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Korea Mid-term Energy Demand Outlook (2017~2022)

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Published by the Korea Energy Economics Institute (KEEI), Mid-term 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

- **The growth of total primary energy supply (TPES) has slowed down significantly since 2012 then remained at an annual average rate of 1.6% from 2012 through 2017.**
 - TPES marked a relatively high growth rate compared to economic growth rate in the 1990s, however, the growth has been slower than economic growth since the 2000s.
 - TPES growth from 2010 to 2011 was above economic growth rate, driven by the expanded facilities of the iron & steel and petrochemical industries.
 - TPES from 2012 to 2013 remained stagnant at around the zero-percent range but then showed a modest pickup and increased to range of 2% in 2017.
 - The recent TPES growth has become more sluggish compared to economic growth due to the relative growth in the less-energy-intensive industries and decreased energy input for power generation along with falling electricity consumption.

- **Over the past five years, petroleum consumption has increased while coal consumption plunged and gas and nuclear energy use returned to downward trend.**
 - Petroleum consumption, led by low oil prices and expansion of petrochemical facilities, grew at an annual average rate of 2.5% from 2012 through 2017.
 - Coal consumption for both steelmaking and generation declined considerably due to the stagnant iron & steel industry and constrained operation of coal-fired power plants, and remained at an annual average rate of 1.7% from 2017 through 2017.
 - Gas consumption grew rapidly at an average rate of 8% per year from 2007 through 2012 but decreased at an annual average rate of 1.3% from 2012 through 2017, driven by decreased gas use for generation and city gas production.
 - Nuclear power generation increased from 2014 to 2015 thanks to the introduction of new nuclear power plants, however, the government's strengthened safety requirements drove it down by an annual average rate of 0.3% from 2012 through 2017.
 - Electricity consumption went up steadily at an annual average rate of 6.0% from 2000 through 2011 but the growth started slowing down in the 2010s, triggered by sluggish exports and the government's power-saving policy, and remained at an annual average rate of 1.7% from 2012 through 2017.

- **The driving force of industrial energy consumption has been weakened recently whereas that of the transport sector has increased thanks to plummeting oil prices.**
 - Energy consumption for industrial use, mainly driven by the petrochemical industry, increased at an annual average rate of 2.3% from 2012 through 2017. However, with the sluggish primary metal industry, the growth slowed down dramatically compared to the past which is attributable to economic slowdown, a sharp decrease in exports to China, etc.
 - The growth of energy use in the transport sector displayed a drastic decline in 2017. However, for the past five years (2012-2017), it has grown faster at an annual average rate of 3.0% thanks to consumption surge triggered by the oil price plunge of 2015-2016.
 - Energy consumption growth in the buildings sector, continuing its downward movement led by stagnant population, improved energy efficiency, etc., increased at an annual average rate of 1.4% from 2012 through 2017.

Energy Outlook

- **Total primary energy demand (TPED) is expected to rise at an annual average rate of 1.9% from 2017 through 2022 and reach 330.3Mtoe in 2022.**
 - Taking into account consumption recovery for industrial use during the forecast period (2017-2022), TPED growth is anticipated to be higher than that over the last five years.
 - However, annual TPED growth is expected to be somewhat different from economic growth rate due to temperature effect, expansion of petrochemical facilities, etc.
 - During the forecast period, TPED is projected to grow more rapidly compared to the period of 2012-2017, thanks to the moderate recovery of the iron & steel industry, expansion of petrochemical facilities, increasing semiconductor exports, etc.
- **Energy intensity growth will slow down compared to the last five-year-period whereas energy consumption per capita is expected to grow faster.**
 - Energy intensity is anticipated to rise from 0.194 in 2017 to 0.184 in 2022 and energy consumption per capita will increase from 5.9 toe in 2017 to 6.3 toe in 2022, at an annual average rate of 1.0% and 1.5%, respectively.

- **The growth of petroleum and coal demand are expected to slow down compared to the past while the use of gas and nuclear energy will grow and rebound during the forecast period (2017-2022).**
 - **Petroleum (↑at an annual average rate of 1.3%)** Taking into account that international oil prices are expected to show a slight uptick, the annual average growth rate of this forecast period is anticipated to slow down compared to the past five years (2012-2017)
 - **Coal (↑1.2%)** Amid increasingly sluggish coal demand for power generation driven by the government's policy to restrain operation of coal-fired power plants, the growth of bituminous coal demand for steelmaking (coking coal) will slow down compared to the past five years due to the modest recovery of the iron & steel industry.
 - **Gas (↑1.1%)** While gas demand for generation is likely to make a turnaround from negative growth and remain unchanged, that for city gas production, led by industrial city gas use, is projected to rise and rebound
 - **Nuclear energy (↑4.6%)** Despite the declining capacity factor of nuclear power plants, nuclear energy demand is expected to grow rapidly thanks to the introduction of four new nuclear power plants.
 - **Electricity (↑2.5%)** Electricity demand growth is forecasted to grow further compared to the last five years (1.7% per year on average) but remain at an annual average rate of below 3% which is lower than that of the pre-2010 period, due to changes in industrial structure, efficiency improvement, etc.
- **Total final energy demand (TFD) will expand at an annual average rate of 1.9% throughout the forecast period and reach 255.2Mtoe in 2022.**
 - **Industry (↑2.3%)** Along with the rising economic growth, energy demand for industrial use is projected to grow, mainly driven by the petrochemical industry, at an annual average rate of 2% or higher, and lead TFD.
 - **Transport (↑1.0%)** Energy demand in the transport sector will grow slower due to gradual increase of oil prices and its annual average growth rate will remain at around 1% from 2017 through 2022.
 - **Buildings (↑1.4%)** The annual growth rate of energy demand in the buildings sector will continue to remain at the 1% range on average, led by electricity and gas demand.

Key Features and Implications

- **Energy demand in the industrial sector is predicted to show different trends compared to changes in economic growth due to changes in petroleum demand in the petrochemical industry.**
 - Demand for naphtha and industrial LPG will increase by 8.5Mtoe during the forecast period (2017-2022) and account for nearly 50% of the increase of energy demand in the industrial sector.
 - The growth of energy demand for industrial use from 2020 to 2021 will take different paths from economic growth rate due to changes in naphtha and LPG demand driven by expansion of petrochemical facilities.
- **Changes in power generation facilities and their share prompted by the government's energy transition policy will increase power generation efficiency and slow down greenhouse gas growth.**
 - Generation capacity, driven by renewable/other, nuclear and coal-fired power plants, is expected to expand according to the 8th Basic Plan on Electricity Demand and Supply.
 - Gross electricity generation is anticipated to increase at an annual average rate of 2.4% throughout the forecast period, driven by nuclear and coal-fired generation, and reach 624TWh in 2022.
 - The increasing share of gas power plants is likely to improve generation efficiency which is expected to slow down the growth of energy input for power generation and TPED.
 - The growth of greenhouse gas emissions from the power generation sector during the forecast period is predicted to be lower than that of gross electricity generation, taking into account the decreasing share of coal-fired power plants.
- **The contribution level of petroleum and coals which lead TPED and that of the industrial and transport sectors that drive total final consumption (TFC) will show a downward movement.**
 - The driving force of petroleum and coals for energy consumption will fall while nuclear energy, petroleum, renewable/other energy and coal are expected to contribute to TPED at similar levels.
 - In terms of energy demand by sector, demand in the industrial and transport sectors will slow down, driving down the growth rate of TFD.
- **Considering economic uncertainty, TPED and TFD are anticipated to increase at an annual average rate of 1.5-1.9% and 1.6-2.3%, respectively, during the forecast period.**

- Economic growth rate in the high-growth and low-growth scenarios are calculated by applying $\pm 1.0\%$ to the standard rate of 2.9% (an annual average rate).
- Throughout the forecast period, TPED in the high-growth and low-growth scenarios will grow at an annual average rate of 2.3% to 337.5Mtoe in 2022 and 1.5% to 324.7Mtoe in 2022, respectively.
- Throughout the forecast period, TFD in the high-growth and low-growth scenarios are expected to rise at an annual average rate of 2.3% to 260.0Mtoe in 2022 and 1.6% to 251.1Mtoe in 2022, respectively.
- Energy intensity in the high-growth and low-growth scenarios are projected to increase at an annual average rate of 1.4% to 0.180(toe/mil won) in 2022 and 0.4% to 0.190(toe/mil won) in 2022, respectively.

