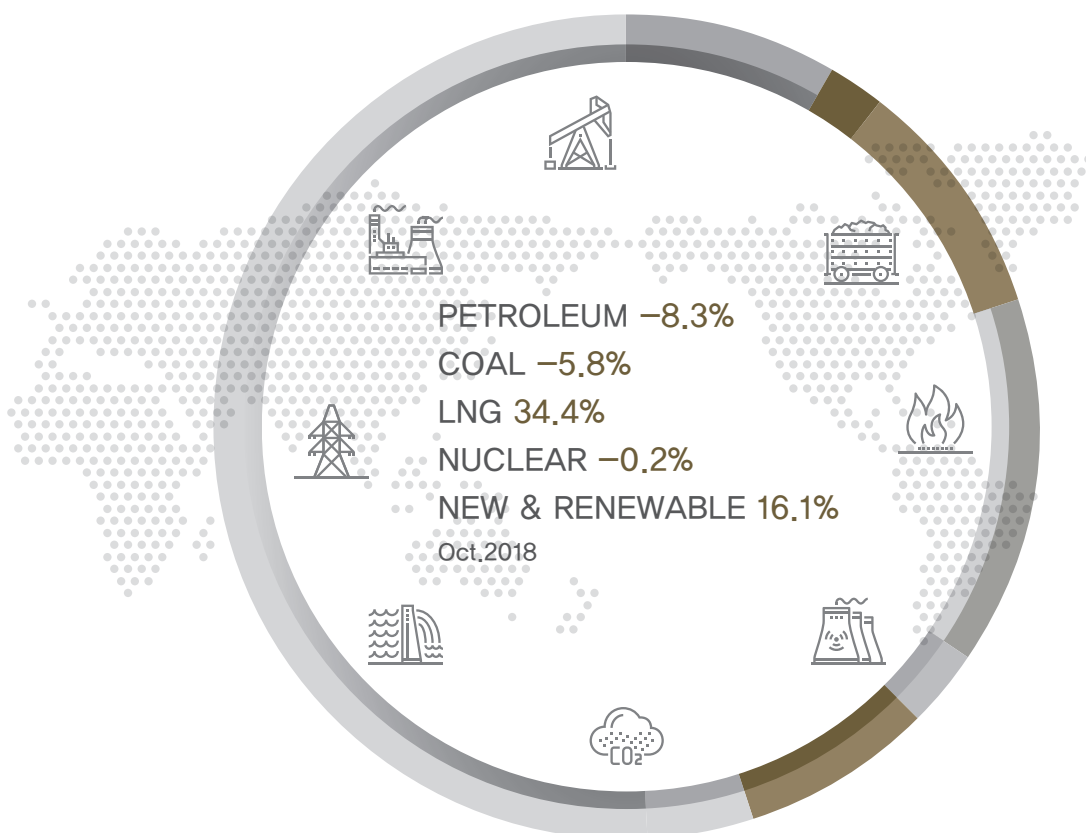


# KEEI

## MONTHLY KOREA ENERGY TRENDS



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# 1. The Economy and the Industry

- **The total export value increased by 22.5% year-on-year in October on the back of the continuously booming semiconductor industry and an all-time high export figure in the petrochemical industry.**
  - The export value of semiconductors went up by 22.1% owing to the increased memory capacity of IT devices and growing demand for Internet of Things (“IoT”), autonomous vehicles and big data, which marked the sixth consecutive month of over \$10 billion, though the sport price has been down, as supply shortage was resolved.
  - The export value of iron & steel products rose by 21.8% year-on-year, backed by growing demand from China (38.6%), Japan (23.0%) and the U.S. (24.0%) and higher unit prices amid increasing global trade regulations.
  - The export value of automobiles rebounded by 35.8% year-on-year, as the demand surged from the U.S. (75.8%), the largest auto market, and major European countries (Germany 24.1%, the U.K. 83.1%) following the launch of a new SUV and also due to increased number of work days (5 days).
  - The export value of petroleum products and petrochemicals rose by 75.3% and 42.1% respectively, with the latter posting an all-time high export figure (\$4.5 billion), due to the increased unit export prices that were in line with oil price trend, and bigger export volume as a result of booming business.
- **The manufacturing production index posted a year-on-year growth of 11.2% (in October), owing to the strong export growth and base effect, and the service production index was up 5.4%.**
  - The manufacturing production index rebounded on the base effect of a downward slide during the same month last year (-5.6%) and export growth, led by the semiconductor, automobile (28.9%) and cement (11.8%) sectors.

## ► Trend in major economic and industrial indicators

	2016	2017	2018p			2018p		
			M8	M9	M10	M8	M9	M10
GDP (trillion won)	1 509.8 (2.9)	1 556.0 (3.1)	-	392.6 (3.8)	-	-	400.3 (2.0)	-
Total export (\$billion, customs clearance basis)	495.4 (-5.9)	573.7 (15.8)	47.1 (17.4)	55.1 (34.9)	44.8 (6.7)	51.2 (8.7)	50.6 (-8.1)	54.9 (22.5)
Semi-conductors	62.2 (-1.1)	97.9 (57.4)	8.8 (56.7)	9.7 (69.9)	9.5 (69.6)	11.5 (31.5)	12.4 (28.3)	11.6 (22.1)
Cars	40.2 (-12.3)	41.7 (3.8)	2.8 (25.4)	3.8 (59.9)	2.9 (-13.0)	2.8 (0.3)	3.0 (-22.4)	3.9 (35.8)
Petroleum products	36.2 (-4.3)	44.7 (23.6)	3.7 (17.8)	4.3 (41.7)	3.1 (6.2)	4.4 (17.6)	4.1 (-5.4)	4.5 (42.1)
Ships, marine structures & components	1.2 (2.3)	1.3 (1.8)	0.1 (2.3)	0.1 (10.0)	0.1 (-5.6)	0.1 (2.5)	0.1 (-8.6)	0.1 (10.9)
Mining and manufacturing production index (2015=100)	107.0 (7.0)	110.9 (3.6)	114.3 (1.6)	119.8 (5.1)	122.2 (3.8)	122.3 (7.0)	121.3 (1.3)	128.1 (4.8)
Service industry performance index (2015=100)	102.6 (2.6)	104.5 (1.8)	103.9 (1.5)	107.5 (4.8)	102.1 (-1.4)	105.6 (1.6)	105.9 (-1.5)	107.8 (5.6)

Note: Figures are based on the real price of 2010, P means provisional, ( ) is year-on-year growth rates (%)  
Source: Korea International Trade Association, Korea Statistical Information Service

## 2. Energy Prices

### Global energy prices

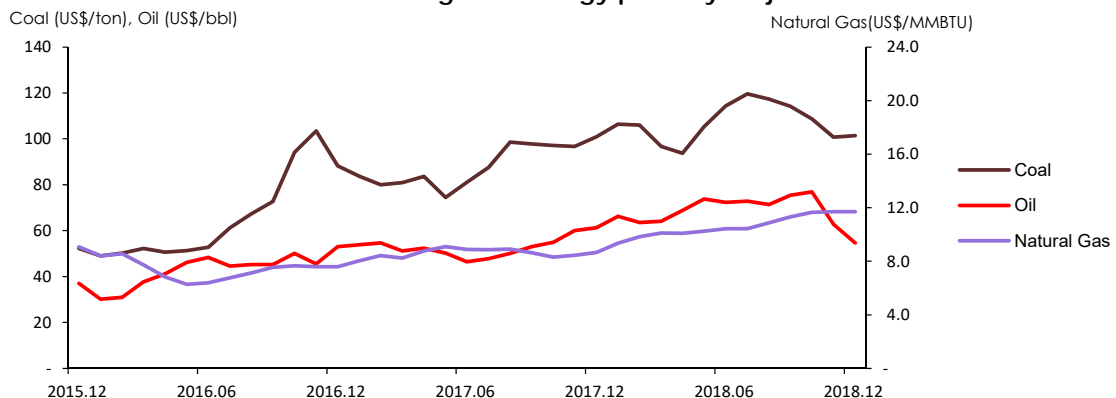
- **Global oil price fell by 12.9% in December from the previous month in part because of growing concerns over an excessive oil supply.**
  - The U.S. government re-imposed the economic sanctions against Iran on November 5th, however, eight countries that have successfully cut down on oil imports from Iran were granted a temporary exemption, which raised concerns over an excessive oil supply in the market.
  - Adding to that, steadily growing crude oil output and the increased number of drilling rigs in the U.S. as well as worries over possible demand reduction amid global economic slowdown were other contributing factors to the oil price decline.
- **Global coal price rebounded slightly in December after four-month decline, and natural gas price didn't change from the previous month.**
  - Coal price made a slight increase, partly because the U.S. government eased environmental regulation placed on coal-fired power plants and India increased its coal imports.

#### ► Trend in global energy prices

	2016	2017				2018		
			M10	M11	M12	M10	M11	M12
Crude oil (US\$/bbl)	43.3	53.0	54.9	60.1	61.2	76.9	62.7	54.7
	(-15.2)	(22.4)	(9.6)	(31.9)	(15.4)	(40.1)	(4.4)	(-10.7)
Natural gas (US\$/MMBTU)	7.4	8.6	8.3	8.5	8.6	11.7	11.7	11.7
	(-32.5)	(16.8)	(8.6)	(11.3)	(13.9)	(40.3)	(38.5)	(35.3)
Coal (US\$/ton)	66.2	88.5	97.1	96.6	100.8	108.7	100.7	101.4
	(12.4)	(33.7)	(3.1)	(-6.6)	(14.4)	(12.0)	(4.2)	(0.6)

Note: Global oil price is the average of the three benchmarks; Brent, Dubai, WTI. Natural gas and coal prices are based on Japan's LNG importing price from Indonesia (CIF) and the price of Australian coal. ( ) is year-on-year growth rates (%)  
Source: www.petronet.co.kr, World Bank(Commodity Markets)

#### ► Trend in global energy price by major sources



## Domestic energy prices

□ **Gasoline and diesel prices declined by 9.3% and 7.1% in December from the previous month due to the global oil price drop and the government's oil tax cut.**

- The domestic gasoline and diesel prices started a downward slide from November, as global oil price fell sharply.
- Although the government's tax break on oil products effectuated on November 6th, it didn't immediately lower prices at some oil & gas stations depending on their inventory levels, which was a contributing factor to the price decrease in December.

□ **Domestic prices of propane and butane fell by 2.7% and 5.2% respectively in December from the previous month, which followed the global price plunge.**

- Global prices of propane and butane, based on which domestic prices are determined in the following month, dropped by 17.6% and 19.8% respectively in November.

