

KEEI MONTHLY KOREA ENERGY TRENDS

2024/01
KOREA ENERGY ECONOMICS INSTITUTE

COAL	-3.8%
PETROLEUM	-0.3%
GAS	0.0%
NUCLEAR	5.2%
NEW & RENEWABLE	0.6%
OCTOBER, 2023	

This publication is derived from Energy Demand & Supply Statistics and Energy Price Statistics issued until October 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

- **October Industrial Production Index rose 0.8% y/y due to increased production of semiconductors, etc. despite production declines in some industries.**
 - The Semiconductor Production Index rose 13.1% YoY due to the base effect of sluggish production in the previous month, but the recovery has been slow given the decline in utilization rates and high inventory levels (-3.1% and 47.9%, respectively, based on the index).
 - In basic chemicals, inventories fell slightly (-1.0%, indexed), but the production index, which had rebounded in the previous month, turned down again (-3.2%) as capacity utilization and output fell by 2.2% and 4.2%, respectively, due to sluggish business conditions.
 - The steel production index rose 26.4% due to a base effect from typhoon damage in 2022, despite a slow recovery in some demand industries.
 - While the cars production rate fell (-3.2%) due to the partial strike that occurred in the previous month, exports expanded (16.0%, by volume), led by eco-friendly vehicles such as electric cars and SUVs, and rose 2.5%. Rise gradually slows.

- **Service sector output index rises modestly as output in other industries increases despite declines in wholesale and retail trade and accommodation and food services.**
 - The Transportation & Warehousing Production Index rose 6.2%, driven by a surge in production in the sub-sector Air Transportation. Other increases were seen in Health Care & Social Assistance, Associations & Organizations, and Repair & Other Personal Services.
 - Meanwhile, the production indexes of the wholesale and retail trade and accommodation and food service industries fell by 3.6% and 5.3% year-on-year, respectively, as private consumption contracted due to high prices and high interest rates, and the wholesale and retail trade continued to decline for the fourth consecutive month and the accommodation and food service industry for the sixth consecutive month.

► Major economic and industrial indicators

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
GDP (trillion won)	1 968.8 (2.6)	1 455.1 (3.0)	-	1 470.5 (1.1)	-	501.0 (1.4)	-
Total export (\$billion, customs clearance basis)	683.6 (6.1)	577.0 (10.2)	52.4 (-5.8)	519.2 (-10.0)	52.0 (-8.1)	54.7 (-4.4)	55.0 (4.9)
Industrial production index (2020=100)	109.7 (1.4)	110.1 (3.5)	105.8 (-2.7)	103.8 (-5.8)	105.6 (-0.8)	109.0 (3.0)	106.7 (0.9)
Semi-conductors	136.5 (7.7)	141.5 (15.2)	123.8 (-11.1)	122.2 (-13.7)	143.0 (8.4)	161.1 (23.6)	140.0 (13.1)
Basic chemical products	99.1 (-6.4)	100.5 (-5.3)	92.0 (-11.5)	94.9 (-5.6)	95.1 (-4.3)	96.2 (4.9)	89.1 (-3.2)
Iron&Steel	96.3 (-8.4)	99.0 (-5.6)	78.0 (-25.1)	99.2 (0.2)	98.6 (-0.5)	91.9 (21.1)	98.6 (26.4)
Cars	116.0 (9.1)	112.3 (7.5)	121.9 (20.3)	126.4 (12.5)	116.3 (8.2)	115.0 (-0.1)	125.0 (2.5)
Service production index (2020=100)	112.0 (6.5)	110.4 (6.8)	113.5 (6.9)	113.9 (3.2)	113.9 (1.6)	115.6 (2.1)	114.4 (0.8)

Wholesale & Retail	107.1	106.4	109.2	105.9	102.8	107.0	105.3
	(1.7)	(2.1)	(1.1)	(-0.5)	(-3.5)	(-0.3)	(-3.6)
Food & Accommodation	119.1	117.9	127.6	119.3	122.6	117.9	120.8
	(16.9)	(18.9)	(12.7)	(1.2)	(-5.0)	(-1.2)	(-5.3)

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

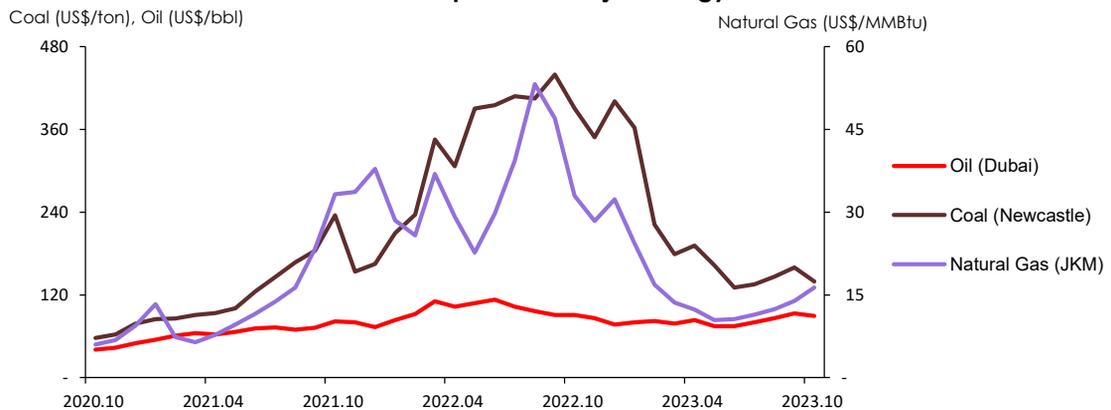
- **International oil prices fell in October on concerns about prolonged high interest rates in the U.S., but escalating tensions in the Middle East limited the downside.**
 - Israel-Hamas conflict raises tensions in Middle East, raising concerns about oil supply stability
 - U.S. Q3 economic growth beats market expectations to 4.9%, raising the possibility of prolonged high interest rates.
 - International fuel coal prices fell in October due to lower international oil prices and concerns about an economic slowdown amid the prospect of continued high interest rates in the U.S.
 - International natural gas prices rise in October on increased supply uncertainty, despite high inventory levels.

► Global energy prices

	2021	2022			2023			
			M8	M9	M10	M8	M9	M10
Crude oil (US\$/bbl)	69.3 (64.2)	96.4 (39.1)	96.6 (-6.3)	90.9 (-5.9)	91.2 (0.2)	86.5 (7.5)	93.3 (7.9)	89.8 (-3.8)
Coal (US\$/ton)	136.4 (126.5)	357.1 (161.8)	404.9 (-0.8)	439.4 (8.5)	390.4 (-11.1)	146.6 (8.5)	159.5 (8.8)	139.5 (-12.6)
Natural gas (US\$/MMBtu)								
TTF	16.1 (397.9)	40.2 (149.6)	69.7 (34.6)	57.9 (-16.9)	38.4 (-33.7)	11.2 (17.0)	11.4 (2.1)	14.6 (27.2)
JKM	17.9 (325.7)	33.9 (89.2)	53.2 (35.2)	47.0 (-11.7)	33.0 (-29.8)	12.4 (8.7)	13.9 (12.0)	16.3 (17.1)

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

- In October, gasoline and diesel selling prices at the pump increased 0.4% and 1.4%, respectively, from the previous month due to higher international prices.
 - In September, the prices of gasoline (92 RON) and diesel (0.001% sulfur content) in the Singapore spot market were USD 104.5 and USD 125.4 per barrel, up 2.6% and 5.1% month-on-month, respectively, and the KRW exchange rate was KRW 1,333.7/dollar, up 0.9%.
 - Retail prices of propane and butane increased by 3.6% and 5.0% month-on-month, respectively, due to higher supply prices from LPG importers.
 - The relative price of industrial propane and city gas (propane/city gas) was 1.16, up 3.0% month-over-month.

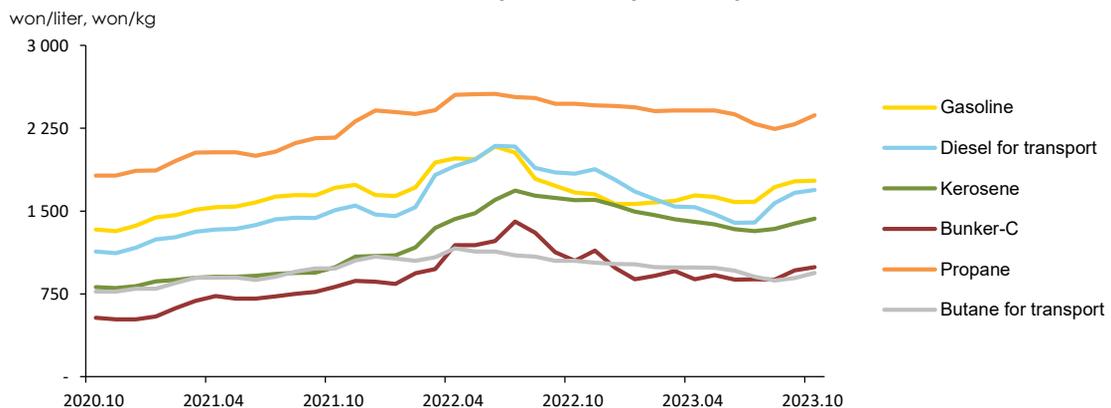
► Domestic petroleum product prices

	2021	2022			2023			
			M8	M9	M10	M8	M9	M10
Gasoline (won/liter)	1 591.2 (15.2)	1 812.7 (13.9)	1 792.2 (-11.7)	1 730.0 (-3.5)	1 666.7 (-3.7)	1 716.8 (8.3)	1 769.2 (3.1)	1 775.9 (0.4)
Diesel for transport (won/liter)	1 392.0 (17.0)	1 843.4 (32.4)	1 889.3 (-9.4)	1 850.2 (-2.1)	1 838.4 (-0.6)	1 573.2 (12.7)	1 666.5 (5.9)	1 690.3 (1.4)
Bunker-C (won/liter)	732.2 (27.8)	1 116.1 (52.4)	1 305.3 (-7.1)	1 128.6 (-13.5)	1 050.8 (-6.9)	880.5 (-0.3)	963.7 (9.4)	992.6 (3.0)
Propane (won/kg)	2 093.4 (13.1)	2 480.1 (18.5)	2 522.4 (-0.4)	2 471.2 (-2.0)	2 469.8 (-0.1)	2 242.8 (-2.0)	2 285.0 (1.9)	2 367.9 (3.6)
Butane for transport (won/liter)	932.3 (17.9)	1 081.8 (16.0)	1 088.8 (-1.0)	1 051.4 (-3.4)	1 049.5 (-0.2)	870.4 (-3.9)	895.5 (2.9)	940.3 (5.0)

