

LG Chem, Ltd. and Subsidiaries

Consolidated Interim Financial Statements

September 30, 2018 and 2017

LG Chem, Ltd. and Subsidiaries

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September 30, 2018 and 2017

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Report on Review of Interim Financial Statements

(English Translation of a Report Originally Issued in Korean)

To the Shareholders and Board of Directors of
LG Chem, Ltd.

Reviewed Financial Statements

We have reviewed the accompanying consolidated interim financial statements of LG Chem, Ltd. and its subsidiaries (collectively referred to as the "Group"). These financial statements consist of the consolidated interim statement of financial position of the Group as at September 30, 2018, and the related consolidated interim statements of profit or loss and comprehensive income for the three-month and nine-month periods ended September 30, 2018 and 2017, and consolidated interim statements of changes in equity and cash flows for the nine-month periods ended September 30, 2018 and 2017, and a summary of significant accounting policies and other explanatory notes, expressed in Korean won.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated interim financial statements in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS) 1034 *Interim Financial Reporting*, and for such internal control as management determines is necessary to enable the preparation of consolidated interim financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to issue a report on these consolidated interim financial statements based on our review.

We conducted our review in accordance with quarterly or semi-annual review standards established by the Securities and Futures Commission of the Republic of Korea. A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Korean Standards on Auditing and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Conclusion

Based on our review, nothing has come to our attention that causes us to believe the accompanying consolidated interim financial statements are not presented fairly, in all material respects, in accordance with Korean IFRS 1034 *Interim Financial Reporting*.

Other Matters

We have audited the consolidated statement of financial position of the Group as at December 31, 2017, and the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for the year then ended, in accordance with Korean Standards on Auditing. We expressed an unqualified opinion on those financial statements, not presented herein, in our audit report dated March 6, 2018. The consolidated statement of financial position as at December 31, 2017, presented herein for comparative purposes, is consistent, in all material respects, with the above audited statement of financial position as at December 31, 2017.

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

November 13, 2018

Seoul, Korea

This report is effective as of November 13, 2018, the review report date. Certain subsequent events or circumstances, which may occur between the review report date and the time of reading this report, could have a material impact on the accompanying consolidated interim financial statements and notes thereto. Accordingly, the readers of the review report should understand that there is a possibility that the above review report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Financial Position
September 30, 2018 (Unaudited) and December 31, 2017

<i>(in millions of Korean won)</i>	Notes	September 30, 2018 (Unaudited)	December 31, 2017
Assets			
Current assets			
Cash and cash equivalents	3, 5, 6	3,066,867	2,249,341
Trade receivables	3, 5, 7, 31	4,948,498	4,448,669
Other receivables	3, 5, 7, 31	453,277	770,776
Prepaid income taxes		1,117	932
Other current assets	13	560,763	376,814
Inventories	9	4,403,535	3,352,454
Assets held for sale	35	3,633	6,595
Total current assets		13,437,690	11,205,581
Non-current assets			
Other receivables	3, 5, 7	123,728	126,429
Financial assets	3, 5, 8	45,550	23,782
Investments in associates and joint ventures	1, 10, 33	288,618	264,096
Deferred tax assets	28	350,928	281,506
Property, plant and equipment	11	12,247,688	11,211,482
Intangible assets	12	1,826,279	1,823,155
Investment properties		956	1,027
Other non-current assets	13	97,823	104,163
Total non-current assets		14,981,570	13,835,640
Total assets		28,419,260	25,041,221
Liabilities			
Current liabilities			
Trade payables	3, 5, 31	2,540,651	2,014,779
Other payables	3, 5, 31	1,880,771	1,847,222
Borrowings	3, 5, 14	2,037,418	1,451,324
Financial liabilities	3, 5, 8	674	-
Provisions	15	75,061	62,940
Income tax payables	28	302,551	414,110
Other current liabilities	17	488,327	854,283
Liabilities held for sale	35	4	31
Total current liabilities		7,325,457	6,644,689
Non-current liabilities			
Other payables	3, 5	10,137	8,646
Borrowings	3, 5, 14	3,262,378	1,593,625
Financial liabilities	3, 5, 8	2,442	-
Provisions	15	174,040	163,476
Net defined benefit liabilities	16	280,448	180,681
Deferred tax liabilities	28	38,816	42,627
Other non-current liabilities	17	68,228	68,900
Total non-current liabilities		3,836,489	2,057,955
Total liabilities		11,161,946	8,702,644

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Financial Position
September 30, 2018 (Unaudited) and December 31, 2017

<i>(in millions of Korean won)</i>	Notes	September 30, 2018 (Unaudited)	December 31, 2017
Equity			
Share capital	1, 19	391,406	391,406
Capital surplus		2,274,623	2,274,386
Other components of equity	21	(374,326)	(362,676)
Accumulated other comprehensive income		(188,170)	(173,839)
Retained earnings	20	14,922,609	14,039,250
Equity attributable to owners of the Parent Company		<u>17,026,142</u>	<u>16,168,527</u>
Non-controlling interest		231,172	170,050
Total equity		<u>17,257,314</u>	<u>16,338,577</u>
Total liabilities and equity		<u>28,419,260</u>	<u>25,041,221</u>

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

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Profit or Loss
Three-Month and Nine-Month Periods Ended September 30, 2018 and 2017 (Unaudited)

	Notes	Period Ended September 30			
		2018		2017	
		(Unaudited)		(Unaudited)	
		Three months	Nine months	Three months	Nine months
<i>(in millions of Korean won, except per share amounts)</i>					
Revenue	31, 33	7,234,858	20,840,301	6,397,083	19,265,812
Cost of sales	23, 31	<u>(5,867,550)</u>	<u>(16,659,852)</u>	<u>(4,940,129)</u>	<u>(15,024,391)</u>
Gross profit		1,367,308	4,180,449	1,456,954	4,241,421
Selling and administrative expenses	22, 23, 31	<u>(764,929)</u>	<u>(2,223,938)</u>	<u>(667,256)</u>	<u>(1,927,945)</u>
Operating profit	33	602,379	1,956,511	789,698	2,313,476
Finance income	5, 25	44,676	156,242	69,595	188,795
Finance costs	5, 25	<u>(113,404)</u>	<u>(287,334)</u>	<u>(62,850)</u>	<u>(219,312)</u>
Share of net profit of associates and joint ventures accounted for using the equity method	10	3,670	3,213	662	4,320
Other non-operating income	5, 26	207,388	291,637	114,325	374,605
Other non-operating expenses	5, 27	<u>(259,623)</u>	<u>(337,735)</u>	<u>(209,050)</u>	<u>(531,609)</u>
Profit before income tax	32	485,086	1,782,534	702,380	2,130,275
Income tax expense	28	<u>(138,486)</u>	<u>(389,795)</u>	<u>(156,928)</u>	<u>(446,404)</u>
Profit for the period		<u>346,600</u>	<u>1,392,739</u>	<u>545,452</u>	<u>1,683,871</u>
Profit is attributable to:					
Owners of the Parent Company		343,389	1,352,462	520,952	1,629,519
Non-controlling interests		3,211	40,277	24,500	54,352
Earnings per share attributable to the equity holders of the Parent Company (in won)	29				
Basic earnings per ordinary share		4,481	17,650	6,799	21,266
Basic earnings per preferred share		4,493	17,687	6,811	21,303
Diluted earnings per ordinary share		4,462	17,483	6,799	21,266
Diluted earnings per preferred share		4,475	17,521	6,811	21,303

The above consolidated interim statements of profit or loss should be read in conjunction with the accompanying notes.

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Comprehensive Income
Three-Month and Nine-Month Periods Ended September 30, 2018 and 2017 (Unaudited)

(in millions of Korean won)	Note	Period Ended September 30			
		2018		2017	
		(Unaudited)		(Unaudited)	
		Three months	Nine months	Three months	Nine months
Profit for the period		346,600	1,392,739	545,452	1,683,871
Other comprehensive income					
<i>Items that will not be reclassified to profit or loss</i>					
Remeasurements of net defined benefit liability	16	(4,873)	(9,546)	(2,709)	(12,927)
Gain on valuation of financial assets at fair value through other comprehensive income		3,555	7,123	-	-
Shares of remeasurements of net defined benefit liabilities of associates		(85)	(145)	(5)	58
Income tax relating to these items		666	668	655	3,127
<i>Items that may be subsequently reclassified to profit or loss</i>					
Exchange differences on translation of foreign operations		(105,501)	(18,581)	44,488	(8,304)
Cash flow hedge		(1,163)	(930)	-	-
Shares of other comprehensive income of joint ventures and associates		(2,767)	(931)	(581)	(4,104)
Changes in the fair value of available-for-sale financial instruments		-	-	(2,096)	(3,425)
Income tax relating to these items		1,580	(2,109)	1,958	129
Other comprehensive income for the period, net of tax		(108,588)	(24,451)	41,710	(25,446)
Total comprehensive income for the period		238,012	1,368,288	587,162	1,658,425
Total comprehensive income for the period is attributable to:					
Owners of the Parent Company		245,508	1,331,218	558,198	1,603,663
Non-controlling interest		(7,496)	37,070	28,964	54,762

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

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Changes in Equity
Nine-Month Periods Ended September 30, 2018 and 2017 (Unaudited)

(in millions of Korean won)

Notes	Attributable to owners of the Parent Company						Non-controlling interests	Total equity
	Share capital	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings	Total		
Balance at January 1, 2017	369,500	1,157,772	(15,699)	(36,993)	12,462,772	13,937,352	113,615	14,050,967
Comprehensive income								
Profit for the period	-	-	-	-	1,629,519	1,629,519	54,352	1,683,871
Remeasurements of net defined benefit liability	16	-	-	-	(9,803)	(9,803)	3	(9,800)
Exchange differences on translation of foreign operations	-	-	-	(9,412)	-	(9,412)	407	(9,005)
Change in the fair value of available-for-sale financial instruments	-	-	-	(2,596)	-	(2,596)	-	(2,596)
Others	-	-	-	(4,103)	58	(4,045)	-	(4,045)
Total comprehensive income for the period	-	-	-	(16,111)	1,619,774	1,603,663	54,762	1,658,425
Transactions with owners:								
Business combination	34	21,906	1,116,614	(337,211)	-	801,309	-	801,309
Purchase of treasury shares	34	-	-	(2,250)	-	(2,250)	-	(2,250)
Effects of changes in ownership of subsidiary	-	-	-	(5,729)	-	(5,729)	5,729	-
Dividends	30	-	-	-	(368,055)	(368,055)	(17,627)	(385,682)
Others	-	-	-	-	(728)	(728)	(243)	(971)
Total transactions with owners		21,906	1,116,614	(345,190)	-	(368,783)	(12,141)	412,406
Balance at September 30, 2017 (Unaudited)		391,406	2,274,386	(360,889)	(53,104)	13,713,763	156,236	16,121,798
Balance at January 1, 2018		391,406	2,274,386	(362,676)	(173,839)	14,039,250	170,050	16,338,577
Comprehensive income								
Profit for the period	-	-	-	-	1,352,462	1,352,462	40,277	1,392,739
Remeasurements of net defined benefit liability	16	-	-	-	(6,930)	(6,930)	-	(6,930)
Exchange differences on translation of foreign operations	-	-	-	(17,740)	-	(17,740)	(3,207)	(20,947)
Gain on valuation of financial assets at fair value through other comprehensive income	-	-	-	5,176	-	5,176	-	5,176
Others	-	-	-	(1,605)	(145)	(1,750)	-	(1,750)
Total comprehensive income for the period	-	-	-	(14,169)	1,345,387	1,331,218	37,070	1,368,288
Transactions with owners:								
Dividends	30	-	-	-	(460,058)	(460,058)	(33,822)	(493,880)
Equity transactions within the Group	-	-	237	(11,650)	-	(11,413)	11,651	238
Establishment of a subsidiary	-	-	-	-	-	-	46,893	46,893
Others	-	-	-	-	(162)	(1,970)	(670)	(2,802)
Total transactions with owners	-	-	237	(11,650)	(162)	(462,028)	24,052	(449,551)
Balance at September 30, 2018 (Unaudited)		391,406	2,274,623	(374,326)	(188,170)	14,922,609	17,026,142	231,172

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

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Cash Flows
Nine-Month Periods Ended September 30, 2018 and 2017 (Unaudited)

(in millions of Korean won)

	Note	Nine-Month Period Ended September 30	
		2018 (Unaudited)	2017 (Unaudited)
Cash flows from operating activities			
Cash generated from operations	32	1,937,999	2,498,360
Interest received		33,903	22,300
Interest paid		(91,240)	(76,274)
Dividends received		10,010	11,154
Income taxes paid		(573,997)	(347,820)
Net cash inflow from operating activities		1,316,675	2,107,720
Cash flows from investing activities			
Decrease in other receivables		755,780	818,132
Decrease in other non-current receivables		42,472	62,666
Decrease in other current financial assets		359	-
Proceeds from disposal of investments in subsidiaries		-	343
Proceeds from disposal of investments in associates and joint ventures		20,748	-
Proceeds from disposal of financial instruments		8,465	-
Proceeds from disposal of property, plant and equipment		410,619	13,793
Proceeds from disposal of intangible assets		1,137	7,727
Government grants received		-	29,628
Business combination, net of cash acquired		-	43,759
Proceeds from disposal of business		-	2,022
Increase in other receivables		(493,784)	(699,489)
Increase in other non-current receivables		(28,043)	(58,775)
Acquisition of investments in associates and joint ventures		(33,225)	(28,720)
Acquisition of financial instruments		(22,676)	(2,191)
Acquisition of property, plant and equipment		(2,844,566)	(1,326,999)
Acquisition of intangible assets		(72,376)	(64,257)
Net cash outflow from investing activities		(2,255,090)	(1,202,361)
Cash flows from financing activities			
Proceeds from borrowings		2,476,762	1,306,737
Capital contribution from non-controlling interests		46,893	-
Repayments of borrowings		(251,924)	(1,523,486)
Dividends paid		(493,880)	(385,682)
Purchase of treasury shares		-	(2,250)
Purchase of a subsidiary's treasury shares		(659)	-
Net cash inflow (outflow) from financing activities		1,777,192	(604,681)
Net increase in cash and cash equivalents			
Cash and cash equivalents at the beginning of the period		2,249,341	1,474,367
Effects of exchange rate changes on cash and cash equivalents		(21,251)	5,578
Cash and cash equivalents at the end of the period		3,066,867	1,780,623

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

LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Interim Financial Statements

September 30, 2018 and 2017 (Unaudited), and December 31, 2017

1. General Information

General information about LG Chem, Ltd. (“the Parent Company”), the controlling company in accordance with Korean IFRS 1110 *Consolidated Financial Statements*, and its subsidiaries (collectively referred to as “the Group”) is as follows:

1.1 The Parent Company

The Parent Company was spun off on April 1, 2001, from LG Chem Investment Ltd. (now LG Corp., formerly LG Chemical Ltd.).

As at September 30, 2018, the Parent Company has its manufacturing facilities in Yeosu, Daesan, Ochang, Cheongju, Ulsan, Naju, Iksan, Paju, Osong, Onsan and Gimcheon.

The Parent Company is authorized to issue 292 million shares of ordinary shares with par value of ₩5,000 per share. As at September 30, 2018, the Parent Company has issued 70,592,343 ordinary shares (₩352,962 million) and 7,688,800 preferred shares (₩38,444 million). The largest shareholder of the Parent Company is LG Corp., which owns 33.34% of the Parent Company’s ordinary shares. Preferred shareholders have no voting rights but are entitled to receive dividends at a rate 1% more than those paid to ordinary shareholders.

1.2 Business Overview

The Group is engaged in Basic materials & Chemicals business, Energy solutions, IT & Electronics materials and Advanced materials business, and also engaged in Life Sciences business acquired through a merger with LG Life Sciences, Ltd. in January 2017. In addition, the Group acquired 100% shares of FarmHannong Co., Ltd., in April 2016, which is engaged to manufacture crop protection products, seeds, fertilizers and others.

The Basic materials & Chemicals business includes production of olefin petrochemicals, such as ethylene, propylene, butadiene from Naphtha, and aromatic petrochemicals such as benzene. It also includes production of synthetic resin and synthetic components from olefin, and aromatic petrochemicals. This business bears characteristics of a large-volume process industry. The Group’s major products are PE, PP, BPA, ABS, EP, PVC, plasticizers, acrylic, SAP, synthetic rubber, a special resin, and others.

The Energy solutions business manufactures and supplies batteries ranging from IT & New application batteries for mobile phones and laptop computers, to automotive batteries for electric vehicles and ESS batteries. Demand of small sized batteries for new applications such as electric tools and electric driving devices as well as traditional IT devices is increasing recently and the automotive battery business is also expected to expand rapidly due to an increasing demand of the batteries in associated with enhanced environment regulation in developed countries. Demand for ESS is expanding with an increasing importance of efficient usage of electricity and generation of renewable energy.

