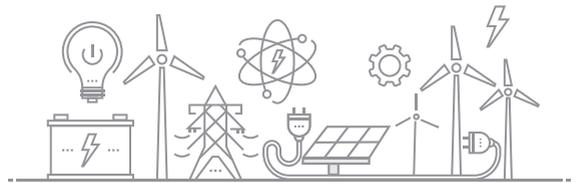


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# KEEI Korea Energy Demand Outlook

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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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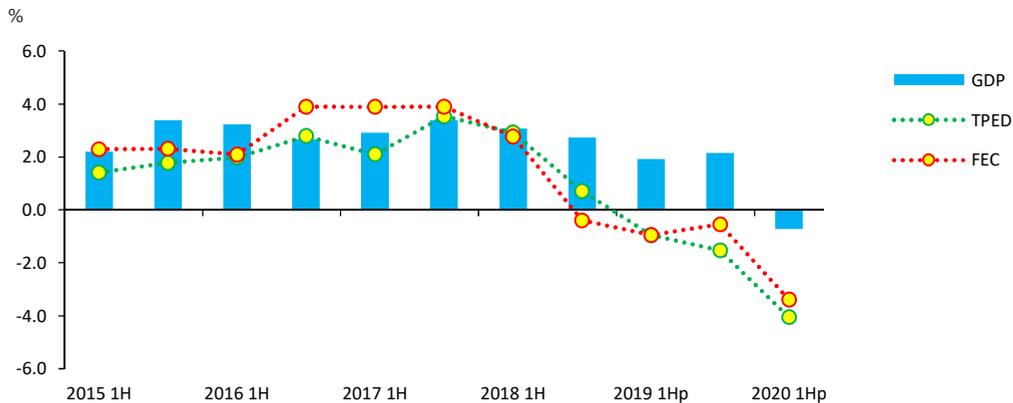
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# 1. Total Primary Energy Supply and Total Final Consumption<sup>1</sup>

□ **Total Primary Energy Supply(“TPES”) and Total Final Consumption(“TFC”) declined by 4.1% and 3.4% respectively in 1H 2020 compared to the same period last year.**

- Energy use plunged in 1H 2020, as industrial and outdoor activities contracted due to the impact of COVID-19.

**Figure 1.1 The growth rates of GDP, TPED and FEC trend**



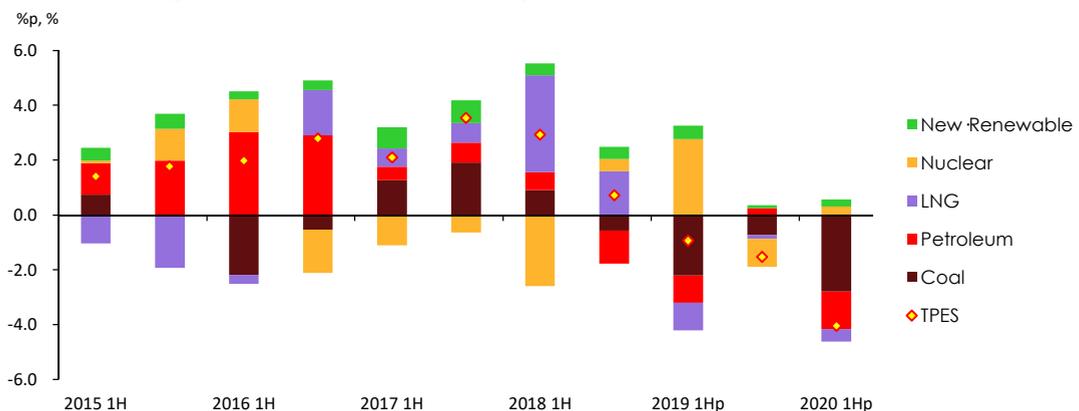
□ **The use of nearly all major energy sources declined (in 1H 2020 on a year-on-year basis), and coal, among others, led the drop in TPES.**

- Coal use fell by 11.3% year-on-year, as its industrial demand declined due to the sluggish construction business, and as it dropped in the power generation sector amid falling power demand and the restrictions on the operation of coal-fired power plants as part of the government plans for electricity supply and demand in winter and reduction of coal-fired generation.
- Petroleum use dropped by 3.0% year-on-year, as it declined in the transport sector, especially road transport and aviation, due to decreased travel demand amid the COVID-19 pandemic, although its industrial demand rose slightly despite sluggish industrial activity, because the use of LPG as petrochemical feedstock surged following the construction of new facilities.

<sup>1</sup> Growth rates of TPES and TFC by energy sources and sectors could be converted to tonnes of oil equivalent, and therefore they could be different from those measured with own unit of energy in (KEEI's) reports on energy trend and outlook by energy sources.

- Nuclear generation posted a year-on-year growth of 2.8%, owing to the commissioning of Shinkori unit 4 (Aug. 2019), which has a 1.4GW capacity. Renewable and 'the other' energy use grew by 3.7% as a result of the government policies that encourage the deployment of renewable energy.
- Gas use fell by 2.5% year-on-year, as it dropped in the power generation sector despite decreased baseload generation due to falling power demand amid the economic slowdown, triggered by the COVID-19 pandemic, and as final city gas use decreased in a dire economic situation as a result of the pandemic and because of weak price competitiveness amid low oil prices.
- Electricity use went down by 2.9% year-on-year, owing to the falling demand in the industrial and commercial sectors, affected by mild weather at the beginning of the year and the impact of COVID-19 since March, although residential electricity use increased, because people spent more time at home during the pandemic.

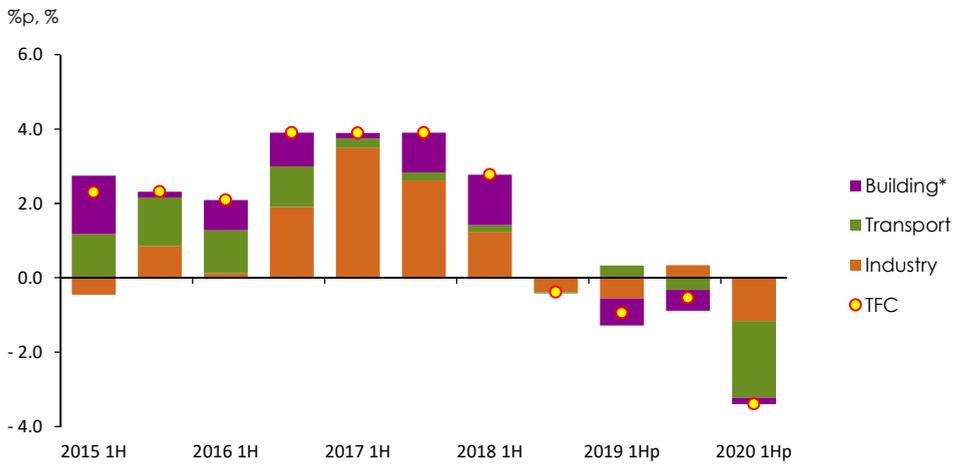
**Figure 1.2 The growth rate of TPES and energy sources**