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



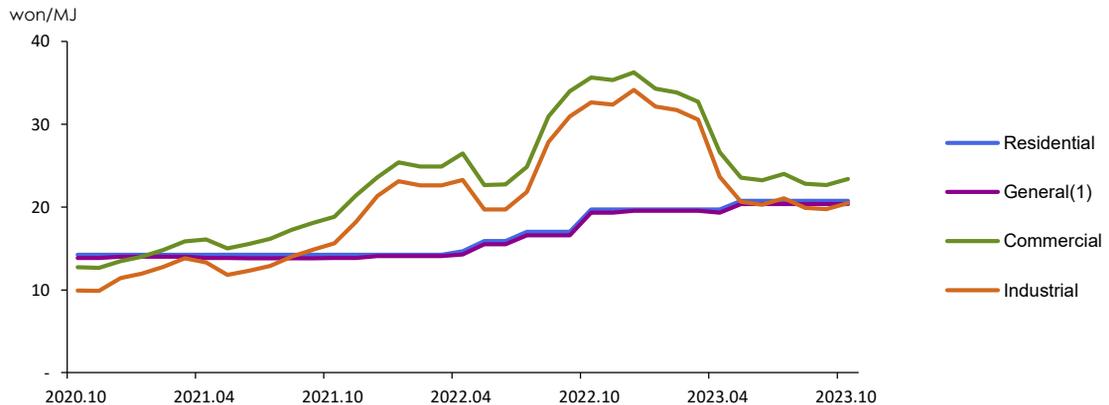
❑ **October city gas rates frozen for residential, but up for commercial, business heating, and industrial.**

- Residential rates remain at 20.7 won per MJ for the fifth consecutive month with both raw material and supply costs were fixed.
- General use rates increased slightly to 1.1% month-over-month as supply costs shifted to other months (April ~ May, October ~ November) rates.
- Business heating and industrial use were 23.4 won and 20.5 won per MJ, up 3.1% and 3.9% month-on-month, respectively.

❑ **October electricity rates remain flat for residential, commercial, and industrial due to Q4 seasonal rate adjustment was fixed.**

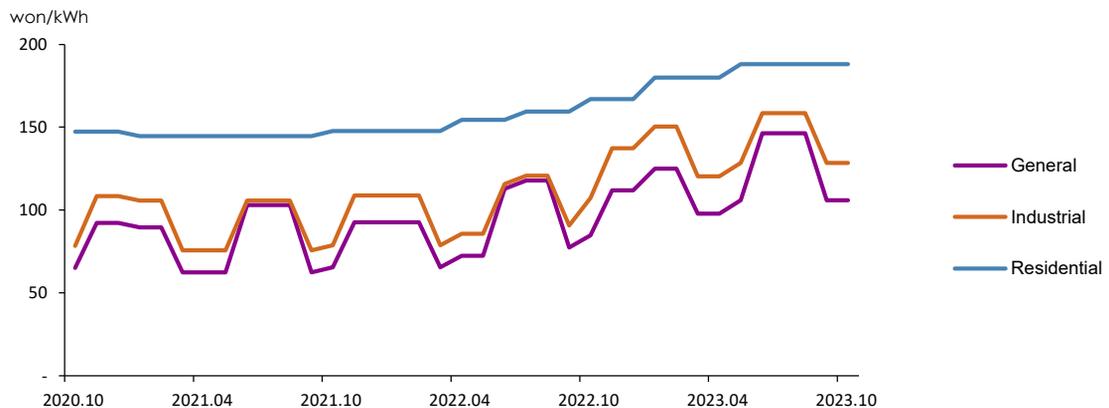
- Q4 fuel cost adjusted unit price was estimated at -1.8 won per kWh, but frozen at 5.0 won per kWh.
- Residential, commercial, and industrial electricity rates are up 12.6%, 24.9%, and 19.7% year-over-year, respectively.

▶ **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

- **October energy imports were up 2.3% year-over-year, with increases in all energy sources except natural gas.**
 - Crude oil imports increased by 5.2% year-on-year due to lower unit prices of crude oil imports, among other factors.
 - Petroleum product imports increased by 6.1% year-on-year, led by naphtha and B-C oil.
 - Coal imports rebounded (8.9%) as bituminous coal led overall import growth on lower unit prices and higher demand for feedstock use.
 - Natural gas imports decreased by 17.2% year-on-year due to the base effect of the increase in the previous month last year.
 - Energy imports rose 2.3% y/y, but the value of imports fell 19.1% due to lower import unit prices. Export volumes rebounded to 10.2%, marking the first time in seven months that exports turned to increase (16.1%).

► Import and domestic production of energy

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Import volume (Mtoe)	333.4 (2.8)	277.0 (3.3)	25.8 (-5.5)	266.6 (-3.8)	26.8 (-11.1)	26.5 (-4.4)	26.4 (2.3)
Crude oil (Mbbbl)	1 031.3 (7.4)	860.8 (8.6)	79.5 (-6.6)	830.2 (-3.5)	75.3 (-22.3)	85.1 (0.6)	83.7 (5.2)
Petroleum product (Mbbbl)	367.1 (-6.4)	305.1 (-5.5)	31.1 (-8.4)	305.4 (0.1)	33.3 (17.4)	33.5 (25.3)	33.1 (6.1)
Coal (Mton)	125.6 (-0.4)	104.2 (-0.3)	8.2 (-12.5)	99.4 (-4.6)	11.8 (-4.1)	9.8 (-7.9)	9.1 (11.4)
LNG (Mton)	46.4 (1.0)	38.1 (-0.3)	4.1 (5.2)	35.4 (-7.1)	3.4 (-10.1)	2.9 (-30.8)	3.4 (-17.2)
Import value (billion US\$, CIF)	222.8 (58.0)	186.5 (69.8)	17.9 (28.8)	146.0 (-21.7)	13.2 (-36.7)	14.2 (-28.6)	14.5 (-19.1)
Energy share of total import value (%)	30.4	30.4	30.3	27.1	25.9	27.9	27.2
Foreign energy dependence (%)	94.4	94.0	94.3	93.5	93.0	93.3	94.1
Export volume (Mtoe)	69.0 (11.2)	57.5 (12.7)	5.6 (-3.2)	56.1 (-2.5)	5.4 (-24.6)	5.8 (-1.1)	6.2 (10.2)
Export value (billion US\$, FOB)	63.1 (63.5)	53.6 (74.6)	4.5 (8.8)	43.2 (-19.4)	4.5 (-32.7)	4.9 (-6.5)	5.2 (16.1)
Domestic production							
Hydropower (TWh)	3.5 (15.9)	3.1 (16.1)	0.3 (17.4)	3.2 (2.5)	0.4 (-39.0)	0.5 (-6.6)	0.3 (12.9)
Renewable energy (Mtoe)	15.9 (10.5)	13.4 (12.5)	1.3 (18.1)	14.1 (5.1)	1.6 (16.1)	1.4 (5.9)	1.3 (0.1)

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 rose 1.2% y/y in October as oil and nuclear grew amid continued decline in coal.**
 - Coal consumption increased in industrial use due to a base effect in steel, but decreased in power generation sector due to lower generation due to transmission line constraints, resulting in an overall decrease of 3.5% YoY.
 - Oil consumption grew 3.0% y/y, driven by a more than 20% increase in self-consumption in the transformation sector, despite a 0.3% decline in final consumption due to the base effect of a significant increase in storage demand in the transportation sector.
 - Gas consumption remained at the same level as in the previous year, despite a significant decrease in consumption for power generation, due to a significant increase in direct natural gas consumption for power auto-production in the industrial sector.

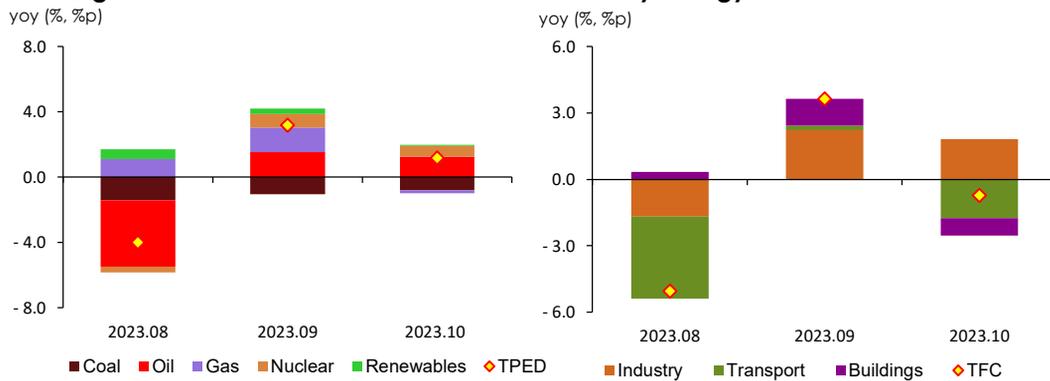
- **Energy final consumption was down 0.7% y/y, with gains in the industrial sector but declines in transportation and buildings.**
 - Industrial sector consumption rose 2.9% y/y, driven by a rebound in steel and petrochemicals following a decline in 2022, and higher consumption for power auto-production in semiconductors, machinery and transportation equipment.
 - Transportation sector consumption decreased by 9.1% y-o-y due to a decline in road sector consumption, with the base effect of a significant increase in storage demand for diesel in the same month in 2022 as international oil prices turned to increase.
 - Consumption in the building sector decreased by 4.2% year-on-year, as mild fall weather reduced heating demand, leading to a significant drop in consumption of city gas, kerosene, and thermal energy in the household sector, and a slowdown in the commercial sector due to a slowdown in the service industry.

