

KEEI

MONTHLY KOREA ENERGY TRENDS

2023/12

KOREA ENERGY ECONOMICS INSTITUTE

COAL	-5.1%
PETROLEUM	0.7%
GAS	10.1%
NUCLEAR	6.4%
NEW & RENEWABLE	3.4%
September, 2023	

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



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1. The Economy and the Industry

- **Gross Domestic Product (GDP) increased by 1.4% year-on-year in 3Q, despite a drop in facility investment, as construction investment and government spending increased.**
 - GDP increased, as the construction investment and government spending rose by 3.8% and 1.1% respectively on a year-on-year basis, although the facility investment decreased (-4.2%) partly due to base effect. Private spending was almost flat (0.2%) compared to the same period last year, as spending contracted, affected by high prices.
- **The industrial production index was up (2.9%) in September in eight months, as production rebounded in some industries including semiconductor, petrochemical and iron & steel sectors.**
 - The semiconductor production index went up by 23.6% year-on-year with the signs of business recovery such as the 2nd consecutive month of growth in the shipment and capacity utilization rate index (35.7%, 6.9%), even though the inventory index was up 58.1% on a year-on-year basis.
 - The production index of basic chemical materials went up by 4.9% year-on-year, as the export and domestic demand recovered to some degree in the petrochemical sector (based on volumes). The iron & steel production index rebounded by 21.1% year-on-year due to the base effect of the same month last year, when the production was hit by Typhoon Hinnamnor.
 - The automobile production index was flat on a year-on-year basis, despite some factors causing a downward trend such as partial strikes by some domestic car manufacturers and parts suppliers, as it was offset by other factors supporting an upward trend including stronger export of eco-friendly cars.
- **The service production index increased by 2.1% year-on-year in September, despite poor performance of some sectors, as several other service sectors posted increased production.**
 - The wholesale & retail and food & accommodation production index declined, led by automobile & parts sales and restaurant businesses respectively, although the pace of decline slowed. Meanwhile, other service sectors posted increased production, including transport & warehouse, finance & insurance, and real estate businesses, driving up the total service production index.

► Major economic and industrial indicators

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
GDP (trillion won)	1 968.8 (2.6)	1 455.1 (3.0)	494.2 (3.2)	1 470.5 (1.1)	- -	- -	501.0 (1.4)
Total export (\$billion, customs clearance basis)	683.6 (6.1)	524.5 (12.2)	57.2 (2.3)	464.2 (-11.5)	50.5 (-16.2)	52.0 (-8.1)	54.7 (-4.4)
Industrial production index (2020=100)	109.7 (1.4)	110.6 (4.2)	105.8 (0.1)	103.4 (-6.5)	103.9 (-8.1)	105.6 (-0.8)	108.9 (2.9)
Semi-conductors	136.5 (7.7)	143.4 (18.6)	130.3 (-6.6)	120.2 (-16.2)	127.2 (-15.0)	143.0 (8.4)	161.1 (23.6)
Basic chemical products	99.1 (-6.4)	101.5 (-4.6)	91.7 (-15.3)	95.6 (-5.8)	97.8 (-4.5)	95.1 (-4.3)	96.2 (4.9)
Iron&Steel	96.3 (-8.4)	101.4 (-3.4)	75.9 (-26.8)	99.3 (-2.1)	101.9 (-5.6)	98.6 (-0.5)	91.9 (21.1)
Cars	116.0	111.3	115.1	126.5	126.5	116.3	115.1

	(9.1)	(6.1)	(28.3)	(13.7)	(6.1)	(8.2)	-
Service production index (2020=100)	112.0	110.0	113.2	113.9	114.2	113.9	115.6
	(6.5)	(6.8)	(7.6)	(3.5)	(1.9)	(1.6)	(2.1)
Wholesale & Retail	107.1	106.1	107.3	105.9	103.4	102.8	107.0
	(1.7)	(2.2)	(1.6)	(-0.1)	(-1.8)	(-3.5)	(-0.3)
Food & Accommodation	119.1	116.8	119.3	119.1	122.3	122.6	117.8
	(16.9)	(19.7)	(16.8)	(2.0)	(-7.4)	(-5.0)	(-1.3)

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 Prices¹

Global Energy Prices

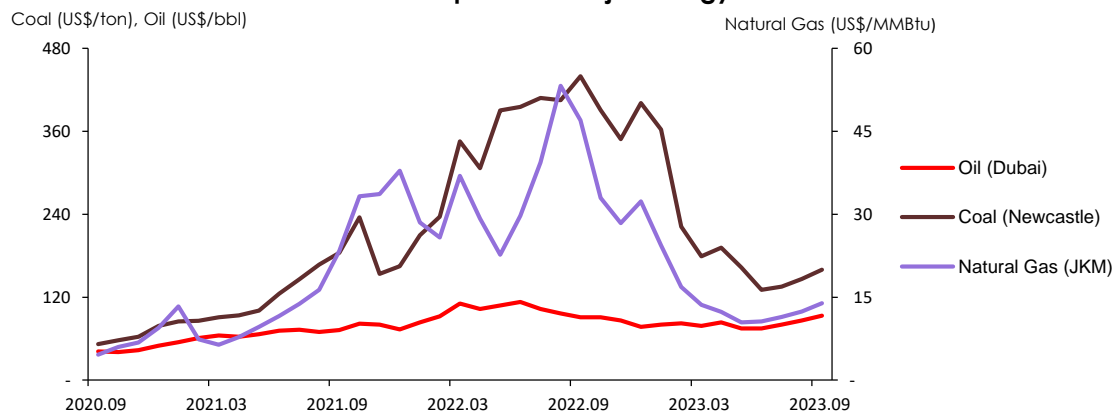
- **Global oil price increased in September, as Saudi Arabia and Russia extended their voluntary supply cuts, and the U.S. crude inventory decreased.**
 - Saudi Arabia and Russia announced the extension of the voluntary oil production cut by 1 million b/d and the export cut by 300,000 b/d respectively until the end of this year.
 - The U.S. is estimated to hold 410 million barrels of crude oil for commercial use as of the end of September, which is the lowest level since March 2022.
 - Global steam coal price rose in September, despite concerns about an economic slowdown in China, as global oil prices showed an upward trend.
 - Global natural gas price increased in September due to supply uncertainties, although its inventory was at a high level.

► Global energy prices

	2021	2022				2023		
			M7	M8	M9	M7	M8	M9
Crude oil (US\$/bbl)	69.3 (64.2)	96.4 (39.1)	103.1 (-8.9)	96.6 (-6.3)	90.9 (-5.9)	80.4 (7.3)	86.5 (7.5)	93.3 (7.9)
Coal (US\$/ton)	136.4 (126.5)	357.1 (161.8)	408.4 (3.4)	404.9 (-0.8)	439.4 (8.5)	135.1 (3.5)	146.6 (8.5)	159.5 (8.8)
Natural gas (US\$/MMBtu)								
TTF	16.1 (397.9)	40.2 (149.6)	51.8 (54.8)	69.7 (34.6)	57.9 (-16.9)	9.6 (-7.1)	11.2 (17.0)	11.4 (2.1)
JKM	17.9 (325.7)	33.9 (89.2)	39.4 (32.4)	53.2 (35.2)	47.0 (-11.7)	11.4 (7.8)	12.4 (8.7)	13.9 (12.0)

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



¹ For recent price trends, please refer to *Energy Brief* (<https://www.kesis.net/main/mainEng.jsp>).

Domestic energy prices

□ The prices of gasoline and diesel at gas stations went up by 3.1% and 5.9% respectively in September in line with rising global prices.

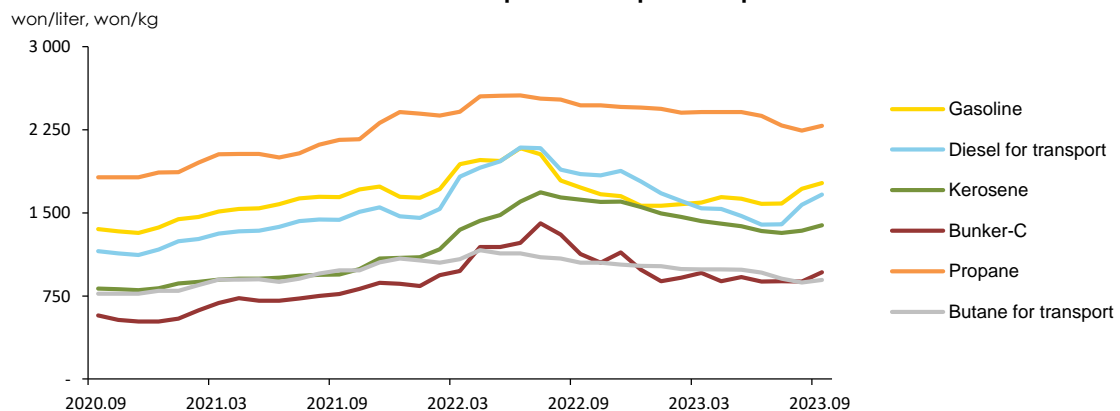
- Singapore's spot prices of gasoline (92RON) and diesel (sulfur content 0.001%) rose by 2.6% and 5.1% to \$104.5 and \$125.4 respectively in September than the prior month, and the won-dollar exchange rate was also up 0.9% from the previous month, which contributed to the price increase.
- Retail prices of propane and butane increased by 1.9% and 2.9% respectively from the previous month, as LPG importers raised their supply prices.
- The relative price of propane for industrial use and city gas (propane/city gas) was up 5.5% than the prior month to 1.12.
- City gas price fell by 0.8% month-on-month, while propane price rose by 4.7%, and accordingly, city gas maintained its price advantage.