**□ As for the final energy use in 1H 2020, it declined in the industrial, transport and buildings sectors all together.**

- Industrial energy use fell by 1.9% year-on-year, owing to the sluggish production in large energy-consuming sectors amid the global economic downturn caused by COVID-19.
- Transport energy use was down 11.2% year-on-year, led by the road transport and aviation sectors as a result of 'social distancing' measures and a sharp fall in demand for overseas travel.
- Buildings' energy use slid by 0.8%, which was affected by a fast decline in the number of heating degree days and the COVID-19 outbreak at the beginning of the year.

**Figure 1.3 The growth rate of TFC by end-use sectors**



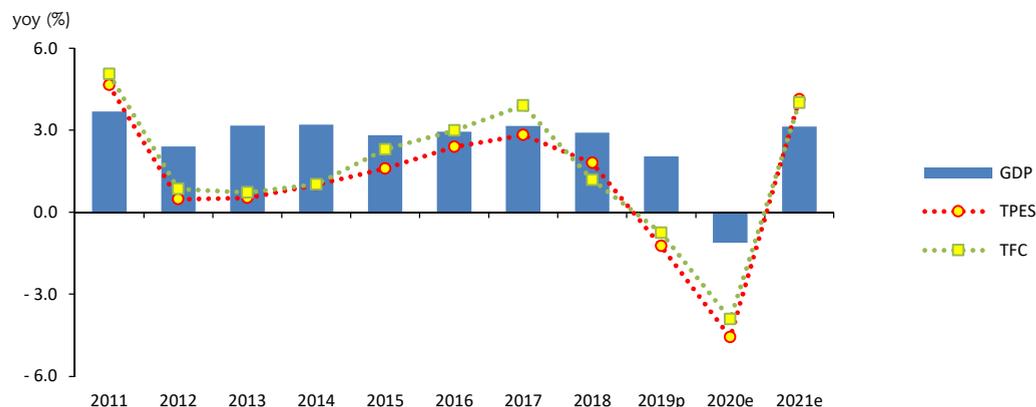
\* Building's energy use refers to the total amount of energy used in residential, commercial, public and other buildings.

## 2. TPES & TFC Outlook

### □ TPES is forecast to contract by 4.6% in 2020 and then rebound by 4.1% in 2021.

- In 2020, TPES will continue the downward trend of the previous year due to the impact of COVID-19, posting two consecutive years of declines for the first time since energy balance was presented.
- In 2021, however, TPES is likely to rebound, as the economy and society gradually recover from the shock of the COVID-19 pandemic with the development of vaccines.

**Figure 2.1 The growth rates of GDP, TPES and TFC, trend and outlook**



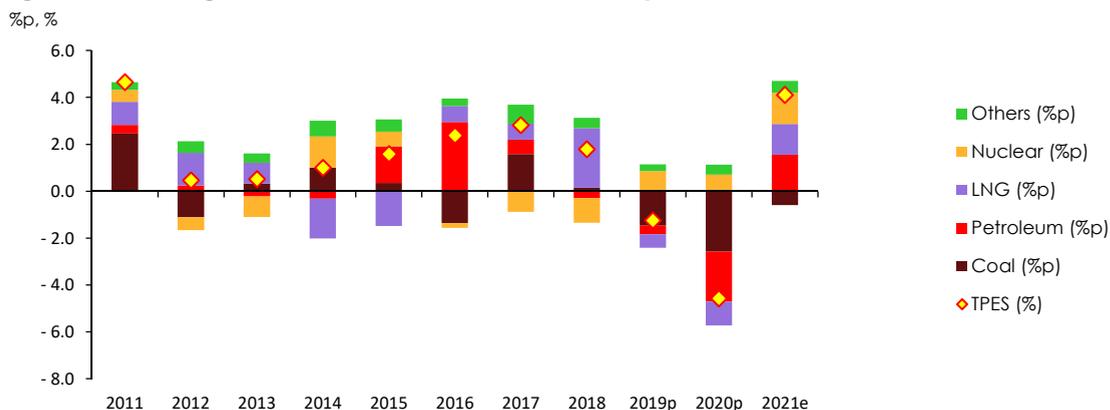
- Energy intensity(toe/KRW1million) will rapidly improve in 2020 for the second consecutive year, as energy consumption declines faster than Gross Domestic Product(“GDP”), and then it is expected to slightly increase in 2021 partly due to base effect.

### □ Demand growth is expected for most energy sources except coal.

- Petroleum demand is projected to fall by 5.1% in 2020, mostly in the transport sector, due to social distancing measures that were introduced to address COVID-19. In 2021, however, the demand is to rebound by 4.4%, led by strong demand growth in the industrial and transport sectors.
- Coal demand will decline by nearly 10% in 2020, as it plunges in the power generation and steelmaking sectors. In 2021, the decline rate will drop to over 2%, driven by demand recovery in the steelmaking sector due to base effect, though the downward slide continues in the power generation sector.
- Nuclear generation is forecast to grow by around 7% in 2020 and 11% in 2021 as a result of the commissioning of a new large reactor.
- Natural gas demand is expected to dwindle by around 6% in 2020, led by the city gas production and power generation sectors. In 2021, however, it will grow by over 7%, as the demand grows in both sectors.

- Electricity demand will drop by almost 3% in 2020, mostly in the industrial and commercial sectors and then it will bounce back by almost 4% in 2021 partly due to the economic recovery and the base effect of the two consecutive years of declines.