► Energy consumption

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
TPED (Mtoe)	306.2	253.0	23.4	245.8	25.0	23.6	23.6
	(0.5)	(1.2)	(-3.4)	(-2.9)	(-4.0)	(3.2)	(1.2)
TFC (Mtoe)	215.5	177.8	16.3	171.8	16.9	16.5	16.2
	(-0.9)	(-0.1)	(-3.6)	(-3.4)	(-5.0)	(3.6)	(-0.7)
- Feedstock exclude	143.2	117.3	10.9	114.0	11.0	10.6	10.4
	(0.2)	(0.8)	(0.7)	(-2.9)	(-6.1)	(2.2)	(-4.4)

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

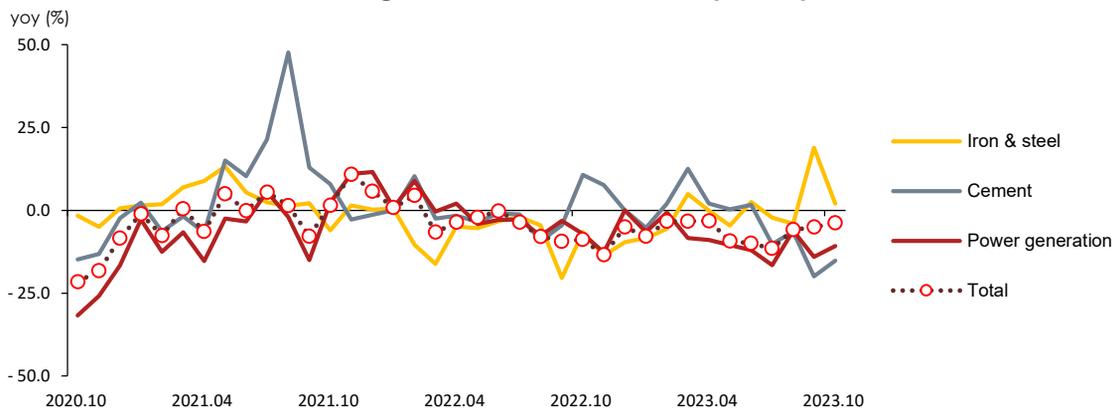
- **Coal consumption fell 3.8% y/y in October, rebounded by a base effect in industrial use but declined in power generation.**
 - Industrial sector coal consumption fell in petrochemicals and nonmetallic minerals as the economy slowed, but rebounded in steel and others.
 - Coal consumption for power generation decreased despite the increase in installed capacity (about 1.1 GW increase y/y), as nuclear and renewable/other generation increased by 5.2% and 5.9%, respectively, and coal-fired power generation plummeted (-9.8%) due to transmission line constraints in the metropolitan area.

► Coal consumption

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Coal (Mton)	117.0	97.4	8.8	91.1	10.3	8.8	8.4
	(-4.7)	(-3.8)	(-8.8)	(-6.5)	(-5.8)	(-5.1)	(-3.8)
Industry	49.4	41.3	3.9	40.3	4.0	4.0	4.0
	(-7.4)	(-6.2)	(-10.8)	(-2.4)	(-5.2)	(8.7)	(4.7)
Iron and Steel	32.5	27.2	2.7	27.2	2.8	2.8	2.7
	(-8.1)	(-7.3)	(-6.5)	(-0.0)	(-4.0)	(18.9)	(2.0)
- Coking-coal	23.6	19.7	1.9	19.8	2.0	2.0	2.0
	(-7.5)	(-7.0)	(-5.3)	(0.1)	(-3.8)	(19.9)	(1.9)
Buildings	0.4	0.2	0.1	0.2	0.0	0.0	0.1
	(-5.3)	(-2.5)	(-7.9)	(-8.5)	(-44.6)	(-45.5)	(10.0)
Power generation	67.1	55.8	4.8	50.5	6.3	4.8	4.3
	(-2.6)	(-1.9)	(-7.1)	(-9.5)	(-6.2)	(-14.0)	(-10.8)

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

□ Petroleum final consumption fell 0.3% in October as gains in the industrial sector were offset by declines in transportation and buildings.

- Industrial sector consumption increased by 5.2% y-o-y, driven by higher exports of petrochemicals, which increased consumption for raw materials.
- Transportation consumption declined 8.9% y/y, due to the base effect driven by higher storage demand in October 2022.

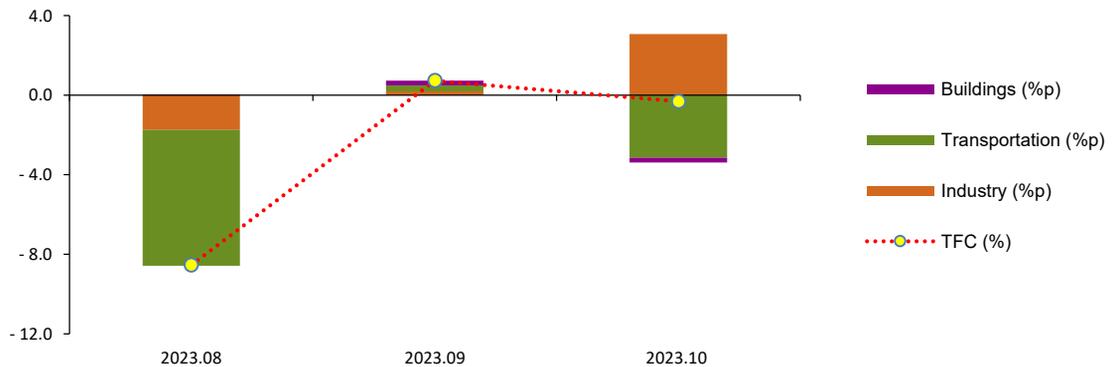
▶ Petroleum product consumption by end-use sectors

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
TFC (Mbbbl)	798.9	661.6	62.9	629.9	63.4	61.7	62.7
	(-1.3)	(-0.5)	(-5.4)	(-4.8)	(-8.6)	(0.7)	(-0.3)
Industry	496.9	414.8	37.0	389.6	40.3	38.7	38.9
- Naphtha	(-1.8)	(-0.6)	(-12.1)	(-6.1)	(-2.9)	(0.3)	(5.2)
	356.0	297.3	25.7	280.2	27.6	27.3	27.7
	(-3.8)	(-2.4)	(-15.6)	(-5.7)	(-9.4)	(-2.0)	(7.7)
Transport	258.0	212.8	22.3	207.5	20.5	20.3	20.4
	(-0.4)	(-0.1)	(8.2)	(-2.5)	(-18.8)	(0.9)	(-8.9)
Buildings	44.0	34.0	3.6	32.8	2.6	2.7	3.4
	(-0.6)	(-2.2)	(-4.3)	(-3.4)	(0.7)	(5.9)	(-4.2)
Power generation (Mbbbl)	5.02	4.39	0.34	2.63	0.21	0.17	0.30
	(20.0)	(26.2)	(-21.5)	(-40.1)	(-53.9)	(-49.6)	(-11.9)

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

□ **October gas consumption remained flat year-over-year, with increases in the industrial sector and decreases in power generation and buildings.**

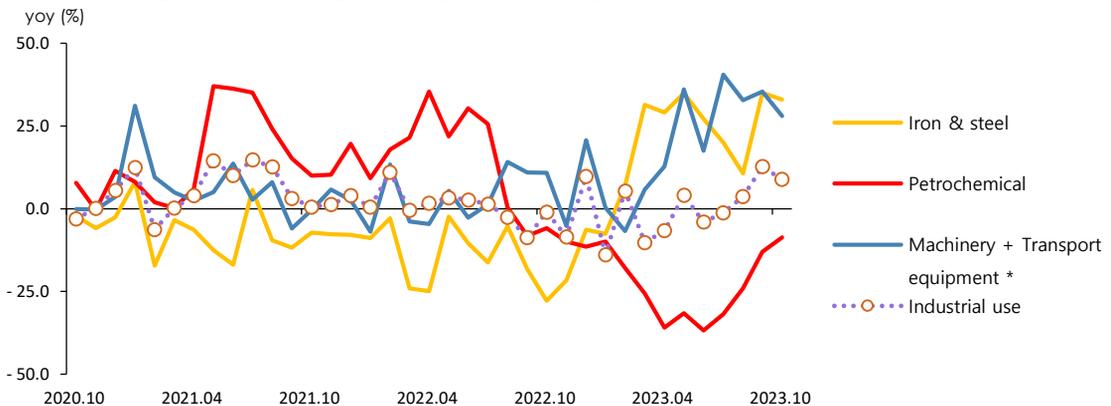
- Gas consumption for power generation fell more sharply (-5.3%), with baseload generation (nuclear+coal+renewables-other) declining by only about 1%, in the face of a 1.7% decline in total generation.
- Industrial gas consumption increased 9.0%, driven by higher natural gas consumption for power auto-production and base effect.
- Gas consumption in the building sector fell by about 16% overall, with residential consumption falling sharply (-21.1%) due to phased-in increases in utility rates and the impact of mild fall weather, and commercial consumption falling (-3.9%) due to a slowdown in the service industry.

► **Natural gas and city gas consumption**

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Gas(TPED) (Mtoe)	59.5	47.9	3.8	46.4	4.2	3.9	3.8
(Natural gas + City gas)	(-1.0)	(-1.7)	(-9.2)	(-3.2)	(8.1)	(10.1)	(0.0)
Power generation	30.0	24.5	2.1	23.7	2.6	2.3	2.0
	(-2.3)	(-4.2)	(-12.0)	(-3.3)	(8.7)	(9.8)	(-5.3)
Industry	10.0	8.1	0.7	8.1	0.8	0.8	0.8
	(0.3)	(0.2)	(-1.7)	(-0.7)	(3.8)	(12.9)	(9.0)
Buildings	15.0	11.6	0.7	10.6	0.5	0.4	0.6
	(3.9)	(4.9)	(3.1)	(-8.4)	(-0.6)	(-5.7)	(-15.7)
Natural gas(TPED) (Mton)	45.6	36.3	3.0	35.0	3.2	2.9	3.0
	(-0.5)	(-1.4)	(-8.3)	(-3.6)	(7.4)	(9.8)	(-1.1)
City gas(TFC) (Bm³)	23.4	18.5	1.3	16.9	1.0	1.0	1.2
	(2.9)	(3.8)	(-0.9)	(-8.3)	(-4.5)	(-4.3)	(-9.8)

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

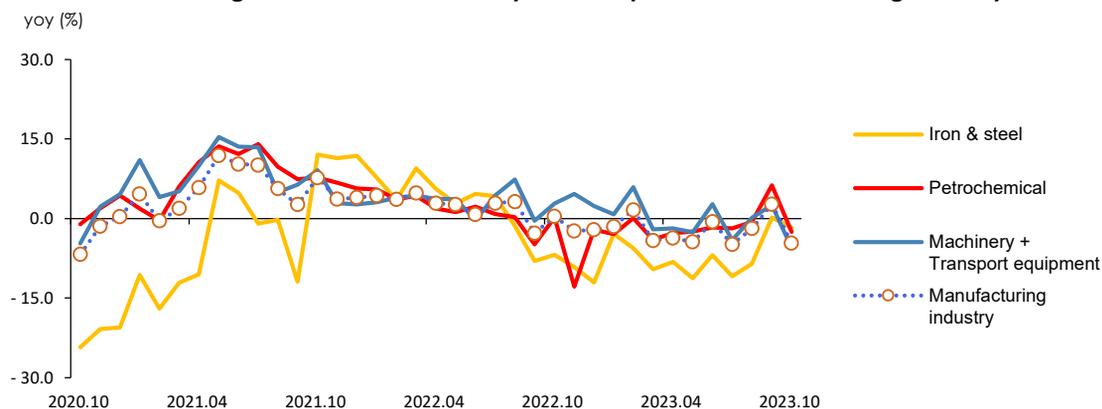
- **October electricity consumption fell 1.3% year-over-year, driven by declines in the industrial sector despite increase in the building sector.**
 - Industrial sector consumption fell 4.4% y/y, with declines in all three major electricity-consuming industries (machinery, petrochemicals, and steel).
 - Considering building sector consumption includes some prior-month consumption due to meter reading day issues, we estimate that residential electricity consumption increased relatively more year-over-year in September due to a 73.1% increase in cooling degree days compared to September 2022.