The Main Indicator and Energy Outlook Result

Main Economic and Energy Indicators - BAU Scenario

											CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Economy and Population												
GDP (2010 trillion won)	1 427.0	1 466.8	1 509.8	1 556.0	1 600.4	1 645.2	1 694.5	1 745.4	1 790.8	3.1	2.9	
Industrial Production(2010=100)	100.3	100.0	102.3	104.2	104.2	105.0	105.9	107.2	108.1	3.1	0.7	
Crude Oil Price (Dubai, USD/bbl)	96.7	50.8	41.2	53.2	69.2	65.1	72.1	76.5	80.8	- 2.5	8.7	
Working Days	271.5	274.0	273.0	269.5	270.0	274.5	276.0	276.5	276.5	- 0.1	0.5	
Population (million)	50.7	51.0	51.3	51.4	51.6	51.8	52.0	52.1	52.3	0.6	0.3	
Average Temperature (°C)	13.4	13.6	13.6	13.0	13.1	12.9	12.9	12.9	12.9	- 0.2	- 0.2	
Cooling Degree days	125.4	151.8	238.1	188.1	280.8	146.3	146.3	146.3	146.3	4.2	- 4.9	
Heating Degree days	2 501.6	2 459.1	2 589.7	2 687.6	2 705.4	2 681.8	2 699.0	2 681.8	2 681.8	0.8	- 0.0	
Energy Indicators												
Total Primary Energy Demand (Mtoe)	283.1	287.7	294.6	301.1	308.8	314.0	320.3	324.9	330.5	2.4	1.9	
Energy Intensity (toe/million won)	0.199	0.197	0.196	0.194	0.193	0.191	0.189	0.187	0.185	- 0.6	- 0.9	
TPED/capita (toe/capita)	5.579	5.640	5.747	5.853	5.980	6.060	6.162	6.233	6.324	1.9	1.6	
Electricity Generation (TWh)	22.0	528.1	540.4	553.5	569.8	582.8	597.1	611.8	624.3	3.2	2.4	
Electricity Generation/capita (MWh/capita)	10.3	10.4	10.5	10.8	11.0	11.2	11.5	11.7	11.9	2.7	2.1	
Electricity Demand/capita (MWh/capita)	9.4	9.5	9.7	9.9	10.2	10.3	10.6	10.8	11.0	2.7	2.2	

Energy Demand - BAU Scenario

	CAGR (%)										
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Total Primary Energy Supply											
Coal (Mton)	133.6	135.2	129.4	139.7	141.7	139.7	139.8	141.9	148.1	4.0	1.2
Oil (Mbbbl)	821.5	856.2	924.2	938.2	957.3	969.2	980.6	990.2	999.6	1.7	1.3
Gas (Bm³)	36.6	33.4	34.9	36.1	40.6	38.2	38.9	39.8	38.1	3.1	1.1
Hydro (TWh)	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	3.3	1.6
Nuclear (TWh)	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6
Other Renewables (Mtoe)	11.0	12.8	13.6	15.0	16.4	17.6	18.7	19.8	20.8	12.0	6.8
Total (Mtoe)	283.1	287.7	294.6	301.1	308.8	314.0	320.3	324.9	330.5	2.4	1.9
Coal	84.8	85.7	81.9	86.3	87.7	86.6	86.8	88.1	91.9	3.8	1.3
Oil	104.9	109.6	118.1	119.6	121.8	123.1	124.5	125.6	126.7	1.3	1.2
Gas	47.8	43.6	45.5	47.2	53.0	49.9	50.9	52.0	49.8	3.1	1.1
Nuclear	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Hydro	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Other Renewables	11.0	12.8	13.6	15.0	16.4	17.6	18.7	19.8	20.8	12.0	6.8
Total Final Consumption											
Coal (Mton)	53.3	52.7	49.1	50.3	50.8	51.7	52.6	53.4	54.2	3.3	1.5
Oil (Mbbbl)	808.5	841.6	902.4	928.1	947.0	960.5	972.4	982.6	993.8	2.0	1.4
Gas (Bm³)	22.1	20.8	21.3	22.6	23.7	24.2	24.6	25.1	25.5	2.3	2.4
Electricity (TWh)	477.6	483.7	497.0	507.7	527.2	536.2	549.4	562.9	574.4	3.3	2.5
Heat (Mtoe)	1.6	1.6	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.6	4.1
Other Renewables (Mtoe)	9.2	10.6	10.9	11.8	12.6	13.3	13.9	14.4	14.8	10.1	4.7
Total (Mtoe)	213.8	218.4	225.5	232.5	238.9	243.3	247.6	251.6	255.4	2.5	1.9
Coal	35.6	35.1	32.7	33.5	33.9	34.5	35.2	35.8	36.3	3.3	1.6
Oil	103.0	107.3	114.8	118.1	120.3	121.9	123.3	124.5	125.9	1.6	1.3
Gas	23.5	22.1	22.7	23.7	24.9	25.4	25.8	26.3	26.7	2.3	2.5
Electricity	41.1	41.6	42.7	43.7	45.3	46.1	47.2	48.4	49.4	3.3	2.5
Heat	1.6	1.6	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.6	4.1
Other Renewables	9.2	10.6	10.9	11.8	12.6	13.3	13.9	14.4	14.8	10.1	4.7
Industry	135.3	135.7	138.3	143.8	148.2	152.0	155.4	158.6	161.6	3.3	2.4
Transport	37.6	40.3	42.7	43.0	43.4	43.9	44.4	44.8	45.2	1.5	1.0
Buildings	40.9	42.4	44.5	45.7	47.4	47.4	47.7	48.2	48.6	1.3	1.3

Energy Demand - BAU Scenario

(yoy, %)

											CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Total Primary Energy Supply												
Coal (Mton)	2.9	1.2	- 4.3	7.9	1.5	- 1.4	0.0	1.6	4.4	4.0	1.2	
Oil (Mbbl)	- 0.5	4.2	7.9	1.5	2.0	1.2	1.2	1.0	0.9	1.7	1.3	
Gas (Bm³)	- 9.0	- 8.7	4.4	3.5	12.4	- 5.9	2.0	2.2	- 4.2	3.1	1.1	
Hydro (TWh)	- 6.8	- 25.9	14.5	5.2	- 10.2	20.4	0.2	- 0.2	0.0	3.3	1.6	
Nuclear (TWh)	12.7	5.3	- 1.7	- 8.4	- 9.7	22.8	7.8	- 0.3	5.2	0.4	4.6	
Other Renewables (Mtoe)	21.9	17.2	5.7	10.2	9.7	7.4	6.3	5.6	5.2	12.0	6.8	
Total (Mtoe)	0.9	1.6	2.4	2.2	2.6	1.7	2.0	1.4	1.7	2.4	1.9	
Coal	3.3	1.1	- 4.5	5.4	1.6	- 1.2	0.2	1.6	4.3	3.8	1.3	
Oil	- 0.8	4.4	7.8	1.2	1.8	1.1	1.1	0.9	0.9	1.3	1.2	
Gas	- 9.0	- 8.7	4.4	3.6	12.4	- 5.9	2.0	2.2	- 4.2	3.1	1.1	
Nuclear	- 6.8	- 25.9	14.5	6.2	- 10.2	20.4	0.2	- 0.2	0.0	3.2	1.6	
Hydro	12.7	5.3	- 1.7	- 7.5	- 9.7	22.8	7.8	- 0.3	5.2	0.3	4.6	
Other Renewables	21.9	17.2	5.7	10.2	9.7	7.4	6.3	5.6	5.2	12.0	6.8	
Total Final Consumption												
Coal (Mton)	7.1	- 1.1	- 6.8	2.3	1.0	1.8	1.7	1.7	1.4	3.3	1.5	
Oil (Mbbl)	1.2	4.1	7.2	2.8	2.0	1.4	1.2	1.0	1.1	2.0	1.4	
Gas (Bm³)	- 7.5	- 5.9	2.3	6.2	5.0	2.0	1.9	1.8	1.5	2.3	2.4	
Electricity (TWh)	0.6	1.3	2.8	2.2	3.8	1.7	2.5	2.5	2.0	3.3	2.5	
Heat (Mtoe)	- 7.6	- 0.5	9.7	8.2	6.6	4.2	3.7	3.3	3.0	2.6	4.1	
Other Renewables (Mtoe)	18.0	15.7	2.9	7.4	7.4	5.5	4.2	3.5	3.0	10.1	4.7	
Total (Mtoe)	1.7	2.1	3.3	3.1	2.8	1.8	1.8	1.6	1.5	2.5	1.9	
Coal	8.3	- 1.2	- 7.0	2.4	1.2	1.9	1.8	1.7	1.5	3.3	1.6	
Oil	1.1	4.2	6.9	2.9	1.9	1.3	1.2	1.0	1.1	1.6	1.3	
Gas	- 7.3	- 5.9	2.6	4.4	5.0	2.1	1.9	1.8	1.5	2.3	2.5	
Electricity	0.6	1.3	2.8	2.2	3.8	1.7	2.5	2.5	2.0	3.3	2.5	
Heat	- 7.6	- 0.5	9.7	8.2	6.6	4.2	3.7	3.3	3.0	2.6	4.1	
Other Renewables	18.0	15.7	2.9	7.4	7.4	5.5	4.2	3.5	3.0	10.1	4.7	
Industry	3.8	0.3	1.9	4.0	3.0	2.6	2.3	2.0	1.9	3.3	2.4	
Transport	0.8	7.1	6.0	0.7	0.8	1.3	1.1	1.0	0.8	1.5	1.0	
Buildings	- 4.0	3.6	5.1	2.6	3.8	- 0.0	0.8	0.9	0.9	1.3	1.3	

Energy Demand by Sector - BAU Scenario

(Mtoe)

										CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Industry	135.3	135.7	138.3	143.8	148.2	152.0	155.4	158.6	161.6	3.3	2.4
Coal	34.8	34.5	32.1	33.0	33.4	34.1	34.8	35.5	36.0	3.6	1.8
Oil	61.2	62.2	66.9	69.8	71.7	73.3	74.7	75.9	77.2	2.2	2.0
Gas	9.5	8.1	8.0	8.4	9.2	9.5	9.7	10.0	10.2	4.9	3.9
Electricity	22.8	22.8	23.2	23.8	24.5	25.1	25.8	26.6	27.2	4.0	2.7
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	7.1	8.1	8.1	8.8	9.4	9.9	10.3	10.7	11.0	9.0	4.5
Transport	37.6	40.3	42.7	43.0	43.4	43.9	44.4	44.8	45.2	1.5	1.0
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	35.8	38.4	40.8	41.0	41.3	41.9	42.3	42.7	43.0	1.3	0.9
Gas	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	7.4	1.0
Electricity	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	3.5	5.3
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	17.5	2.3
Buildings*	40.9	42.4	44.5	45.7	47.4	47.4	47.7	48.2	48.6	1.3	1.3
Coal	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	- 6.6	- 11.8
Oil	6.0	6.8	7.1	7.2	7.2	6.7	6.3	5.9	5.6	- 1.5	- 4.7
Gas	12.7	12.7	13.4	14.0	14.4	14.6	14.8	15.0	15.2	0.6	1.7
Electricity	18.1	18.6	19.3	19.6	20.6	20.7	21.1	21.5	21.9	2.4	2.2
Heat	1.6	1.6	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.6	4.1
Other Renewables	1.7	2.1	2.4	2.5	2.7	2.9	3.0	3.2	3.3	13.6	5.7
Transform	134.9	134.2	135.7	137.4	141.6	143.8	147.4	149.7	153.0	2.5	2.2
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0
Oil	2.0	2.2	3.3	1.5	1.5	1.3	1.2	1.1	0.8	- 11.1	- 11.9
Gas	47.3	43.2	45.0	46.7	52.5	49.4	50.4	51.5	49.3	3.0	1.1
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4

* include residential, commercial, public-etc usage

Coal - BAU Scenario

(Mton)

											CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Total Coal Demand	133.6	135.2	129.4	139.7	141.7	139.7	139.8	141.9	148.1	4.0	1.2	
Transform	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0	
Power Generation	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0	
Heat	-	-	-	-	-	-	-	-	-	-	-	
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-	
Total Final Consumption	53.3	52.7	49.1	50.3	50.8	51.7	52.6	53.4	54.2	3.3	1.5	
Industry	51.7	51.3	47.9	49.2	49.8	50.9	51.8	52.8	53.6	3.6	1.7	
Transport	-	-	-	-	-	-	-	-	-	-	-	
Buildings	1.6	1.5	1.3	1.1	0.9	0.8	0.7	0.6	0.6	- 6.4	- 11.8	
Consumption by products												
Anthracite	10.2	10.7	10.9	8.3	7.8	7.8	7.8	7.8	7.8	- 1.5	- 1.2	
Bituminous	123.4	124.5	118.5	131.3	133.9	131.9	132.0	134.2	140.3	4.5	1.3	
Iron making	37.6	36.8	33.5	36.1	37.0	37.9	38.7	39.4	40.2	5.3	2.1	
Cement	4.9	4.7	4.6	4.2	3.6	3.5	3.5	3.4	3.4	- 1.9	- 4.1	
Power Generation	78.2	80.4	77.8	88.3	90.5	87.7	86.9	88.3	93.7	4.8	1.2	

Oil - BAU Scenario

(Mbbbl)

											CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e		07-17	17-22
Total Oil Demand	821.5	856.2	924.2	938.2	957.3	969.2	980.6	990.2	999.6		1.7	1.3
Transform	13.0	14.6	21.8	10.1	10.3	8.8	8.1	7.7	5.8		- 10.7	- 10.5
Power Generation	11.0	12.8	19.3	8.0	7.5	6.3	5.7	5.2	3.3		- 11.8	- 16.2
Heat	1.0	0.8	1.3	1.2	1.1	0.7	0.7	0.7	0.6		- 6.9	- 10.9
Gas Manufacture	0.9	1.0	1.2	0.9	1.7	1.7	1.8	1.8	1.8		2.1	14.1
Total Final Consumption	808.5	841.6	902.4	928.1	947.0	960.5	972.4	982.6	993.8		2.0	1.4
Industry	491.8	501.0	542.6	566.8	583.3	597.2	609.4	619.6	630.8		2.8	2.2
Transport	268.8	287.1	303.6	304.4	306.5	310.1	313.2	316.0	318.4		1.3	0.9
Buildings	47.9	53.5	56.3	56.9	57.1	53.1	49.7	46.9	44.6		- 1.4	- 4.7
Consumption by products												
Gasoline	73.5	76.6	78.9	79.6	80.6	81.6	82.4	83.1	83.9		2.5	1.1
Diesel (including Transformation)	144.8	156.4	166.6	168.9	168.5	168.4	168.6	168.7	168.6		1.5	- 0.0
Kerosene (including Transformation)	15.4	16.2	19.1	19.0	19.4	18.2	17.1	16.2	15.3		- 3.1	- 4.2
B-C (including Transformation)	33.3	38.3	47.5	35.8	33.7	31.1	29.8	28.6	26.4		- 9.1	- 5.9
Jet Oil	32.0	34.4	37.0	38.2	40.8	42.5	43.9	45.4	46.6		3.9	4.1
LPG (including Transformation)	89.6	89.9	109.0	104.8	110.9	110.4	109.9	109.4	109.0		0.8	0.8
Naphtha	396.3	410.8	430.1	458.4	468.7	482.7	494.9	505.2	516.8		3.8	2.4
Other Non-Energy	36.6	33.7	36.1	33.5	34.6	34.4	34.0	33.6	33.1		1.8	- 0.2

Gas - BAU Scenario

										CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Total Gas Demand (Mton)	36.6	33.4	34.9	36.1	40.6	38.2	38.9	39.8	38.1	3.1	1.1
Transform	36.3	33.1	34.5	35.8	40.2	37.8	38.6	39.4	37.7	3.0	1.1
Power Generation	16.3	14.6	15.5	15.6	18.9	16.8	17.1	17.5	15.4	3.3	- 0.2
Heat	1.7	1.5	1.6	1.7	2.1	1.7	1.7	1.8	1.8	10.5	1.2
Gas Manufacture	18.3	17.0	17.5	18.5	19.3	19.4	19.8	20.2	20.5	2.3	2.1
Industry	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	-	3.4
City Gas (Bm³)	22.1	20.8	21.3	22.6	23.7	24.2	24.6	25.1	25.5	2.3	2.4
Industry*	8.7	7.3	7.2	7.8	8.5	8.7	9.0	9.2	9.4	4.6	3.9
Transport	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	7.6	1.0
Buildings	12.2	12.2	12.8	13.6	14.0	14.2	14.4	14.6	14.8	0.9	1.7

* exclude industrial LNG usage

Electricity - BAU Scenario

(TWh)

											CAGR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Net Electricity Demand	522.0	528.1	540.4	553.5	569.8	582.8	597.1	611.8	624.3	3.2	2.4	
Own use and Losses	44.4	44.4	43.4	45.7	42.7	46.6	47.8	48.9	49.9	2.9	1.8	
Total Final Consumption	477.6	483.7	497.0	507.7	527.2	536.2	549.4	562.9	574.4	3.3	2.5	
Industry	264.6	265.6	270.0	276.7	284.6	292.2	300.4	308.8	315.7	4.0	2.7	
Transport	2.0	2.2	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.5	5.3	
Buildings	211.0	215.8	224.4	228.3	239.6	240.8	245.7	250.6	255.0	2.4	2.2	
Installed Electrical Capacity (GW)*	92.4	97.6	104.1	116.4	118.9	124.6	129.8	133.7	138.9	5.6	3.6	
Coal	26.7	27.3	31.4	36.8	37.1	36.5	36.9	38.8	41.6	6.0	2.5	
Oil	4.3	4.2	4.1	4.1	4.1	4.0	4.0	4.0	2.8	-0.5	-7.7	
Gas	29.8	32.2	32.6	37.5	38.1	39.9	41.6	41.6	41.6	7.3	2.1	
Nuclear	20.7	21.7	22.2	22.5	22.5	25.3	26.7	26.7	28.1	2.4	4.5	
Hydro	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	1.7	0.0	
Other Renewables	4.5	5.6	7.3	8.9	10.5	12.3	14.1	16.2	18.3	21.8	15.4	
Electricity Generation of Power Plants*	522.0	528.1	540.4	553.5	569.8	582.8	597.1	611.8	624.3	3.4	2.4	
Coal	203.4	204.7	213.8	238.2	238.5	234.5	232.3	237.0	252.9	4.4	1.2	
Oil	25.0	31.7	14.3	9.1	5.8	4.9	4.4	4.1	2.6	-6.7	-22.3	
Gas	114.7	100.8	120.8	122.9	153.0	134.5	134.1	140.3	124.1	4.6	0.2	
Nuclear	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6	
Hydro	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	6.3	1.5	
Other Renewables	14.7	20.3	23.0	27.8	32.2	36.6	41.2	45.9	50.9	-	12.8	
Fuel Consumption of Power Plants (Mtoe)*	108.6	109.8	110.6	110.7	113.4	115.9	119.0	120.8	123.6	2.5	2.2	
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0	
Oil	1.7	2.0	3.0	1.2	1.2	1.0	0.9	0.8	0.5	-12.1	-16.0	
Gas	21.3	19.0	20.2	20.3	24.7	21.9	22.3	22.8	20.2	3.3	-0.2	
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6	
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6	
Other Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4	

