lee, Hak Soo
Chief Executive Officer
Korea Water Resources Corporation

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
AS OF DECEMBER 31, 2017 AND 2016

	December 31, 2017	December 31, 2016
	(In thousands of Korean won)	
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents (Notes 6, 7 and 38)	₩160,865,887	₩111,502,376
Short-term loans and receivables (Notes 12 and 38)	8,640,246	-
Short-term financial instruments (Notes 11 and 38)	23,897,420	79,605,251
Derivative assets (Notes 8 and 38)	2,180,359	13,940,759
Trade and other receivables, net (Notes 9 and 38)	338,920,824	297,800,217
Inventories (Note 13)	6,416,510,928	5,838,039,077
Current tax assets (Note 36)	50,122	19,396
Other non-financial assets (Note 14)	90,740,237	81,103,125
TOTAL CURRENT ASSETS	7,041,806,023	6,422,010,201
NON-CURRENT ASSETS		
Non-current AFS financial assets (Notes 10 and 38)	23,131,909	17,040,121
Long-term loans and receivables (Notes 12 and 38)	17,762,987	19,436,514
Non-current derivative assets (Notes 8 and 38)	28,672,132	62,389,624
Long-term trade and other receivables, net (Notes 9 and 38)	662,483,263	648,922,129
Property, plant and equipment (Notes 16 and 23)	1,592,189,869	1,490,732,119
Intangible assets other than goodwill (Notes 17, 23, 24 and 44)	11,382,626,363	11,498,154,422
Investments in associates (Note 15)	75,025,579	86,636,527
Deferred tax assets (Note 36)	39,227,137	49,309,867
Other non-financial assets (Note 14)	4,370,145	4,798,298
TOTAL NON-CURRENT ASSETS	13,825,489,384	13,877,419,621
TOTAL ASSETS	₩20,867,295,407	₩20,299,429,822

(Continued)

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (CONTINUED)
AS OF DECEMBER 31, 2017 AND 2016

	December 31, 2017	December 31, 2016
	(In thousands of Korean won)	
LIABILITIES		
CURRENT LIABILITIES		
Trade and other payables (Notes 18 and 38)	₩349,176,235	₩329,739,964
Short-term borrowings (Notes 19 and 38)	5,018,749	-
Current portion of long-term borrowings (Notes 19 and 38)	102,918,456	73,952,246
Current portion of debentures, net (Notes 19 and 38)	1,341,689,500	1,494,543,000
Derivative liabilities (Notes 8, 20 and 38)	20,161,613	-
Current tax liabilities (Note 36)	1,738,162	1,968
Other non-financial liabilities (Note 25)	1,135,920,047	1,139,863,553
Provisions (Note 22)	99,472,152	116,464,377
TOTAL CURRENT LIABILITIES	3,056,094,914	3,154,565,108
NON-CURRENT LIABILITIES		
Long-term trade and other payables (Note 18)	3,950	4,850
Long-term borrowings (Notes 19 and 38)	342,475,031	405,843,160
Debentures, net (Notes 19 and 38)	9,932,699,270	9,799,643,323
Derivative liabilities (Notes 8, 20 and 38)	35,837,762	26,977,212
Other non-financial liabilities (Notes 24 and 25)	41,392,575	41,659,075
Employee benefits (Note 21)	164,341,891	140,377,217
Deferred tax liabilities (Note 36)	58,149	58,149
Provisions (Notes 22 and 43)	60,387,705	69,727,023
TOTAL NON-CURRENT LIABILITIES	10,577,196,333	10,484,290,009
TOTAL LIABILITIES	13,633,291,247	13,638,855,117
SHAREHOLDERS' EQUITY		
Issued capital (Notes 1 and 26)	8,101,944,481	7,687,517,325
Retained earnings (accumulated deficit) (Notes 27 and 28)	(864,040,732)	(1,044,967,874)
Other equity components (Note 29)	(37,848,682)	(14,524,684)
CONTROLLING INTERESTS	7,200,055,067	6,628,024,767
NON-CONTROLLING INTERESTS	33,949,093	32,549,938
TOTAL SHAREHOLDERS' EQUITY	7,234,004,160	6,660,574,705
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	₩20,867,295,407	₩20,299,429,822

(Concluded)

See accompanying notes to consolidated financial statements.

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	2017	2016
	(In thousands of Korean won)	
REVENUE (Notes 5, 30, 40 and 41)	₩3,375,560,292	₩3,618,084,600
COST OF SALES (Notes 37 and 41)	(2,793,723,888)	(3,105,616,495)
GROSS PROFIT	581,836,404	512,468,105
Selling, general and administrative expenses (Notes 31 and 37)	(154,119,986)	(148,368,676)
OPERATING PROFIT	427,716,418	364,099,429
Other incomes (Notes 9, 24 and 32)	68,450,293	20,053,389
Other expenses (Notes 9 and 32)	(42,887,498)	(120,128,132)
Other gains (losses), net (Notes 17 and 33)	(1,889,366)	(143,011,414)
Financial incomes (Notes 8, 34 and 38)	125,341,339	46,182,234
Financial costs (Notes 8, 35 and 38)	(383,289,611)	(329,105,380)
Share of profit of equity-accounted investees, net (Note 15)	(1,145,493)	(3,308,952)
NET INCOME (LOSS) BEFORE INCOME TAX EXPENSE (BENEFIT)	192,296,082	(165,218,826)
Income tax expense (benefit) (Note 36)	7,362,030	(48,253,507)
NET INCOME (LOSS) FOR THE YEAR	184,934,052	(116,965,319)
OTHER COMPREHENSIVE INCOME (LOSS)		
Items that will not be reclassified to profit or loss:		
Defined benefit plan actuarial profit (loss) (Note 27)	1,678,689	(1,155,534)
Total items that will not be reclassified to profit or loss	1,678,689	(1,155,534)
Items that are or may be reclassified subsequently to profit or loss:		
Effective portion of unrealized change in fair values of cash flow hedges	18,896,899	1,331,329
Unrealized net change in fair value of AFS financial assets, net of income tax	913	156
Foreign currency translation differences for foreign operations	(37,627,558)	4,556,686
Unrealized gain (loss) on valuation of equity method investments	(10,469,571)	(1,888,232)
Total items that are or may be reclassified subsequently to profit or loss (Notes 8 and 29)	(29,199,317)	3,999,939
OTHER COMPREHENSIVE INCOME (LOSS) FOR THE YEAR, NET OF INCOME TAX	(27,520,628)	2,844,405
TOTAL COMPREHENSIVE INCOME (LOSS) FOR THE YEAR	₩157,413,424	₩(114,120,914)

(Continued)

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	2017	2016
	(In thousands of Korean won)	
Net income (loss) attributable to:		
Controlling interests	₩179,248,453	₩(120,912,854)
Non-controlling interests	5,685,599	3,947,535
NET INCOME (LOSS) FOR THE YEAR	184,934,052	(116,965,319)
Total comprehensive income (loss) attributable to:		
Controlling interests	157,603,263	(120,045,631)
Non-controlling interests	(189,839)	5,924,717
TOTAL COMPREHENSIVE INCOME (LOSS) FOR THE YEAR	₩157,413,424	₩(114,120,914)

(Concluded)

See accompanying notes to consolidated financial statements.

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	Equity attributable to owners of the Group					
	Issued capital	Retained earnings	Other equity components	Subtotal	Non-controlling interests	Total equity
			(In thousands of Korean won)			
Balance at January 1, 2016	₩7,193,548,343	₩(2,374,278,653)	₩1,434,831,946	₩6,254,101,636	₩23,366,881	₩6,277,468,518
Comprehensive income (loss) for the year						
Net loss	-	(120,912,853)	-	(120,912,853)	3,947,535	(116,965,319)
Other comprehensive loss	-	(1,155,534)	2,022,756	867,222	1,977,182	2,844,404
Loss reserves	-	1,451,379,166	(1,451,379,166)	-	-	-
Total comprehensive income for the year	-	1,329,310,779	(1,449,356,410)	(120,045,631)	5,924,717	(114,120,914)
Transactions with owners of the Group						
Increase in paid-in capital	493,968,982	-	-	493,968,982	-	493,968,982
Others	-	-	(220)	(220)	3,258,340	3,258,120
Total transactions with owners of the Group	493,968,982	-	(220)	493,968,762	3,258,340	497,227,102
Balance at December 31, 2016	₩7,687,517,325	₩(1,044,967,874)	₩(14,524,684)	₩6,628,024,767	₩32,549,938	₩6,660,574,706
Balance at January 1, 2017	₩7,687,517,325	₩(1,044,967,874)	₩(14,524,684)	₩6,628,024,767	₩32,549,938	₩6,660,574,706
Comprehensive income (loss) for the year						
Net loss	-	179,248,453	-	179,248,453	5,685,599	184,934,052
Other comprehensive loss	-	1,678,689	(23,323,879)	(21,645,190)	(5,875,439)	(27,520,629)
Total comprehensive income (loss) for the year	-	180,927,142	(23,323,879)	157,603,263	(189,840)	157,413,423
Transactions with owners of the Group						
Increase in paid-in capital	414,427,156	-	-	414,427,156	-	414,427,156
Others	-	-	(119)	(119)	1,588,995	1,588,876
Total transactions with owners of the Group	414,427,156	-	(119)	414,427,037	1,588,995	416,016,032
Balance at December 31, 2017	₩8,101,944,481	₩(864,040,732)	₩(37,848,682)	₩7,200,055,067	₩33,949,093	₩7,234,004,160

See accompanying notes to consolidated financial statements

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	2017	2016
	(In thousands of Korean won)	
Cash flows from operating activities		
Net income (loss) for the year	₩184,934,052	₩(116,965,319)
Adjustments for:		
Expenses for employee benefits	29,986,260	30,775,872
Depreciation	87,403,233	84,917,226
Amortization	614,237,966	608,110,128
Allowance for bad and doubtful debts	(33,848)	(872,973)
Other bad debt expense	508,991	47,353
Recovery of provisions	-	(4,506,879)
Provisions recognized	97,923,850	172,350,736
Gain on disposal of property, plant and equipment, net	(646,979)	(178,356)
Impairment loss on intangible assets	2,536,346	143,018,579
Interest income	(12,610,934)	(9,345,215)
Dividend income	(743,367)	(502,403)
Loss on valuation of derivatives, net	84,655,000	(33,760,000)
Loss on derivative transactions, net	27,332,000	-
Gain (loss) on foreign currency translation, net	(83,522,242)	31,795,630
Gain (loss) on foreign currency transactions, net	(24,425,418)	312,500
Gain (loss) on valuation of investments in associates and subsidiaries, net	1,145,493	3,411,155
Interest expense	262,545,872	294,422,633
Loss on redemption of debenture	3,778,767	-
Gain on disposal of investments in associates and subsidiaries	-	(102,204)
Income tax expense (benefit)	7,362,030	(48,253,507)
Others, net	(266,500)	(266,500)
Changes in:		
Trade accounts receivable	(7,819,494)	107,343,834
Inventories	(446,778,739)	(451,396,074)
Other operating assets	(38,730,737)	67,103,587
Long-term trade accounts receivable	(14,905,823)	(200,994,243)
Trade accounts payable	4,584,089	1,807,441
Other operating liabilities	(324,741,491)	74,700,132
Payment of employee benefits	(3,806,956)	(3,465,094)
Cash generated from operating activities	449,901,421	749,508,039
Dividends received	743,367	502,403
Interest received	9,811,054	651,823
Interest paid	(241,046,888)	(476,135,944)
Income taxes paid	1,088,814	(36,534)
Net cash provided by operating activities	220,497,768	274,489,792

(Continued)

KOREA WATER RESOURCES CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	2017	2016
	(In thousands of Korean won)	
Cash flows from investing activities		
Acquisition of short-term financial instruments	₩(304,296,299)	₩-
Proceeds from sale of short-term financial instruments	360,004,130	36,913,692
Acquisition of AFS financial assets	(6,275,822)	(2,252,000)
Proceeds from sale of AFS financial assets	184,946	119,108
Increase in long-term loans	(47,365,219)	(1,142,738)
Collection of long-term loans	36,359,122	2,540,497
Increase in deposit	(50,005,272)	(53,472,999)
Decrease in deposit	49,878,780	43,569,839
Acquisition of property, plant and equipment	(150,842,186)	(117,604,442)
Proceeds from sale of property, plant and equipment	2,772,560	3,907,217
Acquisition of intangible assets	(566,778,369)	(706,141,612)
Proceeds from sale of intangible assets	39,600,001	43
Government grant returned	5,000,000	-
Contributions for construction received	-	900,000
Acquisition of investments in associates	-	(91,924,000)
Proceeds from sale of investments in associates	-	426,004
Net cash used in investing activities	(631,763,628)	(884,161,391)
Cash flows from financing activities		
Repayment of current portion of long-term borrowings	(1,536,107,000)	(42,159,340)
Settlement of derivatives	(12,557,000)	-
Repayment of debentures	(26,446,767)	(1,336,581,000)
Proceeds from debentures	1,607,543,277	1,372,440,000
Increase in short-term borrowings	5,018,749	-
Increase in long-term borrowings	7,162,080	105,768,755
Equity investments from government	414,427,155	493,968,982
Increase in investment in subsidiaries	1,588,877	3,258,121
Net cash (used in) provided by financing activities	460,629,371	596,695,518
Net decrease in cash and cash equivalents	49,363,511	(12,976,081)
Cash and cash equivalents at January 1	111,502,376	124,832,949
Effect of changes in exchange rates on cash and cash equivalents denominated in foreign currencies	-	(354,492)
Cash and cash equivalents at December 31	₩160,865,887	₩111,502,376

(Concluded)

See accompanying notes to consolidated financial statements.

1. REPORTING ENTITY:

(1) The Parent company

Korea Water Resources Development Corporation (the "Parent") was incorporated in 1967 in accordance with the Korea Water Resources Development Corporation Act of the Republic of Korea.

The Parent was reorganized as Industrial Sites and Water Resources Development Corporation on December 24, 1973, pursuant to the Act for Promotion of Industrial Site Development, and had been reorganized again as Korea Water Resources Corporation, pursuant to the Korea Water Resources Corporation Act (the "K-water Act") on July 1, 1988.

The Parent is engaged in the business of promoting public interests by developing and managing water resources, facilitating water supply and improving the quality of water. In addition, the Parent is involved in developing projects for industrial complexes and special-purpose areas in accordance with the K-water Act.