► Electricity consumption by end-use sectors

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Electricity (TWh)	535.3	448.1	41.3	447.4	49.5	47.1	40.8
	(2.9)	(3.6)	(1.3)	(-0.1)	(0.9)	(6.2)	(-1.3)
Industry	274.1	229.1	22.0	224.1	22.9	22.6	21.0
	(1.7)	(2.4)	(0.3)	(-2.2)	(-1.7)	(2.9)	(-4.4)
Transport	4.0	3.3	0.3	3.9	0.4	0.4	0.4
	(8.7)	(9.4)	(7.4)	(17.2)	(15.7)	(22.1)	(18.6)
Buildings	257.2	215.7	19.0	219.4	26.1	24.1	19.4
	(4.1)	(4.7)	(2.4)	(1.8)	(2.9)	(9.3)	(2.0)
Residential	78.6	66.3	5.9	67.5	9.1	8.1	6.1
	(1.3)	(1.5)	(-0.7)	(1.8)	(4.7)	(12.6)	(4.2)
Commercial	147.0	123.1	10.8	125.1	14.1	13.2	10.9
	(5.9)	(6.9)	(4.7)	(1.6)	(1.6)	(7.1)	(0.9)

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

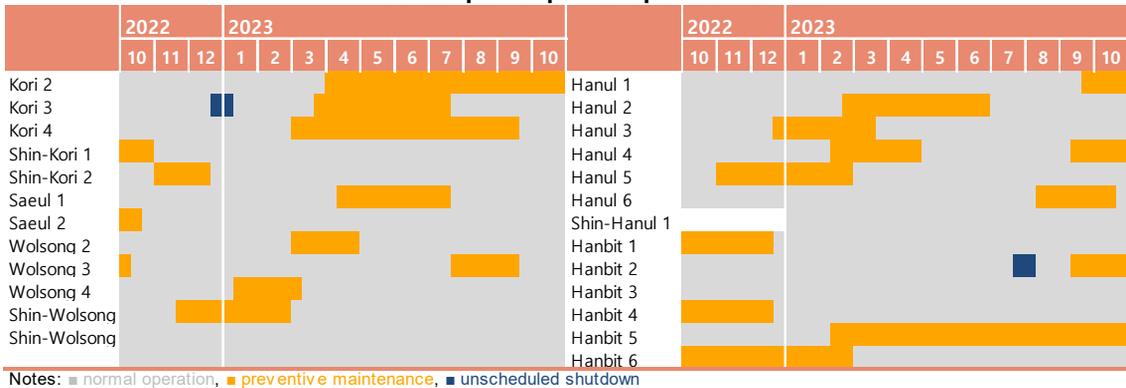
► The growth rate of electricity consumption in manufacturing industry



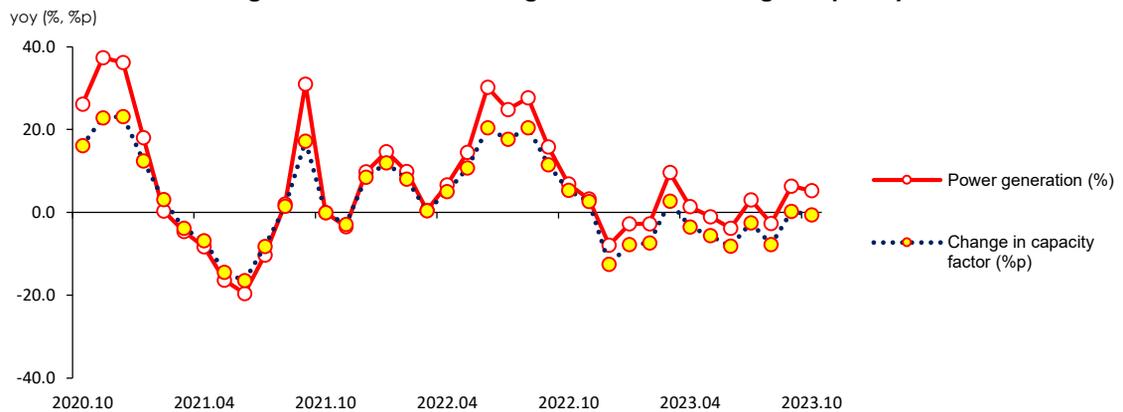
9. Nuclear

- **Nuclear power generation increased 5.2% y/y in October as capacity factor fell, but installed capacity rose.**
 - The number of planned and unplanned shutdowns was the same as in the same month last year, but the capacity factor rate decreased by 0.6%p year-on-year to 82.5% due to the commissioning of Shin Hanul Unit 1 and an increase in average daily preventive maintenance (0.2 GW).
 - Nuclear capacity increased by 6.0% (1.4GW) year-on-year due to the entry of Shin Hanul Unit 1 (Dec. 7, 2022).
 - The share of nuclear power in total electricity generation increased by 2.2%p year-on-year to 33.7%, the highest since May 2020 (36.7%).

► Nuclear power plants operation status



► The growth rate of nuclear generation & average capacity factor

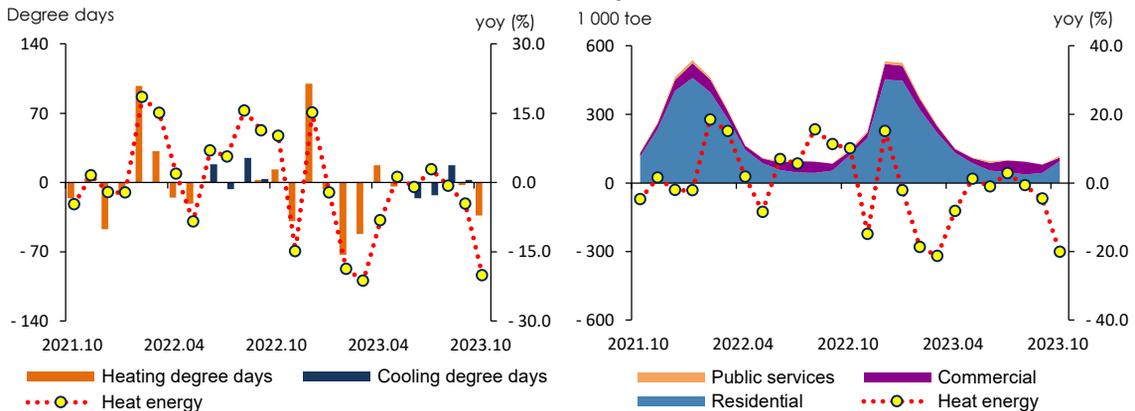


Note: Capacity factor = Ratio of actual power generated to possible power generation when utilizing 100% of available facility. Facility capacity values are based on end-of-the-month data.

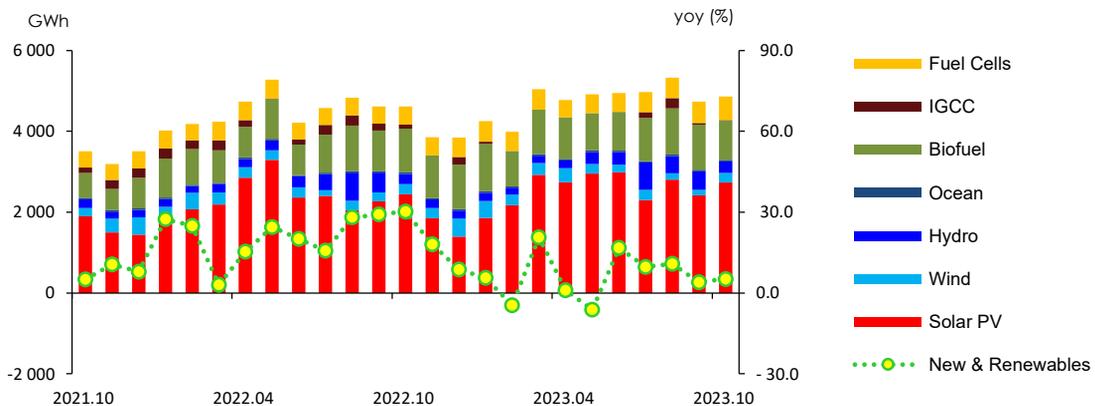
10. Heat and Renewable energy

- **Heat energy consumption in October was down 20.1% year-over-year, with declines in all sectors, including household and commercial.**
 - Heat energy consumption plunged 21.2% year-over-year in the residential sector due to rate increases (13.0%) and mild fall weather, while the commercial sector saw an 11.2% decline due to a slowdown in the service sector.
- **Renewable and other energy consumption increased by 0.6% y/y, driven by growth in the power generation sector, despite a decline in final consumption.**
 - Renewable and other generation increased 5.2% year-over-year, led by solar, fuel cells, and hydropower.
 - Renewable and other energy final consumption was down 1.2% y/y, driven by declines in industry and transportation, excluding buildings.