* District Heat is classified by fuel type since 2014

Heat and Other Renewables - *BAU Scenario*

(Mtoe)

	CAGR (%)										(MSE)
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	
Net Heat Demand	1.6	1.6	1.7	1.9	1.9	1.9	2.0	2.1	2.1	1.5	2.7
Own use and Losses	-0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-27.4	-283.1
Total Final Consumption	1.6	1.6	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.6	4.1
Industry	-	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.6	1.7	1.8	2.0	2.1	2.1	2.2	2.3	2.6	4.1
Heat Production by fuel											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.4	3.4	3.9
Gas	0.5	0.5	0.6	0.7	0.6	0.6	0.6	0.7	0.7	-1.3	0.5
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
Fuel Consumption of District Heat											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-6.8	-11.0
Gas	2.2	2.0	2.0	2.2	2.7	2.2	2.2	2.3	2.4	10.5	1.2
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	12.6	14.1	15.0	16.5	17.8	19.2	20.4	21.4	22.4	10.8	6.4
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Transform	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4
Total Final Consumption	9.2	10.6	10.9	11.8	12.6	13.3	13.9	14.4	14.8	10.1	4.7
Industry	7.1	8.1	8.1	8.8	9.4	9.9	10.3	10.7	11.0	9.0	4.5
Transport	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	17.5	2.3
Buildings	1.7	2.1	2.4	2.5	2.7	2.9	3.0	3.2	3.3	13.6	5.7

Main Economic and Energy Indicators - HEG Scenario

	GACR (%)										
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Economy and Population											
GDP (2010 trillion won)	1 427.0	1 466.8	1 509.8	1 556.0	1 612.3	1 673.5	1 740.5	1 810.1	1 875.3	3.1	3.8
Industrial Production(2010=100)	100.3	100.0	102.3	104.2	104.5	105.5	106.8	108.5	109.7	3.1	1.0
Crude Oil Price (Dubai, USD/bbl)	96.7	50.8	41.2	53.2	69.2	65.1	72.1	76.5	80.8	- 2.5	8.7
Working Days	271.5	274.0	273.0	269.5	270.0	274.5	276.0	276.5	276.5	- 0.1	0.5
Population (million)	50.7	51.0	51.3	51.4	51.6	51.8	52.0	52.1	52.3	0.6	0.3
Average Temperature (°C)	13.4	13.6	13.6	13.0	13.1	12.9	12.9	12.9	12.9	- 0.2	- 0.2
Cooling Degree days	125.4	151.8	238.1	188.1	280.8	146.3	146.3	146.3	146.3	4.2	- 4.9
Heating Degree days	2 501.6	2 459.1	2 589.7	2 687.6	2 705.4	2 681.8	2 699.0	2 681.8	2 681.8	0.8	- 0.0
Energy Indicators											
Total Primary Energy Demand (Mtoe)	283.1	287.7	294.6	301.1	309.7	316.6	324.1	330.3	337.5	2.4	2.3
Energy Intensity (toe/million won)	0.199	0.197	0.196	0.194	0.193	0.190	0.187	0.183	0.180	- 0.6	- 1.4
TPED/capita (toe/capita)	5.579	5.640	5.747	5.853	5.999	6.111	6.237	6.337	6.459	1.9	2.0
Electricity Generation (TWh)	522.0	528.1	540.4	553.5	573.4	591.1	611.4	632.4	651.2	3.2	3.3
Electricity Generation/capita (MWh/capita)	10.3	10.4	10.5	10.8	11.1	11.4	11.8	12.1	12.5	2.7	3.0
Electricity Demand/capita (MWh/capita)	9.4	9.5	9.7	9.9	10.3	10.5	10.8	11.2	11.5	2.7	3.0

Energy Demand - HEG Scenario

										CACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Total Primary Energy Supply											
Coal (Mton)	133.6	135.2	129.4	139.7	142.0	140.2	140.4	142.8	149.2	4.0	1.3
Oil (Mbbbl)	821.5	856.2	924.2	938.2	956.5	973.2	984.1	994.9	1 006.1	1.7	1.4
Gas (Bm3)	36.6	33.4	34.9	36.1	41.2	39.5	41.1	42.8	42.0	3.1	3.1
Hydro (TWh)	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	3.3	1.6
Nuclear (TWh)	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6
Other Renewables (Mtoe)	11.0	12.8	13.6	15.0	16.5	17.9	19.1	20.3	21.5	12.0	7.5
Total (Mtoe)	283.1	287.7	294.6	301.1	309.7	316.6	324.1	330.3	337.5	2.4	2.3
Coal	84.8	85.7	81.9	86.3	87.9	86.9	87.2	88.7	92.6	3.8	1.4
Oil	104.9	109.6	118.1	119.6	121.6	123.5	124.8	126.0	127.3	1.3	1.3
Gas	47.8	43.6	45.5	47.2	53.8	51.6	53.7	55.9	54.9	3.1	3.1
Nuclear	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Hydro	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Other Renewables	11.0	12.8	13.6	15.0	16.5	17.9	19.1	20.3	21.5	12.0	7.5
Total Final Consumption											
Coal (Mton)	53.3	52.7	49.1	50.3	51.0	52.1	53.2	54.3	55.3	3.3	1.9
Oil (Mbbbl)	808.5	841.6	902.4	928.1	946.2	964.4	975.9	987.2	1 000.2	2.0	1.5
Gas (Bm3)	22.1	20.8	21.3	22.6	23.9	24.5	24.9	25.4	25.7	2.3	2.7
Electricity (TWh)	477.6	483.7	497.0	507.7	530.5	543.8	562.5	581.8	599.1	3.3	3.4
Heat (Mtoe)	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	6.5
Other Renewables (Mtoe)	9.2	10.6	10.9	11.8	12.7	13.5	14.2	14.9	15.5	10.1	5.7
Total (Mtoe)	213.8	218.4	225.5	232.5	239.6	245.2	250.2	255.2	260.0	2.5	2.3
Coal	35.6	35.1	32.7	33.5	34.0	34.8	35.6	36.4	37.0	3.3	2.0
Oil	103.0	107.3	114.8	118.1	120.1	122.2	123.6	124.9	126.5	1.6	1.4
Gas	23.5	22.1	22.7	23.7	25.1	25.7	26.1	26.6	27.0	2.3	2.7
Electricity	41.1	41.6	42.7	43.7	45.6	46.8	48.4	50.0	51.5	3.3	3.4
Heat	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	6.5
Other Renewables	9.2	10.6	10.9	11.8	12.7	13.5	14.2	14.9	15.5	10.1	5.7
Industry	135.3	135.7	138.3	143.8	148.6	153.4	157.0	160.7	164.2	3.3	2.7
Transport	37.6	40.3	42.7	43.0	43.5	44.1	44.7	45.2	45.7	1.5	1.2
Buildings	40.9	42.4	44.5	45.7	47.5	47.7	48.5	49.3	50.1	1.3	1.9

Energy Demand - HEG Scenario

(yoy, %)

