

# KEEI MONTHLY KOREA ENERGY TRENDS

KOREA ENERGY ECONOMICS INSTITUTE

2024/03

COAL	-8.3%
PETROLEUM	-9.2%
GAS	-9.6%
NUCLEAR	6.9%
NEW & RENEWABLE	2.9%
DECEMBER. 2023	



This publication is derived from Energy Demand & Supply Statistics and Energy Price Statistics issued until December 2023.

Disclaimer: The translations provided here are the result of an automatic translation of Korean Energy Trends for the convenience of international readers. They have been reviewed by our editors, but in case of any confusion in interpretation, the Korean version takes precedence.

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## 1. The Economy and the Industry

### □ The Industrial Production Index increased 6.1% year-on-year in December as production increased in most industries, led by the semiconductor industry.

- The Semiconductor Production Index hit a five-year high, driven by a recovery in demand, including an increase in exports (21.7%, by value), and a base effect from a decline in production due to the recession in the previous year. Capacity utilization index and shipment index also increased by 26.5% and 79.3%, respectively.
- Steel and basic chemicals production index rose 11.7% and 2.0% year-on-year, respectively, due to base effect and other factors.
- The index for automobile production remained at the same level as a year earlier (-0.4%) due to higher exports but lower production of internal combustion engine parts.

### □ The services industry production index has been rising for 34 consecutive months, but the pace of growth has slowed significantly.

- Production increased in some sectors of the service industry, but declined in others, including wholesale and retail trade and accommodation and food services.

### □ Gross domestic product grew 2.2% y/y in 4Q 2023, driven by higher private consumption and net exports despite lower investment.

- Construction investment decreased by 1.9% YoY, mainly in civil construction, and equipment investment decreased by 3.6% YoY, mainly in machinery. However, private consumption increased by 0.9%, led by services, and net exports (value) surged, leading to an increase in gross domestic product.

#### ► Major economic and industrial indicators

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
GDP (trillion won)	1 968.8 (2.6)	1 968.8 (2.6)	513.8 (1.4)	1 995.6 (1.4)	- -	- -	525.1 (2.2)
Total export (\$billion, customs clearance basis)	683.6 (6.1)	683.6 (6.1)	54.8 (-9.7)	632.2 (-7.5)	55.0 (4.9)	55.6 (7.3)	57.6 (5.0)
Industrial production index (2020=100)	109.6 (1.0)	109.6 (1.0)	109.2 (-10.7)	106.7 (-2.6)	107.9 (2.0)	114.1 (6.1)	115.9 (6.1)
Semi-conductors	135.7 (5.4)	135.7 (5.4)	117.1 (-26.0)	133.0 (-2.0)	145.3 (17.3)	157.2 (40.7)	172.1 (47.0)
Basic chemical products	98.9 (-6.5)	98.9 (-6.5)	96.7 (-12.6)	95.5 (-3.5)	89.5 (-2.7)	91.6 (5.0)	98.6 (2.0)
Iron&Steel	96.3 (-8.4)	96.3 (-8.4)	86.1 (-18.9)	98.9 (2.8)	100.0 (28.0)	95.8 (20.8)	96.2 (11.7)
Cars	115.8 (9.1)	115.8 (9.1)	131.0 (10.9)	127.6 (10.2)	125.1 (3.0)	133.8 (-1.7)	130.5 (-0.4)
Service production index (2020=100)	112.3 (6.9)	112.3 (6.9)	129.3 (6.9)	115.8 (3.2)	115.2 (1.6)	116.9 (2.5)	130.5 (0.9)
Wholesale & Retail	107.1 (2.7)	107.1 (2.7)	112.3 (1.2)	106.4 (-0.6)	105.1 (-3.8)	109.4 (0.3)	111.4 (-0.8)
Food & Accommodation	119.1 (16.9)	119.1 (16.9)	129.9 (12.8)	120.0 (0.8)	121.1 (-5.1)	115.8 (-3.4)	127.0 (-2.2)

Note: Figures are based on the real price of 2020, P means provisional, ( ) is year-on-year growth rates (%).  
Source: Bank of Korea, Korea International Trade Association, Korea Statistical Information Service

## 2. Energy Prices

### Global Energy Prices

#### □ International oil prices fell in December on uncertainty over OPEC+ production cuts, despite projected oil demand growth in 2024.

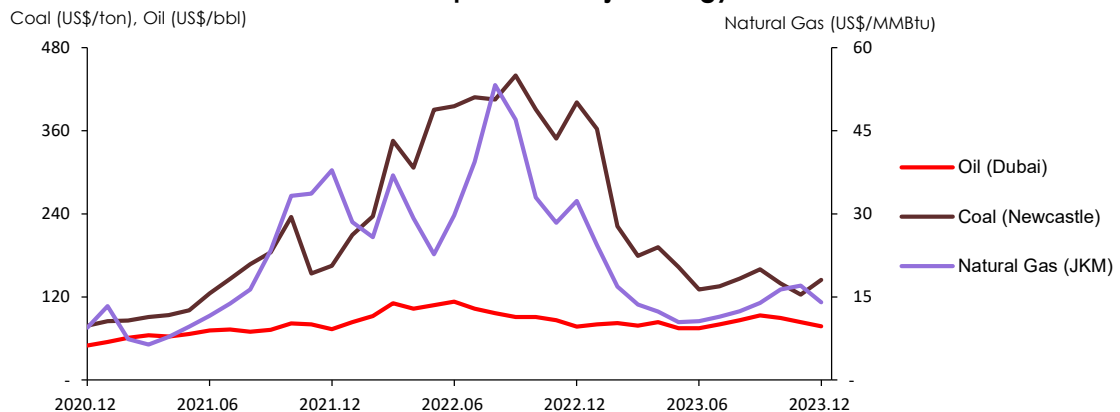
- The IEA revised up its 2024 global oil demand growth forecast by 130,000 b/d in December from the previous month (930,000 b/d).
- OPEC+ announced on November 30 that it would cut production by 2.2 million b/d in Q1 2024 (an additional 900,000 b/d), but doubt over the sufficiency of additional cuts and skepticism over the implementation of the cuts put downward pressure on international oil prices.
- International natural gas prices fell sharply on high inventory levels and robust supply although the winter season began.
- International thermal coal prices rose from the previous month on seasonally higher demand from the power generation sector, despite lower international oil prices.

#### ► Global energy prices

	2021	2022				2023		
			M10	M11	M12	M10	M11	M12
Crude oil (US\$/bbl)	69.3 (64.2)	96.4 (39.1)	91.2 (0.2)	86.3 (-5.4)	77.2 (-10.5)	89.8 (-3.8)	83.6 (-6.9)	77.3 (-7.5)
Coal (US\$/ton)	136.4 (126.5)	357.1 (161.8)	390.4 (-11.1)	348.6 (-10.7)	400.9 (15.0)	139.5 (-12.6)	123.2 (-11.7)	144.3 (17.2)
Natural gas (US\$/MMBtu)								
Henry Hub	3.7 (74.6)	6.5 (75.3)	6.1 (-21.6)	6.4 (5.7)	5.8 (-10.3)	3.1 (16.8)	3.1 (-3.0)	2.5 (-16.9)
TTF	16.1 (397.9)	40.2 (149.6)	38.4 (-33.7)	35.9 (-6.5)	36.7 (2.2)	14.6 (27.2)	14.5 (-0.7)	11.6 (-20.1)
JKM	17.9 (325.7)	33.9 (89.2)	33.0 (-29.8)	28.4 (-13.9)	32.3 (14.0)	16.3 (17.1)	17.0 (4.4)	14.0 (-17.5)

Note: Oil and coal prices are based on Dubai oil and Newcastle thermal coal in Australia, respectively. ( ) is month-on-month growth rates (%).  
Source: Korea National Oil Corporation, World Bank, CME Group

#### ► Global prices of major energy sources



## Domestic energy prices

### □ Domestic prices of gasoline and diesel decreased by 5.0% and 6.3% month-on-month in December, respectively, due to lower international prices.

- Domestic gasoline and diesel prices decreased throughout December, reaching KRW 1,579.3 and KRW 1,495.2 per liter, respectively, on December 31st.
- Retail prices of propane and butane remained at the previous month's level as LPG importers (SK Gas, E1, etc.) froze their supply prices.
- The relative price of industrial propane prices and city gas retail tariffs (propane/city gas) decreased by 10.0% m/m to 1.18.

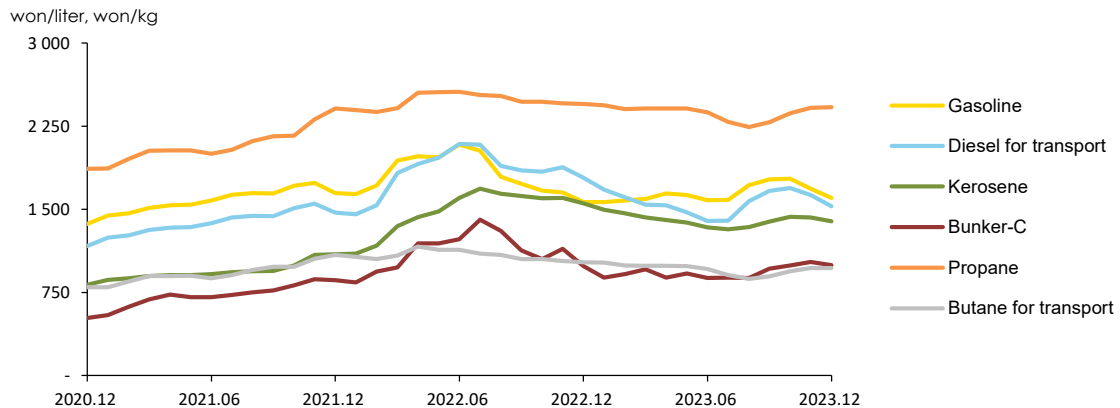
### ► Domestic petroleum product prices

	2021	2022	2023			2021	2022	2023
			M10	M11	M12			
Gasoline (won/liter)	1 591.2 (15.2)	1 812.7 (13.9)	1 666.7 (-3.7)	1 650.3 (-1.0)	1 563.8 (-5.2)	1 775.9 (0.4)	1 684.1 (-5.2)	1 600.6 (-5.0)
Diesel for transport (won/liter)	1 392.0 (17.0)	1 843.4 (32.4)	1 838.4 (-0.6)	1 879.2 (2.2)	1 783.3 (-5.1)	1 690.3 (1.4)	1 628.2 (-3.7)	1 526.3 (-6.3)
Bunker-C (won/liter)	732.2 (27.8)	1 116.1 (52.4)	1 050.8 (-6.9)	1 142.2 (8.7)	986.7 (-13.6)	992.6 (3.0)	1 024.1 (3.2)	994.7 (-2.9)
Propane (won/kg)	2 093.4 (13.1)	2 480.1 (18.5)	2 469.8 (-0.1)	2 455.4 (-0.6)	2 449.7 (-0.2)	2 367.9 (3.6)	2 416.6 (2.1)	2 420.1 (0.1)
Butane for transport (won/liter)	932.3 (17.9)	1 081.8 (16.0)	1 049.5 (-0.2)	1 032.2 (-1.6)	1 021.4 (-1.0)	940.3 (5.0)	970.8 (3.3)	970.8 (-0.0)