► 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

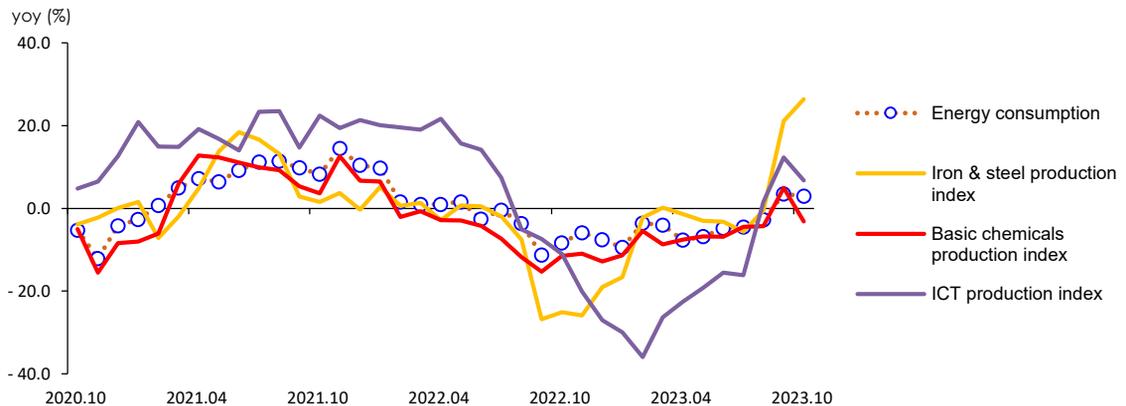
- **Industrial sector energy consumption increased 2.9% year-over-year in October, with increase in all major energy-intensive sectors.**
 - Energy consumption in the industrial sector increased for the second consecutive month for the first time since May 2022, as petrochemicals and steel rebounded by base effects, while semiconductors and automobiles recovered weakly.

► Industrial energy consumption

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Industry (Mtoe)	131.7	109.8	10.1	105.5	10.7	10.5	10.4
	(-2.2)	(-1.2)	(-8.3)	(-3.9)	(-2.7)	(3.5)	(2.9)
Petrochemical	67.6	56.6	5.0	52.6	5.4	5.2	5.3
	(-1.3)	(0.2)	(-11.2)	(-7.0)	(-5.4)	(0.8)	(6.1)
- Naphtha	43.6	36.4	3.2	34.3	3.4	3.3	3.4
	(-3.9)	(-2.6)	(-15.7)	(-5.7)	(-9.4)	(-2.0)	(7.7)
Iron & Steel	25.9	21.7	2.1	21.8	2.2	2.2	2.2
	(-7.3)	(-6.5)	(-7.4)	(0.8)	(-3.3)	(18.4)	(3.5)
- Coking coal	16.6	13.9	1.4	13.9	1.4	1.4	1.4
	(-6.7)	(-6.2)	(-4.5)	(0.1)	(-3.8)	(19.9)	(1.9)
Machinery + Transport Equipment	12.9	10.5	1.0	10.8	1.1	1.1	1.0
	(4.1)	(2.9)	(4.3)	(2.0)	(6.0)	(7.2)	(0.7)
Share of feedstock (%)	54.8	55.0	53.8	54.7	55.4	55.5	55.7

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

► Industrial energy consumption & production index



12. Transport

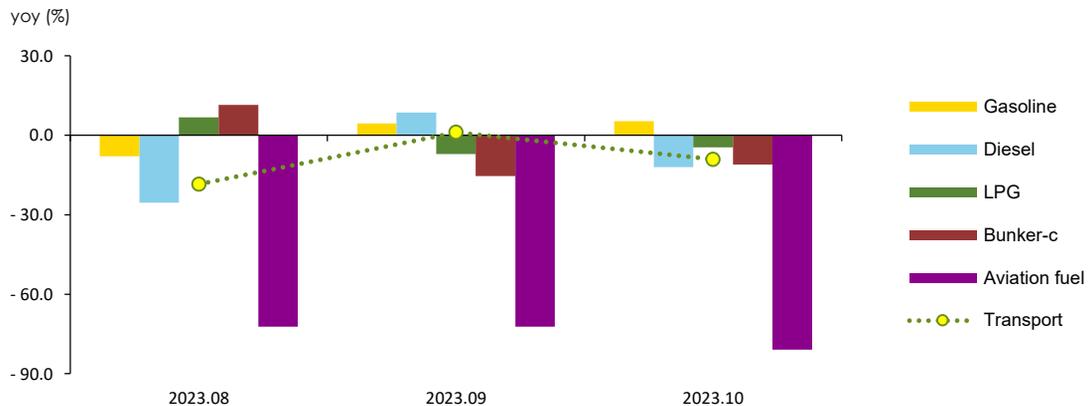
- **October transportation energy consumption fell across all sectors, down 9.1% y/y.**
 - Road sector consumption decreased by 5.4% y/y in 2022, with the base effect of higher consumption due to increased storage demand in the same month last year.
 - Aviation sector consumption was down 80.7% y/y, driven by a 10.0% y/y decrease in flights and a continued decline since June due to a change in the manual for compiling statistics.

► The growth rate of petroleum consumption in the transport sector

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Transport (Mtoe)	36.29	29.97	3.14	29.27	2.90	2.87	2.85
	(-0.9)	(-0.6)	(8.2)	(-2.3)	(-18.5)	(1.1)	(-9.1)
Road	33.86	27.89	2.92	27.82	2.77	2.77	2.76
	(-1.0)	(-0.8)	(9.5)	(-0.3)	(-16.1)	(5.3)	(-5.4)
Domestic navigation	0.46	0.40	0.04	0.38	0.04	0.04	0.03
	(8.5)	(13.3)	(-20.4)	(-4.7)	(12.8)	(-12.0)	(-12.1)
Domestic aviation	1.67	1.43	0.15	0.82	0.05	0.04	0.03
	(-0.3)	(1.9)	(-2.1)	(-42.4)	(-72.0)	(-72.0)	(-80.7)
Rail	0.30	0.25	0.02	0.25	0.03	0.03	0.02
	(-9.9)	(-9.7)	(-15.5)	(-1.6)	(-2.1)	(3.3)	(-1.8)

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

- **Building sector consumption fell in October, led by the household sector and city gas due to lower heating demand.**
 - In the household sector, consumption of city gas, kerosene, and thermal energy decreased by more than 20% year-on-year due to temperature effects.
 - Commercial sector consumption declines slightly year-over-year due to slower recovery in the services sector.

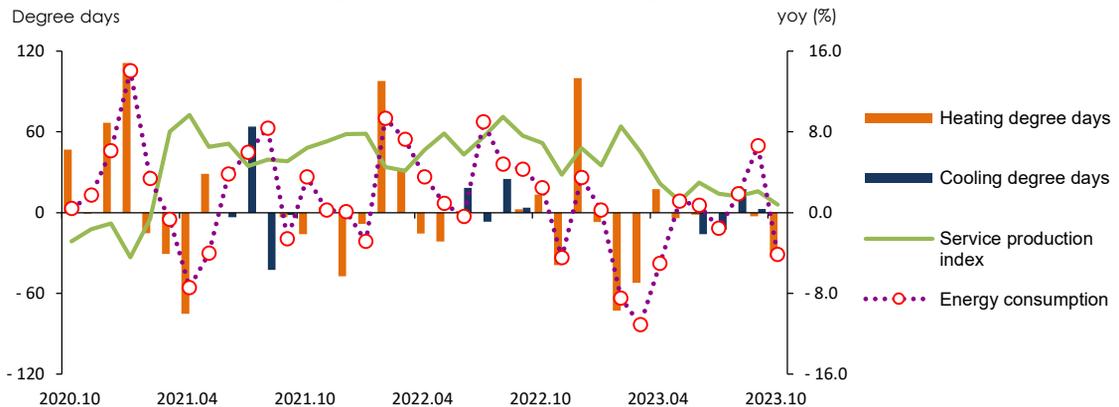
► Energy consumption in buildings

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Buildings (Mtoe)	47.4	38.0	3.1	37.0	3.3	3.1	3.0
	(3.0)	(3.7)	(2.4)	(-2.7)	(1.8)	(6.6)	(-4.2)
Residential	23.2	18.1	1.3	16.9	1.2	1.1	1.2
	(1.2)	(1.9)	(0.0)	(-6.7)	(0.1)	(2.8)	(-9.4)
Commercial	18.9	15.6	1.3	15.7	1.7	1.6	1.3
	(5.4)	(6.1)	(3.0)	(0.8)	(2.6)	(6.7)	(-0.4)
Public services	5.3	4.4	0.4	4.4	0.4	0.5	0.4
	(2.3)	(2.8)	(9.3)	(1.0)	(3.5)	(16.5)	(0.9)
Heating degree days	2 567.1	1 715.2	134.8	1 559.6	-	-	101.6
	(6.8)	(6.3)	(11.0)	(-9.1)	-	(-100.0)	(-24.6)
Cooling degree days	141.9	141.9	-	133.6	76.5	6.6	-
	(40.1)	(40.1)	-	(-5.8)	(29.7)	(73.7)	-
Service production index (2020=100)	112.0	110.4	113.5	113.9	113.9	115.6	114.4
	(6.5)	(6.8)	(6.9)	(3.2)	(1.6)	(2.1)	(0.8)

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

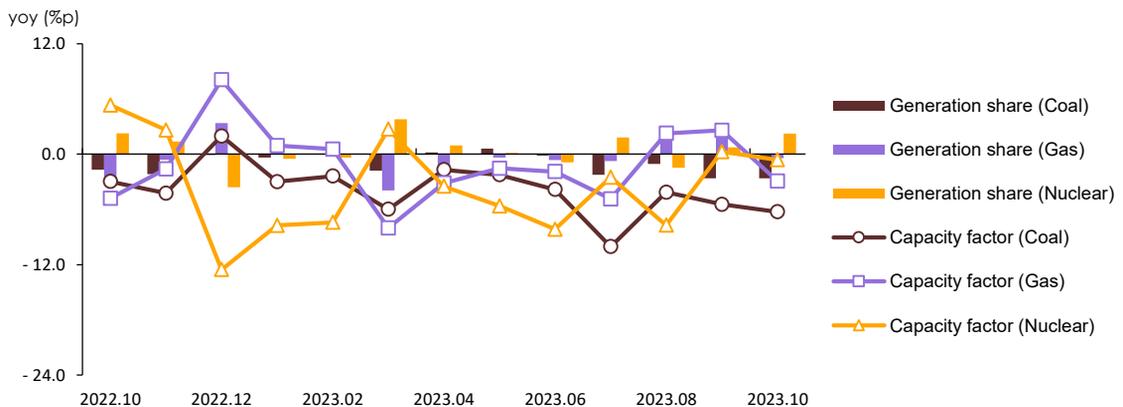
- In October, electricity generation was down 1.7% year-over-year, with more nuclear and renewable and others, and less coal and gas generation.
 - Nuclear power generation increased by 5.2% YoY due to the entry of Shin Hanul Unit 1 (1.4GW, Dec. 7, 2022).
 - Renewable and other energy generation increased 5.9% year-over-year, led by solar (12.1%), fuel cells (30.9%), and hydropower (12.9%).
 - Coal-fired generation down 9.8% as nuclear, renewables gained ground amid transmission constraints in the Metropolitan areas.
 - Gas generation down 3.4% y/y, while baseload generation and total generation decreased altogether.

