

KEEI

MONTHLY KOREA ENERGY TRENDS

2023/07

KOREA ENERGY ECONOMICS INSTITUTE

COAL	-3.6%
PETROLEUM	-7.8%
GAS	-8.0%
NUCLEAR	1.4%
NEW & RENEWABLE	0.4%
April. 2023	

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



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1. The Economy and the Industry

- **The mining & manufacturing production index has been down for seven consecutive months until April due to continued weak production across most of the sectors, excluding the automobile sector.**
 - The semiconductor production index fell by 21.1% year-on-year as a result of steadily sluggish business performance, output reduction by domestic manufacturers (-27.5%, based on the utilization rate index) and base effect, although the pace of the decline slowed since it dropped sharply in February.
 - The production index of basic chemical materials fell by 7.5% year-on-year, as petrochemical output contracted, and domestic demand as well as exports declined (-17.7%, -1.3% respectively). The utilization rate index was down 8.0%, marking the 15th consecutive month of decline since February 2022.
 - The iron & steel production index slid by 1.0% year-on-year, despite the recovery of some sectors that are major source of demand such as the automobile sector, as construction business was stagnant, for example, the total area where the construction started decreased (-48.8%), which resulted in lower demand for some of the iron & steel products.
 - The automobile production index jumped 16.7% year-on-year, recording 12 consecutive months of growth until April, as parts supply such as semiconductors returned to normal, the production of green cars expanded, and automobile exports increased (33.9%, based on export volume).
- **The service production index posted a year-on-year growth of 2.9% (in April), driven by stronger production in some of the sectors, although the rate of the growth was much lower.**
 - The wholesale & retail production index started to decline, ending the upward trend seen since last December, as production decreased in most of the subsectors (wholesale & retail) except the automobile and parts supply sectors.
 - The food & accommodation production index grew by 1.8% year-on-year. However, the pace of the growth was much slower, because the production plunged in the restaurant & bar businesses.

► Major economic and industrial indicators

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
GDP (trillion won)	1 968.8 (2.8)	468.0 (3.1)	- -	472.2 (0.9)	- -	472.2 (0.9)	- -
Total export (\$billion, customs clearance basis)	683.6 (6.1)	231.2 (17.0)	57.8 (12.9)	200.8 (-13.2)	50.0 (-7.7)	54.9 (-13.9)	49.5 (-14.5)
Industrial production index (2020=100)	109.7 (1.4)	110.6 (5.5)	111.8 (4.9)	100.0 (-9.6)	93.9 (-8.2)	108.9 (-7.6)	101.6 (-9.1)
Semi-conductors	136.5 (7.7)	142.5 (30.5)	139.9 (31.4)	98.8 (-30.7)	78.3 (-41.7)	113.1 (-26.9)	110.4 (-21.1)
Basic chemical products	99.1 (-6.4)	105.2 (0.2)	102.0 (-2.9)	96.5 (-8.3)	93.0 (-5.5)	99.6 (-8.7)	94.4 (-7.5)
Iron&Steel	96.3 (-8.4)	104.4 (1.1)	102.8 (-2.8)	99.1 (-5.1)	94.8 (-2.3)	107.9 (0.2)	101.8 (-1.0)
Cars	116.0 (9.1)	106.5 (-3.5)	114.1 (-2.1)	128.2 (20.3)	124.2 (26.7)	142.6 (27.1)	133.2 (16.7)
Service production index (2020=100)	112.0	106.5	110.7	112.3	108.2	117.5	113.9

	(6.5)	(5.7)	(6.2)	(5.5)	(8.5)	(6.0)	(2.9)
Wholesale & Retail	107.1	104.9	108.1	106.3	101.0	112.0	105.3
	(1.7)	(2.0)	(2.0)	(1.4)	(6.1)	(0.5)	(-2.6)
Food & Accommodation	119.1	104.1	117.5	116.7	113.2	119.9	119.5
	(16.9)	(16.9)	(19.0)	(12.1)	(23.3)	(17.9)	(1.7)

Note: Figures are based on the real price of 2015, 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

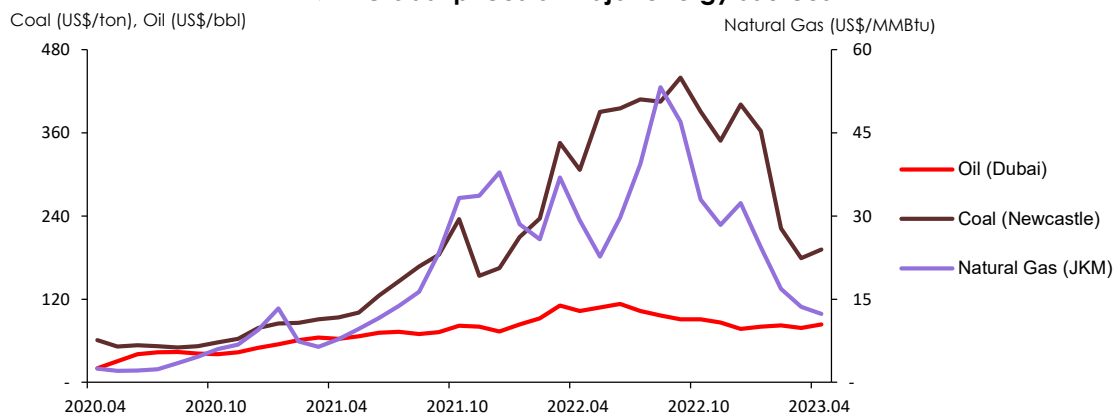
- **Global oil price rose by 6.3% in April compared to the previous month, following the OPEC+ announcement of oil production cuts and amid an expectation that the US Federal Reserve (Fed) would pause the interest rate hikes.**
 - o Major oil producing countries of OPEC+ including Saudi Arabia announced further output cuts of 1.16 million b/d (May-Dec.).
 - o The US CPI and PPI for March, announced on April 12-13, were lower than the market expectation, leading to a growing anticipation that the Fed would stop raising the interest rates. The US dollar, the settlement currency for crude oil, was bearish (based on the index, -1.9%).
 - o Global steam coal price went up by 7.0% year-on-year in April owing to the global oil price increase that followed the OPEC+ announcement of oil production cuts.
 - o Global natural gas price dropped in April due to high inventory levels in Europe and Asia.

► Global energy prices

	2021	2022				2023		
			M2	M3	M4	M2	M3	M4
Crude oil (US\$/bbl)	69.3 (64.2)	96.4 (39.1)	92.4 (10.7)	110.9 (20.1)	102.8 (-7.3)	82.1 (2.1)	78.5 (-4.4)	83.4 (6.3)
Coal (US\$/ton)	136.4 (126.5)	357.1 (161.8)	236.2 (12.7)	345.3 (46.1)	306.6 (-11.2)	222.1 (-38.7)	179.3 (-19.3)	191.8 (7.0)
Natural gas (US\$/MMBtu)								
TTF	16.1 (397.9)	40.2 (149.6)	26.9 (-4.6)	41.8 (55.2)	31.8 (-23.9)	16.5 (-16.5)	13.7 (-16.9)	13.4 (-2.3)
JKM	17.9 (325.7)	33.9 (89.2)	25.8 (-9.5)	37.0 (43.1)	29.2 (-20.9)	16.9 (-30.7)	13.6 (-19.4)	12.3 (-9.2)

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 This report presents the energy price trend of the month for which energy consumption data is available. For more on the latest price trend, see *Energy Supply and Demand Brief*.

Domestic energy prices

□ **At domestic gas stations, gasoline price was up 3.1% in April from the previous month in line with the global price fluctuations, while diesel price was down 0.3%.**

- The price of gasoline at gas stations maintained the upward trend for three consecutive months, after its global price rebounded in January, while the price of diesel has been down for five straight months amid the steady downward trend in global prices since last July.
- The fuel tax on gasoline and diesel (excl. VAT) were 559.4 won and 335.6 won per liter, which are 186.5 won and 193.2 won lower than before the introduction of the fuel tax cuts (Nov. 12, 2021). The tax cuts are due to end in August.
- The retail prices of propane and butane remained flat compared to the previous month, as domestic LPG importers (e.g. SK Gas) kept their supply prices unchanged.
- The relative price of propane to city gas for industrial customers rose by 29.2% in April from the previous month to 1.08.