► Domestic petroleum product prices

	2021	2022	2023			2023	2023	2023
			M7	M8	M9	M7	M8	M9
Gasoline (won/liter)	1 591.2 (15.2)	1 812.7 (13.9)	2 030.0 (-2.6)	1 792.2 (-11.7)	1 730.0 (-3.5)	1 585.5 (0.3)	1 716.8 (8.3)	1 769.2 (3.1)
Diesel for transport (won/liter)	1 392.0 (17.0)	1 843.4 (32.4)	2 084.9 (-0.2)	1 889.3 (-9.4)	1 850.2 (-2.1)	1 396.5 (0.1)	1 573.2 (12.7)	1 666.5 (5.9)
Bunker-C (won/liter)	732.2 (27.8)	1 116.1 (52.4)	1 405.7 (14.3)	1 305.3 (-7.1)	1 128.6 (-13.5)	883.3 (0.5)	880.5 (-0.3)	963.7 (9.4)
Propane (won/kg)	2 093.4 (13.1)	2 480.1 (18.5)	2 531.2 (-1.1)	2 522.4 (-0.4)	2 471.2 (-2.0)	2 287.5 (-3.7)	2 242.8 (-2.0)	2 285.0 (1.9)
Butane for transport (won/liter)	932.3 (17.9)	1 081.8 (16.0)	1 100.2 (-3.0)	1 088.8 (-1.0)	1 051.4 (-3.4)	905.3 (-5.8)	870.4 (-3.9)	895.5 (2.9)

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



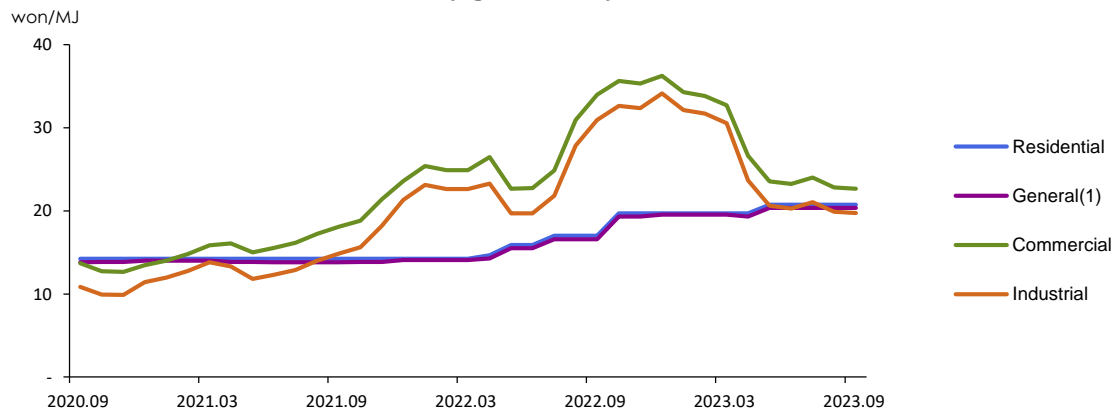
□ **City gas rates for residential and general use were flat in September, while the rates for office heating and industrial use slightly declined.**

- City gas rates for residential and general use remained at 20.7 won/MJ and 20.4 won/MJ respectively, as their material and supply costs were fixed.
- City gas rates for office heating and industrial use fell by 0.7% and 0.8% respectively to 22.7 won/MJ and 19.7 won/MJ compared to the previous month.
- The industrial city gas rate remained at the lower level than the rates for residential and general use for the second month in a row.

□ **The electric rate for residential use was unchanged in September, while the rates for general and industrial use plunged following the seasonal rate adjustment (spring & autumn).**

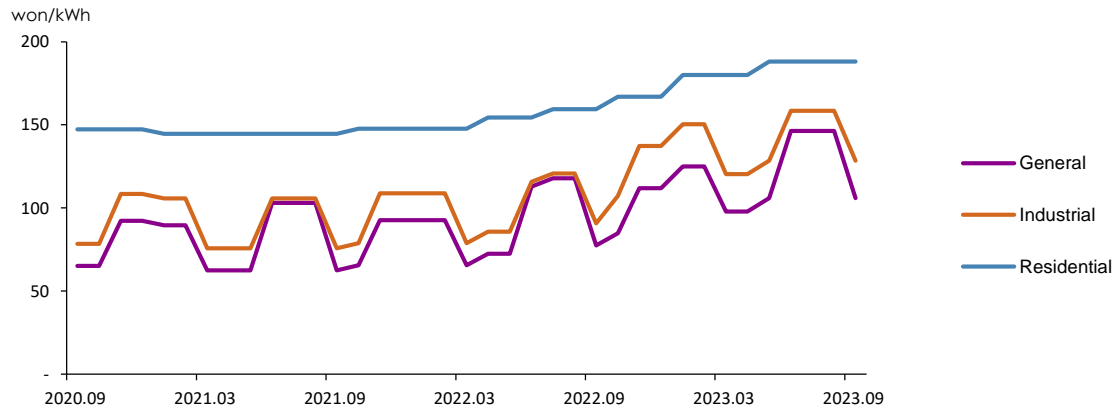
- Energy charge for general and industrial electricity use dropped by 30.6% and 20.8% respectively from the previous month to 91.9 won/kWh and 114.4 won/kWh, as they were adjusted to the spring & autumn rates (Mar-May, Sept-Oct).
- On a year-on-year basis, electric rates for residential, general, and industrial use went up by 17.9%, 36.8%, 41.6% respectively, as energy charge was raised three times, and climate & environment charge was raised once for the last one year.

► **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

- **The total energy import volume dropped by 4.4% year-on-year in September, as the import volume of all energy sources declined except crude oil and petroleum products.**
 - The import volume of crude oil rebounded by 0.6% year-on-year amid the continued downward trend in unit import prices of crude oil from all the regions.
 - The import volume of petroleum products went up by 25.3% year-on-year, as the import of most petroleum products increased including naphtha and LPG.
 - The import volume of coal fell by 7.9%, as bituminous coal import dropped by 8.0% year-on-year due to the continued demand slowdown in the domestic power generation sector, and as anthracite import fell by 5.5% year-on-year.
 - The import volume of natural gas declined by 30.8% year-on-year partly due to the base effect of the same month last year, when it grew by 13.9% because of the stockpiling ahead of the winter season amid the downward trend in global gas prices (-11.7% month-on-month, based on JKM).
 - Energy import & export values fell by 28.6% and 6.4% respectively on a year-on-year basis, marking the 7th consecutive month of decline, as energy import & export volumes decreased (-4.4%, -1.1%) amid the steadily falling global energy prices.

► Import and domestic production of energy

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
Import volume (Mtoe)	333.4	251.2	27.7	240.2	25.4	26.8	26.5
	(2.8)	(4.3)	(-2.4)	(-4.4)	(-15.5)	(-11.1)	(-4.4)
Crude oil (Mbbbl)	1 031.3	781.2	84.6	746.5	81.8	75.3	85.1
	(7.4)	(10.4)	(7.6)	(-4.4)	(-16.7)	(-22.3)	(0.6)
Petroleum product (Mbbbl)	367.1	273.9	26.7	272.4	27.4	33.3	33.5
	(-6.4)	(-5.2)	(-23.3)	(-0.6)	(-19.6)	(17.4)	(25.3)
Coal (Mton)	125.6	96.0	10.6	90.3	10.7	11.8	9.8
	(-0.4)	(0.9)	(-17.2)	(-5.9)	(-9.6)	(-4.1)	(-7.9)
LNG (Mton)	46.4	34.0	4.2	32.0	2.6	3.4	2.9
	(1.0)	(-0.9)	(13.9)	(-5.8)	(-19.6)	(-10.1)	(-30.8)
Import value (billion US\$, CIF)	222.8	168.5	19.9	131.5	12.1	13.2	14.2
	(58.0)	(75.7)	(58.6)	(-22.0)	(-43.6)	(-36.7)	(-28.6)
Energy share of total import value (%)	30.4	30.4	32.7	27.0	24.8	25.9	27.9
Foreign energy dependence (%)	94.4	94.0	93.5	93.5	93.4	93.0	93.4
Export volume (Mtoe)	69.0	51.9	5.8	49.9	5.3	5.4	5.8
	(11.2)	(14.8)	(3.5)	(-3.8)	(-19.2)	(-24.6)	(-1.1)
Export value (billion US\$, FOB)	63.1	49.1	5.3	38.0	3.9	4.5	4.9
	(63.5)	(84.8)	(46.0)	(-22.6)	(-39.3)	(-32.7)	(-6.4)
Domestic production							
Hydropower (TWh)	3.5	2.9	0.5	2.9	0.7	0.4	0.5
	(15.9)	(16.0)	(63.8)	(1.6)	(70.9)	(-39.0)	(-6.6)
Renewable energy (Mtoe)	15.9	12.1	1.3	12.7	1.5	1.6	1.4
	(10.5)	(11.9)	(16.0)	(5.5)	(6.1)	(16.1)	(4.2)

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

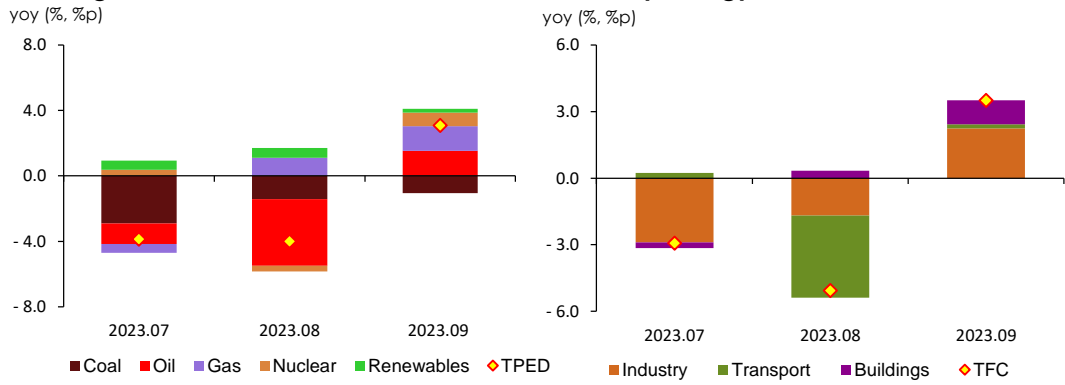
- **Total Primary Energy Demand (TPED) posted a year-on-year growth of 3.1% in September, as the use of all energy sources increased except coal.**
 - Coal use dropped by 5.1% year-on-year, as it continued to drop in the power generation sector due to the constraints on transmission lines, although its industrial use increased, as it rebounded in the iron & steel sector due to base effect.
 - Gas use grew by 10.1% year-on-year, as its industrial use increased, especially in the iron & steel, machinery, and non-ferrous metal sectors for captive generation, and as it also grew in the power generation sector amid growing electricity demand, while buildings' gas use decreased due to higher city gas rates for civil use.
 - The final use of petroleum went up by 0.7% year-on-year, as its industrial use slightly increased, mostly LPG as petrochemical feedstock, and it also increased in the transport sector due to base effect.
- **Total Final Consumption (TFC) went up by 3.5% year-on-year in September, as it simultaneously increased in the industrial, transport and building sectors.**
 - Industrial energy use increased for the first time since May 2022, as it rebounded in the iron & steel and petrochemical sectors due to base effect, and as it also increased in the semiconductor, machinery, and transport equipment sectors.
 - Transport energy use rose by 1.0% year-on-year, led by the road transport sector due to the base effect of the same month last year, when gas stations' stockpiling demand declined, although energy use continued to decrease in the domestic aviation sector amid a drop in the number of domestic flights.
 - Energy use in buildings increased in all subsectors, as electricity use grew amid the increased number of cooling degree days, and gas use also increased in the commercial sector partly due to stronger service production. Consequently, the total energy use in buildings went up by 5.9% year-on-year.

