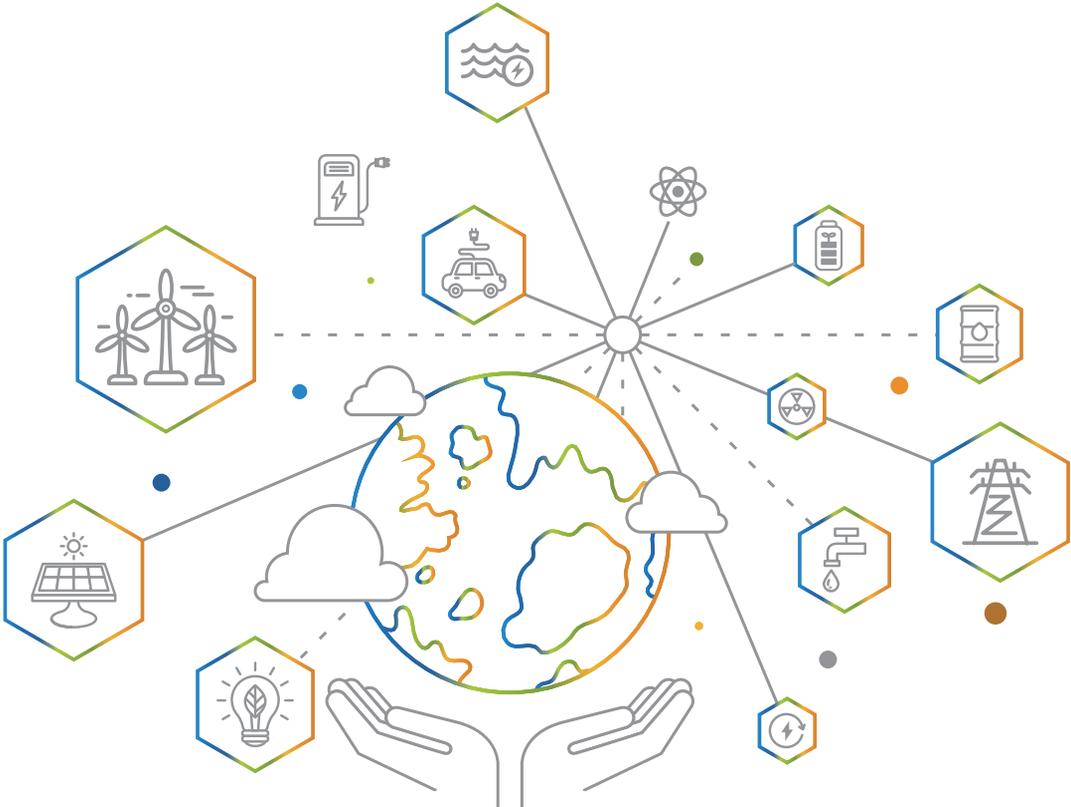


# KEEI Korea Energy Demand Outlook

K O R E A E N E R G Y E C O N O M I C S I N S T I T U T E



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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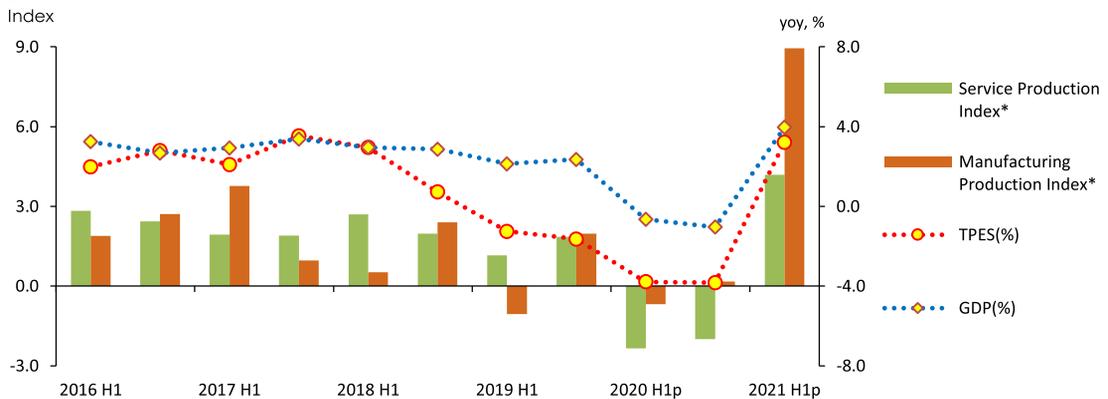
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# 1. Total Primary Energy Supply and Total Final Consumption

□ **Total Primary Energy Supply (“TPES”) for the first half in 2021 posted a year-on-year increase of 3.2% driven by an overall recovery of economic activities**

- As the global economy enjoyed a recovery, the total export value in Korea jumped up and as a result, the production activity in the mining and manufacturing industries became activated. The production activity in the service sector also showed signs of recovery. Against this backdrop, the energy consumption grew at a fast speed of more than 3%

**Figure 1.1 Growth Rate of GDP and TPES, Production Index**

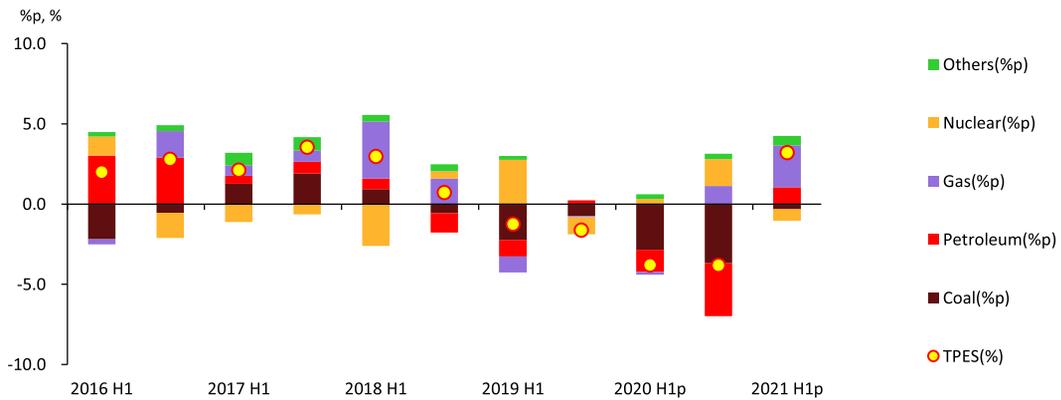


\* Production indexes show year-on-year differences

□ **Despite of a drop in nuclear and coal use, Total Energy Consumption (“TEC”) climbed up rapidly as petroleum, gas and renewable energy consumption increased**