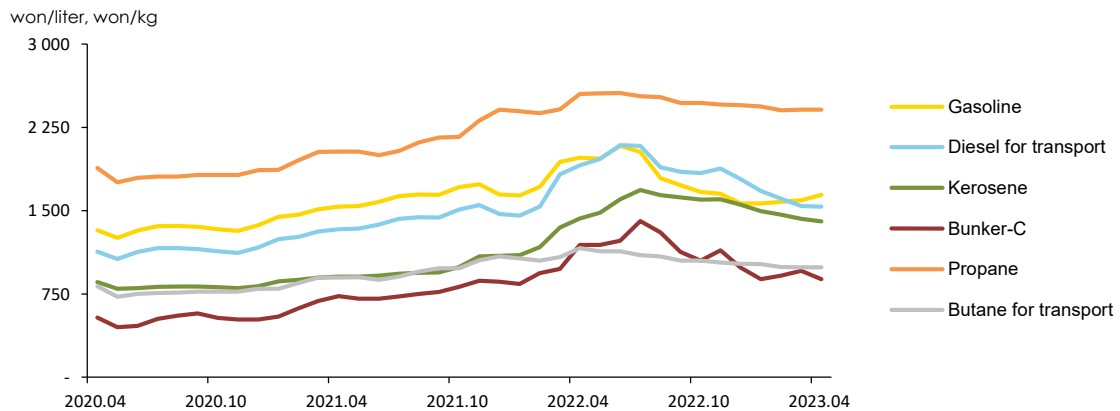
► Domestic petroleum product prices

	2021	2022				2023		
			M2	M3	M4	M2	M3	M4
Gasoline (won/liter)	1 591.2 (15.2)	1 812.7 (13.9)	1 714.6 (4.9)	1 938.5 (13.1)	1 976.5 (2.0)	1 578.5 (1.0)	1 592.2 (0.9)	1 640.9 (3.1)
Diesel for transport (won/liter)	1 392.0 (17.0)	1 843.4 (32.4)	1 536.6 (5.7)	1 827.0 (18.9)	1 906.4 (4.3)	1 606.4 (-4.1)	1 539.7 (-4.2)	1 535.7 (-0.3)
Bunker-C (won/liter)	732.2 (27.8)	1 116.1 (52.4)	937.4 (11.6)	974.0 (3.9)	1 191.7 (22.3)	915.6 (3.6)	956.9 (4.5)	882.5 (-7.8)
Propane (won/kg)	2 093.4 (13.1)	2 480.1 (18.5)	2 379.0 (-0.7)	2 412.1 (1.4)	2 552.2 (5.8)	2 405.4 (-1.4)	2 409.7 (0.2)	2 409.0 (-0.0)
Butane for transport (won/liter)	932.3 (17.9)	1 081.8 (16.0)	1 050.7 (-2.0)	1 083.0 (3.1)	1 163.2 (7.4)	992.2 (-2.7)	989.4 (-0.3)	988.3 (-0.1)

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



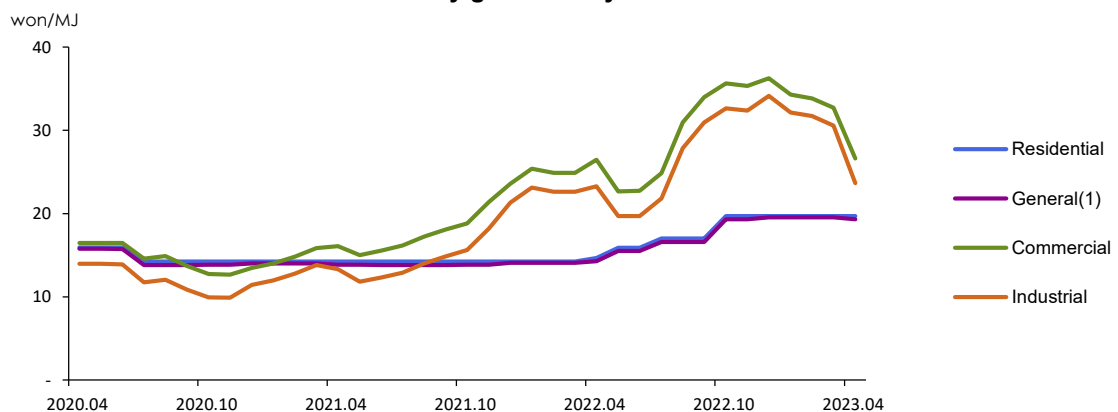
□ **City gas rate for residential use was flat in April, while the rates for general use, office heating and industrial use dropped by 1.1%, 18.6% and 22.6% respectively than the prior month.**

- The material cost of city gas for residential and general use hasn't been changed at 15.6 won/MJ for the last six months after it was raised by 20.9% in last October.
- The material cost of city gas for office heating and industrial use declined by 21.5% from the previous month to 22.1 won/MJ partly due to lower import cost of LPG.
- The wholesale supply prices of city gas for general and industrial use dropped by 16.3% and 55.3% respectively from the prior month, as the prices were adjusted for the period other than the summer and winter seasons.
- City gas rates for residential use, general use, office heating and industrial use were 19.7 won, 19.3 won, 26.6 won and 23.6 won per MJ in April, and on a year-on-year basis, the rates increased by 34.4%, 35.5%, 0.6%, 1.6% respectively.

□ **Electric rates for general and industrial use fell by around 20% each in March than the previous month after they were adjusted to the spring and autumn rates, and they remained at the same levels in April.**

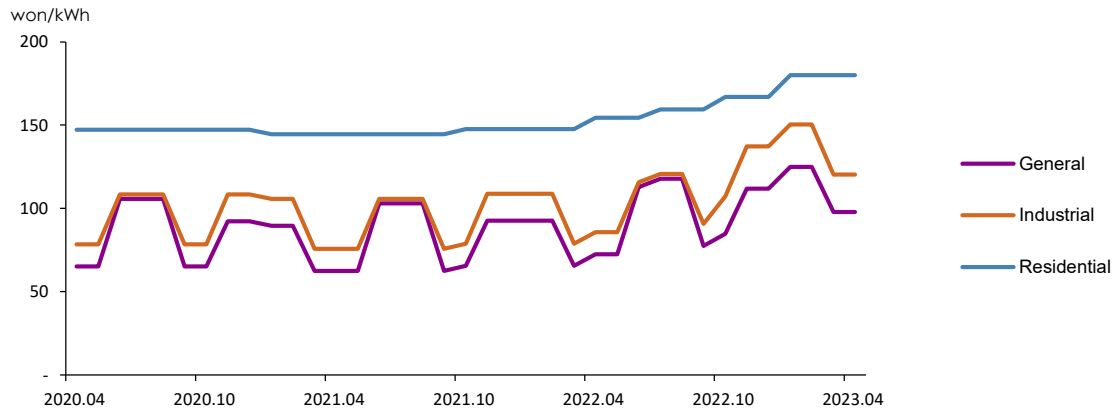
- Energy charge and climate change & environmental charge have been fixed for four consecutive months since January— when they were raised by 11.4 won/kWh and 1.7 won/kWh respectively.
- Though the fuel cost pass-through adjustment rate was estimated to be 6.8 won/kWh in 2Q, it was fixed at 5.0 won/kWh due to the upper and lower limits of the rate adjustment.
- Electric rates for residential, general and industrial use increased by 16.5% to 180.0 won, 35.2% to 97.9 won and 40.5% to 120.4 won per kWh on a year-on-year basis.

► **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 6.4% year-on-year in April, as the import of all energy sources declined.**
 - The import volume of crude oil fell by 5.9% year-on-year, which was affected by a drop in petroleum products exports and a slowdown in domestic demand.
 - The import volume of petroleum products dropped by 15.0% year-on-year, as naphtha and LPG imports fell for two months in a row.
 - The import volume of bituminous coal which accounts for the largest share of the total coal imports, decreased by 1.2% year-on-year despite lower unit import price (-13.1%, based on Australian coal), due to weak demand from the domestic power generation sector, and consequently, the total import volume of coal fell by 1.1%.
 - The import volume of natural gas fell by 8.5% year-on-year, the 2nd consecutive month of decline, due to the high base effect (21.4%) of last year when imports surged following the Russia-Ukraine war.
 - The total energy import value went down by 25.0% year-on-year, as the total energy import volume decreased, and the unit import price of major energy sources also declined. Energy's share of the total import value fell sharply since February (26.6%) to 20.3% in April.
 - The total energy export volume was down 4.9% year-on-year, led by a drop in petroleum products exports to Southeast Asia, which takes up the largest share of the total energy exports.

► Import and domestic production of energy

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Import volume (Mtoe)	333.4	112.8	25.9	112.0	29.6	29.4	24.2
	(2.8)	(8.2)	(2.0)	(-0.7)	(12.8)	(1.4)	(-6.4)
Crude oil (Mbbl)	1 031.3	345.9	86.2	341.7	87.2	91.8	81.1
	(7.4)	(12.6)	(3.4)	(-1.2)	(9.9)	(7.3)	(-5.9)
Petroleum product (Mbbl)	367.1	129.5	28.7	123.5	34.4	31.3	24.4
	(-6.4)	(9.2)	(-6.2)	(-4.7)	(4.3)	(-0.9)	(-15.0)
Coal (Mton)	125.6	39.6	8.5	39.9	9.7	11.1	8.4
	(-0.4)	(3.4)	(-9.3)	(0.8)	(-2.1)	(12.1)	(-1.1)
LNG (Mton)	46.4	16.9	3.4	17.1	5.1	4.0	3.2
	(1.0)	(1.5)	(21.4)	(1.2)	(46.4)	(-18.5)	(-8.5)
Import value (billion US\$, CIF)	184.1	57.4	14.1	54.4	14.7	13.9	10.6
	(72.1)	(98.1)	(91.8)	(-5.2)	(21.4)	(-11.1)	(-25.0)
Energy share of total import value (%)	25.1	24.1	23.4	24.0	26.6	23.3	20.3
Foreign energy dependence (%)	94.2	94.2	92.6	93.8	94.0	93.1	92.9
Export volume (Mtoe)	69.01	21.49	5.46	22.29	5.65	6.00	5.20
	(11.2)	(18.0)	(12.0)	(3.7)	(7.3)	(6.8)	(-4.9)
Petroleum product (Mtoe)	68.99	21.47	5.46	22.29	5.65	6.00	5.20
	(11.6)	(18.4)	(13.1)	(3.8)	(7.3)	(6.8)	(-4.9)
Domestic production							
Hydropower (TWh)	3.5	0.8	0.2	0.7	0.2	0.2	0.2
	(15.9)	(-3.7)	(-12.8)	(-3.2)	(0.5)	(-12.7)	(-6.6)
Renewable energy (Mtoe)	16.0	5.3	1.4	5.5	1.2	1.5	1.4
	(11.0)	(7.7)	(5.4)	(3.6)	(-3.8)	(14.2)	(0.6)