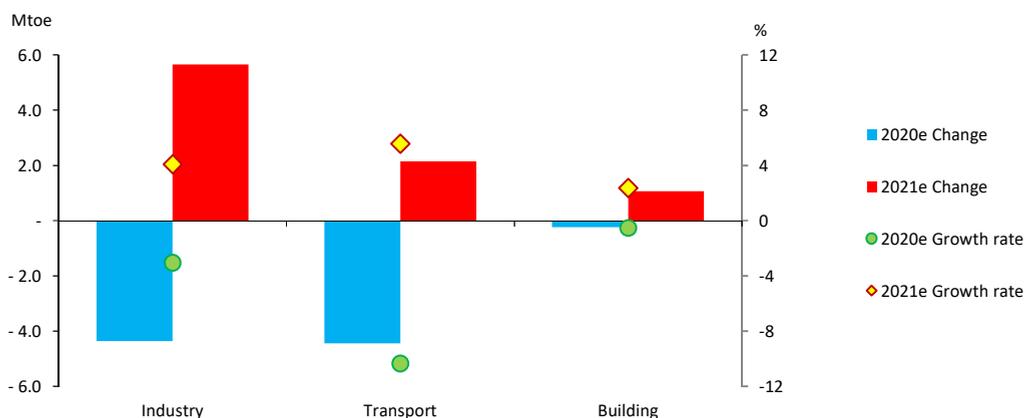
**Figure 2.2 The growth rate of TPES & contributions by sources**



□ Final energy demand will decrease by 3.9% in 2020, and then it will increase by 4.0% in 2021.

- Industrial energy demand is forecast to decline by around 3% in 2020 owing to a slowdown in industrial production amid the COVID-19 pandemic. In 2021, it will grow by around 4% with the recovery of the economy.

**Figure 2.3 The change and growth rate of TFC by energy sources and end-use sectors, 2020 and 2021**



- Energy demand for transport will contract by above 10% in 2020 from the previous year, especially in the road transport and aviation sectors, due to the impact of the COVID-19 pandemic, and then it will rebound by over 5% in 2021, as travel demand returns mostly in the second half of the year.

- Energy demand in buildings will remain flat for 2020 amid contrasting impact of COVID-19 in the residential and commercial sectors along with the impact of the heating and cooling degree days. In 2021, it will grow by around 2.5%.

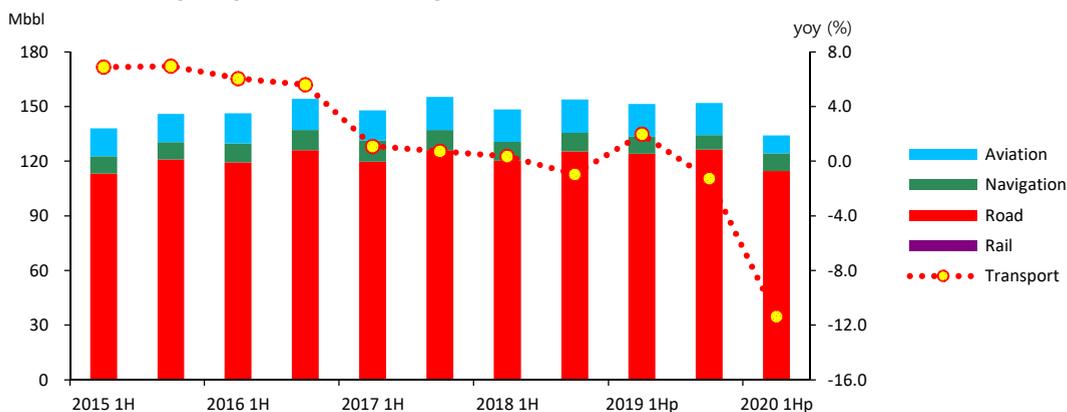
### 3. Key features and Implications

- **The COVID-19 crisis had the most profound impact on energy demand in 2020.**
  - During the ongoing COVID-19 pandemic, transport energy use plunged due to a rapid drop in travel demand, and industrial energy use also declined as a result of sluggish production amid the global economic slowdown. In the buildings' sector, energy use declined in commercial buildings affected by social distancing measures, while it grew slightly in residential buildings with more time spent at home.
  - This chapter is thoroughly discussing the impact of COVID-19 on energy demand by sectors in 2020 and in the following years.

#### Transport

- **The transport sector was directly hit by COVID-19, and its energy use dropped by 10.6% in 1H 2020 on a year-on-year basis.**
  - The closure of international routes and social distancing measures taken to contain the virus led to a sharp fall in travel demand, and accordingly, energy use plunged mostly in the road transport and aviation sectors.
- **In 2021, transport energy demand is expected to grow in line with the economic recovery, though the demand may remain stagnant for some time in the aviation sector.**
  - As the number of vaccinated people rises in 2021, travel demand is expected to grow along with the economic recovery. In the aviation sector, however, the recovery could take much longer depending on the vaccination rates in other countries.

**Figure 3.1 Transport petroleum use by sub-sectors**



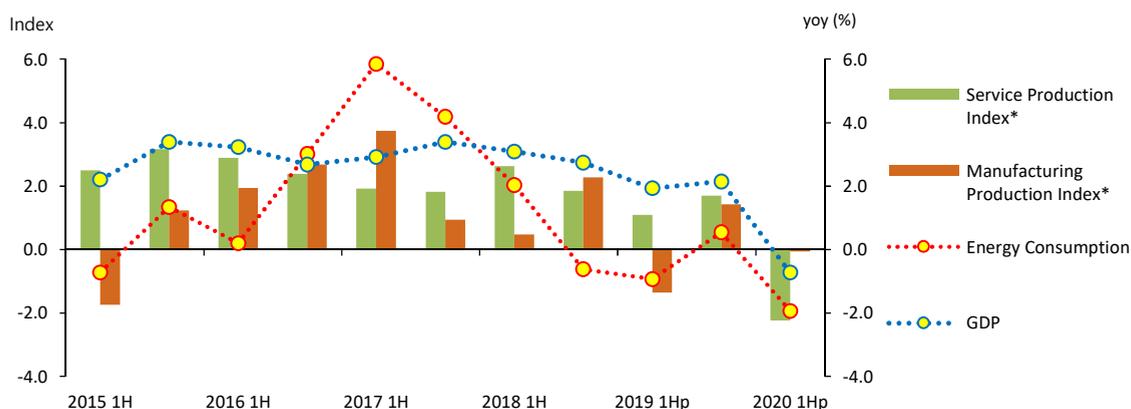
- **Since the COVID-19 pandemic started, new trends have been emerging from the social distancing experiences, which affect transport energy demand.**

- The covid-19 pandemic will keep bringing about new trends affecting energy demand such as preference for personal cars over public transport; growing use of delivery service and falling travel demand due to increased teleworking.

## Industry

- **The impact of COVID-19 on industrial energy demand appeared to be more indirect than direct.**
  - As the virus is spreading throughout the country, a growing number of factories are being closed after employees tested positive. Still, the impact on energy use seems to be limited, as the closure continues only for 1-3 days in most cases.