The IT & Electronics material business manufactures and supplies various kinds of IT materials such as polarizer, glass substrate, OLED film, semiconductor materials and RO membranes, which will be the next growth engine for future. Advanced materials business manufactures and supplies display and battery materials for LCD Photoresist, OLED materials, battery materials and others.

The Life Sciences business manufactures and supplies pharmaceutical products, such as quinolone antibiotics ‘Factive’, human growth hormone ‘Eutropin’, diabetes drug ‘Zemiglo’, bovine somatotropin ‘Boostin’, hyaluronic acid filler ‘YVOIRE’ and others, as well as fine chemical products, such as herbicide ‘PYANCHOR’ for rice farming and others.

LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Interim Financial Statements

September 30, 2018 and 2017 (Unaudited), and December 31, 2017

FarmHannong Co., Ltd., subsidiary of the Parent Company, manufactures and sells crop protection products, seeds, fertilizers and others. The crop protection business provides high value products such as environmentally-friendly pesticide. The fertilizer business leads developing a next generation fertilizers such as eco-friendly organic and functional fertilizers, and potting soil. The seed business puts priority on retaining various genetic resources and developing rare breeds with high profit in order to remain competitive in a future food industry.

1.3 Consolidated Subsidiaries, Associates and Joint Ventures

	September 30, 2018			
	Percentage of ownership (%)	Business location	Closing month	Business activities
Consolidated subsidiaries				
Ningbo LG Yongxing Chemical Co., Ltd. ¹	75	China	December	ABS/SBL manufacturing and sales
Ningbo Zhenhai LG Yongxing Trade Co., Ltd. ¹	75	China	December	ABS sales
LG Chem HK Ltd.	100	Hong Kong	December	Sales and trading
LG Chem America, Inc. ²	100	USA	December	Sales and trading
LG Chemical India Pvt. Ltd. ³	100	India	December	Synthetic resin manufacturing and sales
LG Polymers India Pvt. Ltd. ³	100	India	December	PS manufacturing
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd. ⁴	100	China	December	Battery/ Polarizer Manufacturing and sales
LG Chem (Taiwan), Ltd.	100	Taiwan	December	Polarizer manufacturing and sales
LG Chem Display Materials (Beijing) Co., Ltd.	100	China	December	Polarizer manufacturing
Tianjin LG Bohai Chemical Co., Ltd. ⁵	75	China	December	PVC, VCM, EDC manufacturing and sales
Tianjin LG BOTIAN Chemical Co., Ltd. ⁵	58	China	December	SBS manufacturing and sales
LG Chem (China) Investment Co., Ltd. ⁶	100	China	December	China holding company
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	100	China	December	ABS/EP manufacturing and sales
LG Chem Europe GmbH	100	Germany	December	Sales and trading
LG Chem Poland Sp. z o.o.	100	Poland	December	Polarizer/EP manufacturing
LG Chem Michigan Inc. ²	100	USA	December	Automotive battery research and manufacturing
LGC Petrochemical India Private Ltd.	100	India	December	Synthetic resin manufacturing and sales
HAENGBOKNURI CO., LTD. ⁷	100	Korea	December	Facility management and general cleaning
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	100	Turkey	December	Sales and trading
LG Chem Japan Co., Ltd.	100	Japan	December	Sales and trading
LG NanoH2O, Inc. ²	100	USA	December	Water processing membrane research and manufacturing
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	100	China	December	Water processing membrane research and manufacturing
Nanjing LG Chem New Energy Battery Co., Ltd. ⁸	50	China	December	Automotive battery manufacturing and sales
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem Wroclaw Energy sp. z o.o. ⁹	100	Poland	December	Automotive battery research and manufacturing
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	70	China	December	ABS manufacturing and sales
FarmHannong Co., Ltd. ¹⁰	100	Korea	December	Agricultural pesticide manufacturing
FarmHwaong Co., Ltd. ^{10,11}	98	Korea	December	Vegetables and fruit farming
Farm Hannong (Heilongjiang) Chemical Co., Ltd. ¹⁰	100	China	December	Agricultural pesticide manufacturing
LG Life Sciences India Pvt. Ltd.	100	India	December	Pharmaceutical products sales

LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Interim Financial Statements

September 30, 2018 and 2017 (Unaudited), and December 31, 2017

LG Life Sciences (Beijing) Co., Ltd.	100	China	December	Pharmaceutical products sales
LG Life Sciences (Thailand) Ltd.	100	Thailand	December	Pharmaceutical products sales
LG Life Sciences America Inc. ¹⁰	100	USA	December	Agricultural pesticide sales
LG Chem Hai Phong Vietnam Co., Ltd.	100	Vietnam	December	Polarizer manufacturing and sales
LG Chem Australia Pty Ltd.	100	Australia	December	ESS sales
LG Chem Mexico S.A. de C.V. ¹²	100	Mexico	December	Sales and trading
FarmHannong(Thailand) Ltd. ^{10,13}	100	Thailand	December	Research and development on seeds
LG Chem Hai Phong engineering Plastics Ltd. ¹⁴	100	Vietnam	December	EP manufacturing and sales
LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd. ¹⁵	100	China	December	Polarizer manufacturing
LEYOU NEW ENERGY MATERIALS(WUXI) Co.,LTD ¹⁶	51	China	December	Battery materials manufacturing and sales
LG Chem Fund I LLC ¹⁷	100	USA	December	Investments in venture companies
Associates				
LG Holdings (HK) Ltd.	26	Hong Kong	December	Sales and trading
TECWIN Co., Ltd.	21	Korea	December	Environment solution and construction of chemical plant
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA. ¹⁸	100	Brazil	December	Sales and trading
LG Chem Malaysia SDN.BHD. ¹⁸	100	Malaysia	December	Sales and trading
LG Fuel Cell Systems Inc.	23	USA	December	Power fuel cell research
FJ Composite Material Co., Ltd.	33	Japan	May	Heat diffuser research and manufacturing
WUXI CL New Energy Technology Ltd. ¹⁹	30	China	December	ESS manufacturing and sales
LG Life Sciences Poland Ltd. ¹⁸	100	Poland	December	Pharmaceutical products sales
Combustion Synthesis Co., Ltd. ²⁰	30	Japan	March	Nitride-based ceramic powder production
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. ²¹	49	China	December	Battery materials manufacturing and sales
Joint ventures				
LG VINA Chemical Co., Ltd.	40	Vietnam	December	DOP production and sales
HL Greenpower Co., Ltd.	49	Korea	December	Automotive battery manufacturing and sales
SEETEC Co., Ltd.	50	Korea	December	Plant utility and distribution, research assistance service

¹ As at September 30, 2018, Ningbo LG Yongxing Chemical Co., Ltd. owns 100% of Ningbo Zhenhai LG Yongxing Trading Co., Ltd.'s shares.

² During the nine-month period ended September 30, 2018, LG Chem Power Inc. was merged into LG Chem Michigan Inc. In addition, LG Chem Michigan Inc. owns 100% of LG Chem America, Inc. and LG NanoH20, Inc.'s shares. During the nine-month period ended September 30, 2018, the Parent Company acquired additional shares of LG Chem Michigan Inc. for ₩ 146,419 million.

³ As at September 30, 2018, LG Chemical India Pvt. Ltd. owns 100% of LG Polymers India Pvt. Ltd.'s shares.

⁴ During the nine-month period ended September 30, 2018, the Group acquired additional shares of LG Chem (Nanjing) Information & Electronics Materials Co.,Ltd. for ₩ 152,868 million.

⁵ During the nine-month period ended September 30, 2018, the Parent Company acquired 17.25% of Tianjin LG BOTIAN Chemical Co.,Ltd.'s shares, out of 20.30% shares owned by Tianjin LG Bohai Chemical Co.,Ltd.

⁶ During the nine-month period ended September 30, 2018, the Parent Company acquired additional shares of LG Chem (China) Investment Co.,Ltd. for ₩ 29,228 million.

⁷ During the nine-month period ended September 30, 2018, Sarangnuri Ltd. was merged into HAENGBOKNURI CO., LTD.

⁸ Although the Parent Company owns less than 50% of the voting rights of Nanjing LG Chem New Energy Battery Co., Ltd., the Parent Company is considered to have control over the investee as

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the Parent Company can exercise the majority voting rights in its decision-making process in accordance with the shareholders' agreement.

- ⁹ During the nine-month period ended September 30, 2018, the Parent Company acquired additional shares of LG Chem Wroclaw Energy Sp. z o.o. for ₩ 307,194 million.
- ¹⁰ As at September 30, 2018, FarmHannong Co., Ltd. owns 100% of Farm Hannong (Heilongjiang) Chemical Co., Ltd., LG Life Sciences America Inc. and FarmHannong(Thailand) Ltd., and also holds 97.93% of FarmHwaong Co., Ltd.
- ¹¹ As at September 30, 2018, FarmHwaong Co., Ltd.'s assets and liabilities are classified as assets and liabilities held for sale (Note 35).
- ¹² LG Chem Mexico S.A. de C.V. was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 100% shares of LG Chem Mexico S.A. de C.V. for ₩ 394 million.
- ¹³ During the nine-month period ended September 30, 2018, the Group newly acquired 100% shares of FarmHannong(Thailand) Ltd. for ₩ 2,586 million.
- ¹⁴ LG Chem Hai Phong Engineering Plastics Ltd. was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 100% shares of LG Chem Hai Phong Engineering Plastics Ltd. for ₩ 15,344 million.
- ¹⁵ LG Chem (Guangzhou) Information & electronics Materials Co.,Ltd. was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 100% shares of LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd. for ₩ 54,109 million.
- ¹⁶ LEYOU NEW ENERGY MATERIALS(WUXI) CO.,LTD was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 51% shares of LEYOU NEW ENERGY MATERIALS(WUXI) CO.,LTD for ₩ 48,808 million.
- ¹⁷ LG CHEM FUND I LLC was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 100% shares of LG CHEM FUND I LLC for ₩ 1,411 million.
- ¹⁸ Classified as an investment in associate due to its small size.
- ¹⁹ During the nine-month period ended September 30, 2018, the Parent Company acquired additional shares of WUXI CL New Energy Technology Ltd. for ₩ 558 million.
- ²⁰ Combustion Synthesis Co., Ltd. was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired shares of Combustion Synthesis Co., Ltd. for ₩ 1,503 million.
- ²¹ HUAJIN NEW ENERGY MATERIALS(QUZHOU) CO.,LTD. was established during the nine-month period ended September 30, 2018, and the Parent Company newly acquired 49% shares of HUAJIN NEW ENERGY MATERIALS(QUZHOU) CO.,LTD. for ₩ 26,128 million.

1.4 Summarized Financial Information of Subsidiaries, Associates and Joint Ventures

Summarized financial information (before elimination of intercompany transactions and adjustments for differences in accounting policies) of subsidiaries, associates and joint ventures is as follows:

<i>(in millions of Korean won)</i>	September 30, 2018			Nine-month period ended September 30, 2018	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the period
Subsidiaries					
Ningbo LG Yongxing Chemical Co., Ltd.	963,819	423,025	540,794	1,620,758	126,258
Ningbo Zhenhai LG Yongxing Trade Co., Ltd.	5,100	1,275	3,825	18,349	386
LG Chem HK Ltd.	41,129	23,135	17,994	311,021	270
LG Chem America, Inc.	253,512	231,148	22,364	612,689	2,122
LG Chemical India Pvt. Ltd.	32,642	10	32,632	-	26
LG Polymers India Pvt. Ltd.	127,412	49,975	77,437	185,944	5,065
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	113,211	61,030	52,181	171,766	(12,571)

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LG Chem (Nanjing) Information & Electronics Materials Co., Ltd.	3,053,130	1,814,956	1,238,174	2,433,343	(5,060)
LG Chem (Taiwan), Ltd.	115,512	56,025	59,487	126,306	(772)
LG Chem Display Materials (Beijing) Co., Ltd.	45,304	18,402	26,902	60,742	1,281
Tianjin LG Bohai Chemical Co., Ltd.	295,557	198,844	96,713	405,543	12,862
Tianjin LG BOTIAN Chemical Co., Ltd.	49,548	45,406	4,142	119,397	2,039
LG Chem (China) Investment Co., Ltd.	484,389	280,679	203,710	43,061	2,995
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	62,905	23,306	39,599	68,203	(5,727)
LG Chem Europe GmbH	314,725	279,870	34,855	514,143	5,338
LG Chem Poland Sp. z o.o.	74,862	39,062	35,800	93,061	2,201
LG Chem Michigan Inc.	608,810	317,874	290,936	249,680	5,192
LGC Petrochemical India Private Ltd.	2,826	558	2,268	3,186	351
HAENGBOKNURI CO., LTD.	2,700	1,022	1,678	6,526	372
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	6,796	5,805	991	25,903	11
LG Chem Japan Co., Ltd.	3,862	363	3,499	4,279	412
LG NanoH2O, Inc. ¹	18,058	5,832	12,226	18,505	2,524
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	4,150	1,160	2,990	-	99
Nanjing LG Chem New Energy Battery Co., Ltd.	680,418	568,736	111,682	432,795	10,586
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	36,690	11,442	25,248	26,784	(4,029)
LG Chem Wroclaw Energy sp. z o.o.	981,630	595,010	386,620	155,670	(52,880)
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	299,117	214,814	84,303	306,964	2,781
FarmHannong Co., Ltd. ¹	1,142,277	690,079	452,198	516,624	16,446
LG Life Sciences India Pvt. Ltd.	4,935	3,180	1,755	8,550	(300)
LG Life Sciences (Beijing) Co., Ltd.	1,086	11	1,075	746	(87)
LG Life Sciences (Thailand) Ltd.	13,667	6,818	6,849	19,134	3,240
LG Chem Hai Phong Vietnam Company Ltd.	17,037	7,567	9,470	19,405	6,239
LG Chem Australia Pty Ltd.	740	124	616	1,214	97
LG Chem Mexico S.A. de C.V.	571	73	498	598	91
LG Chem Hai Phong engineering Plastics Ltd.	15,410	47	15,363	-	(112)
LG Chem (Guangzhou) Information & electronics Materials Co.,Ltd.	51,543	97	51,446	-	(434)
LEYOU NEW ENERGY MATERIALS(WUXI) Co.,LTD	94,676	3	94,673	-	582
LG Chem Fund I LLC	1,393	1,391	2	-	(1,399)
Associates					
LG Holdings (HK) Ltd.	243,926	43,030	200,896	37,245	13,878
TECWIN Co., Ltd.	79,106	32,206	46,900	106,404	8,619
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	155	139	16	1,160	(21)
LG Chem Malaysia SDN.BHD.	285	16	269	475	25
LG Fuel Cell Systems Inc.	33,125	7,276	25,849	6,284	(34,240)
FJ Composite Material Co., Ltd.	6,258	2,782	3,476	1,815	(506)
WUXI CL New Energy Technology Ltd.	9,827	5,386	4,441	-	(353)
LG Life Sciences Poland Ltd.	162	99	63	164	(9)
Combustion Synthesis Co., Ltd.	1,086	29	1,057	99	(388)
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD.	53,322	-	53,322	-	-
Joint ventures					
LG VINA Chemical Co., Ltd.	17,858	11,150	6,708	44,982	275
HL Greenpower Co., Ltd.	272,159	233,223	38,936	359,699	1,064
SEETEC Co., Ltd.	342,716	44,789	297,927	389,660	17,491

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¹ Included its subsidiaries' financial information from an intermediate parent perspective and not applied adjustments of a fair value measurement due to the business combination in the consolidated financial statements.