Note: p means provisional, () is year-on-year growth rates (%), *Foreign energy dependence (%) including Nuclear energy
Source: Korea Energy Economics Institute

4. Energy Consumption

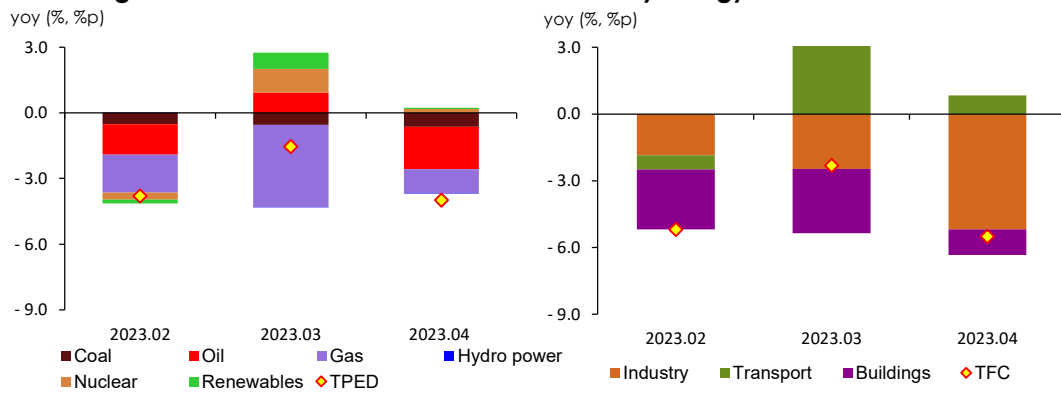
- **Total Primary Energy Demand (TPED) fell by 4.0% year-on-year in April, as demand for major energy sources all declined, except nuclear energy.**
 - Coal use dropped by 3.6% year-on-year, despite stronger industrial demand, as a result of weak demand in the power generation sector amid growing nuclear and renewable & other energy generation.
 - Gas use fell by 8.0% year-on-year (based on toe), as it declined in the power generation sector due to decreased electricity use and increased baseload generation, and as it also decreased in the industrial and building sectors due to the economic slowdown and higher city gas rates.
 - Petroleum use went down by 7.2% year-on-year, led by a sharp drop in its industrial use, especially as petrochemical feedstock, amid a slump in petrochemical business, although the transport sector's petroleum use increased. The use of nuclear energy grew by 1.4% following the commissioning of Shin Hanul Unit 1 (Dec, 2022).
- **Total Final Consumption (TFC) went down by 5.5% year-on-year (in April), with the industrial and building sectors leading the downward trend amid the economic downturn and higher energy rates.**
 - Industrial energy use fell by 8.1% year-on-year, as production decreased in most of the subsectors and remarkably in the petrochemical sector due to fewer work days (-1 day) and worsening global economic conditions.
 - Transport energy use grew by 5.6% year-on-year due to the base effect of the same month last year, when energy use plunged immediately before the additional fuel tax cuts. Meanwhile, diesel consumption decreased along with a drop in the manufacturing shipment index (-7.3%) as a result of the exacerbating economic crisis.
 - Energy use in buildings dropped by 5.5%, especially city gas and electricity in the residential sector due to higher energy rates, despite the increased number of heating degree days (13.4%), while it just slightly declined (-1.1%) in the commercial sector amid steadily growing service sector production.

► Energy consumption

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
TPED (Mtoe)	304.5	105.3	23.4	101.1	25.0	25.7	22.5
	(0.4)	(3.0)	(-1.2)	(-4.0)	(-3.8)	(-1.5)	(-4.0)
TFC (Mtoe)	214.0	76.1	16.8	72.3	18.1	18.2	15.9
	(-0.8)	(2.3)	(-2.2)	(-5.1)	(-5.2)	(-2.3)	(-5.5)
- Feedstock exclude	141.7	51.0	10.6	49.2	12.7	12.1	10.4
	(0.4)	(1.1)	(-5.3)	(-3.4)	(-5.1)	(-1.3)	(-1.5)

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 fell by 3.6% year-on-year in April, led by the power generation sector, although its industrial use increased.

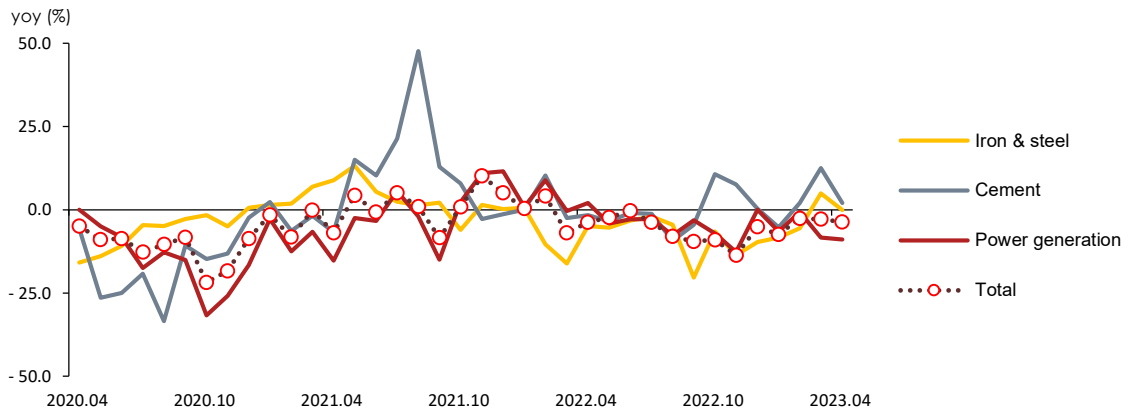
- Industrial coal use grew by 3.2% year-on-year, as it increased in major industrial sectors except the iron & steel sector.
- In the power generation sector, coal use dropped by 8.9% year-on-year, because coal-fired generation decreased due to lower power demand (-3.1%) and growing nuclear (1.4%) and renewable & other energy (2.2%) generation.

► Coal consumption

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Coal (Mton)	114.0	36.8	8.2	35.2	9.0	8.3	7.9
	(-4.9)	(-1.5)	(-3.8)	(-4.3)	(-2.6)	(-2.9)	(-3.6)
Industry	46.5	15.4	3.6	15.1	3.5	4.0	3.7
	(-8.1)	(-6.9)	(-10.2)	(-2.1)	(-5.7)	(3.8)	(3.2)
-Coking-coal	23.6	7.9	1.9	7.7	1.7	2.0	1.9
	(-7.5)	(-7.3)	(-6.0)	(-2.5)	(-5.5)	(4.9)	(0.3)
Buildings	0.4	0.1	0.0	0.1	0.0	0.0	0.0
	(-5.1)	(-6.4)	(-10.5)	(-2.3)	(17.1)	(-6.9)	(-23.5)
Power generation	67.1	21.2	4.6	20.0	5.5	4.3	4.2
	(-2.6)	(2.8)	(2.0)	(-5.9)	(-0.7)	(-8.3)	(-8.9)

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 fell by 7.8% year-on-year in April due to decreased use of petroleum as feedstock in the industrial sector, even though it increased in all other end-use sectors.
 - In the industrial sector, petroleum use declined by 14.7% year-on-year, because petrochemical business was stagnant, and factory operations were disrupted by droughts.
 - In the transport sector, petroleum use went up by 5.5%, led by the road transport sector along with the base effect of a sharp contraction during the same month last year.
 - In the building sector, petroleum use rose by 15.9% year-on-year, as demand for auxiliary heating devices such as petroleum stoves increased amid chilly spring weather.