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

Source: Korea National Oil Corporation

### ► Domestic petroleum product prices



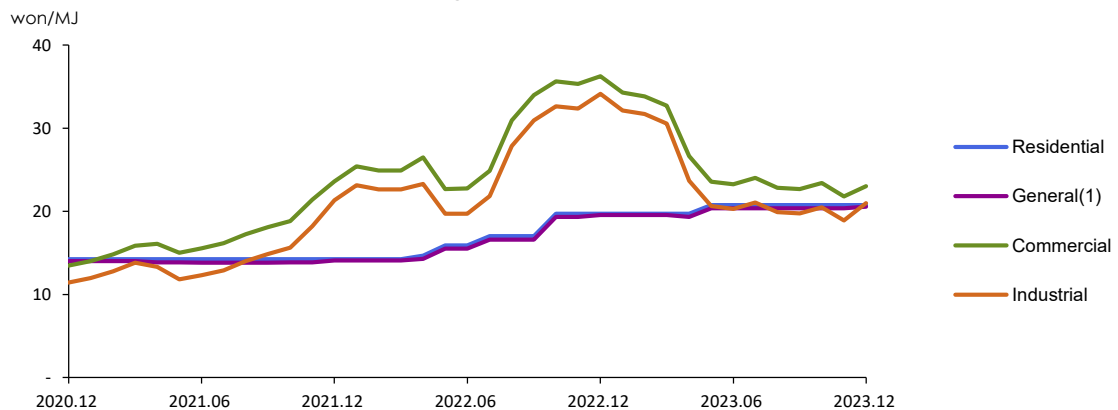
☐ **In December, city gas rates were frozen for residential use, but increased for general use, office heating, and industrial use.**

- Residential rates were frozen at 20.7 won per MJ for seven months, with material costs and supply costs frozen.
- General use rates were frozen for material costs, but increased slightly for supply costs due to the application of winter (December through March) rates.
- Office heating rates increased by 5.7% month-over-month due to a 7.2% month-over-month increase in material costs to 18.4 won per MJ.
- Industrial tariffs increased 11.1% month-on-month due to an increase in material costs to 18.4 won per MJ and an increase in supply costs due to the application of winter tariffs, the first time in five months that all private (residential and general use) tariffs have been higher.

☐ **December electricity tariffs remained at the previous month's level with an increase in the industrial tariff.**

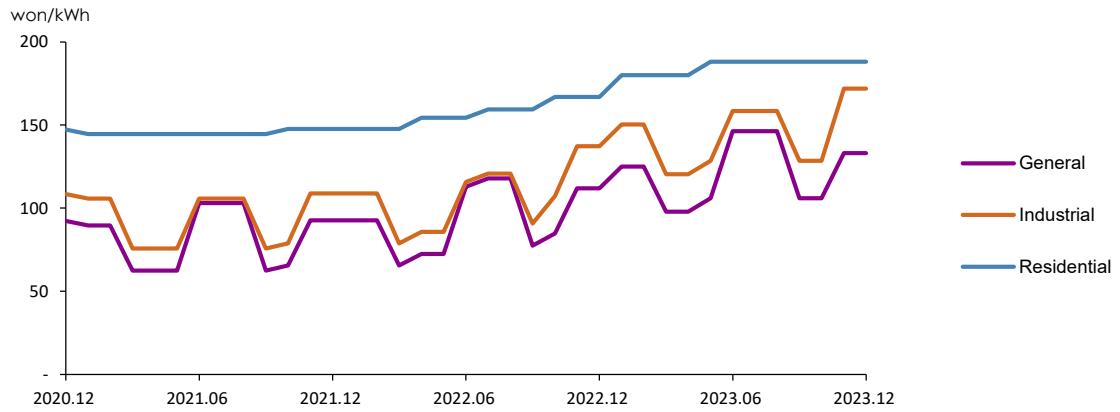
- Residential and general use rates increased by 12.6% and 18.9% year-on-year, respectively, due to two time energy charge increase (January and May) and one time climate environment charge increase (January) in the past year.
- Industrial tariffs for large capacity users (contracted power of 300 kW or more) were further increased on November 9, with a 25.2% year-on-year increase in the High Voltage B (154 kV) and Medium Load time slots(08:00-16:00).

► **City gas rates by end-use sectors**



Source: Seoul City Gas

## ► Electric rates by end-use sectors



Note: The electric rates by end-use sectors refer to the prices for residential use ([high voltage], the 2nd stage price), general use ([A], low voltage) and Industrial use ([B], high voltage B middle load), including Climate Environmental Price.  
Source: KEPCO

### 3. Energy Supply

□ **Energy import volumes in December increased by 3.5% y/y, with increases in all energy sources except coal.**

- Crude oil import volume increased for the fourth consecutive month due to the continuation of the decline in unit prices in most exporting regions since February 2023.
- Petroleum products import volumes increased by 1.0% y/y, led by naphtha and B-C oils.
- Coal import volume decreased by 0.9% y/y as bituminous coal, the largest component of coal imports, declined slightly (-0.3%) from a year earlier due to lower consumption for domestic industry and power generation, and anthracite coal also declined by 24.1%.
- Natural gas import volumes rebounded, rising 10.3% y/y, driven by lower import unit costs.
- The amount of energy exports and imports decreased due to the decline in export and import unit prices. The decline in import prices (-18.0%) was greater than the decline in export prices (-6.5%), so while the export amount decreased by 4.1%, the import amount increased by 15.1%.

► **Import and domestic production of energy**

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
Import volume (Mtoe)	333.4 (2.8)	333.4 (2.8)	29.0 (1.1)	324.4 (-2.7)	26.4 (2.3)	27.3 (0.0)	30.0 (3.5)
Crude oil (Mbbbl)	1 031.3 (7.4)	1 031.3 (7.4)	87.6 (0.7)	1 005.8 (-2.5)	83.7 (5.2)	85.7 (3.3)	89.9 (2.6)
Petroleum product (Mbbbl)	367.1 (-6.4)	367.1 (-6.4)	30.5 (-19.4)	372.1 (1.4)	33.1 (6.1)	35.8 (13.7)	30.9 (1.0)
Coal (Mton)	125.6 (-0.4)	125.6 (-0.4)	10.8 (3.1)	119.8 (-4.6)	9.1 (11.4)	8.9 (-15.3)	10.7 (-0.9)
LNG (Mton)	46.4 (1.0)	46.4 (1.0)	4.5 (16.9)	44.1 (-4.9)	3.4 (-17.2)	3.7 (-1.3)	5.0 (10.3)
Import value (billion US\$, CIF)	222.8 (58.0)	222.8 (58.0)	18.7 (15.6)	176.4 (-20.8)	14.5 (-19.3)	14.6 (-17.5)	15.8 (-15.1)
Energy share of total import value (%)	30.4	30.4	31.3	27.4	27.1	28.1	29.8
Foreign energy dependence (%)	94.3	94.3	97.1	93.8	94.1	95.1	95.9
Export volume (Mtoe)	69.0 (11.2)	69.0 (11.2)	6.0 (5.9)	68.2 (-1.2)	6.2 (10.2)	6.0 (8.0)	6.1 (2.6)
Export value (billion US\$, FOB)	63.1 (63.5)	63.1 (63.5)	4.7 (20.3)	52.2 (-17.3)	5.2 (16.0)	4.5 (-6.7)	4.5 (-4.1)
Domestic production							
Hydropower (TWh)	3.5 (16.0)	3.5 (16.0)	0.2 (9.5)	3.7 (4.9)	0.3 (12.9)	0.2 (7.4)	0.3 (41.2)
Renewable energy (Mtoe)	15.9 (10.7)	15.9 (10.7)	1.3 (-2.4)	16.8 (5.9)	1.3 (1.8)	1.4 (18.1)	1.3 (1.7)

Note: p means provisional, ( ) is year-on-year growth rates (%), \*Foreign energy dependence (%) including Nuclear energy, Most of exports are petroleum products.

Source: Korea Energy Economics Institute, Korea International Trade Association

## 4. Energy Consumption

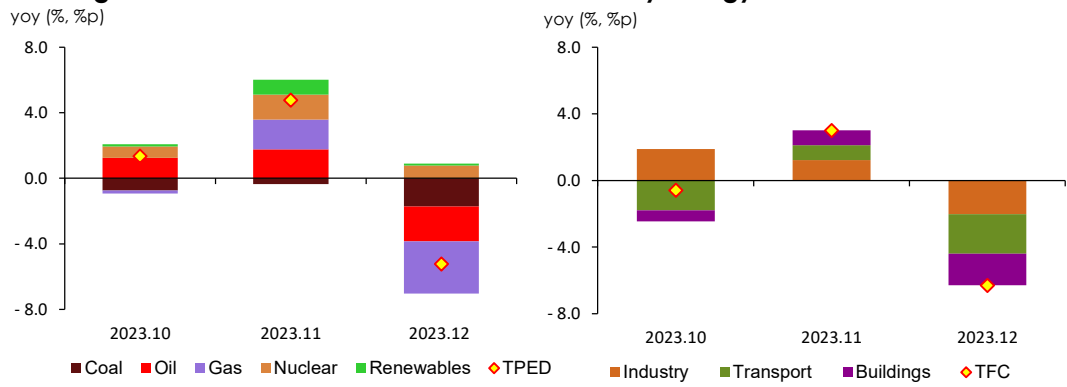
- **Total energy consumption in December decreased by 5.2% year-on-year due to lower consumption of fossil fuels, excluding carbon-free energy sources.**
  - Coal consumption decreased by 8.0% y-o-y, as industrial consumption declined due to fewer working days and sluggish cement and petrochemicals, while power generation consumption declined due to the increase in nuclear, renewable and other generation.
  - Oil consumption decreased by 5.5% YoY due to a significant decline in final consumption in the road sector, which was driven by the base effect of higher storage demand for gasoline in January 2023, and lower consumption for feedstock in the industrial sector.
  - Gas consumption decreased by 9.6% y/y due to a significant decline in gas-fired power generation for peak loads as a result of lower total power generation, and lower consumption in the industrial sector, mainly for petrochemicals.
- **Energy final consumption decreased by 6.3% y/y, with declines in all sectors, led by transportation.**
  - Despite stronger growth in semiconductor production, industrial sector consumption fell 3.7% y/y as a result of two working days decrease and the continued impact of the economic slowdown.
  - Transportation sector consumption fell 13.9% y/y due to a base effect of higher gasoline consumption ahead of the decrease in the fuel tax rate cut in January 2023 and a decline in road sector consumption, with diesel consumption falling due to continued weak domestic consumption.
  - Building sector consumption decreased by 6.8% YoY due to heating demand decrease affected by mild winter weather and the price effect of higher energy prices.