(in millions of Korean won)

	December 31, 2017			Nine-month period ended September 30, 2017	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the period
Subsidiaries					
Ningbo LG Yongxing Chemical Co., Ltd.	1,007,732	449,049	558,683	1,554,130	163,504
Ningbo Zhenhai LG Yongxing Trade Co., Ltd.	10,420	6,927	3,493	32,867	674
LG Chem HK Ltd.	96,752	79,690	17,062	368,932	376
LG Chem America, Inc.	191,011	171,566	19,445	595,292	738
LG Chemical India Pvt. Ltd.	32,716	5	32,711	-	29
LG Polymers India Pvt. Ltd.	93,999	15,651	78,348	186,187	10,308
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	109,443	44,342	65,101	148,208	2,060
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd.	2,410,548	1,301,136	1,109,412	2,059,162	87,407
LG Chem (Taiwan), Ltd.	122,310	60,462	61,848	147,279	5,414
LG Chem Display Materials (Beijing) Co., Ltd.	40,158	14,196	25,962	52,031	1,776
Tianjin LG Bohai Chemical Co., Ltd.	349,416	255,165	94,251	385,535	30,711
Tianjin LG BOTIAN Chemical Co., Ltd.	48,438	46,298	2,140	126,829	664
LG Chem (China) Investment Co., Ltd.	324,605	153,146	171,459	44,658	4,221
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	64,708	19,057	45,651	68,241	(796)
LG Chem Europe GmbH	231,237	202,012	29,225	389,639	6,131
LG Chem Poland Sp. z o.o.	64,841	30,877	33,964	70,479	1,892
LG Chem Michigan Inc.	232,301	138,085	94,216	173,161	18,701
LG Chem Power Inc.	18,640	6,013	12,627	32,626	3,327
LGC Petrochemical India Private Ltd.	2,502	390	2,112	3,185	288
HAENGBOKNURI CO., LTD.	2,292	939	1,353	5,098	20
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	6,618	5,113	1,505	18,753	254
LG Chem Japan Co., Ltd.	3,462	470	2,992	4,286	466
LG NanoH2O, Inc. ¹	10,269	971	9,298	11,767	1,919
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	4,103	1,173	2,930	-	(1,937)
Nanjing LG Chem New Energy Battery Co., Ltd.	478,421	375,998	102,423	154,405	2,920
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	35,028	5,559	29,469	17,429	(2,832)
LG Chem Wroclaw Energy sp. z o.o.	330,033	202,131	127,902	11,529	(4,560)
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	290,840	208,170	82,670	274,117	11,810
FarmHannong Co., Ltd. ¹	1,152,122	621,754	530,368	536,369	25,144
LG Life Sciences India Pvt. Ltd.	7,143	4,923	2,220	8,586	(600)
LG Life Sciences (Beijing) Co., Ltd.	1,191	20	1,171	593	(24)
LG Life Sciences (Thailand) Ltd.	10,008	6,595	3,413	14,969	1,805
Sarangnuri Ltd.	227	60	167	203	50
LG Chem Hai Phong Vietnam Company Ltd.	4,480	1,266	3,214	-	(47)
LG Chem Australia Pty Ltd.	559	12	547	-	-
Associates					
LG Holdings (HK) Ltd.	249,896	60,681	189,215	35,734	11,574
TECWIN Co., Ltd.	79,106	32,206	46,900	-	-
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	164	123	41	-	-
LG Chem Malaysia SDN.BHD.	252	19	233	-	-
LG Fuel Cell Systems Inc.	48,444	4,701	43,743	1,851	(31,800)

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	December 31, 2017			Nine-month period ended September 30, 2017	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the period
FJ Composite Material Co., Ltd.	7,052	2,858	4,194	569	(369)
WUXI CL New Energy Technology Ltd.	4,521	1,180	3,341	-	(336)
LG Life Sciences Poland Ltd.	124	72	52	139	(17)
Joint ventures					
LG VINA Chemical Co., Ltd.	17,539	9,242	8,297	39,349	1,561
HL Greenpower Co., Ltd.	190,881	151,728	39,153	317,924	4,629
SEETEC Co., Ltd.	344,189	43,751	300,438	370,385	11,735

¹ Included its subsidiaries' financial information from an intermediate parent perspective and not applied adjustments of a fair value measurement due to the business combination in the consolidated financial statements.

1.5 Changes in Scope for Consolidation

Subsidiaries newly included in the consolidation for the nine-month period ended September 30, 2018, are as follows:

Subsidiary	Reason
LG Chem Mexico S.A. de C.V.	Newly established
FarmHannong(Thailand) Ltd.	Newly established
LG Chem Hai Phong Engineering Plastics Ltd.	Newly established
LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd.	Newly established
LEYOU NEW ENERGY MATERIALS(WUXI) Co.,LTD	Newly established
LG Chem Fund I LLC	Newly established

Subsidiaries excluded from the consolidation for the nine-month period ended September 30, 2018, are as follows:

Subsidiary	Reason
LG Chem Power Inc.	Merged into LG Chem Michigan Inc.
Sarangnuri Ltd.	Merged into HAENGBOKNURI CO., LTD.

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2. Summary of Significant Accounting Policies

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

2.1 Basis of Preparation

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

The Group's condensed consolidated interim financial statements for the nine-month period ended September 30, 2018, have been prepared in accordance with Korean IFRS 1034 *Interim Financial Reporting*. The condensed consolidated interim financial statements have been prepared in accordance with Korean IFRS which is effective or early adopted as at September 30, 2018.

(a) New and amended standards adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2018.

- Korean IFRS 1109 *Financial Instruments*

The Group has applied Korean IFRS 1109 *Financial Instruments* on January 1, 2018, the date of initial application. In accordance with the transitional provisions in Korean IFRS 1109, comparative figures have not been restated, and the impact of the change in accounting policy following the adoption of IFRS 9 are recognized in the opening balance sheet on January 1, 2018. The application of the standard has following impacts on the financial statements.

On the date of initial application, January 1, 2018, the financial instruments of the Group with any reclassifications noted, were as follows:

<i>(in millions of Korean won)</i>	Measurement category		Carrying amount		
	Korean IFRS 1039	Korean IFRS 1109	Korean IFRS 1039	Korean IFRS 1109	Difference
Current financial assets					
		Amortized costs	4,448,669	4,218,196	(230,473)
Trade receivables	Amortized costs	Fair value through other comprehensive income	-	230,473	230,473
Cash and cash equivalents	Amortized costs	Amortized costs	2,249,341	2,249,341	-
Other receivables	Amortized costs	Amortized costs	770,776	770,776	-
Non-current financial assets					
Equity instruments	Available-for-sale financial assets	Fair value through other comprehensive income	23,782	16,982	(6,800)
Debt instruments	Available-for-sale financial assets	Fair value through profit or loss	-	6,800	6,800

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Other receivables	Amortized costs	Amortized costs	126,429	126,429	-
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(i) Financial assets at amortized cost classified as fair value through other comprehensive income

Certain trade receivables were reclassified from financial assets at amortized cost to fair value through other comprehensive income, as the Group's business model is achieved both by collecting contractual cash flows and selling of these assets. The contractual cash flows of these investments are solely principal and interest. As a result, debt instruments with a fair value of ₩ 230,473 million were reclassified from financial assets at amortized cost to financial assets at fair value through other comprehensive income on January 1, 2018.

(ii) Reclassification of equity investments from available-for-sale to fair value through other comprehensive income

The Group elected to present changes in the fair value of all its equity investments previously classified as available-for-sale, because these investments are not held for trading, in other comprehensive income. As a result, assets with a fair value of ₩230,473 million were reclassified from available-for-sale financial assets to financial assets at fair value through other comprehensive income. As at January 1, 2018, as related accumulated other comprehensive income of ₩ 418 million were not reclassified to profit or loss even though these assets are disposed of.

(iii) Reclassification of equity investments from available-for-sale to fair value through profit or loss

As at January 1, 2018, the Group classified equity investments, amounted of ₩6,800 million from available-for-sale to fair value through profit or loss, and did not classified to amortized costs as their cash flows are not solely payment of principal.

(iv) Other financial assets

Equity securities held for trading and contingent consideration are all required to be held as fair value through profit or loss under Korean IFRS 1109. There was no impact on the amounts recognized in relation to these assets from the adoption of Korean IFRS 1109.

- Korean IFRS 1115 *Revenue from Contracts with Customers*

The Group has elected to apply Korean IFRS 1115 *Revenue from Contracts with Customers*. In accordance with the transition provisions in Korean IFRS 1115, comparative figures have not been restated. The Group does not expect the amendment to have a significant impact on the financial statements.

- Amendments to Korean IFRS 1028 *Investments in Associates and Joint Ventures*
- Amendments to Korean IFRS 1102 *Share-based Payment*
- Enactment of Interpretation 2122 *Foreign Currency Transaction and Advance Consideration*
- Amendments to Korean IFRS 1040 *Investment Property*

(b) *New standards and interpretations not adopted by the Group*

Certain new accounting standards and interpretations that have been published that are not mandatory for annual reporting period commencing January 1, 2018 and have not been early adopted by the Group are set out below.

- Enactment of Korean IFRS 1116 *Leases*

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2.2 Significant Accounting Policies

Significant accounting policies and method of computation used in the preparation of the consolidated interim financial statements are consistent with those of the consolidated financial statements for the year ended December 31, 2017, except for the changes due to the application of amendment and enactments of standards described in Note 2.1.(a) and the ones described below.

2.2.1 Income Tax Expense

Income tax expense for the interim period is recognized based on management's best estimate of the weighted average annual income tax rate expected for the full financial year. The estimated average annual tax rate is applied to the pre-tax income.

2.2.2 Financial Assets

(a) Classification

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

- those to be measured subsequently at fair value (either through other comprehensive income, or through profit or loss), and
- those to be measured at amortized cost

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

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

For investments in equity instruments that are not held for trading, the Group presents subsequent changes in fair value of the investments in equity instruments in other comprehensive income at initial recognition.

(b) Measurement

At initial recognition, the Group measures a financial asset, in the case of a financial asset not at fair value through profit or loss, at its fair value plus transaction costs that are directly attributable to the acquisition of the financial asset or the issuance of the financial liabilities. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss.

Hybrid (combined) contracts with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

Debt instruments

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

- Amortized cost: Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized

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cost. A gain or loss on a debt investment that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets using the effective interest rate method is included in 'finance income'.

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

Equity instruments

The Group subsequently measures all equity investments at fair value. Fair value gains and losses on equity investments in other comprehensive income is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividends from such investments continue to be recognized in profit or loss as 'finance income' when the Group's right to receive payments is established.

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

(c) Impairment

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

2.2.3 Revenue Recognition

From January 1, 2018, the Group has applied Korean IFRS 1115 *Revenue from Contracts with Customers*.

Korean IFRS 1018 and other previous revenue standard identify revenue as income that arises in the course of ordinary activities of an entity and provides guidance on a variety of different types of revenue, such as, sale of goods, rendering of services, interest, dividends, royalties and

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construction contracts. However, the new standard is based on the principle that revenue is recognized when control of a good or service transfers to a customer so the notion of the control replaces the existing notion of risks and rewards. A new five-step process must be applied before revenue from contract with customers can be recognized:

- Identify contracts with customers
- Identify the separate performance obligation
- Determine the transaction price of the contract
- Allocate the transaction price to each of the separate performance obligations, and
- Recognize the revenue as each performance obligation is satisfied.

The adoption of Korean IFRS 1115 does not have a significant impact on the financial statements.

(a) Identify performance obligation

With regard to the contract of selling products to the customer, the Group identifies the services provided separately to the customer as a different performance obligation. When the Group makes a sales contract with the customer, the standard warranty period for each product and customer is set up considering the legal warranty period. Even though the standard warranty period has been expired, the warranties are recognized as a revenue and is identified as a separate performance obligation when the Group provides additional warranties for the quality of product or when the customer has an option to purchase additional warranties separately.

(b) A performance obligation satisfied at a point in time

The revenue from the sale of goods is recognized at the time they are delivered to the customer. Delivery occurs when the products have been shipped to the specific location, the risks of obsolescence and loss have been transferred to the customer, and either the customer has accepted the products in accordance with the sales contract, the acceptance provisions have lapsed, or the group has objective evidence that all criteria for acceptance have been satisfied.

The goods are often sold with volume discounts, and it is the group's policy to sell its products to the customer with a right of return. Accumulated experience is used to estimate for the discounts and the refund, and the volume discounts is calculated based on the periodical forecast sales. The warranty provision for the sales and refund is reasonably estimated and recognized properly.

(c) Refunds

A gross contract liability for the expected refunds to customers is recognized as adjustment to revenue, and the Group has a right to recover the product from the customer where the customer exercises his right of return and recognizes an asset and a corresponding adjustment to cost of sales. A right to recover the products is measured at former carrying amount of the product less the costs to recover the products.

(d) Significant financing component

As a practical expedient, the Group need not adjust the promised amount of consideration for the effects of a significant financing component as the period between when the entity transfers a promised good or service to a customer and when the customer pays for that good or service is generally one year or less.

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3. Financial Risk Management

3.1 Financial Risk Factors

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

Risk management is carried out by the Group's finance team under policies approved by the Corporate Management Committee. The finance team identifies, evaluates and hedges financial risks in close co-operation with the Group's operating units. The Corporate Management Committee reviews and approves written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, and credit risk, use of derivative financial instruments and non-derivative financial instruments, investment of excess liquidity.

(1) Market risk

1) Foreign exchange risk

The Group operates internationally and is exposed to foreign exchange risk arising from foreign currency exposures, primarily with respect to the US dollar. Foreign exchange risk arises from future commercial transactions, recognized assets and liabilities.

Management has set up a policy to require group companies to manage their foreign exchange risk against their functional currency. The Group manages maximum loss for currency risk exposures within acceptable range by using currency risk management model and hires employees who are exclusively responsible for currency risk management.

The Group has certain investments in foreign operations, whose net assets are exposed to foreign currency translation risk. Currency exposure arising from the net assets of the Group's foreign operations is managed primarily through borrowings denominated in the relevant foreign currencies.

As at September 30, 2018 and December 31, 2017, the Group's monetary assets and liabilities denominated in currencies other than its functional currency, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018		December 31, 2017	
	Assets	Liabilities	Assets	Liabilities
USD	2,485,632	2,331,060	2,337,448	1,561,175
EUR	241,121	564,246	174,464	21,226
JPY	32,206	123,884	36,304	109,162
CNY and others	61,692	8,575	60,616	1,512

As at September 30, 2018 and December 31, 2017, if the Group's functional currency had weakened / strengthened by 10% against the US dollar with all other variables held constant, profit before income tax would have been affected as follows:

<i>(in millions of Korean won)</i>	September 30, 2018		December 31, 2017	
	10% Increase	10% Decrease	10% Increase	10% Decrease
USD	15,457	(15,457)	77,627	(77,627)

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The above sensitivity analysis has been performed for monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency at the reporting date.

2) Price risk

The Group is exposed to equity securities price risk arises from investments held by the Group and classified in the consolidated interim statement of financial position as non-current financial assets. The Group's equity investments are publicly traded and are related to the KOSPI index.

The table below summarizes the impact of increases/decreases of the listed stock price index on the Group's equity before tax effects as at September 30, 2018 and December 31, 2017. The analysis is based on the assumption that the equity index has increased/decreased by 10% with all other variables held constant, and that all the Group's equity instruments moved in line with the index.

<i>(in millions of Korean won)</i>	September 30, 2018		December 31, 2017	
	10% Increase	10% Decrease	10% Increase	10% Decrease
KOSPI	-	-	553	(553)

3) Interest rate risk

Interest rate risk is defined as the risk that the interest income or expenses arising from deposits and borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises through floating rate deposits and borrowings. The objective of interest rate risk management lies in maximizing corporate value by minimizing uncertainty in interest rates fluctuations and net interest expense.

The Group adequately minimizes risks from interest rate fluctuations through various policies, such as sharing excess cash within the Group (internal cash sharing) to minimize external borrowings, avoiding high rate borrowings, reforming capital structure, managing an appropriate ratio of fixed rate borrowings and floating rate borrowings, monitoring a fluctuation of domestic and foreign interest rates daily, weekly and monthly, establishing alternatives, and balancing floating rate short-term borrowings with floating rate deposits.

The table below summarizes the impact of increases/decreases of interest rate on the Group's equity and post-tax profit for the nine-month periods ended September 30, 2018 and 2017. The analysis is based on the assumption that the interest rate has increased/decreased by 1% (100 basis points) with all other variables held constant.

<i>(in millions of Korean won)</i>	Impact on post-tax profit		Impact on equity	
	2018	2017	2018	2017
Increase	(17,771)	(14,457)	(17,771)	(14,457)
Decrease	17,771	14,457	17,771	14,457

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(2) Credit risk

Credit risk is managed on the Group basis. Credit risk arises from debt instruments at amortized cost or fair value through other comprehensive income. The maximum exposure to credit risk as at September 30, 2018 and December 31, 2017, is as follows:

(in millions of Korean won)

	September 30, 2018		
	Amount before allowance	Impairment allowance	Carrying amount (maximum exposure)
Amortized cost	8,414,691	(11,035)	8,403,656
Fair value through other comprehensive income	188,673	-	188,673
	<u>8,603,364</u>	<u>(11,035)</u>	<u>8,592,329</u>

(in millions of Korean won)

	December 31, 2017		
	Amount before allowance	Impairment allowance	Carrying amount (maximum exposure)
Amortized cost	7,373,206	(8,511)	7,364,695
Fair value through other comprehensive income	230,473	-	230,473
Total	<u>7,603,679</u>	<u>(8,511)</u>	<u>7,595,168</u>

The Group has established the following policies and procedures to manage credit risks.