► Petroleum product consumption by end-use sectors

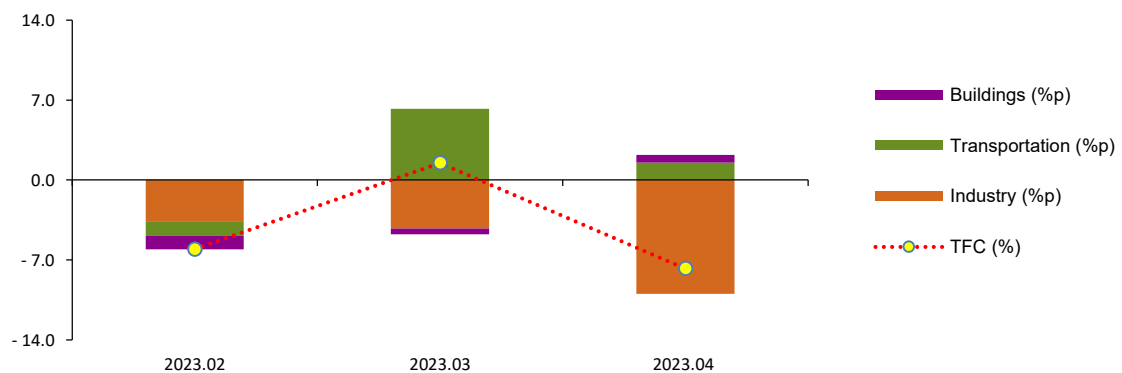
	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
TFC (Mbbl)	798.9	271.6	63.3	254.8	60.6	68.9	58.4
	(-1.3)	(3.6)	(-3.5)	(-6.2)	(-6.1)	(1.5)	(-7.8)
Industry	496.9	175.2	43.0	158.2	37.6	42.4	36.7
	(-1.8)	(7.9)	(6.1)	(-9.7)	(-5.8)	(-6.4)	(-14.7)
- Naphtha	356.0	125.3	31.5	117.1	27.8	31.9	26.6
	(-3.8)	(3.7)	(4.2)	(-6.5)	(-0.5)	(-0.3)	(-15.6)
Transport	258.0	78.2	17.6	79.9	18.4	22.9	18.6
	(-0.4)	(-4.6)	(-20.0)	(2.2)	(-4.3)	(22.6)	(5.5)
Buildings	44.0	18.2	2.7	16.7	4.6	3.6	3.1
	(-0.6)	(2.1)	(-11.6)	(-7.8)	(-14.2)	(-8.7)	(15.9)
Power generation (Mbbl)	5.02	2.16	0.25	1.18	0.26	0.31	0.27
	(20.0)	(86.8)	(18.2)	(-45.3)	(-54.0)	(-24.0)	(7.5)

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 declined by 8.0% year-on-year in April, as it declined in all sectors due to lower gas-fired generation, worsening economic conditions and higher gas rates.**

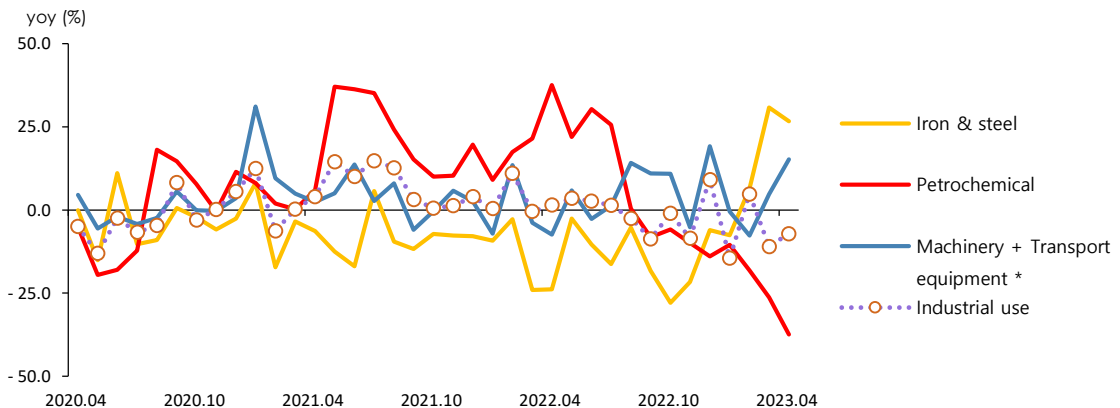
- In the power generation sector, gas-fired generation decreased (-7.3%) as a result of lower power demand and growing baseload (incl. renewables) generation (-0.5%), which led to drop in gas use.
- In the industrial sector, gas use continued to dropped in most subsectors, except iron and steel, due to the economic downturn at home and abroad. Especially, gas use decreased for eight straight months in the petrochemical sector as a result of stagnant business and droughts in the Honam area.
- In the building sector, gas use fell sharply, led by the residential sector (-19.3%) due to base effect and higher city gas rates for civilian use. It declined in the commercial sector as well, though the decline was slight (just -0.1%) amid rising service sector production.

► Natural gas and city gas consumption

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Gas(TPED) (Mtoe)	59.5	24.2	4.7	22.3	6.0	5.2	4.3
(Natural gas + City gas)	(-1.1)	(1.3)	(0.4)	(-7.9)	(-5.7)	(-15.6)	(-8.0)
Power generation	29.7	10.7	2.3	10.2	2.5	2.6	2.1
	(-3.2)	(-3.0)	(-3.9)	(-5.2)	(0.2)	(-16.0)	(-7.0)
Industry	10.0	3.6	0.8	3.4	1.0	0.8	0.8
	(0.2)	(2.2)	(0.7)	(-6.4)	(5.6)	(-10.3)	(-6.4)
Buildings	15.2	8.2	1.2	7.3	2.2	1.5	1.0
	(5.3)	(7.8)	(9.7)	(-10.8)	(-12.7)	(-19.4)	(-15.4)
Natural gas(TPED) (Mton)	45.3	18.2	3.4	16.8	4.5	3.9	3.2
	(-1.0)	(1.3)	(-1.4)	(-8.0)	(-7.1)	(-16.1)	(-5.7)
City gas(TFC) (Bm³)	23.6	11.2	1.9	10.0	2.8	2.2	1.6
	(3.9)	(6.9)	(8.1)	(-10.8)	(-11.7)	(-16.5)	(-14.9)

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 went down by 3.1% year-on-year in April, as industrial production activities slowed, while the electric rates increased.

- In the industrial sector, electricity use fell by 3.8% due to lower demand in the machinery, petrochemical and iron & steel sectors, although it grew in the transport equipment sector.
- In the building sector, electricity use decreased by 2.5% despite the increased number of heating degree days, because consumer sentiment was depressed by higher electric rates.

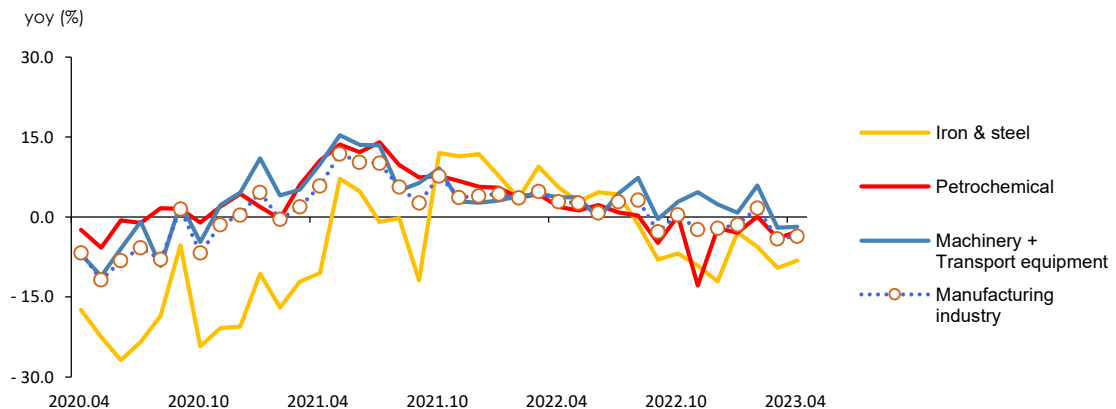
► Electricity consumption by end-use sectors

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Electricity (TWh)	535.3	182.6	42.7	181.6	47.0	43.1	41.4
	(2.9)	(4.5)	(4.5)	(-0.5)	(1.0)	(-3.5)	(-3.1)
Industry	274.1	93.0	22.6	91.2	22.6	22.6	21.8
	(1.7)	(4.2)	(3.2)	(-2.0)	(1.4)	(-4.3)	(-3.8)
Transport	4.0	1.3	0.3	1.4	0.4	0.3	0.3
	(8.7)	(6.1)	(5.7)	(13.6)	(13.6)	(14.4)	(14.6)
Buildings	257.2	88.3	19.8	89.0	24.0	20.2	19.3
	(4.1)	(4.7)	(6.0)	(0.8)	(0.4)	(-2.9)	(-2.5)
Residential	78.6	25.8	6.1	25.5	6.8	5.8	5.9
	(1.3)	(2.1)	(3.2)	(-1.2)	(-0.5)	(-4.0)	(-2.6)
Commercial	147.0	51.3	11.2	52.2	14.3	11.8	10.9
	(5.9)	(6.4)	(8.2)	(1.8)	(0.6)	(-2.6)	(-2.6)