### ► Energy consumption

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>TPED (Mtoe)</b>	<b>305.1</b>	<b>305.1</b>	<b>29.0</b>	<b>297.6</b>	<b>23.6</b>	<b>25.1</b>	<b>27.5</b>
	(0.6)	(0.6)	(-1.1)	(-2.5)	(1.3)	(4.8)	(-5.2)
<b>TFC (Mtoe)</b>	<b>214.5</b>	<b>214.5</b>	<b>20.6</b>	<b>207.6</b>	<b>16.1</b>	<b>17.5</b>	<b>19.3</b>
	(-0.5)	(-0.5)	(-3.0)	(-3.2)	(-0.6)	(3.0)	(-6.3)
- Feedstock exclude	142.2	142.2	14.5	138.1	10.3	11.7	13.3
	(0.7)	(0.7)	(1.4)	(-2.9)	(-4.2)	(3.7)	(-7.8)

Note: p means provisional, ( ) is year-on-year growth rates.  
Source: Korea Energy Economics Institute

## ► The growth rates of TPED & TFC and contribution by energy sources and end-use sectors



## 5. Coal

### □ Coal consumption fell 8.3% y/y in December, with declines in all industries except steel and in the power generation sector.

- Coal consumption in the industrial sector declined for the fourth month since September, driven by fewer working days (2 days) compared to a year earlier and lower consumption in key industries such as cement and petrochemicals due to weak business conditions.
- Coal consumption for power generation decreased by 12.1% y-o-y due to a decrease in coal-fired power generation, as a result of a significant increase in nuclear and renewable and other power generation despite a decrease in total power generation (-5.7%).

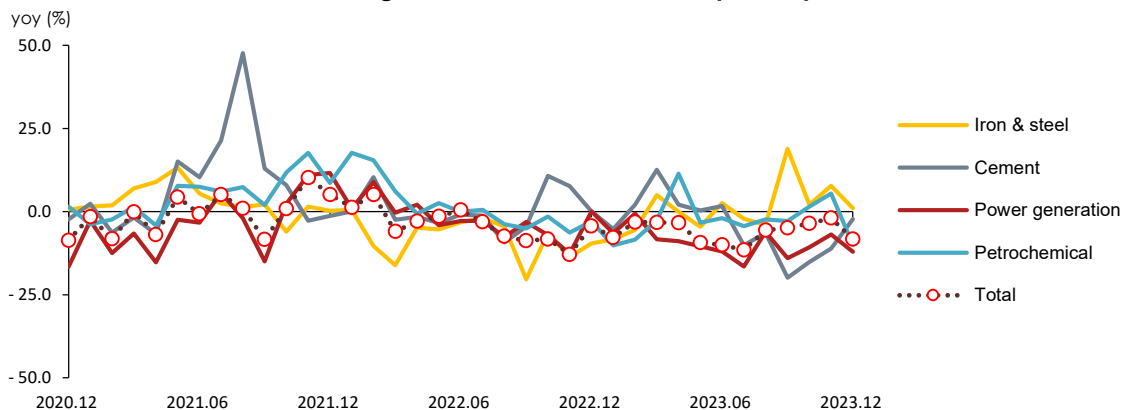
#### ► Coal consumption

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Coal (Mton)</b>	<b>115.0</b>	<b>115.0</b>	<b>10.4</b>	<b>107.7</b>	<b>8.3</b>	<b>8.6</b>	<b>9.5</b>
	(-4.1)	(-4.1)	(-4.3)	(-6.3)	(-3.6)	(-2.0)	(-8.3)
Industry	47.4	47.4	4.0	46.6	3.9	4.0	3.9
	(-6.2)	(-6.2)	(-10.4)	(-1.7)	(5.5)	(4.3)	(-2.0)
Iron and Steel	32.5	32.5	2.8	32.7	2.7	2.7	2.8
	(-8.1)	(-8.1)	(-9.6)	(0.7)	(2.0)	(7.8)	(1.0)
- Coking coal	23.6	23.6	2.0	23.8	2.0	2.0	2.0
	(-7.5)	(-7.5)	(-8.3)	(0.8)	(1.9)	(8.3)	(1.2)
Buildings	0.4	0.4	0.1	0.4	0.1	0.1	0.1
	(-5.3)	(-5.3)	(-14.8)	(-8.2)	(10.0)	(1.2)	(-17.3)
Power generation	67.1	67.1	6.4	60.7	4.3	4.6	5.6
	(-2.6)	(-2.6)	(0.0)	(-9.6)	(-10.8)	(-6.9)	(-12.1)

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

Source: Korea Energy Economics Institute

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



## 6. Petroleum

□ Final consumption of petroleum decreased by 9.2% in December, with declines in all sectors, led by the transportation sector.

- Industrial sector consumption decreased by 5.2% y/y due to lower consumption for petrochemical feedstock and fewer working days.
- Transportation sector consumption decreased by 14.3% y-o-y, due to the base effect of higher gasoline consumption in December 2022 in the road sector.

### ► Petroleum product consumption by end-use sectors

	2022p	M1~12		2023p			
			M12	M1~12	M10	M11	M12
<b>TFC (Mbbbl)</b>	<b>798.9</b>	<b>798.9</b>	<b>73.7</b>	<b>761.0</b>	<b>62.6</b>	<b>64.3</b>	<b>66.9</b>
	(-1.3)	(-1.3)	(-5.8)	(-4.7)	(-0.4)	(1.0)	(-9.2)
Industry	496.9	496.9	42.6	469.0	38.9	39.1	40.4
	(-1.8)	(-1.8)	(-11.2)	(-5.6)	(5.2)	(-1.2)	(-5.2)
- Naphtha	356.0	356.0	30.7	337.9	27.7	27.7	30.1
	(-3.8)	(-3.8)	(-13.6)	(-5.1)	(7.7)	(-1.3)	(-2.0)
Transport	258.0	258.0	25.1	250.2	20.3	21.2	21.5
	(-0.4)	(-0.4)	(1.5)	(-3.0)	(-9.0)	(5.4)	(-14.3)
Buildings	44.0	44.0	6.0	41.8	3.4	4.0	5.0
	(-0.6)	(-0.6)	(8.7)	(-4.8)	(-4.2)	(1.4)	(-16.5)
<b>Power generation (Mbbbl)</b>	<b>5.02</b>	<b>5.02</b>	<b>0.32</b>	<b>3.00</b>	<b>0.30</b>	<b>0.16</b>	<b>0.21</b>
	(20.0)	(20.0)	(-0.2)	(-40.2)	(-11.9)	(-46.9)	(-35.6)

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

Source: Korea Energy Economics Institute

### ► The growth rates of petroleum product consumption & contribution(%p) by end-use sectors

yoy(% , %p)



## 7. Gas

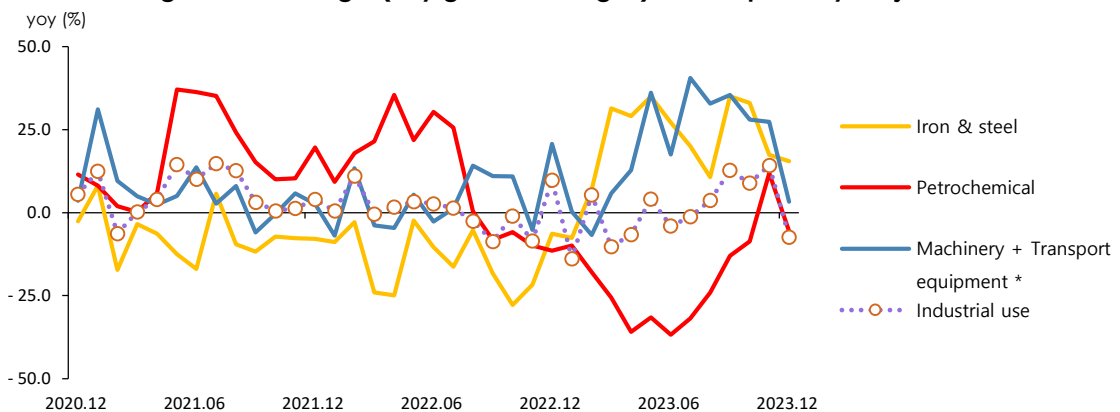
- **Gas consumption in December decreased by 9.6% y/y, driven by a broader decline in power generation and a decline in the industrial and buildings sector.**
  - Gas consumption for power generation declined more sharply at 18.3% y/y as total generation fell by 5.7%, but baseload (nuclear + coal + renewables + other) generation remained flat (-0.3%).
  - Industrial sector gas consumption decreased by 7.3% y/y, with declines in several sectors, led by petrochemicals.
  - Gas consumption in the buildings sector decreased by 7.5% year-on-year due to mild winter weather and price increase.

### ► Natural gas and city gas consumption

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Gas(TPED) (Mtoe)</b>	<b>59.5</b>	<b>59.5</b>	<b>7.0</b>	<b>57.5</b>	<b>3.8</b>	<b>4.8</b>	<b>6.3</b>
(Natural gas + City gas)	(-1.0)	(-1.0)	(10.5)	(-3.3)	(0.0)	(4.7)	(-9.6)
Power generation	30.0	30.0	3.2	28.5	2.0	2.2	2.6
	(-2.3)	(-2.3)	(16.8)	(-5.0)	(-5.3)	(-4.9)	(-18.3)
Industry	10.0	10.0	1.1	10.0	0.8	0.9	1.0
	(0.3)	(0.3)	(9.0)	(-0.3)	(9.0)	(14.3)	(-7.3)
Buildings	15.0	15.0	2.3	13.9	0.6	1.2	2.1
	(3.9)	(3.9)	(6.8)	(-7.4)	(-15.7)	(1.7)	(-7.5)
<b>Natural gas(TPED) (Mton)</b>	<b>45.6</b>	<b>45.6</b>	<b>5.7</b>	<b>43.9</b>	<b>3.0</b>	<b>3.9</b>	<b>5.0</b>
	(-0.5)	(-0.5)	(13.0)	(-3.7)	(-1.1)	(9.3)	(-12.4)
<b>City gas(TFC) (Bm<sup>3</sup>)</b>	<b>23.4</b>	<b>23.4</b>	<b>3.1</b>	<b>21.7</b>	<b>1.2</b>	<b>1.9</b>	<b>2.8</b>
	(2.9)	(2.9)	(5.5)	(-7.4)	(-9.8)	(2.8)	(-8.1)

Note: p means provisional, ( ) is year-on-year growth rates (%).  
Source: Korea Energy Economics Institute

### ► The growth rate of gas(city gas+natural gas)consumption by major industries



Note: The transport equipment sector includes only city gas consumption. Natural gas consumption in the transport equipment sector is highly variable, including the amount of LNG loaded (+) and unloaded (-) during the test operation of the LNG carrier.

## 8. Electricity

□ Electricity consumption in December decreased 1.2% year-on-year, driven by a slight increase in buildings but a decline in industry.

- In the industrial sector, manufacturing continued its modest recovery, but the number of working days decreased by 2 days, leading to a decline in electricity consumption in all major electricity consumers.
- Consumption in the buildings sector increased in both residential and commercial, but the increase in commercial was modest as growth in the Services Production Index slowed for the third consecutive month (0.9%).