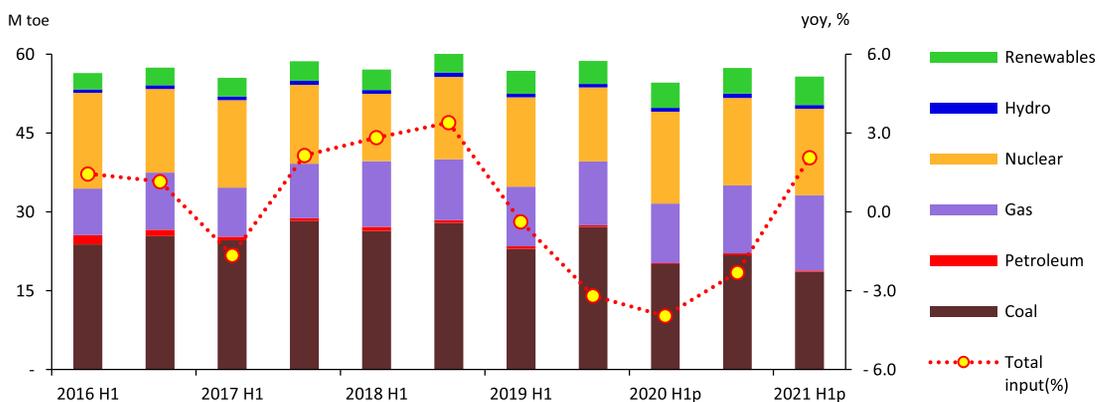
- Coal use declined by 1.8% due to a fall in the power generation sector, although in the final use sector, coal consumption rose mainly for industrial use
- While the growth in petroleum use in the transport sector became stagnant in a backwash of COVID-19 pandemic, the industrial use increased thanks to a business recovery and expansion of petroleum facility. Consequently, the total petroleum consumption posted a year-on-year growth of 2.6%

**Figure 1.2 Growth Rate of TPES & Contribution by Source**



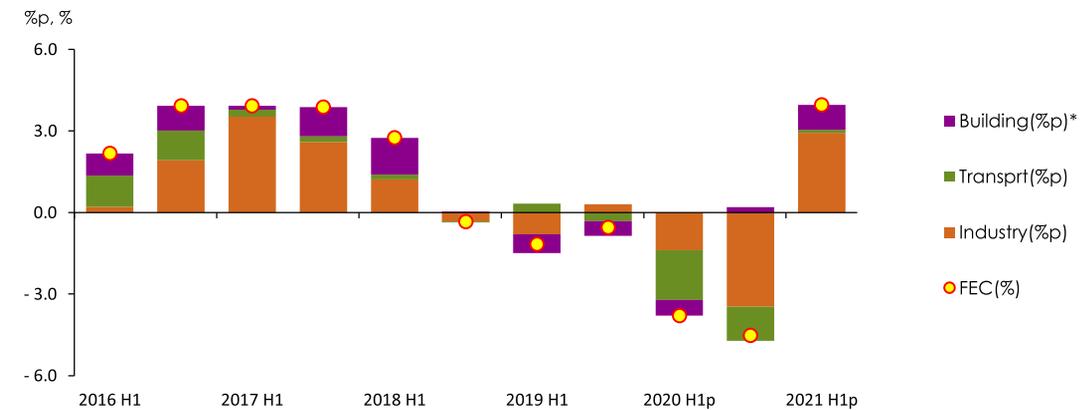
- Natural gas use rose by 13.7% year-on-year as the consumption in the power consumption went up rapidly due to increased electricity consumption and a drop in base-load generation and the amount of gas used for producing city gas showed a decent growth
- Nuclear power generation declined by 5.9% as the facility capacity stayed the same and the operation rate of nuclear power plants slightly went down. On the other side, renewable & other energy use rose by 8.8% on the back of the government policies aiming for widely deploying renewable power generation facilities
- Meanwhile, electricity use posted a year-on-year increase of 3.6% as the industrial sector witnessed a rapid growth in its power consumption with increased production activities. Also, the consumption in the building sector went up decently as the demand for heating jumped up due to cold snaps at the beginning of the year and the service industry enjoyed a business recovery

**Figure 1.3 Generation Input and Total Generation Input Growth by Energy Source**



- **While the energy use in the transport sector became stagnant, the total final energy consumption for the first half in 2021 increased by 4.0% with a rapid growth in the industrial and building sectors**
  - Industrial energy use stepped up by 4.8% year-on-year as the economy recovered from the impact of COVID-19 pandemic to boost production activities in the mining and manufacturing industries, mainly driven by energy-intensive businesses
  - Although the road transport sector, which has the largest share in energy consumption, posted a 2.3% growth, the total energy use in the transport sector stayed almost at the same (0.6%) on the year-on-year basis with the 13.2%, 3.3% and 8.4% decreases in the air, marine and railroad transport sectors

**Figure 1.4 Growth Rate of TFC & Contribution by Source**



\* include residential, commercial, public-etc usage

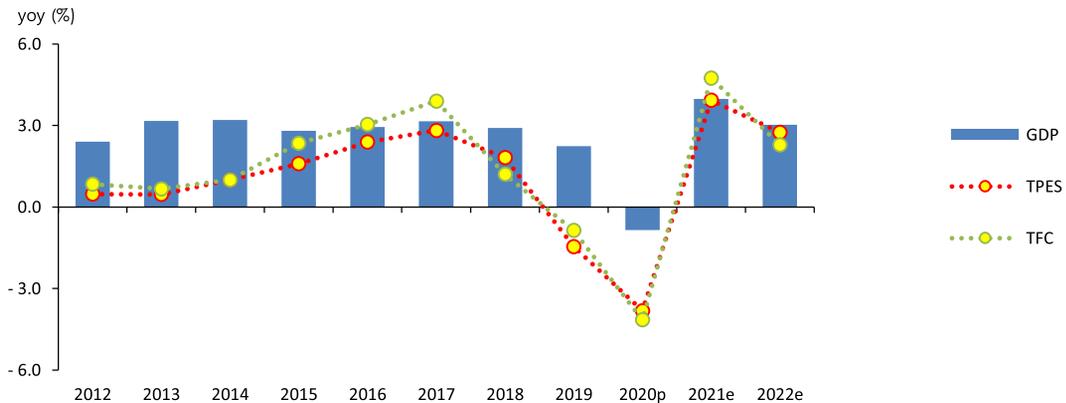
- As for the building sector, the residential, commercial and public sectors jumped up by 4.0%, 2.3% and 8.4% respectively on the year-on-year basis due to a business recovery in the service industry and cold snaps at the beginning of the year

## 2. TPES & TFC Outlook

□ **Total Primary Energy Supply (“TPES”) is expected to increase by 3.9% and 2.7% in 2021 and 2022 respectively to reach 311.3 million toe**

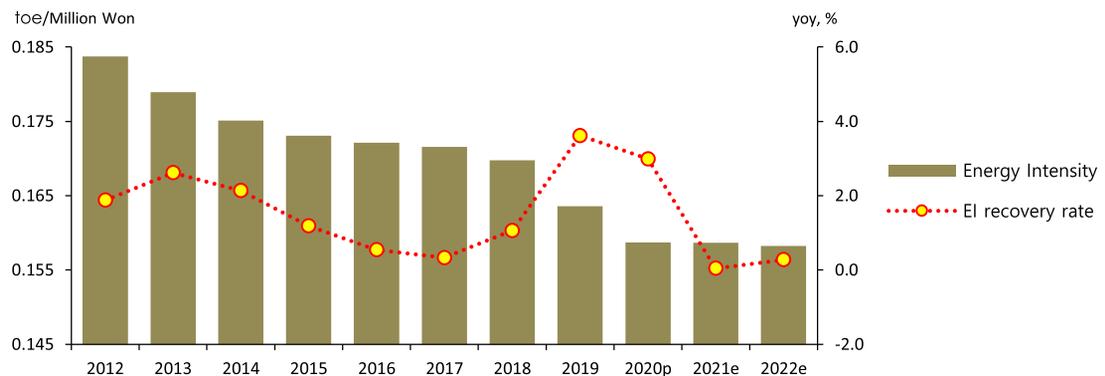
- Thanks to a base effect resulting from a decline trend for last two consecutive years and a rapid recovery in production activities, TPES is anticipated to increase by nearly 4% in 2021. Similarly, energy consumption in 2022 is likely to rise as the negative impact of COVID 19 pandemic is expected to abate