As of December 31, 2017, issued capital of the Parent amounts to ₩8,109 billion, and the present ownership of the Parent is as follows:

(Unit: In thousands of Korean won)

	Share capital	Percentage of ownership
Government of the Republic of Korea	₩7,500,557,930	92.5%
Korea Development Bank	601,390,088	7.4%
Local government	7,026,278	0.1%
	₩8,108,974,296	100.0%

(2) Consolidated subsidiaries

1) Details of consolidated subsidiaries as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

Consolidated subsidiary	Main business	Ownership ratio of the Parent (%)		Location
		2017	2016	
KDS Hydro Pte. Ltd.	Pakistan Patrind Hydropower Project, etc.	80.0%	80.0%	Singapore
Waterway Plus Co., Ltd.	Gyeong-in Canal Project, operation and maintenance of Marina, etc.	100.0%	100.0%	Korea
K-Water Thailand Co., Ltd.	Water Management Project	99.9%	99.9%	Thailand
JSC Nenskra Hydro	Georgia Nenskra Hydroelectric Project	100.0%	100.0%	Georgia

2) Details of the consolidated subsidiaries as of and for the years ended December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

Consolidated subsidiary	Assets	Liabilities	Revenue	Net income (loss)
KDS Hydro Pte. Ltd.	₩538,714,132	₩368,958,600	₩113,310,631	₩28,429,674
Waterway Plus Co., Ltd.	7,364,948	1,860,340	9,509,891	65,909
K-Water Thailand Co., Ltd.	8,058	1,269	-	2,028
JSC Nenskra Hydro	98,470,069	461,717	-	(5,434,944)

(ii) December 31, 2016

(Unit: In thousands of Korean won)

Consolidated subsidiary	Assets	Liabilities	Revenue	Net income (loss)
KDS Hydro Pte. Ltd.	₩499,567,991	₩336,808,047	₩174,082,644	₩19,738,921
Waterway Plus Co., Ltd.	9,530,226	4,092,440	9,408,493	(29,138)
K-Water Thailand Co., Ltd.	10,017	5,096	-	(4,579)
JSC Nenskra Hydro	68,249,314	1,390,253	-	232,992

3) Change in the scope of consolidation for the year ended December 31, 2017, is none.

2. BASIS OF PREPARATION:

(1) Basis of preparation

The Parent and subsidiaries (the “Group”) prepared consolidated financial statements in accordance with the Korean Government-owned and Quasi-government Accounting Regulations and Standards. If there are no regulations other than Korean Government-owned and Quasi-government Accounting Regulations and Standards, accounting standards of the Group are adopted in accordance with Korean International Financial Reporting Standards (“K-IFRS”).

Accounting standards that the Group adopted in accordance with Korean Government-owned and Quasi-government Accounting Regulation and Standards are as follows:

(i) Government grants (Article 44: Accounting of Government Grants)
Government grants used for the acquisition of certain assets are deducted from the acquisition cost of the acquired assets and such grants are offset against the depreciation expenses of the acquired assets during the useful lives of the assets. Government grants received for consignment management service provided by the Group are recognized as other income.

(ii) Contribution to the Employee Welfare Fund (Article 49)
The Group contributes to the employee welfare fund and contributions are recognized as operating expenses in accordance with Employee Welfare Fund Act.

(iii) Presentation of financial statements (Article 2)
Financial statements are prepared and accounts are created and classified in accordance with guidelines set by the Minister of Strategy and Finance.

(i) Allowance for doubtful accounts (Article 11 of Quasi-Government Accounting Regulations)
Allowance for doubtful accounts is calculated based on the evaluation of accounts receivable aging. Accounts receivable for which collection is certain, such as amounts due from national and local governments and amounts relating to industrial complexes, are excluded from the analysis of aging.

(2) Amendments to K-IFRSs and new interpretations that are mandatorily effective for the current year

In the current year, the Group has applied for a number of amendments to K-IFRSs and new interpretations issued that are mandatorily effective accounting periods beginning on or after January 1, 2017.

(i) Amendments to K-IFRS 1007 – *Statement of Cash Flows*

The amendments require an entity to provide disclosures that enable users of financial statements to evaluate changes in liabilities arising from financing activities, including both cash and non-cash changes. Consistent with the transition provisions of the amendments, the Group has not disclosed comparative information for the prior period. The application of these amendments has no material impact on the disclosures or the amounts recognized in the Group's consolidated financial statements.

(ii) Amendments to K-IFRS 1012 – *Income Taxes*

The amendments clarify that, in evaluating the deferred tax assets arising from deductible temporary difference of debt instruments measured at fair value, the carrying amount of an asset does not limit the estimation of probable future taxable profits. The application of these amendments has no material impact on the disclosures or the amounts recognized in the Group's consolidated financial statements.

(iii) Annual Improvements to K-IFRS 2014-2016 Cycle

The Group has applied the amendments to K-IFRS 1112—Share-based Payment included in the annual improvements to K-IFRS 2014-2016 Cycle for the first time in the current year. The other amendments included in this package are not yet mandatorily effective and they have not been early adopted by the Group.

The amendments state that an entity need not provide summarized financial information for interests in subsidiaries, associates or joint ventures that are classified (or included in a disposal group that is classified) as held for sale. The amendments clarify that this is the only concession from the disclosure requirements for K-IFRS 1112.

(3) New and revised K-IFRSs in issue, but not yet effective.

(i) Amendments to K-IFRS 1109 – *Financial Instruments*

The amendments to K-IFRS 1109 contain the requirements for the classification and measurement of financial assets and financial liabilities based on a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets and based on the contractual terms that give rise on specified dates to cash flows, impairment methodology based on the expected credit losses, broadened types of instruments that qualify as hedging instruments, the types of risk components of non-financial items that are eligible for hedge accounting and change in the hedge effectiveness test. The amendments are effective for annual periods beginning on or after January 1, 2018.

(ii) Amendments to K-IFRS 1115 – *Revenue from Contracts with Customers*

The core principle under K-IFRS 1115 is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The amendments introduce a five-step approach to revenue recognition and measurement: 1) Identify the contract with a customer, 2) Identify the performance obligations in the contract, 3) Determine the transaction price, 4) Allocate the transaction price to the performance obligations in the contract and 5) Recognize revenue when (or as) the entity satisfies a performance obligation. This standard will supersede K-IFRS 1011 - Construction Contracts, K-IFRS 1018- Revenue, K-IFRS 2113 - Customer Loyalty Programmes, K-IFRS 2115-Agreements for the Construction of Real Estate, K-IFRS 2118 - Transfers of Assets from Customers and K-IFRS 2031-Revenue-Barter Transactions Involving Advertising Services. The amendments are effective for annual periods beginning on or after January 1, 2018.

(iii) Amendments to K-IFRS 1116 – *Leases*
K-IFRS 16 introduces a comprehensive model for the identification of lease arrangements and accountings treatments for both lessors and lessees. K-IFRS 16 will supersede the current lease guidance, including K-IFRS 1017 Leases and the related interpretations when it becomes effective. The amendments are effective for annual periods beginning on or after January 1, 2019.

K-IFRS 1116 distinguishes leases and service contracts on the basis of whether an identified asset is controlled by a customer. Distinctions of operating leases and finance leases are removed for lessee accounting and replaced by a model where a right-of-use asset and corresponding liability have to be recognized for all leases by lessees, except for short-term leases and leases of low-value assets.

The right-of-use asset is initially measured at cost and subsequently measured at cost (subject to certain exceptions), less accumulated depreciation and impairment losses, adjusted for any remeasurement of the lease liability. The lease liability is initially measured at the present value of the lease payments that are not paid at that date. Subsequently, the lease liability is adjusted for interest and lease payments, as well as the impact of lease modifications, among others. Furthermore, the classification of cash flows will also be affected as operating lease payments under K-IFRS 1017 are presented as operating cash flows, whereas under the K-IFRS 1116 model, the lease payments will be split into a principal and an interest portion that will be presented as financing and operating cash flows, respectively.

In contrast to lessee accounting, K-IFRS 1116 substantially carries forward the lessor accounting requirements in K-IFRS 1017, and continues to require a lessor to classify a lease either as an operating lease or a finance lease. Furthermore, extensive disclosures are required by K-IFRS 1116. The Group is currently assessing its potential impact.

(iv) Amendments to K-IFRS 2122 – *Foreign Currency Transactions and Advance Consideration*
The interpretation addresses how to determine the ‘date of transaction’ for the purpose of determining the exchange rate to use on initial recognition of an asset, expense or income when consideration for that item has been paid or received in advance in a foreign currency that resulted in the recognition of a non-monetary asset or non-monetary liability (e.g., a non-refundable deposit or deferred revenue).

The interpretation specifies that the date of transaction is the date on which the entity initially recognizes the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the interpretation requires an entity to determine the date of transaction for each payment or receipt of advance consideration.

The interpretation is effective for annual periods beginning on or after January 1, 2018, with earlier application permitted. Entities can apply the interpretation either retrospectively or prospectively. Specific transition provisions apply to prospective application.

The Group does not anticipate that the application of the amendments in the future will have an impact on the Group's consolidated financial statements because the Group already accounts for transactions involving the payment or receipt of advance consideration in a foreign currency in a way that is consistent with the amendments.

(v) Annual Improvements to K-IFRS 2014-2016 Cycle

The annual improvements include amendments to K-IFRS 1101 First-time Adoption and K-IFRS 1028 Investment in Associates and Joint Ventures. The amendments to K-IFRS 1028 clarify that the option for a venture capital organization and other similar entities to measure investments in associates and joint ventures at fair value through profit or loss ("FVTPL") is available separately for each associate or joint venture, and that election should be made at initial recognition of the associate or joint venture. In respect of the option for an entity that is not an investment entity ("IE") to retain the fair value measurement applied by its associates and joint ventures that are IEs when applying the equity method, the amendments make a similar clarification that this choice is available for each IE associate or IE joint venture. The amendments apply retrospectively, with earlier application permitted.

Both the amendments to K-IFRS 1101 and K-IFRS 1028 are effective for annual periods beginning on or after January 1, 2018. The Group does not anticipate that the application of the amendments in the future will have any impact on the Group's consolidated financial statements, as the Group is neither a first-time adopter of K-IFRS nor a venture capital organization. Furthermore, the Group does not have any associate or joint venture that is an IE.

The Group believes the application of these amendments will have no significant impact on its consolidated financial statements.

3. SIGNIFICANT ACCOUNTING POLICIES:

The principal accounting policies are set out below. Except for the effect of the amendments to K-IFRSs and new interpretations set out below, the principal accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2017, are consistent with the accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2016.

The consolidated financial statements have been prepared on the historical cost basis, except for certain non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given.

(1) Basis of Consolidation

The consolidated financial statements incorporate the financial statements of the Group and entities (including structured entities) controlled by the Group (and its subsidiaries). Control is achieved where the Group 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 Group 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 Group 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 Group considers all relevant facts and circumstances in assessing whether or not the Group's voting rights in an investee are sufficient to give it power, including the size of the Group's holding of voting rights relative to the size and dispersion of holdings of the other vote holders;
- potential voting rights held by the Group, other vote holders or other parties;
- rights arising from other contractual arrangements; and
- any additional facts and circumstances that indicate that the Group 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 shareholders' meetings.

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

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

All intra-Group transactions and related assets, 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 Group.

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 other comprehensive income and accumulated in equity, the amounts previously recognized in other comprehensive income and accumulated in equity are accounted for as if the Group had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under K-IFRS 1039 or, when applicable, the cost on initial recognition of an investment in an associate or a joint venture.

(2) Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but having no 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 K-IFRS 1105. 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 other comprehensive income of the associate or joint venture. When the Group's share of losses on 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. Any excess of the Group’s share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

Upon disposal of an associate or a joint venture that results in the Group losing significant influence over that associate or joint venture, any retained investment is measured at fair value at that date and the fair value is regarded as its fair value on initial recognition as a financial asset in accordance with K-IFRS 1039. The difference between the previous carrying amount of the associate or joint venture attributable to the retained interest and its fair value is included in the determination of the gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in other comprehensive income in relation to that associate or joint venture on the same basis as would be required if that associate or joint venture had directly disposed of the related assets or liabilities. Therefore, if a gain or loss previously recognized in other comprehensive income by that associate or joint venture would be reclassified to profit or loss on disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss (as reclassification adjustment) when it loses significant influence over that associate or joint venture.

When the Group reduces its ownership interest in an associate or a joint venture, but the Group continues to use the equity method, the Group reclassifies to profit or loss the proportion of the gain or loss that had previously been recognized in other comprehensive income relating to that reduction in ownership interest if that gain or loss would be reclassified to profit or loss on the disposal of the related assets or liabilities. In addition, the Group applies K-IFRS 5, Non-current Assets Held for Sale and Discontinued Operations, to a portion of investment in an associate or a joint venture that meets the criteria to be classified as held for sale.

The requirements of K-IFRS 1039 are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group’s investment in an associate or a joint venture. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with K-IFRS 1036, Impairment of Assets, by comparing its recoverable amount (higher of value in use and fair value, less costs to sell) with its carrying amount; any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with K-IFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

The Group continues to use the equity method when an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate. There is no remeasurement to fair value upon such changes in ownership interests.

When a group entity transacts with an associate or a joint venture of the Group, 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.

(3) Non-current assets held for sale

Non-current assets and 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.

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

(4) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. The Group recognizes revenue when the amount of revenue can be reliably measured; when it is probable that future economic benefits will flow to the entity; and when specific criteria have been met for each of the Group's activities, as described below:

1) Sale of goods
Revenue from the sale of goods is recognized when the Group has transferred to the buyer the significant risks and rewards of ownership of the goods.

2) Rendering of services
Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. Depending on the nature of the transaction, the Group determines the stage of completion by reference to surveys of work performed, services performed to date as a percentage of total services to be performed or the proportion that costs incurred to date bear to the estimated total costs of the transaction, as applicable.

3) Dividend and interest income
Dividend income from investments is recognized when the shareholders' right to receive payment has been established (provided that it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably).

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably. Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount on initial recognition.

4) Rental income

The Group's policy for recognition of revenue from operating leases is described in Note 3 (5).

5) Service concession arrangements

The Group's essential businesses (dam (inclusive of current dam maintenance and downstream business) and regional water supply) in K-IFRS 2112(5) are met. These businesses apply to public-to-private service concession arrangement due to the grantor controls or regulate what services the operator must provide with the infrastructure. The service concession arrangements recognize its sales and cost of goods sold via constructional processes to the extent that related cost of sales are highly probable of being recoverable.

(5) 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.

1) The Group as 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) The Group as 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 consolidated statements 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 (see Note 3 (7)). Contingent rentals are recognized as expenses in the periods in which they are incurred.

Operating lease payments are recognized as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating leases are recognized as an expense in the period in which they are incurred.

In the event that lease incentives are received to enter into operating leases, such incentives are recognized as a liability. The aggregate benefit of incentives is recognized as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

(6) Foreign currencies

The individual financial statements of each Group 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 Group entity are expressed in Korean won, which is the functional currency of the entity and the presentation currency of the consolidated financial statements.

In preparing the 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 (see Note 3 (17) below for hedging accounting policies); 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 other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

(7) 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.

(8) Retirement benefit costs and termination benefits

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

For defined benefit retirement 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 on the asset ceiling (if applicable) and the return on plan assets (excluding interest), is reflected immediately in the consolidated statements of financial position, with a charge or credit recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not 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 other comprehensive income. Curtailment gains and losses are accounted for as past service costs.