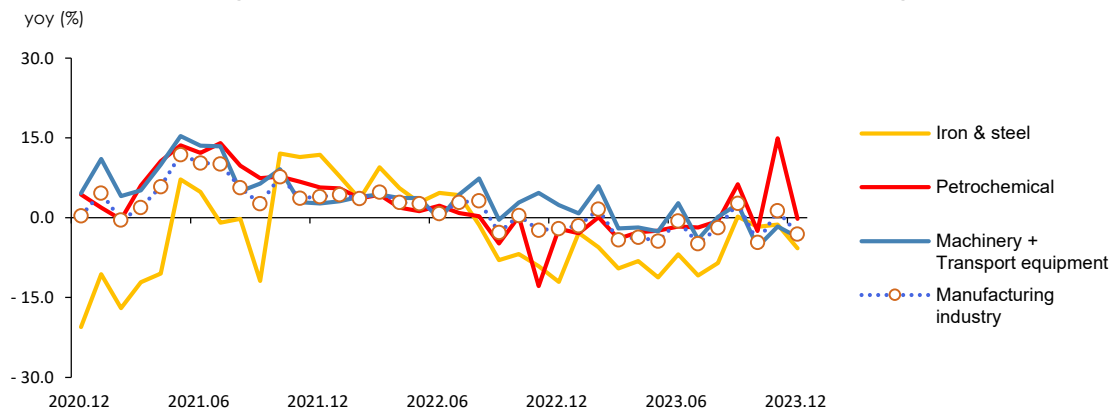
### ► Electricity consumption by end-use sectors

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Electricity (TWh)</b>	<b>535.4</b>	<b>535.4</b>	<b>45.8</b>	<b>534.7</b>	<b>40.8</b>	<b>42.0</b>	<b>45.3</b>
	(2.9)	(2.9)	(-0.3)	(-0.1)	(-1.3)	(1.3)	(-1.2)
Industry	274.1	274.1	23.1	268.5	21.0	22.0	22.4
	(1.7)	(1.7)	(-1.9)	(-2.0)	(-4.4)	(0.6)	(-3.1)
Transport	4.1	4.1	0.4	4.7	0.4	0.4	0.4
	(9.5)	(9.5)	(5.3)	(16.5)	(16.1)	(16.1)	(14.5)
Buildings	257.2	257.2	22.3	261.5	19.4	19.6	22.4
	(4.1)	(4.1)	(1.3)	(1.7)	(2.0)	(1.8)	(0.6)
Residential	78.6	78.6	6.3	79.9	6.1	6.0	6.4
	(1.3)	(1.3)	(1.3)	(1.7)	(4.2)	(1.0)	(1.6)
Commercial	147.0	147.0	13.0	149.2	10.9	11.1	13.0
	(5.9)	(5.9)	(0.2)	(1.5)	(0.9)	(2.0)	(0.3)

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

Source: Korea Energy Economics Institute

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

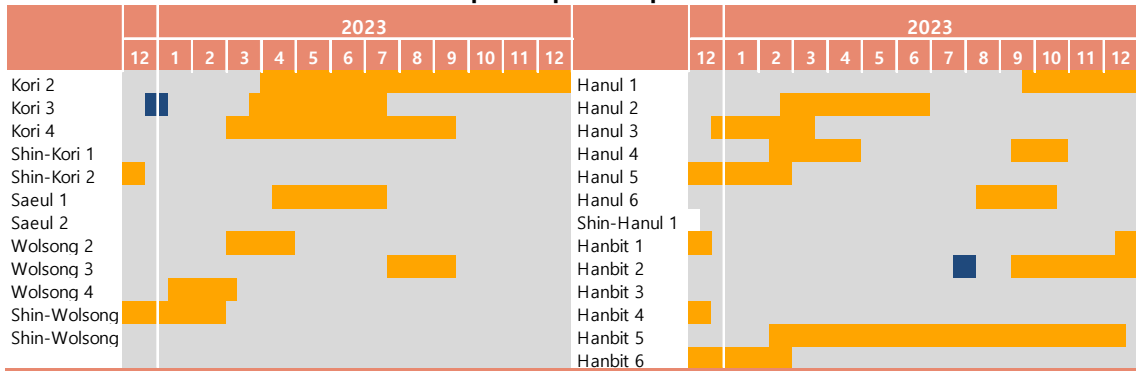


## 9. Nuclear

### □ Nuclear power generation in December increased by 7.0% y/y due to higher capacity utilization rate as average daily preventive maintenance decreased.

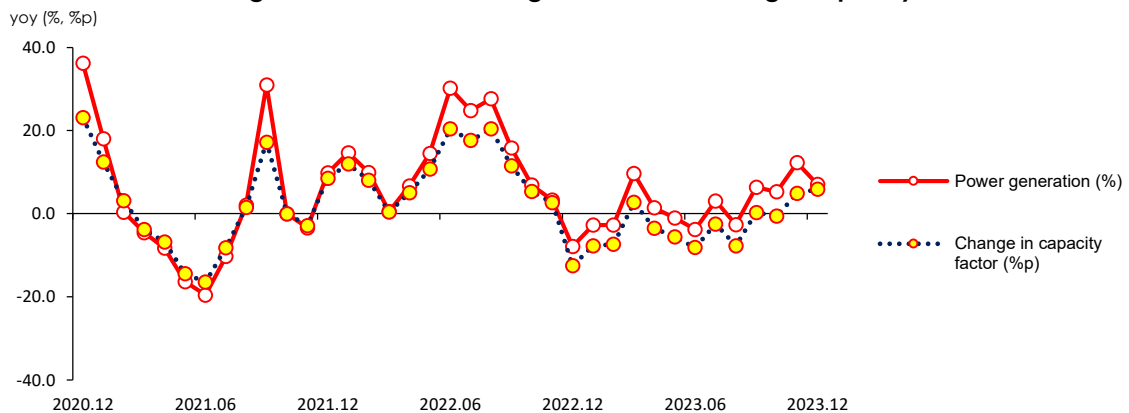
- The number of planned and unplanned shutdowns decreased by 3 units year-on-year to 5 units, and the average daily preventive maintenance decreased by 1.4 GW, resulting in a 5.8 percentage point year-on-year increase in capacity utilization rate to 88.9%.
- Capacity utilization rate was overestimated year-on-year from June 23 to November 23 due to the test operation of Shin-hanul Unit 1 (22.6.~22.11.), but the impact was minimal from December 2023 due to the official operation of Shin-hanul Unit 1 (7.12.2022) (see February issue for more information).
- Shin-hanul Unit 2 (1.4GW) was loaded with nuclear fuel in September 23, and has been in test operation since December 21, 2022.
- Nuclear power accounted for 31.1% of total power generation, up 3.7 percentage points year-on-year.

#### ► Nuclear power plants operation status



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

#### ► The growth rate of nuclear generation & average capacity factor



Note: Capacity factor = Ratio of actual power generated to possible power generation when utilizing 100% of available facility. Facility capacity values are based on end-of-the-month data.

## 10. Heat and Renewable energy

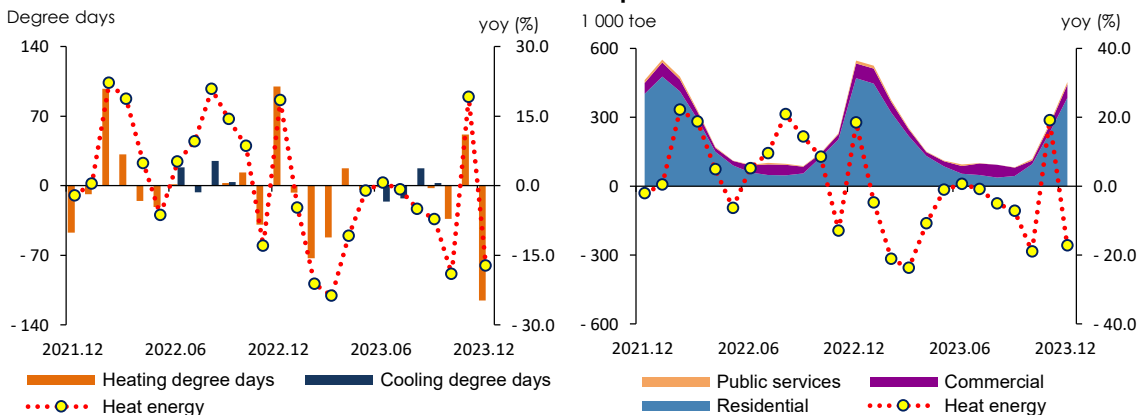
□ **December heat energy consumption fell sharply across all sectors, down 17.2% year-on-year, due to both temperature and price effects.**

- Thermal energy consumption fell sharply by 18.0%, 10.2%, and 23.5% y/y in the residential, commercial, and public services, respectively, due to price increases (13.0%) and mild winter weather (heating degree days -19.2%).

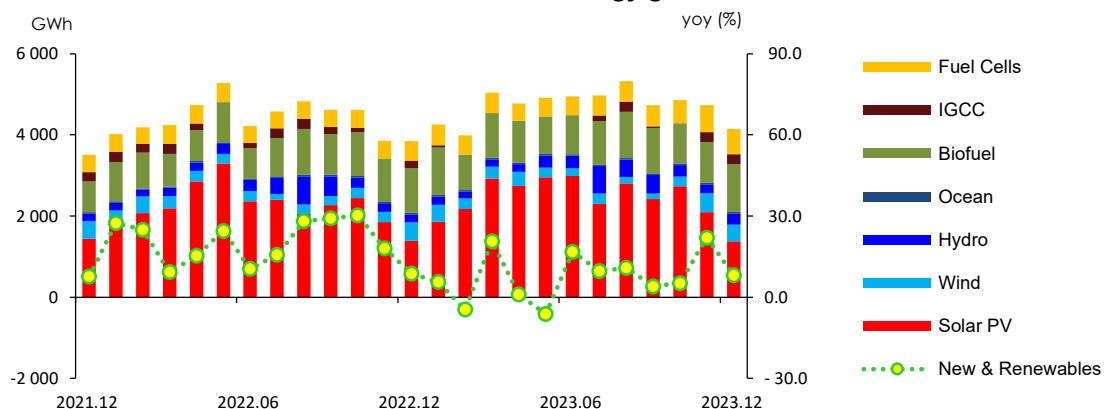
□ **Renewable and other energy consumption increased by 2.9% YoY, driven by growth in power generation and final sector consumption.**

- Renewable and other power generation increased by 8.2% y/y, led by fuel cells, hydro, bio, and IGCC.
- Renewable-Other final consumption increased 5.1% y/y, driven by gains in the industrial sector despite a decline in the transportation sector.

### ► Heat energy consumption by sector and the growth rate of total heat energy consumption



### ► New & renewable energy generation by source and the growth rate of total new & renewable energy generation



Note: The power generation from and installed capacity of renewable & other energy sources are based on the data from KEPCO's 'The Monthly Report on Electric Power Statistics'.