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

Source: Korea Energy Economics Institute

► The growth rate of electricity consumption in manufacturing industry

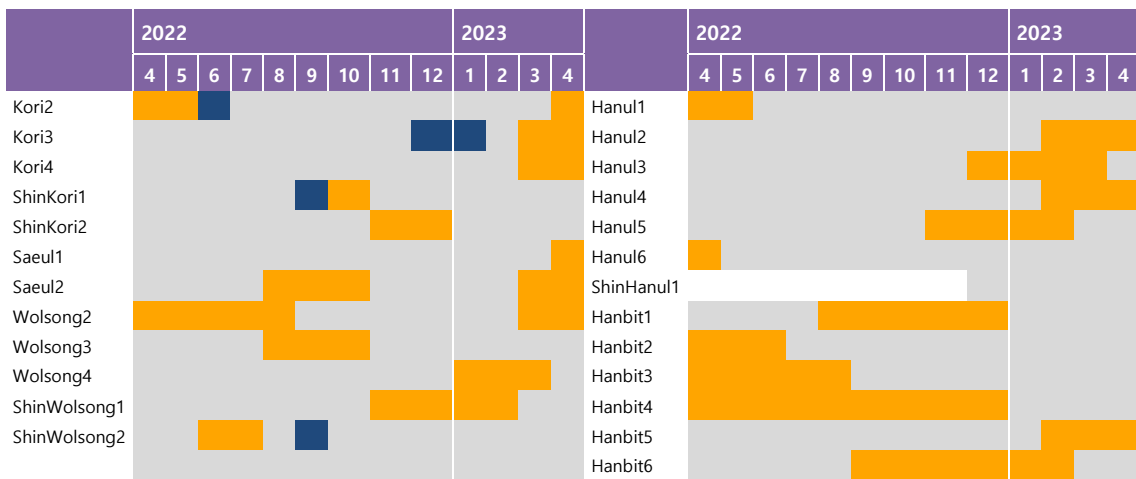


9. Nuclear

□ The total nuclear generation went up by 1.4% year-on-year in April despite a drop in the average capacity factor, as nuclear installed capacity increased.

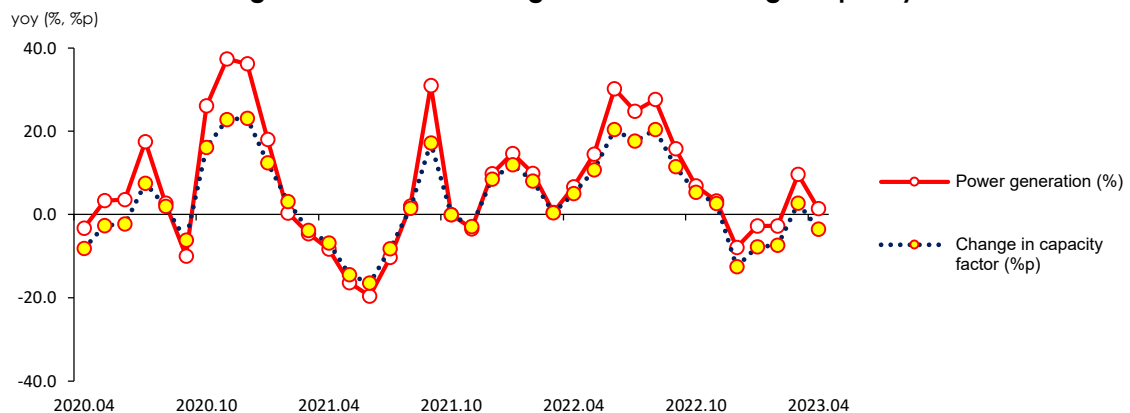
- The installed capacity of nuclear power plants increased by 6.0% year-on-year due to the commissioning of Shin Hanul Unit 1 (1.4GW) in last December.
- The daily average of preventive maintenance grew by 1.1GW, as the number of scheduled and unscheduled reactor shutdowns increased by two reactors on a year-on-year basis.
- Nuclear energy's share of the total power generation rose by 1.0p year-on-year to 30.8%.

► 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

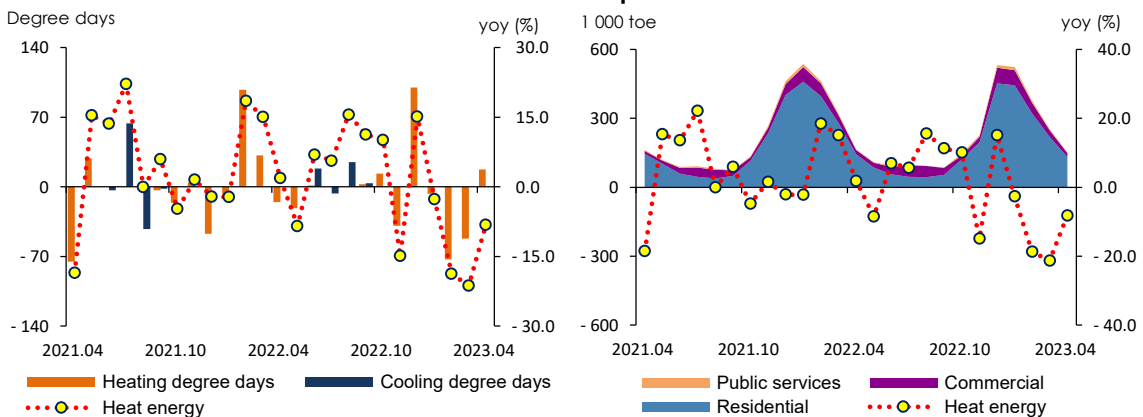
□ **Heat energy use dropped by 8.2% year-on-year in April, as it declined in the residential, commercial and public sectors all together.**

- In the residential sector, heat energy use fell by 8.3% year-on-year, marking the 4th consecutive month of decline, due to higher heat energy rates. In the commercial sector, it also fell by 8.3% year-on-year owing to weak production in the service sector (wholesale & retail).

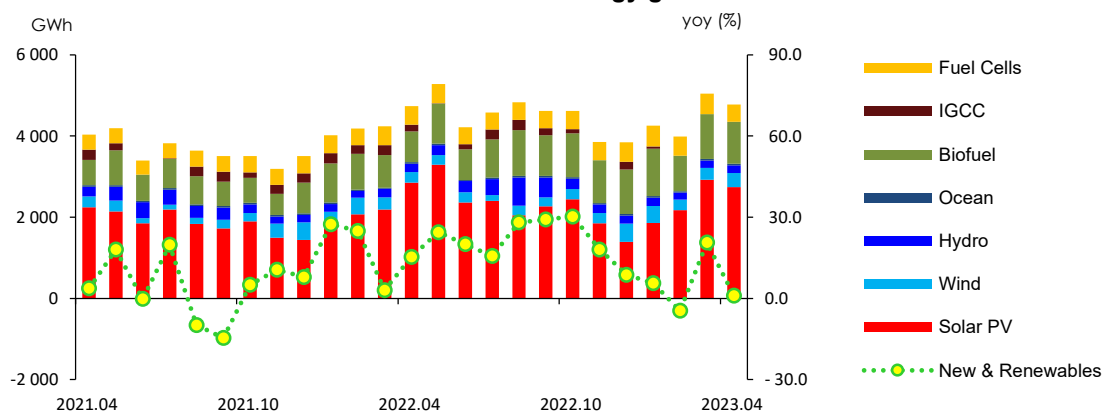
□ **Renewable & other energy use went up by mere 0.4% year-on-year in April, as it grew much slowly in the power generation sector, and the final use of renewable & other energy decreased.**

- Renewable & other energy generation grew at much slower rate of 1.0%, even though bioenergy and wind power generation grew by over 30%, as solar PV generation decreased (-3.9%), which takes up a large share of the total renewable generation.
- The FEC of renewables fell by 2.9% yoy, as it declined in all end-use sectors, except the transport.

► 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



11. Industry

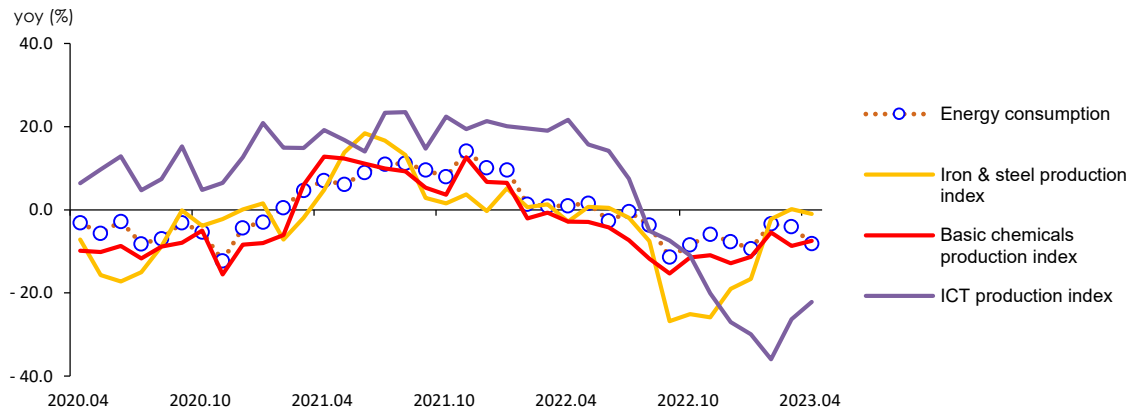
- Industrial energy use decreased by 8.1% year-on-year in April, driven by a sharp drop in the petrochemical sector, although energy use increased in some sectors.
 - Industrial energy use decreased more rapidly, as it declined in most of the subsectors, especially the petrochemical sector owing to fewer work days (-1 day) and worsening global economic conditions, although energy use slightly increased in the iron & steel and transport equipment sectors.