► Energy consumption

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
TPED (Mtoe)	306.2	229.7	22.9	222.1	25.4	25.0	23.6
	(0.5)	(1.7)	(-5.1)	(-3.3)	(-3.9)	(-4.0)	(3.1)
TFC (Mtoe)	215.5	161.5	15.9	155.5	17.1	16.9	16.4
	(-0.9)	(0.3)	(-8.2)	(-3.7)	(-2.9)	(-5.0)	(3.5)
- Feedstock exclude	143.2	106.4	10.4	103.5	11.1	11.0	10.6
	(0.2)	(0.8)	(-3.8)	(-2.7)	(-0.2)	(-6.1)	(2.0)

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 use dropped by 5.1% year-on-year in September, with the power generation sector leading the downward trend, although it bounced back in the industrial sector due to base effect.

- Industrial coal use increased, because it rebounded in the iron & steel sector, although it declined in most industries amid the economic slowdown.
- Coal use declined in the power generation sector, as coal-fired power generation decreased, affected by constraints on transmission lines in the Metropolitan area, while nuclear and renewable & other energy generation increased.

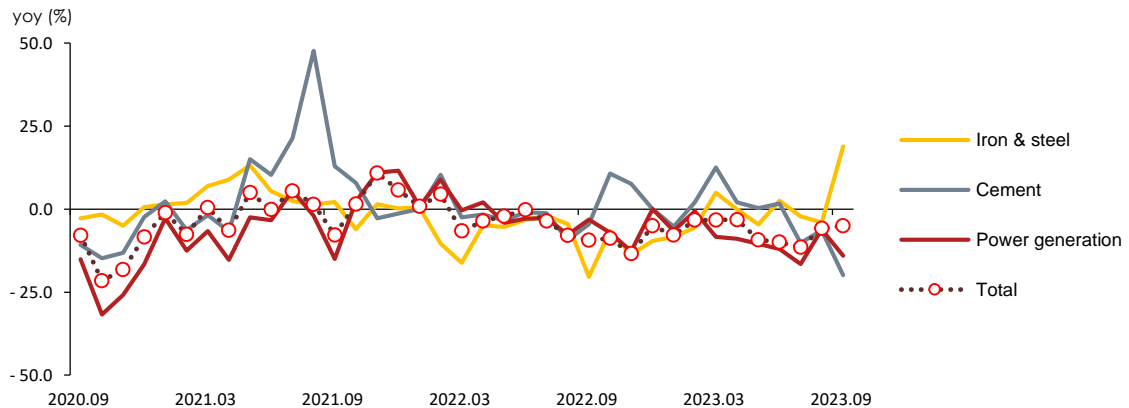
► Coal consumption

	2022p			2023p			
		M1~9	M9		M1~9	M7	M8
Coal (Mton)	117.0	88.7	9.3	82.7	10.0	10.3	8.8
	(-4.7)	(-3.3)	(-9.3)	(-6.8)	(-11.5)	(-5.8)	(-5.1)
Industry	49.4	37.5	3.7	36.3	4.1	4.0	4.0
	(-7.4)	(-5.7)	(-17.4)	(-3.2)	(-3.2)	(-5.2)	(8.7)
- Coking-coal	23.6	17.8	1.7	17.8	2.1	2.0	2.0
	(-7.5)	(-7.2)	(-20.5)	(-0.1)	(-2.1)	(-3.8)	(19.9)
Buildings	0.4	0.2	0.0	0.2	0.0	0.0	0.0
	(-5.3)	(-0.5)	(3.1)	(-15.0)	(-61.3)	(-44.6)	(-45.5)
Power generation	67.1	51.0	5.5	46.2	5.9	6.3	4.8
	(-2.6)	(-1.4)	(-3.2)	(-9.4)	(-16.5)	(-6.2)	(-14.0)

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

- The final use of petroleum rose by 0.7% year-on-year in September, as industrial petroleum use that had been decreasing started to increase, and in addition, it also increased in the transport and building sectors.
 - Industrial petroleum use increased by 0.3% year-on-year, as petrochemical business slightly improved in 3Q, and accordingly, naphtha use fell more slowly, while LPG use as feedstock increased.
 - Petroleum use went up by 0.8% year-on-year in the transport sector, partly due to the base effect of lower stockpiling demand in the same month last year.

► Petroleum product consumption by end-use sectors

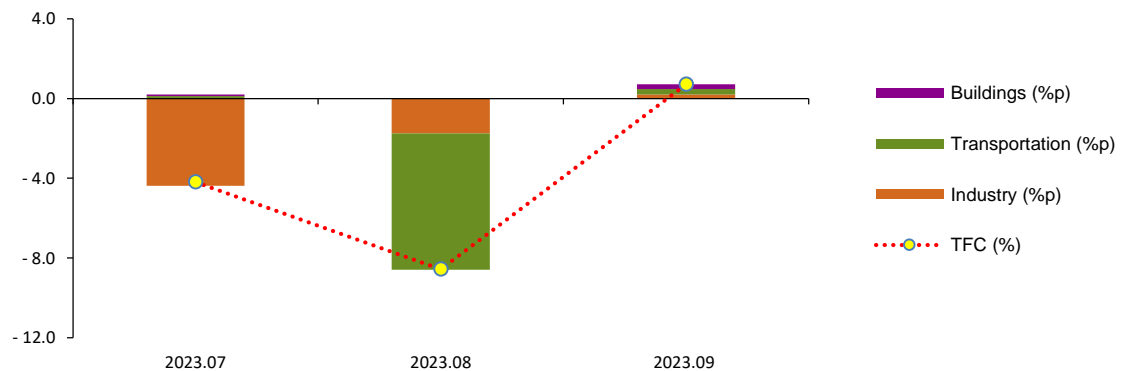
	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
TFC (Mbbl)	798.9	598.7	61.3	567.2	65.6	63.4	61.7
	(-1.3)	(0.0)	(-11.0)	(-5.3)	(-4.2)	(-8.6)	(0.7)
Industry	496.9	377.8	38.6	350.7	40.2	40.3	38.7
	(-1.8)	(0.7)	(-12.5)	(-7.2)	(-6.9)	(-2.9)	(0.3)
- Naphtha	356.0	271.5	27.8	252.5	28.4	27.6	27.3
	(-3.8)	(-1.0)	(-14.6)	(-7.0)	(-11.6)	(-9.4)	(-2.0)
Transport	258.0	190.4	20.1	187.1	23.0	20.5	20.3
	(-0.4)	(-1.0)	(-7.6)	(-1.7)	(0.3)	(-18.8)	(0.8)
Buildings	44.0	30.4	2.5	29.4	2.4	2.6	2.7
	(-0.6)	(-2.0)	(-13.9)	(-3.3)	(2.3)	(0.7)	(5.9)
Power generation (Mbbl)	5.02	4.05	0.33	2.33	0.27	0.21	0.17
	(20.0)	(33.0)	(-27.8)	(-42.5)	(-41.2)	(-53.9)	(-49.6)

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 use grew by 10.1% year-on-year in September, led by the power generation and industrial sectors, while it declined in the building sector.**

- Gas use increased by almost 10% in the power generation sector compared to the same month last year, as baseload generation (nuclear + coal + renewable & other) grew by mere 1.3%, while the total power generation rose by 3.8%.
- Gas use went up by around 13% in the industrial sector, as it increased in the iron & steel, paper & printing, non-ferrous metal, and machinery sectors.
- Gas use plunged (-15.9%) in residential buildings due to the gradual raise of city gas rates for civil use and temperature effect (↑ 1.6°C in average temperature), leading the downward slide in buildings' total energy use (-5.7%).

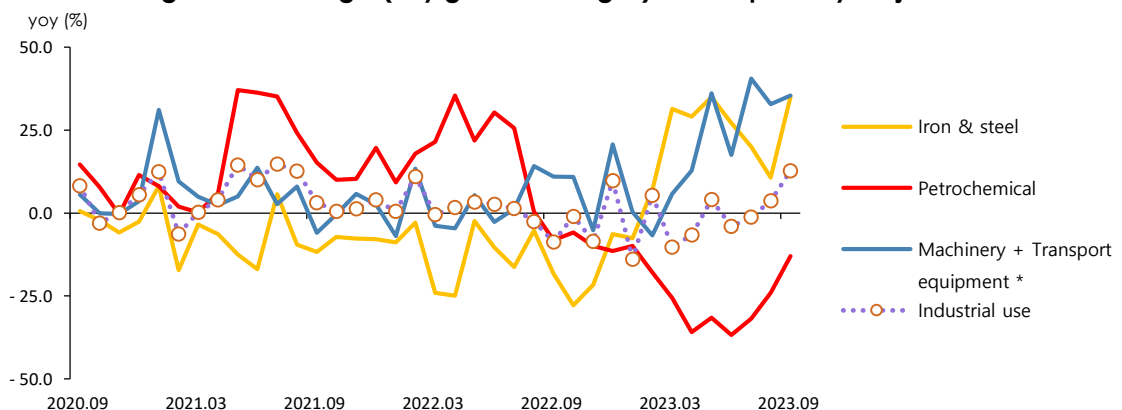
► Natural gas and city gas consumption

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
Gas(TPED) (Mtoe)	59.5	44.1	3.5	42.6	4.2	4.2	3.9
(Natural gas + City gas)	(-1.0)	(-1.0)	(-7.4)	(-3.5)	(-3.7)	(8.1)	(10.1)
Power generation	30.0	22.4	2.1	21.7	2.4	2.6	2.3
	(-2.3)	(-3.4)	(-8.4)	(-3.1)	(-8.2)	(8.7)	(9.8)
Industry	10.0	7.4	0.7	7.3	0.8	0.8	0.8
	(0.3)	(0.3)	(-9.4)	(-1.7)	(-1.1)	(3.8)	(12.9)
Buildings	15.0	10.9	0.5	10.0	0.5	0.5	0.4
	(3.9)	(5.0)	(9.3)	(-7.9)	(-2.7)	(-0.6)	(-5.7)
Natural gas(TPED) (Mton)	45.6	33.2	2.7	32.0	3.2	3.2	2.9
	(-0.5)	(-0.7)	(-7.6)	(-3.8)	(-3.2)	(7.4)	(9.8)
City gas(TFC) (Bm³)	23.4	17.1	1.1	15.7	1.1	1.0	1.0
	(2.9)	(4.2)	(1.8)	(-8.2)	(-9.6)	(-4.5)	(-4.3)

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 use rose by 6.2% year-on-year in September, as it increased in both the building and industrial sectors.
 - Industrial electricity use went up by 2.9% year-on-year, as it grew fast in the petrochemical and transport equipment sectors, and it rebounded in the machinery and iron & steel sectors.
 - Buildings' electricity use went up by 9.3% year-on-year, affected by the increased number of cooling degree days and increased production in the service sector.