To manage credit risks relating to trade receivables, the Group evaluates the credit rating of customers and determines credit limit for each customer based on the information provided by credit rating agencies and other available financial information before commencing business with new customers. The credit risks relating to trade receivables are also mitigated by insurance contracts, collateral as well as payment guarantees.

The Group has entered into export bond insurance contracts with Korea Trade Insurance Corporation to mitigate credit risks relating to export trade receivables to overseas customers. The Group is also provided with collateral by customers depending on their credit rating or payment guarantees from the customers' financial institutions if necessary.

The Group has deposited its cash and cash equivalents and other long-term deposits in several financial institutions, such as Woori Bank and others. The Group has also entered into derivative contract with several financial institutions. The Group maintains business relationship with those financial institutions with high credit ratings evaluated by independent credit rating agencies and accordingly, credit risks associated with these financial institutions are limited.

(3) Liquidity risk

Finance team of the Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. The Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of

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liquid assets necessary to meet these, monitoring balance sheet liquidity ratios against internal and external regulatory requirements and maintaining debt financing plans.

The table below analyzes the Group's non-derivative financial liabilities into relevant maturity groupings based on the remaining period at the reporting period to the contractual maturity date. Cash flows presented below are gross cash flows before discount, and includes cash flows for interests.

(in millions of Korean won)

	September 30, 2018			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding financial lease liabilities)	2,092,072	617,060	2,009,064	918,386
Finance lease liabilities	5,177	5,177	15,532	7,899
Trade and other payables	4,421,422	6,789	3,205	143
Total	6,518,671	629,026	2,027,801	926,428

(in millions of Korean won)

	December 31, 2017			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding financial lease liabilities)	1,472,881	333,734	1,076,000	327,225
Finance lease liabilities	5,253	5,177	15,532	10,532
Trade and other payables	3,862,001	6,927	1,576	142
Total	5,340,135	345,838	1,093,108	337,899

As at September 30, 2018, the Group has entered into swap contracts for which cash flow hedge accounting is applied, to avoid market price fluctuation of raw materials. Details of derivative assets and liabilities are as follows:

(in millions of Korean won)

	September 30, 2018		December 31, 2017	
	Assets	Liabilities	Assets	Liabilities
Product (raw materials) swap ¹	-	674	-	-
Total	-	674	-	-

¹ Gain (loss) resulting from the contracts to avoid cash flow fluctuation risk of expected future transaction is accounted for as accumulated other comprehensive income (Note 5).

3.2 Capital Risk Management

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

Consistent with others in the industry, the Group monitors capital on the basis of the gearing ratio. This ratio is calculated as net debt divided by total capital. Net debt is calculated as total borrowings less cash and cash equivalents. Total capital is calculated as 'equity' as shown in the consolidated statement of financial position plus net debt.

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The gearing ratio and debt-to-equity ratio as at September 30, 2018 and December 31, 2017, were as follows:

<i>(in millions of Korean won, except for ratios)</i>	September 30, 2018	December 31, 2017
Total borrowings (Note 14) (A)	5,299,796	3,044,949
Less: cash and cash equivalents (B)	<u>(3,066,867)</u>	<u>(2,249,341)</u>
Net debt (C=A+B)	2,232,929	795,608
Total liabilities (D)	11,161,946	8,702,644
Total equity (E)	<u>17,257,314</u>	<u>16,338,577</u>
Total capital (F=C+E)	<u>19,490,243</u>	<u>17,134,185</u>
Gearing ratio (C/F)	11.5%	4.6%
Debt-to-equity ratio (D/E)	64.7%	53.3%

3.3 Fair Value

(1) Carrying amount and fair value of financial instruments by category as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018		December 31, 2017	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets (current)				
Cash and cash equivalents	3,066,867	1	2,249,341	1
Deposits held by financial institutions	266,222	1	529,701	1
Trade receivables	4,948,498	1	4,448,669	1
Other receivables (excluding deposits held by financial institutions)	187,055	1	241,075	1
Financial assets (non-current)				
Deposits held by financial institutions	64,326	1	64,308	1
Other receivables (excluding deposits held by financial institutions)	59,402	1	62,121	1
Other non-current financial assets (carried at cost)	-	-	17,718	2
Other non-current financial assets (carried at fair value)				
Marketable financial assets	3	3	6,064	6,064
Non-marketable financial assets	45,547	1	-	-
Financial liabilities (current)				
Trade and other payables	4,421,422	1	3,862,001	1
Current borrowings (excluding finance lease liabilities)	2,032,363	1	1,446,187	1
Current finance lease liabilities	5,055	1	5,137	1
Current derivative financial liabilities	674	674	-	-
Financial liabilities (non-current)				
Non-current borrowings (excluding finance lease liabilities)	3,236,883	3,294,526	1,566,258	1,560,147
Non-current finance lease liabilities	25,495	26,567	27,367	28,776
Other non-current payables	10,137	1	8,646	1

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<i>(in millions of Korean won)</i>	September 30, 2018		December 31, 2017	
	Carrying amount	Fair value	Carrying amount	Fair value
Other non-current financial liabilities (conversion rights)	2,442	2,442	-	-

¹ These financial assets and liabilities are not included in the disclosure above as their carrying amount is a reasonable approximation of the fair value.

² As at December 31, 2017, all other non-current financial assets of the Group consist of available-for-sale equity securities. These equity securities are measured at cost as the range of reasonable fair value estimates is significant and the probabilities of the various estimates cannot be reasonably assessed.

(2) Fair value for measurement and disclosure are determined based on the following method:

Fair values of financial liabilities (non-current) are based on cash outflows discounted by using Korean won currency note yield in the same credit grade with the Parent Company (AA+), and the applied discount rates as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in percentage)</i>	September 30, 2018	December 31, 2017
Discount rate	1.94%~2.89%	1.95%~2.90%

(3) Fair value hierarchy

Items that are measured at fair value or for which the fair value is disclosed are categorized by the fair value hierarchy levels, and the levels are defined as follows:

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

Fair value hierarchy classifications of the financial instruments that are measured at fair value or their fair value are disclosed as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other non-current financial assets (marketable financial assets)	3	-	-	3
Other current financial liabilities (derivative instruments)	-	674	-	674
Other non-current financial liabilities (conversion rights)	-	2,442	-	2,442
Financial assets/liabilities not measured at fair value				
Non-current borrowings	-	3,294,526	-	3,294,526

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(excluding finance lease liabilities)				
Non-current finance lease liabilities	-	26,567	-	26,567

<i>(in millions of Korean won)</i>	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other non-current financial assets (carried at fair value)	6,064	-	-	6,064
Financial assets/liabilities not measured at fair value				
Non-current borrowings (excluding finance lease liabilities)	-	1,560,147	-	1,560,147
Non-current finance lease liabilities	-	28,776	-	28,776

4. Critical Accounting Estimates and Assumptions

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

Significant accounting estimates and assumptions applied in the preparation of these consolidated interim financial statements are the same as those applied to the consolidated financial statements for the year ended December 31, 2017, except for the estimates used to determine income tax expense and the accounting estimates and assumptions for implementation of Korean IFRS 1109 explained as below.

(1) Impairment of financial assets

The allowance for impairment for financial assets under Korean IFRS 1109 is based on assumptions about risk of default and expected loss rates. The Group uses judgement in making these assumptions and selecting the inputs to the impairment calculation based on the Group's past history, existing market conditions as well as forward looking estimates at the end of each reporting period.

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5. Financial Instruments by Category

Categorizations of financial instruments as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

Financial assets	September 30, 2018			Total
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	
Cash and cash equivalents	3,066,867	-	-	3,066,867
Trade receivables	4,759,825	-	188,673	4,948,498
Other receivables	453,277	-	-	453,277
Other non-current receivables	123,728	-	-	123,728
Other non-current financial assets	-	16,069	29,481	45,550
Total	8,403,697	16,069	218,154	8,637,920

(in millions of Korean won)

Financial liabilities	September 30, 2018			Total
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ¹	
Trade payables	-	2,540,651	-	2,540,651
Other payables	-	1,880,771	-	1,880,771
Borrowings (current)	-	2,028,494	8,924	2,037,418
Other current liabilities (dividends payable)	-	-	-	-
Other current financial liabilities	-	-	674	674
Other non-current financial liabilities	2,442	-	-	2,442
Other non-current payables	-	10,137	-	10,137
Borrowings (non-current)	-	3,236,883	25,495	3,262,378
Total	2,442	9,696,936	35,093	9,734,471

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Financial assets	December 31, 2017			
	Loans and receivables	Financial assets at fair value through profit or loss	Available-for-sale financial assets	Total
Cash and cash equivalents	2,249,341	-	-	2,249,341
Trade receivables	4,448,669	-	-	4,448,669
Other receivables	770,776	-	-	770,776
Other non-current receivables	126,429	-	-	126,429
Other non-current financial assets	-	-	23,782	23,782
Total	7,595,215	-	23,782	7,618,997

(in millions of Korean won)

Financial liabilities	December 31, 2017			
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ¹	Total
Trade payables	-	2,014,779	-	2,014,779
Other payables	-	1,847,222	-	1,847,222
Borrowings (current)	-	1,443,683	7,641	1,451,324
Other non-current payables	-	8,646	-	8,646
Borrowings (non-current)	-	1,566,258	27,367	1,593,625
Total	-	6,880,588	35,008	6,915,596

¹ Other financial liabilities include (a) financial lease liabilities that are not subject to the categorizations of financial liabilities and (b) financial liabilities that are related to transfer transactions not qualified for derecognition.

Net gains or losses on each category of financial instruments for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Dividend income				
Financial assets at fair value through other comprehensive income	115	123	-	-
Available-for-sale financial assets	-	-	127	331
Interest income				
Financial assets at fair value through other comprehensive income	-	-	-	5
Financial assets at amortized cost	11,938	35,435	7,730	21,531
Interest expense				
Derivative instruments	-	-	-	-
Financial liabilities at amortized cost	(40,210)	(103,962)	(26,284)	(77,147)
Other financial liabilities	(252)	(776)	(64)	(5,411)

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	2018		2017	
	Three months	Nine months	Three months	Nine months
Gain (loss) on valuation				
Financial assets at fair value through profit or loss	65	65	-	-
Financial assets at fair value through other comprehensive income	3,588	9,755	-	-
Derivative instruments	(2,683)	(495)	-	-
Loss on redemption of debentures				
Financial liabilities at amortized cost	-	(13)	-	-
Gain (loss) on disposal				
Financial assets at fair value through profit or loss	-	-	-	-
Derivative instruments	-	-	-	170
Financial assets at fair value through other comprehensive income	-	(1,542)	-	-
Gain (loss) on foreign currency translation				
Financial assets at amortized cost	(113,205)	(22,303)	14,587	39,760
Financial liabilities at amortized cost	41,262	(67,772)	(1,270)	23,645
Other financial liabilities	(219)	130	1,451	(723)
Gain (loss) on foreign currency transaction				
Financial assets at amortized cost	89,754	127,262	16,065	(131,972)
Financial liabilities at amortized cost	(93,009)	(100,533)	18,777	70,819
Other financial liabilities	(5)	(212)	(2,507)	65,329

6. Cash and Cash Equivalents

Details of cash and cash equivalents as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)	September 30, 2018	December 31, 2017
Bank deposits and cash on hand	877,942	598,712
Deposits held by financial institutions and others	2,188,925	1,650,629
Total	3,066,867	2,249,341

As at September 30, 2018, cash and cash equivalents include ₩14,259 million which is subject to a restriction on the use in association with the governmental R&D projects.

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7. Trade and Other Receivables

Trade and other receivables and its provisions for impairment, as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018		
	Gross amount	Provision for impairment	Carrying amount
Trade receivables ¹	4,957,425	(8,927)	4,948,498
Other current receivables	455,386	(2,109)	453,277
Other non-current receivables ²	123,728	-	123,728
Total	5,536,539	(11,036)	5,525,503

(in millions of Korean won)

	December 31, 2017		
	Gross amount	Provision for impairment	Carrying amount
Trade receivables ¹	4,456,221	(7,552)	4,448,669
Other current receivables	771,735	(959)	770,776
Other non-current receivables ²	126,429	-	126,429
Total	5,354,385	(8,511)	5,345,874

¹ As at September 30, 2018 and December 31, 2017, trade receivables transferred to financial institutions have been collateralized for borrowings (current) and the amount of trade receivables not fully derecognized is as follows (Note 14):

(in millions of Korean won)

	Loans and receivables (trade receivables collateralized for borrowings)	
	September 30, 2018	December 31, 2017
Carrying amount of transferred assets	3,869	2,504
Carrying amount of related liabilities	(3,869)	(2,504)

² As at September 30, 2018, ₩928 million of other non-current receivables represents deposits which are restricted from withdrawal in connection with maintaining checking accounts (December 31, 2017: ₩550 million).

Details of other receivables as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018	December 31, 2017
Current		
Non-trade receivables	145,944	187,314
Deposits held by financial institutions ¹	266,222	529,701
Accrued income	5,192	5,126
Guarantee deposits provided	35,919	48,635
	<u>453,277</u>	<u>770,776</u>
Non-current		
Non-trade receivables	4,080	4,246
Deposits held by financial institutions ²	64,326	64,308

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Loans	338	291
Guarantee deposits provided	54,984	57,584
	<u>123,728</u>	<u>126,429</u>
Total	<u>577,005</u>	<u>897,205</u>

¹ As at September 30, 2018, ₩1,338 million (December 31, 2017: ₩1,338 million) is pledged as a collateral for borrowings and others.

² As at September 30, 2018, ₩63,400 million (December 31, 2017: ₩63,400 million) is restricted from being withdrawn in relation to large, small and medium-sized companies cooperation agreement and others.

The aging analysis of trade and other receivables as at September 30, 2018 and December 31, 2017, is as follows:

(in millions of Korean won)

	September 30, 2018		December 31, 2017	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Receivables not past due	4,775,494	559,579	4,302,204	834,882
Past due but not impaired				
Up to 3 months	152,275	11,278	148,043	59,070
Between 3-6 months	14,594	3,776	311	2,078
Over 6 months	8,878	2,372	554	1,175
	<u>175,747</u>	<u>17,426</u>	<u>148,908</u>	<u>62,323</u>
Impaired receivables	6,184	2,109	5,109	959
	<u>4,957,425</u>	<u>579,114</u>	<u>4,456,221</u>	<u>898,164</u>

Movements on the provision for impairment of trade and other receivables for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	7,552	-	959	-
Business combination (Note 34)	-	-	-	-
Additions	1,539	-	1,150	-
Write-off	(112)	-	-	-
Reversals	-	-	-	-
Exchange differences	(52)	-	-	-
Ending balance	<u>8,927</u>	<u>-</u>	<u>2,109</u>	<u>-</u>

(in millions of Korean won)

	December 31, 2017			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	12,219	-	385	990
Business combination (Note 34)	2,018	-	-	-
Additions	-	-	796	-

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Write-off	(644)	-	(221)	(990)
Reversals	(4,464)	-	(1)	-
Exchange differences	(1,577)	-	-	-
Ending balance	7,552	-	959	-

As at September 30, 2018 and December 31, 2017, the carrying amounts of trade and other receivables are approximation of their fair values.

8. Other Financial Assets and Liabilities

Details of other financial assets and liabilities as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Other financial assets		
Financial assets at fair value through other comprehensive income (current)	-	-
Financial assets at fair value through other comprehensive income (non-current)	29,481	-
Financial assets at fair value through profit or loss (current)	-	-
Financial assets at fair value through profit or loss (non-current)	16,069	-
Available-for-sale financial assets	-	23,782
	<u>45,550</u>	<u>23,782</u>
Other financial liabilities		
Financial liabilities at fair value through other comprehensive income (current)	674	-
Financial liabilities at fair value through profit or loss (non-current)	2,442	-
	<u>3,116</u>	<u>-</u>

Changes in other financial assets for the nine-month periods ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Beginning balance	23,782	23,448
Business combination (Note 34)	-	2,652
Acquisitions / Transfer	21,952	3,001
Disposals	(10,005)	(195)
Impairment	-	(209)
Gain (loss) on valuation (before income tax effects)	9,821	(5,550)
Less: current portion	-	-
Exchange differences	-	635
Ending balance	<u>45,550</u>	<u>23,782</u>

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9. Inventories

Details of inventories as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018		
	Gross amount	Valuation allowance	Carrying amount
Merchandise	144,866	(1,408)	143,458
Finished / Semi-finished products	2,541,385	(93,750)	2,447,635
Work-in-process	11,264	-	11,264
Raw materials	1,111,127	(18,037)	1,093,090
Supplies	152,629	-	152,629
Materials-in-transit	555,459	-	555,459
Total	4,516,730	(113,195)	4,403,535

(in millions of Korean won)

	December 31, 2017		
	Gross amount	Valuation allowance	Carrying amount
Merchandise	141,567	(3,320)	138,247
Finished / Semi-finished products	1,956,436	(95,369)	1,861,067
Work-in-process	9,852	-	9,852
Raw materials	897,227	(14,459)	882,768
Supplies	136,251	-	136,251
Materials-in-transit	324,269	-	324,269
Total	3,465,602	(113,148)	3,352,454

During the nine-month period ended September 30, 2018, the cost of inventories recognized as 'cost of sales' is amounted to ₩12,821,834 million (2017: ₩11,667,198 million).