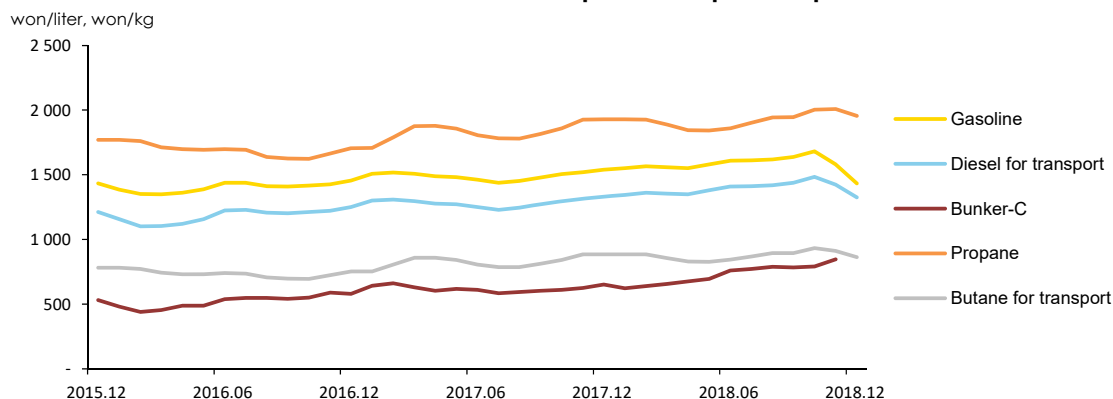
### ► Trend in domestic energy prices

	2016	2017				2018		
			M10	M11	M12	M10	M11	M12
Gasoline (won/liter)	1 402.9 (-7.1)	1 491.4 (6.3)	1 504.5 (6.2)	1 521.1 (6.6)	1 540.3 (5.9)	1 681.1 (11.7)	1 580.9 (3.9)	1 433.1 (-7.0)
Diesel for transport (won/liter)	1 182.9 (-9.0)	1 282.6 (8.4)	1 295.6 (7.0)	1 313.0 (7.4)	1 332.4 (6.6)	1 485.0 (14.6)	1 424.7 (8.5)	1 324.1 (-0.6)
Bunker-C (won/liter)	521.1 (-14.9)	619.4 (18.9)	610.5 (10.7)	624.3 (5.9)	652.3 (12.5)	790.3 (29.5)	846.5 (35.6)	-
Propane (won/kg)	1 689.7 (-6.2)	1 833.7 (8.5)	1 857.9 (14.4)	1 926.7 (15.8)	1 929.8 (13.2)	2 002.4 (7.8)	2 008.6 (4.3)	1 954.7 (1.3)
Butane for transport (won/liter)	733.9 (-9.0)	826.4 (12.6)	841.2 (21.2)	884.6 (22.0)	885.1 (17.8)	934.2 (11.1)	910.5 (2.9)	863.4 (-2.5)

Note: Gasoline, diesel and butane prices are based on charging station prices, Bunker-C price is based on dealership price, propane price is based on sales shop price. ( ) is year-on-year growth rates (%)

Source: [www.opinet.co.kr](http://www.opinet.co.kr)

### ► Trend in domestic petroleum product prices



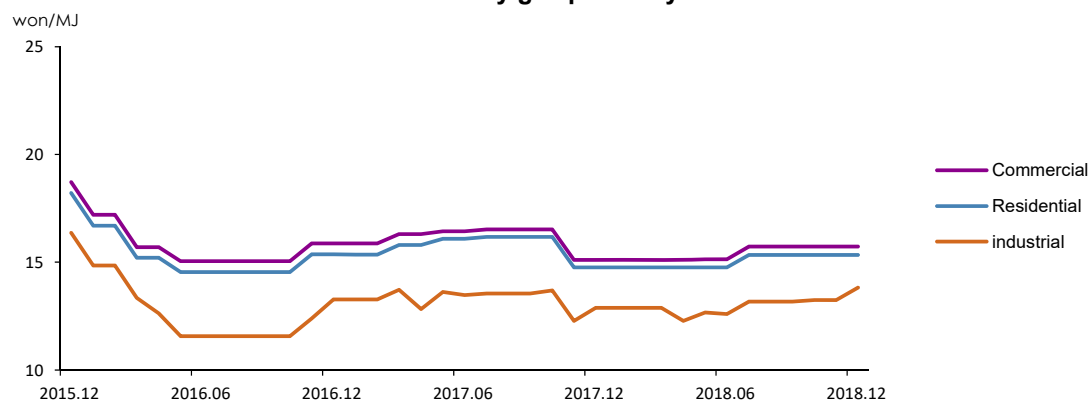
☐ **City gas price was fixed in the previous month (Nov), and it has been flat for the last six months.**

- The global LNG price has continued to increase in line with the recent oil price hike. The price of city gas, however, was fixed in November as was the case in September in order to stabilize prices and reduce the economic burden on people.
- City gas price for industrial use rose by 4.3%, as it was adjusted for the winter season (Dec-Mar) from other seasonal categories (April-May, Oct-Nov).
- On a year-over-year basis, city gas prices for commercial, residential and industrial use rose by 4.1%, 4.0% and 7.3% respectively, as the prices for each-end use all increased in July.

☐ **Heat energy price was the same as the previous month due to fixed city gas prices.**

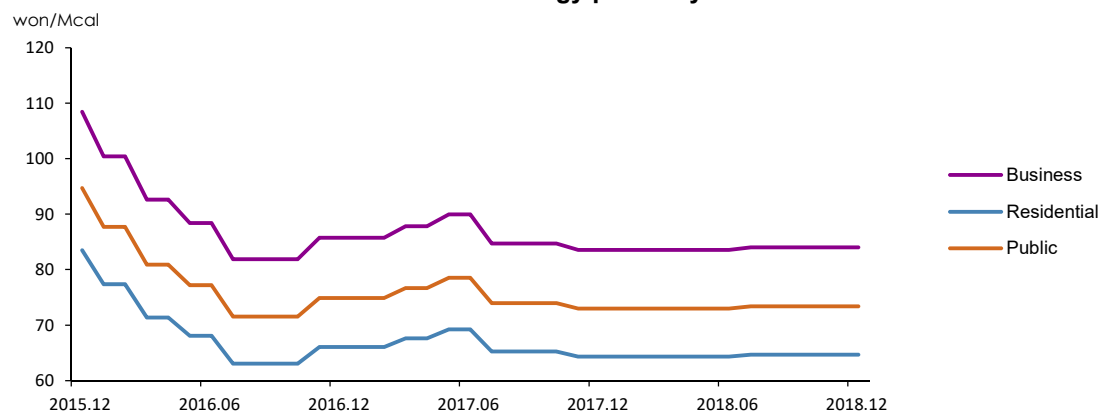
- Korea District Heating Corporation's heat energy price is linked to city gas price according to the fuel cost pass-through scheme, and the actual fuel cost is reflected in the heat energy price once a year (LNG for over 100MW, city gas for under 100MW).

► **Trend in city gas prices by end-use sectors**



Note: Instead of volume(M<sup>3</sup>), calorie (MJ) has been used as the unit of measurement in the city gas rate system since July 2012. Figures before that are converted based on standard calorie (additional tax, base charge excluded)

► **Trend in heat energy prices by end-use sectors**



Note: The rates are based on flat rate for heating (additional tax, base charge excluded)

Source: Korea District Heating Corporation.

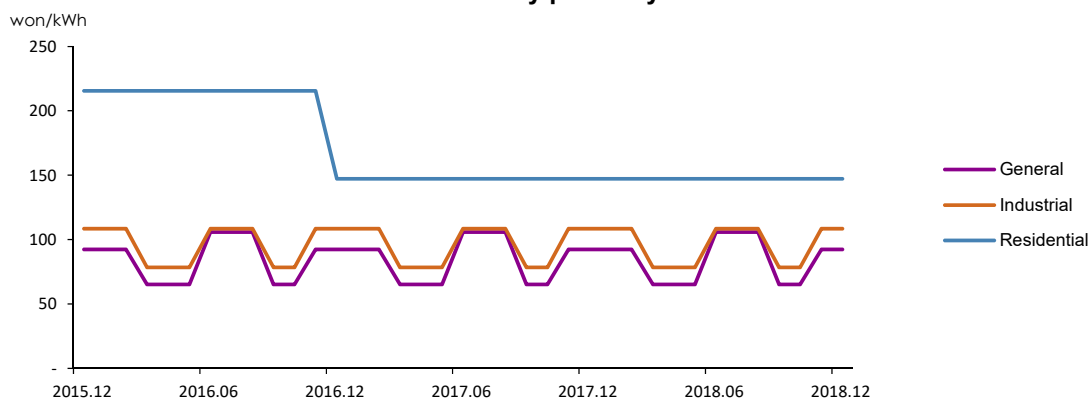
□ **Electricity prices<sup>1</sup> have been flat since November when the prices for industrial and general consumers soared due to price adjustment for the winter season.**

- Electricity prices for industrial and general consumers rose by 38.2% and 41.6% respectively (in November) from the previous month, according to the seasonal pricing from spring/autumn (Mar-May, Sept-Oct) to winter (Nov-Feb).
- Residential electricity is subject to the progressive pricing scheme, and the price has been flat since the reform of the scheme in December 2016.

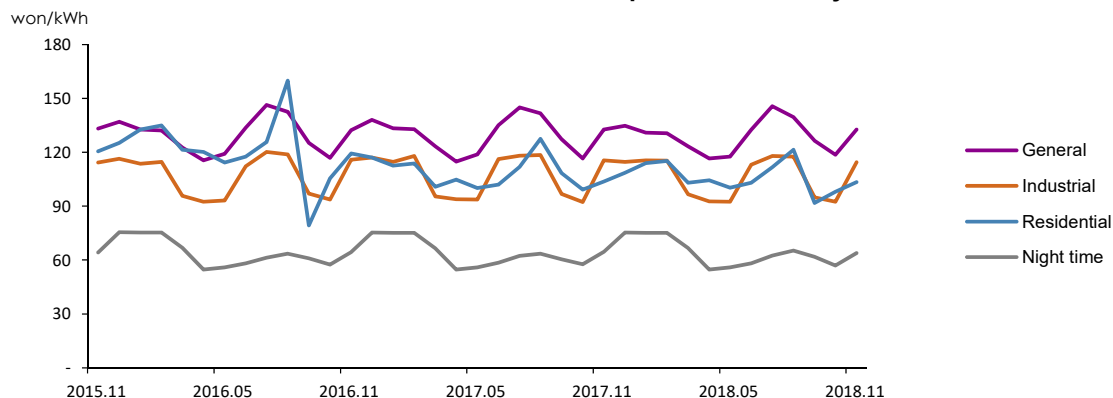
□ **The unit sales price of electricity for industrial and general consumers went up by 23.8% and 11.8% respectively in November than a month ago, and that of residential electricity rose by 5.5%.**

- The unit sales price of industrial and general electricity rose sharply after prices were adjusted for winter, and that of residential electricity, which is subject to progressive rates, increased on account of growing demand for heating.

#### ► Trend in electricity prices by end-use sectors



#### ► Trend in unit sales price of electricity



<sup>1</sup> The electricity prices by end-use sectors refer to the prices for residential use ([high voltage], the 2<sup>nd</sup> stage electricity rates), general use ([A], low voltage) and Industrial use ([B], high voltage B middle load).