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

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

Discretionary contributions made by employees or third parties reduce service cost upon payment of these contributions to the plan. When the formal terms of the plans specify that there will be contributions from employees or third parties, the accounting depends on whether the contributions are linked to services, as follows:

If the contributions are not linked to services (e.g., contributions are required to reduce a deficit arising from losses on plan assets or from actuarial losses), they are reflected in the remeasurement of the net defined benefit liability (asset).

If the contributions are linked to services, they reduce service costs. For the amount of contribution that is dependent on the number of years of service, the entity reduces service cost by attributing the contributions to periods of service using the attribution method required by K-IFRS 1019 paragraph 70 for the gross benefits. For the amount of contribution that is independent of the number of years of service, the entity reduces service cost in the period in which the related service is rendered.

(9) Taxation

Income tax expense represents the sum of the tax currently payable and deferred tax.

1) Current tax

The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the consolidated statements of comprehensive income (loss) 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) Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the consolidated 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.

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

3) Current and deferred taxes for the year

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

(10) Property, plant and equipment

Property, plant and equipment are stated at cost, less subsequent accumulated depreciation and accumulated impairment losses. The cost of an item of property, plant and equipment is directly attributable to their 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 at 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:

	Useful lives (years)
Buildings	30
Structures	30
Machinery	20
Ships	10
Vehicles	5
Other property, plant and equipment	5

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

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

(11) Intangible assets

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

2) Internally generated intangible assets - research and development expenditure
Expenditure on research activities is recognized as an expense in the period in which it is incurred.

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

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

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

3) Derecognition of intangible assets

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

4) Amortization of intangible assets

The Group does not amortize club memberships, which are no limits to the periods. Amortization expense is computed using the straight-line method based on the estimated useful lives of the assets as follows:

	Useful lives (years)
Usage rights of water dam	50
Usage rights of water supply plant	20
Concession assets' usage rights	Concession period
Other intangible assets	5

(12) Impairment of tangible and intangible assets

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 (if any). Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the cash-generating unit to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units or, otherwise, they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

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

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

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

(13) Inventories

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

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

(14) Provisions

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

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

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

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

(15) Financial instruments

Financial assets and financial liabilities are recognized when an entity becomes a party to the contractual provisions of the instruments. Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at FVTPL are recognized immediately in profit or loss.

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

Financial assets are classified into the following specified categories: 'FVTPL,' 'held-to-maturity investments,' 'available-for-sale ("AFS") financial assets' and 'loans and receivables.' The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

1) Effective interest method

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

Income is recognized on an effective interest basis for debt instruments other than those financial assets classified as at FVTPL.

2) Financial assets at FVTPL

Financial assets are classified as at FVTPL when the financial asset is a contingent consideration that may be paid by an acquirer as part of business combination to which K-IFRS 1103 applies.

A financial asset is classified as held for trading if:

- it has been acquired principally for the purpose of selling in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that the Group manages together and has 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 asset other than a financial asset held for trading or contingent consideration that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial asset 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 1039 permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any dividend or interest earned on the financial asset and is included in the 'other gains and losses' line item in the consolidated statements of comprehensive income (loss).

3) Held-to-maturity investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates for which 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.

4) AFS financial assets

AFS financial assets are non-derivatives that are either designated as AFS or are not classified as (a) loans and receivables, (b) held-to-maturity investments or (c) financial assets at FVTPL.

They are subsequently measured at fair value at the end of each reporting period. Changes in the carrying amount of AFS monetary financial assets relating to changes in foreign currency rates (see below), interest income calculated using the effective interest method and dividends on AFS equity investments are recognized in profit or loss. Other changes in the carrying amount of AFS financial assets are recognized in other comprehensive income. When the investment is disposed of or determined to be impaired, the cumulative gain or loss previously accumulated in other comprehensive income is reclassified to profit or loss.

Dividends on AFS equity instruments are recognized in profit or loss when the Group's right to receive the dividends is established.

The fair value of AFS monetary financial assets denominated in a foreign currency is determined in that foreign currency and translated at the spot rate prevailing at the end of the reporting period. The foreign exchange gains and losses that are recognized in profit or loss are determined based on the amortized cost of the monetary asset. Other foreign exchange gains and losses are recognized in other comprehensive income.

AFS equity investments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured and derivatives that are linked to, and must be settled by, delivery of such unquoted equity investments are measured at cost, less any identified impairment losses at the end of each reporting period.

5) Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments and are not quoted in an active market are classified as 'loans and receivables.' Loans and receivables are measured at amortized cost using the effective interest method, less any impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables when the effect of discounting is immaterial.

6) Impairment of financial assets

Financial assets, other than those at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Financial assets are considered to be impaired when there is objective evidence that, as a result of one or more events have occurred after the initial recognition of the financial asset and the estimated future cash flows of the investment have been affected.

For AFS equity investments, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment.

For all other financial assets, objective evidence of impairment includes:

- significant financial difficulty of the issuer or counterparty;
- default or delinquency in interest or principal payments;
- probability that the borrower will enter bankruptcy or financial reorganization; or
- disappearance of an active market for that financial asset because of financial difficulties.

For certain categories of financial assets such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. Objective evidence of impairment for a portfolio of receivables could include the Group's past experience of collecting payments, an increase in the number of delayed payments in the portfolio past the average credit period of 30 days, as well as observable changes in national or local economic conditions that correlate with default on receivables.

For financial assets carried at amortized cost, the amount of impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

For financial assets that are carried at cost, the amount of impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets, with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognized in profit or loss.

When an AFS financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss in the period.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

In respect of AFS equity securities, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to an impairment loss is recognized in other comprehensive income. In respect of AFS debt securities, impairment losses are subsequently reversed through profit or loss if an increase in the fair value of the investment can be objectively related to an event occurring after the recognition of the impairment loss.

7) Derecognition of financial assets

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

On derecognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

On derecognition of a financial asset other than in its entirety (e.g., when the Group retains an option to repurchase part of a transferred asset or retains a residual interest and such a retained interest indicates that the transferor has neither transferred nor retained substantially all the risks and rewards of ownership and has retained control of the transferred asset), the Group allocates the previous carrying amount of the financial asset between the part it continues to recognize under continuing involvement and the part it no longer recognizes on the basis of the relative fair value of those parts on the date of the transfer. The difference between the carrying amount allocated to the part that is no longer recognized and the sum of the consideration received for the part that is no longer recognized and any cumulative gain or loss allocated to it that had been recognized in other comprehensive income is recognized in profit or loss. A cumulative gain or loss that had been recognized in other comprehensive income is allocated between the part that continues to be recognized and the part that is no longer recognized on the basis of the relative fair value of those parts.

(16) Financial liabilities and equity instruments

1) Classification as debt or equity

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

2) Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Group are recognized at the proceeds 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.

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 an 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 a 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 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.

4) Financial liabilities

Financial liabilities are recognized when the Group becomes a party to the contractual provisions of the instruments. Financial liabilities are initially measured at fair value. Transaction cost that is directly attributable to the issue of financial liabilities is deducted from the fair value of the financial liabilities on initial recognition. Transaction costs directly attributable to acquisition of financial liabilities at FVTPL are recognized immediately in profit or loss.

Financial liabilities are classified as either financial liabilities at FVTPL or other financial liabilities.

5) Financial liabilities at FVTPL

Financial liabilities are classified as at FVTPL when the financial liability is contingent consideration that may be paid by an acquirer as part of a business combination to which K-IFRS 1103 applies, is held for trading or 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;
- 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 that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial liability forms part of a group of financial assets or financial liabilities, or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group 's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and K-IFRS 1039 permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the ‘other gains and losses’ line item in the consolidated statements of comprehensive income (loss).

6) Other financial liabilities

Other financial liabilities are subsequently measured at amortized cost using the effective interest method, with interest expense recognized on an effective yield basis.

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

7) Financial guarantee contracts

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

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 obligation under the contract, as determined in accordance with K-IFRS 1037, *Provisions, Contingent Liabilities and Contingent Assets*; or
- the amount initially recognized, less cumulative amortization recognized in accordance with K-IFRS 1018.

8) Derecognition of financial liabilities

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

(17) Derivative financial instruments

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

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

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

1) Embedded derivatives

Derivatives embedded in non-derivative host contracts are treated as separate derivatives when they meet the definition of a derivative, their risks and characteristics are closely related to those of the host contracts and the contracts are not measured at FVTPL.

2) Hedge accounting

The Group designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives in respect of foreign currency risk, as either 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 entity 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 highly effective in offsetting changes in fair values or cash flows of the hedged item.

3) Fair value hedges

Changes in the fair value of derivatives that are designated and qualify as fair value hedges are recognized in profit or loss immediately, together with any changes in the fair value of the hedged asset or liability that are attributable to the hedged risk. The change in the fair value of the hedging instrument and the change in the hedged item attributable to the hedged risk are recognized in the line of the consolidated statements of comprehensive income (loss) relating to the hedged item.

Hedge accounting is discontinued when the Group revokes the hedging relationship; when the hedging instrument expires or is sold, terminated or exercised; or when it no longer qualifies for hedge accounting. 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.

4) Cash flow hedges

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss and is included in the 'Financial income and cost' line item.

Amounts previously recognized in other comprehensive income and accumulated in equity are reclassified to profit or loss in the periods when the hedged item is recognized in profit or loss in the same line of the consolidated statements of comprehensive income (loss) as the recognized hedged item. However, when the forecast transaction that is hedged results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously accumulated in equity are transferred from equity and included in the initial measurement of the cost of the non-financial asset or non-financial liability.

Hedge accounting is discontinued when the Group revokes the hedging relationship; when the hedging instrument expires or is sold, terminated or exercised; or when it no longer qualifies for hedge accounting. Any gain or loss accumulated in equity at that time remains in equity and is recognized when the forecast transaction is ultimately recognized in profit or loss. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in equity is recognized immediately in profit or loss.

(18) 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 consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of K-IFRS 1102, *Share-Based Payment;* leasing transactions that are within the scope of K-IFRS 1017, *Leases*; and measurements that have some similarities to fair value but are not fair value, such as net realizable value in K-IFRS 1002, *Inventories*, or value in use in K-IFRS 1036.

In addition, for financial reporting purposes, fair value measurements are categorized into Levels 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.

(19) Accounting treatment related to the emission rights cap and trade scheme

The Group classifies the emission rights as intangible assets. Emission right allowances that the government allocated free of charge are not measured, and emission right allowances purchased are measured at cost that the Group paid to purchase. If emission rights that the government allocated free of charge are sufficient to settle the emission right allowances allotted for vintage year, the emission liabilities are not measured. However, for the emission liabilities that exceed the allowances allocated free of charge, the shortfall is measured at the best estimate at the end of the reporting period.

(20) The approval date for issue of consolidated financial statements

The Group's consolidated financial statements for submission to Ministry of Strategy and Finance are approved by the board of directors on February 27, 2018.

4. SIGNIFICANT ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTIES:

In the application of the Group's accounting policies, which are described in Note 3, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

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

(1) Defined benefit obligation

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, such as discount rates, rates of expected future salary increases and mortality rates.

(2) Warranty provision

Provisions for the expected cost of warranty obligations are recognized at the best estimate of the expenditure required to settle the Group's current and future obligations. Provisions are determined by the estimate based on past experience.

(3) Deferred tax

Recognition and measurement of deferred tax assets and liabilities require the management's judgment, in particular, whether to recognize if the scope of deferred tax assets is affected by management's judgment and assumption in the future.

(4) Estimated useful lives of property, plant, equipment and intangible assets

Useful lives for depreciation and amortization are determined by the management's judgment.

5. SEGMENT INFORMATION:

(1) The Group discloses operating segment

The Group is not required to disclose operating segment information. The Group instead has elected to present certain financial information for its six business units, as described below.

Business segment	Main goods and services
Multiregional waterworks business	Operational management of multiregional waterworks
Multipurpose dams operation business	Operational management of multipurpose dams
Site development business	Sales and rent of land
Construction business	Construction of tangible assets (waterworks, dams, etc.)
Local waterworks and sewage treatment business	Operation and management of local waterworks and sewage treatment
Other businesses	Foreign business, aggregate business, consignment business, Kyung-in canal operation business, Four River Restoration operation business and renewable energy business

(2) The following table provides information of operations for each operating segment for the years ended December 31, 2017 and 2016:

(i) 2017

(Unit: In thousands of Korean won)

	Multiregional waterworks business	Multipurpose dams operation business	Site development business	Construction business	Local waterworks and sewage treatment business	Other businesses	Total
Total revenue	₩1,116,183,837	₩468,331,165	₩544,912,165	₩618,247,496	₩184,804,454	₩453,024,683	₩3,385,503,800
Interbusiness unit revenue	-	-	-	-	-	9,943,508	9,943,508
External revenue	1,116,183,837	468,331,165	544,912,165	618,247,496	184,804,454	443,081,175	3,375,560,292
Operating profit	98,600,351	107,062,370	136,684,875	-	20,820,177	64,548,646	427,716,419
Depreciation and amortization	474,451,763	127,486,179	1,567,915	22,727	27,907,434	70,205,180	701,641,198

(ii) 2016

(Unit: In thousands of Korean won)

	Multiregional waterworks business	Multipurpose dams operation business	Site development business	Construction business	Local waterworks and sewage treatment business	Other businesses	Total
Total revenue	₩1,049,862,339	₩431,491,083	₩689,740,883	₩829,384,230	₩172,798,258	₩454,373,928	₩3,627,650,721
Interbusiness unit revenue	-	-	-	-	-	9,566,122	9,566,122
External revenue	1,049,862,339	431,491,083	689,740,884	829,384,230	172,798,258	444,807,806	3,618,084,600
Operating profit	98,438,279	70,285,651	104,894,028	-	31,342,531	59,138,939	364,099,428
Depreciation and amortization	469,271,072	124,605,239	-	198,014	23,770,665	75,182,364	693,027,354

The Group does not provide information of asset and liability for each operating segment and regional financial information on account of most of the sales being domestic.

6. CASH AND CASH EQUIVALENTS:

Details of cash and cash equivalents as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Demand deposits	₩83,763,307	₩62,007,627
Cash equivalent classified as short-term investment assets	77,102,580	49,494,749
	₩160,865,887	₩111,502,376

7. RESTRICTED FINANCIAL INSTRUMENTS:

Details of cash and cash equivalents that are restricted in use as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	Description	December 31, 2017	December 31, 2016
Cash and cash equivalents	Restricted in use for designated purpose (*)	₩40,202,215	₩29,784,724

(*) Restricted cash and cash equivalents consist of advance payments received from customers in light of local waterworks and the use is restricted for designated purposes.

8. DERIVATIVE INSTRUMENTS:

(1) Details of derivative instruments as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Financial derivative assets:				
Currency swap	₩2,180,359	₩-	₩13,940,759	₩38,055,471
Interest rate swap	-	28,672,132	-	24,334,153
	₩2,180,359	₩28,672,132	₩13,940,759	₩62,389,624
Financial derivative liabilities:				
Currency swap	₩20,161,613	₩24,759,399	₩-	₩14,628,459
Interest rate swap	-	11,078,363	-	12,348,753
	₩20,161,613	₩35,837,762	₩-	₩26,977,212

(2) Purpose

(i) Currency swap

The Group entered into currency swap contracts to hedge cash flow risk associated with change in foreign exchange rate and interest rate of foreign currency debentures.