**Figure 3.2 Industrial energy consumption & production index**



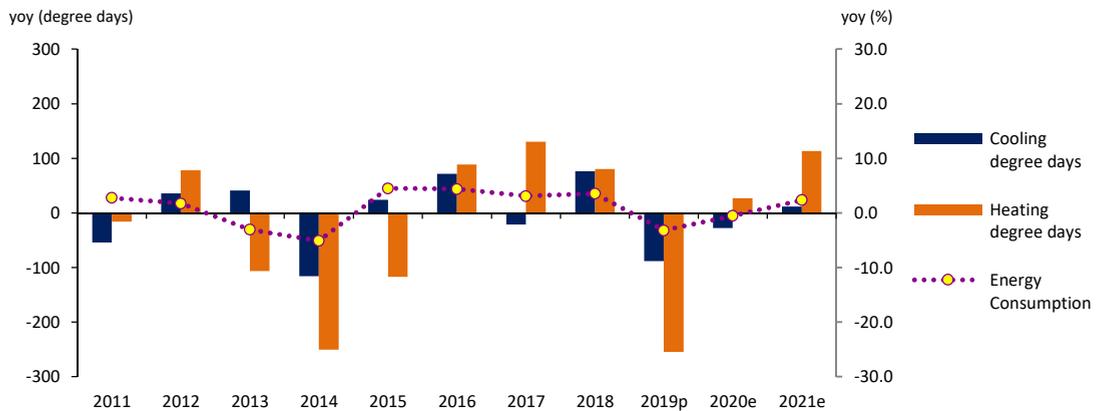
- Industrial energy use fell sharply owing to the indirect impact of COVID-19: the demand declined in the domestic and global markets, and the domestic manufacturing activities contracted amid the covid-19 crisis.
- **The future energy demand in the industrial sector will be influenced by the pandemic situation both at home and abroad.**
  - Industrial energy demand will be heavily influenced by the developments of the COVID-19 pandemic, since domestic industry is affected by not just domestic demand but also export demand.

## Buildings

- **Buildings energy use fell by 0.8% year-on-year in 1H 2020 as a result of the social distancing measures and decreased number of heating degree days.**
  - Buildings energy use dropped at the beginning of 2020 with mild weather (Jan-Feb), but later it increased, as people spent more time at home due to social distancing measure taken to slow the COVID-19 outbreak that started in late February. As a result, buildings' energy use posted a slight decline in 1H 2020.

- **Petroleum use increased in buildings, as domestic petroleum product prices declined in line with the sharp drop in global oil price.**
  - Petroleum use in buildings grew by 4.5% year-on-year in 1H 2020, because petroleum product prices declined amid the COVID-19 crisis, and it grew by 18.5% from March to June when the virus raged on.
- **The use of energy, except petroleum, increased in residential buildings while decreased in commercial & public buildings both because of the COVID-19 pandemic.**
  - Excluding petroleum consumption that surged due to global oil price plunge, distorting the consumption trend, the buildings sector witnessed a contrasting impact of COVID-19 on its energy demand: the demand increased in residential buildings while decreased in commercial buildings since the outbreak started in full swing in March due to the social distancing measures and longer stay at home.

**Figure 3.3 Energy consumption in buildings & major indicators**



- **In 2021, buildings' energy use will depend on the spread of COVID-19 and the beginning of the vaccination process.**
  - Energy use will continue to increase in residential buildings and decrease in commercial and public buildings from 4Q 2020 to 1Q 2021, as the number of confirmed cases are rising fast amid the third wave of the pandemic
  - Buildings' energy use is projected to fall by 0.5% in 2020, but it is to rise by 2.4% in 2021 assuming the year's temperature to be the ten-year average, though the COVID-19 situation could largely change the growth rate.

# The Main Indicator and Energy Outlook Result

## Main Economic and Energy Indicators

	2017	2018		2019p				2020e		2021e	
		1H	2H		1H	2H		1H	2H		
<b>Economy and Population</b>											
GDP (2010 trillion won)	1 760.8	881.4	930.6	1 812.0	898.4	950.5	1 849.0	891.9	936.3	1 828.2	1 885.4
Industrial Production(2010=100)	104.8	104.9	107.8	106.4	103.5	109.1	106.3	103.3	108.3	105.8	108.0
Crude Oil Price (Dubai, USD/bbl)	53.2	68.0	70.9	69.4	65.5	61.6	63.5	40.7	41.6	41.1	46.0
Working Days	269.5	133.0	137.0	270.0	134.0	138.5	272.5	136.0	139.0	275.0	276.0
Population (million)	51.4	51.6	51.6	51.6	51.7	51.7	51.7	51.8	51.8	51.8	51.8
Average Temperature (°C)	13.1	9.9	16.1	13.0	10.4	16.7	13.5	11.0	15.6	13.3	13.1
Cooling Degree days	132.7	3.5	205.5	209.0	-	120.4	120.4	3.7	88.8	92.5	104.1
Heating Degree days	2 517.1	1 616.9	980.9	2 597.8	1 511.5	831.4	2 342.9	1 439.3	930.7	2 370.0	2 483.5
<b>Energy Indicators</b>											
Total Primary Energy Demand (Mtoe)	302.1	153.1	154.4	307.5	151.6	152.1	303.7	145.5	144.3	289.8	301.7
Energy Intensity (toe/million won)	0.172	0.174	0.166	0.170	0.169	0.160	0.165	0.163	0.154	0.159	0.160
TPED/capita (toe/capita)	5.881	2.966	2.993	5.959	2.932	2.941	5.873	2.809	2.787	5.596	5.822
Electricity Generation (TWh)	553.5	279.1	291.6	570.6	277.1	285.9	563.0	270.2	275.7	545.8	568.9
Electricity Generation/capita (MWh/capita)	10.8	5.4	5.7	11.1	5.4	5.5	10.9	5.2	5.3	10.5	11.0
Electricity Demand/capita (MWh/capita)	9.9	5.1	5.1	10.2	5.0	5.0	10.1	4.9	4.9	9.8	10.1