**Figure 2.1 Growth Rate of GDP, TPES and TFC, Trend and Outlook**



- Recently, Energy Intensity (toe/million KRW) recovered fast with a decline in energy use. As this recovery acts as a base effect, Energy Intensity is expected to stay at the 2020 level from 2021 to 2022

**Figure 2.2 Energy Intensity and EI Recovery Trend**

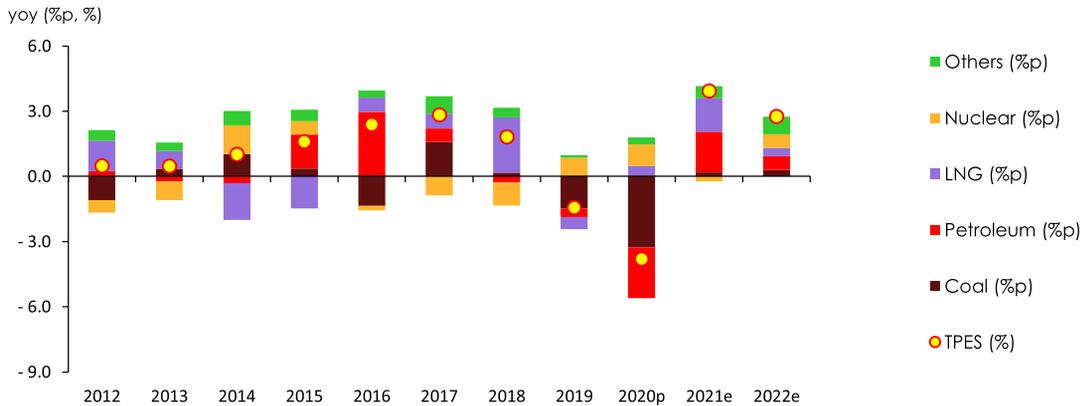


Note: Energy Intensity is calculated as the value of 'TPES/GDP', expressed in toe/million. EI recovery rate multiplies EI increase rate by '-1'

□ **While petroleum and gas will lead the increase in the energy demand in 2021, petroleum, nuclear and renewable energy sources are expected to take the lead in 2022**

- The demand for petroleum is likely to grow fast in 2021 in the industrial sector, especially for petroleum used as a raw material in the petrochemical industry. Similarly, in 2022, the petroleum demand is expected to rise in the transport sector mainly for road and air transportation
- The demand for coal in the final consumption sector will go up at a decent rate driven by the iron making industry. However, as the demand in the power generation sector is likely to decline or become stagnant, the growth rate in the demand for coal is anticipated to stay at a 1-2% level
- In 2021, nuclear power will experience a slight drop as its capacity factor declines a bit. However, nuclear generation is expected to rise by more than 5% in 2022 with one new large-capacity unit coming online
- As for natural gas, the demand is likely to step up rapidly with a surge in gas consumption from the power generation sector. However, the growth in the total gas demand is forecast to slow down dramatically as the gas used for generation witnesses a slight decrease
- Electricity demand fell for two years in a row since it reached the peak of 526.1 TWh in 2018. The demand for electricity, however, is expected to surpass the 2018 high in 2021 and approach a 540 TWh level in 2022

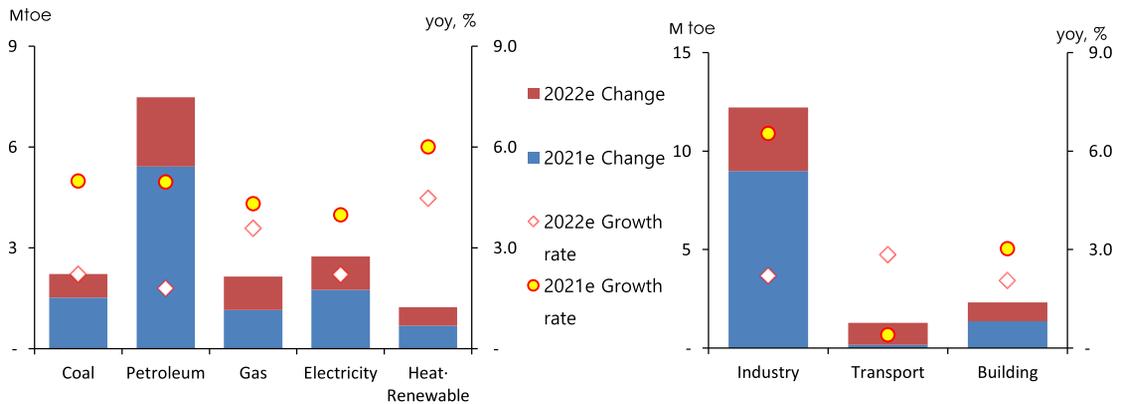
**Figure 2.3 Growth Rate of TPES & Contribution by Source**



□ **Energy demand in the final consumption sector is expected to grow by 4.7% in 2021 and 2.3% in 2022**

- Energy demand in the industrial sector will rise by more than 6% in 2021 thanks to a recovery in production activities across industries as well as facility expansion and increased facility utilization rate of energy-intensive industries. On the same note, the industrial energy demand is anticipated to increase by more than 2% on the back of a decent economic growth rate of 3% in 2022

**Figure 2.4 Change and Growth Rate of TFC by Energy Sources & End-use Sector, 2021 and 2022**



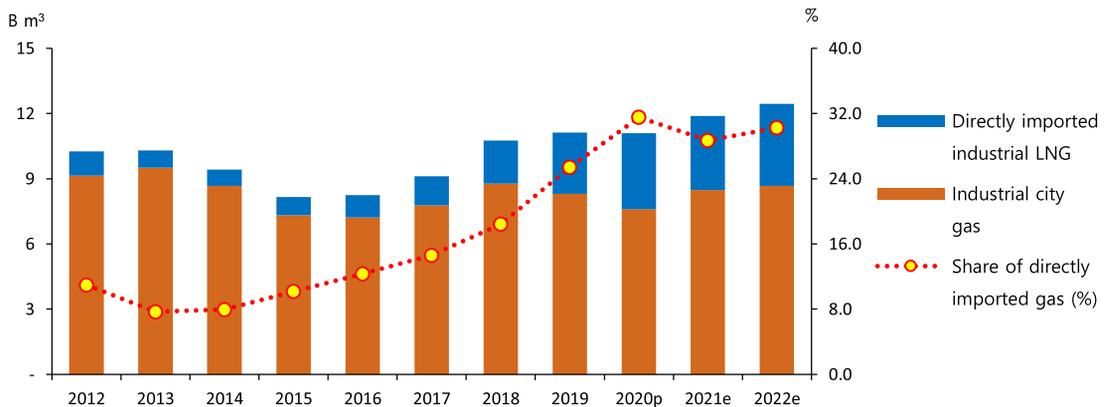
- In the transport sector, the energy demand continues to be stagnant in 2021 due to the impact of COVID-19 pandemic. However, it is expected to recover fast mainly in the second half of 2022 as the energy demand in road and air transport sectors starts to improve
- Energy demand in the building sector is anticipated to keep rising at a 2-3% level driven by several factors including a base effect and a temperature effect