### 3. Energy Supply

□ **The total energy import volume posted a year-on-year growth of 5.3% in October, as the import of major energy sources, particularly gas, all increased.**

- Crude oil input to refineries declined due to decreased operation rates, while the import volume increased, and consequently, the inventory level went up by over 10%.
- The import volume of petroleum products increased by 4.3% despite decreased bunker-C import (-15.6%), as LPG and naphtha imports increased (31.6%, 0.8%).
- The import volume of LNG increased, especially from the U.S., because of growing demand from the power generation and city gas production sectors.
- The foreign energy dependence including nuclear energy fell by 0.8%p to 93.2% on a year-on-year basis partly because of increased renewable generation.
- The energy share of the total import value was up 4.5%p to 28.1%, as the unit import price of energy increased.

#### ► Trend in energy trade and domestic production

	2016	2017p			2018p		
			M1~9	M9	M1~9	M8	M10
<b>Import volume</b>							
Crude oil (Mbbbl)	1 078.1 (5.1)	1 118.2 (3.7)	830.8 (3.6)	93.1 (-1.1)	830.2 (-0.1)	95.0 (-6.4)	97.8 (5.3)
Petroleum product (Mbbbl)	334.6 (8.7)	314.5 (-6.0)	237.4 (-5.2)	27.4 (-5.4)	252.8 (6.5)	27.0 (8.1)	27.8 (4.3)
Bituminous coal (Mton)	118.5 (-0.8)	131.5 (11.0)	100.7 (16.3)	13.2 (19.2)	99.4 (-1.3)	11.0 (-3.0)	10.1 (3.7)
Anthracite (Mton)	9.4 (5.4)	7.0 (-25.7)	5.5 (-20.3)	0.5 (-44.7)	5.8 (5.7)	0.8 (61.5)	0.7 (118.3)
LNG (Mton)	33.5 (0.3)	37.5 (12.2)	27.3 (19.9)	2.4 (5.8)	31.6 (15.9)	2.9 (11.5)	3.8 (37.9)
Import volume (Mtoe)	321.9 (2.7)	339.7 (5.5)	253.0 (7.1)	28.2 (7.3)	262.5 (3.7)	28.3 (1.0)	29.4 (5.3)
Import value (billion US\$, CIF)	80.9 (-21.2)	109.5 (35.2)	79.9 (41.7)	9.0 (30.5)	106.2 (33.0)	12.5 (46.8)	13.6 (52.5)
<b>Domestic production</b>							
Hydropower (TWh)	6.6 (14.5)	7.0 (5.5)	5.5 (5.1)	0.7 (7.7)	5.6 (2.3)	0.7 (-27.7)	0.5 (-9.9)
Anthracite (Mton)	1.7 (-2.2)	1.5 (-14.0)	1.1 (-9.7)	0.1 (-11.7)	0.9 (-18.0)	0.1 (-18.3)	0.1 (-7.5)
Natural gas (Mton)	0.1 (-18.0)	0.3 (120.5)	0.2 (244.2)	0.0 n.a	0.2 (-6.6)	0.0 (2.6)	0.0 (-42.8)
Renewable energy (Mtoe)	13.6 (5.7)	15.8 (16.7)	11.9 (16.9)	1.3 (21.5)	16.4 (37.6)	2.0 (42.0)	1.8 (43.8)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics



## 4. Energy Consumption

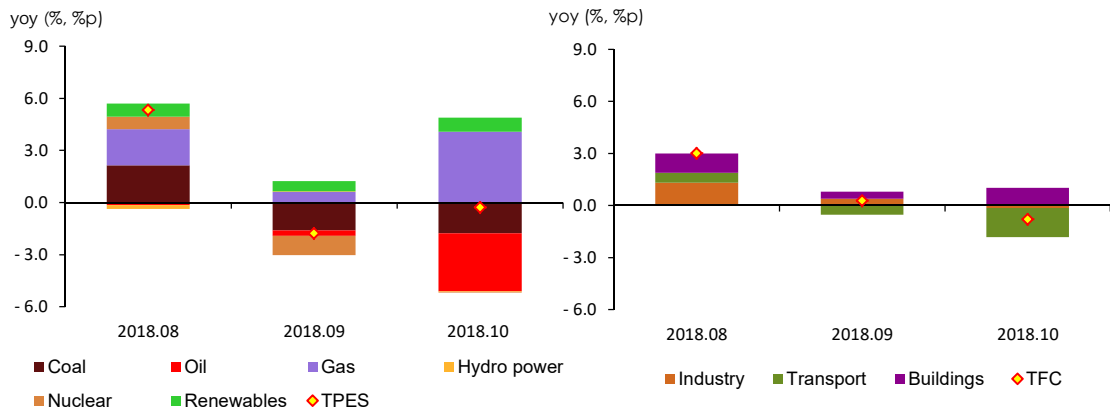
- **Total Primary Energy Supply (“TPES”) went down by 0.3% year-on-year in October despite increased gas consumption, as coal and petroleum consumption decreased.**
  - Coal consumption fell by 5.8% year-on-year despite slightly increased bituminous coal use for steelmaking, as the consumption decreased in the power generation sector, affected by increased preventive maintenance and in the cement production sector as well.
  - Naphtha consumption decreased in the petrochemical sector, and petroleum consumption decreased in the transport sector due to the price increase, and consequently, the total petroleum consumption fell by 8.3%, leading the downward slide of TPES.
  - Gas consumption soared by nearly 35%, as it surged in the power generation sector amid growing power demand and falling baseload generation, and in the gas production sector as well due to increased number of heating degree days and growing city gas consumption based on improved price competitiveness.
  - The total nuclear generation was close to the level of the same month last year (-0.2%), as almost the same number of nuclear reactors were operated.
- **Total Final Consumption (“TFC”) was down 0.8% year-on-year in October, despite increased consumption in buildings, as it declined in the industrial and transport sectors.**
  - Final energy use in the industrial sector posted a small year-on-year decrease (-0.2%), as decreased energy use in the petrochemical and primary metals sectors due to output reduction was offset by increased consumption in the fabricated metals sector, which was attributed to the bigger outputs of semiconductors and automobiles
  - Final energy use in the transport sector fell by 8.8% from the same month last year, especially in the road transport and navigation sectors, as a result of the over 10% rise in petroleum product prices, combined with global oil price increase.
  - Final energy use in buildings was up 6.5% due to increased use of city gas, electricity and heat energy in response to growing heating demand.
  - Electricity consumption rose by 4.2%, as the consumption grew rapidly in the industry (6.0%), especially the fabricated metals sector.

### ► Energy consumption trend

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Total energy (Mtoe)</b>	<b>293.4</b> (2.4)	<b>302.1</b> (2.9)	<b>246.9</b> (2.6)	<b>24.1</b> (3.0)	<b>252.7</b> (2.4)	<b>23.7</b> (-1.8)	<b>24.1</b> (-0.3)
<b>Final energy (Mtoe)</b>	<b>225.1</b> (3.3)	<b>233.9</b> (3.9)	<b>191.3</b> (3.8)	<b>18.5</b> (2.4)	<b>195.3</b> (2.1)	<b>18.5</b> (0.3)	<b>18.4</b> (-0.8)

Note: p means provisional, ( ) is year-on-year growth rates  
Source: Monthly Energy statistics (KEEI)

► The growth rates of TPES and TFC & energy consumption trend by energy source and end-use sectors



## 5. Coal

□ **Coal consumption declined by 5.8% year-on-year in October despite increased industrial consumption, because it dropped sharply in the transformation sector.**

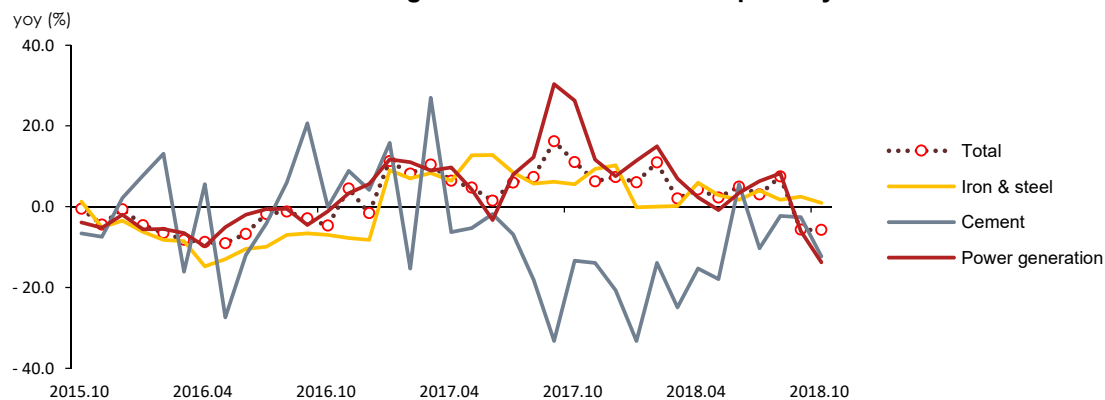
- Coal consumption fell by more than 10% in the transformation sector, as the average capacity factor decreased due to the base effect and much increased preventive maintenance (6.9GW, 152.0%).
- Coal consumption increased in the industrial sector, owing to the increased bituminous coal consumption for steelmaking and dramatically increased anthracite consumption.
- Coal consumption posted a year-on-year growth in the buildings sector as a result of growing heating demand amid increased number of heating degree days (82.7degree days).

### ► Coal consumption trend

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Coal (Mton)</b>	<b>129.3</b>	<b>139.8</b>	<b>115.1</b>	<b>11.6</b>	<b>118.5</b>	<b>11.5</b>	<b>11.0</b>
	(-4.3)	(8.1)	(8.3)	(11.1)	(2.9)	(-5.7)	(-5.8)
Industry	47.8	49.3	40.8	3.9	41.7	3.8	4.2
	(-6.6)	(3.2)	(3.1)	(-9.2)	(2.3)	(-4.1)	(9.4)
Buildings	1.3	1.1	0.7	0.2	0.6	0.1	0.2
	(-14.8)	(-14.0)	(-15.5)	(-14.4)	(-10.2)	(-38.1)	(6.0)
Power generation	80.3	89.4	73.7	7.6	76.2	7.7	6.5
	(-2.7)	(11.3)	(11.7)	(26.2)	(3.3)	(-6.1)	(-13.8)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

### ► The growth rate of coal consumption by use



## 6. Petroleum

□ **Petroleum consumption fell by 8.3% year-on-year in October, as the consumption plunged in both of the industrial and transport sectors.**

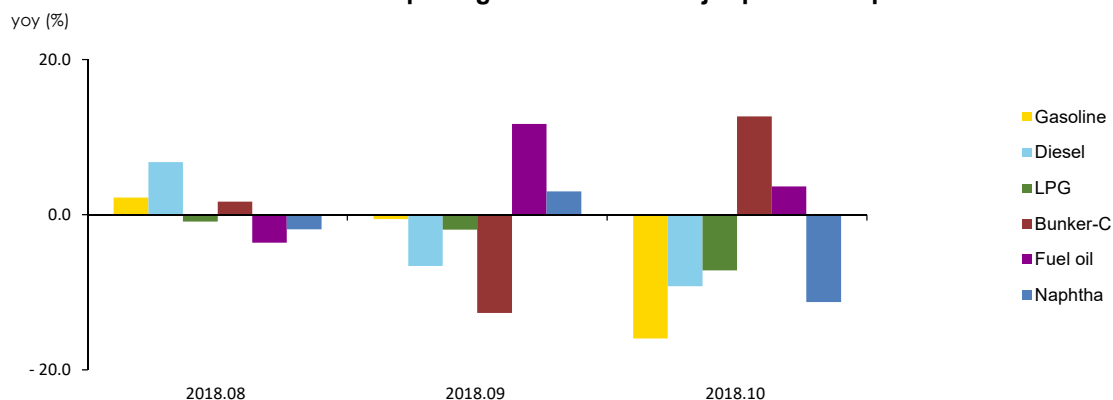
- Industrial petroleum consumption was down 8.8% year-on-year, and especially naphtha and LPG consumption dropped sharply.
- Petroleum consumption decreased by 10.0% year-on-year in the transport sector, as the consumption declined in the road transport sector, which takes a large share of the total consumption, due to the price increase, and in the domestic navigation sector as well, though the aviation sector consumed more petroleum.
- The use of LPG, kerosene and diesel, which account for a large share of the total consumption, fell by 2.5%, 4.7% and 8.4% respectively (in October) on a year-on-year basis partly due to the price increase, and the total petroleum consumption in buildings has been down for five months in a row.