► Industrial energy consumption

	2022p	2023p		2023p			
		M1~4	M4	M1~4	M2	M3	M4
Industry (Mtoe)	130.0	44.9	10.8	42.0	10.2	10.9	9.9
	(-2.2)	(3.2)	(1.0)	(-6.3)	(-3.4)	(-4.1)	(-8.1)
Petrochemical	66.0	23.3	5.7	20.9	5.0	5.5	4.8
	(-1.6)	(7.4)	(5.9)	(-10.2)	(-6.2)	(-8.1)	(-16.0)
- Naphtha	43.6	15.3	3.9	14.3	3.4	3.9	3.3
	(-3.9)	(3.6)	(4.1)	(-6.5)	(-0.5)	(-0.3)	(-15.6)
Iron & Steel	25.9	8.7	2.1	8.5	1.9	2.2	2.1
	(-7.3)	(-6.7)	(-4.9)	(-2.3)	(-5.1)	(4.8)	(0.4)
- Coking coal	16.6	5.5	1.4	5.3	1.2	1.4	1.3
	(-6.7)	(-6.5)	(-5.2)	(-3.3)	(-6.4)	(4.0)	(-0.5)
Machinery + Transport Equipment	13.0	4.4	1.0	4.4	1.2	1.0	1.0
	(4.7)	(3.5)	(2.7)	(-0.6)	(12.0)	(-8.2)	(0.7)
Share of feedstock (%)	55.5	56.1	57.9	54.8	53.2	56.4	55.3

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 5.6% year-on-year in April due to the base effect from the same period last year, when energy use plunged in the road transport sector.

- In the road transport sector, energy use increased due to the low base effect from the same period last year, when energy use declined ahead of the additional fuel tax cuts in May. Especially gasoline use increased amid growing demand for mobility, while diesel use slightly decreased.
- In the aviation sector, energy use increased by 22.1% because of the low base effect from the previous year, although the number of flights fell by 13.4% year-on-year.

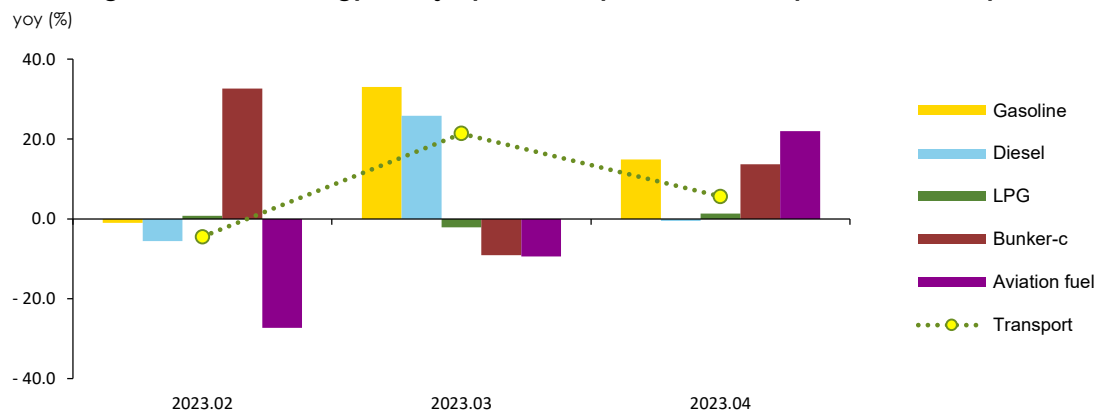
► The growth rate of petroleum consumption in the transport sector

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Transport (Mtoe)	36.35	11.05	2.51	11.27	2.58	3.23	2.65
	(-0.8)	(-4.6)	(-19.6)	(2.0)	(-4.5)	(21.4)	(5.6)
Road	33.92	10.24	2.36	10.54	2.41	3.05	2.48
	(-0.8)	(-5.3)	(-19.6)	(2.9)	(-3.6)	(23.9)	(4.9)
Domestic navigation	0.46	0.16	0.03	0.15	0.04	0.04	0.04
	(8.5)	(32.6)	(28.1)	(-5.2)	(17.0)	(-11.3)	(13.3)
Domestic aviation	1.67	0.55	0.09	0.48	0.10	0.12	0.11
	(-0.3)	(4.3)	(-30.9)	(-11.7)	(-27.1)	(-9.3)	(22.1)
Rail	0.30	0.10	0.02	0.10	0.03	0.02	0.02
	(-9.9)	(-11.0)	(-13.8)	(-2.1)	(0.2)	(-0.1)	(-4.5)

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 decreased in April, as the use of all energy sources declined except petroleum products partly due to price effect.

- In the residential sector, energy use fell by 11.3% year-on-year, mostly city gas, even though the number of heating degree days increased.
- In the commercial sector, energy use slightly declined, as production was stagnant in the wholesale and retail businesses, though the overall production recovered in the service industry.

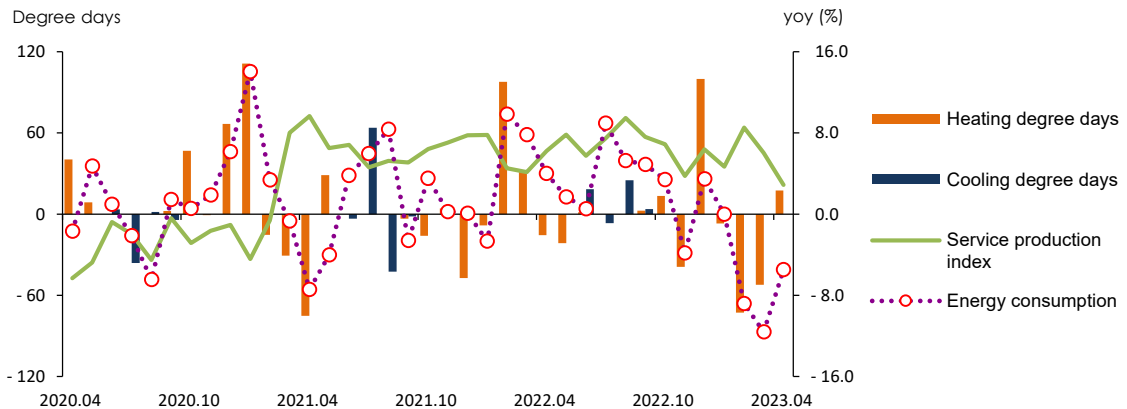
► Energy consumption in buildings

	2022p			2023p			
		M1~4	M4	M1~4	M2	M3	M4
Buildings (Mtoe)	47.7	20.2	3.5	19.0	5.3	4.1	3.3
	(3.4)	(4.3)	(4.0)	(-6.2)	(-8.8)	(-11.6)	(-5.5)
Residential	23.3	11.4	1.7	10.2	3.0	2.1	1.5
	(1.4)	(4.3)	(3.4)	(-10.0)	(-12.3)	(-16.8)	(-11.3)
Commercial	19.1	6.9	1.4	6.9	1.9	1.5	1.4
	(6.4)	(6.7)	(5.6)	(-1.0)	(-3.8)	(-5.0)	(-1.1)
Public services	5.3	1.9	0.4	1.9	0.5	0.4	0.4
	(2.3)	(-4.0)	(1.2)	(-1.8)	(-4.6)	(-6.0)	(4.7)
Heating degree days	2 567.1	1 540.3	130.8	1 425.9	433.9	267.6	148.3
	(6.8)	(7.4)	(-10.5)	(-7.4)	(-14.4)	(-16.3)	(13.4)
Cooling degree days	141.9	-	-	-	-	-	-
	(40.1)	-	-	-	-	-	-
Service production index (2020=100)	112.0	106.5	110.7	112.3	108.2	117.5	113.9
	(6.5)	(5.7)	(6.2)	(5.5)	(8.5)	(6.0)	(2.9)

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

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

► Energy consumption in buildings & major indicators



14. Power Generation

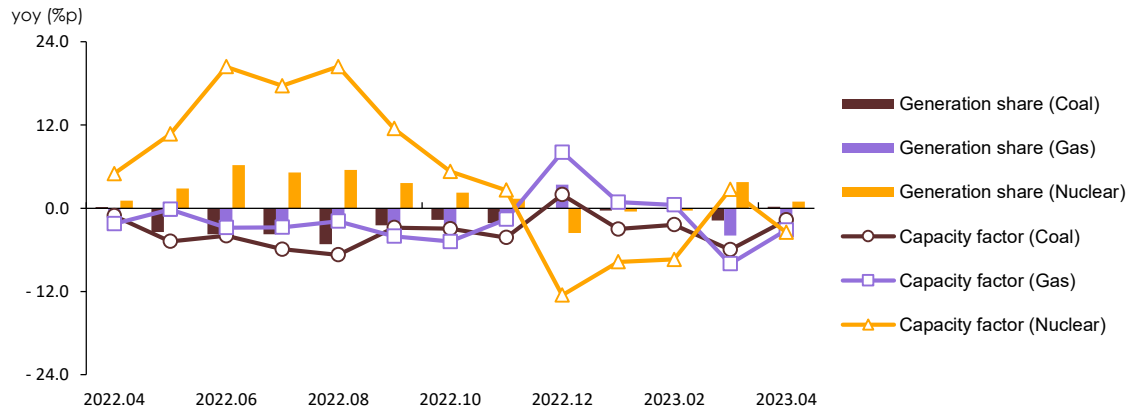
- **The total power generation and fuel input declined by 1.7% and 3.7% respectively in April from the same month last year amid falling electricity demand.**
 - Nuclear generation went up by 1.4% year-on-year as a result of the commissioning of Shin Hanul Unit 1 (1.4GW) at the end of last year (2022.12.7), although the number of reactors that were subject to the preventive maintenance increased by one reactor.
 - Renewable & other energy generation rose by mere 2.2%, even though wind power and bioenergy generation grew fast in line with the growth in installed capacity, as solar PV generation that accounts for a large share of the total renewable generation fell by 3.9% due to a drop in sunlight hours and solar radiation
 - Coal-fired generation continued to decline. The pace of the decline, however, slowed down, as nuclear and renewable & other energy generation grew more slowly.
 - Power generation from gas plants, which are peak load power plants, decreased by 7.3% year-on-year, as the total power generation fell by 1.7%, while baseload generation including renewable & other energy grew by over 0.5%.
 - Nuclear, coal, gas and renewable & other energy represented 30.8%, 29.8%, 26.9% and 12.2% respectively in the power generation mix.