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10. Investments in Associates and Joint Ventures

Changes in investments in associates and joint ventures for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018						
	Beginning balance	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income of associates and joint ventures	Others	Ending balance
LG VINA Chemical Co., Ltd.	3,327	-	(810)	118	(762)	-	1,873
HL Greenpower Co., Ltd.	20,240	-	-	(951)	-	(211)	19,078
LG Holdings (HK) Ltd.	51,029	-	-	3,607	(571)	-	54,065
TECWIN Co., Ltd.	8,008	-	-	1,820	-	-	9,828
SEETEC Co., Ltd.	146,741	-	(10,000)	8,745	-	9	145,495
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	150
LG Fuel Cell Systems Inc.	30,334	5,036	-	(9,647)	718	57	26,498
FJ Composite Materials Co., LTD.	2,669	-	-	(258)	(67)	-	2,344
WUXI CL New Energy Technology Ltd.	1,002	558	-	(106)	(127)	-	1,327
LG Life Sciences Poland Ltd.	17	-	-	-	-	-	17
Combustion Synthesis Co., Ltd. ¹	-	1,503	-	(115)	(122)	(30)	1,236
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. ²	-	26,128	-	-	-	-	26,128
	<u>264,096</u>	<u>33,225</u>	<u>(10,810)</u>	<u>3,213</u>	<u>(931)</u>	<u>(175)</u>	<u>288,618</u>

(in millions of Korean won)

	December 31, 2017								
	Beginning balance	Business combination	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income of associates and joint ventures	Changes in ownership of associates	Others	Ending balance
LG VINA Chemical Co., Ltd.	3,874	-	-	(846)	753	(454)	-	-	3,327
HL Greenpower Co., Ltd.	16,927	-	-	-	3,010	-	-	303	20,240
LG Holdings (HK) Ltd.	74,843	-	-	-	4,281	(8,596)	-	(19,499)	51,029
TECWIN Co., Ltd.	7,214	-	-	-	794	-	-	-	8,008
SEETEC Co., Ltd.	148,333	-	-	(10,000)	8,408	-	-	-	146,741
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	-	-	150
LG Fuel Cell Systems Inc.	8,908	-	24,527	-	(10,191)	(587)	7,680	(3)	30,334
FJ Composite Materials Co., Ltd.	-	-	3,015	-	(259)	(87)	-	-	2,669
WUXI CL New Energy Technology Ltd.	-	-	1,178	-	(176)	-	-	-	1,002
LG Life Sciences Poland Ltd.	-	17	-	-	-	-	-	-	17

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260,828	17	28,720	(10,846)	6,620	(9,724)	7,680	(19,199)	264,096
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¹ During the nine-month period ended September 30, 2018, the Parent Company newly acquired 29.54% shares of Combustion Synthesis Co., Ltd. for ₩1,503 million.

² During the nine-month period ended September 30, 2018, the Parent Company newly acquired 49% shares of HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. for ₩26.128 million.

11. Property, Plant and Equipment

Changes in property, plant and equipment for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018										
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,568,295	2,762,588	654,629	4,169,473	13,654	403,522	105,759	73,399	1,317,877	142,286	11,211,482
Cost	1,605,247	3,438,000	1,190,383	13,157,481	39,945	1,085,752	352,106	211,585	1,361,431	142,286	22,584,216
Accumulated depreciation	-	(637,025)	(521,806)	(8,840,809)	(26,143)	(669,189)	(243,973)	(136,034)	-	-	(11,074,979)
Accumulated impairment	(36,952)	(38,387)	(13,948)	(147,199)	(148)	(13,041)	(2,374)	(2,152)	(43,554)	-	(297,755)
Acquisitions/ Transfer	42,298	387,049	36,180	1,689,427	1,789	145,726	49,199	14,505	2,769,039	140,894	5,276,106
Disposals/ Transfer	(2,507)	(3,888)	(402)	(761,380)	(104)	(8,168)	(2,259)	(2,028)	(2,329,111)	(56,726)	(3,166,573)
Exchange differences	(62)	(10,044)	(964)	(23,818)	(1)	(896)	(347)	-	4,136	-	(31,996)
Depreciation	-	(68,579)	(34,251)	(725,704)	(2,305)	(103,486)	(29,111)	(49,382)	-	-	(1,012,818)
Impairment	-	(2,782)	(311)	(17,946)	-	(125)	(1)	-	(7,800)	-	(28,965)
Reversal of impairment	-	24	42	365	5	1	15	-	-	-	452
Ending balance	1,608,024	3,064,368	654,923	4,330,417	13,038	436,574	123,255	36,494	1,754,141	226,454	12,247,688
Cost	1,644,976	3,801,648	1,223,626	13,902,809	41,012	1,192,081	391,726	218,794	1,805,609	226,454	24,448,735
Accumulated depreciation	-	(702,587)	(554,808)	(9,417,351)	(27,831)	(744,277)	(266,071)	(180,148)	-	-	(11,893,073)
Accumulated impairment	(36,952)	(34,693)	(13,895)	(155,041)	(143)	(11,230)	(2,400)	(2,152)	(51,468)	-	(307,974)

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	December 31, 2017										
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,470,226	2,181,396	651,061	4,288,509	8,594	384,777	95,905	100,360	473,111	26,194	9,680,133
Cost	1,507,154	2,796,650	1,145,962	12,656,297	41,183	1,005,567	323,646	238,906	484,950	26,194	20,226,509
Accumulated depreciation	-	(575,932)	(479,210)	(8,305,213)	(32,439)	(611,202)	(225,767)	(138,098)	-	-	(10,367,861)
Accumulated impairment	(36,928)	(39,322)	(15,691)	(62,575)	(150)	(9,588)	(1,974)	(448)	(11,839)	-	(178,515)
Business combination (Note 34)	62,738	81,497	6,590	109,011	197	8,256	2,918	-	164,722	57,392	493,321
Acquisitions/ Transfer	38,594	607,656	51,272	955,563	9,761	180,809	45,578	41,658	2,535,725	133,175	4,599,791
Disposals/ Transfer	(2,972)	(9,888)	(787)	(53,527)	(49)	(31,254)	(1,242)	-	(1,820,436)	(74,475)	(1,994,630)
Exchange differences	(291)	(28,426)	(5,133)	(77,319)	(121)	(6,971)	(1,821)	-	(2,854)	-	(122,936)
Depreciation	-	(75,093)	(46,529)	(955,324)	(4,691)	(125,354)	(35,001)	(66,915)	-	-	(1,308,907)
Impairment	-	(1,390)	(3,039)	(98,125)	(39)	(6,142)	(652)	(1,704)	(32,391)	-	(143,482)
Reversal of impairment	-	6,836	1,194	3,721	2	797	91	-	-	-	12,641
Transfer to assets held for sale (Note 35)	-	-	-	(3,036)	-	(1,396)	(17)	-	-	-	(4,449)
Ending balance	1,568,295	2,762,588	654,629	4,169,473	13,654	403,522	105,759	73,399	1,317,877	142,286	11,211,482
Cost	1,605,247	3,438,000	1,190,383	13,157,481	39,945	1,085,752	352,106	211,585	1,361,431	142,286	22,584,216
Accumulated depreciation	-	(637,025)	(521,806)	(8,840,809)	(26,143)	(669,189)	(243,973)	(136,034)	-	-	(11,074,979)
Accumulated impairment	(36,952)	(38,387)	(13,948)	(147,199)	(148)	(13,041)	(2,374)	(2,152)	(43,554)	-	(297,755)

During the nine-month period ended September 30, 2018, the Group capitalized ₩13,669 million of borrowing costs (2017: ₩4,848 million), which was recognized from borrowings in relation to acquisition of property, plant and equipment. The capitalization rate of borrowings used to determine the amount of borrowing costs eligible for capitalization is 2.18% (2017: 2.36%).

Line items including depreciation in the consolidated statements of profit or loss for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Cost of sales	315,055	923,949	296,993	908,568
Selling and administrative expenses	29,652	85,403	24,536	71,949
Others	1,971	3,466	877	2,621
Total	346,678	1,012,818	322,406	983,138

Details of machinery and construction-in-progress classified as a finance lease as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018	December 31, 2017	
	Machinery	Machinery	Construction-in-progress
Cost- capitalized finance leases	45,025	43,274	1,275
Accumulated depreciation	(16,483)	(12,952)	-
Net book amount	28,542	30,322	1,275

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The Group leases machinery under non-cancellable finance lease agreements. The lease terms are 3~10 years and the contracts include an agreement that the ownership of the assets is transferred by the end of the lease term.

The Group reviews annually whether there is any indication that an asset may be impaired. During 2017, Glass Substrate business, a CGU in IT & Electronic materials and Advanced materials segment, was tested for impairment as its economic performance was lower than expected.

During 2017, certain equipment in LED Encap business, a CGU in IT & Electronic materials and Advanced materials segment, was tested for reversal of impairment as the future economic performance of OLED material division was estimated to exceed the previous expectation due to a transfer of LED Encap business to OLED material compound process.

The amount of impairment loss (reversal) recognized as other non-operating (income) expense and key assumptions used for calculation of value in use for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	2017	
	Glass Substrate ¹	LED Encap
Impaired amount		
Property, plant and equipment	124,138	(11,320)
Intangible assets	2,345	(6)
Key assumptions		
Pre-tax discount rate	N/A	12.3%
Growth rate for subsequent years exceeding five years	N/A	-

¹ The recoverable amount is calculated based on fair value less costs to sell and it is a non-recurring fair value measured by an observable transaction price. It is categorized as level 2 of the fair value hierarchy.

During 2017, the Group decided to dispose of certain of non-current assets and recognized the difference between the fair value and the carrying amount as impairment losses (Note 35).

12. Intangible Assets

Changes in intangible assets for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018					
	Development costs	Industrial property rights	Goodwill	Memberships	Others	Total
Beginning balance	192,046	371,381	925,593	50,806	283,329	1,823,155
Separate acquisitions/ Transfer	46,393	38,004	-	484	23,138	108,019
Additions – internal development	8,230	-	-	-	-	8,230
Disposals/Transfer	(9,783)	(20)	-	(623)	(23,104)	(33,530)
Exchange differences	(143)	1,183	3,883	(3)	47	4,967
Amortization	(31,480)	(22,502)	-	-	(25,802)	(79,784)
Impairment	(4,778)	-	-	-	-	(4,778)
Ending balance	200,485	388,046	929,476	50,664	257,608	1,826,279

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(in millions of Korean won)

	December 31, 2017					
	Development costs	Industrial property rights	Goodwill	Memberships	Others	Total
Beginning balance	102,853	344,882	252,253	52,793	79,363	832,144
Business combination (Note 34)	53,913	12,770	686,229	3,723	203,144	959,779
Separate acquisitions/ Transfer	66,432	47,005	-	1,538	34,921	149,896
Additions – internal development	20,843	-	-	-	-	20,843
Disposals/ Transfer	(8,066)	(55)	-	(6,080)	(308)	(14,509)
Exchange differences	(1,107)	(1,985)	(12,889)	(35)	(349)	(16,365)
Amortization	(33,764)	(30,010)	-	-	(32,944)	(96,718)
Impairment	(9,064)	(868)	-	(1,133)	(498)	(11,563)
Reversal of impairment	6	-	-	-	-	6
Transfer to assets held for sale (Note 35)	-	(358)	-	-	-	(358)
Ending balance	192,046	371,381	925,593	50,806	283,329	1,823,155

Line items including amortization of intangible assets for the three-month and nine-month periods ended September 30, 2018 and 2017, as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Cost of sales	5,734	17,604	9,340	18,897
Selling and administrative expenses	21,110	62,180	19,315	53,744
Total	26,844	79,784	28,655	72,641

The Group recognized total research and development costs of ₩ 737,036 million (2017: ₩ 641,818 million) as expenses.

Changes in greenhouse gas emission permits for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

(in thousands of tons and millions of Korean won)

	September 30, 2018					
	2017		2018		Total	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Beginning balance	7,520	18,635	6,648	-	14,168	18,635
Allocation with nil consideration	160	-	11	-	171	-
Purchase	481	11,826	-	-	481	11,826
Business combination	-	-	-	-	-	-
Borrowings/ carry forwards between years	(358)	(7,359)	358	7,359	-	-
Surrendered to the government	(7,803)	(23,102)	-	-	(7,803)	(23,102)
Ending balance	-	-	7,017	7,359	7,017	7,359

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<i>(in thousands of tons and millions of Korean won)</i>	December 31, 2017					
	2016		2017		Total	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Beginning balance	6,191	-	6,475	-	12,666	-
Allocation with nil consideration	350	-	799	-	1,149	-
Purchase	250	5,133	873	18,635	1,123	23,768
Business combination	62	-	58	-	120	-
Borrowings/ carry forwards between years	685	-	(685)	-	-	-
Surrendered to the government	(7,538)	(5,133)	-	-	(7,538)	(5,133)
Ending balance	<u>-</u>	<u>-</u>	<u>7,520</u>	<u>18,635</u>	<u>7,520</u>	<u>18,635</u>

13. Other Current and Non-Current Assets

Details of other current and non-current assets as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Current		
Prepayments and prepaid expenses	173,208	129,387
Prepaid value added tax	333,203	225,790
Others	54,352	21,637
Total	<u>560,763</u>	<u>376,814</u>
Non-current		
Long-term prepayments and long-term prepaid expenses	97,669	104,072
Others	154	91
Total	<u>97,823</u>	<u>104,163</u>

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14. Borrowings

Borrowings as at September 30, 2018 and December 31, 2017, consist of:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Current		
Short-term borrowings	1,480,268	957,868
Current-portion of long-term borrowings	402,132	318,441
Current-portion of debentures	149,963	169,878
Finance lease liabilities	5,055	5,137
	<u>2,037,418</u>	<u>1,451,324</u>
Non-current		
Long-term borrowings	507,907	518,955
Debentures	2,728,976	1,047,303
Finance lease liabilities	25,495	27,367
	<u>3,262,378</u>	<u>1,593,625</u>
Total	<u>5,299,796</u>	<u>3,044,949</u>

Details of short-term borrowings as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	Bank	Latest maturity date	Interest rate(%) as at September 30, 2018	September 30, 2018	December 31, 2017
Notes discounted ¹ (Negotiable notes)	Woori Bank, others Nonghyup Bank,	Nov. 29, 2018	Libor + 0.52 and others 2.17	3,869	2,504
Bank loans	others	Apr. 20, 2019	and others	<u>1,476,399</u>	<u>955,364</u>
Total				<u>1,480,268</u>	<u>957,868</u>

¹ As at September 30, 2018, trade receivables transferred to financial institutions have been collateralized for borrowings (current) (Note 7).

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Details of long-term borrowings as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)	September 30, 2018				
	Bank	Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KEB Hana Bank ¹	1.75	441	353	88
Borrowings in foreign currencies	HSBC	LIBOR + 1.00~1.05	242,616	198,099	44,517
	Sumitomo Mitsui Banking Corporation	LIBOR + 0.98~1.05	99,781	17,649	82,132
	Agricultural Bank of China	USD: LIBOR + 0.80 CNY: PBOC × 0.90	46,565	9,798	36,767
	Construction Bank of China	PBOC × 0.90	23,746	3,727	20,019
	Communications Bank of China	PBOC	36,012	2,734	33,278
	CITI	USD: LIBOR + 0.95 Euro: Euribor + 0.90	83,355	-	83,355
	Bank of America	LIBOR + 0.90	11,127	11,127	-
	ING BANK	EURIBOR + 0.83	64,739	-	64,739
	UOB	LIBOR + 1.55	52,905	52,905	-
	Standard Chartered Bank	LIBOR + 1.60	26,119	26,119	-
	Mizuho Banking Corporation	LIBOR + 0.98~1.02	77,865	47,852	30,013
	BNP PARIBAS	Euro: Euribor + 0.99 PLN: Wibor + 0.55	19,422	-	19,422
	CNOOC Finance	PBOC × 0.90	60,992	19,414	41,577
	Hangseng	LIBOR + 1.00	31,717	3,339	28,378
	Bank of China	LIBOR + 0.95	32,637	9,015	23,622
Total			910,039	402,131	507,907

¹ Other receivables are pledged as collateral for the above long-term borrowings (Note 18).