	GACR (%)										
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Total Primary Energy Supply											
Coal (Mton)	2.9	1.2	- 4.3	7.9	1.7	- 1.3	0.2	1.7	4.5	4.0	1.3
Oil (Mbbbl)	- 0.5	4.2	7.9	1.5	2.0	1.7	1.1	1.1	1.1	1.7	1.4
Gas (Bm3)	- 9.0	- 8.7	4.4	3.5	14.2	- 4.1	3.9	4.2	- 1.9	3.1	3.1
Hydro (TWh)	- 6.8	- 25.9	14.5	5.2	- 10.2	20.4	0.2	- 0.2	0.0	3.3	1.6
Nuclear (TWh)	12.7	5.3	- 1.7	- 8.4	- 9.7	22.8	7.8	- 0.3	5.2	0.4	4.6
Other Renewables (Mtoe)	21.9	17.2	5.7	10.2	10.3	8.2	7.0	6.2	5.8	12.0	7.5
Total (Mtoe)	0.9	1.6	2.4	2.2	2.9	2.2	2.4	1.9	2.2	2.4	2.3
Coal	3.3	1.1	- 4.5	5.4	1.8	- 1.1	0.3	1.8	4.4	3.8	1.4
Oil	- 0.8	4.4	7.8	1.2	1.7	1.5	1.0	1.0	1.0	1.3	1.3
Gas	- 9.0	- 8.7	4.4	3.6	14.2	- 4.1	3.9	4.2	- 1.9	3.1	3.1
Nuclear	- 6.8	- 25.9	14.5	6.2	- 10.2	20.4	0.2	- 0.2	0.0	3.2	1.6
Hydro	12.7	5.3	- 1.7	- 7.5	- 9.7	22.8	7.8	- 0.3	5.2	0.3	4.6
Other Renewables	21.9	17.2	5.7	10.2	10.3	8.2	7.0	6.2	5.8	12.0	7.5
Total Final Consumption											
Coal (Mton)	7.1	- 1.1	- 6.8	2.3	1.4	2.3	2.0	2.1	1.7	3.3	1.9
Oil (Mbbbl)	1.2	4.1	7.2	2.8	1.9	1.9	1.2	1.1	1.3	2.0	1.5
Gas (Bm3)	- 7.5	- 5.9	2.3	6.2	6.0	2.3	1.7	1.9	1.4	2.3	2.7
Electricity (TWh)	0.6	1.3	2.8	2.2	4.5	2.5	3.4	3.4	3.0	3.3	3.4
Heat (Mtoe)	- 7.6	- 0.5	9.7	8.2	7.2	5.9	6.3	6.5	6.8	2.6	6.5
Other Renewables (Mtoe)	18.0	15.7	2.9	7.4	8.1	6.6	5.2	4.4	4.0	10.1	5.7
Total (Mtoe)	1.7	2.1	3.3	3.1	3.0	2.3	2.0	2.0	1.9	2.5	2.3
Coal	8.3	- 1.2	- 7.0	2.4	1.6	2.4	2.1	2.2	1.8	3.3	2.0
Oil	1.1	4.2	6.9	2.9	1.7	1.7	1.1	1.1	1.2	1.6	1.4
Gas	- 7.3	- 5.9	2.6	4.4	6.0	2.4	1.7	1.9	1.4	2.3	2.7
Electricity	0.6	1.3	2.8	2.2	4.5	2.5	3.4	3.4	3.0	3.3	3.4
Heat	- 7.6	- 0.5	9.7	8.2	7.2	5.9	6.3	6.5	6.8	2.6	6.5
Other Renewables	18.0	15.7	2.9	7.4	8.1	6.6	5.2	4.4	4.0	10.1	5.7
Industry	3.8	0.3	1.9	4.0	3.3	3.2	2.4	2.4	2.2	3.3	2.7
Transport	0.8	7.1	6.0	0.7	1.1	1.4	1.3	1.2	1.1	1.5	1.2
Buildings	- 4.0	3.6	5.1	2.6	4.0	0.5	1.6	1.7	1.6	1.3	1.9

Energy Demand by Sector - HEG Scenario

(백만 toe)

										GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Industry	135.3	135.7	138.3	143.8	148.6	153.4	157.0	160.7	164.2	3.3	2.7
Coal	34.8	34.5	32.1	33.0	33.6	34.4	35.2	36.1	36.7	3.6	2.2
Oil	61.2	62.2	66.9	69.8	71.5	73.5	74.7	75.7	77.0	2.2	2.0
Gas	9.5	8.1	8.0	8.4	9.4	9.7	9.9	10.2	10.4	4.9	4.2
Electricity	22.8	22.8	23.2	23.8	24.6	25.6	26.6	27.7	28.6	4.0	3.8
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	7.1	8.1	8.1	8.8	9.5	10.1	10.6	11.0	11.5	9.0	5.5
Transport	37.6	40.3	42.7	43.0	43.5	44.1	44.7	45.2	45.7	1.5	1.2
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	35.8	38.4	40.8	41.0	41.5	42.0	42.6	43.1	43.6	1.3	1.2
Gas	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	7.4	1.0
Electricity	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	3.5	5.3
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	17.5	2.3
Buildings*	40.9	42.4	44.5	45.7	47.5	47.7	48.5	49.3	50.1	1.3	1.9
Coal	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	- 6.6	- 11.8
Oil	6.0	6.8	7.1	7.2	7.1	6.7	6.4	6.1	5.9	- 1.5	- 3.9
Gas	12.7	12.7	13.4	14.0	14.5	14.7	14.9	15.1	15.3	0.6	1.8
Electricity	18.1	18.6	19.3	19.6	20.7	20.9	21.5	22.1	22.6	2.4	2.9
Heat	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	6.5
Other Renewables	1.7	2.1	2.4	2.5	2.7	2.9	3.1	3.3	3.5	13.6	6.7
Transform	134.9	134.2	135.7	137.4	142.4	145.5	150.2	153.6	158.1	2.5	2.8
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0
Oil	2.0	2.2	3.3	1.5	1.5	1.3	1.2	1.1	0.8	- 11.1	- 11.5
Gas	47.3	43.2	45.0	46.7	53.4	51.1	53.2	55.4	54.4	3.0	3.1
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4

* include residential, commercial, public-etc usage

Coal - HEG Scenario

(Mton)

	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	GACR (%)	
										07-17	17-22
Total Coal Demand	133.6	135.2	129.4	139.7	142.0	140.2	140.4	142.8	149.2	4.0	1.3
Transform	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0
Power Generation	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0
Heat	-	-	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-
Total Final Consumption	53.3	52.7	49.1	50.3	51.0	52.1	53.2	54.3	55.3	3.3	1.9
Industry	51.7	51.3	47.9	49.2	50.0	51.3	52.5	53.7	54.7	3.6	2.1
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.5	1.3	1.1	0.9	0.8	0.7	0.6	0.6	- 6.4	- 11.8
Consumption by products											
Anthracite	10.2	10.7	10.9	8.3	7.8	7.8	7.8	7.8	7.9	- 1.5	- 1.0
Bituminous	123.4	124.5	118.5	131.3	134.1	132.4	132.6	135.0	141.3	4.5	1.5
Iron making	37.6	36.8	33.5	36.1	37.1	38.1	39.1	40.0	40.9	5.3	2.5
Cement	4.9	4.7	4.6	4.2	3.7	3.7	3.6	3.6	3.6	- 1.9	- 3.1
Power Generation	78.2	80.4	77.8	88.3	90.5	87.7	86.9	88.3	93.7	4.8	1.2

Oil - HEG Scenario

(Mbbbl)

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e		07-17	17-22
Total Oil Demand	821.5	856.2	924.2	938.2	956.5	973.2	984.1	994.9	1 006.1		1.7	1.4
Transform	13.0	14.6	21.8	10.1	10.3	8.8	8.2	7.8	5.9		- 10.7	- 10.2
Power Generation	11.0	12.8	19.3	8.0	7.5	6.3	5.7	5.2	3.3		- 11.8	- 16.2
Heat	1.0	0.8	1.3	1.2	1.1	0.7	0.7	0.7	0.7		- 6.9	- 8.7
Gas Manufacture	0.9	1.0	1.2	0.9	1.8	1.8	1.8	1.8	1.9		2.1	14.4
Total Final Consumption	808.5	841.6	902.4	928.1	946.2	964.4	975.9	987.2	1 000.2		2.0	1.5
Industry	491.8	501.0	542.6	566.8	582.1	599.5	609.7	619.2	630.2		2.8	2.1
Transport	268.8	287.1	303.6	304.4	307.5	311.6	315.4	319.1	322.6		1.3	1.2
Buildings	47.9	53.5	56.3	56.9	56.6	53.3	50.9	48.9	47.3		- 1.4	- 3.6
Consumption by products												
Gasoline	73.5	76.6	78.9	79.6	80.7	81.7	82.5	83.2	84.0		2.5	1.1
Diesel (including Transformation)	144.8	156.4	166.6	168.9	169.0	169.1	169.8	170.5	171.0		1.5	0.2
Kerosene (including Transformation)	15.4	16.2	19.1	19.0	18.7	17.0	15.9	15.1	14.3		- 3.1	- 5.6
B-C (including Transformation)	33.3	38.3	47.5	35.8	33.7	30.9	29.2	27.8	25.4		- 9.1	- 6.6
Jet Oil	32.0	34.4	37.0	38.2	40.8	42.9	44.8	46.7	48.5		3.9	4.9
LPG (including Transformation)	89.6	89.9	109.0	104.8	111.2	112.8	113.2	113.7	114.4		0.8	1.8
Naphtha	396.3	410.8	430.1	458.4	468.9	487.1	498.4	508.8	520.6		3.8	2.6
Other Non-Energy	36.6	33.7	36.1	33.5	33.5	31.8	30.4	29.2	27.9		1.8	- 3.6

Gas - HEG Scenario

										GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Total Gas Demand (Mton)	36.6	33.4	34.9	36.1	41.2	39.5	41.1	42.8	42.0	3.1	3.1
Transform	36.3	33.1	34.5	35.8	40.9	39.2	40.7	42.4	41.6	3.0	3.1
Power Generation	16.3	14.6	15.5	15.6	19.3	17.8	18.9	20.1	18.8	3.3	3.9
Heat	1.7	1.5	1.6	1.7	2.1	1.7	1.8	1.9	2.0	10.5	3.6
Gas Manufacture	18.3	17.0	17.5	18.5	19.4	19.7	20.0	20.4	20.8	2.3	2.3
Industry	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	-	3.7
City Gas (Bm³)	22.1	20.8	21.3	22.6	23.9	24.5	24.9	25.4	25.7	2.3	2.7
Industry*	8.7	7.3	7.2	7.8	8.6	9.0	9.1	9.4	9.6	4.6	4.2
Transport	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	7.6	1.0
Buildings	12.2	12.2	12.8	13.6	14.1	14.3	14.5	14.7	14.9	0.9	1.8