► Power generation by energy sources

	2022p			2023p			
		M1~4	M4		M1~4	M2	M3
Power Generation (TWh)	594.4	197.8	44.9	193.9	47.7	47.9	44.1
	(3.1)	(4.7)	(2.8)	(-2.0)	(-1.6)	(-3.5)	(-1.7)
Coal	193.2	61.6	13.3	59.5	15.7	12.7	13.1
	(-2.4)	(5.6)	(3.3)	(-3.4)	(-1.4)	(-9.6)	(-1.1)
Oil	2.0	1.0	0.1	0.6	0.2	0.2	0.1
	(-16.5)	(36.3)	(-9.6)	(-33.6)	(-14.8)	(-6.0)	(-7.6)
Gas	163.6	58.3	12.8	55.3	13.8	14.2	11.9
	(-2.8)	(-3.1)	(-4.9)	(-5.1)	(1.0)	(-14.8)	(-7.3)
Nuclear	176.1	57.3	13.4	58.0	13.6	15.2	13.6
	(11.4)	(7.9)	(6.7)	(1.2)	(-2.7)	(9.6)	(1.4)
Renewables	59.6	19.6	5.3	20.4	4.5	5.7	5.4
	(18.9)	(18.3)	(13.6)	(4.2)	(-5.5)	(15.2)	(2.2)
Baseload	428.9	138.5	31.9	137.9	33.8	33.6	32.1
	(5.6)	(8.2)	(6.3)	(-0.4)	(-2.5)	(2.3)	(0.5)

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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
GDP (trillion won)	1 915.8 (4.1)	1 968.8 (2.8)	468.0 (3.1)	- (-)	468.0 (3.1)	- (-)	472.2 (0.9)	- (-)	472.2 (0.9)	- (-)
Private consumption	882.5 (3.7)	917.8 (4.0)	223.6 (3.7)	- (-)	223.6 (-)	- (-)	233.8 (4.6)	- (-)	233.8 (-)	- (-)
Facilities investment	181.6 (9.0)	180.5 (-0.7)	42.0 (-6.7)	- (-)	42.0 (-)	- (-)	44.5 (5.9)	- (-)	44.5 (-)	- (-)
Construction investment	265.0 (-1.6)	257.6 (-2.8)	52.3 (-4.0)	- (-)	52.3 (-)	- (-)	53.3 (1.9)	- (-)	53.3 (-)	- (-)
Consumer price index (2020=100)	102.5	107.7	105.7	105.3	106.1	106.9	110.5	110.4	110.6	110.8
USD to KRW exchange rate (won)	1 144.0	1 291.4	1 211.4	1 198.3	1 221.0	1 232.3	1 285.9	1 270.7	1 305.7	1 320.0
Benchmark rate (%)	0.6	2.1	1.3	1.3	1.3	1.5	3.5	3.5	3.5	3.5
Coincident composite index (2020=100)	104.1	108.2	107.4	107.4	107.6	107.5	109.1	108.7	109.5	110.0
Mining & manufacturing production index (2020=100)	108.2	109.7	110.6	102.3	117.8	111.8	100.0	93.9	108.9	101.6
Manufacturing operation ratio index (2020=100)	105.2	105.2	106.4	98.3	113.1	107.8	96.9	90.6	105.6	99.0
Average temperature	13.3	12.9	5.1	-0.1	7.7	13.8	6.1	2.5	9.4	13.1
- year-on-year difference	0.3	-0.4	-0.9	-3.5	-1.0	0.6	1.0	2.6	1.7	-0.7
Heating degree days	2 404.7 (-1.8)	2 567.1 (6.8)	1 540.3 (7.4)	506.7 (23.9)	319.7 (11.0)	130.8 (-10.5)	1 425.9 (-7.4)	433.9 (-14.4)	267.6 (-16.3)	148.3 (13.4)
Cooling degree days	101.3 (18.9)	141.9 (40.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
Energy intensity	0.16 (1.0)	0.16 (-2.2)	0.18 (1.1)	- (-)	0.18 (1.1)	- (-)	0.17 (-4.8)	- (-)	0.17 (-4.8)	- (-)
Per capita consumption										
Oil (bbl)	0.0 (7.3)	0.0 (-1.7)	0.0 (3.9)	0.0 (0.9)	0.0 (3.5)	0.0 (-4.0)	0.0 (-5.2)	0.0 (-4.9)	0.0 (2.1)	0.0 (-7.1)
Electricity (MWh)	0.0 (4.9)	0.0 (3.1)	0.0 (4.7)	0.0 (5.4)	0.0 (6.6)	0.0 (4.8)	0.0 (-0.4)	0.0 (1.1)	0.0 (-3.4)	0.0 (-2.9)
City gas (1 000 m ³)	- (3.5)	- (4.1)	- (7.1)	- (13.1)	- (10.8)	- (8.4)	- (-10.6)	- (-11.6)	- (-16.4)	- (-14.8)
Total energy (toe)	0.0 (5.3)	0.0 (0.7)	0.0 (3.3)	0.0 (4.8)	0.0 (2.5)	- (-1.0)	0.0 (-3.8)	- (-3.7)	- (-1.4)	- (-3.9)

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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Industrial production index										
All industry	105.5 (5.5)	110.1 (4.4)	106.4 (5.2)	99.0 (4.7)	112.7 (4.2)	109.5 (5.5)	107.2 (0.7)	102.4 (3.4)	114.9 (2.0)	108.4 (-1.0)
Mining & manufacturing	108.2 (8.2)	109.7 (1.4)	110.6 (5.5)	102.3 (6.7)	117.8 (4.8)	111.8 (4.9)	100.0 (-9.6)	93.9 (-8.2)	108.9 (-7.6)	101.6 (-9.1)
Semiconductor	126.8 (26.8)	136.5 (7.7)	142.5 (30.5)	134.4 (29.7)	154.7 (26.8)	139.9 (31.4)	98.8 (-30.7)	78.3 (-41.7)	113.1 (-26.9)	110.4 (-21.1)
Iron & steel	105.2 (5.2)	96.3 (-8.4)	104.4 (1.1)	97.0 (0.6)	107.7 (1.3)	102.8 (-2.8)	99.1 (-5.1)	94.8 (-2.3)	107.9 (0.2)	101.8 (-1.0)
Cement	103.2 (3.1)	100.2 (-2.9)	94.2 (-2.7)	75.6 (-4.8)	104.5 (-8.4)	110.7 (-5.5)	92.8 (-1.6)	86.1 (13.9)	106.2 (1.6)	100.6 (-9.1)
Basic compound	105.9 (5.9)	99.1 (-6.4)	105.2 (0.2)	98.4 (-2.1)	109.1 (-0.7)	102.0 (-2.9)	96.5 (-8.3)	93.0 (-5.5)	99.6 (-8.7)	94.4 (-7.5)
Transport equipment	106.3 (6.3)	116.0 (9.1)	106.5 (-3.5)	98.0 (3.5)	112.2 (-7.2)	114.1 (-2.1)	128.2 (20.3)	124.2 (26.7)	142.6 (27.1)	133.2 (16.7)
Electric & electronic	107.7 (7.7)	110.8 (2.9)	106.7 (3.3)	100.1 (8.1)	113.3 (1.7)	109.4 (2.7)	105.9 (-0.7)	103.4 (3.3)	114.3 (0.9)	105.2 (-3.8)
Service	105.2 (5.2)	112.0 (6.5)	106.5 (5.7)	99.7 (4.5)	110.8 (4.1)	110.7 (6.2)	112.3 (5.5)	108.2 (8.5)	117.5 (6.0)	113.9 (2.9)
Wholesale and retail	105.3 (5.3)	107.1 (1.7)	104.9 (2.0)	95.2 (0.1)	111.4 (2.2)	108.1 (2.0)	106.3 (1.4)	101.0 (6.1)	112.0 (0.5)	105.3 (-2.6)
Food & Accommodation	101.9 (1.9)	119.1 (16.9)	104.1 (16.9)	91.8 (9.8)	101.7 (5.5)	117.5 (19.0)	116.7 (12.1)	113.2 (23.3)	119.9 (17.9)	119.5 (1.7)
Production output										
Iron & steel - Pig iron	46 440.5 (2.4)	42 658.2 (-8.1)	14 181.1 (-8.3)	3 336.6 (-10.4)	3 549.6 (-10.9)	3 422.7 (-5.8)	14 549.1 (2.6)	3 360.4 (0.7)	3 799.8 (7.0)	3 651.7 (6.7)
Iron & steel - Crude steel	70 418.0 (5.0)	65 846.2 (-6.5)	22 445.4 (-3.9)	5 145.5 (-6.3)	5 707.6 (-5.8)	5 521.6 (-4.0)	22 347.9 (-0.4)	5 205.8 (1.2)	5 834.7 (2.2)	5 681.1 (2.9)
Petrochemical - Basic petrochemicals	34 434.5 (12.7)	32 854.1 (-4.6)	11 753.1 (8.5)	2 751.3 (5.6)	3 015.5 (6.6)	2 856.7 (2.1)	10 264.6 (-12.7)	2 435.8 (-11.5)	2 644.9 (-12.3)	2 406.4 (-15.8)
Petrochemical - Intermediate raw material	15 764.6 (2.6)	13 852.5 (-12.1)	4 900.4 (-8.0)	1 147.9 (-11.7)	1 294.3 (-8.1)	1 185.9 (-7.4)	4 593.7 (-6.3)	1 119.1 (-2.5)	1 168.9 (-9.7)	1 088.2 (-8.2)
Petrochemical - 3 major products	23 224.7 (9.2)	22 129.4 (-4.7)	8 115.4 (9.8)	1 917.4 (9.8)	2 101.5 (9.4)	1 931.9 (4.0)	7 258.9 (-10.6)	1 748.7 (-8.8)	1 902.7 (-9.5)	1 755.1 (-9.1)
The number of cars	3 462.4 (-1.3)	3 756.5 (8.5)	1 143.6 (-7.2)	264.0 (1.1)	302.2 (-9.5)	306.5 (-5.3)	1 442.4 (26.1)	343.6 (30.2)	409.8 (35.6)	382.3 (24.7)