(ii) Rate swap

The Group entered into interest rate swap contracts to hedge cash flow risk associated with change in interest rate of Korean won-denominated debentures.

(3) Details of risks and the Group's strategy

(i) Details of risks

The Group is exposed to risks of fluctuations in exchange rates of Korean won against foreign currencies and interest rate appreciation on the repayment of foreign currency-denominated debentures. Also, the Group is exposed to cash flow risk associated with change in interest rate of Korean won-denominated debentures.

(ii) Strategy

The Group entered into cross-currency interest rate swap contracts to fix the principal and interest amount in Korean won and interest rate swap contracts to fix the interest rate of Korean won-denominated debentures.

(4) Details of cross-currency swaps (cash flow hedge) as of December 31, 2017, are as follows:

(Unit: In thousands of Korean won, JPY and USD)

Counterparty	Contract period	Notional amount: Payment	Notional amount: Receipt	Interest rate: Payment (%)	Interest rate: Receipt (%)	Contract foreign exchange rate
BNP-PARIBAS	10/01/2013-10/01/2018	₩161,934,000	JPY 15,000,000	3.28	2.00	10.80
Societe Generale	10/16/2014-04/16/2018	105,990,000	USD 100,000	2.11	2.00	1,059.90
BNP-PARIBAS	10/16/2014-04/16/2018	105,990,000	USD 100,000	2.11	2.00	1,059.90
Standard Chartered	10/16/2014-04/16/2018	105,990,000	USD 100,000	2.11	2.00	1,059.90
KDB	05/20/2017-05/20/2031	117,250,000	USD 100,000	1.84	2.77	1,172.50
KDB	05/23/2017-05/23/2022	111,900,000	USD 100,000	2.055	2.75	1,119.00
KEB	05/23/2017-05/23/2022	167,850,000	USD 150,000	2.045	2.75	1,119.00
KB	05/23/2017-05/23/2022	111,900,000	USD 100,000	2.05	2.75	1,119.00

(5) Details of interest rate swaps (cash flow hedge) as of December, 2017, are as follows:

(Unit: In thousands of Korean won)

Counterparty	Contract period	Notional amount	Interest rate: Payment (%)	Interest rate: Receipt (%)
Standard Chartered	07/16/2010–07/16/2020	₩50,000,000	4.97	Pegged with IRS Index
Standard Chartered	08/09/2010–08/09/2020	40,000,000	4.86	Pegged with IRS Index
BNP-PARIBAS	08/09/2010–08/09/2020	30,000,000	4.86	Pegged with IRS Index
BNP-PARIBAS	08/09/2010–08/09/2020	30,000,000	4.86	Pegged with IRS Index
BNP-PARIBAS	11/23/2010–11/23/2020	20,000,000	4.59	Pegged with BPSTAR Index
Nomura Financial Investment	08/20/2014–08/20/2029	50,000,000	3.109	4.07
Nomura Financial Investment	09/04/2014–09/04/2029	50,000,000	3.073	4.06
BNP-PARIBAS	09/15/2014–09/15/2029	100,000,000	3.10	4.06
Nomura Financial Investment	01/26/2016–01/26/2036	30,000,000	2.038	2.91
Societe Generale	03/09/2017–06/09/2022	30,000,000	2.11	CD+0.24
Nomura Financial Investment	11/09/2017–11/09/2037	50,000,000	2.555(*)	2.86

(*) CD+15bp after 10 years

(6) Valuation gain (loss) and transaction gain (loss) of derivative instruments for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	Valuation gain (loss)				Transaction gain (loss)	
	Finance income (loss)		Other comprehensive income (*)		Finance gain (loss)	
	2017	2016	2017	2016	2017	2016
Cash flow hedge	₩(84,655,000)	₩33,760,000	₩18,896,898	₩1,331,329	₩(27,332,000)	₩-

(*) Net of tax effects

9. TRADE AND OTHER RECEIVABLES:

(1) Details of trade account receivables as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017			December 31, 2016		
	Gross	Allowance for doubtful accounts	Book value	Gross	Allowance for doubtful accounts	Book value
Current:						
Trade receivables	₩228,667,514	₩(195,234)	₩228,472,280	₩218,919,547	₩(253,683)	₩218,665,864
Other receivables	117,443,952	(6,995,408)	110,448,544	85,707,036	(6,572,683)	79,134,353
Total	₩346,111,466	₩(7,190,642)	₩338,920,824	₩304,626,583	₩(6,826,366)	₩297,800,217

	Gross	Present value discount	Book value	Gross	Present value discount	Book value
Non-Current:						
Trade receivables	₩496,392,360	₩(33,730)	₩496,358,630	₩483,439,611	₩(132,707)	₩483,306,904
Other receivables	166,124,633	-	166,124,633	165,615,225	-	165,615,225
Total	₩662,516,993	₩(33,730)	₩662,483,263	₩649,054,836	₩(132,707)	₩648,922,129

(2) Other receivables as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017			December 31, 2016		
	Gross	Allowance for doubtful accounts	Book value	Gross	Allowance for doubtful accounts	Book value
Current:						
Accounts receivable	₩82,605,908	₩(6,995,408)	₩75,610,500	₩62,285,473	₩(6,572,684)	₩55,712,789
Accrued income	34,690,566	-	34,690,566	23,050,417	-	23,050,417
Deposit	147,478	-	147,478	371,146	-	371,146
Total	₩117,443,952	₩(6,995,408)	₩110,448,544	₩85,707,036	₩(6,572,684)	₩79,134,352

	Gross	Present value discount	Book value	Gross	Present value discount	Book value
Non-Current:						
Deposit	₩166,124,633	-	₩166,124,633	₩165,615,225	-	₩165,615,225
Total	₩166,124,633	-	₩166,124,633	₩165,615,225	-	₩165,615,225

(3) Credit risk and allowance for doubtful accounts

The above trade and other receivables are classified as loans and receivables and measured at amortized cost. Trade accounts receivable are non-interest bearing and are generally on 30 days' term.

(i) Details of the aging of trade accounts receivable as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Neither overdue nor impaired trade accounts receivable	₩707,739,522	₩678,825,912
Overdue, but not impaired trade accounts receivable	16,922,384	22,366,802
- More than 24 months	8,989,830	11,702,250
- 12 months–24 months	2,541,373	1,318,937
- 6 months–12 months	4,529,669	6,111,968
- 3 months–6 months	850,853	3,233,647
- 1 month–3 months	10,659	-
Trade accounts receivable tested for impairment	397,968	1,166,444
- More than 24 months	78,659	75,060
- 12 months–24 months	174,249	12,676
- 6 months–12 months	94,964	134,211
- 3 months–6 months	13,999	885,651
- 1 month–3 months	36,097	58,846
	725,059,874	702,359,158
Less: allowance for doubtful accounts	(195,234)	(253,683)
	₩724,864,640	₩702,105,475

(ii) Details of the aging of other receivables as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Neither overdue nor impaired trade accounts receivable	₩242,013,935	₩242,899,943
Overdue, but not impaired trade accounts receivable	33,083,032	1,158,066
- More than 24 months	11,072	9,832
- 12 months–24 months	10,626,424	-
- 6 months–12 months	11,618,832	938,498
- 3 months–6 months	6,871,884	187,909
- 1 month–3 months	3,954,820	21,827
Trade accounts receivable tested for impairment	8,471,618	7,264,252
- More than 24 months	6,438,384	6,305,308
- 12 months–24 months	648,998	362,856
- 6 months–12 months	267,690	110,939
- 3 months–6 months	1,078,960	193,965
- 1 month–3 months	37,586	291,184
	283,568,585	251,322,261
Less: allowance for doubtful accounts	(6,995,408)	(6,572,684)
	₩276,573,177	₩244,749,577

(4) Changes in allowance for trade and other receivables for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Trade accounts receivable	Other receivables	Trade accounts receivable	Other receivables
Beginning balance	₩253,683	₩6,572,685	₩1,070,420	₩6,692,141
Bad debt expense	-	508,991	-	47,353
Impairment loss recognized	(33,848)	-	(775,275)	(97,698)
Write-off	(24,601)	(86,268)	(41,462)	(69,111)
Ending balance	₩195,234	₩6,995,408	₩253,683	₩6,572,685

10. AFS FINANCIAL ASSETS:

(1) Changes in AFS financial assets for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Beginning balance	Acquisitions	Disposals	Assessment	Ending balance
Non-market equity securities	₩17,040,121	₩6,275,822	₩(184,947)	₩913	₩23,131,909

(ii) 2016

(Unit: In thousands of Korean won)

	Beginning balance	Acquisitions	Disposals	Assessment	Ending balance
Non-market equity securities	₩14,907,073	₩2,252,000	₩(119,108)	₩156	₩17,040,121

(2) Details of AFS financial assets as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Non-current unlisted securities:		
Korea Construction Management Corporation (*1)	₩4,000,000	₩4,000,000
Global Infra Fund	17,380,105	12,758,051
P-waters Corporation (*1)	180,720	180,720
Korea Specialty Contractor Financial Cooperative (*1)	102,262	101,350
Luzon Clean Water(Bulacan) (*1, 2)	1,468,822	-
	₩23,131,909	₩17,040,121

(*1) Investments in equity securities that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost.

(*2) For the year ended December 31, 2017, the Group has acquired 67,500,000 stocks of Luzon Clean Water (Bulacan).

11. SHORT-TERM FINANCIAL INSTRUMENTS:

Details of short-term financial instruments as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Money market trust	₩19,897,420	₩79,605,251
Time deposit	4,000,000	-
	₩23,897,420	₩79,605,251

12. OTHER FINANCIAL ASSETS:

Details of other financial assets as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-Current	Current	Non-Current
Loans to employees	₩-	₩9,824,472	₩-	₩11,204,560
Other loans	8,640,246	7,938,515	-	8,231,954
	₩8,640,246	₩17,762,987	₩-	₩19,436,514

13. INVENTORIES:

Details of inventories as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Acquisition cost	Book value	Acquisition cost	Book value
Raw material	₩3,727,340	₩3,727,340	₩2,992,081	₩2,992,081
Finished goods	6,404,515,538	6,404,515,538	5,826,664,810	5,826,664,810
Stored goods	8,135,069	8,135,069	8,358,666	8,358,666
Other inventories	132,981	132,981	23,520	23,520
Total	₩6,416,510,928	₩6,416,510,928	₩5,838,039,077	₩5,838,039,077

14. OTHER NON-FINANCIAL ASSETS:

Details of other non-financial assets as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Advance payments	₩76,734,054	₩-	₩76,776,603	₩-
Prepaid expenses	14,006,182	-	4,326,522	-
Others	-	4,370,145	-	4,798,298
Total	₩90,740,236	₩4,370,145	₩81,103,125	₩4,798,298

15. INVESTMENT IN SUBSIDIARIES AND ASSOCIATES:

(1) Details of investment in subsidiaries and associates as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

Companies	Principal activity	Country of incorporation	Ownership (%)	Acquisition cost	Book value December 31, 2017	Book value December 31, 2016
Associates:						
KWPP Holdings Co.	Angat dam hydropower project in Philippines	Philippines	38.50%	₩268	₩9,465	₩17,026
Angat Hydropower Co.	Angat dam hydropower project in Philippines	Philippines	40.00%	100,845,106	75,016,114	86,619,501
				₩100,845,374	₩75,025,579	₩86,636,527

(2) Changes in investment in associates for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Net book value at January 1, 2017	Acquisitions	Equity gain (loss) in associates, net	Unrealized gain (loss) on valuation of equity method investments	Net book value at December 31, 2017
KWPP Holdings Co.	₩17,026	₩-	₩(6,404)	₩(1,157)	₩9,465
Angat Hydropower Co.	86,619,501	-	(1,139,089)	(10,464,299)	75,016,114

(ii) 2016

(Unit: In thousands of Korean won)

	Net book value at January 1, 2016	Acquisitions	Equity gain (loss) in associates, net	Unrealized gain (loss) on valuation of equity method investments	Net book value at December 31, 2016
KWPP Holdings Co.	₩-	₩-	₩17,016	₩9	₩17,026
Angat Hydropower Co.	-	91,924,000	(3,428,172)	(1,876,327)	86,619,501

(3) Details of investment in associates for the years ended December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Assets	Liabilities	Revenue	Net income (loss)
KWPP Holdings Co.	₩553,465	₩528,650	₩32,573	₩(16,650)
Angat Hydropower Co.	465,095,383	277,370,864	49,058,362	(2,850,520)

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Assets	Liabilities	Revenue	Net income (loss)
KWPP Holdings Co.	₩597,777	₩551,453	₩-	₩66,986
Angat Hydropower Co.	542,453,847	325,692,363	30,099,602	(7,612,008)

16. PROPERTY, PLANT AND EQUIPMENT:

(1) Details of property, plant and equipment as of December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Acquisition cost	Government grant	Accumulated depreciation and impairment	Net book value
Land	₩184,398,914	₩-	₩-	₩184,398,914
Buildings	489,781,121	(5,786,451)	(191,874,013)	292,120,657
Structures	413,808,428	-	(126,459,526)	287,348,902
Machinery and equipment	1,049,772,577	-	(536,650,827)	513,121,750
Ships	13,830,312	-	(9,838,329)	3,991,983
Vehicles	14,906,151	-	(8,808,225)	6,097,926
Furniture and fixtures	67,046,089	-	(46,354,759)	20,691,330
Tools	79,808,199	-	(67,590,587)	12,217,612
Construction in progress	272,200,795	-	-	272,200,795
	₩2,585,552,586	₩(5,786,451)	₩(987,576,266)	₩1,592,189,869

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Acquisition cost	Government grant	Accumulated depreciation and impairment	Net book value
Land	₩182,608,107	₩-	₩-	₩182,608,107
Buildings	472,748,005	(827,286)	(176,551,094)	295,369,625
Structures	413,181,804	-	(112,528,715)	300,653,089
Machinery and equipment	980,409,838	-	(498,857,881)	481,551,957
Ships	12,917,904	-	(9,487,709)	3,430,195
Vehicles	13,160,948	-	(8,855,051)	4,305,897
Furniture and fixtures	63,375,588	-	(46,997,959)	16,377,629
Tools	75,536,097	-	(64,372,489)	11,163,608
Construction in progress	195,272,012	-	-	195,272,012
	₩2,409,210,303	₩(827,286)	₩(917,650,898)	₩1,490,732,119

(2) Changes in property, plant and equipment for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Net book value at January 1, 2017	Acquisitions (*1)	Disposals	Depreciation	Transfer	Others (*2)	Net book value at December 31, 2017
Land	₩182,608,107	₩1,791,992	₩(1,185)	₩-	₩-	₩-	₩184,398,914
Buildings	295,369,625	3,579,476	(1,229,192)	(16,136,565)	15,537,314	(5,000,000)	292,120,658
Structures	300,653,089	10,680	(58,661)	(14,035,754)	779,548	-	287,348,901
Machinery and equipment	481,551,957	31,097	(812,148)	(43,840,134)	30,039,822	46,151,156	513,121,750
Ships	3,430,195	2,100	(15,407)	(771,452)	1,346,547	-	3,991,983
Vehicles	4,305,897	3,424,317	(46)	(1,627,424)	7,245	(12,063)	6,097,926
Furniture and fixtures	16,377,629	10,725,792	(1,451)	(6,455,013)	45,856	(1,483)	20,691,330
Tools	11,163,608	3,014	(7,489)	(4,536,891)	5,595,370	-	12,217,612
Construction in progress	195,272,012	131,332,610	-	-	(53,351,702)	(1,052,125)	272,200,795
	₩1,490,732,119	₩150,901,078	₩(2,125,580)	₩(87,403,233)	₩-	₩40,085,485	₩1,592,189,869

(*1) Included in additions are capitalized borrowing costs of ₩58,891 thousand.