## 11. Industry

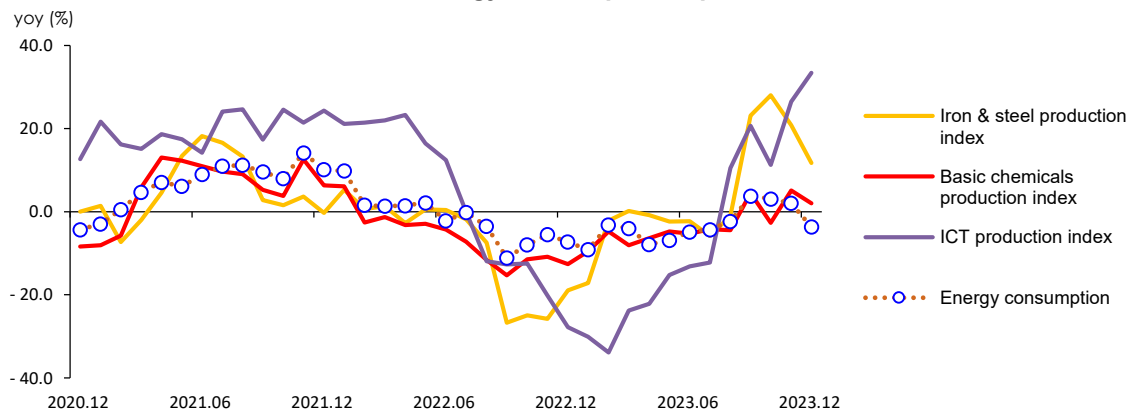
- Energy consumption in the industrial sector decreased by 3.7% year-on-year in December due to a decrease in the number of working days (2 days) and a sluggish economy.
  - Despite stronger production growth in the semiconductor industry, energy consumption in the industrial sector turned to decline for the first time in four months since September due to a decrease in working days, a delayed recovery in the petrochemical industry, and a sharp drop in consumption due to base effects in the transportation equipment industry.

### ► Industrial energy consumption

	2022p	2023p		2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Industry (Mtoe)</b>	<b>130.5</b>	<b>130.5</b>	<b>11.3</b>	<b>126.2</b>	<b>10.3</b>	<b>10.6</b>	<b>10.9</b>
	(-1.9)	(-1.9)	(-7.3)	(-3.3)	(3.1)	(2.0)	(-3.7)
Petrochemical	66.2	66.2	5.7	62.2	5.2	5.2	5.4
	(-1.3)	(-1.3)	(-10.8)	(-6.0)	(6.6)	(1.3)	(-4.6)
- Naphtha	43.6	43.6	3.8	41.4	3.4	3.4	3.7
	(-3.9)	(-3.9)	(-13.7)	(-5.1)	(7.7)	(-1.3)	(-2.0)
Iron & Steel	25.9	25.9	2.2	26.3	2.2	2.2	2.3
	(-7.3)	(-7.3)	(-9.1)	(1.4)	(3.5)	(7.6)	(1.7)
- Coking coal	16.6	16.6	1.4	16.7	1.4	1.4	1.4
	(-6.7)	(-6.7)	(-7.5)	(0.8)	(1.9)	(8.3)	(1.2)
Machinery + Transport Equipment	13.2	13.2	1.3	13.2	1.0	1.1	1.2
	(6.2)	(6.2)	(16.9)	(0.4)	(-0.3)	(3.8)	(-9.6)
Share of feedstock (%)	55.3	55.3	53.8	55.1	56.1	54.6	54.4

Note: p means provisional, ( ) is year-on-year growth rates (%).  
Source: Korea Energy Economics Institute

### ► Industrial energy consumption & production index



## 12. Transport

- **Transportation sector consumption in December decreased by 13.9% y-o-y due to the base effect of higher gasoline consumption in the road sector in the same month a year earlier.**
  - Road sector consumption decreased by 12.6% y-o-y, due to the base effect of higher consumption in the same month of the previous year, ahead of the reduction of the fuel tax cut for gasoline.
  - Aviation sector consumption was down 62.8% y/y, despite a 1.7% y/y increase in flights, as the working group that collects jet fuel statistics changed the basis for compiling the statistics since June, continuing a downward trend.
  - Consumption in the navigation sector increased 23.5% y-o-y, with heavy oil and diesel consumption up 32.1% and 9.0% y-o-y, respectively.

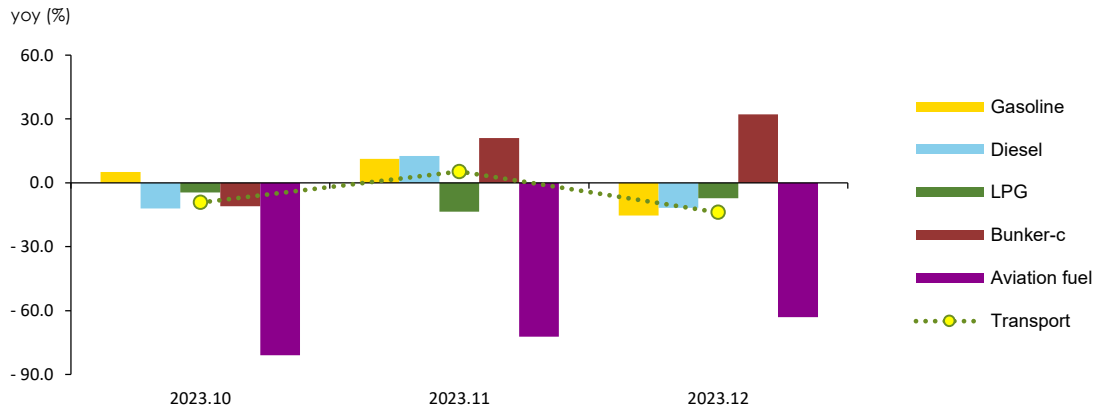
### ► The growth rate of petroleum consumption in the transport sector

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Transport (Mtoe)</b>	<b>36.29</b>	<b>36.29</b>	<b>3.50</b>	<b>35.24</b>	<b>2.85</b>	<b>2.97</b>	<b>3.01</b>
	(-0.9)	(-0.9)	(0.4)	(-2.9)	(-9.2)	(5.3)	(-13.9)
Road	33.86	33.86	3.32	33.59	2.76	2.88	2.90
	(-1.0)	(-1.0)	(1.3)	(-0.8)	(-5.5)	(8.9)	(-12.6)
Domestic navigation	0.46	0.46	0.03	0.46	0.03	0.04	0.04
	(8.5)	(8.5)	(-22.0)	(-1.5)	(-12.0)	(12.1)	(23.5)
Domestic aviation	1.67	1.67	0.12	0.90	0.03	0.03	0.04
	(-0.3)	(-0.3)	(-10.3)	(-46.0)	(-80.7)	(-71.9)	(-62.8)
Rail	0.30	0.30	0.03	0.30	0.02	0.02	0.03
	(-9.9)	(-9.9)	(-13.6)	(-1.4)	(-1.8)	(0.9)	(-1.9)

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

Source: Korea Energy Economics Institute

### ► The growth rates of energy & major petroleum product consumption in the transport sector



## 13. Buildings

- **Consumption in the buildings sector decreased by 6.8% y-o-y in December due to lower demand for heating due to temperature and price effects.**
  - Residential sector consumption decreased mainly for city gas, heat energy and kerosene due to mild winter weather.
  - Commercial sector consumption declined, led by city gas, due to a slowdown in service sector growth and temperature effects.
  - Residential city gas and heat tariffs increased by 5.3% and 13.0% y-o-y, respectively, reflecting material cost increases.

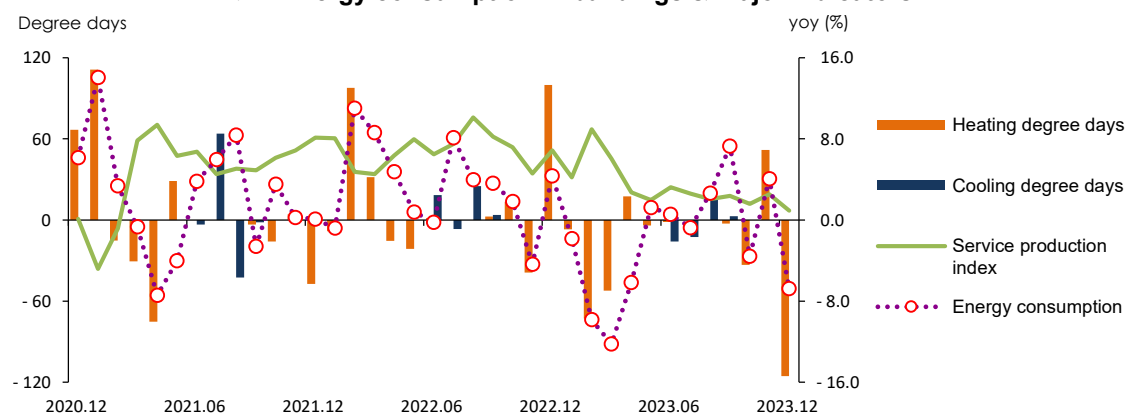
### ► Energy consumption in buildings

	2022p			2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Buildings (Mtoe)</b>	<b>47.7</b>	<b>47.7</b>	<b>5.7</b>	<b>46.2</b>	<b>3.0</b>	<b>3.9</b>	<b>5.3</b>
	(3.6)	(3.6)	(4.3)	(-3.2)	(-3.6)	(4.1)	(-6.8)
Residential	23.6	23.6	3.3	21.8	1.2	1.9	3.0
	(2.7)	(2.7)	(5.6)	(-7.3)	(-10.2)	(2.8)	(-8.7)
Commercial	18.9	18.9	1.9	19.0	1.3	1.5	1.8
	(5.4)	(5.4)	(4.4)	(0.5)	(-0.2)	(4.4)	(-4.7)
Public services	5.2	5.2	0.5	5.3	0.4	0.4	0.5
	(1.2)	(1.2)	(-3.1)	(2.0)	(8.6)	(8.9)	(-2.1)
Heating degree days	2 567.1	2 567.1	600.3	2 347.8	101.6	303.3	484.9
	(6.8)	(6.8)	(20.0)	(-8.5)	(-24.6)	(20.5)	(-19.2)
Cooling degree days	141.9	141.9	-	133.6	-	-	-
	(40.1)	(40.1)	-	(-5.8)	-	-	-
Service production index (2020=100)	112.3	112.3	129.3	115.8	115.2	116.9	130.5
	(6.9)	(6.9)	(6.9)	(3.2)	(1.6)	(2.5)	(0.9)

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

Source: Korea Energy Economics Institute, Korea Meteorological Administration, Korean Statistical Information Service

### ► Energy consumption in buildings & major indicators



## 14. Power Generation

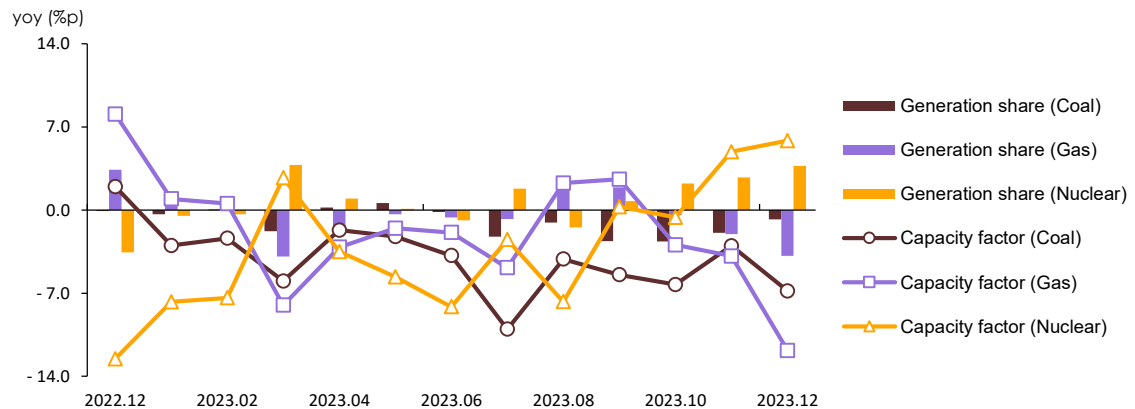
- Electricity generation in December decreased by 5.7% year-on-year, with declines in generation from all sources except nuclear and renewables and other.
  - Electricity consumption decreased by 1.2% YoY, mainly from coal and gas power generation.
  - Nuclear power generation increased by 7.0% y/y due to the grid-connection of Shin-hanul Unit 1 (1.4GW, December 7, 2022) and reduced preventive maintenance.
  - Renewable and other power generation increased by 7.1% YoY, mainly from fuel cell (27.7%), hydropower (41.2%), and bio (7.2%).
  - Coal generation fell nearly 8 percent due to increased nuclear and renewable generation, amid transmission constraints in the metropolitan area, while gas generation, which serves peak loads, plunged nearly 18 percent due to lower electricity consumption.