### 3. Key Features and Implications

#### Surge in Global Energy Prices

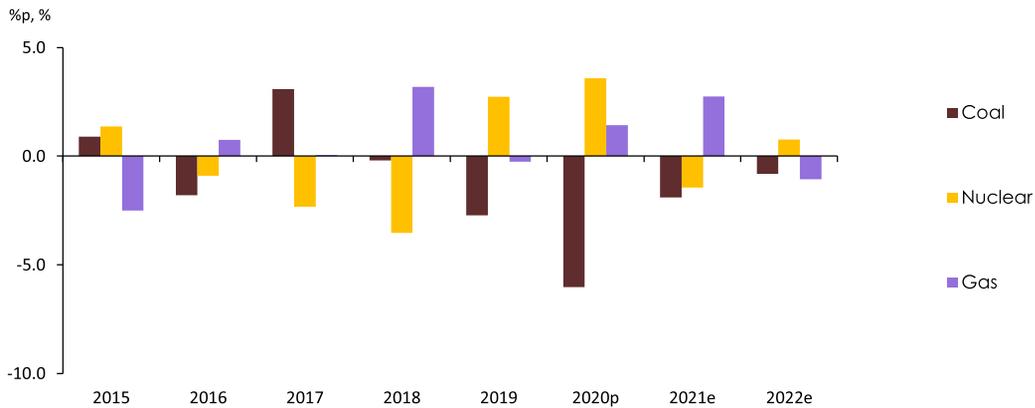
- **As natural gas prices are taking sudden changes, the uncertainty of outlook for gas and the role of nuclear power are expected to grow**
  - Due to a mix-up between the supply and demand of natural gas in the global market, LNG price almost trebled compared to the price in June. However, a possibility of an LNG price collapse is emerging as well, giving a boost to uncertainties around gas prices
  - In 2022, natural gas price is expected to be higher than average. Consequently, the pressure to increase the domestic city gas price is likely to increase while the growth in direct LNG imports, which have surged over the last few years, will significantly slow down

**Figure 3.1 Trend and Outlook of Industrial City Gas & Directly Imported Industrial LNG**



- Influenced by increased price of natural gas, the share of gas in the generation mix in 2022 will decline. On the other side, the proportion of nuclear power is likely to grow as it is to step in for the reduction of gas-fired generation

**Figure 3.2 Share in Generation Input Mix by Energy Source**



**The surge in oil price, triggered by the imbalance between supply and demand of global crude oil, is expected to be short-lived and limited in influencing the domestic market**

- The oil demand jumped up thanks to the global economic recovery from the impact of COVID-19 pandemic. However, the production increase from oil-producing countries did not keep up with the recovery, which strongly drove up the global oil price. Nevertheless, the monthly average of Middle East Dubai crude oil kept being sluggish after it hit \$82.2/barrel in August
- Petroleum products in the domestic market also witnessed large price jumps. Since last November, the retail prices of all petroleum products soared
- As the global crude oil price goes up, the prices of petroleum products in the domestic market are anticipated to rise for the time being. However, the impact of increased global oil price on the supply and demand of petroleum in the transport and industrial sectors is likely to be limited

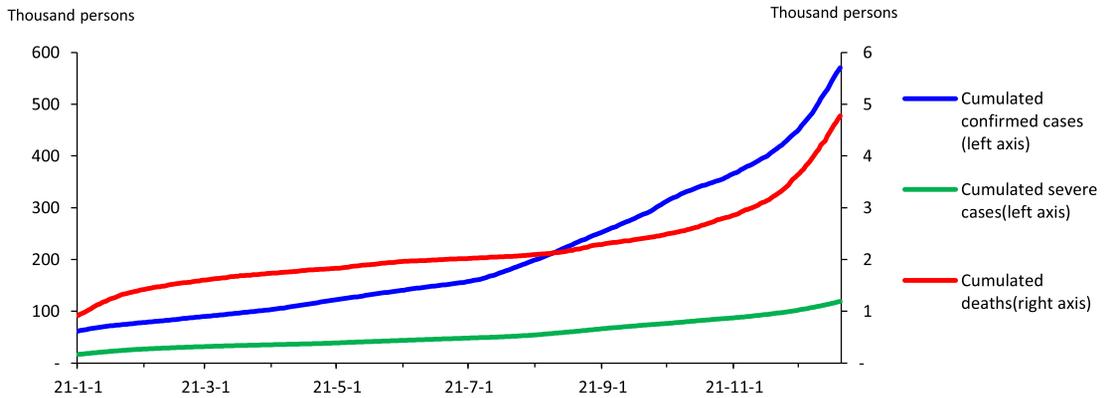
**Increased Uncertainty Amidst Spread of COVID-19 Virus**

**The uncertainties related to COVID-19 pandemic rise as the number of confirmed cases soared after November 1 and a new variant of Coronavirus has surfaced**

- Korea had adhered to enhanced Social Distancing restrictions, including a cap of five people per social gathering. However, the Moon administration decided to switch to Gradual Return to Normal phase on the back of more than 80% of First Dose vaccination rate and over 75% of Second Dose vaccination rate
- Unfortunately, since November 1 commencing Phase 1 of Gradual Return to Normal, the number of confirmed cases began rising rapidly

- The spread of Omicron, first detected in South Africa, marched rapidly onto all corners of the world, and the variant is becoming the dominant variant over Delta variant in some major countries. In this situation, the waves of Coronavirus can gain speed once again

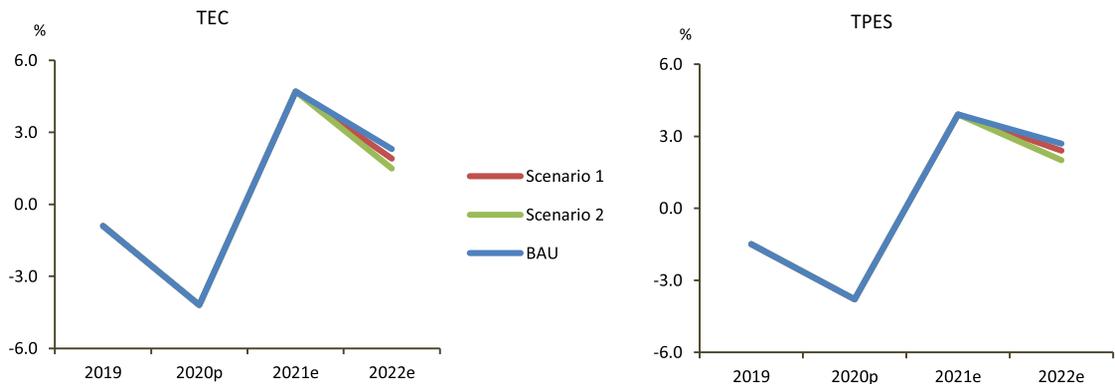
**Figure 3.3 Cumulated Confirmed Cases, Severe Cases & Deaths of COVID-19**



- **In case that COVID-19 pandemic stays longer than expected, the recovery of energy demand is likely to slow down driven by the transport sector**

- This paper is based on the assumption that COVID-19 pandemic takes a turn for the better during 2022 and as a result, an increase in energy demand in many sectors such as transport becomes palpable in the second half

