

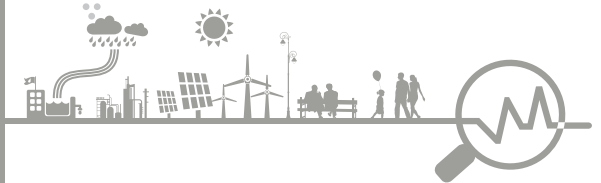


# KEEI

## Korea Energy Demand Outlook



KOREA ENERGY ECONOMICS INSTITUTE



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Published by the Korea Energy Economics Institute (KEEI), Energy Demand Outlook takes a closer look at the global energy market and supply and demand trends in domestic energy and examines the outlook for short-term energy demand.

This report outlines the recent changes in the supply and demand of energy and provides important data and policy implications in an effort to contribute to the establishment and adjustment of a series of energy policies by the government.

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.

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# Summary

## Energy Trends

### ☐ **TPES in Q3 2017 increased to 73.9Mtoe, up 2.6% year-on-year.**

- Despite the stagnant energy consumption growth in the transport sector due to rising oil prices, TPES increased as energy consumption in the industrial sector escalated along with the recovery of manufacturing production activities led by base effect and expanded facilities.
  - The industrial energy consumption moved upward as exports expanded, the number of working days increased (2.5 days) and feedstock energy consumption went up by more than 4% due to expanded petrochemical facilities and the base effect of the iron and steel industry.

### ☐ **By energy source, petroleum and gas consumption grew at a slower pace while coal consumption rebounded, and nuclear energy use maintained its sharp downward trend.**

- **Petroleum (↑2.3%)** Despite soaring naphtha consumption driven by expanded petrochemical facilities, petroleum consumption growth rate slowed down to the 2%-range due to a stagnant consumption growth in the transport sector and a negative consumption growth in the power generation sector.
- **Coal (↑11.0%)** Coal consumption showed a year-on-year surge as the consumption in the generation sector soared thanks to newly introduced bituminous coal power plants,<sup>1</sup> and that for steelmaking rebounded due to base effect of a year-on-year plunge.
- **Nuclear energy (↓10.8%)** Despite the commissioning of Shinkori Unit 3 (2016.12), nuclear generation maintained its steep downward trend since 2H 2016 and reduced by nearly 10%, due to extended preventive maintenance period of several nuclear power plants along with strengthened safety requirements after the outbreak of an earthquake in Gyeongju.
- **Gas (↓1.0%)** Although gas consumption for city gas production rose (5.3%), gas consumption showed a year-on-year decrease as that for power generation went down (-4.3%) due to increased coal-fired power generation.

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<sup>1</sup> As of the end of June 2017, the installed capacity of bituminous coal power plants increased by 8.3GW (31.5%) on a year-on-year basis.

- **Electricity (↑3.7%)** Electricity consumption showed a nearly 4% year-on-year increase as industrial and commercial uses rapidly grew due to the increased number of working days and industrial production activities.
- **TFC in 2017 marked 116.3Mtoe, 2.8% up on a year-on-year basis, led by the industrial sector.**
  - Industry (↑2.1%) The industrial energy consumption maintained its upward movement thanks to the recovery of bituminous coal consumption for steelmaking and increased naphtha consumption driven by expanded facilities.
  - Transport (↑2.6%) The energy consumption in the transport sector which had increased rapidly since 2015 slowed down dramatically due to rising oil prices and the base effect of a year-on-year surge.
  - Buildings (↑3.9%) Despite the increased oil, city gas and heat energy prices, electricity rates for residential use rapidly went up by nearly 4% due to reduced progressive electricity rate tariffs (2016.12) and temperature effect.

## Energy Outlook

- **In 2018, TPED will increase by 2.3% to 308.3Mtoe and TFD is expected to be up by 2.4% to 236.8Mtoe.**
  - Assuming that the economic growth rate remains similar at the 3%-range in 2017 and 2018, the growth rate of TPED and TFD in 2018 will remain similar to that of the previous year.
- **Demand for most energy sources except coal will increase compared to 2017.**
  - Non-fuel oil demand will grow slower in 2018, however, despite rising oil prices, demand for petroleum will rise faster thanks to the recovery of fuel oil demand mainly driven by the transport sector.
  - The growth of coal demand will greatly slow down, led by the diminishing effect of newly introduced bituminous power plants.
  - Nuclear power demand will rapidly drop in 2017 but rebound in 2018, driven by base effect and new power plants to be commissioned.
  - Gas demand will grow further along with the modest increase of city gas growth rate and the recovery of gas demand for power generation.
  - Electricity demand will rebound to the mid 2%-range as the demand growth rate of the buildings and industrial sectors are expected to rise.