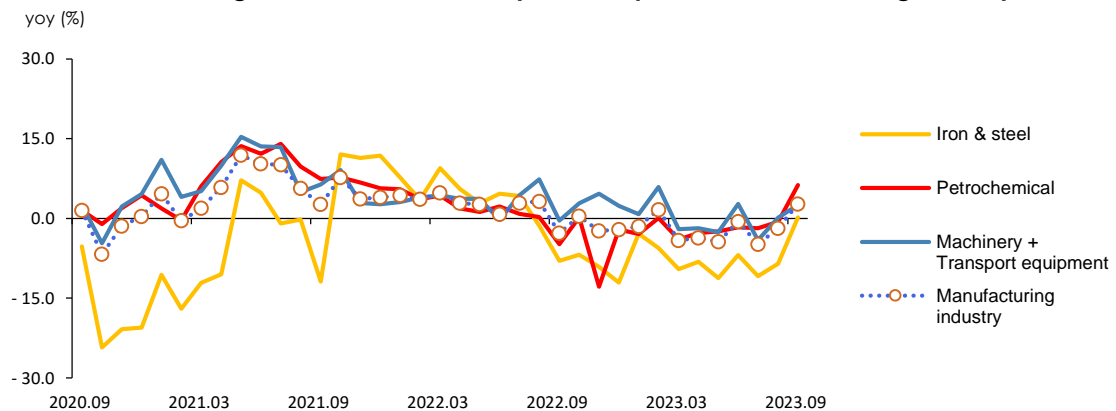
► Electricity consumption by end-use sectors

	2022p			2023p			
		M1~9	M9		M1~9	M7	M8
Electricity (TWh)	535.3	406.8	44.3	406.6	45.7	49.5	47.1
	(2.9)	(3.8)	(1.4)	(-0.0)	(-3.6)	(0.9)	(6.2)
Industry	274.1	207.1	22.0	203.1	22.8	22.9	22.6
	(1.7)	(2.7)	(-2.8)	(-1.9)	(-5.0)	(-1.7)	(2.9)
Transport	4.0	3.0	0.3	3.5	0.4	0.4	0.4
	(8.7)	(9.6)	(13.1)	(17.0)	(14.4)	(15.7)	(22.1)
Buildings	257.2	196.7	22.0	200.1	22.5	26.1	24.1
	(4.1)	(5.0)	(5.8)	(1.7)	(-2.5)	(2.9)	(9.3)
Residential	78.6	60.5	7.2	61.4	7.0	9.1	8.1
	(1.3)	(1.7)	(3.6)	(1.5)	(-4.1)	(4.7)	(12.6)
Commercial	147.0	112.3	12.3	114.2	12.7	14.1	13.2
	(5.9)	(7.1)	(7.8)	(1.6)	(-2.0)	(1.6)	(7.1)

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

Source: Korea Energy Economics Institute

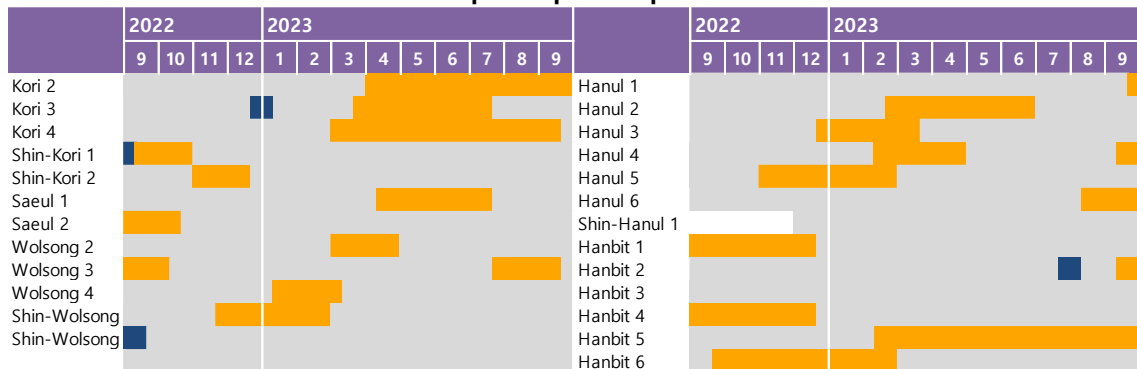
► The growth rate of electricity consumption in manufacturing industry



9. Nuclear

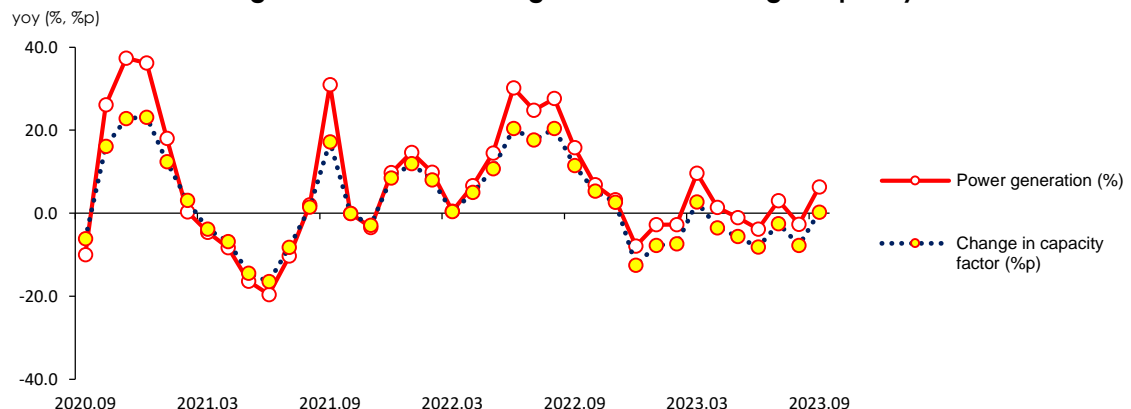
- The total nuclear generation rose by 6.4% year-on-year in September, as its capacity factor increased due to a drop in daily average preventive maintenance.
 - The nuclear capacity factor was up 0.3%p year-on-year to 84.5%, as the daily average preventive maintenance dropped by 1.2GW, although the number of scheduled and unscheduled shutdowns increased by one to eight reactors compared to the same month last year.
 - Although the commissioning of Shin Hanul Unit 1 (1.4GW, 2022.12.7) contributed to the growth in the total power generation, it had minor impact on the power generation growth in September 2023, as the reactor was being test-operated at 92.7% of its total capacity in the same month last year.
 - The nuclear capacity factor was overestimated in September 2022, because the power generation of Shin Hanul unit 1, which entered test operation at that time, was included, while its installed capacity was not included in the total nuclear power generation and installed capacity data.
 - Nuclear power stations' share of the total power generation was up 0.7%p to 31.2% on a year-on-year basis.

► Nuclear power plants operation status



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

► The growth rate of nuclear generation & average capacity factor

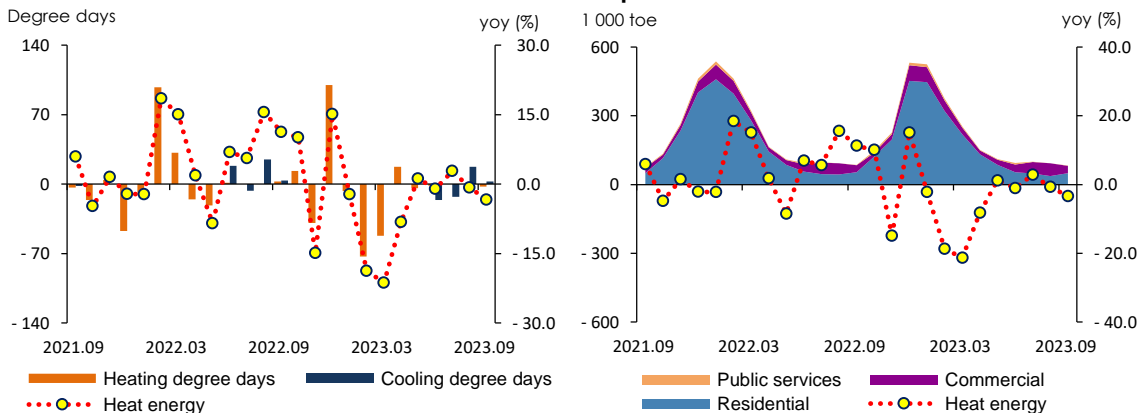


Note: Capacity factor = Ratio of actual power generated to possible power generation when utilizing 100% of available facility. Facility capacity values are based on end-of-the-month data.