► Power generation by energy sources

	2022p			2023p			
		M1~10	M10	M1~10	M8	M9	M10
Power Generation (TWh)	594.4	492.6	45.7	488.1	55.2	48.1	45.0
	(3.1)	(3.4)	(-0.9)	(-0.9)	(2.3)	(3.8)	(-1.7)
Coal	193.2	159.3	14.5	153.0	18.8	14.9	13.1
	(-2.4)	(-2.6)	(-5.9)	(-4.0)	(-0.8)	(-4.2)	(-9.8)
Oil	2.0	1.7	0.1	1.3	0.1	0.1	0.1
	(-16.5)	(-15.9)	(-49.2)	(-21.9)	(-10.9)	(-21.5)	(-20.5)
Gas	163.6	134.0	11.5	131.7	14.6	12.8	11.2
	(-2.8)	(-4.8)	(-11.2)	(-1.7)	(10.3)	(11.9)	(-3.4)
Nuclear	176.1	146.8	14.4	148.5	15.9	15.0	15.1
	(11.4)	(14.8)	(6.8)	(1.1)	(-2.7)	(6.4)	(5.2)
Renewables	59.6	50.8	5.2	53.6	5.9	5.3	5.5
	(18.9)	(20.1)	(28.8)	(5.4)	(8.7)	(4.0)	(5.9)
Baseload	428.9	357.0	34.1	355.0	40.5	35.2	33.7
	(5.6)	(6.9)	(3.6)	(-0.5)	(-0.3)	(1.3)	(-1.1)

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

	2021	2022				2023				
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
GDP (trillion won)	1 918.7 (4.3)	1 968.8 (2.6)	1 455.1 (3.0)	-	494.2 (3.2)	-	1 470.5 (1.1)	-	501.0 (1.4)	-
Private consumption	881.4 (3.6)	917.8 (4.1)	682.1 (4.4)	-	232.8 -	-	696.4 (2.1)	-	233.4 -	-
Facilities investment	182.1 (9.3)	180.5 (-0.9)	131.4 (-3.4)	-	44.3 -	-	134.2 (2.1)	-	42.5 -	-
Construction investment	265.0 (-1.6)	257.6 (-2.8)	187.1 (-3.2)	-	64.5 -	-	191.8 (2.5)	-	66.9 -	-
Consumer price index (2020=100)	102.5	107.7	107.4	108.6	108.8	109.2	111.4	112.3	112.8	113.3
USD to KRW exchange rate (won)	1 144.0	1 291.4	1 283.7	1 318.4	1 391.6	1 426.7	1 305.4	1 318.5	1 329.5	1 350.7
Benchmark rate (%)	0.6	2.1	1.9	2.5	2.5	3.0	3.5	3.5	3.5	3.5
Coincident composite index (2020=100)	103.7	108.2	108.1	109.0	109.2	109.4	109.7	110.0	110.0	110.1
Mining & manufacturing production index (2020=100)	108.2	109.7	110.1	106.4	105.8	105.8	103.8	105.6	109.0	106.7
Manufacturing operation ratio index (2020=100)	105.2	105.2	105.6	101.3	100.8	101.8	99.5	100.0	101.3	100.5
Average temperature	13.3	12.9	14.7	25.3	21.0	14.0	15.4	26.4	22.6	14.7
- year-on-year difference	0.3	-0.4	-0.3	0.5	-0.4	-1.2	0.7	1.1	1.6	0.8
Heating degree days	2 404.7 (-1.8)	2 567.1 (6.8)	1 715.2 (6.3)	-	2.6 -	134.8 (11.0)	1 559.6 (-9.1)	-	-	101.6 (-24.6)
Cooling degree days	101.3 (18.9)	141.9 (40.1)	141.9 (40.1)	59.0 (73.5)	3.8 -	-	133.6 (-5.8)	76.5 (29.7)	6.6 (73.7)	-
Energy intensity	0.16 (0.9)	0.16 (-2.0)	0.16 (-1.3)	-	0.15 (-3.0)	-	0.15 (-4.3)	-	0.15 (-3.1)	-
Per capita consumption										
Oil (bbl)	0.0 (7.3)	0.0 (-1.8)	0.0 (-1.3)	0.0 (0.8)	0.0 (-12.4)	0.0 (-5.8)	0.0 (-4.4)	0.0 (-9.8)	0.0 (2.6)	0.0 (0.3)
Electricity (MWh)	0.0 (4.9)	0.0 (3.0)	0.0 (3.7)	0.0 (2.9)	0.0 (1.6)	0.0 (1.5)	0.0 (-0.2)	0.0 (0.8)	0.0 (6.2)	0.0 (-1.4)
City gas (1 000 m ³)	- (3.5)	- (3.1)	- (4.0)	- (-0.1)	- (1.9)	- (-0.8)	- (-8.3)	- (-4.6)	- (-4.4)	- (-9.9)
Total energy (toe)	0.0 (5.4)	0.0 (0.6)	0.0 (1.3)	0.0 (2.4)	- (-4.9)	- (-3.3)	0.0 (-2.9)	- (-4.1)	- (3.1)	- (1.1)

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

	2021	2022				2023				
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Industrial production index										
All industry	105.3 (5.3)	110.1 (4.5)	108.7 (5.3)	107.9 (6.4)	109.1 (4.5)	109.2 (3.8)	109.3 (0.5)	109.2 (1.2)	112.0 (2.7)	110.1 (0.8)
Mining & manufacturing	108.2 (8.2)	109.7 (1.4)	110.1 (3.5)	106.4 (1.5)	105.8 (0.1)	105.8 (-2.7)	103.8 (-5.8)	105.6 (-0.8)	109.0 (3.0)	106.7 (0.9)
Semiconductor	126.8 (26.8)	136.5 (7.7)	141.5 (15.2)	131.9 (-3.5)	130.3 (-6.6)	123.8 (-11.1)	122.2 (-13.7)	143.0 (8.4)	161.1 (23.6)	140.0 (13.1)
Iron & steel	105.2 (5.2)	96.3 (-8.4)	99.0 (-5.6)	99.1 (-7.6)	75.9 (-26.8)	78.0 (-25.1)	99.2 (0.2)	98.6 (-0.5)	91.9 (21.1)	98.6 (26.4)
Cement	103.2 (3.1)	100.2 (-2.9)	100.3 (-0.8)	98.3 (3.3)	96.7 (2.3)	112.1 (3.1)	92.4 (-7.9)	83.9 (-14.6)	87.2 (-9.8)	94.7 (-15.5)
Basic compound	105.9 (5.9)	99.1 (-6.4)	100.5 (-5.3)	99.4 (-11.8)	91.7 (-15.3)	92.0 (-11.5)	94.9 (-5.6)	95.1 (-4.3)	96.2 (4.9)	89.1 (-3.2)
Transport equipment	106.3 (6.3)	116.0 (9.1)	112.3 (7.5)	107.5 (21.3)	115.1 (28.3)	121.9 (20.3)	126.4 (12.5)	116.3 (8.2)	115.0 (-0.1)	125.0 (2.5)
Electric & electronic	107.7 (7.7)	110.8 (2.9)	110.0 (4.2)	107.1 (2.0)	112.7 (9.3)	110.8 (2.9)	107.2 (-2.6)	104.6 (-2.3)	108.4 (-3.8)	104.2 (-6.0)
Service	105.2 (5.2)	112.0 (6.5)	110.4 (6.8)	112.1 (9.5)	113.2 (7.6)	113.5 (6.9)	113.9 (3.2)	113.9 (1.6)	115.6 (2.1)	114.4 (0.8)
Wholesale and retail	105.3 (5.3)	107.1 (1.7)	106.4 (2.1)	106.5 (5.7)	107.3 (1.6)	109.2 (1.1)	105.9 (-0.5)	102.8 (-3.5)	107.0 (-0.3)	105.3 (-3.6)
Food & Accommodation	101.9 (1.9)	119.1 (16.9)	117.9 (18.9)	129.0 (26.6)	119.3 (16.8)	127.6 (12.7)	119.3 (1.2)	122.6 (-5.0)	117.9 (-1.2)	120.8 (-5.3)
Production output										
Iron & steel - Pig iron	46 440.5 (2.4)	42 658.2 (-8.1)	35 857.9 (-7.1)	3 853.9 (-4.2)	3 169.0 (-17.0)	3 417.4 (-9.0)	37 579.1 (4.8)	3 893.3 (1.0)	3 861.3 (21.8)	3 824.4 (11.9)
Iron & steel - Crude steel	70 418.0 (5.0)	65 846.2 (-6.5)	55 806.4 (-4.8)	5 933.5 (-2.8)	4 614.6 (-15.2)	5 151.1 (-10.9)	55 917.6 (0.2)	5 587.8 (-5.8)	5 451.4 (18.1)	5 491.9 (6.6)
Petrochemical - Basic petrochemicals	34 434.5 (12.7)	32 854.1 (-4.6)	27 751.0 (-2.6)	2 766.8 (-11.6)	2 552.9 (-15.5)	2 395.1 (-18.5)	25 722.8 (-7.3)	2 598.2 (-6.1)	2 641.6 (3.5)	2 697.5 (12.6)
Petrochemical - Intermediate raw material	15 764.6 (2.6)	13 852.5 (-12.1)	11 678.3 (-11.5)	1 195.2 (-17.3)	1 116.8 (-20.0)	1 041.5 (-16.7)	10 826.8 (-7.3)	993.0 (-16.9)	1 014.4 (-9.2)	1 088.6 (4.5)
Petrochemical - 3 major products	23 224.7 (9.2)	22 129.4 (-4.7)	18 854.3 (-1.6)	1 844.8 (-10.5)	1 697.8 (-14.6)	1 542.5 (-18.1)	17 976.8 (-4.7)	1 891.3 (2.5)	1 878.5 (10.6)	1 866.4 (21.0)
The number of cars	3 462.4 (-1.3)	3 756.5 (8.5)	3 023.3 (6.4)	284.4 (21.1)	307.7 (34.1)	327.5 (24.2)	3 502.5 (15.9)	312.0 (9.7)	301.8 (-1.9)	341.0 (4.1)

Note: p means provisional.