## Energy demand growth rates by major energy source

	2013	2014	2015	2016	2017e	2018e
<b>TPED</b>	0.6	0.9	1.7	2.4	2.3	2.3
Coal	1.1	2.9	1.2	- 4.3	8.4	0.6
Petroleum	- 0.3	- 0.5	4.2	7.9	1.5	2.0
Gas	4.8	- 9.0	- 8.9	4.4	2.0	3.0
Nuclear	- 7.7	12.7	5.3	- 1.7	- 7.0	3.0
Electricity	1.8	0.6	1.3	2.8	1.9	2.4

☐ **Energy demand in the industrial and transport sectors will continue to grow in 2018 while that for the buildings is expected to decline slightly.**

- Although feedstock energy (naphtha, coking coal, etc.) demand is predicted to show a year-on-year decrease, energy demand in the industrial sector will rise at a similar level to the previous year as demand for fuel is expected to grow further.
- Despite rising oil prices, energy demand in the transport sector will maintain its growth rate at a similar level to the previous year thanks to the recovery of travel and cargo transport demand.
- Energy demand in the buildings sector will show an increase of the 2%-range, driven by lower energy prices and private consumption expansion along with the introduction of income-led growth policy. However, the growth rate will show a slight year-on-year decrease as the number of cooling degree days plunged<sup>2</sup> while that of heating degree days remained unchanged.

## Key Features and Implications

☐ **Although TPES in 2017 has been adjusted downward due to revision of energy conversion factors, the revision effects are less relevant compared to the past.**

- Energy consumption records have been adjusted as new energy conversion factors were applied in 2017.
- The volume (toe) of both TPES and TFC changed dramatically in the year in which energy conversion factors were revised, however, energy consumption, especially TPES, showed a relatively slight decrease after the 7<sup>th</sup> revision.

<sup>2</sup> Assuming that the average temperatures over the last 10 years are applied, the number of cooling degree days is expected to decrease by 32.8% in 2018.

- ☐ **Due to the government's coal phase-out policy, the share of coal-fired power generation is predicted to decline after marking the highest record in 2017.**
  - Taking into account the government's policy to control coal-fired power generation and increased gas, renewable and nuclear power generation, the share of coal-fired power generation in the gross generation is expected to fall after reaching the highest point in 2017.
  
- ☐ **The growth rate of TPED and TFD will become similar in 2018 as energy input for generation is expected to increase further.**
  - The total energy input for generation will grow further as the gross generation increases due to rising electricity demand, and the increase will be led by coal-fired generation in 2017 and gas and nuclear power generation in 2018.
  - Conversion loss will increase for two consecutive years due to the growing total energy input for generation, narrowing down the gap between TPED and TFD growth rates.
  
- ☐ **Uncertainty regarding heating energy demand in the buildings sector is expected to increase due to the cold wave that hit the country at the end of 2017.**
  - Due to abnormally low temperature that continued in 2017, energy demand in the buildings sector, mainly led by the increasing heating energy, will continue to rise in 2017 and 2018. However, the likelihood of extraordinary cold wave raises uncertainty about the prospect.