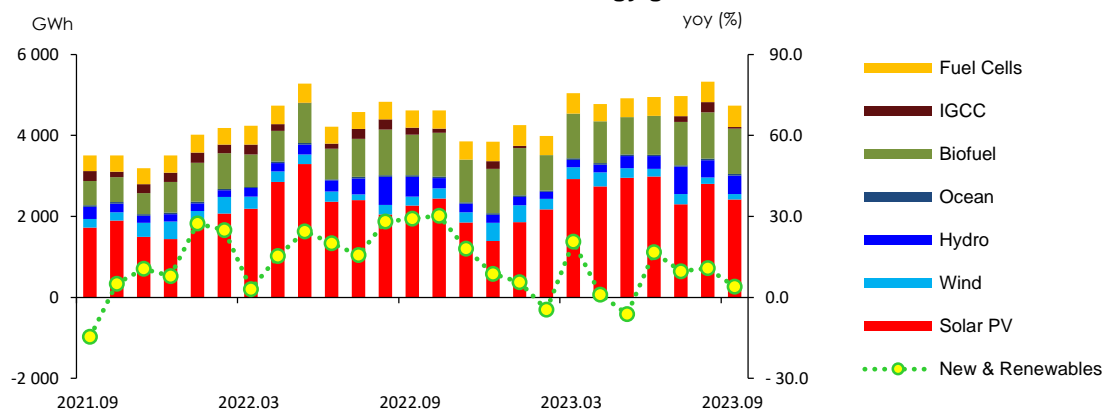
10. Heat and Renewable energy

- **Heat energy use declined by 3.4% year-on-year in September, led by a sharp drop in the residential sector, while it grew in the commercial sector.**
 - Heat energy use fell sharply by 7.2% year-on-year in the residential sector partly due to the rate increase (36.4%) and temperature effect (↑ 1.6°C in average temperature), leading the downward slide in the total heat energy use, while it went up by 3.1% year-on-year in the commercial sector.
- **Renewable & other energy use increased by 3.4% year-on-year in September, as it has grown in the power generation and end-use sectors for three months in a row.**
 - In the power generation sector, renewable & other energy generation went up by 4.0%, with solar PV, bioenergy and fuel cell leading the growth.
 - The final use of renewable & other energy increased by 1.8% year-on-year, as it has been up in all end-use sectors for three consecutive months.

► 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 energy use went up by 3.5% year-on-year in September, as it grew in all large energy consuming-industries.

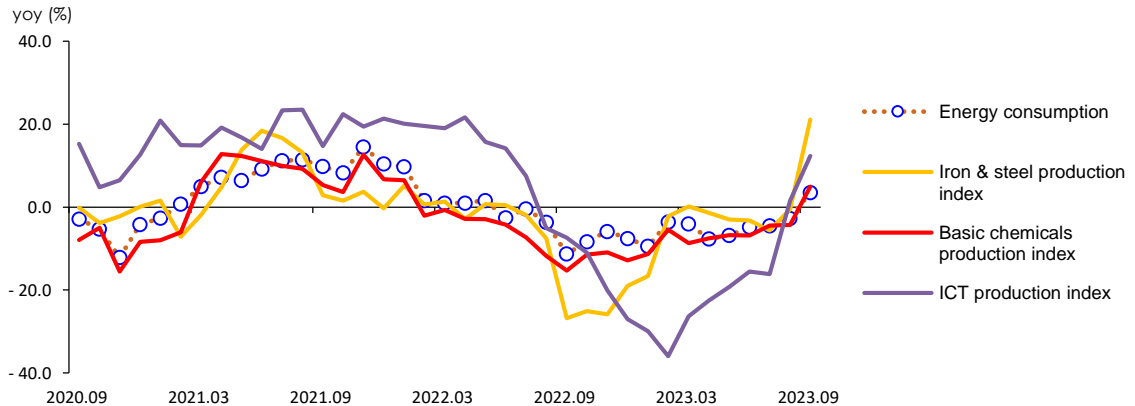
- Industrial energy use increased for the first time since May 2022, as it bounced back in the iron & steel and petrochemical sectors partly due to base effect, and the semiconductor sector has shown signs of recovery, even though the number of workdays fell by 0.5 day.

► Industrial energy consumption

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
Industry (Mtoe)	131.7	99.7	10.1	95.1	10.9	10.7	10.5
	(-2.2)	(-0.4)	(-11.3)	(-4.6)	(-4.5)	(-2.7)	(3.5)
Petrochemical	67.6	51.6	5.2	47.4	5.4	5.4	5.2
	(-1.3)	(1.4)	(-12.1)	(-8.2)	(-9.1)	(-5.4)	(0.8)
- Naphtha	43.6	33.2	3.4	30.9	3.5	3.4	3.3
	(-3.9)	(-1.1)	(-14.7)	(-7.0)	(-11.6)	(-9.4)	(-2.0)
Iron & Steel	25.9	19.6	1.9	19.7	2.3	2.2	2.2
	(-7.3)	(-6.4)	(-18.7)	(0.5)	(-1.3)	(-3.3)	(18.4)
- Coking coal	16.6	12.5	1.2	12.5	1.5	1.4	1.4
	(-6.7)	(-6.4)	(-19.8)	(-0.1)	(-2.1)	(-3.8)	(19.9)
Machinery + Transport Equipment	12.9	9.5	1.0	9.7	1.1	1.1	1.1
	(4.1)	(2.8)	(-2.0)	(2.2)	(2.6)	(6.0)	(7.2)
Share of feedstock (%)	54.8	55.1	54.0	54.6	55.2	55.4	55.5

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

► Industrial energy consumption & production index



12. Transport

□ Transport energy use increased by 1.0% year-on-year in September, as it grew in the road transport sector due to base effect.

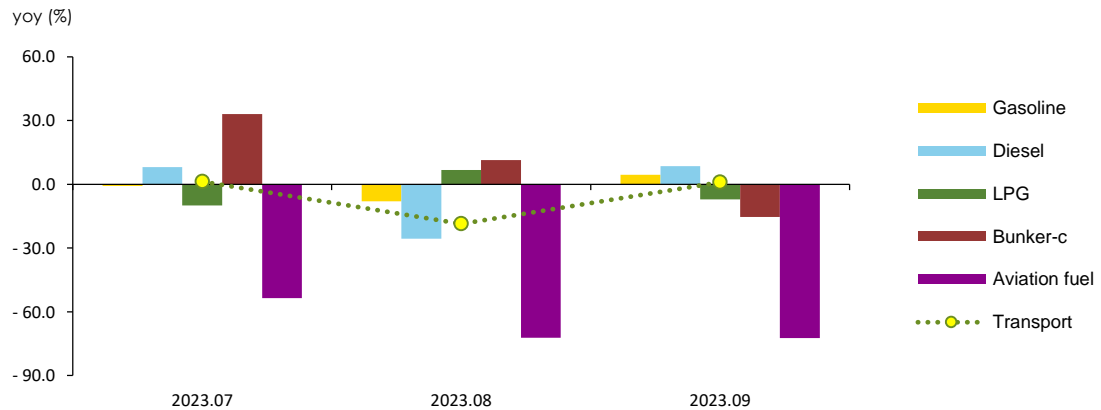
- In the road transport sector, energy use grew by 5.2% due to the base effect of the same month last year, when energy use decreased amid an expectation of lower oil prices in the international market.
- In the aviation sector, energy use dropped by 72.0% year-on-year, as the number of flights fell by 8.6% from the same month last year, and the working group that collects statistics on jet oil changed standards for compiling statistics.

► The growth rate of petroleum consumption in the transport sector

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
Transport (Mtoe)	36.29	26.83	2.84	26.42	3.25	2.89	2.87
	(-0.9)	(-1.5)	(-8.0)	(-1.6)	(1.3)	(-18.5)	(1.0)
Road	33.86	24.97	2.63	25.05	3.13	2.77	2.77
	(-1.0)	(-1.9)	(-8.7)	(0.3)	(3.4)	(-16.1)	(5.2)
Domestic navigation	0.46	0.36	0.04	0.35	0.04	0.04	0.04
	(8.5)	(18.5)	(18.0)	(-4.0)	(35.6)	(12.8)	(-12.0)
Domestic aviation	1.67	1.27	0.14	0.79	0.06	0.05	0.04
	(-0.3)	(2.4)	(-0.7)	(-37.8)	(-53.3)	(-72.0)	(-72.0)
Rail	0.30	0.23	0.02	0.22	0.02	0.03	0.03
	(-9.9)	(-9.1)	(-6.4)	(-1.6)	(-6.9)	(-2.1)	(3.3)

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

- **Energy use in buildings increased by 5.9% year-on-year in September, as it grew in all subsectors, mostly electricity, which was affected by growing air-conditioning demand.**
 - In the residential sector, electricity use went up by 12.6% year-on-year due to temperature effect, while city gas and heat energy use decreased.
 - In the commercial sector, energy use increased by 6.2% year-on-year amid a steady recovery in the service industry.

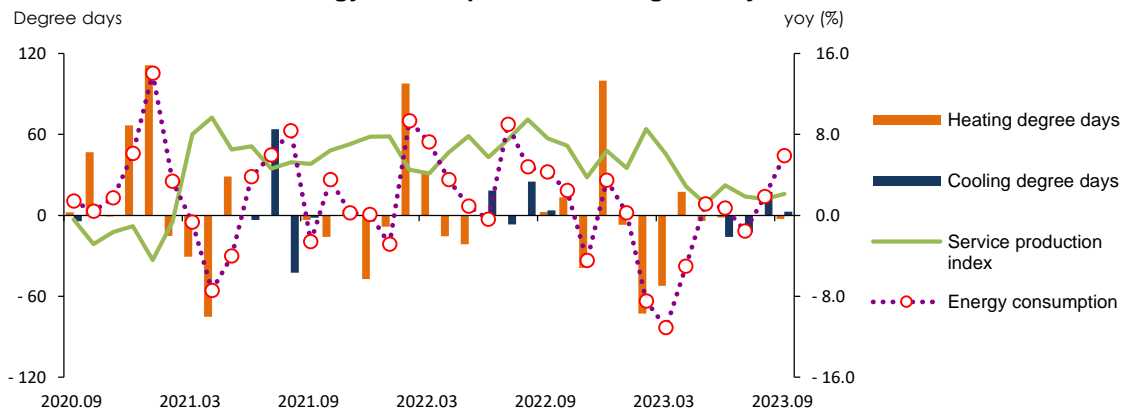
► Energy consumption in buildings

	2022p			2023p			
		M1~9	M9	M1~9	M7	M8	M9
Buildings (Mtoe)	47.4	34.9	2.9	34.0	3.0	3.3	3.1
	(3.0)	(3.8)	(4.3)	(-2.7)	(-1.5)	(1.8)	(5.9)
Residential	23.2	16.8	1.1	15.7	1.0	1.2	1.1
	(1.2)	(2.0)	(0.6)	(-6.5)	(-2.3)	(0.1)	(2.9)
Commercial	18.9	14.2	1.5	14.4	1.5	1.7	1.5
	(5.4)	(6.4)	(7.1)	(0.9)	(-0.6)	(2.6)	(6.2)
Public services	5.3	4.0	0.4	4.0	0.4	0.4	0.4
	(2.3)	(2.2)	(4.8)	(0.6)	(-3.2)	(3.5)	(12.8)
Heating degree days	2 567.1	1 580.4	2.6	1 458.0	-	-	-
	(6.8)	(5.9)	-	(-7.7)	-	-	(-100.0)
Cooling degree days	141.9	141.9	3.8	133.6	47.9	76.5	6.6
	(40.1)	(40.1)	-	(-5.8)	(-21.0)	(29.7)	(73.7)
Service production index (2020=100)	112.0	110.0	113.2	113.9	114.2	113.9	115.6
	(6.5)	(6.8)	(7.6)	(3.5)	(1.9)	(1.6)	(2.1)