### ► Power generation by energy sources

	2022p	2023p		2023p			
		M1~12	M12	M1~12	M10	M11	M12
<b>Power Generation (TWh)</b>	<b>594.4</b>	<b>594.4</b>	<b>55.6</b>	<b>588.0</b>	<b>45.0</b>	<b>47.6</b>	<b>52.4</b>
	(3.1)	(3.1)	(4.1)	(-1.1)	(-1.7)	(2.9)	(-5.7)
Coal	193.2	193.2	18.9	184.9	13.1	14.5	17.4
	(-2.4)	(-2.4)	(3.9)	(-4.3)	(-9.9)	(-3.2)	(-7.9)
Oil	2.0	2.0	0.2	1.5	0.1	0.1	0.1
	(-16.5)	(-16.5)	(9.0)	(-24.4)	(-20.6)	(-37.0)	(-38.2)
Gas	163.6	163.6	16.9	157.7	11.2	12.1	13.9
	(-2.8)	(-2.8)	(17.2)	(-3.6)	(-3.4)	(-4.6)	(-17.7)
Nuclear	176.1	176.1	15.2	180.5	15.1	15.7	16.3
	(11.4)	(11.4)	(-7.9)	(2.5)	(5.2)	(12.2)	(7.0)
Renewables	59.6	59.6	4.4	63.4	5.5	5.1	4.7
	(18.9)	(18.9)	(7.4)	(6.4)	(6.1)	(17.0)	(7.1)
Baseload	428.9	428.9	38.5	428.8	33.7	35.3	38.4
	(5.6)	(5.6)	(-0.8)	(-0.0)	(-1.1)	(5.9)	(-0.3)

Notes: p means provisional, ( ) is year-on-year growth rates (%).  
Source: Korea Electric Power Corporation

### ► Power generation by major energy sources



## <Appendix> Major indicators & statistics of energy supply and demand

### Major Statistics & Indicators of the Economy

	2020	2021	2022				2023			
				M10	M11	M12		M10	M11	M12
GDP (trillion won)	1 839.5 (-0.7)	1 918.7 (4.3)	1 968.8 (2.6)	-	-	513.8 (1.4)	1 995.6 (1.4)	-	-	525.1 (2.2)
Private consumption	851.0 (-4.8)	881.4 (3.6)	917.8 (4.1)	-	-	235.7 (3.3)	934.3 (1.8)	-	-	237.9 (0.9)
Facilities investment	166.6 (7.2)	182.1 (9.3)	180.5 (-0.9)	-	-	49.0 (6.5)	181.4 (0.5)	-	-	47.3 (-3.6)
Construction investment	269.3 (1.5)	265.0 (-1.6)	257.6 (-2.8)	-	-	70.5 (-1.8)	261.0 (1.3)	-	-	69.2 (-1.9)
Consumer price index (2020=100)	100.0	102.5	107.7	109.2	109.1	109.3	111.6	113.3	112.7	112.7
USD to KRW exchange rate (won)	1 180.3	1 144.0	1 291.4	1 426.7	1 364.1	1 296.2	1 305.7	1 350.7	1 310.4	1 304.0
Benchmark rate (%)	0.7	0.6	2.1	3.0	3.3	3.3	3.5	3.5	3.5	3.5
Coincident composite index (2020=100)	100.0	103.7	108.2	109.3	109.1	108.8	110.2	110.9	111.0	111.1
Mining & manufacturing production index (2020=100)	100.0	108.5	109.6	105.8	107.5	109.2	106.8	107.9	114.1	116.1
Manufacturing operation ratio index (2020=100)	100.0	105.0	104.8	101.6	103.2	103.3	100.8	102.0	106.5	104.5
Average temperature	13.0	13.3	12.9	14.0	9.6	-1.4	13.7	14.7	7.9	2.4
- year-on-year difference	- 0.4	0.3	- 0.4	- 1.2	1.3	- 3.2	0.7	0.8	- 1.7	3.7
Heating degree days	2 448.0 (3.3)	2 404.7 (-1.8)	2 567.1 (6.8)	134.8 (11.0)	251.6 (-13.4)	600.3 (20.0)	2 347.8 (-8.5)	101.6 (-24.6)	303.3 (20.5)	484.9 (-19.2)
Cooling degree days	85.2 (-29.2)	101.3 (18.9)	141.9 (40.1)	-	-	-	133.6 (-5.8)	-	-	-
Energy intensity	0.16 (-2.8)	0.16 (0.8)	0.16 (-1.9)	-	-	0.15 (-4.2)	0.15 (-3.8)	-	-	0.15 (-2.2)
Per capita consumption										
Oil (bbl)	0.0 (-4.2)	0.0 (7.2)	0.0 (-1.8)	0.0 (-5.8)	0.0 (-3.0)	0.0 (-5.1)	0.0 (-4.3)	0.0 (0.3)	0.0 (1.8)	0.0 (-8.8)
Electricity (MWh)	0.0 (-2.2)	0.0 (4.9)	0.0 (3.1)	0.0 (1.5)	0.0 (-0.4)	0.0 (-0.2)	0.0 (-0.2)	0.0 (-1.4)	0.0 (1.2)	0.0 (-1.2)
City gas (1 000 m3)	- (-2.1)	- (3.4)	- (3.1)	- (-0.7)	- (-8.5)	- (5.7)	- (-7.5)	- (-9.9)	- (2.7)	- (-8.2)
Total energy (toe)	0.0 (-3.6)	0.0 (5.3)	0.0 (0.8)	- (-3.2)	- (-4.3)	0.0 (-0.9)	0.0 (-2.5)	- (1.3)	- (4.7)	0.0 (-5.3)

Note: Figures are based on the real price of 2015. p means provisional, ( ) is year-on-year growth rates (%).

Source: Bank of Korea, Korea Statistical Information Service, Korea Meteorological Administration, Korea Energy Economics Institute

## The Index of Production & Operating Ratio by Sectors

	2020	2021	2022			2023				
				M10	M11	M12		M10	M11	M12
Industrial production index										
All industry	100.0 (-1.1)	105.5 (5.5)	110.6 (4.9)	109.4 (3.9)	112.0 (2.6)	126.0 (1.9)	111.7 (1.0)	111.0 (1.5)	114.5 (2.2)	126.5 (0.4)
Mining & manufacturing	100.0 (-0.3)	108.5 (8.5)	109.6 (1.0)	105.8 (-3.2)	107.5 (-5.5)	109.2 (-10.7)	106.8 (-2.6)	107.9 (2.0)	114.1 (6.1)	116.1 (6.3)
Semiconductor	100.0 (22.7)	128.7 (28.7)	135.7 (5.4)	123.9 (-12.9)	111.7 (-22.6)	117.1 (-26.0)	133.0 (-2.0)	145.3 (17.3)	157.2 (40.7)	172.1 (47.0)
Iron & steel	100.0 (-6.3)	105.1 (5.1)	96.3 (-8.4)	78.1 (-24.9)	79.3 (-25.8)	86.1 (-18.9)	98.9 (2.8)	100.0 (28.0)	95.8 (20.8)	96.2 (11.7)
Cement	100.0 (-7.5)	102.8 (2.8)	100.0 (-2.8)	112.2 (3.5)	106.0 (-6.8)	94.2 (-16.1)	90.9 (-9.1)	92.5 (-17.6)	99.0 (-6.6)	86.8 (-7.9)
Basic compound	100.0 (-7.1)	105.8 (5.8)	98.9 (-6.5)	92.0 (-11.5)	87.2 (-10.8)	96.7 (-12.6)	95.5 (-3.5)	89.5 (-2.7)	91.6 (5.0)	98.6 (2.0)
Transport equipment	100.0 (-9.5)	106.1 (6.1)	115.8 (9.1)	121.5 (20.3)	136.1 (21.3)	131.0 (10.9)	127.6 (10.2)	125.1 (3.0)	133.8 (-1.7)	130.5 (-0.4)
Electric & electronic	100.0 (-1.0)	108.7 (8.7)	112.6 (3.6)	113.2 (3.7)	113.8 (-1.1)	119.8 (-2.8)	111.0 (-1.4)	104.5 (-7.7)	106.3 (-6.6)	110.8 (-7.5)
Service	100.0 (-2.0)	105.0 (5.0)	112.3 (6.9)	113.4 (7.2)	114.0 (4.6)	129.3 (6.9)	115.9 (3.2)	115.2 (1.6)	116.9 (2.5)	130.9 (1.2)
Wholesale and retail	100.0 (-2.6)	104.3 (4.3)	107.1 (2.7)	109.2 (2.1)	109.1 (0.1)	112.3 (1.2)	106.4 (-0.6)	105.1 (-3.8)	109.4 (0.3)	111.3 (-0.9)
Food & Accommodation	100.0 (-18.4)	101.9 (1.8)	119.1 (16.9)	127.6 (12.8)	119.9 (3.7)	129.9 (12.8)	120.0 (0.7)	121.1 (-5.1)	115.8 (-3.4)	126.9 (-2.3)
Production output										
Iron & steel - Pig iron	45 359.6 (-4.5)	46 440.5 (2.4)	42 658.2 (-8.1)	3 417.4 (-9.0)	3 231.9 (-17.1)	3 568.4 (-9.8)	45 205.0 (6.0)	3 824.4 (11.9)	3 852.4 (19.2)	3 773.5 (5.7)
Iron & steel - Crude steel	67 078.8 (-6.1)	70 418.0 (5.0)	65 846.2 (-6.5)	5 151.1 (-10.9)	4 807.4 (-17.6)	5 232.3 (-11.8)	66 683.3 (1.3)	5 491.9 (6.6)	5 383.4 (12.0)	5 382.3 (2.9)
Petrochemical - Basic petrochemicals	30 542.7 (-4.4)	34 434.5 (12.7)	32 854.1 (-4.6)	2 395.1 (-18.5)	2 484.2 (-12.3)	2 618.8 (-16.0)	31 157.9 (-5.2)	2 697.5 (12.6)	2 611.7 (5.1)	2 827.8 (8.0)
Petrochemical - Intermediate raw material	15 369.0 (-6.1)	15 764.6 (2.6)	13 852.5 (-12.1)	1 041.5 (-16.7)	1 077.1 (-13.6)	1 097.2 (-17.0)	12 973.5 (-6.3)	1 088.6 (4.5)	995.9 (-7.5)	1 150.8 (4.9)
Petrochemical - 3 major products	21 268.9 (-1.7)	23 224.7 (9.2)	22 129.4 (-4.7)	1 542.5 (-18.1)	1 520.4 (-19.4)	1 754.8 (-19.4)	21 472.1 (-3.0)	1 866.4 (21.0)	1 703.8 (12.1)	1 791.5 (2.1)
The number of cars	3 506.8 (-11.2)	3 462.4 (-1.3)	3 756.5 (8.5)	327.5 (24.2)	379.8 (25.4)	353.4 (10.8)	4 240.3 (12.9)	341.0 (4.1)	370.1 (-2.5)	367.6 (4.0)

Note: p means provisional.