# The Main Indicator and Energy Outlook Result

## Main Economic and Energy Indicators

	2014	2015	2016			2017			2018		
			1H	2H		1H	2H		1H	2H	
Economy and Population											
GDP (2010 trillion won)	1 427.0	1 466.8	734.1	774.1	1 508.3	754.6	800.6	1 555.1	778.7	823.0	1 601.7
Industrial Production(2010=100)	108.4	108.1	107.7	110.7	109.2	109.9	113.1	111.5	110.3	114.3	112.3
Crude Oil Price (Dubai, USD/bbl)	96.7	50.8	36.8	45.7	41.2	51.5	54.9	53.2	61.8	57.5	59.7
Working Days	274.5	271.5	135.5	138.5	274.0	133.5	139.5	273.0	136.0	136.5	272.5
Population (million)	50.7	51.0	51.2	51.2	51.2	51.4	51.4	51.4	51.6	51.6	51.6
Average Temperature (°C)	13.4	13.6	10.2	16.9	13.6	10.2	15.9	13.0	9.4	16.0	12.7
Cooling Degree days	125.4	151.8	10.2	227.9	238.1	18.2	169.9	188.1	2.8	123.7	126.4
Heating Degree days	2 501.6	2 459.1	1 654.1	935.6	2 589.7	1 626.1	1 061.5	2 687.6	1 727.9	981.1	2 709.0
Energy Indicators											
Total Primary Energy Demand (Mtoe)	282.8	287.6	146.1	148.5	294.6	148.8	152.5	301.3	153.0	155.3	308.4
Energy Intensity (toe/million won)	0.199	0.197	0.200	0.192	0.196	0.198	0.191	0.194	0.197	0.189	0.193
TPED/capita (toe/capita)	5.573	5.638	2.851	2.897	5.748	2.892	2.965	5.857	2.964	3.008	5.972
Electricity Generation (TWh)	522.0	528.1	266.1	274.4	540.4	270.3	281.8	552.2	277.9	287.7	565.6
Electricity Generation/capita (MWh/capita)	10.3	10.4	5.2	5.4	10.5	5.3	5.5	10.7	5.4	5.6	11.0
Electricity Demand/capita (MWh/capita)	9.4	9.5	4.8	4.9	9.7	4.9	5.0	9.8	5.0	5.0	10.1

## Energy Demand

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
Total Primary Energy Supply											
Coal (Mton)	133.6	135.2	62.1	67.4	129.4	67.1	73.1	140.3	68.8	72.3	141.1
Oil (Mbbbl)	821.5	856.2	451.4	472.7	924.2	458.4	479.5	937.9	468.4	488.6	957.0
Gas (Bm³)	36.7	33.4	17.9	17.0	34.9	18.5	17.1	35.6	19.4	17.3	36.7
Hydro (TWh)	7.8	5.8	3.0	3.6	6.6	3.2	3.8	7.0	3.7	4.4	8.0
Nuclear (TWh)	156.4	164.8	86.5	75.5	162.0	78.1	72.6	150.7	77.5	77.7	155.2
Other Renewables (Mtoe)	10.7	12.8	6.8	6.8	13.6	7.5	7.6	15.1	8.1	8.4	16.5
Total (Mtoe)	282.8	287.6	146.1	148.5	294.6	148.8	152.5	301.3	153.0	155.3	308.4
Coal	84.8	85.7	39.3	42.6	81.9	41.5	45.1	86.6	42.6	44.6	87.2
Oil	104.9	109.6	57.8	60.3	118.1	58.4	61.2	119.6	59.7	62.3	122.0
Gas	47.8	43.5	23.3	22.2	45.4	24.1	22.3	46.4	25.3	22.5	47.8
Nuclear	1.6	1.2	0.6	0.8	1.4	0.7	0.8	1.5	0.8	0.9	1.7
Hydro	33.0	34.8	18.3	15.9	34.2	16.6	15.5	32.1	16.5	16.6	33.1
Other Renewables	10.7	12.8	6.8	6.8	13.6	7.5	7.6	15.1	8.1	8.4	16.5
Total Final Consumption											
Coal (Mton)	53.3	52.7	23.4	26.0	49.4	23.5	24.5	47.9	23.7	24.6	48.4
Oil (Mbbbl)	808.5	841.6	438.7	463.7	902.4	452.7	476.0	928.7	463.5	485.7	949.2
Gas (Bm³)	22.1	20.8	12.3	9.0	21.3	12.8	9.6	22.4	13.4	9.7	23.1
Electricity (TWh)	477.6	483.7	248.5	248.5	497.0	251.4	255.1	506.6	258.5	260.5	518.9
Heat (Mtoe)	1.6	1.6	1.0	0.7	1.7	1.1	0.7	1.8	1.1	0.7	1.9
Other Renewables (Mtoe)	9.2	10.6	5.5	5.4	10.9	5.9	5.9	11.8	6.3	6.2	12.5
Total (Mtoe)	213.7	218.3	112.5	113.1	225.6	115.4	115.8	231.2	118.8	118.0	236.8
Coal	35.6	35.1	15.6	17.2	32.8	15.7	16.4	32.1	15.9	16.5	32.4
Oil	103.0	107.3	55.9	58.9	114.8	57.5	60.7	118.2	59.0	61.9	120.9
Gas	23.4	22.0	13.0	9.5	22.6	13.5	10.2	23.7	14.2	10.3	24.5
Electricity	41.1	41.6	21.4	21.4	42.7	21.6	21.9	43.6	22.2	22.4	44.6
Heat	1.6	1.6	1.0	0.7	1.7	1.1	0.7	1.8	1.1	0.7	1.9
Other Renewables	9.2	10.6	5.5	5.4	10.9	5.9	5.9	11.8	6.3	6.2	12.5
Industry	135.2	135.6	67.4	71.0	138.4	70.0	72.3	142.3	72.0	74.1	146.2
Transport	37.6	40.3	20.8	21.9	42.7	21.1	22.3	43.4	21.5	22.6	44.1
Buildings	40.9	42.4	24.3	20.2	44.5	24.4	21.2	45.6	25.3	21.3	46.5