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

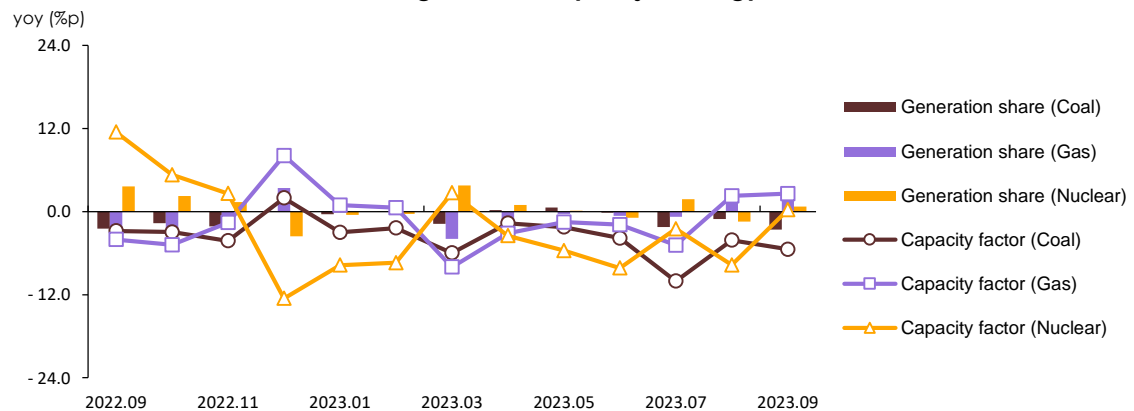
- In September, nuclear, gas and renewable & other energy generation rapidly increased, while coal-fired power generation fell by over 4%.
 - Nuclear generation grew by 6.4%, which was affected by a drop in the daily average preventive maintenance (-1.2GW, yoy).
 - Renewable & other energy generation went up by 4.0% year-on-year, with solar PV (6.8%), bioenergy (12.7%) and fuel cell (23.3%) leading the growth.
 - Coal-fired generation declined by 4.2%, as nuclear and renewable energy generation, which are placed higher in merit order, increased amid the transmission constraint issue in the Metropolitan area.
 - Gas-fired generation increased by 11.9% year-on-year, as baseload generation grew by mere 1.3%, while the total power generation rose by 3.8%.

► Power generation by energy sources

	2022p	2023p		2023p			
		M1~9	M9	M1~9	M7	M8	M9
Power Generation (TWh)	594.4	446.9	46.3	443.1	53.2	55.2	48.1
	(3.1)	(3.8)	(2.0)	(-0.8)	(-3.2)	(2.3)	(3.8)
Coal	193.2	144.8	15.6	139.9	17.8	18.8	14.9
	(-2.4)	(-2.2)	(-5.0)	(-3.4)	(-9.3)	(-0.8)	(-4.2)
Oil	2.0	1.5	0.1	1.2	0.1	0.1	0.1
	(-16.5)	(-11.1)	(-56.6)	(-22.1)	(6.5)	(-10.9)	(-21.5)
Gas	163.6	122.4	11.4	120.6	13.9	14.6	12.8
	(-2.8)	(-4.1)	(-9.4)	(-1.5)	(-6.0)	(10.3)	(11.9)
Nuclear	176.1	132.4	14.1	133.3	15.8	15.9	15.0
	(11.4)	(15.7)	(15.8)	(0.7)	(3.0)	(-2.7)	(6.4)
Renewables	59.6	45.6	5.1	48.1	5.5	5.9	5.3
	(18.9)	(19.2)	(28.1)	(5.4)	(9.0)	(8.7)	(4.0)
Baseload	428.9	322.9	34.8	321.3	39.2	40.5	35.2
	(5.6)	(7.3)	(6.9)	(-0.5)	(-2.3)	(-0.3)	(1.3)

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

	2021	2022					2023			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
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	107.2	108.7	108.6	108.8	111.2	111.3	112.3	112.8
USD to KRW exchange rate (won)	1 144.0	1 291.4	1 267.8	1 307.4	1 318.4	1 391.6	1 300.3	1 286.3	1 318.5	1 329.5
Benchmark rate (%)	0.6	2.1	1.8	2.3	2.5	2.5	3.5	3.5	3.5	3.5
Coincident composite index (2020=100)	103.7	108.2	108.0	108.5	109.0	109.2	109.7	110.0	110.0	110.0
Mining & manufacturing production index (2020=100)	108.2	109.7	110.6	113.1	106.4	105.8	103.4	103.9	105.6	108.9
Manufacturing operation ratio index (2020=100)	105.2	105.2	106.0	107.4	101.3	100.8	99.4	99.7	100.0	101.4
Average temperature	13.3	12.9	14.8	25.9	25.3	21.0	15.4	25.5	26.4	22.6
- year-on-year difference	0.3	- 0.4	- 0.2	- 0.1	0.5	- 0.4	0.7	- 0.4	1.1	1.6
Heating degree days	2 404.7 (-1.8)	2 567.1 (6.8)	1 580.4 (5.9)	- -	- -	2.6 -	1 458.0 (-7.7)	- -	- -	- (-100.0)
Cooling degree days	101.3 (18.9)	141.9 (40.1)	141.9 (40.1)	60.6 (-10.0)	59.0 (73.5)	3.8 -	133.6 (-5.8)	47.9 (-21.0)	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 (-0.8)	0.0 (-0.0)	0.0 (0.8)	0.0 (-12.4)	0.0 (-4.9)	0.0 (-4.6)	0.0 (-9.8)	0.0 (2.6)
Electricity (MWh)	0.0 (4.9)	0.0 (3.0)	0.0 (4.0)	0.0 (6.0)	0.0 (2.9)	0.0 (1.6)	0.0 (-0.1)	0.0 (-3.7)	0.0 (0.8)	0.0 (6.2)
City gas (1 000 m ³)	- (3.5)	- (3.1)	- (4.4)	- (6.7)	- (-0.1)	- (1.9)	- (-8.2)	- (-9.7)	- (-4.6)	- (-4.4)
Total energy (toe)	0.0 (5.4)	0.0 (0.6)	0.0 (1.8)	0.0 (2.7)	0.0 (2.4)	- (-4.9)	0.0 (-3.4)	- (-3.9)	- (-4.1)	- (3.0)

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			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Industrial production index										
All industry	105.3 (5.3)	110.1 (4.5)	108.7 (5.5)	110.1 (5.9)	107.9 (6.4)	109.1 (4.5)	109.2 (0.5)	108.6 (-1.4)	109.2 (1.2)	112.0 (2.7)
Mining & manufacturing	108.2 (8.2)	109.7 (1.4)	110.6 (4.2)	113.1 (2.6)	106.4 (1.5)	105.8 (0.1)	103.4 (-6.5)	103.9 (-8.1)	105.6 (-0.8)	108.9 (2.9)
Semiconductor	126.8 (26.8)	136.5 (7.7)	143.4 (18.6)	149.6 (14.9)	131.9 (-3.5)	130.3 (-6.6)	120.2 (-16.2)	127.2 (-15.0)	143.0 (8.4)	161.1 (23.6)
Iron & steel	105.2 (5.2)	96.3 (-8.4)	101.4 (-3.4)	108.0 (-1.9)	99.1 (-7.6)	75.9 (-26.8)	99.3 (-2.1)	101.9 (-5.6)	98.6 (-0.5)	91.9 (21.1)
Cement	103.2 (3.1)	100.2 (-2.9)	99.0 (-1.3)	106.7 (0.4)	98.3 (3.3)	96.7 (2.3)	92.1 (-6.9)	82.2 (-23.0)	83.9 (-14.6)	87.1 (-9.9)
Basic compound	105.9 (5.9)	99.1 (-6.4)	101.5 (-4.6)	102.4 (-7.3)	99.4 (-11.8)	91.7 (-15.3)	95.6 (-5.8)	97.8 (-4.5)	95.1 (-4.3)	96.2 (4.9)
Transport equipment	106.3 (6.3)	116.0 (9.1)	111.3 (6.1)	119.2 (9.1)	107.5 (21.3)	115.1 (28.3)	126.5 (13.7)	126.5 (6.1)	116.3 (8.2)	-
Electric & electronic	107.7 (7.7)	110.8 (2.9)	109.9 (4.3)	115.6 (3.2)	107.1 (2.0)	112.7 (9.3)	107.5 (-2.2)	112.1 (-3.0)	104.6 (-2.3)	108.4 (-3.8)
Service	105.2 (5.2)	112.0 (6.5)	110.0 (6.8)	112.1 (7.5)	112.1 (9.5)	113.2 (7.6)	113.9 (3.5)	114.2 (1.9)	113.9 (1.6)	115.6 (2.1)
Wholesale and retail	105.3 (5.3)	107.1 (1.7)	106.1 (2.2)	105.3 (0.2)	106.5 (5.7)	107.3 (1.6)	105.9 (-0.1)	103.4 (-1.8)	102.8 (-3.5)	107.0 (-0.3)
Food & Accommodation	101.9 (1.9)	119.1 (16.9)	116.8 (19.7)	132.1 (25.6)	129.0 (26.6)	119.3 (16.8)	119.1 (2.0)	122.3 (-7.4)	122.6 (-5.0)	117.8 (-1.3)
Production output										
Iron & steel - Pig iron	46 440.5 (2.4)	42 658.2 (-8.1)	32 440.5 (-6.9)	3 955.1 (-1.5)	3 853.9 (-4.2)	3 169.0 (-17.0)	33 754.7 (4.1)	3 965.9 (0.3)	3 893.3 (1.0)	3 861.3 (21.8)
Iron & steel - Crude steel	70 418.0 (5.0)	65 846.2 (-6.5)	50 655.4 (-4.2)	6 275.5 (2.5)	5 933.5 (-2.8)	4 614.6 (-15.2)	50 425.6 (-0.5)	5 714.0 (-8.9)	5 587.8 (-5.8)	5 451.4 (18.1)
Petrochemical - Basic petrochemicals	34 434.5 (12.7)	32 854.1 (-4.6)	25 355.9 (-0.7)	2 915.8 (-5.9)	2 766.8 (-11.6)	2 552.9 (-15.5)	23 025.3 (-9.2)	2 716.4 (-6.8)	2 598.2 (-6.1)	2 641.6 (3.5)
Petrochemical - Intermediate raw material	15 764.6 (2.6)	13 852.5 (-12.1)	10 636.7 (-11.0)	1 156.0 (-13.6)	1 195.2 (-17.3)	1 116.8 (-20.0)	9 738.2 (-8.4)	1 084.7 (-6.2)	993.0 (-16.9)	1 014.4 (-9.2)
Petrochemical - 3 major products	23 224.7 (9.2)	22 129.4 (-4.7)	17 311.8 (0.2)	1 900.5 (-7.8)	1 844.8 (-10.5)	1 697.8 (-14.6)	16 110.5 (-6.9)	1 838.2 (-3.3)	1 891.3 (2.5)	1 878.5 (10.6)
The number of cars	3 462.4 (-1.3)	3 756.5 (8.5)	2 695.8 (4.6)	324.7 (9.1)	284.4 (21.1)	307.7 (34.1)	3 161.5 (17.3)	353.0 (8.7)	312.0 (9.7)	301.8 (-1.9)