* exclude industrial LNG usage

Electricity - HEG Scenario

(TWh)

	증가율 (%)										
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Net Electricity Demand	522.0	528.1	540.4	553.5	573.4	591.1	611.4	632.4	651.2	3.2	3.3
Own use and Losses	44.4	44.4	43.4	45.7	43.0	47.3	48.9	50.6	52.1	2.9	2.6
Total Final Consumption	477.6	483.7	497.0	507.7	530.5	543.8	562.5	581.8	599.1	3.3	3.4
Industry	264.6	265.6	270.0	276.7	286.4	297.4	309.4	321.8	332.6	4.0	3.8
Transport	2.0	2.2	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.5	5.3
Buildings	211.0	215.8	224.4	228.3	241.1	243.2	249.8	256.5	262.9	2.4	2.9
Installed Electrical Capacity (GW)*	92.4	97.6	104.1	116.4	118.9	124.6	129.8	133.7	138.9	5.6	3.6
Coal	26.7	27.3	31.4	36.8	37.1	36.5	36.9	38.8	41.6	6.0	2.5
Oil	4.3	4.2	4.1	4.1	4.1	4.0	4.0	4.0	2.8	- 0.5	- 7.7
Gas	29.8	32.2	32.6	37.5	38.1	39.9	41.6	41.6	41.6	7.3	2.1
Nuclear	20.7	21.7	22.2	22.5	22.5	25.3	26.7	26.7	28.1	2.4	4.5
Hydro	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	1.7	0.0
Other Renewables	4.5	5.6	7.3	8.9	10.5	12.3	14.1	16.2	18.3	21.8	15.4
Electricity Generation of Power Plants*	522.0	528.1	540.4	553.5	573.4	591.1	611.4	632.4	651.2	3.4	3.3
Coal	203.4	204.7	213.8	238.2	238.5	234.5	232.3	237.0	252.9	4.4	1.2
Oil	25.0	31.7	14.3	9.1	5.8	4.9	4.4	4.1	2.6	- 6.7	- 22.3
Gas	114.7	100.8	120.8	122.9	156.6	142.8	148.3	160.8	151.0	4.6	4.2
Nuclear	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6
Hydro	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	6.3	1.5
Other Renewables	14.7	20.3	23.0	27.8	32.2	36.6	41.2	45.9	50.9	-	12.8
Fuel Consumption of Power Plants (Mtoe)*	108.6	109.8	110.6	110.7	113.9	117.3	121.4	124.1	128.0	2.5	2.9
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0
Oil	1.7	2.0	3.0	1.2	1.2	1.0	0.9	0.8	0.5	- 12.1	- 16.0
Gas	21.3	19.0	20.2	20.3	25.3	23.2	24.6	26.2	24.6	3.3	3.9
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Other Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4

* District Heat is classified by fuel type since 2014

Heat and Other Renewables - HEG Scenario

(Mtoe)

	(Mtoe)										
											증가율 (%)
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22
Net Heat Demand	1.6	1.6	1.7	1.9	1.9	2.0	2.1	2.2	2.4	1.5	5.2
Own use and Losses	- 0.0	0.0	0.0	0.0	- 0.1	- 0.1	- 0.1	- 0.1	- 0.2	- 27.4	- 286.2
Total Final Consumption	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	6.5
Industry	-	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	6.5
Heat Production by fuel											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.6	3.4	6.3
Gas	0.5	0.5	0.6	0.7	0.6	0.6	0.7	0.7	0.8	- 1.3	3.0
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
Fuel Consumption of District Heat											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	- 6.8	- 8.9
Gas	2.2	2.0	2.0	2.2	2.7	2.2	2.4	2.5	2.7	10.5	3.6
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	12.6	14.1	15.0	16.5	17.8	19.5	20.7	21.9	23.1	10.8	7.0
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Transform	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4
Total Final Consumption	9.2	10.6	10.9	11.8	12.7	13.5	14.2	14.9	15.5	10.1	5.7
Industry	7.1	8.1	8.1	8.8	9.5	10.1	10.6	11.0	11.5	9.0	5.5
Transport	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	17.5	2.3
Buildings	1.7	2.1	2.4	2.5	2.7	2.9	3.1	3.3	3.5	13.6	6.7

Main Economic and Energy Indicators - *LEG Scenario*

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Economy and Population												
GDP (2010 trillion won)	1 427.0	1 466.8	1 509.8	1 556.0	1 588.5	1 617.1	1 649.4	1 682.4	1 709.3	3.1	1.9	
Industrial Production(2010=100)	100.3	100.0	102.3	104.2	104.0	104.5	105.1	105.9	106.5	3.1	0.4	
Crude Oil Price (Dubai, USD/bbl)	96.7	50.8	41.2	53.2	69.2	65.1	72.1	76.5	80.8	- 2.5	8.7	
Working Days	271.5	274.0	273.0	269.5	270.0	274.5	276.0	276.5	276.5	n.a	0.5	
Population (million)	50.7	51.0	51.3	51.4	51.6	51.8	52.0	52.1	52.3	0.6	0.3	
Average Temperature (°C)	13.4	13.6	13.6	13.0	13.1	12.9	12.9	12.9	12.9	- 0.2	- 0.2	
Cooling Degree days	125.4	151.8	238.1	188.1	280.8	146.3	146.3	146.3	146.3	4.2	- 4.9	
Heating Degree days	2 501.6	2 459.1	2 589.7	2 687.6	2 705.4	2 681.8	2 699.0	2 681.8	2 681.8	0.8	- 0.0	
Energy Indicators												
Total Primary Energy Demand (Mtoe)	283.1	287.7	294.6	301.1	307.5	312.2	317.1	320.4	324.7	2.4	1.5	
Energy Intensity (toe/million won)	0.199	0.197	0.196	0.194	0.194	0.193	0.193	0.191	0.190	- 0.6	- 0.4	
TPED/capita (toe/capita)	5.579	5.640	5.747	5.853	5.956	6.025	6.101	6.147	6.214	1.9	1.2	
Electricity Generation (TWh)	522.0	528.1	540.4	553.5	566.4	576.9	588.1	599.4	608.2	3.2	1.9	
Electricity Generation/capita (MWh/capita)	10.3	10.4	10.5	10.8	11.0	11.1	11.3	11.5	11.6	2.7	1.6	
Electricity Demand/capita (MWh/capita)	9.4	9.5	9.7	9.9	10.1	10.2	10.4	10.6	10.7	2.7	1.6	

Energy Demand - *LEG Scenario*

	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	GACR (%)	
										07-17	17-22
Total Primary Energy Supply											
Coal (Mton)	133.6	135.2	129.4	139.7	141.6	139.3	139.1	141.1	147.0	4.0	1.0
Oil (Mbbbl)	821.5	856.2	924.2	938.2	954.3	968.7	977.8	985.6	994.1	1.7	1.2
Gas (Bm ³)	36.6	33.4	34.9	36.1	40.1	37.4	37.5	37.9	35.6	3.1	- 0.3
Hydro (TWh)	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	3.3	1.6
Nuclear (TWh)	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6
Other Renewables (Mtoe)	11.0	12.8	13.6	15.0	16.3	17.4	18.4	19.3	20.2	12.0	6.1
Total (Mtoe)	283.1	287.7	294.6	301.1	307.5	312.2	317.1	320.4	324.7	2.4	1.5
Coal	84.8	85.7	81.9	86.3	87.6	86.4	86.3	87.6	91.2	3.8	1.1
Oil	104.9	109.6	118.1	119.6	121.3	122.9	123.9	124.8	125.7	1.3	1.0
Gas	47.8	43.6	45.5	47.2	52.4	48.8	49.0	49.5	46.4	3.1	- 0.3
Nuclear	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Hydro	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Other Renewables	11.0	12.8	13.6	15.0	16.3	17.4	18.4	19.3	20.2	12.0	6.1
Total Final Consumption											
Coal (Mton)	53.3	52.7	49.1	50.3	50.6	51.3	52.0	52.6	53.1	3.3	1.1
Oil (Mbbbl)	808.5	841.6	902.4	928.1	944.0	960.0	969.7	978.0	988.4	2.0	1.3
Gas (Bm ³)	22.1	20.8	21.3	22.6	23.7	24.1	24.5	24.8	25.1	2.3	2.1
Electricity (TWh)	477.6	483.7	497.0	507.7	524.0	530.7	541.0	551.5	559.6	3.3	2.0
Heat (Mtoe)	1.6	1.6	1.7	1.8	2.0	2.0	2.0	2.0	2.0	2.6	1.8
Other Renewables (Mtoe)	9.2	10.6	10.9	11.8	12.5	13.1	13.5	13.9	14.1	10.1	3.8
Total (Mtoe)	213.8	218.4	225.5	232.5	238.0	242.0	245.3	248.3	251.1	2.5	1.6
Coal	35.6	35.1	32.7	33.5	33.8	34.3	34.8	35.2	35.6	3.3	1.2
Oil	103.0	107.3	114.8	118.1	119.8	121.6	122.8	123.7	124.9	1.6	1.1
Gas	23.5	22.1	22.7	23.7	24.8	25.3	25.7	26.1	26.3	2.3	2.1
Electricity	41.1	41.6	42.7	43.7	45.1	45.6	46.5	47.4	48.1	3.3	2.0
Heat	1.6	1.6	1.7	1.8	2.0	2.0	2.0	2.0	2.0	2.6	1.8
Other Renewables	9.2	10.6	10.9	11.8	12.5	13.1	13.5	13.9	14.1	10.1	3.8
Industry	135.3	135.7	138.3	143.8	147.6	151.1	153.7	156.0	158.2	3.3	1.9
Transport	37.6	40.3	42.7	43.0	43.4	43.9	44.2	44.6	44.9	1.5	0.9
Buildings	40.9	42.4	44.5	45.7	47.0	47.0	47.4	47.8	48.1	1.3	1.0