(*2) Others included ₩46,151,099 thousand transferred from intangible assets.

(ii) 2016

(Unit: In thousands of Korean won)

	Net book value at January 1, 2016	Acquisitions	Disposals	Depreciation	Transfer	Others (*)	Net book value at December 31, 2016
Land	₩182,368,264	₩1,391	₩-	₩-	₩-	₩238,452	₩182,608,107
Buildings	279,096,561	-	(1,203,595)	(14,838,534)	9,829,097	22,486,096	295,369,625
Structures	282,874,008	15,800	(150,335)	(13,425,878)	818,434	30,521,060	300,653,089
Machinery and equipment	498,845,428	-	(1,001,187)	(43,695,160)	15,350,507	12,052,369	481,551,957
Ships	3,910,069	17,824	(94,453)	(776,138)	185,342	187,551	3,430,195
Vehicles	3,465,389	1,957,044	(16,537)	(1,180,407)	-	80,408	4,305,897
Furniture and fixtures	15,989,191	6,376,518	(7,883)	(5,988,392)	-	8,195	16,377,629
Tools	11,769,604	-	(12,742)	(5,012,717)	4,338,510	80,953	11,163,608
Construction in progress	131,881,729	109,235,865	-	-	(30,521,890)	(15,323,692)	195,272,012
	₩1,410,200,243	₩117,604,442	₩(2,486,732)	₩(84,917,226)	₩-	₩50,331,392	₩1,490,732,119

(*) Others included ₩51,001,938 thousand transferred from intangible assets.

17. INTANGIBLE ASSETS OTHER THAN GOODWILL:

(1) Details of intangible assets as of December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Acquisition cost	Contributions toward construction	Government grants	Accumulated amortization and impairment	Net book value
Software	₩130,553,984	₩-	₩-	₩(91,660,130)	₩38,893,854
Industrial proprietary rights	449,094	-	-	(359,800)	89,294
Intangible assets under development	2,980,918,043	-	(6,334,196)	(1,168,853,889)	1,805,729,957
Concession assets usage rights	16,675,020,674	(4,889,628)	(41,035,237)	(8,098,756,667)	8,530,339,142
Other intangible assets	6,277,408,428	-	-	(5,269,834,313)	1,007,574,115
	₩26,064,350,223	₩(4,889,628)	₩(47,369,433)	₩(14,629,464,799)	₩11,382,626,363

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Acquisition cost	Contributions toward construction	Government grants	Accumulated amortization and impairment	Net book value
Software	₩107,695,795	₩-	₩-	₩(88,429,766)	₩19,266,029
Industrial proprietary rights	449,094	-	-	(332,787)	116,307
Intangible assets under development	2,807,472,002	-	(6,334,196)	(1,166,317,543)	1,634,820,263
Concession assets usage rights	16,370,465,108	(5,375,471)	(44,590,329)	(7,484,038,413)	8,836,460,895
Other intangible assets	6,277,322,350	-	-	(5,269,831,422)	1,007,490,928
	₩25,563,404,349	₩(5,375,471)	₩(50,924,525)	₩(14,008,949,931)	₩11,498,154,422

(2) Changes in intangible assets for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Net book value at January 1, 2017	Additions (*1)	Disposals	Amortization	Impairment loss(*2)	Transfer	Others(*3)	Net book value at December 31, 2017
Software	₩19,266,029	₩22,158,618	₩(1)	₩(3,531,110)	₩-	₩-	₩1,000,319	₩38,893,855
Industrial proprietary rights	116,307	-	-	(27,013)	-	-	-	89,294
Intangible assets under development	1,634,820,263	563,692,728	-	-	(2,536,346)	(344,147,366)	(46,099,322)	1,805,729,957
Concession assets usage rights	8,836,460,895	8,200	(39,600,000)	(610,677,319)	-	344,147,366	-	8,530,339,142
Other intangible assets	1,007,490,928	85,709	-	(2,524)	-	-	2	1,007,574,115
	₩11,498,154,422	₩585,945,255	₩(39,600,001)	₩(614,237,966)	₩(2,536,346)	₩-	₩(45,099,001)	₩11,382,626,363

(*1) Included in additions are capitalized borrowing costs of ₩19,166,886 thousand.

(*2) An impairment loss of ₩2,536,346 thousand was recognized as the recoverable amount was determined to be lower than the net book value.

(*3) Included in others are transfers of fixed assets amounting to ₩46,151,099 thousand.

(ii) 2016

(Unit: In thousands of Korean won)

	Net book value at January 1, 2016	Additions (*1)	Disposals	Amortization	Impairment loss(*2)	Transfer	Others(*3)	Net book value at December 31, 2016
Software	₩17,636,265	₩5,537,579	₩(43)	₩(3,908,010)	₩-	₩-	₩238	₩19,266,029
Industrial proprietary rights	146,823	1,699	-	(32,215)	-	-	-	116,307
Intangible assets under development	1,677,101,208	718,134,582	-	-	(143,018,579)	(566,322,045)	(51,074,903)	1,634,820,263
Concession assets usage rights	8,902,396,700	-	(28,800,000)	(604,169,557)	-	566,322,045	711,707	8,836,460,895
Other intangible assets	1,007,489,171	2,100	-	(346)	-	-	3	1,007,490,928
	₩11,604,770,167	₩723,675,960	₩(28,800,043)	₩(608,110,128)	₩(143,018,579)	₩-	₩(50,362,955)	₩11,498,154,422

(*1) Included in additions are capitalized borrowing costs of ₩17,534,348 thousand.

(*2) The Group recognized an impairment loss of ₩143,018,579 thousand was recognized as the recoverable amount was determined to be lower than the net book value.

(*3) Included in others are transfers of fixed assets amounting to ₩51,001,938 thousand and transfers of inventory assets amounting to ₩72,416 thousand.

(3) Significant individual intangible assets as of December 31, 2017 and 2016, are detailed as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Description	Amount	Residual useful life(*)
Software	Development expense, other intangible assets and construction in progress for data processing	₩38,893,855	3.51
Industrial proprietary rights	Copyright, patents and industrial proprietary rights	89,294	3.35
Intangible assets under development	Water facilities under construction	1,805,729,958	-
Concession assets usage rights	Management right of water facilities in capital area	7,629,551,458	20.54
	Usage rights of water dams, usage rights of hydrogen dams, concession asset usage rights and management right of aggregate complex	900,787,684	Concession period
Other intangible assets	Waterfront business front	1,000,000,000	Concession period
	Membership	7,574,115	Indefinite

(*) Weighted-average residual useful life

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Description	Amount	Residual useful life(*)
Software	Development expense, other intangible assets and construction in progress for data processing	₩19,266,029	2.99
Industrial proprietary rights	Copyright, patents and industrial proprietary rights	116,307	4.73
Intangible assets under development	Water facilities under construction	1,634,820,263	-
Concession assets usage rights	Management right of water facilities in capital area	7,888,444,426	22.04
	Usage rights of water dams, usage rights of hydrogen dams, concession asset usage rights and management right of aggregate complex	948,016,468	Concession period
Other intangible assets	Waterfront business front	1,000,000,000	Concession period
	Membership	7,490,928	Indefinite

(*) Weighted-average residual useful life

18. TRADE AND OTHER PAYABLES:

Details of trade and other payables as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Trade accounts payable	₩20,906,173	₩-	₩16,322,083	₩-
Non-trade payables	205,003,317	-	196,775,275	-
Accrued expenses	120,262,658	-	104,335,880	-
Dividends payable	312,406	-	312,407	-
Others	2,691,682	3,950	11,994,319	4,850
	₩349,176,236	₩3,950	₩329,739,964	₩4,850

19. BORROWINGS AND DEBENTURES:

(1) Details of borrowings and debentures as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Current:		
Short-term borrowings	₩ 5,018,749	₩-
Current portion of long-term borrowings	102,918,456	73,952,246
Current portion of debentures	1,341,689,500	1,494,543,000
	1,449,626,705	1,568,495,246
Non-current:		
Long-term borrowings	344,324,609	408,438,472
Less: present value discount on long-term borrowings	(1,849,578)	(2,595,311)
Debentures	9,937,819,000	9,802,014,500
Less: present value of discount on debentures	(5,119,730)	(2,371,177)
	10,275,174,301	10,205,486,484
	₩11,724,801,006	₩11,773,981,730

(2) Details of redemption plan of borrowings and debentures as of December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Borrowings	Debentures	Total
Within a year	₩107,937,205	₩1,341,689,500	₩1,449,626,705
One year–five years	139,335,403	4,780,679,000	4,920,014,403
After five years	204,989,206	5,157,140,000	5,362,129,206
	₩452,261,814	₩11,279,508,500	₩11,731,770,314

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Borrowings	Debentures	Total
Within a year	₩73,952,246	₩1,494,543,000	₩1,568,495,246
One year–five years	180,813,491	5,341,164,500	5,521,977,991
After five years	227,624,981	4,460,850,000	4,688,474,981
	₩482,390,718	₩11,296,557,500	₩11,778,948,218

(3) Details of short-term borrowings as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	Financial institutions	Interest rate	Maturity	December 31, 2017	December 31, 2016
Short-term borrowings in foreign currency	Daewoo Engineering & Construction Co., Ltd.	Libor + 1%	2018	₩5,018,749	₩-

(4) Details of long-term borrowings as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	Financial institutions	Interest rate	Maturity	December 31, 2017	December 31, 2016
Long-term borrowings denominated in Korean won	Korea Development Bank	Floating interest rate	2025	₩74,194,000	₩115,618,000
	Korea Labor Welfare Corporation	2.00%	2020	-	525,000
	Global Infra Fund	Floating interest rate	2018	32,388,246	32,388,246
Long-term borrowings in foreign currency	Islamic Development Bank and others	Floating interest rate	2024	340,660,819	333,859,472
				447,243,065	482,390,718
Less: Present value discount				(1,849,578)	(2,595,311)
Less: Current portion				(102,918,456)	(73,952,246)
				₩342,475,031	₩405,843,161

(5) Details of debentures as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won, JPY and USD)

			December 31, 2017		December 31, 2016	
Series	Interest rate	Maturity	Foreign currency	Korean won	Foreign currency	Korean won
100th–236th	5.49%, etc.	01/18/2018 –12/21/2047	-	₩10,300,000,000	-	₩10,290,000,000
Land compensation (14-01–17-12)	3.11%, etc.	01/31/2018 –12/31/2020	-	33,592,000	-	53,426,000
Euro bonds	2.77%, etc.	04/16/2018 –05/20/2031	USD 750,000 JPY 15,000,000	945,916,500	USD 660,000 JPY 15,000,000	953,131,500
				11,279,508,500		11,296,557,500
Less: Present value of discount				(5,119,730)		(2,371,177)
Less: Current portion				(1,341,689,500)		(1,494,543,000)
				₩9,932,699,270		₩9,799,643,323

20. OTHER FINANCIAL LIABILITIES:

Details of other financial liabilities as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Derivative liabilities	₩20,161,613	₩35,837,762	₩-	₩26,977,212

21. EMPLOYEE BENEFITS:

(1) Defined contribution retirement benefit plan

The Group sponsors defined contribution plan for certain qualified employees. The plan assets are managed independently from the Group's assets by the plan administrator. If employees leave before they meet the requirements to be qualified for the defined contribution plan, the Group's contribution payable is reduced by the amount of the contribution lost.

(i) The amount of contribution recognized in the comprehensive income for the years ended December 31 2017 and 2016, is as follows:

(Unit: In thousands of Korean won)

	2017	2016
Cost of goods sold	₩11,905,681	₩12,260,751
Operating cost	4,993,589	1,775,488
Other	470,894	415,696
	₩17,370,164	₩14,451,935

(2) Defined retirement benefit plan

(i) Actuarial assumptions as of December 31, 2017 and 2016, are as follows:

	December 31, 2017	December 31, 2016
Discount rate/expected rate on plan assets	2.47%	2.16%
Future salary increase rate	4.97%	4.97%

(ii) Details of expenses recognized in profit or loss for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Current service cost	₩26,187,464	₩23,520,166
Interest on obligation	4,028,510	2,926,978
Interest on plan assets	(229,714)	(196,260)
Past service cost	-	4,524,988
	₩29,986,260	₩30,775,872

The amounts recognized in employee expenses in the accompanying consolidated statements of comprehensive income (loss) are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Cost of sales	₩20,504,408	₩24,186,159
Selling, general and administrative expenses	3,782,587	3,944,798
Others	5,699,265	2,644,915
	₩29,986,260	₩30,775,872

(iii) Present value of defined benefit obligations and fair value of plan assets as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Present value of defined benefit obligations	₩177,153,191	₩152,344,059
Fair value of plan assets	(12,811,300)	(11,966,842)
Recognized as defined benefit liabilities in the consolidated statements of financial position	₩164,341,891	₩140,377,217

(iv) Movements in the present value of defined benefit obligations for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩152,344,059	₩123,310,395
Past service cost	-	4,524,988
Current service cost	26,187,464	23,520,166
Interest expense	4,028,510	2,926,978
Actuarial loss	(2,236,133)	1,597,074
Benefits paid	(3,170,708)	(3,535,542)
Ending balance	₩177,153,192	₩152,344,059

(v) Movements in plan assets for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩11,966,842	₩11,768,408
Operating commissions	(33,173)	(36,879)
Interest on plan assets	229,714	196,260
Actuarial loss	(21,504)	72,623
Defined benefits payments	1,151,734	-
Benefits paid by the plan	(482,313)	(33,570)
Ending balance	₩12,811,300	₩11,966,842

(vi) Accumulated actuarial loss recorded in other comprehensive income as of December 31, 2017 and 2016, is as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Accumulated actuarial loss	₩41,785,055	₩42,308,210

(vii) Main categories of the plan assets and the expected return on plan assets by categories as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	Expected return on plan assets		Fair value of plan assets	
	December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
Derivative liabilities	2.47%	2.16%	₩12,811,300	₩11,966,842

For the year ended December 31, 2017, the actual return on plan assets is ₩208,210 thousand.