## Energy Demand

(yoy, %)

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Total Primary Energy Supply</b>											
Coal (Mton)	2.9	1.2	- 7.2	- 1.4	- 4.3	8.1	8.6	8.4	2.5	- 1.1	0.6
Oil (Mbbl)	- 0.5	4.2	8.1	7.8	7.9	1.5	1.4	1.5	2.2	1.9	2.0
Gas (Bm <sup>3</sup> )	- 9.0	- 8.9	- 2.0	11.9	4.4	3.4	0.5	2.0	5.0	0.9	3.0
Hydro (TWh)	- 6.8	- 25.9	7.3	21.1	14.5	7.0	5.3	6.1	13.2	15.1	14.2
Nuclear (TWh)	12.7	5.3	10.2	- 12.5	- 1.7	- 9.7	- 3.8	- 7.0	- 0.8	7.1	3.0
Other Renewables (Mtoe)	20.1	20.3	5.9	5.5	5.7	10.6	12.4	11.5	8.8	9.7	9.2
<b>Total (Mtoe)</b>	<b>0.9</b>	<b>1.7</b>	<b>2.0</b>	<b>2.8</b>	<b>2.4</b>	<b>1.9</b>	<b>2.7</b>	<b>2.3</b>	<b>2.8</b>	<b>1.8</b>	<b>2.3</b>
Coal	3.3	1.1	- 7.3	- 1.7	- 4.5	5.5	6.0	5.8	2.6	- 1.1	0.7
Oil	- 0.8	4.4	8.2	7.4	7.8	1.0	1.5	1.3	2.3	1.9	2.1
Gas	- 8.9	- 8.9	- 2.0	11.9	4.3	3.6	0.6	2.2	5.0	0.9	3.0
Nuclear	- 6.8	- 25.9	7.3	21.1	14.5	8.0	6.3	7.1	13.2	15.1	14.2
Hydro	12.7	5.3	10.2	- 12.5	- 1.7	- 8.8	- 2.9	- 6.1	- 0.8	7.1	3.0
Other Renewables	20.1	20.3	5.9	5.5	5.7	10.6	12.4	11.5	8.8	9.7	9.2
<b>Total Final Consumption</b>											
Coal (Mton)	7.1	- 1.1	- 8.8	- 3.9	- 6.3	0.2	- 5.7	- 2.9	1.2	0.6	0.9
Oil (Mbbl)	1.2	4.1	7.0	7.5	7.2	3.2	2.7	2.9	2.4	2.0	2.2
Gas (Bm <sup>3</sup> )	- 7.5	- 5.9	1.1	4.1	2.3	4.3	6.9	5.4	4.7	0.9	3.1
Electricity (TWh)	0.6	1.3	1.7	3.9	2.8	1.2	2.7	1.9	2.8	2.1	2.4
Heat (Mtoe)	- 7.6	- 0.5	8.1	12.3	9.7	1.7	10.0	4.9	7.2	2.7	5.3
Other Renewables (Mtoe)	18.0	15.7	3.2	2.7	2.9	8.2	8.1	8.2	6.0	6.0	6.0
<b>Total (Mtoe)</b>	<b>1.7</b>	<b>2.1</b>	<b>2.5</b>	<b>4.2</b>	<b>3.3</b>	<b>2.6</b>	<b>2.4</b>	<b>2.5</b>	<b>2.9</b>	<b>1.9</b>	<b>2.4</b>
Coal	8.3	- 1.2	- 9.0	- 4.3	- 6.6	0.5	- 4.9	- 2.3	1.3	0.6	0.9
Oil	1.1	4.2	6.7	7.1	6.9	3.0	3.1	3.0	2.5	2.0	2.3
Gas	- 7.4	- 5.9	1.4	4.2	2.5	3.9	6.6	5.0	4.7	0.9	3.1
Electricity	0.6	1.3	1.7	3.9	2.8	1.2	2.7	1.9	2.8	2.1	2.4
Heat	- 7.6	- 0.5	8.1	12.3	9.7	1.7	10.0	4.9	7.2	2.7	5.3
Other Renewables	18.0	15.7	3.2	2.7	2.9	8.2	8.1	8.2	6.0	6.0	6.0
Industry	3.8	0.3	0.7	3.3	2.0	3.9	1.8	2.8	2.9	2.6	2.8
Transport	0.8	7.1	6.5	5.6	6.0	1.2	1.9	1.6	1.9	1.4	1.6
Buildings	- 4.1	3.6	4.5	5.7	5.1	0.5	4.6	2.4	3.6	0.4	2.1