► **Trend in petroleum product consumption by end-use sectors**

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Petroleum (Mbbbl)</b>	<b>921.1</b> (8.0)	<b>937.1</b> (1.7)	<b>771.8</b> (2.1)	<b>79.9</b> (3.1)	<b>770.1</b> (-0.2)	<b>76.7</b> (-0.4)	<b>73.3</b> (-8.3)
Industry	542.6 (8.3)	567.0 (4.5)	468.2 (5.2)	50.2 (7.8)	468.7 (0.1)	47.3 (1.4)	45.8 (-8.8)
Transport	300.5 (5.8)	303.2 (0.9)	252.0 (1.2)	25.0 (0.2)	246.9 (-2.0)	25.0 (-3.4)	22.5 (-10.0)
Buildings	56.3 (5.2)	56.4 (0.3)	43.5 (0.2)	4.3 (-3.7)	44.2 (1.7)	3.9 (-1.9)	4.2 (-1.8)
Power generation	21.8 (48.7)	10.5 (-51.9)	8.1 (-55.7)	0.4 (-73.5)	10.2 (26.1)	0.4 (-2.0)	0.8 (97.4)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

► **The consumption growth rates of major petroleum products**



## 7. Gas

□ **Natural gas use posted a year-on-year growth of 34.4% in October, driven by surging demand from the power generation and gas production sectors.**

- Gas use for power generation rose by more than 40% due to the base effect of a sharp drop during the same month last year (-31.0%) and decreased baseload (nuclear + coal) generation (-5.5%) that was partially replaced by gas-fired generation. Gas use for city gas production has been up for seven months in a row.

□ **City gas use increased by 18.2% year-on-year (in October), led by the industrial and buildings sectors, owing to the temperature effect and increased number of work days.**

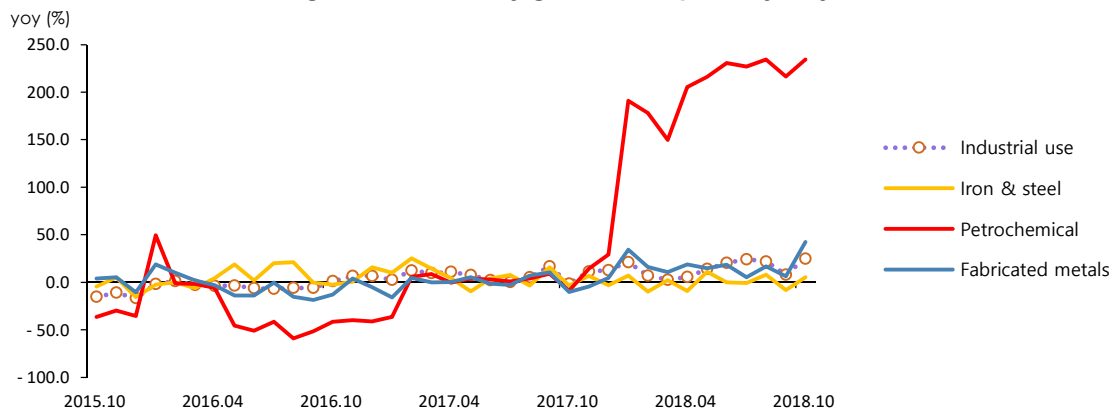
- Gas use surged in the fabricated metals and petrochemical sectors, and the total industrial gas use has been up for 12 consecutive months.
- Gas use in buildings went up, especially in the residential buildings, because of temperature effect amid increased number of heating degree days.

► **Trend in natural gas and city gas consumption**

	2016	2017p			2018p		
			M1~10	M10	M1~10	M9	M10
<b>LNG (Mton)</b>	<b>34.9</b>	<b>36.4</b>	<b>27.7</b>	<b>2.2</b>	<b>32.7</b>	<b>2.2</b>	<b>2.9</b>
	(4.4)	(4.3)	(1.3)	(-14.6)	(18.1)	(5.5)	(34.4)
Power generation	15.5	15.6	12.2	0.9	15.0	1.1	1.4
	(6.4)	(0.6)	(-1.5)	(-31.0)	(22.4)	(6.7)	(46.8)
City gas production	17.4	18.4	13.7	1.1	15.3	0.9	1.4
	(2.7)	(5.8)	(2.6)	(-1.1)	(11.8)	(5.1)	(27.4)
<b>City gas (bm<sup>3</sup>)</b>	<b>21.3</b>	<b>22.6</b>	<b>17.4</b>	<b>1.3</b>	<b>18.5</b>	<b>1.1</b>	<b>1.5</b>
	(2.3)	(6.3)	(4.2)	(0.8)	(6.3)	(-1.5)	(18.2)
Industry	7.2	7.8	6.2	0.6	7.1	0.6	0.7
	(-1.4)	(7.7)	(6.7)	(-1.2)	(14.4)	(8.1)	(24.9)
Buildings	12.8	13.6	10.1	0.6	10.4	0.4	0.7
	(5.0)	(6.0)	(3.1)	(4.0)	(2.1)	(-13.5)	(14.0)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

► **The growth rate of city gas consumption by major industries**



## 8. Electricity

- Electricity consumption rose by 4.2% in October on a year-on-year basis, led by the industrial sector where the consumption grew fast partly due to more work days.

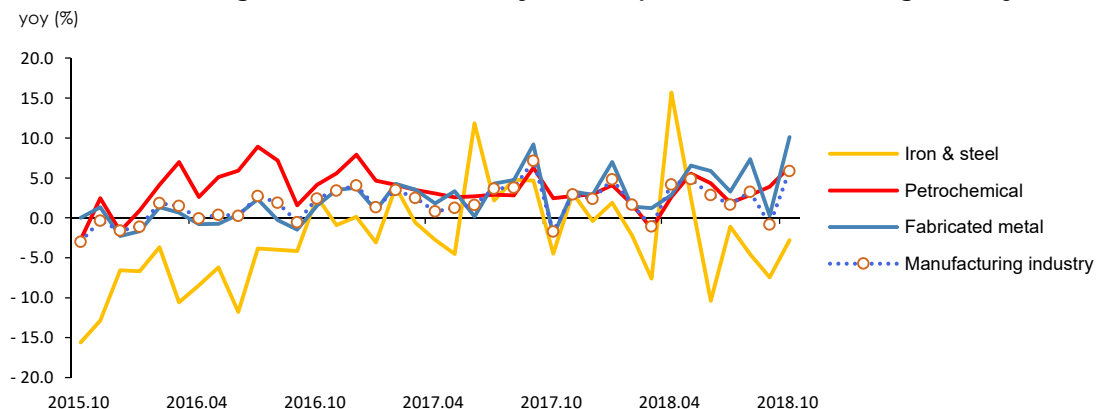
- Industrial electricity consumption recorded the fastest growth of the year in October, because the consumption increased in the fabricated metals and petrochemical sectors, although it continuously declined in the primary metals sector.
- Electricity consumption in buildings increased due to stronger service production and heating demand.

### ► Trend in electricity consumption by end-use sectors

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Electricity (TWh)</b>	<b>497.0</b> (2.8)	<b>507.7</b> (2.2)	<b>420.7</b> (1.8)	<b>38.4</b> (-0.5)	<b>438.9</b> (4.3)	<b>43.7</b> (3.3)	<b>40.0</b> (4.2)
Industry	270.0 (1.6)	276.7 (2.5)	229.1 (2.4)	21.8 (-1.7)	235.7 (2.9)	23.3 (-0.2)	23.1 (6.0)
Transport	2.7 (21.3)	2.9 (6.5)	2.4 (4.9)	0.2 (7.6)	2.5 (4.8)	0.3 (1.5)	0.2 (0.9)
Buildings	224.4 (4.0)	228.2 (1.7)	189.2 (1.0)	16.4 (1.1)	200.8 (6.1)	20.2 (7.6)	16.7 (1.9)

Notes: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

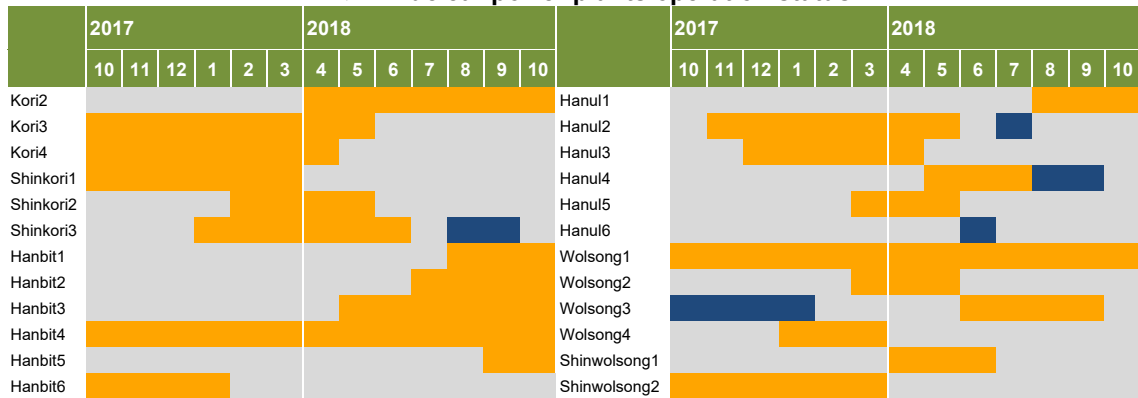
### ► The growth rate of electricity consumption in manufacturing industry



## 9. Nuclear

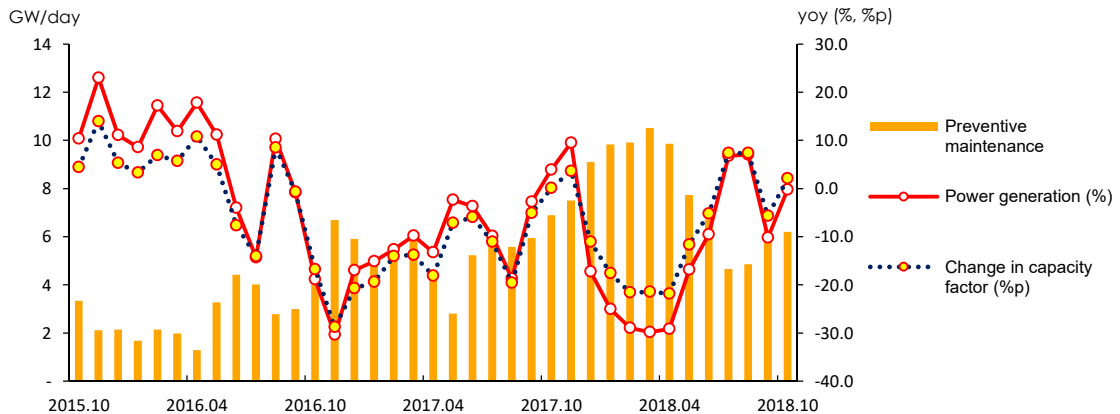
- The total nuclear generation in October fell slightly short of the figure posted in the same month last year.
- The daily average of preventive maintenance decreased (-0.7GW, -10.0%) due to the shutdown of Wolsong unit1, and thus, the average capacity factor at nuclear power plants grew by 2.1%p to 74.3% on a year-on-year basis.
- Nuclear's share of the total generation fell by 1.6%p year-on-year to 27.0%, which was the third consecutive month of decline.