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

International Energy Prices

	2021	2022				2023				
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Crude oil (USD/bbl)										
WTI	67.9 (72.4)	94.2 (38.7)	97.0 (45.9)	91.5 (35.1)	83.8 (17.1)	87.0 (7.2)	78.2 (-19.4)	81.3 (-11.1)	89.4 (6.7)	85.5 (-1.8)
Dubai	69.3 (64.1)	96.4 (39.1)	99.3 (46.5)	96.6 (39.0)	90.9 (25.2)	91.2 (11.7)	82.4 (-17.0)	86.5 (-10.5)	93.3 (2.5)	89.7 (-1.5)
Brent	70.8 (63.8)	98.9 (39.7)	101.5 (46.2)	97.7 (38.6)	90.6 (21.0)	93.6 (11.8)	82.7 (-18.5)	85.1 (-12.9)	92.6 (2.2)	88.7 (-5.2)
Unit value of import (C&F)	70.2 (56.9)	102.3 (45.6)	104.3 (53.2)	107.6 (46.1)	104.7 (41.8)	100.9 (27.7)	85.4 (-18.1)	84.9 (-21.1)	90.3 (-13.8)	94.8 (-6.1)
LNG										
Henry Hub (USD/MMBTU)	3.7 (74.6)	6.5 (75.2)	6.6 (85.1)	8.8 (117.8)	7.8 (51.7)	6.1 (9.2)	2.6 (-60.0)	2.6 (-69.9)	2.7 (-65.3)	3.1 (-48.2)
TTF (USD/MMBTU)	16.0 (396.1)	40.1 (150.0)	40.9 (221.5)	69.7 (351.5)	57.9 (156.1)	38.4 (24.4)	13.1 (-68.1)	11.2 (-83.9)	11.4 (-80.2)	14.6 (-62.1)
JKM (USD/MMBTU)	17.9 (324.7)	33.9 (89.5)	34.6 (141.9)	53.2 (225.3)	47.0 (101.2)	33.0 (-0.8)	14.2 (-58.8)	12.4 (-76.6)	13.9 (-70.4)	16.3 (-50.6)
Unit value of import (USD/ton, CIF)	550.8 (41.2)	1 053.5 (91.3)	1 012.8 (106.2)	1 198.8 (124.1)	1 470.4 (157.5)	1 247.3 (86.5)	797.0 (-21.3)	660.0 (-44.9)	678.2 (-53.9)	628.5 (-49.6)
Coal (USD/ton)										
Thermal coal (Newcastle)	136.0 (125.8)	356.3 (161.9)	352.6 (168.3)	404.9 (142.2)	439.4 (138.7)	390.4 (65.8)	183.0 (-48.1)	146.6 (-63.8)	159.5 (-63.7)	139.5 (-64.3)
Unit value of import (CIF)	115.1 (48.1)	226.3 (96.7)	230.7 (126.8)	242.4 (111.2)	203.1 (60.9)	230.1 (61.8)	174.7 (-24.3)	147.4 (-39.2)	139.6 (-31.3)	151.6 (-34.1)
Petroleum product (USD/bbl)										
Gasoline	80.3 (72.2)	115.2 (43.4)	119.5 (52.9)	110.9 (37.0)	97.8 (16.4)	94.9 (-3.8)	99.6 (-16.6)	107.7 (-2.9)	110.3 (12.7)	98.9 (4.2)
Kerosene	75.1 (67.9)	126.7 (68.6)	128.8 (76.8)	132.2 (78.5)	120.9 (51.3)	123.4 (32.6)	104.8 (-18.7)	116.6 (-11.8)	122.9 (1.7)	113.6 (-8.0)
Diesel	77.6 (57.2)	135.3 (74.3)	138.2 (83.3)	139.7 (82.5)	129.1 (55.7)	137.3 (43.7)	107.1 (-22.5)	119.4 (-14.6)	125.4 (-2.9)	117.5 (-14.4)
Bunker-C	64.4 (64.3)	82.3 (27.8)	86.3 (35.7)	78.2 (20.0)	66.2 (-9.9)	62.2 (-19.8)	72.0 (-16.5)	85.1 (8.8)	84.0 (26.8)	76.3 (22.6)
Propane	647.9 (63.2)	737.1 (13.8)	758.5 (24.1)	670.0 (1.5)	650.0 (-2.3)	590.0 (-26.3)	568.0 (-25.1)	470.0 (-29.9)	550.0 (-15.4)	600.0 (1.7)
Butane	629.6 (55.9)	734.2 (16.6)	755.0 (26.4)	660.0 (0.8)	630.0 (-5.3)	560.0 (-29.6)	568.5 (-24.7)	460.0 (-30.3)	560.0 (-11.1)	615.0 (9.8)
Naphtha	70.6 (74.6)	83.1 (17.7)	85.8 (25.1)	72.0 (1.8)	67.1 (-10.6)	71.4 (-15.3)	68.8 (-19.8)	70.2 (-2.5)	74.1 (10.6)	70.3 (-1.5)

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

	2021	2022				2023				
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Petroleum product										
Gasoline (won/liter)	1 590.5 (15.1)	1 812.4 (14.0)	1 853.5 (18.0)	1 792.2 (8.9)	1 730.0 (5.3)	1 666.7 (-2.7)	1 643.1 (-11.3)	1 716.8 (-4.2)	1 769.2 (2.3)	1 775.9 (6.6)
Diesel (won/liter)	1 391.3 (16.9)	1 841.8 (32.4)	1 844.0 (34.8)	1 889.3 (31.2)	1 850.2 (28.7)	1 838.4 (21.8)	1 555.0 (-15.7)	1 573.2 (-16.7)	1 666.5 (-9.9)	1 690.3 (-8.1)
Bunker-C (won/liter)	731.7 (27.6)	1 115.2 (52.4)	1 125.4 (59.5)	1 305.3 (74.0)	1 128.6 (46.9)	1 050.8 (29.2)	915.9 (-18.6)	880.5 (-32.5)	963.7 (-14.6)	992.6 (-5.5)
Propane (won/kg)	2 092.6 (13.1)	2 479.6 (18.5)	2 485.0 (21.9)	2 522.4 (19.3)	2 471.2 (14.4)	2 469.8 (14.2)	2 363.0 (-4.9)	2 242.8 (-11.1)	2 285.0 (-7.5)	2 367.9 (-4.1)
Butane (won/liter)	931.8 (17.8)	1 081.7 (16.1)	1 092.7 (20.9)	1 088.8 (14.3)	1 051.4 (7.2)	1 049.5 (7.0)	955.0 (-12.6)	870.4 (-20.1)	895.5 (-14.8)	940.3 (-10.4)
City gas(won/MJ)										
Residential	14.2 (-5.7)	16.6 (16.7)	16.0 (12.3)	17.0 (19.5)	17.0 (19.5)	19.7 (38.4)	20.3 (27.2)	20.7 (22.0)	20.7 (22.0)	20.7 (5.3)
General(1)	13.9 (-6.5)	16.3 (17.3)	15.7 (12.9)	16.6 (20.2)	16.6 (20.2)	19.3 (39.7)	20.0 (27.7)	20.4 (22.6)	20.4 (22.6)	20.4 (5.4)
Commercial	17.2 (14.2)	28.7 (66.6)	27.2 (68.6)	30.9 (79.4)	34.0 (87.9)	35.6 (89.4)	26.7 (-2.0)	22.8 (-26.2)	22.7 (-33.3)	23.4 (-34.3)
Industry	14.4 (14.2)	25.9 (79.9)	24.4 (83.3)	27.9 (99.3)	30.9 (108.4)	32.6 (109.1)	24.0 (-1.7)	19.9 (-28.7)	19.7 (-36.3)	20.5 (-37.2)
Heat(won/Mcal)										
Residential	65.2 (-1.4)	74.1 (13.7)	71.0 (8.8)	74.5 (14.2)	74.5 (14.2)	89.9 (37.8)	95.0 (33.8)	101.6 (36.4)	101.6 (36.4)	101.6 (13.0)
Commercial	84.7 (-1.4)	96.3 (13.7)	92.2 (8.8)	96.7 (14.2)	96.7 (14.2)	116.7 (37.8)	123.3 (33.8)	131.9 (36.4)	131.9 (36.4)	131.9 (13.0)
Public	74.0 (-1.4)	84.1 (13.7)	80.5 (8.8)	84.5 (14.2)	84.5 (14.2)	101.9 (37.8)	107.7 (33.8)	115.2 (36.3)	115.2 (36.3)	115.2 (13.0)
Electricity(won/kWh)										
Residential	142.3 (-3.4)	147.8 (3.9)	146.5 (2.9)	147.2 (3.4)	147.2 (3.4)	154.6 (8.6)	170.8 (16.6)	174.0 (18.2)	174.0 (18.2)	174.0 (12.5)
General	79.4 (-5.9)	84.9 (7.0)	81.9 (5.4)	105.6 (4.9)	65.1 (8.1)	72.5 (20.4)	106.3 (29.7)	132.4 (25.4)	91.9 (41.2)	91.9 (26.8)
Industry	91.0 (-5.2)	98.8 (8.6)	93.6 (5.8)	108.4 (4.7)	78.4 (6.7)	95.0 (29.3)	126.2 (34.8)	144.4 (33.2)	114.4 (45.9)	114.4 (20.4)

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)