**Figure 3.4 Growth in Total Final Consumption and Total Energy Demand by Scenario**



Note: Scenario 1 and Scenario 2 assumes that the negative effects of COVID-19 pandemic do not fade out in 2022. The energy demand in the air transport sector is presumed to stay at last year's level. Using Scenario 1 as a starting line, Scenario 2 employs a much more serious situation, in which the growth in the energy demand of road transport and building sectors declined by 1%p compared to BAU

- However, the spread of Coronavirus gains speed recently and a new variant Omicron, more contagious than its predecessors, has surfaced. If the spread of COVID-19 continues and the wave of highly-contagious Omicron diffuses on a national scale, it is difficult to say that New Normal can be achieved over COVID-19 pandemic even in the second half of 2022 and if this is the case, the recovery of energy demand will become much slower

# The Main Indicator and Energy Outlook Result

## Main Economic and Energy Indicators

	2018	2019		2020p				2021e		2022e	
		1H	2H	1H	2H	1H	2H	1H	2H		
<b>Economy and Population</b>											
GDP (2010 trillion won)	1 812.0	899.3	953.4	1 852.7	893.5	943.4	1 836.9	928.9	981.0	1 909.9	1 967.8
Industrial Production(2010=100)	106.3	103.9	109.5	106.7	103.0	109.6	106.3	111.8	114.0	112.9	116.2
Crude Oil Price (Dubai, USD/bbl)	69.4	65.5	61.6	63.5	40.7	43.8	42.2	63.5	76.5	70.0	69.6
Working Days	270.0	134.0	138.5	272.5	137.0	138.5	275.5	135.5	137.0	272.5	274.5
Population (million)	51.6	51.7	51.7	51.7	51.8	51.8	51.8	51.8	51.8	51.8	51.8
Average Temperature (°C)	13.0	10.4	16.6	13.5	10.8	15.3	13.0	10.4	16.1	13.3	13.1
Cooling Degree days	209.0	-	120.4	120.4	3.5	81.7	85.2	-	101.3	101.3	106.6
Heating Degree days	2 597.8	1 511.5	859.4	2 370.9	1 473.4	974.6	2 448.0	1 492.3	938.0	2 430.3	2 467.7
<b>Energy Indicators</b>											
Total Primary Energy Demand (Mtoe)	307.6	151.2	151.9	303.1	145.4	146.1	291.5	150.1	152.9	303.0	311.3
Energy Intensity (toe/million won)	0.170	0.169	0.159	0.164	0.163	0.155	0.159	0.162	0.156	0.159	0.159
TPED/capita (toe/capita)	5.960	2.924	2.938	5.862	2.809	2.821	5.630	2.897	2.950	5.847	6.005
Electricity Generation (TWh)	570.6	277.1	285.9	563.0	270.1	282.0	552.2	278.8	296.1	574.9	589.8
Electricity Generation/capita (MWh/capita)	11.1	5.4	5.5	10.9	5.2	5.4	10.7	5.4	5.7	11.1	11.4
Electricity Demand/capita (MWh/capita)	10.2	5.0	5.0	10.1	4.9	5.0	9.8	5.0	5.2	10.2	10.4

## Energy Demand

	2018	2019		2020p			2021e			2022e	
		1H	2H		1H	2H		1H	2H		
<b>Total Primary Energy Supply</b>											
Coal (Mton)	141.1	63.0	70.0	133.0	55.9	60.7	116.6	54.9	62.6	117.5	119.6
Oil (Mbbbl)	931.8	454.8	472.2	927.1	441.1	431.2	872.3	452.5	465.2	917.7	937.1
Gas (Bm <sup>3</sup> )	42.3	21.4	19.6	41.0	21.2	20.9	42.1	24.1	21.4	45.5	46.4
Hydro (TWh)	7.3	3.0	3.2	6.2	3.2	4.0	7.1	3.4	3.4	6.8	7.6
Nuclear (TWh)	133.5	79.8	66.1	145.9	82.1	78.1	160.2	77.2	79.8	157.0	165.9
Other Renewables (Mtoe)	17.1	8.9	8.8	17.7	9.3	9.2	18.4	10.1	10.1	20.2	22.4
<b>Total (Mtoe)</b>	<b>307.6</b>	<b>151.2</b>	<b>151.9</b>	<b>303.1</b>	<b>145.4</b>	<b>146.1</b>	<b>291.5</b>	<b>150.1</b>	<b>152.9</b>	<b>303.0</b>	<b>311.3</b>
Coal	86.7	39.0	43.2	82.1	34.7	37.6	72.2	34.2	38.6	72.8	73.7
Oil	118.5	57.7	59.6	117.3	55.7	54.6	110.2	57.2	58.5	115.7	117.6
Gas	55.2	28.0	25.6	53.5	27.7	27.3	55.0	31.5	28.0	59.5	60.7
Nuclear	1.5	0.6	0.7	1.3	0.7	0.8	1.5	0.7	0.7	1.4	1.6
Hydro	28.4	17.0	14.1	31.1	17.5	16.6	34.1	16.4	17.0	33.4	35.3
Other Renewables	17.1	8.9	8.8	17.7	9.3	9.2	18.4	10.1	10.1	20.2	22.4
<b>Total Final Consumption</b>											
Coal (Mton)	49.3	24.1	24.1	48.2	22.0	23.8	45.8	23.4	25.0	48.5	50.1
Oil (Mbbbl)	920.0	449.8	468.7	918.5	438.3	427.5	865.7	448.3	462.0	910.4	930.8
Gas (Bm <sup>3</sup> )	24.3	13.6	9.6	23.3	12.7	9.7	22.5	13.6	10.0	23.7	24.3
Electricity (TWh)	526.1	259.9	260.6	520.5	252.3	257.0	509.3	261.3	268.2	529.5	541.2
Heat (Mtoe)	2.7	1.6	1.0	2.6	1.5	1.1	2.7	1.7	1.1	2.8	2.9
Other Renewables (Mtoe)	9.1	4.5	4.5	8.9	4.4	4.4	8.8	4.7	4.6	9.3	9.8
<b>Total (Mtoe)</b>	<b>233.4</b>	<b>116.8</b>	<b>114.6</b>	<b>231.4</b>	<b>112.4</b>	<b>109.4</b>	<b>221.7</b>	<b>116.8</b>	<b>115.5</b>	<b>232.3</b>	<b>237.6</b>
Coal	32.5	16.0	16.0	32.1	14.6	15.8	30.5	15.6	16.4	32.0	32.7
Oil	116.8	57.0	59.1	116.1	55.3	54.1	109.3	56.7	58.1	114.8	116.8
Gas	27.0	15.3	11.5	26.9	14.8	11.9	26.7	15.7	12.2	27.9	28.9
Electricity	45.2	22.3	22.4	44.8	21.7	22.1	43.8	22.5	23.1	45.5	46.5
Heat	2.7	1.6	1.0	2.6	1.5	1.1	2.7	1.7	1.1	2.8	2.9
Other Renewables	9.1	4.5	4.5	8.9	4.4	4.4	8.8	4.7	4.6	9.3	9.8
Industry	143.5	70.4	72.5	142.9	68.8	68.5	137.3	72.1	74.2	146.3	149.5
Transport	43.0	21.5	21.5	43.0	19.3	20.1	39.4	19.5	20.1	39.6	40.7
Buildings	46.9	24.9	20.5	45.5	24.3	20.8	45.0	25.3	21.1	46.4	47.4