## Energy Demand by Sector

(Mtoe)

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Industry</b>	<b>135.2</b>	<b>135.6</b>	<b>67.4</b>	<b>71.0</b>	<b>138.4</b>	<b>70.0</b>	<b>72.3</b>	<b>142.3</b>	<b>72.0</b>	<b>74.1</b>	<b>146.2</b>
Coal	34.8	34.5	15.4	16.8	32.3	15.5	16.1	31.6	15.8	16.2	31.9
Oil	61.2	62.2	32.3	34.6	66.9	33.9	35.8	69.7	34.9	36.8	71.7
Gas	9.4	8.0	4.1	3.8	7.9	4.4	4.1	8.4	4.6	4.2	8.8
Electricity	22.8	22.8	11.5	11.7	23.2	11.8	12.0	23.8	12.1	12.3	24.4
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	7.1	8.1	4.0	4.1	8.1	4.4	4.4	8.8	4.7	4.7	9.3
<b>Transport</b>	<b>37.6</b>	<b>40.3</b>	<b>20.8</b>	<b>21.9</b>	<b>42.7</b>	<b>21.1</b>	<b>22.3</b>	<b>43.4</b>	<b>21.5</b>	<b>22.6</b>	<b>44.1</b>
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	35.8	38.4	19.9	20.9	40.8	20.1	21.2	41.3	20.4	21.5	41.9
Gas	1.3	1.3	0.6	0.6	1.3	0.6	0.7	1.3	0.6	0.7	1.3
Electricity	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.3
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.4	0.4	0.2	0.2	0.4	0.3	0.3	0.6	0.3	0.3	0.6
<b>Buildings*</b>	<b>40.9</b>	<b>42.4</b>	<b>24.3</b>	<b>20.2</b>	<b>44.5</b>	<b>24.4</b>	<b>21.2</b>	<b>45.6</b>	<b>25.3</b>	<b>21.3</b>	<b>46.5</b>
Coal	0.7	0.7	0.2	0.4	0.6	0.2	0.3	0.5	0.2	0.3	0.4
Oil	6.0	6.8	3.7	3.4	7.1	3.6	3.7	7.2	3.7	3.5	7.2
Gas	12.7	12.7	8.3	5.1	13.4	8.6	5.4	14.0	9.0	5.4	14.4
Electricity	18.1	18.6	9.7	9.6	19.3	9.7	9.8	19.5	10.0	10.0	20.0
Heat	1.6	1.6	1.0	0.7	1.7	1.1	0.7	1.8	1.1	0.7	1.9
Other Renewables	1.7	2.1	1.3	1.2	2.4	1.3	1.2	2.5	1.3	1.3	2.6
<b>Transform</b>	<b>135.1</b>	<b>134.5</b>	<b>69.0</b>	<b>66.9</b>	<b>135.9</b>	<b>69.6</b>	<b>69.6</b>	<b>139.2</b>	<b>71.8</b>	<b>70.7</b>	<b>142.6</b>
Coal	49.2	50.6	23.7	25.3	49.0	25.8	28.8	54.5	26.7	28.2	54.8
Oil	2.0	2.2	2.0	1.4	3.3	0.9	0.5	1.4	0.7	0.4	1.1
Gas	47.7	43.5	23.2	22.1	45.3	24.1	22.3	46.4	25.3	22.5	47.8
Nuclear	33.0	34.8	18.3	15.9	34.2	16.6	15.5	32.1	16.5	16.6	33.1
Hydro	1.6	1.2	0.6	0.8	1.4	0.7	0.8	1.5	0.8	0.9	1.7
Renewables	1.5	2.2	1.3	1.4	2.6	1.5	1.8	3.3	1.8	2.1	4.0

\* include residential, commercial, public-etc usage

## Coal

(Mton)