22. PROVISIONS:

(1) Details of provisions as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Provision for benefits	₩86,679,602	₩-	₩81,340,357	₩-
Provision for Greenhouse gases exhaustion	1,498,816	-	27,020	-
Provision for litigation	-	37,641,847	-	44,703,748
Provision for restoration	-	22,745,858	-	25,023,275
Provision for other current liabilities	11,293,734	-	35,097,000	-
	₩99,472,152	₩60,387,705	₩116,464,377	₩69,727,023

(2) Changes in provisions for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Book value at Jan. 1, 2017	Increase	Utilization	Reversal	Book value at Dec. 31, 2017
Provision for benefits	₩81,340,357	₩76,265,041	₩(70,925,797)	₩-	₩86,679,601
Provision for Greenhouse gases exhaustion	27,020	1,471,796	-	-	1,498,816
Provision for litigation	44,703,748	16,690,932	(23,752,833)	-	37,641,847
Provision for restoration	25,023,275	3,496,081	(5,773,498)	-	22,745,858
Provision for other current liabilities	35,097,000	-	(23,803,265)	-	11,293,735
	₩186,191,400	₩97,923,850	₩(124,255,393)	₩-	₩159,859,857

(ii) 2016

(Unit: In thousands of Korean won)

	Book value at Jan. 1, 2016	Increase	Utilization	Reversal	Book value at Dec. 31, 2016
Provision for benefits	₩73,247,027	₩88,363,047	₩(80,269,717)	₩-	₩81,340,357
Provision for Greenhouse gases exhaustion	291,405	-	-	(264,385)	27,020
Provision for litigation	4,768,325	44,242,601	(4,307,178)	-	44,703,748
Provision for restoration	20,375,187	4,648,088	-	-	25,023,275
Provision for financial guarantee	4,242,494	-	-	(4,242,494)	-
Provision for other current liabilities	-	35,097,000	-	-	35,097,000
	₩102,924,438	₩172,350,736	₩(84,576,895)	₩(4,506,879)	₩186,191,400

23. GOVERNMENT GRANTS:

(1) Details of government grants as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Buildings	₩(5,786,451)	₩(827,286)
Intangible assets under development	(6,334,196)	(6,334,196)
Concession assets usage rights	(41,035,237)	(44,590,329)
	₩(53,155,884)	₩(51,751,811)

(2) Details of government grants related to assets for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Book value at January 1, 2017	Receive	Acquisitions	Offset the depreciation	Profit	Others	Book value at December 31, 2017
Buildings	₩(827,286)	₩(5,000,000)	₩-	₩40,835	₩-	₩-	₩(5,786,451)
Intangible assets under development	(6,334,196)	-	-	-	-	-	(6,334,196)
Concession assets usage rights	(44,590,329)	-	-	3,555,092	-	-	(41,035,237)
	₩(51,751,811)	₩(5,000,000)	₩-	₩3,595,927	₩-	₩-	₩(53,155,884)

(ii) 2016

(Unit: In thousands of Korean won)

	Book value at January 1, 2016	Receive	Acquisitions	Offset the depreciation	Profit	Others	Book value at December 31, 2016
Buildings	₩(868,121)	₩-	₩-	₩40,835	₩-	₩-	₩(827,286)
Intangible assets under development	(6,334,196)	-	-	-	-	-	(6,334,196)
Concession assets usage rights	(48,145,421)	-	-	3,555,092	-	-	(44,590,329)
	₩(55,347,738)	₩-	₩-	₩3,595,927	₩-	₩-	₩(51,751,811)

24. CUSTOMERS' CONTRIBUTION TO CONSTRUCTION COSTS:

(1) Details of revenue generated from customers' contribution to construction costs recognized as profit or loss for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Offset against the deferred construction income	₩266,500	₩266,500
Offset against the depreciation	485,843	485,843
	₩752,343	₩752,343

(2) Changes in deferred income related to customers' contribution to construction costs for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩41,659,075	₩41,025,575
Increase	-	900,000
Decrease	(266,500)	(266,500)
Ending balance	₩41,392,575	₩41,659,075

(3) Changes in construction costs for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩5,375,471	₩5,861,313
Increase	-	-
Decrease	(485,843)	(485,842)
Ending balance	₩4,889,628	₩5,375,471

25. NON-FINANCIAL LIABILITIES:

(1) Details of other non-financial liabilities as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Current	Non-current	Current	Non-current
Advance received	₩1,105,089,646	₩-	₩1,109,528,114	₩-
Prepaid income	193,710	-	253,873	-
Withholdings	21,951,071	-	21,168,745	-
Deferred income	-	41,392,575	-	41,659,075
Others	8,685,620	-	8,912,821	-
	₩1,135,920,047	₩41,392,575	₩1,139,863,553	₩41,659,075

26. ISSUED CAPITAL:

(1) Details of issued capital as of December 31, 2017 and 2016, are as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Government	Others	Total
Share capital	₩7,500,557,930	₩608,416,366	₩8,108,974,296

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Government	Others	Total
Share capital	₩7,084,131,930	₩608,416,366	₩7,692,548,296

(2) Details of discount on shares issued as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Discount on shares issued	₩7,029,816	₩5,030,971

27. RETAINED EARNINGS:

(1) Details of retained earnings (accumulated deficit) as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Unappropriated retained earnings (accumulated deficit)	₩(917,017,301)	₩(1,080,255,882)

(*) In accordance with the K-water Act, an amount equal to at least 20% of net income in each fiscal year is required to be appropriated as a legal reserve, until the reserve equals 50% of share 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 share capital.

(2) Changes in retained earnings (accumulated deficit) for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩(1,080,255,882)	₩(2,384,847,331)
Net income (loss)	161,559,892	(145,632,184)
Dividends	-	-
Loss reserves	-	1,451,379,166
Actuarial gain (loss)	1,678,689	(1,155,533)
Others	-	-
Ending balance	₩(917,017,301)	₩(1,080,255,882)

(3) Dividend paid for the years ended December 31, 2017 and 2016, is as follows:

(Unit: In thousands of Korean won)

	2017		2016	
	Investment	Dividend	Investment	Dividend
Investment	₩8,108,974,296	₩-	₩7,692,548,296	₩-

(4) Changes in actuarial loss for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩(43,463,744)	₩(42,308,210)
Changes for the year	2,214,629	(1,524,451)
Tax effect	(535,940)	368,917
Ending balance	₩(41,785,055)	₩(43,463,744)

28. CONSOLIDATED STATEMENTS OF DISPOSITION OF DEFICIT:

Consolidated statements of appropriation of retained earnings for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
I. Unappropriated retained earnings (accumulated deficit)	₩(917,017,301)	₩(1,080,255,882)
Balance at beginning of year	(1,080,255,882)	(933,468,166)
Income (loss) for the year	161,559,892	(145,632,183)
Actuarial gains (loss)	1,678,689	(1,155,533)
II. Disposal of deficit (appropriation of retained earnings)	-	-
III. Unappropriated retained earnings (accumulated deficit) to be carried over to subsequent year	₩(917,017,301)	₩(1,080,255,882)

29. OTHER COMPONENTS OF EQUITY:

(1) Details of other components of equity as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Other capital surplus	₩(1,628,759)	₩(1,628,640)
Accumulated other comprehensive loss	(36,219,923)	(12,896,044)
	₩(37,848,682)	₩(14,524,684)

(2) Changes in other capital surplus for the years ended December 31, 2017 and 2016, are as follows:

	December 31, 2017	December 31, 2016
Beginning balance	₩(1,628,640)	₩731,749
Changes	(119)	(220)
Loss reserves		(2,360,169)
Ending balance	₩(1,628,759)	₩(1,628,640)

(3) Changes in accumulated other comprehensive loss for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Gain (loss) on valuation of derivatives	Gain (loss) on valuation of AFS financial assets	Unrealized gain (loss) on valuation of equity method	Gain (loss) on foreign operations translation	Total
Beginning balance	₩(3,869,081)	₩(59,950)	₩(1,958,082)	₩(7,008,931)	₩(12,896,044)
Changes	24,929,945	1,205	(10,469,571)	(31,752,119)	(17,290,540)
Tax effect	(6,033,047)	(292)	-	-	(6,033,339)
Ending balance	₩15,027,817	₩(59,037)	₩(12,427,653)	₩(38,761,050)	₩(36,219,923)

(ii) 2016

(Unit: In thousands of Korean won)

	Gain (loss) on valuation of derivatives	Gain (loss) on valuation of AFS financial assets	Unrealized gain (loss) on valuation of equity method	Gain (loss) on foreign operations translation	Total
Beginning balance	₩(5,200,409)	₩(60,106)	₩(69,850)	₩(9,588,435)	₩(14,918,800)
Changes	1,756,370	205	(2,491,071)	2,579,504	1,845,008
Tax effect	(425,042)	(49)	602,839	-	177,748
Ending balance	₩(3,869,081)	₩(59,950)	₩(1,958,082)	₩(7,008,931)	₩(12,896,044)

(4) Changes in other capital for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Beginning balance	₩-	₩1,449,018,998
Changes	-	(1,449,018,998)
Ending balance	₩-	₩-

30. REVENUE:

Details of revenue from continuous operation of the Group for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Revenue from selling product:		
Land held for sale revenue	₩544,912,165	₩689,740,883
Water supply business revenue	1,116,183,837	1,049,862,339
Multiple-purpose dams business revenue	562,389,990	532,644,306
Ara waterway operation business revenue	100,896,577	134,162,539
	2,324,382,569	2,406,410,067
Revenue from providing service:		
Local waterworks business revenue	157,493,061	150,882,692
Sewage treatment business revenue	27,311,394	21,915,566
Four river management business revenue	24,663,636	25,237,272
	209,468,091	198,035,530
Revenue from construction contract:		
Water resource revenue	92,539,680	194,749,723
Sewage construction revenue	9,437,524	9,377,717
Private investment construction revenue (waterworks)	303,732,462	325,147,600
Private investment construction revenue (multiple-purpose dams)	155,259,186	239,195,312
Private investment construction revenue (local)	49,038,559	55,438,165
Private investment construction revenue (Kyung-in Canal Project)	8,240,085	5,475,713
	618,247,496	829,384,230
Other revenue:		
Foreign business revenue	7,284,073	2,835,298
Aggregate business revenue	19,564,694	26,006,826
Incidental business revenue	196,613,369	155,412,649
	223,462,136	184,254,773
	₩3,375,560,292	₩3,618,084,600

31. SELLING, GENERAL AND ADMINISTRATIVE EXPENSE:

Details of selling, general and administrative expenses for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Wages and salaries	₩42,834,599	₩45,173,039
Contribution to the Employee Welfare Fund	6,500,000	6,900,000
Expenses for employee benefits	8,776,176	5,720,286
Other employee benefits	6,365,157	6,849,161
Insurance	4,395,443	1,078,225
Depreciation	4,229,981	4,171,638
Amortization	593,587	754,638
Reversal of bad debt expense	(33,848)	(775,275)
Commissions	7,946,004	9,133,908
Advertisement	11,849,562	11,601,251
Training	6,617,792	5,061,296
Vehicle maintenance	352,129	354,861
Printing	492,015	582,198
Entertainment	157,616	124,304
Rent	1,523,220	1,405,549
Communications	2,360,340	2,351,757
Taxes and dues	2,495,935	1,387,451
Supplies	733,372	721,476
Utilities	1,535,394	1,492,197
Repairs	9,542,670	9,858,348
Development	27,923,041	27,004,933
Travel	2,443,614	2,727,242
Clothing	388,285	150,210
Research and analysis	342,175	259,626
Sales promotions	805,292	1,242,001
Sales commissions	894,216	1,301,169
Others	2,056,219	1,737,187
	₩154,119,986	₩148,368,676

32. OTHER INCOMES AND OTHER EXPENSES:

(1) Details of other incomes for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Reversal of allowance for bad debts	₩-	₩97,698
Customers' contribution to construction	266,500	266,500
Rent income	2,142,666	1,878,686
Others	66,041,127	17,810,505
	₩68,450,293	₩20,053,389

(2) Other expenses for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Transfer of provision for other current liabilities	₩22,142,824	₩117,857,622
Other bad debt expense	508,991	47,353
Donations	1,904,907	1,380,789
Others	18,330,776	842,368
	₩42,887,498	₩120,128,132

33. OTHER GAINS AND LOSSES:

Details of other gains and losses for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Gain on disposal of property, plant and equipment	₩2,085,381	₩3,267,534
Loss on disposal of property, plant and equipment	(1,438,402)	(3,089,178)
Impairment loss on intangible assets(*1)	(2,536,345)	(143,018,579)
Others, net	-	(171,190)
	₩(1,889,366)	₩(143,011,413)

(*1) As recovered amount was decided, which is investment cost in respect to Four River Restoration Project, an impairment loss of ₩143,018,579 thousand was recognized in 2016.

34. FINANCE INCOMES:

(1) Details of finance incomes for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Interest income	₩12,610,934	₩9,345,215
Dividends	743,367	502,403
Gain on valuation of derivative instruments	-	33,760,000
Gain on settlement of derivative instruments	-	-
Gain on foreign currency translation	84,655,000	2,574,616
Gain on foreign currency transactions	27,332,038	-
	₩125,341,339	₩46,182,234

(2) Details of interest income for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Cash and cash equivalents	₩7,026,435	₩5,735,160
Trade and other receivables	5,584,499	3,610,055
	₩12,610,934	₩9,345,215

35. FINANCE COSTS:

(1) Details of finance costs for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Interest expenses	₩262,545,873	₩294,422,633
Loss on valuation of derivative instruments	84,655,000	-
Loss on settlement of derivative instruments	27,332,000	-
Loss on redemption of debenture	3,778,767	-
Loss on foreign currency translation	1,132,758	34,370,246
Loss on foreign currency transactions	3,845,213	312,501
	₩383,289,611	₩329,105,380

(2) Details of interest expenses for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Trade and other payables	₩94,095	₩20,581
Long-term borrowings	2,936,969	2,607,334
Debentures	380,748,221	425,836,565
Derivative liabilities	29,685,478	20,106,463
	413,464,763	448,570,943
Less: capitalized borrowing costs	(150,918,890)	(154,148,310)
	₩262,545,873	₩294,422,633

Weighted-average interest rate used to capitalize the borrowing costs for the year ended December 31, 2017, is 2.82% (3.64% for 2016).

36. INCOME TAX EXPENSE:

(1) The components of income tax expense (benefit) for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Current tax expense	₩2,935,617	₩60,292
Adjustment for prior years	912,963	1,017,208
Income taxes directly charged to equity	(6,569,279)	(56,174)
Origination and reversal of temporary differences	10,082,729	(49,274,833)
Total income tax expense (benefit)	₩7,362,030	₩(48,253,507)

(2) Reconciliation of effective tax rate:

(Unit: In thousands of Korean won)

	2017	2016
Profit (loss) before income tax expense	₩192,296,083	₩(165,218,826)
Tax rate	24.20%	24.20%
Income tax using the Group's statutory tax rate	46,535,652	(39,982,956)
Adjustments:		
Effect of graduated tax rates	(462,000)	(462,000)
Current adjustments for prior periods	900,125	1,017,208
Effect of tax investigation	-	-
Non-taxable income	(5,164,627)	(7,336,536)
Non-deductible expenses	6,033,046	425,042
Temporary difference not recognized as deferred income tax	(40,480,166)	(1,914,265)
Income tax expense (benefit)	₩7,362,030	₩(48,253,507)
Average effective tax rate	3.83%	(*)

(*) Due to loss before income tax expense, effective tax rate does not need to be calculated.