Note: p means provisional.

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

International Energy Prices

	2021	2022					2023			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Crude oil (USD/bbl)										
WTI	67.9 (72.4)	94.2 (38.7)	98.1 (51.3)	99.4 (37.2)	91.5 (35.1)	83.8 (17.1)	77.4 (-21.1)	76.0 (-23.5)	81.3 (-11.1)	89.4 (6.7)
Dubai	69.3 (64.1)	96.4 (39.1)	100.2 (51.3)	103.1 (41.4)	96.6 (39.0)	90.9 (25.2)	81.6 (-18.5)	80.4 (-22.0)	86.5 (-10.5)	93.3 (2.5)
Brent	70.8 (63.8)	98.9 (39.7)	102.3 (51.0)	105.1 (41.5)	97.7 (38.6)	90.6 (21.0)	82.1 (-19.8)	80.2 (-23.7)	85.1 (-12.9)	92.6 (2.2)
Unit value of import (C&F)	70.2 (56.9)	102.3 (45.6)	104.7 (56.5)	115.6 (56.3)	107.6 (46.1)	104.7 (41.8)	84.3 (-19.4)	80.2 (-30.6)	84.9 (-21.1)	90.3 (-13.8)
LNG										
Henry Hub (USD/MMBTU)	3.7 (74.6)	6.5 (75.2)	6.7 (99.2)	7.2 (88.4)	8.8 (117.8)	7.8 (51.7)	2.6 (-61.2)	2.6 (-63.3)	2.6 (-69.9)	2.7 (-65.3)
TTF (USD/MMBTU)	16.0 (396.1)	40.1 (150.0)	41.2 (284.6)	51.8 (314.4)	69.7 (351.5)	57.9 (156.1)	12.9 (-68.7)	9.6 (-81.5)	11.2 (-83.9)	11.4 (-80.2)
JKM (USD/MMBTU)	17.9 (324.7)	33.9 (89.5)	34.7 (185.1)	39.4 (185.7)	53.2 (225.3)	47.0 (101.2)	14.0 (-59.7)	11.4 (-70.9)	12.4 (-76.6)	13.9 (-70.4)
Unit value of import (USD/ton, CIF)	550.8 (41.2)	1 053.5 (91.3)	986.8 (109.3)	1 032.6 (107.3)	1 198.8 (124.1)	1 470.4 (157.5)	815.7 (-17.3)	620.6 (-39.9)	660.0 (-44.9)	678.2 (-53.9)
Coal (USD/ton)										
Thermal coal (Newcastle)	136.0 (125.8)	356.3 (161.9)	348.4 (190.7)	408.4 (179.9)	404.9 (142.2)	439.4 (138.7)	187.8 (-46.1)	135.1 (-66.9)	146.6 (-63.8)	159.5 (-63.7)
Unit value of import (CIF)	115.1 (48.1)	226.3 (96.7)	230.8 (137.4)	254.6 (147.9)	242.4 (111.2)	203.1 (60.9)	177.2 (-23.2)	151.1 (-40.6)	147.4 (-39.2)	139.6 (-31.3)
Petroleum product (USD/bbl)										
Gasoline	80.3 (72.2)	115.2 (43.4)	122.2 (61.1)	121.7 (42.6)	110.9 (37.0)	97.8 (16.4)	99.7 (-18.4)	99.0 (-18.7)	107.7 (-2.9)	110.3 (12.7)
Kerosene	75.1 (67.9)	126.7 (68.6)	129.5 (83.3)	134.9 (74.6)	132.2 (78.5)	120.9 (51.3)	103.8 (-19.8)	98.9 (-26.7)	116.6 (-11.8)	122.9 (1.7)
Diesel	77.6 (57.2)	135.3 (74.3)	138.3 (89.0)	145.3 (81.9)	139.7 (82.5)	129.1 (55.7)	105.9 (-23.4)	101.8 (-30.0)	119.4 (-14.6)	125.4 (-2.9)
Bunker-C	64.4 (64.3)	82.3 (27.8)	88.9 (43.4)	79.4 (19.9)	78.2 (20.0)	66.2 (-9.9)	71.5 (-19.6)	75.0 (-5.5)	85.1 (8.8)	84.0 (26.8)
Propane	647.9 (63.2)	737.1 (13.8)	777.2 (31.7)	725.0 (16.9)	670.0 (1.5)	650.0 (-2.3)	564.4 (-27.4)	400.0 (-44.8)	470.0 (-29.9)	550.0 (-15.4)
Butane	629.6 (55.9)	734.2 (16.6)	776.7 (34.9)	725.0 (16.9)	660.0 (0.8)	630.0 (-5.3)	563.3 (-27.5)	375.0 (-48.3)	460.0 (-30.3)	560.0 (-11.1)
Naphtha	70.6 (74.6)	83.1 (17.7)	87.4 (30.8)	81.6 (8.1)	72.0 (1.8)	67.1 (-10.6)	68.6 (-21.5)	62.1 (-23.9)	70.2 (-2.5)	74.1 (10.6)

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			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Petroleum product										
Gasoline (won/liter)	1 590.5 (15.1)	1 812.4 (14.0)	1 874.2 (20.6)	2 030.0 (24.6)	1 792.2 (8.9)	1 730.0 (5.3)	1 628.4 (-13.1)	1 585.5 (-21.9)	1 716.8 (-4.2)	1 769.2 (2.3)
Diesel (won/liter)	1 391.3 (16.9)	1 841.8 (32.4)	1 844.6 (36.4)	2 084.9 (46.3)	1 889.3 (31.2)	1 850.2 (28.7)	1 540.0 (-16.5)	1 396.5 (-33.0)	1 573.2 (-16.7)	1 666.5 (-9.9)
Bunker-C (won/liter)	731.7 (27.6)	1 115.2 (52.4)	1 133.7 (63.5)	1 405.7 (93.0)	1 305.3 (74.0)	1 128.6 (46.9)	907.4 (-20.0)	883.3 (-37.2)	880.5 (-32.5)	963.7 (-14.6)
Propane (won/kg)	2 092.6 (13.1)	2 479.6 (18.5)	2 486.7 (22.8)	2 531.2 (24.3)	2 522.4 (19.3)	2 471.2 (14.4)	2 362.5 (-5.0)	2 287.5 (-9.6)	2 242.8 (-11.1)	2 285.0 (-7.5)
Butane (won/liter)	931.8 (17.8)	1 081.7 (16.1)	1 097.5 (22.6)	1 100.2 (21.4)	1 088.8 (14.3)	1 051.4 (7.2)	956.6 (-12.8)	905.3 (-17.7)	870.4 (-20.1)	895.5 (-14.8)
City gas(won/MJ)										
Residential	14.2 (-5.7)	16.6 (16.7)	15.6 (9.4)	17.0 (19.5)	17.0 (19.5)	17.0 (19.5)	20.3 (30.3)	20.7 (22.0)	20.7 (22.0)	20.7 (22.0)
General(1)	13.9 (-6.5)	16.3 (17.3)	15.3 (9.9)	16.6 (20.2)	16.6 (20.2)	16.6 (20.2)	20.0 (30.8)	20.4 (22.6)	20.4 (22.6)	20.4 (22.6)
Commercial	17.2 (14.2)	28.7 (66.6)	26.3 (65.9)	24.9 (54.0)	30.9 (79.4)	34.0 (87.9)	27.1 (2.9)	24.0 (-3.4)	22.8 (-26.2)	22.7 (-33.3)
Industry	14.4 (14.2)	25.9 (79.9)	23.5 (79.9)	21.8 (69.1)	27.9 (99.3)	30.9 (108.4)	24.4 (3.7)	21.1 (-3.5)	19.9 (-28.7)	19.7 (-36.3)
Heat(won/Mcal)										
Residential	65.2 (-1.4)	74.1 (13.7)	68.9 (5.6)	74.5 (14.2)	74.5 (14.2)	74.5 (14.2)	94.3 (36.8)	101.6 (36.4)	101.6 (36.4)	101.6 (36.4)
Commercial	84.7 (-1.4)	96.3 (13.7)	89.5 (5.6)	96.7 (14.2)	96.7 (14.2)	96.7 (14.2)	122.4 (36.8)	131.9 (36.4)	131.9 (36.4)	131.9 (36.4)
Public	74.0 (-1.4)	84.1 (13.7)	78.1 (5.6)	84.5 (14.2)	84.5 (14.2)	84.5 (14.2)	106.9 (36.8)	115.2 (36.3)	115.2 (36.3)	115.2 (36.3)
Electricity(won/kWh)										
Residential	142.3 (-3.4)	147.8 (3.9)	145.6 (2.3)	147.2 (3.4)	147.2 (3.4)	147.2 (3.4)	170.4 (17.1)	174.0 (18.2)	174.0 (18.2)	174.0 (18.2)
General	79.4 (-5.9)	84.9 (7.0)	83.0 (4.1)	105.6 (4.9)	105.6 (4.9)	65.1 (8.1)	107.9 (30.0)	132.4 (25.4)	132.4 (25.4)	91.9 (41.2)
Industry	91.0 (-5.2)	98.8 (8.6)	93.4 (3.6)	108.4 (4.7)	108.4 (4.7)	78.4 (6.7)	127.5 (36.5)	144.4 (33.2)	144.4 (33.2)	114.4 (45.9)