## Energy Demand

	2017	2018		2019p			2020e			2021e	
		1H	2H		1H	2H		1H	2H		
<b>Total Primary Energy Supply</b>											
Coal (Mton)	139.8	68.9	72.1	141.0	63.0	70.0	133.0	55.9	64.2	120.0	117.4
Oil (Mbbbl)	937.1	466.6	465.2	931.8	455.2	472.6	927.9	441.7	439.1	880.8	919.5
Gas (Bm <sup>3</sup> )	36.4	22.6	19.7	42.3	21.4	19.5	40.9	20.9	17.7	38.6	41.5
Hydro (TWh)	7.0	3.4	3.9	7.3	3.0	3.2	6.2	3.2	3.9	7.1	7.8
Nuclear (TWh)	148.4	60.0	73.6	133.5	79.8	66.1	145.9	82.1	74.1	156.2	174.1
Other Renewables (Mtoe)	15.8	8.4	8.7	17.1	9.2	9.0	18.3	9.6	9.8	19.4	20.7
<b>Total (Mtoe)</b>	<b>302.1</b>	<b>153.1</b>	<b>154.4</b>	<b>307.5</b>	<b>151.6</b>	<b>152.1</b>	<b>303.7</b>	<b>145.5</b>	<b>144.3</b>	<b>289.8</b>	<b>301.7</b>
Coal	86.2	42.4	44.3	86.7	39.0	43.2	82.1	34.7	39.6	74.3	72.6
Oil	119.4	59.3	59.2	118.5	57.8	59.6	117.4	55.7	55.2	110.9	115.4
Gas	47.5	29.5	25.7	55.2	28.0	25.5	53.5	27.3	23.1	50.4	54.2
Nuclear	1.5	0.7	0.8	1.5	0.6	0.7	1.3	0.7	0.8	1.5	1.7
Hydro	31.6	12.8	15.7	28.4	17.0	14.1	31.1	17.5	15.8	33.3	37.1
Other Renewables	15.8	8.4	8.7	17.1	9.2	9.0	18.3	9.6	9.8	19.4	20.7
<b>Total Final Consumption</b>											
Coal (Mton)	50.4	24.3	24.9	49.2	24.1	24.1	48.2	22.0	23.5	45.5	46.7
Oil (Mbbbl)	926.6	459.4	460.6	920.0	449.9	468.7	918.6	438.9	436.3	875.2	914.2
Gas (Bm <sup>3</sup> )	22.6	14.0	10.3	24.3	13.6	9.6	23.3	12.7	9.4	22.2	22.8
Electricity (TWh)	507.7	261.7	264.5	526.1	259.9	260.6	520.5	252.3	253.1	505.4	524.7
Heat (Mtoe)	2.4	1.6	1.1	2.7	1.5	1.0	2.6	1.5	1.1	2.6	2.7
Other Renewables (Mtoe)	8.6	4.5	4.6	9.1	4.8	4.6	9.3	4.7	4.7	9.4	9.7
<b>Total (Mtoe)</b>	<b>230.0</b>	<b>117.9</b>	<b>114.9</b>	<b>232.7</b>	<b>116.8</b>	<b>114.2</b>	<b>231.0</b>	<b>112.8</b>	<b>109.2</b>	<b>221.9</b>	<b>230.8</b>
Coal	33.4	16.0	16.4	32.4	16.0	16.0	32.1	14.7	15.6	30.3	30.8
Oil	117.9	58.3	58.6	116.8	57.0	59.1	116.1	55.4	54.8	110.1	114.7
Gas	24.1	15.0	11.5	26.4	15.0	11.1	26.1	14.8	11.2	26.0	27.7
Electricity	43.7	22.5	22.7	45.2	22.3	22.4	44.8	21.7	21.8	43.5	45.1
Heat	2.4	1.6	1.1	2.7	1.5	1.0	2.6	1.5	1.1	2.6	2.7
Other Renewables	8.6	4.5	4.6	9.1	4.8	4.6	9.3	4.7	4.7	9.4	9.7
Industry	141.9	71.0	71.8	142.9	70.4	72.2	142.6	69.0	69.2	138.2	143.9
Transport	42.8	21.1	21.9	43.0	21.5	21.5	43.0	19.1	19.5	38.5	40.7
Buildings	45.3	25.7	21.2	46.9	24.9	20.5	45.4	24.7	20.5	45.2	46.2

## Energy Demand

(yoy, %)

	2017	2018		2019p		2020e		2021e		2021e	
		1H	2H	1H	2H	1H	2H	1H	2H		
<b>Total Primary Energy Supply</b>											
Coal (Mton)	8.1	3.7	-1.7	0.9	-8.5	-2.9	-5.7	-11.3	-8.3	-9.7	-2.2
Oil (Mbbbl)	1.7	1.9	-2.9	-0.6	-2.4	1.6	-0.4	-3.0	-7.1	-5.1	4.4
Gas (Bm <sup>3</sup> )	4.3	21.6	10.5	16.2	-5.2	-0.8	-3.2	-2.5	-9.2	-5.7	7.5
Hydro (TWh)	5.5	5.6	2.5	3.9	-11.5	-16.3	-14.1	5.7	21.4	13.8	9.4
Nuclear (TWh)	-8.4	-23.3	4.6	-10.1	33.1	-10.2	9.3	2.8	12.1	7.0	11.5
Other Renewables (Mtoe)	16.7	7.7	8.3	8.0	10.0	3.5	6.7	3.7	8.5	6.1	6.8
<b>Total (Mtoe)</b>	<b>2.8</b>	<b>2.9</b>	<b>0.7</b>	<b>1.8</b>	<b>-0.9</b>	<b>-1.5</b>	<b>-1.2</b>	<b>-4.1</b>	<b>-5.1</b>	<b>-4.6</b>	<b>4.1</b>
Coal	5.7	3.3	-1.9	0.6	-8.0	-2.5	-5.2	-10.9	-8.2	-9.5	-2.3
Oil	1.5	1.7	-3.0	-0.7	-2.6	0.7	-0.9	-3.6	-7.5	-5.5	4.1
Gas	4.4	21.6	10.5	16.2	-5.2	-0.8	-3.2	-2.5	-9.2	-5.7	7.5
Nuclear	6.5	5.6	2.5	3.9	-11.5	-16.3	-14.1	5.7	21.4	13.8	9.4
Hydro	-7.5	-23.3	4.6	-10.1	33.1	-10.2	9.3	2.8	12.1	7.0	11.5
Other Renewables	16.7	7.7	8.3	8.0	10.0	3.5	6.7	3.7	8.5	6.1	6.8
<b>Total Final Consumption</b>											
Coal (Mton)	2.7	-2.0	-2.5	-2.3	-0.7	-3.4	-2.1	-9.0	-2.3	-5.6	2.6
Oil (Mbbbl)	3.0	1.7	-3.0	-0.7	-2.1	1.8	-0.2	-2.4	-6.9	-4.7	4.5
Gas (Bm <sup>3</sup> )	6.3	9.3	4.9	7.4	-2.7	-6.1	-4.1	-6.8	-2.0	-4.8	2.9
Electricity (TWh)	2.2	4.1	3.2	3.6	-0.7	-1.5	-1.1	-2.9	-2.9	-2.9	3.8
Heat (Mtoe)	11.8	15.6	2.2	9.9	-4.8	-5.0	-4.9	-0.9	6.9	2.2	2.4
Other Renewables (Mtoe)	20.4	5.8	5.1	5.5	5.5	-0.3	2.6	-0.6	2.7	1.0	2.9
<b>Total (Mtoe)</b>	<b>3.9</b>	<b>2.8</b>	<b>-0.4</b>	<b>1.2</b>	<b>-1.0</b>	<b>-0.5</b>	<b>-0.8</b>	<b>-3.4</b>	<b>-4.4</b>	<b>-3.9</b>	<b>4.0</b>
Coal	3.1	-2.7	-2.9	-2.8	0.1	-2.4	-1.1	-8.2	-2.8	-5.5	1.8
Oil	3.1	1.4	-3.1	-0.9	-2.1	0.9	-0.6	-3.0	-7.3	-5.2	4.2
Gas	6.0	10.6	9.0	9.9	0.5	-3.3	-1.1	-1.7	1.1	-0.5	6.7
Electricity	2.2	4.1	3.2	3.6	-0.7	-1.5	-1.1	-2.9	-2.9	-2.9	3.8
Heat	11.8	15.6	2.2	9.9	-4.8	-5.0	-4.9	-0.9	6.9	2.2	2.4
Other Renewables	20.4	5.8	5.1	5.5	5.5	-0.3	2.6	-0.6	2.7	1.0	2.9
Industry	5.0	2.0	-0.6	0.7	-0.9	0.5	-0.2	-1.9	-4.2	-3.1	4.1
Transport	1.2	1.0	-0.2	0.4	1.8	-1.7	0.0	-11.2	-9.5	-10.3	5.6
Buildings	3.1	6.4	0.2	3.5	-3.3	-3.0	-3.2	-0.8	-0.2	-0.5	2.4