## Energy Demand

(yoy, %)

	2018		2019		2020p			2021e			2022e	
			1H	2H		1H	2H		1H	2H		
<b>Total Primary Energy Supply</b>												
Coal (Mton)	0.9	-8.6	-2.9	-5.7	-11.3	-13.3	-12.4	-1.8	3.3	0.8	1.7	
Oil (Mbbbl)	-0.6	-2.5	1.5	-0.5	-3.0	-8.7	-5.9	2.6	7.9	5.2	2.1	
Gas (Bm <sup>3</sup> )	16.2	-5.2	-0.6	-3.1	-1.0	6.7	2.7	13.7	2.5	8.2	2.0	
Hydro (TWh)	3.9	-11.5	-16.3	-14.1	5.6	22.6	14.4	6.3	-14.3	-5.1	12.7	
Nuclear (TWh)	-10.1	33.1	-10.2	9.3	2.8	18.2	9.8	-5.9	2.2	-2.0	5.7	
Other Renewables (Mtoe)	8.0	5.4	1.3	3.3	4.6	4.0	4.3	8.8	9.8	9.3	11.2	
<b>Total (Mtoe)</b>	<b>1.8</b>	<b>-1.3</b>	<b>-1.6</b>	<b>-1.5</b>	<b>-3.8</b>	<b>-3.8</b>	<b>-3.8</b>	<b>3.2</b>	<b>4.7</b>	<b>3.9</b>	<b>2.7</b>	
Coal	0.6	-8.1	-2.6	-5.3	-11.0	-13.0	-12.1	-1.4	2.7	0.8	1.3	
Oil	-0.7	-2.6	0.6	-1.0	-3.6	-8.4	-6.0	2.7	7.2	5.0	1.6	
Gas	16.2	-5.2	-0.6	-3.1	-1.0	6.7	2.7	13.7	2.5	8.2	2.0	
Nuclear	3.9	-11.5	-16.3	-14.1	5.6	22.6	14.4	6.3	-14.3	-5.1	12.7	
Hydro	-10.1	33.1	-10.2	9.3	2.8	18.2	9.8	-5.9	2.2	-2.0	5.7	
Other Renewables	8.0	5.4	1.3	3.3	4.6	4.0	4.3	8.8	9.8	9.3	11.2	
<b>Total Final Consumption</b>												
Coal (Mton)	-2.1	-1.0	-3.4	-2.2	-8.9	-1.0	-4.9	6.4	5.1	5.7	3.5	
Oil (Mbbbl)	-0.7	-2.1	1.7	-0.2	-2.6	-8.8	-5.7	2.3	8.1	5.2	2.2	
Gas (Bm <sup>3</sup> )	7.4	-2.8	-6.0	-4.1	-6.7	1.0	-3.5	7.3	2.8	5.4	2.6	
Electricity (TWh)	3.6	-0.7	-1.5	-1.1	-2.9	-1.4	-2.2	3.6	4.4	4.0	2.2	
Heat (Mtoe)	9.9	-1.4	-1.3	-1.3	-4.3	7.6	0.4	10.4	0.5	6.2	3.3	
Other Renewables (Mtoe)	5.5	-1.5	-2.9	-2.2	-0.6	-2.2	-1.4	5.6	6.3	5.9	4.8	
<b>Total (Mtoe)</b>	<b>1.2</b>	<b>-1.2</b>	<b>-0.6</b>	<b>-0.9</b>	<b>-3.8</b>	<b>-4.5</b>	<b>-4.2</b>	<b>4.0</b>	<b>5.6</b>	<b>4.7</b>	<b>2.3</b>	
Coal	-2.6	-0.2	-2.4	-1.3	-8.5	-1.5	-5.0	6.6	3.5	5.0	2.2	
Oil	-0.9	-2.1	0.9	-0.6	-3.1	-8.5	-5.8	2.5	7.5	5.0	1.8	
Gas	9.7	0.9	-2.5	-0.6	-3.6	3.6	-0.5	6.2	1.9	4.3	3.6	
Electricity	3.6	-0.7	-1.5	-1.1	-2.9	-1.4	-2.2	3.6	4.4	4.0	2.2	
Heat	9.9	-1.4	-1.3	-1.3	-4.3	7.6	0.4	10.4	0.5	6.2	3.3	
Other Renewables	5.5	-1.5	-2.9	-2.2	-0.6	-2.2	-1.4	5.6	6.3	5.9	4.8	
Industry	0.7	-1.3	0.5	-0.4	-2.3	-5.5	-3.9	4.8	8.3	6.5	2.2	
Transport	0.4	1.8	-1.7	0.0	-10.0	-6.7	-8.3	0.6	0.2	0.4	2.8	
Buildings	3.5	-3.2	-2.9	-3.1	-2.7	1.1	-1.0	4.2	1.7	3.0	2.1	

## Energy Demand by Sector

(Mtoe)

	2018	2019		2020p				2021e			2022e
		1H	2H		1H	2H		1H	2H		
<b>Industry</b>	<b>143.5</b>	<b>70.4</b>	<b>72.5</b>	<b>142.9</b>	<b>68.8</b>	<b>68.5</b>	<b>137.3</b>	<b>72.1</b>	<b>74.2</b>	<b>146.3</b>	<b>149.5</b>
Coal	32.0	15.9	15.9	31.8	14.6	15.7	30.2	15.5	16.2	31.7	32.4
Oil	69.3	33.4	35.9	69.2	34.0	32.5	66.5	35.1	36.4	71.6	72.6
Gas	11.1	5.9	5.6	11.4	5.7	5.7	11.4	6.1	6.1	12.2	12.8
Electricity	24.4	12.1	12.0	24.1	11.4	11.6	23.0	11.9	12.3	24.2	24.8
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	6.7	3.2	3.2	6.4	3.2	3.0	6.2	3.3	3.3	6.6	6.9
<b>Transport</b>	<b>43.0</b>	<b>21.5</b>	<b>21.5</b>	<b>43.0</b>	<b>19.3</b>	<b>20.1</b>	<b>39.4</b>	<b>19.5</b>	<b>20.1</b>	<b>39.6</b>	<b>40.7</b>
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	40.8	20.4	20.4	40.8	18.3	19.0	37.4	18.5	19.2	37.7	38.9
Gas	1.2	0.6	0.6	1.2	0.5	0.6	1.1	0.5	0.5	1.0	1.0
Electricity	0.3	0.1	0.1	0.3	0.1	0.1	0.2	0.1	-	0.1	-
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.7	0.4	0.3	0.7	0.3	0.4	0.7	0.4	0.4	0.7	0.8
<b>Buildings*</b>	<b>46.9</b>	<b>24.9</b>	<b>20.5</b>	<b>45.5</b>	<b>24.3</b>	<b>20.8</b>	<b>45.0</b>	<b>25.3</b>	<b>21.1</b>	<b>46.4</b>	<b>47.4</b>
Coal	0.4	0.1	0.2	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.2
Oil	6.8	3.3	2.8	6.1	2.9	2.5	5.5	3.0	2.5	5.5	5.3
Gas	14.7	8.9	5.3	14.2	8.6	5.6	14.2	9.0	5.5	14.6	15.0
Electricity	20.6	10.2	10.3	20.5	10.2	10.4	20.6	10.5	10.8	21.3	21.7
Heat	2.7	1.6	1.0	2.6	1.5	1.1	2.7	1.7	1.1	2.8	2.9
Other Renewables	1.7	0.9	0.9	1.8	0.9	1.0	1.9	1.0	1.0	2.0	2.1
<b>Transform</b>	<b>147.1</b>	<b>72.4</b>	<b>70.7</b>	<b>143.1</b>	<b>69.4</b>	<b>70.0</b>	<b>139.3</b>	<b>71.5</b>	<b>71.9</b>	<b>143.4</b>	<b>148.2</b>
Coal	54.2	23.0	27.1	50.1	20.0	21.8	41.8	18.6	22.2	40.8	41.0
Oil	1.7	0.7	0.5	1.2	0.4	0.5	0.9	0.5	0.4	0.9	0.8
Gas	53.2	26.7	24.0	50.6	26.0	25.4	51.4	29.8	26.1	56.0	56.8
Nuclear	28.4	17.0	14.1	31.1	17.5	16.6	34.1	16.4	17.0	33.4	35.3
Hydro	1.5	0.6	0.7	1.3	0.7	0.8	1.5	0.7	0.7	1.4	1.6
Renewables	8.0	4.4	4.4	8.8	4.8	4.8	9.7	5.4	5.5	10.8	12.7