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			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Coal (Mton)	122.8 (0.6)	117.0 (-4.7)	88.7 (-3.3)	11.4 (-3.6)	11.0 (-7.9)	9.3 (-9.3)	82.7 (-6.8)	10.0 (-11.5)	10.3 (-5.8)	8.8 (-5.1)
- Coking coal excluded	97.2 (-0.1)	93.4 (-4.0)	70.9 (-2.2)	9.2 (-4.2)	8.9 (-8.8)	7.5 (-6.4)	64.9 (-8.4)	7.9 (-13.7)	8.3 (-6.3)	6.7 (-10.7)
Oil (Mbbl)	830.7 (7.1)	814.5 (-1.9)	609.2 (-0.9)	69.8 (-0.2)	70.4 (0.7)	61.9 (-12.5)	579.8 (-4.8)	66.6 (-4.6)	63.5 (-9.7)	63.6 (2.7)
LNG (Mton)	45.8 (10.4)	45.6 (-0.5)	33.2 (-0.7)	3.3 (-3.6)	3.0 (-3.0)	2.7 (-7.6)	32.0 (-3.8)	3.2 (-3.2)	3.2 (7.4)	2.9 (9.8)
Hydro (TWh)	3.1 (-21.2)	3.5 (15.9)	2.9 (16.0)	0.4 (8.3)	0.7 (141.2)	0.5 (63.8)	2.9 (1.6)	0.7 (70.9)	0.4 (-39.0)	0.5 (-6.6)
Nuclear (TWh)	158.0 (-1.4)	176.1 (11.4)	132.4 (15.7)	15.4 (24.8)	16.3 (27.6)	14.1 (15.8)	133.3 (0.7)	15.8 (3.0)	15.9 (-2.7)	15.0 (6.4)
Others (Mtoe)	14.4 (13.8)	15.9 (10.5)	12.1 (11.9)	1.4 (15.4)	1.4 (16.6)	1.3 (16.0)	12.7 (5.5)	1.5 (6.1)	1.6 (16.1)	1.4 (4.2)
TPED (Mtoe)	304.9 (5.2)	306.2 (0.5)	229.7 (1.7)	26.4 (2.6)	26.1 (2.3)	22.9 (-5.1)	222.1 (-3.3)	25.4 (-3.9)	25.0 (-4.0)	23.6 (3.1)

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

Share of TPED by Sources

(unit: %)

	2021	2022p					2023p			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Coal	24.4	23.1	23.4	26.0	25.4	24.3	22.6	24.0	24.9	22.6
- Coking coal excluded	18.6	17.7	17.9	20.3	19.7	19.1	17.0	18.2	19.3	16.5
Oil	39.9	39.7	39.6	39.5	40.4	40.9	39.4	39.8	37.9	41.1
LNG	19.6	19.5	18.9	16.2	15.0	15.3	18.8	16.3	16.7	16.3
Hydro	0.2	0.2	0.3	0.3	0.6	0.5	0.3	0.6	0.4	0.4
Nuclear	11.0	12.2	12.3	12.4	13.3	13.1	12.8	13.3	13.5	13.5
Others	4.7	5.2	5.3	5.2	5.2	5.8	5.7	5.7	6.3	5.9
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			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Industry	134.6 (7.5)	131.7 (-2.2)	99.7 (-0.4)	11.4 (-0.4)	11.0 (-3.7)	10.1 (-11.3)	95.1 (-4.6)	10.9 (-4.5)	10.7 (-2.7)	10.5 (3.5)
Transport	36.6 (5.4)	36.3 (-0.9)	26.8 (-1.5)	3.2 (2.7)	3.6 (15.8)	2.8 (-8.0)	26.4 (-1.6)	3.3 (1.3)	2.9 (-18.5)	2.9 (1.0)
Residential	22.9 (2.6)	23.2 (1.2)	16.8 (2.0)	1.0 (7.9)	1.2 (0.6)	1.1 (0.6)	15.7 (-6.5)	1.0 (-2.3)	1.2 (0.1)	1.1 (2.9)
commercial	17.9 (1.7)	18.9 (5.4)	14.2 (6.4)	1.6 (7.6)	1.7 (8.0)	1.5 (7.1)	14.4 (0.9)	1.5 (-0.6)	1.7 (2.6)	1.5 (6.2)
Public	5.2 (4.0)	5.3 (2.3)	4.0 (2.2)	0.5 (17.0)	0.4 (4.6)	0.4 (4.8)	4.0 (0.6)	0.4 (-3.2)	0.4 (3.5)	0.4 (12.8)
TFC	217.3 (6.0)	215.5 (-0.9)	161.5 (0.3)	17.6 (1.7)	17.8 (1.2)	15.9 (-8.2)	155.5 (-3.7)	17.1 (-2.9)	16.9 (-5.0)	16.4 (3.5)
Coal (Mton)	53.8 (4.9)	49.9 (-7.4)	37.7 (-5.6)	4.3 (-5.0)	4.2 (-8.3)	3.7 (-17.2)	36.4 (-3.2)	4.1 (-3.3)	4.0 (-5.3)	4.0 (8.2)
Oil (Mbbl)	809.1 (7.6)	798.9 (-1.3)	598.7 (0.0)	68.5 (1.1)	69.3 (1.9)	61.3 (-11.0)	567.2 (-5.3)	65.6 (-4.2)	63.4 (-8.6)	61.7 (0.7)
- Non-energy oil excluded	350.6 (4.3)	345.8 (-1.4)	252.3 (-2.3)	27.8 (-1.5)	31.4 (15.0)	26.6 (-7.4)	247.0 (-2.1)	29.0 (4.4)	26.5 (-15.6)	26.1 (-1.6)
Electricity (TWh)	520.3 (4.7)	535.3 (2.9)	406.8 (3.8)	47.4 (5.9)	49.1 (2.7)	44.3 (1.4)	406.6 (-0.0)	45.7 (-3.6)	49.5 (0.9)	47.1 (6.2)
City gas (Bm ³)	22.7 (3.3)	23.4 (2.9)	17.1 (4.2)	1.2 (6.6)	1.1 (-0.2)	1.1 (1.8)	15.7 (-8.2)	1.1 (-9.6)	1.0 (-4.5)	1.0 (-4.3)
Heat-others (1 000 toe)	9.8 (6.3)	10.0 (1.9)	7.4 (3.2)	0.7 (11.2)	0.7 (12.9)	0.7 (6.9)	7.2 (-2.6)	0.8 (6.2)	0.8 (7.3)	0.7 (1.1)

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			
			M1~9	M7	M8	M9	M1~9	M7	M8	M9
Industry	61.9	61.1	61.7	64.5	61.9	63.7	61.1	63.4	63.4	63.7
Transport	16.9	16.8	16.6	18.2	19.9	17.9	17.0	19.0	17.1	17.5
Residential	10.6	10.8	10.4	5.9	6.5	6.8	10.1	5.9	6.9	6.7
Commercial	8.3	8.8	8.8	8.8	9.3	9.1	9.2	9.0	10.0	9.4
Public	2.4	2.5	2.4	2.6	2.4	2.5	2.6	2.6	2.6	2.7
TFC	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Coal	15.6	14.7	14.8	15.6	15.1	14.9	15.0	15.5	15.1	15.7
Oil	47.5	47.2	47.1	49.1	49.8	49.0	46.3	48.8	47.3	47.6
- Non-energy oil excluded	21.5	21.3	20.8	20.9	23.7	22.2	20.9	22.4	20.5	20.9
Electricity	20.6	21.4	21.7	23.1	23.7	24.0	22.5	23.0	25.2	24.6
City gas	11.7	12.1	11.8	8.0	7.3	7.8	11.6	8.1	7.8	7.9
Heat-others	4.5	4.7	4.6	4.1	4.1	4.3	4.6	4.5	4.6	4.2

Note: p means provisional.

Source: Korea Energy Economics Institute

Statistics on Energy Production Facilities

	2020	2021	2022	2023			M7	M8	M9
				M7	M8	M9			
Total capacity (GW)	129.2 (3.1)	134.0 (3.7)	138.0 (3.0)	134.3 (2.3)	134.7 (2.3)	134.8 (2.0)	142.6 (6.2)	143.4 (6.5)	143.5 (6.5)
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)	36.3 (-0.4)	38.2 (5.4)	38.3 (5.6)	38.3 (5.6)
Gas	41.2 (4.1)	41.2 (0.1)	41.2 -	41.2 (0.1)	41.2 (0.1)	41.2 (0.1)	43.1 (4.5)	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			M7	M8	M9
				M7	M8	M9			
The number of household demanding city gas (mil)	20.1 (2.4)	20.5 (2.0)	20.9 (1.7)	20.6 (2.0)	20.6 (2.3)	20.7 (2.2)	20.8 (1.2)	20.8 (0.9)	20.9 (1.2)
Registered cars (mil)	24.4 (2.9)	24.9 (2.2)	25.5 (2.4)	25.3 (2.3)	25.3 (2.3)	25.4 (2.3)	25.8 (2.0)	25.8 (1.9)	25.8 (1.9)
- gasoline	11.4 (4.1)	11.8 (3.1)	12.1 (2.6)	12.0 (2.7)	12.0 (2.6)	12.0 (2.6)	12.2 (2.4)	12.3 (2.4)	12.3 (2.4)
- 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)	9.6 (-2.0)	9.6 (-2.2)	9.6 (-2.3)
- 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 (-3.2)	1.9 (-3.5)	1.8 (-3.6)
- hybrid	0.6 (33.1)	0.9 (34.0)	1.1 (28.5)	1.0 (31.7)	1.0 (31.0)	1.1 (30.2)	1.3 (29.4)	1.3 (29.7)	1.4 (30.3)

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

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