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(in millions of Korean won)	December 31, 2017				
	Bank	Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KEB Hana Bank ¹	1.75	706	353	353
Borrowings in foreign currencies	Sumitomo Mitsui Banking Corporation	Libor + 1.05	53,463	5,346	48,117
	Standard Chartered Bank	Libor + 1.60	25,095	-	25,095
	Construction Bank of China	PBOC ×0.90	27,791	3,770	24,021
	Communications Bank of China	PBOC	12,896	1,841	11,055
	Agricultural Bank of China	USD: Libor + 0.80 CNY: PBOC ×0.90	51,637	9,496	42,141
	Bank of America	Libor + 0.90~1.50	69,579	32,080	37,499
	Bank of China	Libor + 0.95	34,246	5,775	28,471
	BNP PARIBAS	EUR: EURIBOR + 0.99 PLN: WIBOR + 0.55	19,151	-	19,151
	CNOOC Finance	PBOC ×0.90	71,515	16,365	55,150
	HSBC	Libor + 1.00~1.05	236,320	198,894	37,426
	JP Morgan	Libor + 0.85~1.05	42,765	42,765	-
	Mizuho Banking Corporation	Libor + 1.02	42,773	-	42,773
	CITI	EURIBOR + 0.90	38,298	-	38,298
	United Overseas Bank	Libor + 1.55	15,255	152	15,103
	Hangseng	Libor + 1.00	32,077	1,604	30,473
	ING	EURIBOR + 0.83	63,829	-	63,829
Total			837,396	318,441	518,955

¹ Other receivables are pledged as collateral for the above long-term borrowings (Note 18).

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Details of debentures as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

		September 30, 2018				
	Financial institution	Annual interest rate (%)	Latest maturity date	Amount in Korean won	Current	Non- current
48th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.77	2019.02.21	50,000	50,000	-
49th Debenture (non-guaranteed/private)	KB Asset Management Co., Ltd and others	2.82	2018.12.12	100,000	100,000	-
50-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.95	2020.05.19	120,000	-	120,000
50-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.05.19	400,000	-	400,000
50-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.05.19	280,000	-	280,000
51-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.56	2021.02.20	190,000	-	190,000
51-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.88	2023.02.20	240,000	-	240,000
51-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.07	2025.02.20	270,000	-	270,000
51-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.29	2028.02.20	300,000	-	300,000
1-1st USD Overseas Convertible bonds¹	Credit Suisse	-	2021.04.16	244,794	-	244,794
1-2nd EUR Overseas Convertible bonds²	Credit Suisse	-	2021.04.16	408,048	-	408,048
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd. and others	1.93	2020.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.26	2022.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.71	2021.03.02	50,000	-	50,000
	NH Investment & Securities Co., Ltd. and others	3.00	2023.03.02	40,000	-	40,000
Less: discount on debentures				(13,903)	(37)	(13,866)
Total				<u>2,878,939</u>	<u>149,963</u>	<u>2,728,976</u>

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¹ Details of 1-1st USD overseas convertible bonds are as follows:

	Details
Aggregate principal amount	USD 220,000,000
Issue price	USD 220,000,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	509,606 registered ordinary shares (treasury shares)
Conversion price (Korean won/shares)	460,000
Conversion period	From May 27, 2018 to April 06, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of conversion price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

² Details of 1-2nd EUR overseas convertible bonds are as follows:

	Details
Aggregate principal amount	EUR 315,200,000
Issue price	EUR 315,200,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	775,128 registered ordinary shares (treasury shares)
Conversion price (Korean won/shares)	533,600
Conversion period	From May 27, 2018 to April 06, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of conversion price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

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		December 31, 2017				
	Financial institution	Annual interest rate (%)	Latest maturity date	Amount in Korean won	Current	Non- current
47th Debenture (non-guaranteed/private)	Government Employees Pension Service and others	3.20	2018.04.30	30,000	30,000	-
48th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.77	2019.02.21	50,000	-	50,000
49th Debenture (non-guaranteed/private)	KB Asset Management Co., Ltd and others	2.82	2018.12.12	100,000	100,000	-
50-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.95	2020.05.19	120,000	-	120,000
50-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.05.19	400,000	-	400,000
50-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.05.19	280,000	-	280,000
Debentures in Korean won (collateralized)¹	IBK Securities Co., Ltd. and others	4.70	2018.03.05	40,000	40,000	-
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd. and others	1.93	2020.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.26	2022.02.16	100,000	-	100,000
Less: discount on debentures				(2,819)	(122)	(2,697)
Total				<u>1,217,181</u>	<u>169,878</u>	<u>1,047,303</u>

¹ Certain property, plant and equipment are pledged as collateral for the above debentures (Note 18).

Details of finance lease liabilities as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

		September 30, 2018			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank	3.12	2024.12.31	29,441	4,923	24,518
CHUNGBUK					
TECHNOPARK	4.13	2023.12.31	1,109	132	977
Total			<u>30,550</u>	<u>5,055</u>	<u>25,495</u>

(in millions of Korean won)

		December 31, 2017			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank	3.12	2024.12.31	31,226	4,886	26,340
Others	3.7~4.13	2023.12.31	1,278	251	1,027
Total			<u>32,504</u>	<u>5,137</u>	<u>27,367</u>

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The present value of finance lease liabilities as at September 30, 2018 and December 31, 2017, is as follows:

(in millions of Korean won)

	September 30, 2018			December 31, 2017		
	Minimum lease payments	Future finance costs	Present value	Minimum lease payments	Future finance costs	Present value
Within 1 year	5,177	122	5,055	5,253	116	5,137
Between 1-5 years	20,709	1,814	18,895	20,710	2,006	18,704
Over 5 years	7,899	1,299	6,600	10,532	1,869	8,663

15. Provisions

Changes in provisions for other liabilities and charges for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, as follows:

(in millions of Korean won)

	September 30, 2018				
	Warranty ¹	Greenhouse gas emission ²	Legal claims ³	Restoration ⁴	Total
Beginning balance	92,662	23,069	20,629	90,056	226,416
Additions	112,049	19,274	7,494	2,299	141,116
Used	(65,037)	(23,102)	(21,295)	(8,997)	(118,431)
Ending balance	139,674	19,241	6,828	83,358	249,101
Less : current portion	(35,159)	(19,241)	-	(20,661)	(75,061)
Total	104,515	-	6,828	62,697	174,040

(in millions of Korean won)

	December 31, 2017				
	Warranty ¹	Greenhouse gas emission ²	Legal claims ³	Restoration ⁴	Total
Beginning balance	51,838	27,801	10,102	95,774	185,515
Business combination	5,994	59	-	-	6,053
Additions	94,603	342	72,787	1,641	169,373
Used	(59,773)	(5,133)	(62,260)	(7,359)	(134,525)
Ending balance	92,662	23,069	20,629	90,056	226,416
Less : current portion	(19,521)	(23,069)	-	(20,350)	(62,940)
Total	73,141	-	20,629	69,706	163,476

¹ Warranty provisions have been accrued for the estimated warranty costs to be incurred due to quality control, exchange, refunds with regard to products based on historical experience.

² Greenhouse gas emission provisions have been accrued for estimated expenditures to be obligated for any excess emission. The estimated emission for the nine-month period ended September 30, 2018, amounts to 5,955 thousand tons (2017: 5,768 thousand tons).

³ Lawsuit provisions have been accrued for certain pending cases.

⁴ As at September 30, 2018, restoration provisions have been accrued for the estimated expenses

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to restore land pollutions and others.

16. Net Defined Benefit Liabilities

Details of net defined benefit liabilities recognized in the consolidated interim statements of financial position as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Present value of defined benefit obligations ¹	1,068,395	1,049,511
Fair value of plan assets	<u>(787,947)</u>	<u>(868,830)</u>
Liabilities in the consolidated interim statement of financial position	<u>280,448</u>	<u>180,681</u>

¹ The present value of retirement benefit obligations is net of existing contributions to the National Pension Plan of ₩842 million as at September 30, 2018 (December 31, 2017: ₩862 million).

The amounts recognized in the consolidated interim statements of profit or loss for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

<i>(in millions of Korean won)</i>	2018		2017	
	Three months	Nine months	Three months	Nine months
Current service cost ¹	35,912	107,898	34,499	102,568
Past service cost	-	-	656	656
Interest cost	<u>1,425</u>	<u>4,309</u>	<u>763</u>	<u>2,215</u>
Total, included in employee benefit expenses	<u>37,337</u>	<u>112,207</u>	<u>35,918</u>	<u>105,439</u>

¹ The above amounts excluded ₩743 million (2017: ₩603 million) of expenses capitalized to construction in progress and development costs.

Post-employment benefits recognized for defined contribution plan for the nine-month period ended September 30, 2018, amounted to ₩5,438 million (2017: ₩1,277 million).

Post-employment benefits recognized in the consolidated interim statements of profit or loss for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

<i>(in millions of Korean won)</i>	2018		2017	
	Three months	Nine months	Three months	Nine months
Cost of sales	25,782	78,408	24,429	72,041
Selling and administrative expenses	<u>13,672</u>	<u>39,237</u>	<u>12,456</u>	<u>34,675</u>
Total	<u>39,454</u>	<u>117,645</u>	<u>36,885</u>	<u>106,716</u>

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Movements in the present value of defined benefit obligations for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Beginning balance	1,049,511	885,259
Business combination (Note 34)	-	69,693
Transfer in	5,690	7,452
Transfer out	(3,602)	(2,278)
Current service cost	108,641	137,355
Past service cost	-	656
Interest expense	24,352	26,572
Remeasurements:		
Actuarial loss from change in demographic assumptions	-	4,100
Actuarial gain from change in financial assumptions	-	(41,917)
Actuarial loss from experience adjustments	-	30,059
Others	-	1,060
Exchange differences	(566)	(437)
Payments from plans	(115,631)	(68,018)
Changes in consolidation scope	-	(45)
Ending balance	1,068,395	1,049,511

Movements in the fair value of plan assets for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Beginning balance	868,830	793,087
Business combination (Note 34)	-	57,771
Transfer in	(577)	(504)
Interest income	20,043	23,604
Remeasurements:		
Return on plan assets (excluding amounts included in interest income)	(9,546)	(7,398)
Contributions:		
Employers	284	59,288
Payments from plans	(90,076)	(56,106)
Administrative costs	(1,011)	(912)
Ending balance	787,947	868,830

The actual return on plan assets for the nine-month period ended September 30, 2018, was ₩10,497 million (for the year ended December 31, 2017: ₩16,206 million).

The significant actuarial assumptions as at September 30, 2018 and December 31, 2017, are as follows:

	September 30, 2018	December 31, 2017
Discount rate	3.2% ~ 3.5%	3.1% ~ 3.5%
Salary growth rate	2.2% ~ 5.0%	2.2% ~ 5.0%

The sensitivity analysis for changes in key actuarial assumptions as at September 30, 2018, is as

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follows:

<i>(in millions of Korean won)</i>	Increase by 1%	Decrease by 1%
Discount rate:		
Increase (decrease) in defined benefit obligations	(108,094)	129,442
Salary growth rate:		
Increase (decrease) in defined benefit obligations	125,964	(107,533)

A decrease in corporate bond yields may lead most significantly to an increase in defined benefit liabilities.

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. The sensitivity of the defined benefit obligation to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized on the statement of financial position.

The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to the prior period.

Plan assets as at September 30, 2018 and December 31, 2017, consist of:

<i>(in millions of Korean won)</i>	September 30, 2018			
	Quoted price	Unquoted price	Total	Composition (%)
Insurance contracts with guaranteed yield	774,054	-	774,054	98
Equity linked bonds	11,107	-	11,107	1
Time deposits	2,786	-	2,786	1
	<u>787,947</u>	<u>-</u>	<u>787,947</u>	<u>100</u>
<i>(in millions of Korean won)</i>	December 31, 2017			
	Quoted price	Unquoted price	Total	Composition (%)
Insurance contracts with guaranteed yield	854,368	-	854,368	98
Equity linked bonds	11,286	-	11,286	1
Time deposits	3,176	-	3,176	1
	<u>868,830</u>	<u>-</u>	<u>868,830</u>	<u>100</u>

17. Other Current and Non-Current Liabilities

Details of other current and non-current liabilities as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Current		
Advances from customers	121,252	493,595
Withholdings	107,560	91,589
Unearned revenues	15,891	9,842
Accrued expenses	243,624	259,257
Total	<u>488,327</u>	<u>854,283</u>
Non-current		
Long-term accrued expenses	47,956	44,663

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Long-term unearned revenues	20,272	24,237
	68,228	68,900

18. Commitments and Contingencies

- (1) As at September 30, 2018, the Parent Company and certain subsidiaries have been guaranteed from the Seoul Guarantee Insurance Company for the execution of contracts and others.
- (2) As at September 30, 2018, the Parent Company has provided one blank promissory note to the Korea National Oil Corporation as a collateral in relation to petroleum import surcharges.
- (3) As at September 30, 2018, the Parent Company and certain subsidiaries have various specific line of credit agreements with several financial institutions, as follows:

(unit: Korean won in millions, foreign currencies in millions)

Classification	The Parent Company		Certain Subsidiaries					
	KRW	USD	KRW	USD	CNY	EUR	INR	THB
Limit of bank overdraft	59,100	-	-	180	1,200	29	-	9
Limit of the letter of credit	32,000	498	-	320	200	2	-	-
Limit of discount of notes from export	-	1,233	-	-	-	-	-	-
Limit of payment guarantees in other foreign currency	-	120	-	-	-	-	-	-
Limit of loan arrangements	-	-	87,441	2,118	7,237	115	3,200	-

The Group also entered into credit line agreements with other financial institutions relating to trade finance and import/export amounting to ₩20,000 million and USD 55 million.

- (4) As at September 30, 2018, the Parent Company and certain subsidiaries have B2B purchase arrangements with several financial institutions with limit of ₩310,000 million and ₩118,600 million, respectively.
- (5) As at September 30, 2018, in relation to price fixing of mobile batteries, the consumers in Canada and Israel have filed two class actions against the Parent Company and certain overseas subsidiaries. However, the ultimate outcome of these cases cannot be determined at the reporting date.
- (6) In addition, as at September 30, 2018, the Parent Company and certain subsidiaries have been named as a plaintiff in 14 and 22 legal actions, respectively, involving ₩ 18,967 million and ₩4,172 million in claims, respectively. They have been named as a defendant in 86 and 28 legal actions, respectively, with ₩58,844 million and ₩16,743 million in claims, respectively. The ultimate outcome of these cases cannot be determined at the reporting date.
- (7) As at September 30, 2018, the Parent Company has technology license agreements with STYRON EUROPE GmbH and other companies for the production of Polycarbonate products. Further, the Parent Company has entered into manufacture and production technical contracts with Exxon Mobile and others.
- (8) The Parent Company has entered into a license agreement with LG Corp. to use trademarks on the products that the Group manufactures and sells, and on the services the Group provides in

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relation to its business.

(9) As at September 30, 2018, the Parent Company has entered into payment guarantee contract of USD 2 million and EUR 5 million with financial institutions to guarantee the warrant of certain installed products. Also, certain subsidiaries have entered into payment guarantee contract of CNY 395 million with financial institutions in relation to custom of imported raw materials.

(10) As at September 30, 2018 and December 31, 2017, assets pledged as collateral for the borrowings are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018			
	Secured amount	Borrowings / Loan	Limit	Secured party
Other receivables	300	Non-current borrowings (Won currency)	441	KEB Hana Bank
	<u>300</u>		<u>441</u>	

<i>(in millions of Korean won)</i>	December 31, 2017			
	Secured amount	Borrowings / Loan	Limit	Secured party
Other receivables	300	Non-current borrowings (Won currency)	705	KEB Hana Bank
Gumi facility, Anseong facility, Genetics institute	52,000	Collateralized debentures (Won currency)	40,000	Creditors
	<u>52,300</u>		<u>40,706</u>	

(11) Capital expenditure arrangement that has not incur at the end of the reporting period is as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Property, plant and equipment	3,279,047	1,734,663

(12) The Group has entered into operating lease agreements for offices, equipment, ports and others. Most of the agreements will be terminated within a year after the end of the reporting period.