► Nuclear power plants operation status



Notes: ■ normal operation, ■ prevented maintenance, ■ unscheduled shutdown

► The growth rate of nuclear generation & daily average of preventive maintenance



## 10. Heat and Renewable energy

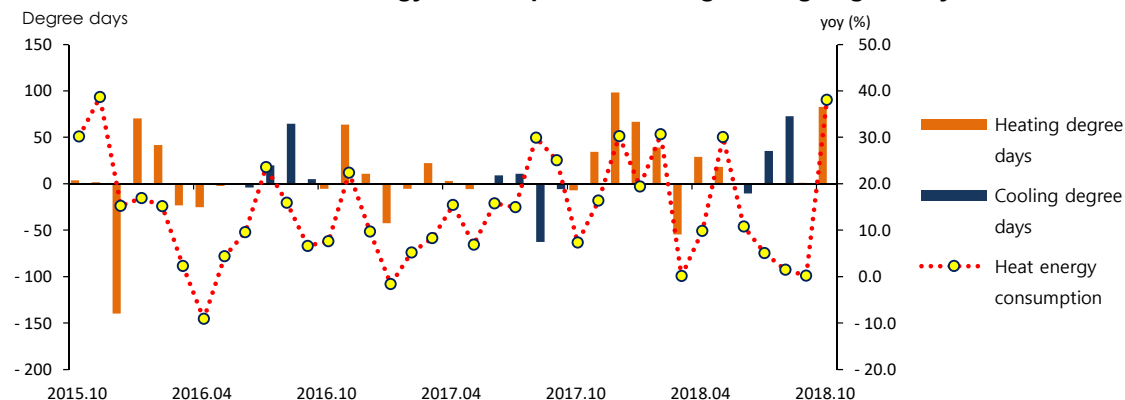
□ **Heat energy use posted a year-on-year growth of 38.1% in October, led by the residential and commercial sectors, amid increased number of heating degree days.**

- Heat energy consumption surged by 40.0% year-on-year in the residential sector due to the increased heating degree days (82.7degree days, 115.0%) and the commissioning of a new combined heat & power plant, and the consumption grew by 18.3% in the commercial sector along with increased service production.

□ **Renewable & other energy use grew by 13.7% year-on-year, especially in the power generation and industrial sectors, on the back of the government's policy support for renewable energy.**

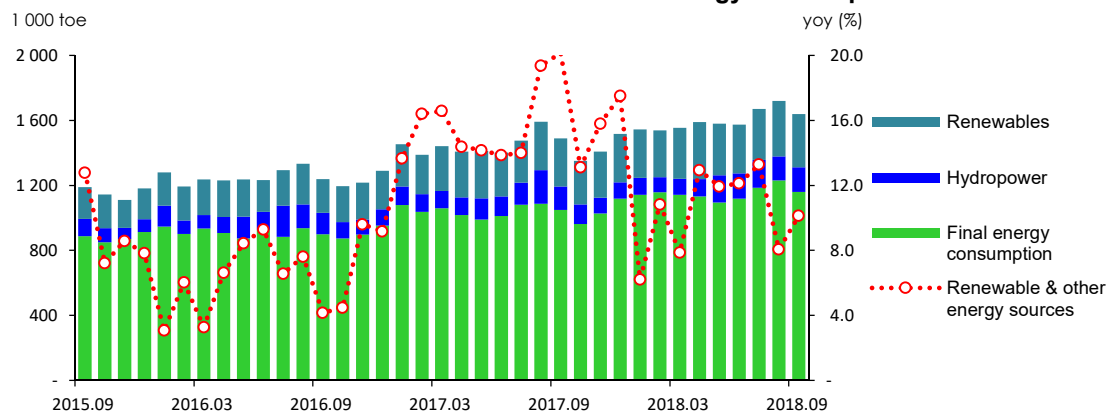
- Renewable generation (refer to the tables below) went up by 25.0%, as the government's renewable energy development policy led to the expansion of solar PV and wind installations.

### ► Heat energy consumption & heating/cooling degree days



Note: The total heat energy consumption is estimated based on the total supply from district heating & cooling companies (KEA's collective energy business). Previously, the figure reflected the monthly supply data of only three energy companies (KDHC, GS Power, SH Corp.).

### ► Trend in renewable and other energy consumption





## 11. Industry

□ Industrial energy consumption fell by 0.2% in October on a year-on-year basis, mostly in the petrochemical and primary metals industries.

- Energy consumption decreased in the petrochemical sector, especially naphtha, and continuously decreased in the primary metals sector, even though the number of work days increased on a year-on-year basis. Meanwhile the fabricated metals sector experienced fast growth in energy consumption.

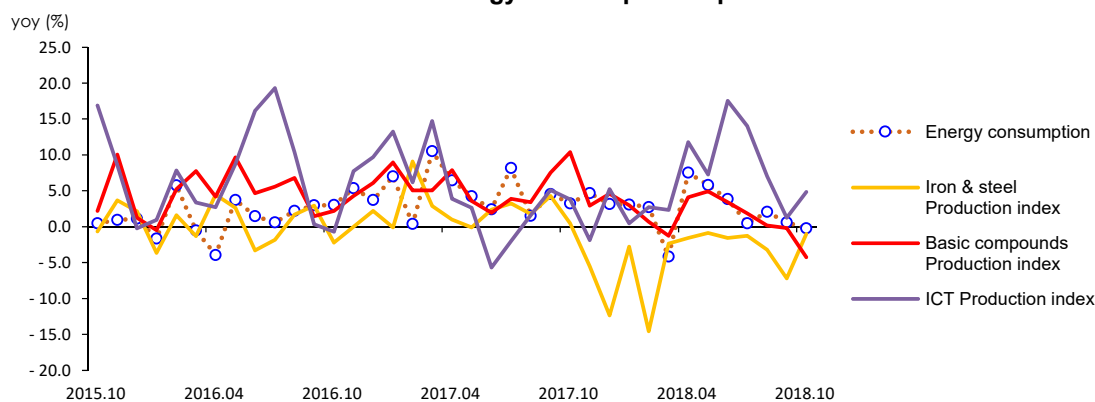
### ► Trend in the industrial energy consumption

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Industry (Mtoe)</b>	<b>137.8</b>	<b>144.3</b>	<b>119.0</b>	<b>12.1</b>	<b>121.5</b>	<b>12.0</b>	<b>12.0</b>
	(1.9)	(4.7)	(4.8)	(3.3)	(2.1)	(0.6)	(-0.2)
Petrochemical	65.9	70.4	58.2	6.2	59.6	6.0	5.8
	(6.7)	(6.7)	(7.2)	(11.5)	(2.4)	(4.5)	(-7.3)
- Naphtha	52.7	56.2	46.4	5.0	46.2	4.7	4.5
	(4.7)	(6.6)	(6.9)	(14.0)	(-0.4)	(3.0)	(-11.2)
Iron & Steel	28.1	35.0	29.0	2.9	25.3	2.5	2.6
	(-8.0)	(24.4)	(24.1)	(19.8)	(-12.8)	(-13.4)	(-12.9)
-Coking coal	23.4	25.3	21.0	2.1	21.4	2.2	2.2
	(-9.0)	(8.0)	(7.7)	(5.1)	(2.0)	(2.5)	(1.0)
Fabricated metal	10.6	10.8	8.9	0.8	9.4	0.9	0.9
	(0.4)	(1.9)	(2.0)	(-4.3)	(6.3)	(0.5)	(15.0)
Share of feedstock (%)	58.8	59.9	60.0	62.7	58.8	60.9	58.9

Note: p means provisional, ( ) is year-on-year growth rates (%)

Source: Monthly Energy Statistics

### ► Industrial energy consumption & production index



## 12. Transport

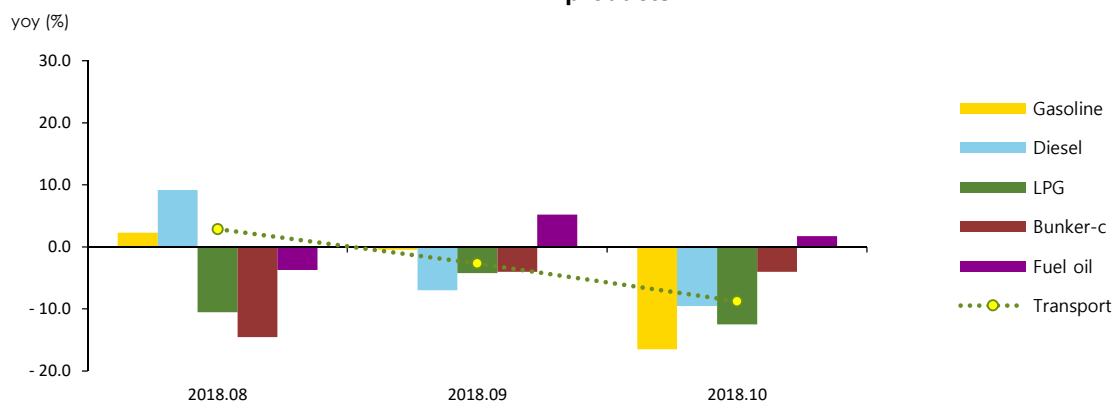
- **Transport energy use declined by 8.8% year-on-year in October on account of a sharp drop in the road transport and domestic navigation sectors, in part as a result of the oil price increase.**
  - Energy use fell by over 10% in the road transport sector, as gasoline, diesel and LPG use plunged due to sharply increased petroleum product prices.
  - Energy use declined in the domestic navigation sector, marking the 11<sup>th</sup> consecutive month of decline, which was attributed to decreased coastal transport volume (-3.2%) and much increased bunker-C price (29.5%).
  - Energy use increased slightly in the aviation sector owing to the increased number of international passengers and air cargo volume, and this despite a drop in the number of domestic passengers and air cargo. Such growth offset decreased energy use in the sector.