## Energy Demand by Sector

(Mtoe)

	2017	2018		2019p			2020e			2021e	
		1H	2H		1H	2H		1H	2H		
<b>Industry</b>	<b>141.9</b>	<b>71.0</b>	<b>71.8</b>	<b>142.9</b>	<b>70.4</b>	<b>72.2</b>	<b>142.6</b>	<b>69.0</b>	<b>69.2</b>	<b>138.2</b>	<b>143.9</b>
Coal	32.8	15.8	16.2	32.0	15.9	15.8	31.7	14.6	15.4	30.0	30.6
Oil	69.8	34.6	34.7	69.3	33.4	35.9	69.2	33.8	33.6	67.5	70.2
Gas	8.8	5.2	5.3	10.5	5.6	5.2	10.7	5.7	5.2	10.9	12.1
Electricity	23.8	12.1	12.3	24.4	12.1	12.0	24.1	11.4	11.5	23.0	24.0
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	6.6	3.3	3.4	6.7	3.5	3.3	6.8	3.5	3.4	6.8	7.0
<b>Transport</b>	<b>42.8</b>	<b>21.1</b>	<b>21.9</b>	<b>43.0</b>	<b>21.5</b>	<b>21.5</b>	<b>43.0</b>	<b>19.1</b>	<b>19.5</b>	<b>38.5</b>	<b>40.7</b>
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	40.9	20.0	20.8	40.8	20.4	20.4	40.8	18.1	18.4	36.5	38.5
Gas	1.3	0.6	0.6	1.2	0.6	0.6	1.2	0.5	0.6	1.1	1.2
Electricity	0.2	0.1	0.1	0.3	0.1	0.1	0.3	0.1	0.1	0.2	0.3
Heat	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	0.4	0.3	0.3	0.7	0.3	0.3	0.7	0.3	0.3	0.7	0.7
<b>Buildings*</b>	<b>45.3</b>	<b>25.7</b>	<b>21.2</b>	<b>46.9</b>	<b>24.9</b>	<b>20.5</b>	<b>45.4</b>	<b>24.7</b>	<b>20.5</b>	<b>45.2</b>	<b>46.2</b>
Coal	0.5	0.2	0.3	0.4	0.1	0.2	0.3	0.1	0.2	0.3	0.3
Oil	7.2	3.6	3.1	6.8	3.3	2.8	6.1	3.4	2.8	6.2	6.0
Gas	14.0	9.2	5.5	14.7	8.9	5.3	14.2	8.6	5.4	14.0	14.4
Electricity	19.6	10.3	10.3	20.6	10.2	10.3	20.5	10.1	10.1	20.3	20.9
Heat	2.4	1.6	1.1	2.7	1.5	1.0	2.6	1.5	1.1	2.6	2.7
Other Renewables	1.6	0.9	0.9	1.7	0.9	0.9	1.8	0.9	1.0	1.9	2.0
<b>Transform</b>	<b>141.4</b>	<b>73.7</b>	<b>73.9</b>	<b>147.7</b>	<b>72.8</b>	<b>71.2</b>	<b>144.0</b>	<b>69.0</b>	<b>67.7</b>	<b>136.7</b>	<b>142.1</b>
Coal	52.8	26.4	27.9	54.2	23.0	27.1	50.1	20.0	24.0	44.1	41.8
Oil	1.5	1.0	0.7	1.7	0.7	0.5	1.3	0.4	0.4	0.7	0.7
Gas	46.7	29.0	24.8	53.8	27.0	24.3	51.3	25.6	21.6	47.2	49.9
Nuclear	31.6	12.8	15.7	28.4	17.0	14.1	31.1	17.5	15.8	33.3	37.1
Hydro	1.5	0.7	0.8	1.5	0.6	0.7	1.3	0.7	0.8	1.5	1.7
Renewables	7.2	3.9	4.1	8.0	4.5	4.4	8.9	4.8	5.1	9.9	11.0

\* include residential, commercial, public-etc usage

## Coal

(Mton)