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19. Share Capital

Changes in share capital and share premium for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

*(in millions of Korean won
and in shares)*

	Ordinary shares		Preferred shares		Share premium
	Number of shares	Share capital	Number of shares	Share capital	
January 1, 2017	66,271,100	331,356	7,628,921	38,144	897,424
Share issuance due to business combination	4,321,243	21,606	59,879	300	1,116,614
December 31, 2017	70,592,343	352,962	7,688,800	38,444	2,014,038
September 30, 2018	70,592,343	352,962	7,688,800	38,444	2,014,038

Changes in treasury shares for the nine-month period ended September 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won and in shares)</i>	Number of shares		Carrying amount	Gain on disposal of treasury shares
	Ordinary shares	Preferred shares		
January 1, 2017	359,795	5,519	15,484	13,855
Purchase of treasury shares due to business combination	1,284,891	10,328	337,211	-
Acquisition of fractional shares due to business combination	7,730	520	2,250	-
December 31, 2017	1,652,416	16,367	354,945	13,855
September 30, 2018	1,652,416	16,367	354,945	13,855

20. Retained Earnings

Retained earnings as at September 30, 2018 and December 31, 2017, consist of:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Legal reserve ¹	328,158	312,894
Discretionary reserve ²	12,541,819	11,410,610
Retained earnings before appropriation	2,052,632	2,315,746
Total	14,922,609	14,039,250

¹ The Commercial Code of the Republic of Korea requires the Parent Company to appropriate for each financial period, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit. When the accumulated legal reserves (the sum of capital reserves and earned profit reserves) are greater than 1.5 times the paid-in capital amount, the excess legal reserves may be distributed in accordance with a resolution of the shareholders' meeting.

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² The Parent Company separately accumulates a discretionary reserve for research and human resource development through appropriation of retained earnings, which has been included as deductible expense for the corporate income tax return according to the Special Tax Treatment Law. The reserve could be reversed in accordance with the terms of related tax laws.

21. Other Components of Equity

Details of other components of equity as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Treasury shares (Note 19)	(354,945)	(354,945)
Capital transactions within the Group ¹	(19,381)	(7,731)
Total	<u>(374,326)</u>	<u>(362,676)</u>

¹ Includes gain or loss on disposal of investments and investment differences due to changes in equity, net of deferred tax.

22. Selling and Administrative Expenses

Selling and administrative expenses for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

<i>(in millions of Korean won)</i>	2018		2017	
	Three months	Nine months	Three months	Nine months
Wages and salaries	203,653	604,858	177,128	541,359
Post-employment benefits (Note 16)	13,671	39,236	12,456	34,675
Employee benefits	39,357	111,681	33,829	102,690
Travel expense	15,150	43,309	13,270	37,964
Water & utilities	12,145	34,715	11,046	30,073
Packaging expense	2,049	6,082	1,671	5,103
Rental expenses	25,497	70,281	20,481	62,477
Commission expenses	110,555	309,359	87,705	250,715
Depreciation (Note 11)	29,661	85,418	24,545	71,972
Advertising expense	7,181	23,284	6,691	19,348
Freight expenses	135,786	408,677	135,946	399,286
Training expense	7,072	17,016	5,110	12,919
Amortization (Note 12)	21,111	62,180	19,315	53,744
Sample expense	4,499	13,624	5,028	14,334
Development costs	45,233	134,843	39,670	100,720
Others	92,308	259,375	73,365	190,566
Total	<u>764,928</u>	<u>2,223,938</u>	<u>667,256</u>	<u>1,927,945</u>

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23. Breakdown of Expenses by Nature

Cost of sales, and selling and administrative expenses by nature for the three-month and nine-month periods ended September 30, 2018 and 2017, consist of:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Changes in inventories of merchandise, finished goods, semi-finished goods and work in process	(316,823)	(593,192)	(27,702)	(33,159)
Raw materials and consumables used	4,464,309	12,407,468	3,440,598	10,650,183
Purchase of merchandise	370,306	1,007,558	383,638	1,050,174
Employee benefit expenses (Note 25)	614,518	1,795,242	556,880	1,641,680
Advertising expenses	7,569	24,254	7,012	20,179
Freight expenses	145,695	437,949	145,830	427,566
Commission expenses	189,012	513,595	147,134	417,115
Depreciation and amortization	372,705	1,090,296	350,192	1,053,181
Operating lease payments	25,463	71,557	21,887	65,738
Other expenses	759,725	2,129,063	581,916	1,659,679
Total	6,632,479	18,883,790	5,607,385	16,952,336

24. Employee Benefit Expenses

Details of employee benefit expenses for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Salaries	518,115	1,512,836	467,788	1,380,498
Post-employment benefits – Defined benefit plan (Note 16)	37,337	112,207	35,918	105,439
Post-employment benefits – Defined contribution plan (Note 16)	2,117	5,438	967	1,277
Others	56,949	164,761	52,207	154,466
Total	614,518	1,795,242	556,880	1,641,680

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25. Finance Income and Costs

Details of finance income and costs for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Finance income				
Interest income ¹	11,938	35,435	7,730	21,536
Dividend income	115	123	127	331
Gain on foreign exchange	21,634	100,680	42,376	119,989
Gain on foreign currency translation	10,989	17,985	19,362	46,769
Gain on valuation of derivative instruments	-	2,019	-	-
Gain on disposal of hedging derivatives	-	-	-	170
Total	44,676	156,242	69,595	188,795
Finance costs				
Interest expense ²	35,894	91,069	23,770	77,710
Loss on foreign exchange	29,148	97,278	32,606	128,765
Loss on foreign exchange translations	46,522	97,134	6,474	12,837
Loss on valuation of derivative instruments	1,840	1,840	-	-
Loss on redemption of debentures	-	13	-	-
Total	113,404	287,334	62,850	219,312

¹ Details of interest income for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Deposits held by financial institutions	10,578	31,770	6,850	18,559
Other financial assets	-	-	-	5
Other loans and receivables	1,360	3,665	880	2,972
Total	11,938	35,435	7,730	21,536

² Details of interest expense for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Interest on bank overdraft and borrowings	22,006	55,324	16,658	57,844
Interest on finance lease liabilities	242	755	276	1,306
Interest on debentures	16,182	43,620	8,211	18,887
Other interest expenses	2,032	5,039	1,203	4,521
Capitalized interest for qualifying assets	(4,568)	(13,669)	(2,578)	(4,848)
Total	35,894	91,069	23,770	77,710

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26. Other Non-Operating Income

Details of other non-operating income for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Gain on foreign exchange	118,896	241,309	69,312	248,933
Gain on foreign currency translation	82,109	26,746	13,666	46,380
Gain on disposal of property, plant and equipment	963	3,982	3,590	5,221
Gain on disposal of intangible assets	-	2	1	4,869
Reversal of impairment loss on property, plant and equipment (Note 11)	141	452	12,641	12,641
Gain on disposal of investments in associates	-	-	-	1,952
Others	5,279	19,146	15,115	54,609
Total	207,388	291,637	114,325	374,605

27. Other Non-Operating Expenses

Details of other non-operating expenses for the three-month and nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Nine months	Three months	Nine months
Loss on foreign exchange	114,642	218,194	46,747	235,981
Loss on foreign currency translation	118,738	37,542	11,786	17,630
Loss on disposal of property, plant and equipment	6,010	23,072	7,586	33,692
Loss on disposal of intangible assets	2	79	304	2,111
Impairment loss on property, plant and equipment (Note 11)	12,581	28,966	124,247	137,116
Impairment loss on intangible assets (Note 12)	3,074	4,778	2,345	6,617
Donations	1,173	6,841	2,018	19,138
Others	3,403	18,263	14,017	79,324
Total	259,623	337,735	209,050	531,609

28. Tax Expense and Deferred Tax

Income tax expense is recognized based on the best estimate of weighted average annual income tax rate expected for the full financial year. The estimated average annual income tax rate used for the year ending December 31, 2018, is 25.1% (the estimated tax rate for the year ended December 31, 2017: 21.2%).

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29. Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to owners of the Parent Company by the weighted average number of shares in issue excluding shares purchased by the Parent Company and held as treasury shares. Preferred shares have a right to participate in the profits of the Parent Company. These participation rights have been considered in presenting the EPS for ordinary shares and preferred shares.

Basic earnings per share attributable to the owners of the Parent Company for the three-month and nine-month periods ended September 30, 2018 and 2017, is computed as follows:

Basic earnings per ordinary share

*(in millions of Korean won and
in number of shares)*

	2018		2017	
	Three months	Nine months	Three months	Nine months
Profit attributable to ordinary shares ¹	308,913	1,216,759	468,694	1,466,070
Weighted average number of ordinary shares outstanding ²	68,939,927	68,939,927	68,940,380	68,940,380
Basic earnings per share attributable to the ordinary shares (in won)	4,481	17,650	6,799	21,266

Basic earnings per preferred share

*(in millions of Korean won and
in number of shares)*

	2018		2017	
	Three months	Nine months	Three months	Nine months
Profit attributable to preferred shares ¹	34,476	135,703	52,258	163,449
Weighted average number of preferred shares outstanding ²	7,672,433	7,672,433	7,672,463	7,672,463
Basic earnings per share attributable to the preferred shares (in won)	4,493	17,687	6,811	21,303

¹ Profit attributable to ordinary and preferred shares are as follows:

*(in millions of Korean won and
in number of shares)*

	2018		2017	
	Three months	Nine months	Three months	Nine months
Profit attributable to the equity holders of the Parent Company	343,389	1,352,462	520,952	1,629,519
Dividends to the ordinary shares (A)	103,410	310,230	86,175	258,526
Dividends to the preferred shares (B)	11,605	34,814	9,687	29,060
Undistributed earnings for the period	228,374	1,007,418	425,090	1,341,933
Undistributed earnings available for the ordinary shares (C)	205,503	906,530	382,519	1,207,544
Undistributed earnings available for the preferred shares (D)	22,871	100,888	42,571	134,389

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Profit for the period attributable to the ordinary shares (A+C)	308,913	1,216,759	468,694	1,466,070
Profit for the period attributable to the preferred shares (B+D)	34,476	135,703	52,258	163,449

² Weighted average numbers of shares are calculated as follows:

2018				
Ordinary shares outstanding	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2018. 1. 1 - 2018. 9. 30	68,939,927	273	18,820,600,071
Total				<u>18,820,600,071</u>

Weighted average number of ordinary shares outstanding: 18,820,600,071 / 273 = 68,939,927 shares

2018				
Preferred shares outstanding	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2018. 1. 1 - 2018. 9. 30	7,672,433	273	2,094,574,209
Total				<u>2,094,574,209</u>

Weighted average number of preferred shares outstanding: 2,094,574,209 / 273 = 7,672,433 shares

2017				
Ordinary shares outstanding	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2017. 1. 1 - 2017. 9. 30	65,911,305	273	17,993,786,265
Share issuance due to business combination	2017. 1. 1 - 2017. 9. 30	4,321,243	273	1,179,699,339
Purchase of treasury shares	2017. 1. 1 - 2017. 9. 30	(1,284,891)	273	(350,775,243)
Purchase of treasury shares	2017. 1. 17 - 2017. 9. 30	(7,730)	257	(1,986,610)
Total				<u>18,820,723,751</u>

Weighted average number of ordinary shares outstanding: 18,820,723,751 / 273 = 68,940,380 shares

2017				
Preferred shares outstanding	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2017. 1. 1 - 2017. 9. 30	7,623,402	273	2,081,188,746
Share issuance due to business combination	2017. 1. 1 - 2017. 9. 30	59,879	273	16,346,967
Purchase of treasury shares	2017. 1. 1 - 2017. 9. 30	(10,328)	273	(2,819,544)
Purchase of treasury shares	2017. 1. 17 - 2017. 9. 30	(520)	257	(133,640)
Total				<u>2,094,582,529</u>

Weighted average number of preferred shares outstanding: 2,094,582,529 / 273 = 7,672,463 shares

Diluted earnings per share is calculated based on the weighted average number of ordinary shares outstanding, adjusted for the assumption that all of dilutive potential ordinary shares to be converted. The Parent Company has one category of dilutive potential ordinary shares: convertible bonds, which were issued during the nine-month period ended September 30, 2017. Convertible

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bonds are considered to be converted into potential ordinary shares and the amount, subtracting income tax effect from related gain and loss such as interest expense on convertible bonds, is added to profit for the period attributable to ordinary shares and preferred shares.

(in millions of Korean won and in number of shares)

	2018	
	Three months	Nine months
Diluted earnings per ordinary shares		
Profit for the period attributable to the ordinary shares	308,913	1,216,759
Gain and loss on convertible bonds (after tax effects)	2,248	2,356
Profit used in calculating diluted earnings per share	311,161	1,219,115
Weighted average number of ordinary shares outstanding	68,939,927	68,939,927
Adjustments for calculation of diluted earnings per share	790,606	790,606
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share	<u>69,730,533</u>	<u>69,730,533</u>
Diluted earnings per share attributable to the ordinary shares (in won)	<u>4,462</u>	<u>17,483</u>

(in millions of Korean won and in number of shares)

	2018	
	Three months	Nine months
Diluted earnings per preferred shares		
Profit for the period attributable to preferred shares	34,475	135,703
Gain and loss on convertible bonds (after tax effects)	(142)	(1,276)
Profit used in calculating diluted earnings per share	34,333	134,427
Weighted average number of preferred shares outstanding	7,672,433	7,672,433
Adjustments for calculation of diluted earnings per share	-	-
Weighted average number of preferred shares and potential preferred shares used as the denominator in calculating diluted earnings per share	<u>7,672,433</u>	<u>7,672,433</u>
Diluted earnings per share attributable to the preferred shares (in won)	<u>4,475</u>	<u>17,521</u>

30. Dividends

The ₩ 460,058 million (2017: ₩ 368,055 million) of dividends for the year ended December 31, 2017, was paid to the shareholders of the Parent Company in April 2018.

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31. Related Party Transactions

As at September 30, 2018 and December 31, 2017, LG Corp. is an entity exercising a significant influence over the Group, which owns 33.34% of the Parent Company's ordinary shares.

Details of associates and other related parties that have sales and other transactions with the Group or have receivables and payables balances as at September 30, 2018 and December 31, 2017, are as follows, and the details of investments in subsidiaries, associates and joint ventures are described in Note 1.3:

Related party	Related party's subsidiary (Domestic)	Related party's subsidiary (overseas)	Details
SERVEONE	-		Subsidiary of LG Corp.
LG CNS Co., Ltd.	BnE Partners and others	LG CNS America Inc. and others	Subsidiary of LG Corp.
LG Siltron Incorporated	-	-	Subsidiary of LG Corp.
LG Management Development Institute	-	-	Subsidiary of LG Corp.
LG Sports Ltd.	-	-	Subsidiary of LG Corp.
LG Holdings Japan	-	-	Subsidiary of LG Corp.
LG MMA Corporation	-	-	Joint venture of LG Corp.
LG Display Co., Ltd.	-	LG Display (China) Co., Ltd. and others	LG Enterprise group ¹
LG Electronics, Inc.	LG Innotek Co., Ltd. and others	Inspur LG Digital Mobile Communications Co., Ltd. and others	LG Enterprise group ¹
LG International Corp.	Pantos Logistics Co., Ltd. and others	LG International (Japan) Ltd. and others	LG Enterprise group ¹
LG Hausys, Ltd.	-	LG Hausys Tianjin Co., Ltd. and others	LG Enterprise group ¹
LG Household & Health Care Ltd.	Coca-Cola Beverage Co.	-	LG Enterprise group ¹
LG Uplus Corp.	-	-	LG Enterprise group ¹
G II R Inc.	HS AD Inc.	-	LG Enterprise group ¹
Silicon Works Co., Ltd.	-	-	LG Enterprise group ¹

¹ Although the entity is not the related party of the Group in accordance with Korean IFRS 1024, the entity belongs to a large enterprise group in accordance with the Monopoly Regulation and Fair Trade Act.