### ► The growth rate of petroleum consumption in the transport sector

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Transport (Mtoe)</b>	<b>42.3</b>	<b>42.8</b>	<b>35.6</b>	<b>3.5</b>	<b>35.1</b>	<b>3.6</b>	<b>3.2</b>
	(6.1)	(1.2)	(1.6)	(0.1)	(-1.3)	(-2.7)	(-8.8)
Road	33.9	34.1	28.3	2.8	28.0	2.8	2.5
	(4.9)	(0.5)	(0.6)	(-1.0)	(-1.0)	(-3.4)	(-10.9)
Navigation	3.4	3.5	3.0	0.3	2.6	0.3	0.3
	(13.8)	(5.8)	(7.4)	(-0.5)	(-12.1)	(-6.9)	(-4.5)
Aviation	4.7	4.8	4.0	0.4	4.2	0.4	0.4
	(9.1)	(3.2)	(4.1)	(7.9)	(4.5)	(5.1)	(1.6)
Rail	0.3	0.3	0.3	0.0	0.3	0.0	0.0
	(8.3)	(2.5)	(0.1)	(13.4)	(4.4)	(-3.9)	(4.8)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

### ► The growth rate of energy consumption in the transport sector & major petroleum products



## 13. Buildings

□ The buildings sector posted a year-on-year energy consumption growth of 6.5% in October, driven by increased city gas and heat energy use amid increased number of heating degree days.

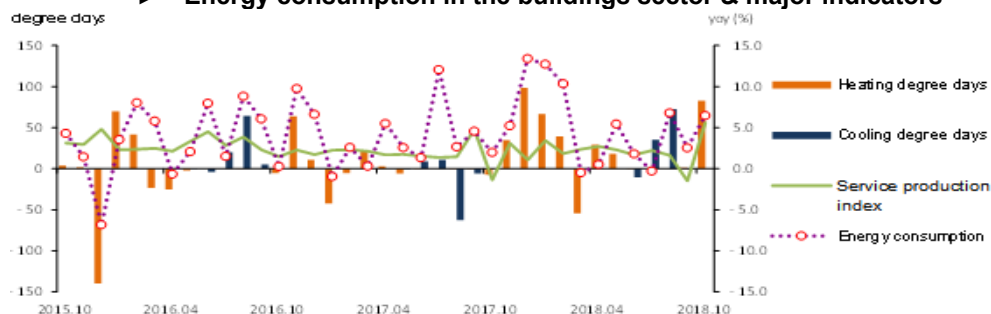
- Energy use in buildings grew faster, as city gas, heat and coal use rose by 14.0%, 38.1% and 6.0% respectively on a year-on-year basis due to increased heating degree days in addition to 1.9% more electricity use, although petroleum use declined by 1.8% because of higher prices.
- The growth rate of energy use in households surpassed 10% for the first time in five months, despite decreased use of kerosene and diesel (-11.7%, -4.1%), because city gas and heat energy use surged (30.2%, 40.0%), and electricity and briquette use grew decently (2.6%, 6.0%).
- Commercial energy use dropped by 1.4%, especially LPG and city gas (-7.6%, -17.5%), although electricity and heat energy use increased (1.9%, 18.3%) amid growing service production and heating degree days.
- Energy use in the public sector continued its rapid growth, as renewable energy consumption increased, supported by mandatory use of renewable energy, and city gas & heat energy consumption surged due to increased number of heating degree days.
- As for the contribution to the energy consumption growth in buildings, city gas topped the list (9.1%p), followed by heat energy (2.7%p) and electricity (0.9%p).

### ► Energy consumption trend in the buildings sector

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Buildings (Mtoe)</b>	<b>45.0</b>	<b>46.8</b>	<b>36.8</b>	<b>3.0</b>	<b>38.8</b>	<b>3.0</b>	<b>3.1</b>
	(5.2)	(4.2)	(2.7)	(2.0)	(5.3)	(2.5)	(6.5)
Residential	21.7	22.5	16.9	1.3	18.3	1.1	1.5
	(5.5)	(3.7)	(1.3)	(1.7)	(8.2)	(0.8)	(12.6)
Commercial	17.1	17.4	14.2	1.2	14.3	1.3	1.1
	(3.5)	(2.2)	(1.6)	(0.6)	(0.8)	(-0.2)	(-1.4)
Public-others	6.2	6.9	5.6	0.5	6.1	0.6	0.5
	(8.7)	(11.0)	(10.1)	(6.1)	(8.2)	(12.8)	(8.9)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

### ► Energy consumption in the buildings sector & major indicators



## 14. Transformation

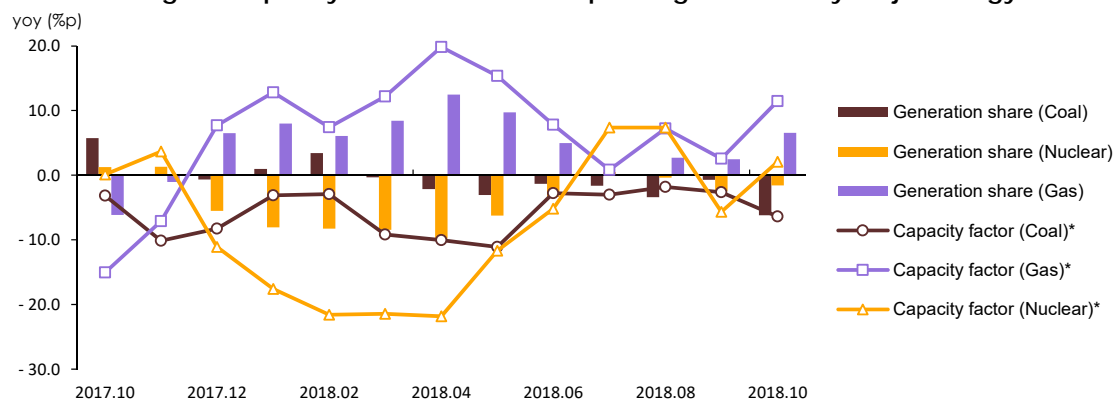
- The total energy used for power generation posted a year-on-year growth of 0.9% in October, driven by increased gas use, though coal and nuclear energy use declined.
  - The baseload generation decreased partly due to increased preventive maintenance, while gas-fired generation grew fast, responding to the growing power demand.
  - As for the power generation by energy source, coal took the largest share (39.3%), followed by nuclear (27.0%), gas (25.5%), renewable & other energy (7.2%) and oil (1.0%).
  - Nuclear, coal and gas plants recorded the average capacity factor of 74.3%, 64.0% and 40.6% respectively.

### ► Energy consumption in the power generation sector

	2016	2017p	2018p				
			M1~10	M10	M1~10	M9	M10
<b>Input (Mtoe)</b>	<b>110.9</b>	<b>111.2</b>	<b>91.8</b>	<b>8.7</b>	<b>93.8</b>	<b>8.8</b>	<b>8.8</b>
	(0.8)	(0.2)	(-0.3)	(3.2)	(2.2)	(-4.7)	(0.9)
Coal	49.2	52.8	43.5	4.5	45.0	4.5	3.9
	(-2.8)	(7.4)	(7.8)	(21.8)	(3.4)	(-6.2)	(-13.8)
Oil	3.0	1.2	1.0	0.0	1.2	0.0	0.1
	(50.1)	(-59.5)	(-62.7)	(-80.3)	(22.4)	(-0.1)	(136.1)
Gas	20.5	20.7	16.3	1.2	19.9	1.4	1.8
	(6.3)	(0.9)	(-1.1)	(-30.4)	(22.4)	(6.9)	(46.5)
Nuclear	34.2	31.6	27.0	2.6	23.2	2.4	2.6
	(-1.7)	(-7.5)	(-8.0)	(4.9)	(-14.0)	(-10.2)	(-0.2)
Hydro/other renewables	4.0	4.8	4.0	0.4	4.5	0.5	0.5
	(17.4)	(19.3)	(19.4)	(21.4)	(11.6)	(9.3)	(16.8)

Notes: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

### ► Change in capacity factor and share of power generation by major energy sources



\*Capacity factor is the ratio of actual energy produced to the amount of energy produced from continuous operation at full rated power

## <Appendix> Major Indicators & Statistics of Energy Supply and Demand

### Major Statistics & Indicators of the Economy

	2014	2015	2016				2017		
				1Q	2Q	3Q	1Q	2Q	3Q
GDP (trillion won)	1 427.0 (3.3)	1 080.2 (2.7)	1 509.8 (2.9)	356.0 (3.0)	378.9 (3.5)	378.3 (2.7)	366.2 (2.9)	389.6 (2.8)	392.6 (3.8)
Private consumption	692.2 (1.7)	525.6 (1.8)	725.4 (2.5)	182.0 (2.4)	176.8 (3.6)	182.1 (2.8)	185.8 (2.1)	181.0 (2.4)	186.8 (2.6)
Facilities investment	134.0 (6.0)	104.1 (5.1)	138.8 (-1.0)	32.2 (-3.6)	35.7 (-1.6)	33.6 (-2.5)	37.3 (16.1)	42.0 (17.9)	39.1 (16.3)
Construction investment	198.5 (1.1)	153.4 (5.5)	233.4 (10.3)	44.5 (8.4)	61.8 (9.4)	62.0 (11.0)	49.5 (11.3)	67.1 (8.5)	67.0 (8.0)
Consumer price index (2015=100)	99.3	100.0	101.0	100.6	100.8	101.0	102.7	102.7	103.3
USD to KRW exchange rate (won)	1 052.8	1 122.1	1 160.8	1 202.4	1 163.2	1 121.1	1 154.9	1 129.4	1 132.3
Benchmark rate (%)	2.3	1.7	1.4	1.5	1.4	1.3	1.3	1.3	1.3
Coincident composite index (2015=100)	97.0	99.4	103.3	101.9	102.7	103.9	105.9	106.8	107.4
Mining & manufacturing production index (2015=100)	100.3	98.5	102.3	98.6	102.1	100.2	103.2	104.3	104.8
Manufacturing operation ratio index (2015=100)	102.0	98.8	98.2	95.8	100.3	95.5	95.9	98.3	98.1
Average temperature	13.3	15.2	13.6	1.3	19.1	25.8	1.4	18.9	25.0
- year-on-year difference	0.9	- 0.2	- 0.0	- 0.8	0.5	0.9	0.1	- 0.2	- 0.8
Heating degree days	2 501.6 (-13.5)	1 593.0 (6.1)	2 589.7 (5.3)	1 513.2 (6.2)	140.9 (-16.2)	0.3 -	1 487.5 (-1.7)	138.6 (-1.6)	0.6 (100.0)
Cooling degree days	125.4 (-35.6)	151.8 (21.1)	238.1 (56.9)	- -	10.2 (-24.4)	227.9 (64.8)	- -	18.2 (78.4)	169.9 (-25.5)
Energy intensity	0.20 (-2.4)	0.20 (-0.9)	0.20 (-0.5)	0.22 (-0.2)	0.18 (-2.4)	0.19 (0.5)	0.22 (-0.7)	0.18 (-0.6)	0.19 (-0.6)
Per capita consumption									
oil (bbl)	16.1 (-1.1)	12.3 (2.7)	18.0 (7.4)	4.5 (7.2)	4.3 (8.0)	4.5 (7.8)	4.6 (1.3)	4.3 (1.6)	4.5 (2.1)
Electricity (MWh)	9.4 (-0.1)	7.2 (1.5)	9.7 (2.3)	2.5 (1.3)	2.3 (1.0)	2.5 (3.7)	2.6 (1.0)	2.3 (0.7)	2.5 (3.4)
City gas (1 000 m <sup>3</sup> )	0.4 (-8.1)	0.3 (-4.4)	0.4 (1.8)	0.2 (2.7)	0.1 (-3.3)	0.1 (-2.6)	0.2 (3.4)	0.1 (5.0)	0.1 (4.8)
Total energy (toe)	5.6 (0.3)	4.2 (1.2)	5.7 (1.9)	1.5 (2.3)	1.3 (0.6)	1.4 (2.7)	1.5 (1.8)	1.3 (1.9)	1.4 (2.8)