Energy Demand - *LEG Scenario*

(yoy, %)

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e		07-17	17-22
Total Primary Energy Supply												
Coal (Mton)	2.9	1.2	- 4.3	7.9	1.4	- 1.6	- 0.1	1.4	4.2	4.0	1.0	
Oil (Mbbbl)	- 0.5	4.2	7.9	1.5	1.7	1.5	0.9	0.8	0.9	1.7	1.2	
Gas (Bm ³)	- 9.0	- 8.7	4.4	3.5	11.1	- 6.8	0.5	0.8	- 6.1	3.1	- 0.3	
Hydro (TWh)	- 6.8	- 25.9	14.5	5.2	- 10.2	20.4	0.2	- 0.2	0.0	3.3	1.6	
Nuclear (TWh)	12.7	5.3	- 1.7	- 8.4	- 9.7	22.8	7.8	- 0.3	5.2	0.4	4.6	
Other Renewables (Mtoe)	21.9	17.2	5.7	10.2	9.1	6.6	5.6	4.9	4.5	12.0	6.1	
Total (Mtoe)	0.9	1.6	2.4	2.2	2.1	1.5	1.6	1.0	1.4	2.4	1.5	
Coal	3.3	1.1	- 4.5	5.4	1.5	- 1.4	- 0.0	1.4	4.1	3.8	1.1	
Oil	- 0.8	4.4	7.8	1.2	1.5	1.3	0.8	0.7	0.7	1.3	1.0	
Gas	- 9.0	- 8.7	4.4	3.6	11.1	- 6.8	0.5	0.8	- 6.1	3.1	- 0.3	
Nuclear	- 6.8	- 25.9	14.5	6.2	- 10.2	20.4	0.2	- 0.2	0.0	3.2	1.6	
Hydro	12.7	5.3	- 1.7	- 7.5	- 9.7	22.8	7.8	- 0.3	5.2	0.3	4.6	
Other Renewables	21.9	17.2	5.7	10.2	9.1	6.6	5.6	4.9	4.5	12.0	6.1	
Total Final Consumption												
Coal (Mton)	7.1	- 1.1	- 6.8	2.3	0.6	1.4	1.3	1.2	1.0	3.3	1.1	
Oil (Mbbbl)	1.2	4.1	7.2	2.8	1.7	1.7	1.0	0.9	1.1	2.0	1.3	
Gas (Bm ³)	- 7.5	- 5.9	2.3	6.2	4.9	2.0	1.4	1.4	1.1	2.3	2.1	
Electricity (TWh)	0.6	1.3	2.8	2.2	3.2	1.3	1.9	1.9	1.5	3.3	2.0	
Heat (Mtoe)	- 7.6	- 0.5	9.7	8.2	6.0	2.5	1.2	0.1	- 0.7	2.6	1.8	
Other Renewables (Mtoe)	18.0	15.7	2.9	7.4	6.6	4.5	3.3	2.5	2.1	10.1	3.8	
Total (Mtoe)	1.7	2.1	3.3	3.1	2.4	1.7	1.4	1.2	1.1	2.5	1.6	
Coal	8.3	- 1.2	- 7.0	2.4	0.8	1.5	1.4	1.3	1.1	3.3	1.2	
Oil	1.1	4.2	6.9	2.9	1.5	1.5	0.9	0.8	1.0	1.6	1.1	
Gas	- 7.3	- 5.9	2.6	4.4	4.9	2.0	1.4	1.4	1.1	2.3	2.1	
Electricity	0.6	1.3	2.8	2.2	3.2	1.3	1.9	1.9	1.5	3.3	2.0	
Heat	- 7.6	- 0.5	9.7	8.2	6.0	2.5	1.2	0.1	- 0.7	2.6	1.8	
Other Renewables	18.0	15.7	2.9	7.4	6.6	4.5	3.3	2.5	2.1	10.1	3.8	
Industry	3.8	0.3	1.9	4.0	2.6	2.4	1.7	1.5	1.4	3.3	1.9	
Transport	0.8	7.1	6.0	0.7	0.9	1.0	0.9	0.8	0.7	1.5	0.9	
Buildings	- 4.0	3.6	5.1	2.6	3.0	0.0	0.8	0.8	0.6	1.3	1.0	

Energy Demand by Sector - *LEG Scenario*

(Mtoe)

	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	yoy (%)	
										07-17	17-22
Industry	135.3	135.7	138.3	143.8	147.6	151.1	153.7	156.0	158.2	3.3	1.9
Coal	34.8	34.5	32.1	33.0	33.3	33.9	34.4	34.9	35.3	3.6	1.4
Oil	61.2	62.2	66.9	69.8	71.3	73.1	74.2	75.1	76.2	2.2	1.8
Gas	9.5	8.1	8.0	8.4	9.2	9.5	9.6	9.8	9.9	4.9	3.2
Electricity	22.8	22.8	23.2	23.8	24.4	24.8	25.4	25.9	26.3	4.0	2.0
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	7.1	8.1	8.1	8.8	9.4	9.8	10.0	10.3	10.5	9.0	3.6
Transport	37.6	40.3	42.7	43.0	43.4	43.9	44.2	44.6	44.9	1.5	0.9
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	35.8	38.4	40.8	41.0	41.4	41.8	42.1	42.4	42.7	1.3	0.8
Gas	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	7.4	1.0
Electricity	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	3.5	5.3
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	17.5	2.3
Buildings*	40.9	42.4	44.5	45.7	47.0	47.0	47.4	47.8	48.1	1.3	1.0
Coal	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	-6.6	-11.8
Oil	6.0	6.8	7.1	7.2	7.1	6.7	6.4	6.2	6.0	-1.5	-3.6
Gas	12.7	12.7	13.4	14.0	14.4	14.5	14.8	15.0	15.1	0.6	1.6
Electricity	18.1	18.6	19.3	19.6	20.4	20.5	20.9	21.2	21.5	2.4	1.9
Heat	1.6	1.6	1.7	1.8	2.0	2.0	2.0	2.0	2.0	2.6	1.8
Other Renewables	1.7	2.1	2.4	2.5	2.7	2.8	2.9	3.1	3.1	13.6	4.7
Transform	134.9	134.2	135.7	137.4	140.9	142.7	145.6	147.1	149.6	2.5	1.7
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0
Oil	2.0	2.2	3.3	1.5	1.5	1.3	1.2	1.1	0.8	-11.1	-12.2
Gas	47.3	43.2	45.0	46.7	51.9	48.3	48.5	49.0	45.9	3.0	-0.3
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6
Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4

* include residential, commercial, public-etc usage

Coal - *LEG Scenario*

(Mton)

	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	증가율 (%)	
										07-17	17-22
Total Coal Demand	133.6	135.2	129.4	139.7	141.6	139.3	139.1	141.1	147.0	4.0	1.0
Transform	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0
Power Generation	80.3	82.5	80.3	89.4	91.0	88.0	87.2	88.5	93.9	4.5	1.0
Heat	-	-	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-
Total Final Consumption	53.3	52.7	49.1	50.3	50.6	51.3	52.0	52.6	53.1	3.3	1.1
Industry	51.7	51.3	47.9	49.2	49.6	50.5	51.2	51.9	52.5	3.6	1.3
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.6	1.5	1.3	1.1	0.9	0.8	0.7	0.6	0.6	-6.4	-11.8
Consumption by products											
Anthracite	10.2	10.7	10.9	8.3	7.8	7.7	7.7	7.7	7.7	-1.5	-1.4
Bituminous	123.4	124.5	118.5	131.3	133.7	131.6	131.4	133.3	139.3	4.5	1.2
Iron making	37.6	36.8	33.5	36.1	36.9	37.6	38.3	38.9	39.5	5.3	1.8
Cement	4.9	4.7	4.6	4.2	3.5	3.4	3.3	3.2	3.1	-1.9	-5.7
Power Generation	78.2	80.4	77.8	88.3	90.5	87.7	86.9	88.3	93.7	4.8	1.2

Oil - *LEG Scenario*

(Mbbbl)