	2021	2022p					2023p			
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Coal (Mton)	122.8 (0.6)	117.0 (-4.7)	97.4 (-3.8)	11.0 (-7.9)	9.3 (-9.3)	8.8 (-8.8)	91.1 (-6.5)	10.3 (-5.8)	8.8 (-5.1)	8.4 (-3.8)
- Coking coal excluded	97.2 (-0.1)	93.4 (-4.0)	77.7 (-2.9)	8.9 (-8.8)	7.5 (-6.4)	6.8 (-9.8)	71.3 (-8.2)	8.3 (-6.3)	6.7 (-10.7)	6.4 (-5.4)
Oil (Mbbbl)	830.7 (7.1)	814.5 (-1.9)	673.6 (-1.4)	70.4 (0.7)	61.9 (-12.5)	64.4 (-5.9)	644.4 (-4.3)	63.5 (-9.7)	63.6 (2.7)	64.6 (0.4)
LNG (Mton)	45.8 (10.4)	45.6 (-0.5)	36.3 (-1.4)	3.0 (-3.0)	2.7 (-7.6)	3.0 (-8.3)	35.0 (-3.6)	3.2 (7.4)	2.9 (9.8)	3.0 (-1.1)
Hydro (TWh)	3.1 (-21.2)	3.5 (15.9)	3.1 (16.1)	0.7 (141.2)	0.5 (63.8)	0.3 (17.4)	3.2 (2.5)	0.4 (-39.0)	0.5 (-6.6)	0.3 (12.9)
Nuclear (TWh)	158.0 (-1.4)	176.1 (11.4)	146.8 (14.8)	16.3 (27.6)	14.1 (15.8)	14.4 (6.8)	148.5 (1.1)	15.9 (-2.7)	15.0 (6.4)	15.1 (5.2)
Others (Mtoe)	14.4 (13.8)	15.9 (10.5)	13.4 (12.5)	1.4 (16.6)	1.3 (16.0)	1.3 (18.1)	14.1 (5.1)	1.6 (16.1)	1.4 (5.9)	1.3 (0.1)
TPED (Mtoe)	304.9 (5.2)	306.2 (0.5)	253.0 (1.2)	26.1 (2.3)	22.9 (-5.1)	23.4 (-3.4)	245.8 (-2.9)	25.0 (-4.0)	23.6 (3.2)	23.6 (1.2)

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

Share of TPED by Sources

(unit: %)

	2021	2022p					2023p			
			M1~10	M8	M9	M10	M1~10	M8	M9	M10
Coal	24.4	23.1	23.3	25.4	24.3	22.8	22.5	24.9	22.6	21.7
- Coking coal excluded	18.6	17.7	17.8	19.7	19.1	16.9	16.9	19.3	16.5	15.9
Oil	39.9	39.7	39.8	40.4	40.9	41.7	39.7	37.9	41.1	42.4
LNG	19.6	19.5	18.7	15.0	15.3	16.9	18.6	16.7	16.3	16.6
Hydro	0.2	0.2	0.3	0.6	0.5	0.2	0.3	0.4	0.4	0.3
Nuclear	11.0	12.2	12.4	13.3	13.1	13.1	12.9	13.5	13.5	13.6
Others	4.7	5.2	5.3	5.2	5.8	5.7	5.7	6.3	5.9	5.6
TPED	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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

Total Final Consumption (TFC)

(Unit: Mtoe)

	2021	2022p					2023p				
		M1~10	M8	M9	M10	M1~10	M8	M9	M10		
Industry	134.6 (7.5)	131.7 (-2.2)	109.8 (-1.2)	11.0 (-3.7)	10.1 (-11.3)	10.1 (-8.3)	105.5 (-3.9)	10.7 (-2.7)	10.5 (3.5)	10.4 (2.9)	
Transport	36.6 (5.4)	36.3 (-0.9)	30.0 (-0.6)	3.6 (15.8)	2.8 (-8.0)	3.1 (8.2)	29.3 (-2.3)	2.9 (-18.5)	2.9 (1.1)	2.8 (-9.1)	
Residential	22.9 (2.6)	23.2 (1.2)	18.1 (1.9)	1.2 (0.6)	1.1 (0.6)	1.3 (0.0)	16.9 (-6.7)	1.2 (0.1)	1.1 (2.8)	1.2 (-9.4)	
commercial	17.9 (1.7)	18.9 (5.4)	15.6 (6.1)	1.7 (8.0)	1.5 (7.1)	1.3 (3.0)	15.7 (0.8)	1.7 (2.6)	1.6 (6.7)	1.3 (-0.4)	
Public	5.2 (4.0)	5.3 (2.3)	4.4 (2.8)	0.4 (4.6)	0.4 (4.8)	0.4 (9.3)	4.4 (1.0)	0.4 (3.5)	0.5 (16.5)	0.4 (0.9)	
TFC	217.3 (6.0)	215.5 (-0.9)	177.8 (-0.1)	17.8 (1.2)	15.9 (-8.2)	16.3 (-3.6)	171.8 (-3.4)	16.9 (-5.0)	16.5 (3.6)	16.2 (-0.7)	
Coal (Mton)	53.8 (4.9)	49.9 (-7.4)	41.6 (-6.2)	4.2 (-8.3)	3.7 (-17.2)	3.9 (-10.8)	40.6 (-2.5)	4.0 (-5.3)	4.0 (8.2)	4.1 (4.8)	
Oil (Mbbl)	809.1 (7.6)	798.9 (-1.3)	661.6 (-0.5)	69.3 (1.9)	61.3 (-11.0)	62.9 (-5.4)	629.9 (-4.8)	63.4 (-8.6)	61.7 (0.7)	62.7 (-0.3)	
- Non-energy oil excluded	350.6 (4.3)	345.8 (-1.4)	282.2 (-1.7)	31.4 (15.0)	26.6 (-7.4)	29.8 (4.1)	274.0 (-2.9)	26.5 (-15.6)	26.1 (-1.6)	27.0 (-9.6)	
Electricity (TWh)	520.3 (4.7)	535.3 (2.9)	448.1 (3.6)	49.1 (2.7)	44.3 (1.4)	41.3 (1.3)	447.4 (-0.1)	49.5 (0.9)	47.1 (6.2)	40.8 (-1.3)	
City gas (Bm ³)	22.7 (3.3)	23.4 (2.9)	18.5 (3.8)	1.1 (-0.2)	1.1 (1.8)	1.3 (-0.9)	16.9 (-8.3)	1.0 (-4.5)	1.0 (-4.3)	1.2 (-9.8)	
Heat{others (1 000 toe)	9.8 (6.3)	10.0 (1.9)	8.1 (3.5)	0.7 (12.9)	0.7 (6.9)	0.7 (6.9)	7.9 (-2.6)	0.8 (7.2)	0.7 (4.1)	0.7 (-5.1)	

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

Share of the Total Final Consumption by Sources

(unit: %)

	2021	2022p					2023p				
		M1~10	M8	M9	M10	M1~10	M8	M9	M10		
Industry	61.9	61.1	61.7	61.9	63.7	61.9	61.4	63.4	63.6	64.1	
Transport	16.9	16.8	16.9	19.9	17.9	19.2	17.0	17.1	17.4	17.6	
Residential	10.6	10.8	10.2	6.5	6.8	8.3	9.8	6.8	6.7	7.5	
Commercial	8.3	8.8	8.8	9.3	9.1	8.2	9.1	10.0	9.4	8.2	
Public	2.4	2.5	2.5	2.4	2.5	2.5	2.6	2.6	2.8	2.5	
TFC	100.0										
Coal	15.6	14.7	14.9	15.1	14.9	15.4	15.1	15.1	15.7	16.2	
Oil	47.5	47.2	47.3	49.8	49.0	49.3	46.6	47.3	47.5	49.1	
- Non-energy oil excluded	21.5	21.3	21.1	23.7	22.2	24.4	21.0	20.5	20.9	21.9	
Electricity	20.6	21.4	21.7	23.7	24.0	21.8	22.4	25.2	24.6	21.6	
City gas	11.7	12.1	11.6	7.3	7.8	9.2	11.4	7.8	7.9	9.0	
Heat{others	4.5	4.7	4.6	4.1	4.3	4.3	4.6	4.6	4.3	4.1	

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

Statistics on Energy Production Facilities

	2020	2021	2022	2023			2023		
				M8	M9	M10	M8	M9	M10
Total capacity (GW)	129.2 (3.1)	134.0 (3.7)	138.0 (3.0)	134.7 (2.3)	134.8 (2.0)	136.0 (1.9)	143.4 (6.5)	143.5 (6.5)	143.8 (5.7)
Nuclear	23.3 -	23.3 -	24.7 (6.0)	23.3 -	23.3 -	23.3 -	24.7 (6.0)	24.7 (6.0)	24.7 (6.0)
Bituminous coal	36.5 (0.1)	36.9 (1.3)	37.3 (1.0)	36.3 (-0.4)	36.3 (-0.4)	37.3 (-0.4)	38.3 (5.6)	38.3 (5.6)	38.3 (2.6)
Gas	41.2 (4.1)	41.2 (0.1)	41.2 -	41.2 (0.1)	41.2 (0.1)	41.2 (0.1)	43.2 (4.8)	43.2 (4.8)	43.2 (4.8)
Refinery capacity (mil BPSD)	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			2023		
				M8	M9	M10	M8	M9	M10
The number of household demanding city gas (mil)	20.1 (2.4)	20.5 (2.0)	20.9 (1.7)	20.6 (2.3)	20.7 (2.2)	20.7 (2.1)	20.8 (0.9)	20.9 (1.2)	20.9 (0.8)
Registered cars (mil)	24.4 (2.9)	24.9 (2.2)	25.5 (2.4)	25.3 (2.3)	25.4 (2.3)	25.4 (2.4)	25.8 (1.9)	25.8 (1.9)	25.9 (1.8)
- gasoline	11.4 (4.1)	11.8 (3.1)	12.1 (2.6)	12.0 (2.6)	12.0 (2.6)	12.0 (2.7)	12.3 (2.4)	12.3 (2.4)	12.3 (2.3)
- diesel	10.0 (0.3)	9.9 (-1.2)	9.8 (-1.2)	9.8 (-1.1)	9.8 (-1.2)	9.8 (-1.1)	9.6 (-2.2)	9.6 (-2.3)	9.5 (-2.4)
- LPG	2.0 (-1.3)	1.9 (-1.7)	1.9 (-2.1)	1.9 (-1.9)	1.9 (-1.9)	1.9 (-1.9)	1.9 (-3.5)	1.8 (-3.6)	1.8 (-3.8)
- hybrid	0.6 (33.1)	0.9 (34.0)	1.1 (28.5)	1.0 (31.0)	1.1 (30.2)	1.1 (29.1)	1.3 (29.7)	1.4 (30.3)	1.4 (31.0)

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

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