Note: Figures are based on the real price of 2010, p means provisional, ( ) is year-on-year growth rates (%)  
Source: BOA Economic statistics system, Monthly Energy Statistics

## The Index of Production & Operating Ratio by Sectors

(2015=100)

	2016	2017					2018			
		M1~10	M8	M9	M10	M1~10	M8	M9	M10	
Industrial production index										
All industry	103.1 (3.2)	105.5 (2.3)	104.3 (2.8)	103.1 (2.1)	109.4 (7.4)	101.3 (-3.0)	105.4 (1.1)	104.7 (1.6)	104.0 (-4.9)	108.3 (6.9)
Mining & manufacturing	102.3 (2.3)	104.2 (1.8)	103.6 (2.8)	100.8 (2.3)	108.9 (10.0)	99.0 (-5.6)	103.6 (0.0)	103.3 (2.5)	99.5 (-8.6)	109.8 (10.9)
Iron & steel	100.2 (0.2)	100.7 (0.4)	101.8 (2.4)	103.5 (1.8)	101.8 (4.3)	102.4 (0.5)	98.2 (-3.6)	100.2 (-3.2)	94.5 (-7.2)	101.4 (-1.0)
Cement	108.3 (8.3)	109.9 (1.4)	109.4 (3.5)	102.2 (-7.5)	120.5 (16.7)	100.0 (-14.7)	99.7 (-8.8)	89.8 (-12.1)	92.9 (-22.9)	111.8 (11.8)
Basic compound	104.8 (4.8)	110.4 (5.4)	110.0 (5.7)	112.4 (3.4)	111.3 (7.5)	113.5 (10.4)	111.4 (1.2)	112.6 (0.2)	111.1 (-0.2)	108.7 (-4.2)
Transport equipment	97.7 (-2.3)	94.9 (-2.9)	95.3 (0.8)	78.9 (12.4)	98.7 (26.5)	80.2 (-17.3)	91.1 (-4.3)	86.6 (9.8)	83.6 (-15.3)	103.4 (28.9)
Electric & electronic	103.3 (3.3)	106.4 (3.0)	104.6 (3.4)	103.4 (5.7)	116.1 (11.8)	101.9 (-7.2)	102.3 (-2.2)	102.0 (-1.4)	99.4 (-14.4)	110.5 (8.4)
Service	102.6 (2.6)	104.5 (1.8)	103.3 (1.8)	103.9 (1.5)	107.5 (4.8)	102.1 (-1.4)	105.6 (2.2)	105.6 (1.6)	105.9 (-1.5)	107.8 (5.6)
Operating ratio index										
Manufacturing	98.2 (-1.8)	97.1 (-1.2)	96.9 (-0.5)	94.1 (1.0)	101.9 (8.9)	92.0 (-7.1)	96.9 (-0.1)	96.6 (2.7)	93.6 (-8.1)	104.0 (13.0)
Iron & steel	99.9 (-0.1)	101.0 (1.0)	101.6 (2.4)	103.3 (2.0)	101.5 (4.3)	102.1 (0.7)	98.5 (-3.0)	98.9 (-4.3)	93.5 (-7.9)	100.6 (-1.5)
Cement	107.0 (7.0)	107.6 (0.5)	106.8 (2.2)	99.8 (-8.2)	117.7 (15.8)	97.6 (-15.4)	108.1 (1.2)	99.8 -	102.7 (-12.7)	123.6 (26.6)
Basic compound	103.6 (3.6)	107.2 (3.4)	107.0 (3.8)	108.7 (1.1)	107.8 (5.4)	109.4 (8.3)	106.7 (-0.3)	107.4 (-1.2)	106.1 (-1.6)	104.1 (-4.8)
Transport equipment	94.2 (-5.8)	89.7 (-4.8)	90.2 (-1.2)	74.9 (11.1)	93.4 (24.7)	75.8 (-18.4)	89.1 (-1.2)	85.4 (14.0)	82.0 (-12.2)	101.3 (33.6)
Electric & electronic	102.2 (2.2)	102.8 (0.5)	101.6 (1.5)	100.0 (4.1)	111.5 (8.9)	98.2 (-9.7)	96.1 (-5.4)	95.9 (-4.1)	91.9 (-17.6)	103.2 (5.1)

Note: p means provisional  
Source: Monthly energy statistics

## International Energy Prices

	2016	2017					2018			
			M1~12	M10	M11	M12	M1~12	M10	M11	M12
Crude oil (USD/bbl)										
WTI	43.3 (-11.2)	51.0 (17.6)	51.0 (17.6)	51.6 (3.3)	56.7 (23.8)	58.0 (11.1)	64.8 (27.1)	70.8 (37.2)	56.7 (0.1)	49.0 (-15.5)
Dubai	41.2 (-18.8)	53.2 (28.9)	53.2 (28.9)	55.5 (13.4)	60.8 (38.5)	61.6 (18.3)	69.4 (30.5)	79.4 (42.9)	65.6 (7.8)	57.3 (-7.0)
Brent	45.0 (-16.0)	54.8 (21.7)	54.8 (21.7)	57.7 (12.2)	62.9 (33.5)	64.1 (16.7)	71.5 (30.5)	80.6 (39.9)	66.0 (4.9)	57.7 (-10.0)
Unit value of import (C&F)	41.0 (-23.0)	53.3 (29.9)	53.3 (29.9)	54.7 (19.9)	57.9 (21.9)	62.1 (29.4)	71.4 (33.9)	79.2 (44.6)	76.2 (31.5)	66.6 (7.2)
LNG										
From Indonesia (USD/MMBTU)	7.4 (-32.6)	8.6 (16.7)	8.6 (16.7)	8.3 (8.6)	8.5 (11.3)	8.6 (13.9)	10.6 (23.7)	11.7 (40.3)	11.7 (38.5)	11.7 (35.3)
Unit value of import (USD/ton, CIF)	356.7 (-35.0)	416.3 (16.7)	416.3 (16.7)	421.6 (11.2)	400.3 (3.1)	430.0 (13.5)	526.2 (26.4)	579.9 (37.6)	584.2 (45.9)	572.9 (33.2)
Bituminous coal (USD/ton)										
From Australia	66.1 (12.2)	88.5 (33.9)	88.5 (33.9)	97.1 (3.1)	96.6 (-6.6)	100.8 (14.4)	107.0 (20.9)	108.7 (12.0)	100.7 (4.2)	101.4 (0.6)
Unit value of import (CIF)	68.9 (-6.8)	104.3 (51.5)	104.3 (51.5)	102.6 (36.8)	107.1 (12.6)	101.2 (1.3)	113.4 (8.7)	114.3 (11.5)	111.2 (3.9)	114.0 (12.7)
Petroleum product (USD/bbl)										
Gasoline	56.2 (-19.1)	68.1 (21.2)	68.1 (21.2)	70.1 (11.3)	75.7 (28.2)	75.4 (13.1)	79.9 (17.4)	87.7 (25.1)	68.6 (-9.3)	60.0 (-20.4)
Kerosene	52.8 (-18.3)	65.3 (23.6)	65.3 (23.6)	68.3 (12.1)	74.0 (30.9)	75.5 (17.7)	84.8 (29.8)	95.1 (39.2)	82.9 (12.0)	71.1 (-5.8)
Diesel	53.0 (-20.4)	66.4 (25.2)	66.4 (25.2)	70.3 (14.0)	74.1 (29.9)	75.9 (18.2)	84.9 (27.9)	97.2 (38.4)	82.3 (11.1)	70.0 (-7.8)
Bunker-C	35.4 (-21.6)	49.7 (40.2)	49.7 (40.2)	51.9 (18.3)	56.7 (33.1)	56.4 (12.2)	65.2 (31.3)	76.8 (47.9)	68.3 (20.4)	56.5 (0.2)
Propane	323.3 (-22.3)	467.5 (44.6)	467.5 (44.6)	575.0 (69.1)	575.0 (47.4)	590.0 (55.3)	542.1 (16.0)	655.0 (13.9)	540.0 (-6.1)	445.0 (-24.6)
Butane	355.8 (-18.5)	501.7 (41.0)	501.7 (41.0)	580.0 (56.8)	580.0 (31.8)	570.0 (35.7)	539.2 (7.5)	655.0 (12.9)	525.0 (-9.5)	415.0 (-27.2)
Naphtha	42.5 (-19.0)	53.8 (26.6)	53.8 (26.6)	57.6 (21.1)	64.4 (38.4)	65.0 (26.9)	67.0 (24.5)	74.7 (29.7)	56.8 (-11.9)	51.7 (-20.4)

Note: 1.( ) is year-on-year growth rates(%)

2.Gasoline type is 95RON, diesel is 0.001%, Bunker-C is high-sulfur oil(180cst/3.5%), for propane and butane, CP is reference value

Source: www.petrinet.co.kr, IMF (primary commodity price), Monthly Energy Statistics