\* include residential, commercial, public-etc usage

## Coal

(Mton)

	2018	2019		2020p			2021e			2022e	
		1H	2H		1H	2H		1H	2H		
	<b>Total Coal Demand</b>	<b>141.1</b>	<b>63.0</b>	<b>70.0</b>	<b>133.0</b>	<b>55.9</b>	<b>60.7</b>	<b>116.6</b>	<b>54.9</b>	<b>62.6</b>	<b>117.5</b>
Transform	91.8	38.9	45.9	84.8	33.9	36.8	70.7	31.5	37.6	69.1	69.4
Power Generation	91.8	38.9	45.9	84.8	33.9	36.8	70.7	31.5	37.6	69.1	69.4
Heat	-	-	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-
<b>Total Final Consumption</b>	<b>49.3</b>	<b>24.1</b>	<b>24.1</b>	<b>48.2</b>	<b>22.0</b>	<b>23.8</b>	<b>45.8</b>	<b>23.4</b>	<b>25.0</b>	<b>48.5</b>	<b>50.1</b>
Industry	48.4	23.9	23.7	47.6	21.8	23.5	45.3	23.3	24.8	48.0	49.7
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	0.9	0.2	0.4	0.6	0.2	0.3	0.5	0.2	0.3	0.4	0.4
<b>Consumption by products</b>											
Anthracite	9.3	4.2	3.7	7.9	3.3	3.9	7.2	3.4	4.0	7.4	7.6
Bituminous	131.8	58.8	66.3	125.1	52.6	56.8	109.4	51.5	58.6	110.1	112.0
Iron making	34.6	17.3	17.7	35.0	16.3	17.5	33.8	17.6	18.2	35.8	36.9
Cement	3.7	2.0	2.0	4.0	1.7	1.7	3.4	1.7	2.0	3.8	4.0
Power Generation	90.8	38.3	45.4	83.6	33.4	36.4	69.8	31.0	37.2	68.2	68.6

## Oil

(Mbbbl)

	2018	2019			2020p			2021e			2022e
		1H	2H		1H	2H		1H	2H		
	<b>Total Oil Demand</b>	<b>931.8</b>	<b>454.8</b>	<b>472.2</b>	<b>927.1</b>	<b>441.1</b>	<b>431.2</b>	<b>872.3</b>	<b>452.5</b>	<b>465.2</b>	<b>917.7</b>
Transform	11.7	5.0	3.6	8.6	2.8	3.8	6.6	4.2	3.2	7.4	6.2
Power Generation	8.6	3.4	2.3	5.7	1.3	2.5	3.8	1.7	1.6	3.3	1.3
Heat	1.1	1.0	0.7	1.7	0.9	0.7	1.6	0.9	1.0	1.9	2.7
Gas Manufacture	2.0	0.6	0.6	1.2	0.6	0.6	1.2	1.5	0.6	2.1	2.2
<b>Total Final Consumption</b>	<b>920.0</b>	<b>449.8</b>	<b>468.7</b>	<b>918.5</b>	<b>438.3</b>	<b>427.5</b>	<b>865.7</b>	<b>448.3</b>	<b>462.0</b>	<b>910.4</b>	<b>930.8</b>
Industry	564.1	272.2	294.1	566.2	278.5	265.3	543.9	286.8	297.5	584.3	596.0
Transport	302.3	151.3	151.8	303.2	135.9	141.2	277.2	137.0	142.4	279.5	288.4
Buildings	53.7	26.3	22.8	49.1	23.8	20.9	44.7	24.5	22.0	46.5	46.4
<b>Consumption by products</b>											
Gasoline	79.7	40.6	42.1	82.7	38.8	42.2	81.0	40.8	43.6	84.5	85.3
Diesel (including Transformation)	164.1	83.1	83.8	166.9	77.4	81.5	158.9	79.4	82.6	162.0	163.9
Kerosene (including Transformation)	18.9	9.2	7.9	17.1	9.4	7.6	17.0	8.8	7.6	16.4	15.6
B-C (including Transformation)	33.7	13.8	10.2	24.0	11.9	11.9	23.8	11.3	11.5	22.8	21.5
Jet Oil	39.9	19.5	19.4	38.8	11.6	10.1	21.7	10.2	10.2	20.4	27.3
LPG (including Transformation)	109.4	55.9	66.2	122.1	60.5	60.8	121.3	61.5	65.6	127.1	130.8
Naphtha	451.2	215.3	223.3	438.6	210.7	194.6	405.3	215.6	216.4	432.1	453.6
Other Non-Energy	35.1	17.3	19.4	36.7	20.8	22.7	43.5	24.9	27.6	52.5	38.9

## Gas

	2018	2019		2020p			2021e			2022e	
		1H	2H		1H	2H		1H	2H		
<b>Total Gas Demand (Mton)</b>	<b>42.3</b>	<b>21.4</b>	<b>19.6</b>	<b>41.0</b>	<b>21.2</b>	<b>20.9</b>	<b>42.1</b>	<b>24.1</b>	<b>21.4</b>	<b>45.5</b>	<b>46.4</b>
Transform	40.7	20.4	18.4	38.8	19.9	19.4	39.3	22.8	20.0	42.8	43.5
Power Generation	18.5	8.7	9.3	17.9	8.7	9.9	18.6	11.0	10.6	21.6	21.3
Heat	2.3	1.0	0.9	1.9	0.9	0.8	1.8	1.1	0.8	1.9	2.0
Gas Manufacture	20.0	10.7	8.2	18.9	10.2	8.7	18.9	10.8	8.5	19.4	20.3
Industry	1.6	1.0	1.2	2.2	1.3	1.5	2.8	1.3	1.4	2.7	3.0
<b>City Gas (Bm<sup>3</sup>)</b>	<b>24.3</b>	<b>13.6</b>	<b>9.6</b>	<b>23.3</b>	<b>12.7</b>	<b>9.7</b>	<b>22.5</b>	<b>13.6</b>	<b>10.0</b>	<b>23.7</b>	<b>24.3</b>
Industry*	8.8	4.4	3.9	8.3	3.9	3.7	7.6	4.3	4.1	8.5	8.7
Transport	1.2	0.6	0.6	1.2	0.5	0.5	1.1	0.5	0.5	1.0	1.0
Buildings	14.3	8.6	5.2	13.8	8.3	5.5	13.8	8.8	5.4	14.2	14.6