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Total Coal Demand</b>	<b>133.6</b>	<b>135.2</b>	<b>62.1</b>	<b>67.4</b>	<b>129.4</b>	<b>67.1</b>	<b>73.1</b>	<b>140.3</b>	<b>68.8</b>	<b>72.3</b>	<b>141.1</b>
Transform	80.3	82.5	38.6	41.4	80.0	43.7	48.7	92.3	45.1	47.7	92.8
Power Generation	80.3	82.5	38.6	41.4	80.0	43.7	48.7	92.3	45.1	47.7	92.8
Heat	-	-	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-
<b>Total Final Consumption</b>	<b>53.3</b>	<b>52.7</b>	<b>23.4</b>	<b>26.0</b>	<b>49.4</b>	<b>23.5</b>	<b>24.5</b>	<b>47.9</b>	<b>23.7</b>	<b>24.6</b>	<b>48.4</b>
Industry	51.7	51.3	23.0	25.2	48.1	23.1	23.8	46.9	23.4	24.0	47.4
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.5	0.5	0.8	1.3	0.4	0.7	1.1	0.4	0.6	0.9
<b>Consumption by products</b>											
Anthracite	10.2	10.7	4.7	6.2	10.9	4.3	4.2	8.4	3.8	4.3	8.1
Bituminous	123.4	124.5	57.4	61.1	118.5	62.8	69.0	131.8	65.0	68.0	133.0
Iron making	37.6	36.8	16.2	17.3	33.5	16.6	17.5	34.1	17.0	17.5	34.5
Cement	4.9	4.7	2.1	2.5	4.6	2.2	2.1	4.3	2.2	2.1	4.3
Power Generation	78.2	80.4	37.6	40.1	77.8	42.7	48.1	90.8	44.7	47.1	91.8

## Oil

(Mbbbl)

	2014	2015	2016p			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Total Oil Demand</b>	<b>821.5</b>	<b>856.2</b>	<b>451.4</b>	<b>472.7</b>	<b>924.2</b>	<b>458.4</b>	<b>479.5</b>	<b>937.9</b>	<b>468.4</b>	<b>488.6</b>	<b>957.0</b>
Transform	13.0	14.6	12.7	9.1	21.8	5.7	3.5	9.2	4.9	2.9	7.8
Power Generation	11.0	12.8	11.2	8.1	19.3	4.5	2.6	7.0	3.6	1.9	5.5
Heat	1.0	0.8	0.8	0.4	1.3	0.8	0.4	1.2	0.8	0.4	1.3
Gas Manufacture	0.9	1.0	0.7	0.6	1.2	0.5	0.5	1.0	0.5	0.5	1.0
<b>Total Final Consumption</b>	<b>808.5</b>	<b>841.6</b>	<b>438.7</b>	<b>463.7</b>	<b>902.4</b>	<b>452.7</b>	<b>476.0</b>	<b>928.7</b>	<b>463.5</b>	<b>485.7</b>	<b>949.2</b>
Industry	491.8	501.0	261.6	281.0	542.6	275.6	289.7	565.3	283.1	298.6	581.7
Transport	268.8	287.1	147.9	155.7	303.6	148.7	157.4	306.1	151.1	159.1	310.2
Buildings	47.9	53.5	29.2	27.1	56.3	28.4	28.9	57.3	29.3	28.0	57.3
<b>Consumption by products</b>											
Gasoline	73.5	76.6	38.2	40.8	78.9	38.5	41.1	79.5	38.8	41.6	80.4
Diesel (including Transformation)	144.8	156.4	81.3	85.2	166.6	82.2	86.7	168.9	83.4	87.5	170.9
Kerosene (including Transformation)	15.4	16.2	10.0	9.0	19.1	9.3	10.0	19.3	9.7	9.2	18.9
B-C (including Transformation)	33.3	38.3	25.4	22.1	47.5	18.5	17.4	35.9	18.4	16.9	35.2
Jet Oil	32.0	34.4	18.2	18.8	37.0	18.5	20.1	38.6	19.5	21.0	40.5
LPG (including Transformation)	89.6	89.9	50.0	58.9	109.0	52.6	50.9	103.5	50.9	50.7	101.6
Naphtha	396.3	410.8	210.7	219.4	430.1	222.9	235.1	458.0	230.7	242.8	473.4
Other Non-Energy	36.6	33.7	17.6	18.5	36.1	16.0	18.2	34.2	17.1	18.9	36.0