	2017	2018		2019p			2020e			2021e	
		1H	2H		1H	2H		1H	2H		
	<b>Total Coal Demand</b>	<b>139.8</b>	<b>68.9</b>	<b>72.1</b>	<b>141.0</b>	<b>63.0</b>	<b>70.0</b>	<b>133.0</b>	<b>55.9</b>	<b>64.2</b>	<b>120.0</b>
Transform	89.4	44.6	47.2	91.8	38.9	45.9	84.8	33.9	40.6	74.6	70.7
Power Generation	89.4	44.6	47.2	91.8	38.9	45.9	84.8	33.9	40.6	74.6	70.7
Heat	-	-	-	-	-	-	-	-	-	-	-
Gas Manufacture	-	-	-	-	-	-	-	-	-	-	-
<b>Total Final Consumption</b>	<b>50.4</b>	<b>24.3</b>	<b>24.9</b>	<b>49.2</b>	<b>24.1</b>	<b>24.1</b>	<b>48.2</b>	<b>22.0</b>	<b>23.5</b>	<b>45.5</b>	<b>46.7</b>
Industry	49.3	24.0	24.3	48.3	23.9	23.7	47.6	21.8	23.2	45.0	46.2
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	1.1	0.3	0.6	0.9	0.2	0.4	0.6	0.2	0.3	0.5	0.4
<b>Consumption by products</b>											
Anthracite	8.3	4.5	4.7	9.2	4.2	3.7	7.9	3.3	3.7	7.0	6.3
Bituminous	131.5	64.4	67.4	131.8	58.8	66.2	125.1	52.6	60.5	113.1	111.1
Iron making	36.3	16.9	17.7	34.6	17.3	17.7	35.0	16.3	17.3	33.5	35.1
Cement	4.2	1.8	1.9	3.7	2.0	2.0	4.0	1.7	1.7	3.4	3.5
Power Generation	88.3	44.3	46.5	90.8	38.3	45.4	83.6	33.4	40.3	73.7	70.1

## Oil

(Mbbbl)

	2017		2018		2019p			2020e		2021e	
		1H	2H		1H	2H		1H	2H		2021e
<b>Total Oil Demand</b>	<b>937.1</b>	<b>466.6</b>	<b>465.2</b>	<b>931.8</b>	<b>455.2</b>	<b>472.6</b>	<b>927.9</b>	<b>441.7</b>	<b>439.1</b>	<b>880.8</b>	<b>919.5</b>
Transform	10.5	7.2	4.5	11.7	5.4	3.9	9.3	2.8	2.8	5.6	5.3
Power Generation	8.1	5.0	3.6	8.6	3.4	2.3	5.7	1.0	1.4	2.4	1.8
Heat	1.2	0.7	0.4	1.1	1.4	1.1	2.4	1.2	0.9	2.1	2.3
Gas Manufacture	1.2	1.5	0.6	2.0	0.6	0.6	1.2	0.6	0.6	1.1	1.2
<b>Total Final Consumption</b>	<b>926.6</b>	<b>459.4</b>	<b>460.6</b>	<b>920.0</b>	<b>449.9</b>	<b>468.7</b>	<b>918.6</b>	<b>438.9</b>	<b>436.3</b>	<b>875.2</b>	<b>914.2</b>
Industry	567.0	282.2	281.9	564.1	272.2	294.1	566.2	277.5	276.6	554.1	576.9
Transport	303.2	148.4	153.8	302.3	151.4	151.9	303.3	134.2	137.0	271.2	286.5
Buildings	56.4	28.8	24.9	53.7	26.3	22.8	49.1	27.2	22.7	49.9	50.8
<b>Consumption by products</b>											
Gasoline	79.6	39.0	40.7	79.7	40.6	42.1	82.7	38.8	41.6	80.3	84.3
Diesel (including Transformation)	165.9	79.9	84.2	164.1	83.2	83.8	167.0	77.5	77.8	155.3	165.9
Kerosene (including Transformation)	19.0	10.2	8.7	18.9	9.2	7.9	17.1	9.4	6.8	16.2	16.7
B-C (including Transformation)	35.8	18.3	15.4	33.7	14.2	10.5	24.7	12.1	10.7	22.9	22.3
Jet Oil	38.2	19.8	20.0	39.9	19.5	19.4	38.8	11.6	10.6	22.2	25.7
LPG (including Transformation)	105.1	56.6	52.8	109.4	55.9	66.2	122.1	61.0	65.2	126.2	136.5
Naphtha	458.4	226.5	224.7	451.2	215.3	223.3	438.6	210.7	206.7	417.4	429.6
Other Non-Energy	35.1	16.4	18.7	35.1	17.3	19.4	36.7	20.7	19.5	40.2	38.4

## Gas

	2017	2018			2019p			2020e			2021e
		1H	2H		1H	2H		1H	2H		
<b>Total Gas Demand (Mton)</b>	<b>36.4</b>	<b>22.6</b>	<b>19.7</b>	<b>42.3</b>	<b>21.4</b>	<b>19.5</b>	<b>40.9</b>	<b>20.9</b>	<b>17.7</b>	<b>38.6</b>	<b>41.5</b>
Transform	35.8	22.2	19.0	41.2	20.7	18.6	39.3	19.6	16.6	36.1	38.2
Power Generation	15.6	9.8	9.1	18.9	8.9	9.5	18.4	8.7	8.1	16.8	17.9
Heat	1.7	1.2	1.0	2.3	1.0	0.9	1.9	0.9	0.8	1.8	1.8
Gas Manufacture	18.5	11.1	8.8	20.0	10.7	8.2	18.9	9.9	7.7	17.6	18.5
Industry	0.6	0.4	0.7	1.1	0.8	0.9	1.7	1.3	1.2	2.5	3.3
<b>City Gas (Bm<sup>3</sup>)</b>	<b>22.6</b>	<b>14.0</b>	<b>10.3</b>	<b>24.3</b>	<b>13.6</b>	<b>9.6</b>	<b>23.3</b>	<b>12.7</b>	<b>9.4</b>	<b>22.2</b>	<b>22.8</b>
Industry*	7.8	4.5	4.3	8.8	4.4	3.9	8.3	3.9	3.6	7.5	7.6
Transport	1.2	0.6	0.6	1.2	0.6	0.6	1.2	0.5	0.6	1.1	1.2
Buildings	13.6	8.9	5.3	14.3	8.6	5.2	13.8	8.3	5.2	13.6	14.0

\* exclude industrial LNG usage

## Electricity

(TWh)