\* exclude industrial LNG usage

## Electricity

(TWh)

	2018	2019				2020p				2021e				2022e
		1H		2H		1H		2H		1H		2H		
<b>Net Electricity Demand</b>	<b>570.6</b>	<b>277.1</b>	<b>285.9</b>	<b>563.0</b>	<b>270.1</b>	<b>282.0</b>	<b>552.2</b>	<b>278.8</b>	<b>296.1</b>	<b>574.9</b>	<b>589.8</b>			
Own use and Losses	44.5	17.3	25.3	42.5	17.9	25.0	42.9	17.5	27.9	45.4	48.6			
<b>Total Final Consumption</b>	<b>526.1</b>	<b>259.9</b>	<b>260.6</b>	<b>520.5</b>	<b>252.3</b>	<b>257.0</b>	<b>509.3</b>	<b>261.3</b>	<b>268.2</b>	<b>529.5</b>	<b>541.2</b>			
Industry	283.7	140.2	139.6	279.8	132.1	135.0	267.1	138.5	142.6	281.1	288.5			
Transport	3.0	1.4	1.5	2.9	1.3	1.4	2.7	1.2	-	1.2	-			
Buildings	239.5	118.2	119.6	237.8	118.8	120.6	239.4	121.6	125.6	247.2	252.6			
<b>Installed Electrical Capacity (GW)*</b>	<b>118.5</b>	<b>120.3</b>	<b>124.6</b>	<b>124.6</b>	<b>126.8</b>	<b>128.5</b>	<b>128.5</b>	<b>129.7</b>	<b>133.0</b>	<b>133.0</b>	<b>139.2</b>			
Coal	37.0	37.0	37.0	37.0	37.1	36.9	36.9	35.8	37.7	37.7	38.4			
Oil	4.3	3.9	3.9	3.9	2.1	2.2	2.2	2.2	2.2	2.2	1.0			
Gas	37.9	38.1	39.4	39.4	41.2	41.2	41.2	41.2	41.2	41.2	42.2			
Nuclear	21.9	21.9	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	24.7			
Hydro	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5			
Other Renewables	11.0	13.0	14.6	14.6	16.7	18.5	18.5	20.8	22.3	22.3	26.5			
<b>Electricity Generation of Power Plants*</b>	<b>570.6</b>	<b>277.1</b>	<b>285.9</b>	<b>563.0</b>	<b>270.1</b>	<b>282.0</b>	<b>552.2</b>	<b>278.6</b>	<b>296.1</b>	<b>574.7</b>	<b>589.8</b>			
Coal	238.4	104.2	123.2	227.4	94.2	102.1	196.3	88.2	105.8	194.0	196.4			
Oil	5.7	1.8	1.4	3.3	0.8	1.4	2.3	2.1	1.0	3.2	1.2			
Gas	153.5	70.2	74.1	144.4	69.4	76.5	145.9	85.7	83.6	169.4	166.8			
Nuclear	133.5	79.8	66.1	145.9	82.1	78.1	160.2	77.2	79.8	157.0	165.9			
Hydro	7.3	3.0	3.2	6.2	3.2	4.0	7.1	3.4	3.4	6.8	7.6			
Other Renewables	32.2	18.0	17.9	35.9	20.4	19.9	40.3	22.0	22.5	44.4	51.8			
<b>Fuel Consumption of Power Plants (Mtoe)*</b>	<b>117.7</b>	<b>56.8</b>	<b>58.7</b>	<b>115.6</b>	<b>54.6</b>	<b>57.4</b>	<b>112.0</b>	<b>55.7</b>	<b>59.5</b>	<b>115.2</b>	<b>118.6</b>			
Coal	54.2	23.0	27.1	50.1	20.0	21.8	41.8	18.6	22.2	40.8	41.0			
Oil	1.3	0.5	0.3	0.8	0.2	0.4	0.6	0.2	0.2	0.5	0.2			
Gas	24.2	11.3	12.1	23.4	11.4	12.9	24.3	14.3	13.9	28.2	27.8			
Nuclear	28.4	17.0	14.1	31.1	17.5	16.6	34.1	16.4	17.0	33.4	35.3			
Hydro	1.5	0.6	0.7	1.3	0.7	0.8	1.5	0.7	0.7	1.4	1.6			
Other Renewables	8.0	4.4	4.4	8.8	4.8	4.8	9.7	5.4	5.5	10.8	12.7			

\* District Heat is classified by fuel type since 2014

## Heat and Other Renewables

(Mtoe)

	2018		2019		2020p		2021e		2022e		
			1H	2H			1H	2H			
<b>Net Heat Demand</b>	<b>2.6</b>	<b>1.6</b>	<b>1.1</b>	<b>2.6</b>	<b>1.5</b>	<b>1.1</b>	<b>2.6</b>	<b>1.7</b>	<b>1.1</b>	<b>2.8</b>	<b>2.9</b>
Own use and Losses	-0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.1	-0.0	0.0	-0.0	-0.0
<b>Total Final Consumption</b>	<b>2.7</b>	<b>1.6</b>	<b>1.0</b>	<b>2.6</b>	<b>1.5</b>	<b>1.1</b>	<b>2.7</b>	<b>1.7</b>	<b>1.1</b>	<b>2.8</b>	<b>2.9</b>
Industry	-	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	2.7	1.6	1.0	2.6	1.5	1.1	2.7	1.7	1.1	2.8	2.9
<b>Heat Production by fuel</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	1.7	1.0	0.7	1.7	1.0	0.7	1.7	1.1	0.7	1.8	1.8
Gas	0.9	0.5	0.4	0.9	0.5	0.4	0.9	0.6	0.4	1.0	1.0
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Fuel Consumption of District Heat</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.3	0.4
Gas	2.9	1.3	1.2	2.5	1.2	1.1	2.3	1.4	1.1	2.5	2.6
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Other Renewables</b>	<b>18.7</b>	<b>9.5</b>	<b>9.5</b>	<b>19.0</b>	<b>9.9</b>	<b>10.0</b>	<b>20.0</b>	<b>10.8</b>	<b>10.8</b>	<b>21.6</b>	<b>24.0</b>
Hydro	1.5	0.6	0.7	1.3	0.7	0.8	1.5	0.7	0.7	1.4	1.6
Transform	8.0	4.4	4.4	8.8	4.8	4.8	9.7	5.4	5.5	10.8	12.7
<b>Total Final Consumption</b>	<b>9.1</b>	<b>4.5</b>	<b>4.5</b>	<b>8.9</b>	<b>4.4</b>	<b>4.4</b>	<b>8.8</b>	<b>4.7</b>	<b>4.6</b>	<b>9.3</b>	<b>9.8</b>
Industry	6.7	3.2	3.2	6.4	3.2	3.0	6.2	3.3	3.3	6.6	6.9
Transport	0.7	0.4	0.3	0.7	0.3	0.4	0.7	0.4	0.4	0.7	0.8
Buildings	1.7	0.9	0.9	1.8	0.9	1.0	1.9	1.0	1.0	2.0	2.1