## Gas

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Total Gas Demand (Mton)</b>	<b>36.7</b>	<b>33.4</b>	<b>17.9</b>	<b>17.0</b>	<b>34.9</b>	<b>18.5</b>	<b>17.1</b>	<b>35.6</b>	<b>19.4</b>	<b>17.3</b>	<b>36.7</b>
Transform	36.4	33.1	17.7	16.8	34.5	18.3	16.9	35.3	19.2	17.1	36.3
Power Generation	15.9	14.6	7.0	8.5	15.5	7.3	8.1	15.4	7.7	8.1	15.9
Heat	2.2	1.5	0.9	0.7	1.6	0.9	0.7	1.7	1.0	0.8	1.7
Gas Manufacture	18.3	17.0	9.8	7.7	17.5	10.1	8.1	18.2	10.5	8.2	18.7
Industry	0.4	0.3	0.2	0.2	0.4	0.2	0.2	0.3	0.2	0.2	0.3
<b>City Gas (Bm³)</b>	<b>22.1</b>	<b>20.8</b>	<b>12.3</b>	<b>9.0</b>	<b>21.3</b>	<b>12.8</b>	<b>9.6</b>	<b>22.4</b>	<b>13.4</b>	<b>9.7</b>	<b>23.1</b>
Industry*	8.7	7.3	3.7	3.5	7.2	4.0	3.7	7.8	4.2	3.8	8.1
Transport	1.3	1.2	0.6	0.6	1.2	0.6	0.6	1.2	0.6	0.6	1.2
Buildings	12.2	12.2	8.0	4.9	12.8	8.2	5.2	13.4	8.6	5.2	13.8

\* exclude industrial LNG usage

## Electricity

(TWh)

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Net Electricity Demand</b>	<b>522.0</b>	<b>528.1</b>	<b>266.1</b>	<b>274.4</b>	<b>540.4</b>	<b>270.3</b>	<b>281.8</b>	<b>552.2</b>	<b>277.9</b>	<b>287.7</b>	<b>565.6</b>
Own use and Losses	44.4	44.4	17.6	25.8	43.4	18.9	26.7	45.6	19.5	27.2	46.7
<b>Total Final Consumption</b>	<b>477.6</b>	<b>483.7</b>	<b>248.5</b>	<b>248.5</b>	<b>497.0</b>	<b>251.4</b>	<b>255.1</b>	<b>506.6</b>	<b>258.5</b>	<b>260.5</b>	<b>518.9</b>
Industry	264.6	265.6	134.1	135.8	270.0	136.9	139.7	276.6	141.2	142.8	284.0
Transport	2.0	2.2	1.3	1.4	2.7	1.3	1.5	2.8	1.4	1.5	3.0
Buildings	211.0	215.8	113.1	111.3	224.4	113.2	114.0	227.1	115.8	116.2	232.0
<b>Installed Electrical Capacity (GW)*</b>	<b>357.5</b>	<b>384.5</b>	<b>197.5</b>	<b>205.2</b>	<b>402.7</b>	<b>219.5</b>	<b>230.3</b>	<b>449.8</b>	<b>228.1</b>	<b>236.9</b>	<b>465.0</b>
Coal	103.6	108.4	54.9	60.5	115.4	66.0	72.8	138.8	69.9	74.0	143.9
Oil	18.5	17.0	8.4	8.3	16.6	8.3	8.3	16.6	8.3	8.3	16.6
Gas	110.6	127.2	65.0	65.2	130.2	70.2	73.8	144.0	73.9	74.3	148.2
Nuclear	82.9	84.9	43.4	43.9	87.3	46.0	45.1	91.1	43.7	46.0	89.7
Hydro	25.8	25.9	13.0	13.0	25.9	13.0	13.0	25.9	13.0	13.0	25.9
Other Renewables	16.1	21.2	12.9	14.3	27.2	16.0	17.3	33.4	19.3	21.4	40.6
<b>Electricity Generation of Power Plants*</b>	<b>522.0</b>	<b>528.1</b>	<b>266.1</b>	<b>274.4</b>	<b>540.4</b>	<b>270.3</b>	<b>281.8</b>	<b>552.2</b>	<b>277.9</b>	<b>287.7</b>	<b>565.6</b>
Coal	203.4	204.7	101.7	112.1	213.8	113.0	124.1	237.2	116.7	121.2	237.9
Oil	25.0	31.7	8.4	5.8	14.3	6.2	3.1	9.3	4.9	2.3	7.2
Gas	114.7	100.8	55.4	65.5	120.8	56.2	61.3	117.5	59.1	61.5	120.5
Nuclear	156.4	164.8	86.5	75.5	162.0	78.1	72.6	150.7	77.5	77.7	155.2
Hydro	7.8	5.8	3.0	3.6	6.6	3.2	3.8	7.0	3.7	4.4	8.0
Other Renewables	14.7	20.3	11.1	11.9	23.0	13.5	16.9	30.4	16.1	20.6	36.8
<b>Fuel Consumption of Power Plants (Mtoe)*</b>	<b>108.1</b>	<b>110.1</b>	<b>54.9</b>	<b>55.9</b>	<b>110.8</b>	<b>55.1</b>	<b>57.9</b>	<b>112.9</b>	<b>56.6</b>	<b>58.9</b>	<b>115.5</b>
Coal	49.2	50.6	23.7	25.3	49.0	25.8	28.8	54.5	26.7	28.2	54.8
Oil	1.7	2.0	1.8	1.3	3.0	0.7	0.4	1.1	0.5	0.3	0.8
Gas	21.0	19.3	9.3	11.2	20.5	9.8	10.7	20.4	10.3	10.8	21.1
Nuclear	33.0	34.8	18.3	15.9	34.2	16.6	15.5	32.1	16.5	16.6	33.1
Hydro	1.6	1.2	0.6	0.8	1.4	0.7	0.8	1.5	0.8	0.9	1.7
Other Renewables	1.5	2.2	1.3	1.4	2.6	1.5	1.8	3.3	1.8	2.1	4.0