Source: Korea Statistical Information Service, Korea Iron & Steel Association, Korea Petrochemical Industry Association

## International Energy Prices

	2020	2021	2022			2023				
				M10	M11	M12		M10	M11	M12
Crude oil (USD/bbl)										
WTI	39.4 (-30.9)	67.9 (72.4)	94.2 (38.7)	87.0 (7.2)	84.4 (7.3)	76.5 (6.7)	77.6 (-17.6)	85.5 (-1.8)	77.4 (-8.3)	72.1 (-5.7)
Dubai	42.2 (-33.6)	69.3 (64.1)	96.4 (39.1)	91.2 (11.7)	86.3 (7.4)	77.2 (5.5)	82.1 (-14.8)	89.7 (-1.5)	83.6 (-3.1)	77.3 (0.1)
Brent	43.2 (-32.7)	70.8 (63.8)	98.9 (39.7)	93.6 (11.8)	90.9 (12.4)	81.3 (8.7)	82.2 (-16.9)	88.7 (-5.2)	82.0 (-9.7)	77.3 (-4.9)
Unit value of import (C&F)	44.8 (-31.7)	70.2 (56.9)	102.3 (45.6)	100.9 (27.7)	94.8 (14.7)	89.5 (12.7)	85.9 (-16.0)	94.4 (-6.4)	91.2 (-3.8)	85.9 (-4.1)
LNG										
Henry Hub (USD/MMBTU)	2.1 (-15.9)	3.7 (74.6)	6.5 (75.2)	6.1 (9.2)	6.4 (25.6)	5.8 (49.3)	2.7 (-59.1)	3.1 (-48.2)	3.1 (-52.5)	2.5 (-56.0)
TTF (USD/MMBTU)	3.2 (-32.4)	16.0 (396.1)	40.1 (150.0)	38.4 (24.4)	35.9 (29.5)	36.7 (-2.6)	13.0 (-67.5)	14.6 (-62.1)	14.5 (-59.7)	11.6 (-68.5)
JKM (USD/MMBTU)	4.2 (-25.1)	17.9 (324.7)	33.9 (89.5)	33.0 (-0.8)	28.4 (-15.6)	32.3 (-14.5)	14.4 (-57.3)	16.3 (-50.6)	17.0 (-40.0)	14.0 (-56.6)
Unit value of import (USD/ton, CIF)	390.2 (-22.8)	550.8 (41.2)	1 053.5 (91.3)	1 247.3 (86.5)	1 259.0 (56.3)	1 255.2 (40.6)	781.8 (-25.8)	628.5 (-49.6)	643.1 (-48.9)	768.8 (-38.8)
Coal (USD/ton)										
Thermal coal (Newcastle)	60.3 (-22.8)	136.0 (125.8)	356.3 (161.9)	390.4 (65.8)	348.6 (126.7)	400.9 (143.5)	174.8 (-50.9)	139.5 (-64.3)	123.2 (-64.7)	144.3 (-64.0)
Unit value of import (CIF)	77.7 (-22.9)	115.1 (48.1)	226.3 (96.7)	230.1 (61.8)	204.0 (15.6)	204.6 (9.1)	169.7 (-25.0)	151.6 (-34.1)	145.1 (-28.9)	144.3 (-29.5)
Petroleum product (USD/bbl)										
Gasoline	46.7 (-35.7)	80.3 (72.2)	115.2 (43.4)	94.9 (-3.8)	98.5 (3.7)	89.4 (1.7)	98.8 (-14.3)	98.9 (4.2)	98.0 (-0.5)	91.3 (2.1)
Kerosene	44.7 (-42.1)	75.1 (67.9)	126.7 (68.6)	123.4 (32.6)	121.2 (35.9)	110.5 (32.3)	104.6 (-17.4)	113.6 (-8.0)	106.5 (-12.1)	101.5 (-8.2)
Diesel	49.4 (-36.8)	77.6 (57.2)	135.3 (74.3)	137.3 (43.7)	127.8 (39.6)	114.0 (32.7)	106.4 (-21.4)	117.5 (-14.4)	106.5 (-16.7)	99.8 (-12.5)
Bunker-C	39.2 (-31.9)	64.4 (64.3)	82.3 (27.8)	62.2 (-19.8)	65.5 (-7.9)	59.6 (-9.5)	71.8 (-12.8)	76.3 (22.6)	72.5 (10.7)	68.8 (15.5)
Propane	397.1 (-8.6)	647.9 (63.2)	737.1 (13.8)	590.0 (-26.3)	610.0 (-29.9)	650.0 (-18.2)	575.0 (-22.0)	600.0 (1.7)	610.0 -	610.0 (-6.2)
Butane	403.8 (-8.6)	629.6 (55.9)	734.2 (16.6)	560.0 (-29.6)	610.0 (-26.5)	650.0 (-13.3)	577.1 (-21.4)	615.0 (9.8)	620.0 (1.6)	620.0 (-4.6)
Naphtha	40.5 (-28.9)	70.6 (74.6)	83.1 (17.7)	71.4 (-15.3)	73.8 (-12.2)	65.7 (-15.4)	69.1 (-16.8)	70.3 (-1.5)	69.4 (-6.0)	72.3 (10.0)

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

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

Source: Korea National Oil Corporation, World Bank, Korea Energy Economics Institute, CME Group, Korea International Trade Association

## Domestic Energy Prices

	2020	2021	2022			2023				
				M10	M11	M12		M10	M11	M12
Petroleum product										
Gasoline (won/liter)	1 381.6 (-6.1)	1 590.5 (15.1)	1 812.4 (14.0)	1 666.7 (-2.7)	1 650.3 (-5.0)	1 563.8 (-5.0)	1 643.0 (-9.3)	1 775.9 (6.6)	1 684.1 (2.0)	1 600.6 (2.4)
Diesel (won/liter)	1 189.8 (-11.2)	1 391.3 (16.9)	1 841.8 (32.4)	1 838.4 (21.8)	1 879.2 (21.3)	1 783.3 (21.4)	1 558.7 (-15.4)	1 690.3 (-8.1)	1 628.2 (-13.4)	1 526.3 (-14.4)
Bunker-C (won/liter)	573.6 (-22.9)	731.7 (27.6)	1 115.2 (52.4)	1 050.8 (29.2)	1 142.2 (31.7)	986.7 (14.9)	931.5 (-16.5)	992.6 (-5.5)	1 024.1 (-10.3)	994.7 (0.8)
Propane (won/kg)	1 850.7 (-1.0)	2 092.6 (13.1)	2 479.6 (18.5)	2 469.8 (14.2)	2 455.4 (6.2)	2 449.7 (1.6)	2 372.2 (-4.3)	2 367.9 (-4.1)	2 416.6 (-1.6)	2 420.1 (-1.2)
Butane (won/liter)	791.1 (-1.9)	931.8 (17.8)	1 081.7 (16.1)	1 049.5 (7.0)	1 032.2 (-2.0)	1 021.4 (-6.1)	957.6 (-11.5)	940.3 (-10.4)	970.8 (-5.9)	970.8 (-5.0)
City gas(won/MJ)										
Residential	15.1 (-3.6)	14.2 (-5.7)	16.6 (16.7)	19.7 (38.4)	19.7 (38.4)	19.7 (38.4)	20.4 (22.9)	20.7 (5.3)	20.7 (5.3)	20.7 (5.3)
General(1)	14.9 (-4.7)	13.9 (-6.5)	16.3 (17.3)	19.3 (39.7)	19.3 (39.7)	19.5 (38.6)	20.1 (23.3)	20.4 (5.4)	20.4 (5.4)	20.6 (5.2)
Commercial	15.1 (-6.4)	17.2 (14.2)	28.7 (66.6)	35.6 (89.4)	35.3 (65.3)	36.2 (53.8)	26.0 (-9.3)	23.4 (-34.3)	21.8 (-38.3)	23.0 (-36.5)
Industry	12.6 (-8.4)	14.4 (14.2)	25.9 (79.9)	32.6 (109.1)	32.4 (77.9)	34.1 (60.1)	23.3 (-9.9)	20.5 (-37.2)	18.9 (-41.6)	21.0 (-38.5)
Heat(won/Mcal)										
Residential	66.2 (0.7)	65.2 (-1.4)	74.1 (13.7)	89.9 (37.8)	89.9 (37.8)	89.9 (37.8)	96.1 (29.6)	101.6 (13.0)	101.6 (13.0)	101.6 (13.0)
Commercial	85.9 (0.7)	84.7 (-1.4)	96.3 (13.7)	116.7 (37.8)	116.7 (37.8)	116.7 (37.8)	124.7 (29.6)	131.9 (13.0)	131.9 (13.0)	131.9 (13.0)
Public	75.1 (0.7)	74.0 (-1.4)	84.1 (13.7)	101.9 (37.8)	101.9 (37.8)	101.9 (37.8)	108.9 (29.6)	115.2 (13.0)	115.2 (13.0)	115.2 (13.0)
Electricity(won/kWh)										
Residential	147.3 -	142.3 (-3.4)	147.8 (3.9)	154.6 (8.6)	154.6 (8.6)	154.6 (8.6)	171.3 (15.9)	174.0 (12.5)	174.0 (12.5)	174.0 (12.5)
General	84.4 -	79.4 (-5.9)	84.9 (7.0)	72.5 (20.4)	99.6 (14.1)	99.6 (14.1)	108.4 (27.7)	91.9 (26.8)	119.0 (19.5)	119.0 (19.5)
Industry	96.0 -	91.0 (-5.2)	98.8 (8.6)	95.0 (29.3)	125.0 (20.8)	125.0 (20.8)	131.5 (33.0)	114.4 (20.4)	157.9 (26.3)	157.9 (26.3)

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

2.Electricity prices are based on Residential(High-voltage, 201-400kWh), General((A) I , Low-voltage), Industry((B), High-voltageB, optionII mid-load).  
Source: Korea National Oil Corporation, Seoul City Gas, Korean District Heating Corporation, Korea Electric Power Corporation