(3) Details of income tax expenses recognized as other comprehensive income (loss) for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Gain (loss) on valuation of derivative instruments	₩(6,033,047)	₩(425,042)
Net change in fair value of AFS financial assets	(292)	(50)
Defined benefit plan actuarial gain (loss)	(535,940)	368,918
Others	-	-
	₩(6,569,279)	₩(56,174)

(4) Deferred tax assets (liabilities) recognized in consolidated financial statements as of December 31, 2017 and 2016, are detailed as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

	Beginning balance	Profit or loss	Other comprehensive income (loss)	Ending balance
Depreciation	₩6,375,172	₩3,246,805	₩-	₩9,621,978
Government grant	12,523,938	(870,214)	-	11,653,724
Contribution toward construction	1,300,864	(117,574)	-	1,183,290
Deferred revenue contribution toward construction	10,346,410	(329,407)	-	10,017,003
Defined benefit liabilities	22,943,746	11,453,990	(535,940)	33,861,796
Plan assets	(2,895,976)	(42,241)	-	(2,938,217)
AFS financial assets	19,184	-	(292)	18,892
Investment securities	58,149	3,289,040	-	3,347,189
Acquisition tax (Gyeong-in Canal Project)	149,041	(7,353)	-	141,688
Accrued of administrative expenses	6,055,633	(551,135)	-	5,504,498
Allowance for doubtful accounts in excess of limit	769,110	30,561	-	799,671
Depreciation by exemption law	(3,221,889)	379,618	-	(3,045,381)
Interest capitalized on inventory during construction period	(142,396,463)	(25,918,449)	-	(168,314,912)
Tax on excessive appreciation of land value (inventories)	(2,750,858)	(1,953,546)	-	(4,704,404)
Accrued income	(11,829)	1,721	-	(10,108)
Tax and dues (land excessive profit tax)	(3,601)	-	-	(3,601)
Reserve for temporary depreciation	(15,960,292)	500,937	-	(15,459,355)
Understatement of impairment loss	(242,000,000)	-	-	(242,000,000)
Dividends payable (Bosung gun)	(5,430)	-	-	(5,430)
Acquisition tax (land)	(37,450)	-	-	(37,450)
Provision for litigation	18,848,459	(7,172,311)	-	11,676,148
Payment guarantee for foreign related party	107,552	8,729	-	116,281
Debentures	(5,356,815)	-	-	(5,356,815)
Loss on valuation of derivatives	6,592,063	3,575,550	(6,033,046)	4,134,566
Amortization of Port marina management rights	1,225,815	-	-	1,225,815
Provision for Greenhouse gases exhaustion	6,539	356,174	-	362,713
Foreign currency deposits	-	4,612	-	4,612
Adjustments for foreign exchange rates	5,545,146	-	-	5,545,146
Common input tax	244,243	(725)	-	243,518
Deficit carried forward from the prior period	1,731,527,342	(23,363,284)	-	1,708,164,058
Gain on overseas operations translation	1,644	-	-	1,644
Consolidation adjustments	1,286	3,626	-	4,912
Others	(14,781,552)	1,438,688	-	(13,342,864)
Total	1,395,219,181	(36,239,297)	(6,569,279)	1,352,410,605
Except for reorganization of deferred tax assets (liabilities)	(1,345,967,462)	32,725,846	-	(1,313,241,616)
Ending balance	₩49,251,719	₩(3,513,451)	₩(6,569,279)	₩39,168,989

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Beginning balance	Profit or loss	Other comprehensive income (loss)	Ending balance
Depreciation	₩6,005,433	₩369,739	₩-	₩6,375,172
Government grant	13,394,152	(870,214)	-	12,523,938
Contribution toward construction	1,418,438	(117,574)	-	1,300,864
Deferred revenue contribution toward construction	10,831,599	(485,189)	-	10,346,410
Defined benefit liabilities	22,936,232	(361,403)	368,917	22,943,746
Plan assets	(2,847,955)	(48,021)	-	(2,895,976)
AFS financial assets	19,234	-	(50)	19,184
Investment securities	58,149	-	-	58,149
Acquisition tax (Gyeong-in Canal Project)	-	149,041	-	149,041
Accrued of administrative expenses	4,930,795	1,124,838	-	6,055,633
Allowance for doubtful accounts in excess of limit	785,819	(16,709)	-	769,110
Depreciation by exemption law	(3,601,506)	379,617	-	(3,221,889)
Interest capitalized on inventory during construction period	(121,514,027)	(20,882,436)	-	(142,396,463)
Tax on excessive appreciation of land value (inventories)	(2,271,180)	(479,678)	-	(2,750,858)
Accrued income	(65,855)	54,026	-	(11,829)
Tax and dues (land excessive profit tax)	(3,601)	-	-	(3,601)
Reserve for temporary depreciation	(16,243,428)	283,136	-	(15,960,292)
Understatement of impairment loss	(242,000,000)	-	-	(242,000,000)
Dividends payable (Bosung gun)	(5,430)	-	-	(5,430)
Acquisition tax (land)	(37,450)	-	-	(37,450)
Provision for litigation	1,153,935	17,694,524	-	18,848,459
Payment guarantee for foreign related party	177,244	(69,692)	-	107,552
Debentures	(5,356,815)	-	-	(5,356,815)
Loss on valuation of derivatives	7,017,104	-	(425,041)	6,592,063
Amortization of Port marina management rights	1,225,815	-	-	1,225,815
Provision for Greenhouse gases exhaustion	70,520	(63,981)	-	6,539
Foreign currency deposits	(90,750)	90,750	-	-
Adjustments for foreign exchange rates	5,545,146	-	-	5,545,146
Common input tax	244,969	(726)	-	244,243
Deficit carried forward from the prior period	1,651,537,245	79,990,097	-	1,731,527,342
Gain on overseas operations translation	1,644	-	-	1,644
Consolidation adjustments	(24,759)	26,045	-	1,286
Others	(16,350,690)	1,569,138	-	(14,781,552)
Total	1,316,940,027	78,335,328	(56,174)	1,395,219,181
Except for reorganization of deferred tax assets (liabilities)	(1,316,963,141)	(29,004,321)	-	(1,345,967,462)
Ending balance	₩(23,114)	₩49,331,007	₩(56,174)	₩49,251,719

(5) Temporary differences, which are not recognized as deferred tax assets, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Tax deficit	₩1,313,241,616	₩1,345,967,463

Accumulated tax deficits that are not recognized as deferred income tax assets are expected to expire in eight to nine years.

(6) Deferred tax assets (liabilities) as of December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Deferred tax assets	₩39,227,137	₩49,309,867
Deferred tax liabilities	(58,149)	(58,149)
	₩39,168,988	₩49,251,718

37. NATURE OF EXPENSES:

Details of nature of expenses for the years ended December 31, 2017 and 2016, are as follows:

(i) 2017

(Unit: In thousands of Korean won)

	Changes in inventories	Selling, general and administrative expenses	Cost of sales	Total
Changes in inventories:				
- Raw material	₩(735,260)	₩-	₩-	₩(735,260)
- Product	(577,850,728)	-	-	(577,850,728)
- Raw material used	-	-	1,960,343,250	1,960,343,250
Wages and salaries	-	42,834,599	349,941,166	392,775,765
Expenses for employee benefits	-	8,776,176	35,545,162	44,321,338
Other employee benefits	-	6,365,157	39,038,040	45,403,197
Insurance	-	4,395,443	1,121,475	5,516,918
Depreciation	-	4,229,981	82,676,180	86,906,161
Amortization	-	593,587	613,361,362	613,954,949
Bad debts expense (refund)	-	(33,848)	-	(33,848)
Commissions	-	7,946,004	49,834,974	57,780,978
Advertisements	-	11,849,562	1,040,920	12,890,482
Training	-	6,617,792	1,058,162	7,675,954
Vehicle maintenance	-	352,129	2,043,479	2,395,608
Printing	-	492,015	686,715	1,178,730
Entertainments	-	157,616	16,562	174,178
Rent	-	1,523,220	3,387,926	4,911,146
Communications	-	2,360,340	5,647,383	8,007,723
Tax and dues	-	2,495,935	75,889,993	78,385,928
Supplies	-	733,372	2,015,555	2,748,927
Utilities	-	1,535,394	3,510,705	5,046,099
Repair	-	9,542,670	104,212,493	113,755,163
Development	-	27,923,041	7,280,825	35,203,866
Travel	-	2,443,614	17,172,893	19,616,507
Clothing	-	388,285	5,489	393,774
Research and analysis	-	342,175	2,914,886	3,257,061
Sales promotion	-	805,291	-	805,291
Sales commissions	-	894,216	-	894,216
Others	-	8,556,220	13,564,281	22,120,501
	₩(578,585,988)	₩154,119,986	₩3,372,309,876	₩2,947,843,874

(ii) December 31, 2016

(Unit: In thousands of Korean won)

	Changes in inventories	Selling, general and administrative expenses	Cost of sales	Total
Changes in inventories:				
- Raw material	₩55,351	₩-	₩-	₩55,351
- Product	(588,333,880)	-	-	(588,333,880)
- Raw material used	-	-	2,304,592,204	2,304,592,204
Wages and salaries	-	45,173,039	343,151,050	388,324,089
Expenses for employee benefits	-	5,720,286	36,446,910	42,167,196
Other employee benefits	-	6,849,161	41,590,313	48,439,474
Insurance	-	1,078,225	1,129,495	2,207,720
Depreciation	-	4,171,638	80,745,589	84,917,227
Amortization	-	754,638	607,355,490	608,110,128
Bad debts expense (refund)	-	(775,275)	-	(775,275)
Commissions	-	9,133,908	37,465,379	46,599,287
Advertisements	-	11,601,251	1,062,657	12,663,908
Training	-	5,061,296	1,117,995	6,179,291
Vehicle maintenance	-	354,861	1,889,238	2,244,099
Printing	-	582,198	682,020	1,264,218
Entertainments	-	124,304	38,631	162,935
Rent	-	1,405,549	3,251,657	4,657,206
Communications	-	2,351,757	5,649,137	8,000,894
Tax and dues	-	1,387,451	76,840,485	78,227,936
Supplies	-	721,476	1,894,934	2,616,410
Utilities	-	1,492,197	3,291,448	4,783,645
Repair	-	9,858,348	104,106,445	113,964,793
Development	-	27,004,933	9,269,543	36,274,476
Travel	-	2,727,242	16,909,457	19,636,699
Clothing	-	150,210	6,816	157,026
Research and analysis	-	259,626	3,824,821	4,084,447
Sales promotion	-	1,242,001	-	1,242,001
Sales commissions	-	1,301,169	-	1,301,169
Others	-	8,637,187	11,583,310	20,220,497
	₩(588,278,529)	₩148,368,676	₩3,693,895,024	₩3,253,985,171

38. CATEGORIES OF FINANCIAL INSTRUMENTS:

(1) Financial assets and liabilities by categories as of December 31, 2017 and 2016, are detailed as follows:

(i) December 31, 2017

(Unit: In thousands of Korean won)

Current financial assets	Financial assets at FVTPL	Loans and receivables	Derivative hedging instrument designated	Total
Cash and cash equivalents	₩-	₩160,865,887	₩-	₩160,865,887
Loans and receivables	-	8,640,246	-	8,640,246
Short-term financial assets	23,897,420	-	-	23,897,420
Trade and other receivables	-	338,920,824	-	338,920,824
Derivative instrument assets	-	-	2,180,359	2,180,359
Subtotal	₩23,897,420	₩508,426,957	₩2,180,359	₩534,504,736

(Unit: In thousands of Korean won)

Non-current financial assets	Loans and receivables	AFS financial assets	Derivative hedging instrument designated	Total
Derivative instrument assets	₩-	₩-	₩28,672,132	₩28,672,132
AFS assets	-	23,131,909	-	23,131,909
Loans and receivables	17,762,987	-	-	17,762,987
Subtotal	17,762,987	23,131,909	28,672,132	69,567,028
Trade and other receivables	662,483,263	-	-	662,483,263
Total	₩680,246,250	₩23,131,909	₩28,672,132	₩732,050,291

(Unit: In thousands of Korean won)

Current financial liabilities	Financial liabilities measured at amortized cost	Derivative hedging instrument designated	Total
Short-term borrowings	₩5,018,749	₩-	₩5,018,749
Current portion of long-term borrowings	102,918,456	-	102,918,456
Current portion of debentures	1,341,689,500	-	1,341,689,500
Current portion of derivative instrument liabilities	-	20,161,613	20,161,613
Subtotal	1,449,626,705	20,161,613	1,469,788,318
Trade and other payables	348,863,829	-	348,863,829
Total	₩1,798,490,534	₩20,161,613	₩1,818,652,147

(Unit: In thousands of Korean won)

Non-current financial liabilities	Financial liabilities measured at amortized cost	Derivative hedging instrument designated	Total
Long-term borrowings	₩342,475,031	₩-	₩342,475,031
Debentures	9,932,699,270	-	9,932,699,270
Derivative instrument liabilities	-	35,837,762	35,837,762
Subtotal	10,275,174,301	35,837,762	10,311,012,063
Trade and other payables	3,950	-	3,950
Total	₩10,275,178,251	₩35,837,762	₩10,311,016,013

(ii) December 31, 2016

(Unit: In thousands of Korean won)

Current financial assets	Financial assets at FVTPL	Loans and receivables	Derivative hedging instrument designated	Total
Cash and cash equivalents	₩-	₩111,502,376	₩-	₩111,502,376
Short-term financial assets	79,605,251	-	-	79,605,251
Trade and other receivables	-	297,800,217	-	297,800,217
Derivative instrument assets	-	-	13,940,759	13,940,759
Subtotal	₩79,605,251	₩409,302,593	₩13,940,759	₩502,848,603

(Unit: In thousands of Korean won)

Non-current financial assets	Loans and receivables	AFS financial assets	Derivative hedging instrument designated	Total
Derivative instrument assets	₩-	₩-	₩62,389,624	₩62,389,624
AFS assets	-	17,040,121	-	17,040,121
Loans and receivables	19,436,514	-	-	19,436,514
Subtotal	19,436,514	17,040,121	62,389,624	98,866,259
Trade and other receivables	648,922,129	-	-	648,922,129
Total	₩668,358,643	₩17,040,121	₩62,389,624	₩747,788,388

(Unit: In thousands of Korean won)

Current financial liabilities	Financial liabilities measured at amortized cost	Derivative hedging instrument designated	Total
Current portion of long-term borrowings	₩73,952,246	₩-	₩73,952,246
Current portion of debentures	1,494,543,000	-	1,494,543,000
Subtotal	1,568,495,246	-	1,568,495,246
Trade and other payables	329,427,557	-	329,427,557
Total	₩1,897,922,803	₩-	₩1,897,922,803

(Unit: In thousands of Korean won)

Non-current financial liabilities	Financial liabilities measured at amortized cost	Derivative hedging instrument designated	Total
Long-term borrowings	₩405,843,161	₩-	₩405,843,161
Debentures	9,799,643,323	-	9,799,643,323
Derivative instrument liabilities	-	26,977,212	26,977,212
Subtotal	10,205,486,484	26,977,212	10,232,463,696
Trade and other payables	4,850	-	4,850
Total	₩10,205,491,334	₩26,977,212	₩10,232,468,546

(2) Details of finance income and costs by categories for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	2017	2016
Loans and receivables (including cash and cash equivalents):		
Interest income	₩12,610,934	₩9,345,215
AFS financial assets:		
Dividend income	743,367	502,403
Derivative hedging instrument designated:		
Gain (loss) on transaction of derivative instruments, net	(27,332,000)	-
Gain (loss) on valuation of derivative instruments, net	(84,655,000)	33,760,000
Financial liabilities measured at amortized cost:		
Interest expense	(262,545,872)	(294,422,633)
Loss on redemption of debenture	(3,778,767)	-
Gain (loss) on foreign currency transactions, net	23,486,825	(312,500)
Gain (loss) on foreign currency translation, net	83,522,242	(31,795,631)
	₩(257,948,271)	₩(282,923,146)

39. RISK MANAGEMENT:

(1) Capital risk management

The fundamental goal of capital risk management is to maintain the Group's going-concern ability and to maximize shareholders' value by means of minimizing capital finance cost. The Group's management reviews the Group's capital structure periodically and maintains optimal capital structure by borrowings, capital increase and so forth.