## Total Primary Energy Supply (TPES)

	2016	2017p					2018p			
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Coal (Mton)	129.3 (-4.3)	139.8 (8.1)	115.1 (8.3)	12.5 (7.4)	12.2 (16.2)	11.6 (11.1)	118.5 (2.9)	13.4 (7.5)	11.5 (-5.7)	11.0 (-5.8)
- Coking coal excluded	95.8 (-2.5)	103.5 (7.9)	85.1 (8.4)	9.4 (7.9)	9.2 (19.9)	8.5 (13.2)	87.8 (3.2)	10.3 (9.4)	8.4 (-8.4)	7.8 (-8.2)
Oil (Mbbbl)	921.1 (8.0)	937.1 (1.7)	771.8 (2.1)	77.8 (-3.5)	77.0 (2.9)	79.9 (3.1)	770.1 (-0.2)	77.6 (-0.3)	76.7 (-0.4)	73.3 (-8.3)
- Non-energy oil excluded	454.9 (11.3)	443.7 (-2.5)	364.7 (-2.0)	36.3 (-8.7)	36.7 (-0.5)	36.3 (-5.6)	365.3 (0.1)	37.2 (2.6)	35.5 (-3.2)	33.7 (-7.0)
LNG (Mton)	34.9 (4.4)	36.4 (4.3)	27.7 (1.3)	2.3 (-2.3)	2.0 (-3.9)	2.2 (-14.6)	32.7 (18.1)	2.7 (17.0)	2.2 (5.5)	2.9 (34.4)
Hydro (TWh)	6.6 (14.5)	7.0 (5.5)	6.1 (6.3)	1.0 (39.5)	0.7 (7.7)	0.6 (20.2)	6.1 (1.2)	0.7 (-27.7)	0.7 (5.8)	0.5 (-9.9)
Nuclear (TWh)	162.0 (-1.7)	148.4 (-8.4)	126.7 (-8.9)	11.9 (-18.7)	12.3 (-2.8)	12.1 (3.9)	108.9 (-14.0)	12.8 (7.0)	11.1 (-10.2)	12.1 (-0.2)
Others (Mtoe)	13.6 (5.7)	15.8 (16.7)	13.1 (16.5)	1.4 (16.7)	1.3 (21.5)	1.2 (12.4)	14.6 (11.6)	1.6 (13.5)	1.5 (10.7)	1.4 (16.1)
<b>TPES (Mtoe)</b>	<b>293.4</b> (2.4)	<b>302.1</b> (2.9)	<b>246.9</b> (2.6)	<b>24.7</b> (-1.3)	<b>24.1</b> (5.9)	<b>24.1</b> (3.0)	<b>252.7</b> (2.4)	<b>26.1</b> (5.3)	<b>23.7</b> (-1.8)	<b>24.1</b> (-0.3)
- Non-energy oil excluded	235.5 (1.8)	240.7 (2.2)	196.2 (1.7)	19.6 (-2.0)	19.1 (5.8)	18.7 (0.8)	202.5 (3.2)	21.1 (7.6)	18.6 (-2.7)	19.1 (2.2)
- Non-energy oil&coal excluded	212.0 (3.2)	215.4 (1.6)	175.3 (1.0)	17.4 (-2.9)	17.0 (5.8)	16.6 (0.3)	181.1 (3.3)	18.9 (8.3)	16.4 (-3.4)	17.0 (2.4)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly Energy Statistics

## Share of TPES by Sources

(unit: %)

	2016	2017p					2018p			
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Coal	27.7	28.5	28.8	31.1	31.2	29.8	28.9	31.5	30.2	28.1
- Coking coal excluded	19.7	20.2	20.3	22.4	22.4	20.9	20.4	23.2	21.0	19.1
Oil	40.1	39.5	39.8	40.0	40.7	42.1	38.7	37.8	41.1	38.8
- non-energy oil excluded	20.3	19.2	19.3	19.1	19.9	19.6	18.8	18.6	19.5	18.3
LNG	15.5	15.7	14.6	12.2	11.0	11.8	16.9	13.6	11.9	16.0
Hydro	0.5	0.5	0.5	0.8	0.6	0.5	0.5	0.6	0.6	0.5
Nuclear	11.6	10.5	10.9	10.3	10.9	10.7	9.2	10.4	9.9	10.7
Others	4.6	5.2	5.3	5.6	5.6	5.1	5.8	6.0	6.3	5.9
<b>TPES</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note: p means provisional  
Source: Monthly Energy Statistics



## Total Final Consumption (TFC)

(Unit: Mtoe)

	2016	2017p					2018p			
			M1~10	M9	M10	M10	M1~10	M9	M10	M10
Industry	137.8 (1.9)	144.3 (4.7)	119.0 (4.8)	11.9 (4.6)	12.1 (3.3)	12.1 (3.3)	121.5 (2.1)	12.0 (0.6)	12.0 (-0.2)	12.0 (-0.2)
Transport	42.3 (6.1)	42.8 (1.2)	35.6 (1.6)	3.7 (3.6)	3.5 (0.1)	3.5 (0.1)	35.1 (-1.3)	3.6 (-2.7)	3.2 (-8.8)	3.2 (-8.8)
Residential-commercial	38.7 (4.6)	39.9 (3.0)	31.1 (1.5)	2.4 (3.2)	2.5 (1.2)	2.5 (1.2)	32.6 (4.8)	2.4 (0.2)	2.6 (6.0)	2.6 (6.0)
Public	6.2 (8.7)	6.9 (11.0)	5.6 (10.1)	0.5 (11.2)	0.5 (6.1)	0.5 (6.1)	6.1 (8.2)	0.6 (12.8)	0.5 (8.9)	0.5 (8.9)
<b>TFC</b>	<b>225.1</b> (3.3)	<b>233.9</b> (3.9)	<b>191.3</b> (3.8)	<b>18.5</b> (4.4)	<b>18.5</b> (2.4)	<b>18.5</b> (2.4)	<b>195.3</b> (2.1)	<b>18.5</b> (0.3)	<b>18.4</b> (-0.8)	<b>18.4</b> (-0.8)
Coal (Mton)	49.0 (-6.8)	50.4 (2.7)	41.4 (2.8)	4.1 (-4.5)	4.0 (-9.4)	4.0 (-9.4)	42.3 (2.1)	3.9 (-5.0)	4.4 (9.3)	4.4 (9.3)
Oil (Mbbbl)	899.3 (7.3)	926.6 (3.0)	763.7 (3.6)	76.6 (3.6)	79.5 (4.6)	79.5 (4.6)	759.9 (-0.5)	76.3 (-0.4)	72.6 (-8.8)	72.6 (-8.8)
Electricity (TWh)	497.0 (2.8)	507.7 (2.2)	420.7 (1.8)	42.3 (2.7)	38.4 (-0.5)	38.4 (-0.5)	438.9 (4.3)	43.7 (3.3)	40.0 (4.2)	40.0 (4.2)
City gas (Bm <sup>3</sup> )	21.3 (2.3)	22.6 (6.3)	17.4 (4.2)	1.1 (11.7)	1.3 (0.8)	1.3 (0.8)	18.5 (6.3)	1.1 (-1.5)	1.5 (18.2)	1.5 (18.2)
Heat others (1 000 toe)	13.1 (4.2)	15.0 (14.0)	12.1 (13.1)	1.1 (17.0)	1.1 (9.8)	1.1 (9.8)	13.4 (11.3)	1.2 (10.0)	1.2 (14.9)	1.2 (14.9)

Note: p means provisional, ( ) is year-on-year growth rates (%)  
Source: Monthly energy statistics

## Share of the Total Final Consumption by Sources

(unit: %)

	2016	2017p					2018p			
			M1~10	M9	M10	M10	M1~10	M9	M10	M10
Industry	61.2	61.7	62.2	64.3	65.1	65.1	62.2	64.6	65.4	65.4
Transport	18.8	18.3	18.6	19.8	19.0	19.0	18.0	19.2	17.5	17.5
Residential-commercial	17.2	17.1	16.3	13.0	13.3	13.3	16.7	13.0	14.2	14.2
Public	2.8	3.0	3.0	2.9	2.6	2.6	3.1	3.3	2.9	2.9
Final energy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Coal	14.3	14.3	14.4	14.8	14.6	14.6	14.3	14.2	15.8	15.8
Oil	50.8	50.4	50.7	52.9	54.5	54.5	49.3	52.3	50.2	50.2
Electricity	19.0	18.7	18.9	19.7	17.8	17.8	19.3	20.3	18.7	18.7
City gas	10.1	10.3	9.7	6.6	7.4	7.4	10.1	6.5	8.7	8.7
Heat others	5.8	6.4	6.3	6.0	5.7	5.7	6.9	6.6	6.6	6.6

Note: p means provisional  
Source: Monthly energy statistics

## Statistics on Energy Production Facilities

	2015	2016	2017				2018p		
				M8	M9	M10	M8	M9	M10
Total capacity (GW)	97.6 (4.8)	105.9 (8.4)	116.9 (19.7)	114.2 (17.9)	115.2 (19.0)	115.9 (18.9)	118.0 (16.8)	118.0 (15.7)	118.0 (14.5)
Nuclear	21.7 (4.8)	23.1 (6.4)	22.5 (3.7)	22.5 (3.7)	22.5 (3.7)	22.5 (3.7)	21.9 (0.6)	21.9 (0.6)	21.9 (0.6)
Bituminous coal	26.2 (1.1)	30.9 (18.0)	36.1 (37.8)	35.3 (36.3)	36.2 (39.8)	36.2 (39.1)	36.4 (30.3)	36.4 (26.1)	36.4 (21.7)
Gas	32.2 (6.5)	32.6 (1.2)	37.9 (17.4)	36.7 (15.1)	36.7 (15.1)	37.1 (15.1)	37.9 (16.1)	37.9 (16.1)	37.9 (16.1)
Refinery capacity (mil BPSD)	3.1 (3.7)	3.1 -	3.1 (0.2)	3.1 (0.2)	3.1 (0.2)	3.1 (0.2)	3.1 (0.2)	3.1 (0.2)	3.1 (0.2)

Note: ( ) is year-on-year growth rates (%)

Source: The monthly report on major electric power statistics

## Statistics on Energy Consumption

	2015	2016	2017				2018p		
				M8	M9	M10	M8	M9	M10
The number of household demanding city gas (mil)	17.4 (3.0)	18.0 (3.4)	18.6 (3.3)	18.2 (3.3)	18.2 (3.3)	18.3 (3.1)	18.8 (3.0)	18.8 (3.0)	18.9 (3.3)
Registered cars (mil)	21.0 (4.3)	21.8 (3.9)	22.5 (3.3)	22.3 (3.4)	22.4 (3.5)	22.4 (3.4)	23.0 (3.1)	23.0 (3.0)	23.1 (3.0)
- gasoline	9.8 (2.3)	10.1 (2.9)	10.4 (2.7)	10.3 (2.9)	10.3 (2.9)	10.3 (2.9)	10.5 (2.5)	10.6 (2.4)	10.6 (2.5)
- diesel	8.6 (8.6)	9.2 (6.4)	9.6 (4.4)	9.4 (4.8)	9.5 (4.8)	9.5 (4.7)	9.8 (4.1)	9.9 (3.9)	9.9 (3.8)
- LPG	2.3 (-3.4)	2.2 (-4.0)	2.1 (-2.9)	2.1 (-3.3)	2.1 (-3.1)	2.1 (-3.0)	2.1 (-3.3)	2.1 (-3.2)	2.0 (-3.3)
- hybrid	0.2 (31.3)	0.2 (37.6)	0.3 (37.6)	0.3 (35.4)	0.3 (36.4)	0.3 (36.2)	0.4 (32.5)	0.4 (30.8)	0.4 (31.3)

Note: ( ) is year-on-year growth rates (%)

Source: Monthly Energy Statistics

# KEEI

MONTHLY **KOREA ENERGY TRENDS** (2019, NO.82)



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KEEI Monthly Korea Energy Trends is designed to be used for energy policy and market strategy in the government and industrial sector by analyzing and providing energy economic indicators in Korea.

This report is written by the Energy Demand and Supply Division of the Center for Energy Information and Statistics in cooperation with the Energy Statistics Research Division of KEEI and other related research divisions.

The energy economic indicators included in this report will be constantly updated until further confirmation.

If you have any further inquiries, please send an email to [EnergyOutlook@keei.re.kr](mailto:EnergyOutlook@keei.re.kr)

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405-11, Jongga-ro, Jung-gu, Ulsan, Korea, 44543

Phone: +82-52-714-2270

Fax: +82-52-714-2025

Email: [webmaster@keei.re.kr](mailto:webmaster@keei.re.kr)

Homepage: <http://www.keei.re.kr>