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Sales and purchases with related parties for the nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018			
	Sales and others	Purchase and others		
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Others
Entity with a significant influence over the Group				
LG Corp.	-	-	-	51,516
Associates and joint ventures				
SEETEC Co., Ltd.	19,409	94,144	1,170	62,274
TECWIN Co., Ltd.	-	210	2,613	260
HL Greenpower Co., Ltd.	286,815	-	-	480
Others	22	-	-	1,933
Other related parties				
LG MMA Corporation	89,969	210,022	-	5,032
SERVEONE and its subsidiaries	10,492	425,306	452,473	130,892
LG CNS Co., Ltd. and its subsidiaries	57,376	1,744	140,154	67,180
Others	-	-	-	11,331
Others				
LG Display Co., Ltd. and its subsidiaries	904,594	66	1,564	5
LG Electronics Inc. and its subsidiaries	736,594	318,440	761,115	74,173
LG International Corp. and its subsidiaries	222,338	407,658	1,491	301,609
LG Hausys, Ltd. and its subsidiaries	158,153	1,932	1,207	5,351
Others	12,794	20,899	2,242	7,391
Total	2,498,556	1,480,420	1,364,029	719,427

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	2017			
	Sales and others	Purchase and others		
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Others
Entity with a significant influence over the Group				
LG Corp.	-	-	-	46,397
Associates and joint ventures				
SEETEC Co., Ltd.	13,215	90,283	17	66,968
TECWIN Co., Ltd.	-	157	2,560	219
HL Greenpower Co., Ltd.	189,057	-	-	-
Others	22	-	-	2,049
Other related parties				
LG MMA Corporation	61,725	161,848	-	4,528
SERVEONE and its subsidiaries	10,413	381,167	178,004	203,392
LG CNS Co., Ltd. and its subsidiaries	13,851	1,461	83,187	55,777
Others	31	-	-	9,430
Others				
LG Display Co., Ltd. and its subsidiaries	995,297	-	6,090	2,165
LG Electronics Inc. and its subsidiaries	709,409	215,560	198,708	11,323
LG International Corp. and its subsidiaries	226,752	376,865	171	268,585
LG Hausys, Ltd. and its subsidiaries	164,205	7,129	486	5,851
Others	17,582	21,825	596	6,190
Total	2,401,559	1,256,295	469,819	682,874

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Balances of receivables and payables arising from sales and purchases of goods and services with related parties as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	September 30, 2018			
	Receivables			Total
	Trade receivables and others	Loan receivables	Other receivables	
Entity with a significant influence over the Group				
LG Corp.	-	-	11,279	11,279
Associates and joint ventures				
SEETEC Co., Ltd.	3,405	-	234	3,639
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	115,404	-	-	115,404
Others	-	-	828	828
Other related parties				
LG MMA Corporation	10,905	-	397	11,302
SERVEONE and its subsidiaries	2,094	-	27,939	30,033
LG CNS Co., Ltd. and its subsidiaries	30,420	-	-	30,420
Others	532	-	4,350	4,882
Others				
LG Display Co., Ltd. and its subsidiaries	215,462	-	3,156	218,618
LG Electronics Inc. and its subsidiaries	161,246	-	29,879	191,125
LG International Corp. and its subsidiaries	47,554	-	712	48,266
LG Hausys, Ltd. and its subsidiaries	18,297	-	73	18,370
Others	-	-	957	957
Total	605,319	-	79,804	685,123

(in millions of Korean won)

	September 30, 2018			
	Payables			Total
	Trade payables	Borrowings	Other payables	
Entity with a significant influence over the Group				
LG Corp.	-	-	9,308	9,308
Associates and joint ventures				
SEETEC Co., Ltd.	11,877	-	11,532	23,409
TECWIN Co., Ltd.	-	-	757	757
HL Greenpower Co., Ltd.	-	-	-	-
Others	-	-	237	237
Other related parties				
LG MMA Corporation	308	-	33,166	33,474
SERVEONE and its subsidiaries	12,031	-	408,964	420,995
LG CNS Co., Ltd. and its subsidiaries	3,718	-	89,990	93,708
Others	-	-	866	866
Others				
LG Display Co., Ltd. and its subsidiaries	51	-	194	245
LG Electronics Inc. and its subsidiaries	136,216	-	317,002	453,218
LG International Corp. and its subsidiaries	49,491	-	35,093	84,584
LG Hausys, Ltd. and its subsidiaries	-	-	1,808	1,808
Others	104	-	6,693	6,797
Total	213,796	-	915,610	1,129,406

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	December 31, 2017			
	Receivables			Total
	Trade receivables and others	Loan receivables	Other receivables	
Entity with a significant influence over the Group				
LG Corp.	-	-	9,183	9,183
Associates and joint ventures				
SEETEC Co., Ltd.	1,752	-	279	2,031
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	60,726	-	-	60,726
Others	16	-	-	16
Other related parties				
LG MMA Corporation	8,663	-	482	9,145
SERVEONE and its subsidiaries	2,893	-	27,948	30,841
LG CNS Co., Ltd. and its subsidiaries	20,209	-	-	20,209
Others	-	-	4,873	4,873
Others				
LG Display Co., Ltd. and its subsidiaries	240,427	-	6,057	246,484
LG Electronics Inc. and its subsidiaries	287,566	-	46,116	333,682
LG International Corp. and its subsidiaries	48,332	-	891	49,223
LG Hausys, Ltd. and its subsidiaries	40,089	-	92	40,181
Others	318	-	398	716
Total	710,991	-	96,319	807,310

(in millions of Korean won)

	December 31, 2017			
	Payables			Total
	Trade payables	Borrowings	Other payables	
Entity with a significant influence over the Group				
LG Corp.	-	-	7,897	7,897
Associates and joint ventures				
SEETEC Co., Ltd.	10,698	-	10,759	21,457
TECWIN Co., Ltd.	-	-	2,195	2,195
HL Greenpower Co., Ltd.	-	-	-	-
Others	-	-	-	-
Other related parties				
LG MMA Corporation	19,140	-	-	19,140
SERVEONE and its subsidiaries	12,630	-	442,860	455,490
LG CNS Co., Ltd. and its subsidiaries	994	-	116,422	117,416
Others	-	-	557	557
Others				
LG Display Co., Ltd. and its subsidiaries	-	-	8,660	8,660
LG Electronics Inc. and its subsidiaries	114,892	-	127,946	242,838
LG International Corp. and its subsidiaries	35,962	-	40,581	76,543
LG Hausys, Ltd. and its subsidiaries	3,409	-	1,811	5,220
Others	2,151	-	5,779	7,930
Total	199,876	-	765,467	965,343

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Fund transactions with related parties for the nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Equity contributions in cash (capital reduction)	Loan (repayment)	Equity contributions in cash (capital reduction)	Loan (repayment)
Associates and joint ventures				
LG Fuel Cell Systems Inc.	5,036	-	24,527	(9,584)
HUAJIN NEW ENERGY MATERIALS(QUZHOU) CO.,Ltd	26,128	-	-	-
FJ Composite Materials Co., Ltd.	-	-	3,015	-
WUXI CL New Energy Technology Ltd.	558	-	1,178	-
Combustion Synthesis Co., Ltd.	1,503	-	-	-
Total	33,225	-	28,720	(9,584)

Dividends received from related parties for the nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Associates and joint ventures		
SEETEC Co., Ltd.	10,000	10,000
LG VINA Chemical Co.,Ltd.	810	846
Total	10,810	10,846

Dividends paid to related parties for the nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Entity with a significant influence over the Group		
LG Corp.	141,205	111,097
Total	141,205	111,097

Key management includes directors and audit committee members having duties and responsibilities over planning, operations and controlling of the Group's business activities.

Compensation for key management of the Group for the nine-month periods ended September 30, 2018 and 2017, consists of:

(in millions of Korean won)

	2018	2017
Short-term employee benefits	47,756	56,964
Post-employment benefits	5,744	3,087
Total	53,500	59,051

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Key management includes directors and audit committee members having duties and responsibilities over planning, operations and controlling of the Group's business activities.

There are no provisions recognized against receivables from related parties as at September 30, 2018.

As at September 30, 2018, there is no payment guarantees provided by the Group for related parties.

32. Cash Generated from Operations

Reconciliation between profit before income tax and cash generated from operations for the nine-month periods ended September 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018	2017
Profit before income tax	1,782,534	2,130,275
Adjustments for:		
Depreciation	1,009,367	980,540
Amortization	79,784	72,641
Post-employment benefits	112,207	105,439
Finance income	(88,658)	(114,957)
Finance costs	220,051	109,557
Foreign exchange differences	3,997	(75,786)
Loss (gain) on valuation of inventories	47	(14,122)
Gain on disposal of property, plant and equipment	(3,982)	(5,221)
Gain on disposal of intangible assets	(2)	(4,869)
Loss on disposal of property, plant and equipment	23,072	33,692
Loss on disposal of intangible assets	79	2,111
Impairment loss on property, plant and equipment	28,966	137,116
Reversal of impairment loss on property, plant and equipment	(452)	(12,640)
Impairment loss on intangible assets	4,778	6,617
Reversal of impairment loss on intangible assets	-	(6)
Gain on disposal of investments in associates	-	(1,952)
Additions to provisions	139,171	136,519
Other expense	(5,358)	(5,462)
Increase in inventories	(1,060,133)	(82,686)
Increase in trade receivables	(523,198)	(847,927)
Increase in other receivables	(9,441)	(34,588)
Increase in other current assets	(31,125)	(115,477)
Increase in settlement of derivatives	-	(2,114)
Increase (decrease) in trade payables	535,603	(32,505)
Increase (decrease) in other payables	(112,473)	92,971
Increase (decrease) in other current liabilities	(62,691)	108,956
Decrease in net defined benefit liabilities	(22,426)	(6,150)
Decrease in provisions	(116,486)	(67,146)
Other cash flows from operations	34,768	5,534
Cash generated from operations	1,937,999	2,498,360

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Changes in liabilities arising from financial activities for the nine-month period ended September 30, 2018, are as follows:

(in millions of Korean won)

	2018						At September 30, 2018
	At January 1, 2018	Cash flows from financing activities	Exchange differences	Amortization	Reclassification of current portion	Effect of change in exchange rate	
Short-term borrowings	1,451,324	398,356	24,376	-	232,756	(69,394)	2,037,418
Long-term borrowings	546,322	166,305	34,204	-	(232,756)	19,327	533,402
Debentures	1,047,303	1,657,645	1,556	2,570	-	19,902	2,728,976
Conversion rights	-	2,532	(90)	-	-	-	2,442
Total	3,044,949	2,224,838	60,046	2,570	-	(30,165)	5,302,238

The significant non-cash transactions for the nine-month periods ended September 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Transfer of construction-in-progress	2,329,111	1,028,635
Transfer of machinery-in-transit	56,726	51,189
Reclassification of long-term borrowings into current portion	282,712	552,662
Reclassification of asset held for sale	-	4,449
Acquisition of an entity by means of the issuance of equity instruments	-	1,138,593

33. Segment Information

General information about the Group's reportable segments is as follows:

Segment	Products or services	Major customers
Basic materials & Chemicals	ABS, PC, EP, PE, PP, Acrylic, Alcohol, SAP, PVC, Synthetic rubber, Special resin, BPA, Ethylene, Propylene and others	LG Electronics Inc., OCI Company Co. Ltd., Mitsubishi Corp. and others
Energy solutions	Mobile batteries, Automotive batteries, Electricity storage batteries and others	Hewlett-Packard Co., General Motors Corp., and others
IT & Electronic materials and Advanced materials ¹	Polarizers, 3D FPR, LCD Photoresist, OLED materials, Battery materials and others	LG Display Co., Ltd., Samsung Display Co., Ltd., BOE, AUO and others
Life sciences ²	Growth hormone, Vaccine, Antidiabetic, agricultural chemicals and others	HUADONG NINGBO, UNICEF, Intervet and others
Common and others	Crop protection products, Seeds, Fertilizers, General management, sales and R&D and others	National Agriculture Cooperative Federation and others

¹ The Group presents IT & Electronic materials and Advanced materials as Advanced materials

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business has been included in IT & Electronic materials since 2017. The comparative information was restated to reflect such changes.

² Life Sciences segment was disclosed separately as LG Life Sciences, Ltd. was merged into the Parent Company on January 1, 2017.

The segment information on revenue, profit and loss for the nine-month periods ended September 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	13,679,148	4,422,325	2,371,102	417,359	523,110	21,413,044
Inter-segment revenue	197,275	203	371,089	3,378	798	572,743
Revenue from external customers ¹	13,481,873	4,422,122	2,000,013	413,981	522,312	20,840,301
Operating profit (loss) ²	1,889,075	113,381	(19,811)	36,060	(62,194)	1,956,511

<i>(in millions of Korean won)</i>	2017					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	13,129,862	3,307,991	2,263,194	403,495	539,190	19,643,732
Inter-segment revenue	134,959	1	234,171	2,314	6,475	377,920
Revenue from external customers ¹	12,994,903	3,307,990	2,029,023	401,181	532,715	19,265,812
Operating profit (loss) ²	2,174,556	15,161	93,532	52,638	(22,411)	2,313,476

¹ Revenue from external customers consists of sales of goods. Interest income and dividend income are included in finance income.

² Management assesses the performance of the operating segments based on a measurement of operating profit of segment.

³ Common and other segments include operating segments not qualifying as a reportable segment, supporting divisions as well as R&D divisions.

The segment information on assets and liabilities as at September 30, 2018 and December 31, 2017, is as follows:

<i>(in millions of Korean won)</i>	September 30, 2018					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	10,130,514	7,191,178	3,740,775	1,851,219	5,505,574	28,419,260
Investments in associates and joint ventures	2,601	20,406	26,129	17	239,465	288,618
Reportable segment	3,294,168	3,542,809	907,419	190,859	3,226,691	11,161,946

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liability¹

(in millions of
Korean won)

	December 31, 2017					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	9,307,132	5,460,448	3,503,330	1,809,248	4,961,063	25,041,221
Investments in associates and joint ventures	4,057	21,242	-	17	238,780	264,096
Reportable segment liability ¹	3,317,393	2,176,990	731,585	427,667	2,049,009	8,702,644

¹ Assets and liabilities are measured in a manner consistent with those in the financial statements, and allocated on the basis of segment operation.

The external sales and non-current assets by geographical segments from continuing operations for the nine-month periods ended September 30, 2018 and 2017, and as at September 30, 2018 and December 31, 2017, are as follows:

(in millions of
Korean won)

	Sales		Non-current assets¹	
	2018	2017	September 30, 2018	December 31, 2017
Korea ²	6,643,196	6,362,043	10,829,414	10,618,989
China	6,908,328	6,481,740	2,261,493	1,887,324
Asia	3,630,588	3,546,265	38,390	31,671
America	1,229,664	1,068,340	354,617	235,481
Europe	2,121,768	1,565,630	591,009	262,199
Others	306,757	241,794	-	-
Total	20,840,301	19,265,812	14,074,923	13,035,664

¹ Represents aggregate amount of property, plant and equipment, intangible assets and investment properties.

² Domestic sales include the exports made through local letters of credit.

There is no single external customer that contributes over 10% of the Group's revenue for the nine-month periods ended September 30, 2018 and 2017.

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34. Business Combination

In order to enhance future-oriented business portfolio and leap into a global player of red bio industry by enlarging investment in long-term and stable new drugs development, the Parent Company merged LG Life Sciences, Ltd. on January 1, 2017.

Goodwill of ₩ 686,229 million arising from the acquisition is attributable to sales increase expected from combining the operations of the Group and Life Sciences business. Goodwill recognized through the business combination is not deductible for income tax purpose.

The following table summarizes the consideration paid for business combination, the fair value of assets acquired and liabilities assumed at the acquisition date:

(in millions of Korean won)

	Amount
Consideration	
Equity securities (Ordinary 4,321,243 shares, Preferred 59,879 shares) ¹	1,138,593
Total consideration	<u>1,138,593</u>
Recognized amounts of identifiable assets acquired and liabilities assumed	
Cash and cash equivalents	43,832
Trade and other (non-current) receivables	112,703
Inventories	123,083
Property, plant and equipment	493,321
Intangible assets	273,550
Other assets	8,315
Trade payables	(38,736)
Borrowings	(729,745)
Provisions	(6,053)
Net defined benefit liabilities	(11,922)
Other liabilities	<u>(153,195)</u>
Treasury shares (Ordinary 1,284,891 shares, Preferred 10,328 shares) ¹	337,211
Fair value of identifiable net assets	<u>452,364</u>
Goodwill	<u>686,229</u>
Total	<u>1,138,593</u>

¹ The fair value of ordinary shares, preferred shares and treasury shares acquired were based on the market price at the acquisition date.

With regard to the above business combination, share issuance cost of ₩ 73 million was deducted from equity.

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35. Assets Held for sale

The Group decided to dispose of Electrolyte business, 2CCL business and others upon the approval of management in February 2016 and January 2017, respectively. The related assets were reclassified as assets held for sale, and the disposal is expected to be completed in 2018. Assets and liabilities of Research Institute and FarmHwaong Co., Ltd., which were acquired during the course of the business combination of FarmHannong Co., Ltd., are also included. The assets and liabilities of Electrolyte business was completely disposed during this period, and the assets and liabilities of 2CCL business and others are expected to be disposed in 2018.

Details of assets and liabilities of disposal group classified as held for sale as at September 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	September 30, 2018	December 31, 2017
Assets of disposal group		
Property, plant and equipment	3,178	5,486
Intangible assets	358	358
Other receivables and others	97	751
Total	<u>3,633</u>	<u>6,595</u>
Liabilities of disposal group		
Other payables and others	4	31
Total	<u>4</u>	<u>31</u>

Assets of the disposal group were measured at fair value immediately before the initial classification of the assets as held for sale and the related other non-operating expenses (income) for the nine-month periods ended September 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018	2017
Impairment loss on property, plant and equipment	-	9,061
Impairment loss on intangible assets	-	4
Total	<u>-</u>	<u>9,065</u>

36. Events After the Reporting Period

To enter into the automotive adhesive business and enhance future-oriented business portfolio through the promotion of automotive materials business, the Group acquired 100% shares of Uniseal, Inc. for ₩143,327 million on October 1, 2018. The Group is assessing accounting treatment and financial impact of the acquisition.