\* District Heat is classified by fuel type since 2014

## Heat and Other Renewables

(Mtoe)

	2014	2015	2016			2017e			2018e		
			1H	2H		1H	2H		1H	2H	
<b>Net Heat Demand</b>	<b>1.6</b>	<b>1.6</b>	<b>1.0</b>	<b>0.7</b>	<b>1.7</b>	<b>0.9</b>	<b>0.7</b>	<b>1.7</b>	<b>1.0</b>	<b>0.8</b>	<b>1.8</b>
Own use and Losses	- 0.0	0.0	- 0.0	0.0	0.0	- 0.1	0.0	- 0.1	- 0.1	0.0	- 0.1
<b>Total Final Consumption</b>	<b>1.6</b>	<b>1.6</b>	<b>1.0</b>	<b>0.7</b>	<b>1.7</b>	<b>1.1</b>	<b>0.7</b>	<b>1.8</b>	<b>1.1</b>	<b>0.7</b>	<b>1.9</b>
Industry	-	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.6	1.0	0.7	1.7	1.1	0.7	1.8	1.1	0.7	1.9
<b>Heat Production by fuel</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	1.0	1.0	0.7	0.4	1.1	0.7	0.5	1.2	0.8	0.5	1.2
Gas	0.5	0.5	0.3	0.3	0.6	0.2	0.3	0.5	0.3	0.3	0.6
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Fuel Consumption of District Heat</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2
Gas	2.8	2.0	1.1	0.9	2.0	1.2	1.0	2.2	1.3	1.0	2.3
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Other Renewables</b>	<b>12.3</b>	<b>14.1</b>	<b>7.4</b>	<b>7.6</b>	<b>15.0</b>	<b>8.2</b>	<b>8.5</b>	<b>16.6</b>	<b>8.9</b>	<b>9.3</b>	<b>18.2</b>
Hydro	1.6	1.2	0.6	0.8	1.4	0.7	0.8	1.5	0.8	0.9	1.7
Transform	1.5	2.2	1.3	1.4	2.6	1.5	1.8	3.3	1.8	2.1	4.0
<b>Total Final Consumption</b>	<b>9.2</b>	<b>10.6</b>	<b>5.5</b>	<b>5.4</b>	<b>10.9</b>	<b>5.9</b>	<b>5.9</b>	<b>11.8</b>	<b>6.3</b>	<b>6.2</b>	<b>12.5</b>
Industry	7.1	8.1	4.0	4.1	8.1	4.4	4.4	8.8	4.7	4.7	9.3
Transport	0.4	0.4	0.2	0.2	0.4	0.3	0.3	0.6	0.3	0.3	0.6
Buildings	1.7	2.1	1.3	1.2	2.4	1.3	1.2	2.5	1.3	1.3	2.6

# KEEI

## Korea Energy Demand Outlook



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