As of December 31, 2017 and 2016, the Group defines net debt and equity as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Net debt:		
Debts (borrowings and debentures)	₩11,724,801,006	₩11,773,981,729
Less: cash and cash equivalents	(160,865,887)	(111,502,376)
	11,563,935,119	11,662,479,353
Equity	7,234,004,160	6,660,574,705
Total equity	₩18,797,939,279	₩18,323,054,058
Adjusted debt ratio	61.52%	63.65%

(2) Financial risk management

(i) Goal of financial risk management

The board of directors is responsible for preparing overall systems for financial risk management and supervising financial risk management. The board of directors established risk management committee to develop the strategy for financial risk management and supervise financial risk management. The committee reviews the compliance of the risk management policy and procedure periodically and reports the result to the board of directors.

The Group's policies for financial risk management are prepared to recognize and analyze the Group's financial risk, establish the Group's risk threshold and control and manage the Group's financial risk to be not over the risk threshold. The Group's risk management systems and policies are reviewed periodically to reflect the market environments and Group's underlying operations. The Group makes employees to understand their own roles and responsibilities, and structure control environments by training employees, financial risk management standards and procedures.

(ii) Credit risk management

(a) Exposure to credit risk

The carrying amount of financial assets represents the maximum credit exposure. The Group limits its exposure to credit risk by depositing cash and cash equivalents in financial institutions that have a high credit rate. The maximum exposure to credit risk at the reporting date is as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
AFS financial assets	₩23,131,909	₩17,040,121
Loans and receivables	1,027,841,051	966,291,566
Cash and cash equivalents	160,865,887	111,502,376
Short-term financial assets	23,897,420	79,605,251
Derivative assets used for hedging	30,852,491	76,330,383
Financial guarantee contracts (*)	180,720	180,720
	₩1,266,769,478	₩1,250,950,417

(*) The above amounts are maximum amounts that the Group should pay in case the principal debtors make a claim.

(iii) Liquidity risk management

(a) December 31, 2017

The following are the contractual maturities of financial liabilities as of December 31, 2017, including estimated interest payments and excluding the impact of netting agreements:

(Unit: In thousands of Korean won)

	Carrying amount	Contractual cash flows	6 months or less	6–12 months
Trade and other payables	₩348,867,779	₩348,867,779	₩348,863,829	₩-
Debentures	11,274,388,770	13,537,636,151	1,099,465,796	611,693,295
Borrowings	450,412,236	453,687,565	16,941,075	92,863,881
Derivative financial liabilities used for hedging	55,999,375	55,999,375	-	20,161,613
	₩12,129,668,160	₩14,396,190,870	₩1,465,270,700	₩724,718,789

(Unit: In thousands of Korean won)

	1 year–2 years	2–5 years	More than 5 years
Trade and other payables	₩3,950	₩-	₩-
Debentures	1,489,833,849	4,281,069,166	6,055,574,045
Borrowings	23,147,961	16,766,926	303,967,722
Derivative financial liabilities used for hedging	-	27,992,874	7,844,888
	₩1,512,985,760	₩4,325,828,966	₩6,367,386,655

(a) December 31, 2016

The following are the contractual maturities of financial liabilities as of December 31, 2016, including estimated interest payments and excluding the impact of netting agreements:

(Unit: In thousands of Korean won)

	Carrying amount	Contractual cash flows	6 months or less	6–12 months
Trade and other payables	₩329,432,407	₩329,432,407	₩329,427,557	₩-
Debentures	11,294,186,323	13,601,877,386	1,332,142,593	541,151,593
Borrowings	479,795,407	486,676,802	22,300,190	54,688,436
Derivative financial liabilities used for hedging	26,977,212	26,977,212	-	-
	₩12,130,391,349	₩14,444,963,807	₩1,683,870,340	₩595,840,029

(Unit: In thousands of Korean won)

	1 year–2 years	2–5 years	More than 5 years
Trade and other payables	₩4,850	₩-	₩-
Debentures	1,733,372,986	4,248,279,337	5,746,930,876
Borrowings	34,045,414	39,036,046	336,606,716
Derivative financial liabilities used for hedging	9,346,847	12,348,753	5,281,612
	₩1,776,770,097	₩4,299,664,136	₩6,088,819,204

(iv) Currency risk

The Group's exposure to foreign currency risk is as follows based on notional amounts:

(Unit: In thousands of Korean won)

	December 31, 2017			December 31, 2016		
	USD	JPY	EUR	USD	JPY	EUR
Loan	₩345,679,568	₩-	₩-	₩333,859,472	₩-	₩-
Debentures	803,550,000	142,366,500	-	797,610,000	155,521,500	-

As of December 31, 2017, the Group entered into currency swap contracts to hedge foreign currency risk, and the currency swap was designated as a hedging instrument for a hedge of a foreign currency risk related to liabilities denominated in foreign currencies.

Currency swap was designed to offset fluctuation of foreign currency-denominated liabilities; therefore, assuming all other variables are consistent, there might be no effect on income before taxes resulting from fluctuation in foreign exchange rate.

(v) Interest rate risk

Borrowings with floating rates were exposed to interest rate risk. The Group entered into currency and interest swap contracts to hedge interest rate risk of a considerable portion of borrowings with floating rates. The Group measures its interest rate risk based on 100 basis points ("bp"), which reflects the management's assessment of reasonable level of interest rate risk.

(a) At the reporting date, the interest rate profile of the Group's interest-bearing financial liabilities is as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Debentures	₩277,140,000	₩484,210,000
Borrowings	333,663,308	375,087,308
	₩610,803,308	₩859,297,308

(b) Cash flow sensitivity analysis for variable-rate instruments

A change of 100 bp in interest rates at the reporting date would have increased (decreased) equity and profit or loss by the amounts shown below. This analysis assumes that all other variables, in particular foreign currency rates, remain constant. The analysis is performed on the same basis for 2016

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	100 bp increase	100 bp decrease	100 bp increase	100 bp decrease
Equity and profit (loss)	₩(6,108,033)	₩6,108,033	₩(8,592,973)	₩8,592,973

(3) Fair values

(i) Fair values versus carrying amounts

The fair values of financial assets and liabilities, together with the carrying amounts shown in the consolidated statements of financial position, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017		December 31, 2016	
	Carrying amount	Fair value	Carrying amount	Fair value
Assets carried at fair value:				
Short-term financial assets	₩23,897,420	₩23,897,420	₩79,605,251	₩79,605,251
AFS financial assets	23,131,909	23,131,909	12,758,051	12,758,051
Derivative instrument assets	30,852,491	30,852,491	76,330,384	76,330,384
	77,881,820	77,881,820	168,693,686	168,693,686
Assets carried at amortized cost:				
Loans and receivables	1,027,807,320	1,027,807,320	966,158,860	966,158,860
Cash and cash equivalents	160,865,887	160,865,887	111,502,376	111,502,376
	1,188,673,207	1,188,673,207	1,077,661,236	1,077,661,236
Liabilities carried at fair value:				
Derivative instrument liabilities	55,999,375	55,999,375	26,977,212	26,977,212
Liabilities carried at amortized cost:				
Debentures	11,274,388,770	11,274,388,770	11,294,186,323	11,294,186,323
Borrowings	450,412,236	450,412,236	479,795,407	479,795,407
Trade and other payables	348,867,779	348,867,779	329,432,407	329,432,407
	₩12,073,668,785	₩12,073,668,785	₩12,103,414,137	₩12,103,414,137

(ii) Fair value hierarchy

The different levels have been defined as follows:

- ✓ Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities
- ✓ Level 2: Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices)
- ✓ Level 3: Inputs for the asset or liability that are not based on observable market data (unobservable inputs)

The table below analyzes financial instruments carried at fair value, by valuation method, as of December 31, 2017:

(Unit: In thousands of Korean won)

	Level 1	Level 2	Level 3	Total
Short-term financial assets	₩23,897,420	₩-	₩-	₩23,897,420
Derivative financial assets	-	30,852,491	-	30,852,491
AFS financial assets	-	-	17,380,105	17,380,105
Derivative financial liabilities	-	55,999,375	-	55,999,375

40. SERVICE CONCESSION ARRANGEMENTS:

If the Group constructs or replaces a public facility, such facility is transferred to the national or local government with no consideration received in return in accordance with Article 32 of the K-Water Act. Under Article 9, Paragraph 1 No. 6, the Group may impose fees for goods sold or services provided by such facility.

Under K-IFRS, the business related to "Multiregional water facility construction in progress," "Multipurpose dams construction in progress," and "Local waterworks construction in progress" of the Group falls under the 'Service Concession Arrangement.' Therefore, sales and cost of sales are recognized using the percentage-of-completion method. The Group recognizes revenue to the extent that related costs of sales will result in revenue.

41. TRANSACTIONS AND BALANCES WITH RELATED COMPANIES:

(1) Details of related parties as of December 31, 2017, are as follows:

Control relationship	Related party
Ultimate parent company	Korean Government
Associates	KWPP Holdings Co. and Angat Hydropower Co.

(2) There is no guarantee provided on behalf of related parties as of December 31, 2017.

(3) Key management personnel compensation in total and for each of the following categories for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Short-term employee benefits	₩1,000,944	₩1,108,848
Expenses for employee benefits	9,945	34,271
	₩1,010,889	₩1,143,119

(4) Assets pledged as collateral for related parties as of December 31, 2017, are as follows:

(Unit: In thousands of Korean won and USD)

Financial institutions	Related party	Collateral assets	Carrying amount(*1)
BPI, KEB Hana Bank, Maybank, UCPB, PBB, Shinhan Bank, BOC, etc.	Angat Hydropower Co.	1,878,180 shares in Angat Hydropower Co (*2) 50 shares in KWPP Holdings Co.	₩100,845,106

(*1) The carrying amount is equal to the acquisition cost.
(*2) The issuance of Angat Hydropower Co. shares is underway, and thus 18,482,800 shares issued in 2017 have been excluded from the number of shares collateralized.

(5) The Korean government issued stock for cash amounting to ₩414,427,155 thousand.

42. NON-CASH INVESTING AND FINANCING ACTIVITIES:

Significant non-cash investing and financing activities for the years ended December 31, 2017 and 2016, are as follows:

(Unit: In thousands of Korean won)

	December 31, 2017	December 31, 2016
Reclassification of construction in progress to asset	₩53,351,702	₩30,521,890
Reclassification of intangible assets under development to asset	344,147,366	566,322,045
Transfer to current portion of long-term borrowing	102,918,456	73,952,246
Transfer to current portion of debentures	1,341,689,500	1,494,543,000

43. CONTINGENCIES:

(1) Assets pledged as collateral for other parties

As of December 31, 2017, the Group has provided 36,144 shares of P-waters Corporation (book value: ₩180,720 thousand) as collaterals to NH Bank for the borrowings of P-waters Corporation.

(2) Litigations

The Group is a plaintiff and defendant in 53 and 160 litigations, respectively.

Details of major pending litigations as a defendant as of December 31, 2017, are as follows:

(Unit: In thousands of Korean won)

Nature of litigation	Number of litigations	Amount of litigation	Note
Claims for construction costs	8	₩52,197,128	Demand for additional payment
Claims for interruption in water supply (Gumi)	4	3,520,050	Damage claims
Claims related to construction and management of dams	18	110,556,986	Damage claims and compensation for loss
Claims for Four River Restoration Project	14	74,993,569	Compensation for loss
Claims for sale of land	86	49,402,120	Damage claims and compensation for loss
Other claims	30	8,303,811	-
	160	₩298,973,664	

The amount of provision the Group recognized with respect to the lawsuits is ₩37,641,847 thousand.

(3) Major construction contracts

As of December 31, 2017, the Group has entered into various contracts totaling ₩4,835 billion for the development of new cities and industrial complex sites and construction of water facilities, dams and others. In connection with these contracts, contractors have designated the Group as a beneficiary of performance guarantee insurance by Seoul Guarantee Insurance and Construction Guarantee and others amounting to 15% of total contract amount.

(4) Credit line agreements

The Group has entered into loan agreements with Hanabank Korea Inc. and five other Korean financial institutions. The available credit lines under these agreements amounted to ₩290,000 million as of December 31, 2017. The Group has not drawn any amount as of December 31, 2017.

(5) Guarantees received

Details of guarantees received from the third parties of the Group as of December 31, 2017, are as follows:

(Unit: In thousands of USD)

Guarantees from	Guarantee amount	Description
The Export-Import Bank of Korea	USD 24,800	Equity injection guarantee for Star Hydro Power Ltd.

44. INVESTMENT FOR KYUNG-IN CANAL PROJECT:

As the Group was appointed to carry out the Gyeong-in Canal Project by the government at the National Policy Coordination Conference on December 11, 2008, the Group has invested and recognized a sum of ₩15,043 hundred million (book value) as intangible assets as of December 31, 2017.

Upon resolution made at the National Policy Coordination Conference on May 22, 2014, the Group is currently negotiating with the government on changes in business plans and procedures for the processing of property rights under the Port Act with regard to investments made in navigation channels, of which were made toward facilities functioning as ports.

Meanwhile, depending on the outcome of the negotiation with the government, uncertainties exist as to the recoverability of investments such as changes in business plans and possibility of exclusion from property rights. The impact these uncertainties will have on the consolidated financial statements cannot be estimated as of December 31, 2017.