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e		07-17	17-22
Total Oil Demand	821.5	856.2	924.2	938.2	954.3	968.7	977.8	985.6	994.1		1.7	1.2
Transform	13.0	14.6	21.8	10.1	10.3	8.7	8.1	7.6	5.7		- 10.7	- 10.8
Power Generation	11.0	12.8	19.3	8.0	7.5	6.3	5.7	5.2	3.3		- 11.8	- 16.2
Heat	1.0	0.8	1.3	1.2	1.1	0.7	0.6	0.6	0.6		- 6.9	- 12.9
Gas Manufacture	0.9	1.0	1.2	0.9	1.7	1.7	1.8	1.8	1.8		2.1	13.8
Total Final Consumption	808.5	841.6	902.4	928.1	944.0	960.0	969.7	978.0	988.4		2.0	1.3
Industry	491.8	501.0	542.6	566.8	580.4	596.5	606.0	613.9	623.6		2.8	1.9
Transport	268.8	287.1	303.6	304.4	306.9	309.8	312.3	314.6	316.6		1.3	0.8
Buildings	47.9	53.5	56.3	56.9	56.7	53.6	51.4	49.5	48.1		- 1.4	- 3.3
Consumption by products												
Gasoline	73.5	76.6	78.9	79.6	80.7	81.7	82.5	83.2	84.0		2.5	1.1
Diesel (including Transformation)	144.8	156.4	166.6	168.9	168.7	168.4	168.7	168.9	168.8		1.5	- 0.0
Kerosene (including Transformation)	15.4	16.2	19.1	19.0	18.7	17.0	15.9	15.1	14.3		- 3.1	- 5.6
B-C (including Transformation)	33.3	38.3	47.5	35.8	33.7	30.8	29.1	27.7	25.2		- 9.1	- 6.8
Jet Oil	32.0	34.4	37.0	38.2	40.4	41.7	42.8	43.8	44.7		3.9	3.2
LPG (including Transformation)	89.6	89.9	109.0	104.8	111.2	112.8	113.3	113.8	114.5		0.8	1.8
Naphtha	396.3	410.8	430.1	458.4	467.5	484.7	495.5	504.5	515.3		3.8	2.4
Other Non-Energy	36.6	33.7	36.1	33.5	33.4	31.5	30.0	28.7	27.3		1.8	- 4.0

Gas - *LEG Scenario*

	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	GACR (%)	
										07-17	17-22
Total Gas Demand (Mton)	36.6	33.4	34.9	36.1	40.1	37.4	37.5	37.9	35.6	3.1	- 0.3
Transform	36.3	33.1	34.5	35.8	39.7	37.0	37.2	37.5	35.2	3.0	- 0.3
Power Generation	16.3	14.6	15.5	15.6	18.5	16.0	15.9	15.9	13.4	3.3	- 2.9
Heat	1.7	1.5	1.6	1.7	2.0	1.6	1.6	1.6	1.6	10.5	- 1.2
Gas Manufacture	18.3	17.0	17.5	18.5	19.2	19.4	19.7	19.9	20.1	2.3	1.7
Industry	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	-	2.7
City Gas (Bm³)	22.1	20.8	21.3	22.6	23.7	24.1	24.5	24.8	25.1	2.3	2.1
Industry*	8.7	7.3	7.2	7.8	8.5	8.8	8.9	9.0	9.1	4.6	3.3
Transport	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	7.6	1.0
Buildings	12.2	12.2	12.8	13.6	14.0	14.1	14.3	14.5	14.7	0.9	1.6

* exclude industrial LNG usage

Electricity - *LEG Scenario*

(TWh)

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e	07-17	17-22	
Net Electricity Demand	522.0	528.1	540.4	553.5	566.4	576.9	588.1	599.4	608.2	3.2	1.9	
Own use and Losses	44.4	44.4	43.4	45.7	42.4	46.2	47.0	48.0	48.7	2.9	1.3	
Total Final Consumption	477.6	483.7	497.0	507.7	524.0	530.7	541.0	551.5	559.6	3.3	2.0	
Industry	264.6	265.6	270.0	276.7	283.4	288.7	294.8	301.0	305.6	4.0	2.0	
Transport	2.0	2.2	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.5	5.3	
Buildings	211.0	215.8	224.4	228.3	237.6	238.9	242.9	247.0	250.3	2.4	1.9	
Installed Electrical Capacity (GW)*	92.4	97.6	104.1	116.4	118.9	124.6	129.8	133.7	138.9	5.6	3.6	
Coal	26.7	27.3	31.4	36.8	37.1	36.5	36.9	38.8	41.6	6.0	2.5	
Oil	4.3	4.2	4.1	4.1	4.1	4.0	4.0	4.0	2.8	-0.5	-7.7	
Gas	29.8	32.2	32.6	37.5	38.1	39.9	41.6	41.6	41.6	7.3	2.1	
Nuclear	20.7	21.7	22.2	22.5	22.5	25.3	26.7	26.7	28.1	2.4	4.5	
Hydro	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	1.7	0.0	
Other Renewables	4.5	5.6	7.3	8.9	10.5	12.3	14.1	16.2	18.3	21.8	15.4	
Electricity Generation of Power Plants*	522.0	528.1	540.4	553.5	566.4	576.9	588.1	599.4	608.2	3.4	1.9	
Coal	203.4	204.7	213.8	238.2	238.5	234.5	232.3	237.0	252.9	4.4	1.2	
Oil	25.0	31.7	14.3	9.1	5.8	4.9	4.4	4.1	2.6	-6.7	-22.3	
Gas	114.7	100.8	120.8	122.9	149.5	128.6	125.0	127.9	108.0	4.6	-2.5	
Nuclear	156.4	164.8	162.0	148.4	134.1	164.7	177.6	177.1	186.3	0.4	4.6	
Hydro	7.8	5.8	6.6	7.0	6.3	7.5	7.6	7.5	7.5	6.3	1.5	
Other Renewables	14.7	20.3	23.0	27.8	32.2	36.6	41.2	45.9	50.9	-	12.8	
Fuel Consumption of Power Plants (Mtoe)*	108.6	109.8	110.6	110.7	112.8	115.0	117.5	118.7	120.9	2.5	1.8	
Coal	49.2	50.6	49.2	52.8	53.8	52.1	51.6	52.4	55.6	4.1	1.0	
Oil	1.7	2.0	3.0	1.2	1.2	1.0	0.9	0.8	0.5	-12.1	-16.0	
Gas	21.3	19.0	20.2	20.3	24.1	20.9	20.7	20.8	17.5	3.3	-2.9	
Nuclear	33.0	34.8	34.2	31.6	28.6	35.1	37.8	37.7	39.7	0.3	4.6	
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6	3.2	1.6	
Other Renewables	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0	25.3	13.4	

* District Heat is classified by fuel type since 2014

Heat and Other Renewables - *LEG Scenario*

(Mtoe)

											GACR (%)	
	2014	2015	2016	2017p	2018e	2019e	2020e	2021e	2022e		07-17	17-22
Net Heat Demand	1.6	1.6	1.7	1.9	1.9	1.9	1.9	1.9	1.9		1.5	0.4
Own use and Losses	- 0.0	0.0	0.0	0.0	- 0.1	- 0.1	- 0.1	- 0.1	- 0.1		- 27.4	- 279.8
Total Final Consumption	1.6	1.6	1.7	1.8	2.0	2.0	2.0	2.0	2.0		2.6	1.8
Industry	-	-	-	-	-	-	-	-	-		-	-
Transport	-	-	-	-	-	-	-	-	-		-	-
Buildings	1.6	1.6	1.7	1.8	2.0	2.0	2.0	2.0	2.0		2.6	1.8
Heat Production by fuel												
Coal	-	-	-	-	-	-	-	-	-		-	-
Oil	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.3		3.4	1.6
Gas	0.5	0.5	0.6	0.7	0.6	0.6	0.6	0.6	0.6		- 1.3	- 1.9
Nuclear	-	-	-	-	-	-	-	-	-		-	-
Hydro	-	-	-	-	-	-	-	-	-		-	-
Other Renewables	-	-	-	-	-	-	-	-	-		-	-
Fuel Consumption of District Heat												
Coal	-	-	-	-	-	-	-	-	-		-	-
Oil	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1		- 6.8	- 13.1
Gas	2.2	2.0	2.0	2.2	2.7	2.1	2.1	2.1	2.1		10.5	- 1.2
Nuclear	-	-	-	-	-	-	-	-	-		-	-
Hydro	-	-	-	-	-	-	-	-	-		-	-
Other Renewables	-	-	-	-	-	-	-	-	-		-	-
Other Renewables	12.6	14.1	15.0	16.5	17.7	19.0	20.0	20.9	21.8		10.8	5.8
Hydro	1.6	1.2	1.4	1.5	1.3	1.6	1.6	1.6	1.6		3.2	1.6
Transform	1.8	2.2	2.6	3.2	3.8	4.3	4.9	5.4	6.0		25.3	13.4
Total Final Consumption	9.2	10.6	10.9	11.8	12.5	13.1	13.5	13.9	14.1		10.1	3.8
Industry	7.1	8.1	8.1	8.8	9.4	9.8	10.0	10.3	10.5		9.0	3.6
Transport	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5		17.5	2.3
Buildings	1.7	2.1	2.4	2.5	2.7	2.8	2.9	3.1	3.1		13.6	4.7

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