## Total Primary Energy Demand (TPED)

	2020	2021	2022	2023p			2023p	2023p		
				M10	M11	M12		M10	M11	M12
Coal (Mton)	119.9 (-12.3)	119.9 (-0.0)	115.0 (-4.1)	8.6 (-8.3)	8.8 (-12.9)	10.4 (-4.3)	107.7 (-6.3)	8.3 (-3.6)	8.6 (-2.0)	9.5 (-8.3)
- Coking coal excluded	95.2 (-13.9)	94.4 (-0.8)	91.4 (-3.2)	6.7 (-9.1)	7.0 (-13.1)	8.4 (-3.3)	83.9 (-8.1)	6.3 (-5.2)	6.6 (-4.7)	7.5 (-10.6)
Oil (Mbbl)	775.7 (-4.0)	830.7 (7.1)	814.5 (-1.9)	64.4 (-5.9)	65.2 (-3.2)	75.7 (-5.2)	779.9 (-4.3)	64.6 (0.4)	66.4 (1.9)	69.1 (-8.7)
LNG (Mton)	41.5 (1.2)	45.8 (10.4)	45.6 (-0.5)	3.0 (-8.3)	3.6 (-9.7)	5.7 (13.0)	43.9 (-3.7)	3.0 (-1.1)	3.9 (9.3)	5.0 (-12.4)
Hydro (TWh)	3.9 (39.0)	3.1 (-21.2)	3.5 (16.0)	0.3 (17.5)	0.2 (19.8)	0.2 (9.5)	3.7 (4.9)	0.3 (12.9)	0.2 (7.4)	0.3 (41.2)
Nuclear (TWh)	160.2 (9.8)	158.0 (-1.4)	176.1 (11.4)	14.4 (6.8)	14.0 (3.2)	15.2 (-7.9)	180.5 (2.5)	15.1 (5.2)	15.7 (12.2)	16.3 (6.9)
Others (Mtoe)	12.6 (9.4)	14.4 (13.8)	15.9 (10.7)	1.3 (16.2)	1.2 (5.4)	1.3 (-2.4)	16.8 (5.9)	1.3 (1.8)	1.4 (18.1)	1.3 (1.7)
<b>TPED (Mtoe)</b>	<b>288.4</b> (-3.4)	<b>303.2</b> (5.1)	<b>305.1</b> (0.6)	<b>23.2</b> (-3.4)	<b>24.0</b> (-4.4)	<b>29.0</b> (-1.1)	<b>297.6</b> (-2.5)	<b>23.6</b> (1.3)	<b>25.1</b> (4.8)	<b>27.5</b> (-5.2)

Note: p means provisional, ( ) is year-on-year growth rates (%).  
Source: Korea Energy Economics Institute

## Share of TPED by Sources

(unit: %)

	2020	2021	2022	2023p			2023p	2023p		
				M10	M11	M12		M10	M11	M12
Coal	25.2	24.0	22.8	22.5	22.2	21.7	22.0	21.5	20.9	21.0
- Coking coal excluded	19.3	18.1	17.4	16.6	16.8	16.8	16.4	15.6	15.3	15.8
Oil	39.3	40.1	39.9	41.9	41.0	38.5	39.8	42.6	40.8	38.4
LNG	18.8	19.7	19.5	17.0	19.5	25.8	19.3	16.6	20.3	23.9
Hydro	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.2
Nuclear	11.8	11.1	12.3	13.2	12.4	11.2	12.9	13.7	13.3	12.6
Others	4.4	4.7	5.2	5.6	5.0	4.4	5.7	5.7	5.6	4.7
<b>TPED</b>	<b>99.8</b>	<b>99.9</b>	<b>100.0</b>	<b>100.5</b>	<b>100.3</b>	<b>101.8</b>	<b>99.9</b>	<b>100.3</b>	<b>101.1</b>	<b>100.9</b>

Note: p means provisional.  
Source: Korea Energy Economics Institute

## Total Final Consumption (TFC)

(Unit: Mtoe)

	2020	2021	2022				2023p			
				M10	M11	M12		M10	M11	M12
Industry	124.0 (-4.0)	133.0 (7.2)	130.5 (-1.9)	10.0 (-8.0)	10.4 (-5.5)	11.3 (-7.3)	126.2 (-3.3)	10.3 (3.1)	10.6 (2.0)	10.9 (-3.7)
Transport	34.7 (-6.6)	36.6 (5.4)	36.3 (-0.9)	3.1 (8.2)	2.8 (-6.1)	3.5 (0.4)	35.2 (-2.9)	2.8 (-9.2)	3.0 (5.3)	3.0 (-13.9)
Residential	22.4 (4.1)	22.9 (2.6)	23.6 (2.7)	1.4 (0.9)	1.9 (-7.8)	3.3 (5.6)	21.8 (-7.3)	1.2 (-10.2)	1.9 (2.8)	3.0 (-8.7)
commercial	17.7 (-5.5)	17.9 (1.7)	18.9 (5.4)	1.3 (2.8)	1.4 (-0.5)	1.9 (4.4)	19.0 (0.5)	1.3 (-0.2)	1.5 (4.4)	1.8 (-4.7)
Public	5.0 (-3.5)	5.2 (4.0)	5.2 (1.2)	0.4 (1.5)	0.4 (-0.7)	0.5 (-3.1)	5.3 (2.0)	0.4 (8.6)	0.4 (8.9)	0.5 (-2.1)
<b>TFC</b>	<b>203.7</b> (-3.8)	<b>215.7</b> (5.8)	<b>214.5</b> (-0.5)	<b>16.2</b> (-3.4)	<b>16.9</b> (-5.4)	<b>20.6</b> (-3.0)	<b>207.6</b> (-3.2)	<b>16.1</b> (-0.6)	<b>17.5</b> (3.0)	<b>19.3</b> (-6.3)
Coal (Mton)	49.2 (-5.2)	51.0 (3.6)	47.8 (-6.2)	3.8 (-9.7)	3.9 (-13.2)	4.0 (-10.5)	47.0 (-1.7)	4.0 (5.6)	4.1 (4.2)	3.9 (-2.2)
Oil (Mbbl)	752.3 (-5.5)	809.1 (7.6)	798.9 (-1.3)	62.9 (-5.4)	63.6 (-3.4)	73.7 (-5.8)	761.0 (-4.7)	62.6 (-0.4)	64.3 (1.0)	66.9 (-9.2)
- Non-energy oil excluded	336.2 (-5.3)	350.6 (4.3)	345.8 (-1.4)	29.8 (4.1)	27.8 (-4.6)	35.8 (4.1)	333.4 (-3.6)	26.9 (-9.7)	28.8 (3.8)	30.7 (-14.3)
Electricity (TWh)	496.9 (-2.1)	520.3 (4.7)	535.4 (2.9)	41.3 (1.3)	41.5 (-0.6)	45.8 (-0.3)	534.7 (-0.1)	40.8 (-1.3)	42.0 (1.3)	45.3 (-1.2)
City gas (Bm³)	22.0 (-2.0)	22.7 (3.3)	23.4 (2.9)	1.3 (-0.9)	1.8 (-8.6)	3.1 (5.5)	21.7 (-7.4)	1.2 (-9.8)	1.9 (2.8)	2.8 (-8.1)
Heat-others (1 000 toe)	9.3 (3.1)	9.8 (6.3)	10.2 (3.7)	0.7 (4.7)	0.8 (-6.9)	1.2 (0.3)	9.9 (-2.8)	0.7 (-3.0)	0.9 (13.6)	1.1 (-5.3)

Note: p means provisional, ( ) is year-on-year growth rates (%).  
Source: Korea Energy Economics Institute

## Share of the Total Final Consumption by Sources

(unit: %)

	2020	2021	2022				2023p			
				M10	M11	M12		M10	M11	M12
Industry	60.9	61.7	60.8	61.7	61.4	55.1	60.8	64.0	60.8	56.6
Transport	17.1	17.0	16.9	19.3	16.7	17.0	17.0	17.6	17.0	15.6
Residential	11.0	10.6	11.0	8.4	11.1	16.0	10.5	7.6	11.1	15.6
Commercial	8.7	8.3	8.8	8.3	8.4	9.4	9.2	8.3	8.5	9.5
Public	2.4	2.4	2.4	2.3	2.4	2.5	2.6	2.5	2.5	2.6
<b>TFC</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Coal	15.3	15.0	14.3	14.9	14.6	12.5	14.5	15.8	14.8	13.1
Oil	47.0	47.9	47.4	49.6	47.8	45.7	46.6	49.3	47.0	44.2
- Non-energy oil excluded	22.0	21.6	21.4	24.5	21.7	23.0	21.1	22.0	21.8	20.9
Electricity	21.0	20.7	21.5	21.9	21.0	19.2	22.1	21.7	20.7	20.2
City gas	12.1	11.8	12.2	9.3	12.0	16.9	12.0	9.0	12.4	16.7
Heat-others	4.5	4.6	4.8	4.3	4.6	5.7	4.8	4.2	5.1	5.8

Note: p means provisional.  
Source: Korea Energy Economics Institute

## Statistics on Energy Production Facilities

	2020	2021	2022	2023			M10	M11	M12
				M10	M11	M12			
Total capacity (GW)	129.2 (3.1)	134.0 (3.7)	138.0 (3.0)	136.0 (1.9)	136.3 (1.8)	138.0 (3.0)	143.8 (5.7)	144.1 (5.7)	144.4 (4.6)
Nuclear	23.3 -	23.3 -	24.7 (6.0)	23.3 -	23.3 -	24.7 (6.0)	24.7 (6.0)	24.7 (6.0)	24.7 -
Bituminous coal	36.5 (0.1)	36.9 (1.3)	37.3 (1.0)	37.3 (-0.4)	37.3 (-0.4)	37.3 (1.0)	38.3 (2.6)	38.2 (2.5)	38.2 (2.5)
Gas	41.2 (4.1)	41.2 (0.1)	41.2 -	41.2 (0.1)	41.2 (0.1)	41.2 -	43.2 (4.8)	43.2 (4.8)	43.2 (4.8)
Refinery capacity (mil BPSD)	3.2 -	3.2 -	3.2 -	3.2 -	3.2 -	3.2 -	3.2 -	3.2 -	3.2 -

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

Source: Korea Electric Power Corporation, Korea National Oil Corporation

## Statistics on Energy Consumption

	2020	2021	2022	2023			M10	M11	M12
				M10	M11	M12			
The number of household demanding city gas (mil)	20.1 (2.4)	20.5 (2.0)	20.9 (1.7)	20.7 (2.1)	20.9 (2.3)	20.9 (1.7)	20.9 (0.8)	21.0 (0.6)	21.1 (1.3)
Registered cars (mil)	24.4 (2.9)	24.9 (2.2)	25.5 (2.4)	25.4 (2.4)	25.5 (2.4)	25.5 (2.4)	25.9 (1.8)	25.9 (1.8)	25.9 (1.7)
- gasoline	11.4 (4.1)	11.8 (3.1)	12.1 (2.6)	12.0 (2.7)	12.0 (2.7)	12.1 (2.6)	12.3 (2.3)	12.3 (2.2)	12.3 (2.0)
- diesel	10.0 (0.3)	9.9 (-1.2)	9.8 (-1.2)	9.8 (-1.1)	9.8 (-1.1)	9.8 (-1.2)	9.5 (-2.4)	9.5 (-2.6)	9.5 (-2.6)
- LPG	2.0 (-1.3)	1.9 (-1.7)	1.9 (-2.1)	1.9 (-1.9)	1.9 (-2.0)	1.9 (-2.1)	1.8 (-3.8)	1.8 (-3.9)	1.8 (-3.8)
- hybrid	0.6 (33.1)	0.9 (34.0)	1.1 (28.5)	1.1 (29.1)	1.1 (28.8)	1.1 (28.5)	1.4 (31.0)	1.4 (31.9)	1.5 (32.1)

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

Source: Korea City Gas Association, Ministry of Land, Infrastructure and Transport