	2017		2018		2019p			2020e			2021e
			1H	2H		1H	2H		1H	2H	
<b>Net Electricity Demand</b>	<b>553.5</b>	<b>279.1</b>	<b>291.6</b>	<b>570.6</b>	<b>277.1</b>	<b>285.9</b>	<b>563.0</b>	<b>270.2</b>	<b>275.7</b>	<b>545.8</b>	<b>568.9</b>
Own use and Losses	45.8	17.4	27.1	44.5	17.3	25.3	42.5	17.9	22.5	40.4	44.2
<b>Total Final Consumption</b>	<b>507.7</b>	<b>261.7</b>	<b>264.5</b>	<b>526.1</b>	<b>259.9</b>	<b>260.6</b>	<b>520.5</b>	<b>252.3</b>	<b>253.1</b>	<b>505.4</b>	<b>524.7</b>
Industry	276.7	140.8	142.9	283.7	140.2	139.6	279.8	133.0	134.1	267.1	279.1
Transport	2.8	1.4	1.5	3.0	1.4	1.5	2.9	1.3	1.4	2.7	2.9
Buildings	228.3	119.4	120.0	239.5	118.2	119.6	237.8	117.9	117.6	235.6	242.7
<b>Installed Electrical Capacity (GW)*</b>	<b>116.4</b>	<b>117.2</b>	<b>118.5</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>134.8</b>
Coal	36.8	36.8	37.0	37.0	37.0	37.0	37.0	37.1	36.5	36.5	37.3
Oil	4.1	4.2	4.3	4.3	3.9	3.9	3.9	2.1	2.1	2.1	2.1
Gas	37.5	37.7	37.9	37.9	38.1	39.4	39.4	41.2	41.2	41.2	41.2
Nuclear	22.5	22.3	21.9	21.9	21.9	23.3	23.3	23.3	23.3	23.3	26.1
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	8.9	9.8	11.0	11.0	13.0	14.6	14.6	16.7	19.0	19.0	21.7
<b>Electricity Generation of Power Plants*</b>	<b>553.5</b>	<b>279.1</b>	<b>291.6</b>	<b>570.6</b>	<b>277.1</b>	<b>285.9</b>	<b>563.0</b>	<b>270.1</b>	<b>275.6</b>	<b>545.8</b>	<b>567.9</b>
Coal	238.8	116.1	122.3	238.4	104.2	123.2	227.4	94.1	111.4	205.6	197.3
Oil	5.3	3.4	2.4	5.7	1.8	1.4	3.3	0.8	0.8	1.7	1.3
Gas	126.0	80.9	72.6	153.5	70.2	74.1	144.4	69.5	62.9	132.4	142.3
Nuclear	148.4	60.0	73.6	133.5	79.8	66.1	145.9	82.1	74.1	156.2	174.1
Hydro	7.0	3.4	3.9	7.3	3.0	3.2	6.2	3.3	3.9	7.2	7.8
Other Renewables	28.0	15.4	16.9	32.2	18.0	17.9	35.9	20.3	20.5	40.7	45.0
<b>Fuel Consumption of Power Plants (Mtoe)*</b>	<b>114.7</b>	<b>57.3</b>	<b>61.0</b>	<b>118.3</b>	<b>57.2</b>	<b>59.1</b>	<b>116.3</b>	<b>54.6</b>	<b>56.5</b>	<b>111.0</b>	<b>115.2</b>
Coal	52.8	26.4	27.9	54.2	23.0	27.1	50.1	20.0	24.0	44.1	41.8
Oil	1.2	0.8	0.5	1.3	0.5	0.3	0.8	0.1	0.2	0.4	0.3
Gas	20.4	12.8	11.9	24.7	11.6	12.4	24.1	11.4	10.5	21.9	23.4
Nuclear	31.6	12.8	15.7	28.4	17.0	14.1	31.1	17.5	15.8	33.3	37.1
Hydro	1.5	0.7	0.8	1.5	0.6	0.7	1.3	0.7	0.8	1.5	1.7
Other Renewables	7.2	3.9	4.1	8.0	4.5	4.4	8.9	4.8	5.1	9.9	11.0

\* District Heat is classified by fuel type since 2014

## Heat and Other Renewables

(Mtoe)

	2017	2018			2019p			2020e			2021e
		1H	2H		1H	2H		1H	2H		
<b>Net Heat Demand</b>	<b>2.4</b>	<b>1.6</b>	<b>1.1</b>	<b>2.6</b>	<b>1.5</b>	<b>1.0</b>	<b>2.5</b>	<b>1.5</b>	<b>1.1</b>	<b>2.6</b>	<b>2.6</b>
Own use and Losses	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1
<b>Total Final Consumption</b>	<b>2.4</b>	<b>1.6</b>	<b>1.1</b>	<b>2.7</b>	<b>1.5</b>	<b>1.0</b>	<b>2.6</b>	<b>1.5</b>	<b>1.1</b>	<b>2.6</b>	<b>2.7</b>
Industry	-	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-	-
Buildings	2.4	1.6	1.1	2.7	1.5	1.0	2.6	1.5	1.1	2.6	2.7
<b>Heat Production by fuel</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	1.5	1.0	0.7	1.7	1.0	0.7	1.7	1.0	0.7	1.7	1.8
Gas	1.0	0.6	0.4	0.9	0.5	0.4	0.9	0.5	0.4	0.8	0.8
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Fuel Consumption of District Heat</b>											
Coal	-	-	-	-	-	-	-	-	-	-	-
Oil	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.2	0.1	0.3	0.3
Gas	2.2	1.6	1.3	2.9	1.3	1.2	2.5	1.2	1.1	2.3	2.4
Nuclear	-	-	-	-	-	-	-	-	-	-	-
Hydro	-	-	-	-	-	-	-	-	-	-	-
Other Renewables	-	-	-	-	-	-	-	-	-	-	-
<b>Other Renewables</b>	<b>17.3</b>	<b>9.1</b>	<b>9.5</b>	<b>18.7</b>	<b>9.9</b>	<b>9.7</b>	<b>19.6</b>	<b>10.3</b>	<b>10.6</b>	<b>20.9</b>	<b>22.3</b>
Hydro	1.5	0.7	0.8	1.5	0.6	0.7	1.3	0.7	0.8	1.5	1.7
Transform	7.2	3.9	4.1	8.0	4.5	4.4	8.9	4.8	5.1	9.9	11.0
<b>Total Final Consumption</b>	<b>8.6</b>	<b>4.5</b>	<b>4.6</b>	<b>9.1</b>	<b>4.8</b>	<b>4.6</b>	<b>9.3</b>	<b>4.7</b>	<b>4.7</b>	<b>9.4</b>	<b>9.7</b>
Industry	6.6	3.3	3.4	6.7	3.5	3.3	6.8	3.5	3.4	6.8	7.0
Transport	0.4	0.3	0.3	0.7	0.3	0.3	0.7	0.3	0.3	0.7	0.7
Buildings	1.6	0.9	0.9	1.7	0.9	0.9	1.8	0.9	1.0	1.9	2.0

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