Note: p means provisional

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

International Energy Prices

	2021	2022					2023			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Crude oil (USD/bbl)										
WTI	67.9 (72.4)	94.2 (38.7)	96.1 (63.5)	91.6 (55.1)	108.3 (73.6)	101.6 (64.7)	77.0 (-19.9)	76.9 (-16.1)	73.4 (-32.2)	79.4 (-21.8)
Dubai	69.3 (64.1)	96.4 (39.1)	97.4 (60.3)	92.4 (51.7)	110.9 (72.2)	102.8 (63.4)	81.1 (-16.7)	82.1 (-11.1)	78.5 (-29.2)	83.4 (-18.8)
Brent	70.8 (63.8)	98.9 (39.7)	99.5 (60.1)	94.1 (51.1)	112.5 (71.2)	105.9 (62.1)	82.5 (-17.1)	83.5 (-11.2)	79.2 (-29.6)	83.4 (-21.3)
Unit value of import (C&F)	70.2 (56.9)	102.3 (45.6)	96.7 (59.8)	91.5 (54.5)	103.1 (60.7)	110.2 (69.2)	85.0 (-12.1)	85.7 (-6.3)	84.2 (-18.2)	84.1 (-23.7)
LNG										
Henry Hub (USD/MMBTU)	3.7 (74.6)	6.5 (75.2)	5.1 (87.6)	4.5 (53.0)	5.0 (89.9)	6.7 (149.7)	2.6 (-48.7)	2.4 (-45.4)	2.4 (-51.6)	2.2 (-67.2)
TTF (USD/MMBTU)	16.0 (396.1)	40.1 (150.0)	32.2 (382.9)	26.9 (338.5)	41.8 (584.2)	31.8 (345.0)	15.9 (-50.8)	16.5 (-38.7)	13.7 (-67.2)	13.4 (-57.9)
JKM (USD/MMBTU)	17.9 (324.7)	33.9 (89.5)	30.1 (245.5)	25.8 (250.9)	37.0 (478.5)	29.2 (274.5)	16.8 (-44.3)	16.9 (-34.6)	13.6 (-63.2)	12.3 (-57.8)
Unit value of import (USD/ton, CIF)	550.8 (41.2)	1 053.5 (91.3)	923.4 (108.8)	843.9 (58.8)	1 016.6 (131.9)	695.0 (80.3)	1 004.0 (8.7)	1 102.9 (30.7)	918.5 (-9.6)	698.9 (0.6)
Coal (USD/ton)										
Thermal coal (Newcastle)	136.0 (125.8)	356.3 (161.9)	274.4 (208.5)	236.2 (174.5)	345.3 (279.8)	306.6 (226.6)	238.9 (-13.0)	222.1 (-6.0)	179.3 (-48.1)	191.8 (-37.4)
Unit value of import (CIF)	115.1 (48.1)	226.3 (96.7)	212.7 (151.2)	197.1 (144.9)	215.5 (140.4)	253.4 (177.0)	198.8 (-6.5)	193.1 (-2.0)	205.9 (-4.5)	200.7 (-20.8)
Petroleum product (USD/bbl)										
Gasoline	80.3 (72.2)	115.2 (43.4)	116.7 (69.5)	110.8 (63.2)	131.1 (78.5)	126.9 (71.5)	99.3 (-14.9)	99.4 (-10.3)	98.5 (-24.9)	100.3 (-21.0)
Kerosene	75.1 (67.9)	126.7 (68.6)	117.4 (83.0)	106.2 (63.0)	133.5 (99.8)	134.4 (101.4)	104.3 (-11.2)	106.6 (0.4)	98.8 (-26.0)	96.8 (-28.0)
Diesel	77.6 (57.2)	135.3 (74.3)	125.1 (87.8)	110.8 (63.1)	141.7 (103.4)	148.8 (116.1)	106.4 (-15.0)	107.7 (-2.8)	102.8 (-27.5)	98.7 (-33.7)
Bunker-C	64.4 (64.3)	82.3 (27.8)	93.2 (63.0)	82.6 (43.4)	103.1 (69.7)	111.1 (88.3)	66.3 (-28.9)	63.7 (-22.8)	67.1 (-34.9)	73.0 (-34.3)
Propane	647.9 (63.2)	737.1 (13.8)	837.5 (43.2)	775.0 (28.1)	895.0 (43.2)	940.0 (67.9)	663.8 (-20.7)	790.0 (1.9)	720.0 (-19.6)	555.0 (-41.0)
Butane	629.6 (55.9)	734.2 (16.6)	841.3 (50.2)	775.0 (32.5)	920.0 (54.6)	960.0 (81.1)	670.0 (-20.4)	790.0 (1.9)	740.0 (-19.6)	545.0 (-43.2)
Naphtha	70.6 (74.6)	83.1 (17.7)	96.8 (58.5)	95.5 (54.9)	110.6 (70.7)	96.6 (55.3)	73.1 (-24.4)	76.5 (-19.9)	72.7 (-34.2)	70.9 (-26.6)

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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Petroleum product										
Gasoline (won/liter)	1 590.5 (15.1)	1 812.4 (14.0)	1 816.2 (22.0)	1 714.6 (17.2)	1 938.5 (28.1)	1 976.5 (28.8)	1 593.7 (-12.3)	1 578.5 (-7.9)	1 592.2 (-17.9)	1 640.9 (-17.0)
Diesel (won/liter)	1 391.3 (16.9)	1 841.8 (32.4)	1 680.9 (30.5)	1 536.6 (21.6)	1 827.0 (39.2)	1 906.4 (43.0)	1 589.3 (-5.4)	1 606.4 (4.5)	1 539.7 (-15.7)	1 535.7 (-19.4)
Bunker-C (won/liter)	731.7 (27.6)	1 115.2 (52.4)	985.9 (52.8)	937.4 (51.3)	974.0 (42.0)	1 191.7 (63.2)	909.7 (-7.7)	915.6 (-2.3)	956.9 (-1.8)	882.5 (-25.9)
Propane (won/kg)	2 092.6 (13.1)	2 479.6 (18.5)	2 434.5 (23.5)	2 379.0 (21.8)	2 412.1 (18.9)	2 552.2 (25.5)	2 416.0 (-0.8)	2 405.4 (1.1)	2 409.7 (-0.1)	2 409.0 (-5.6)
Butane (won/liter)	931.8 (17.8)	1 081.7 (16.1)	1 092.2 (26.9)	1 050.7 (23.9)	1 083.0 (20.5)	1 163.2 (29.4)	997.4 (-8.7)	992.2 (-5.6)	989.4 (-8.6)	988.3 (-15.0)
City gas(won/MJ)										
Residential	14.2 (-5.7)	16.6 (16.7)	14.3 (0.8)	14.2 -	14.2 -	14.7 (3.0)	19.7 (37.4)	19.7 (38.4)	19.7 (38.4)	19.7 (34.4)
General(1)	13.9 (-6.5)	16.3 (17.3)	14.1 (1.2)	14.1 (0.6)	14.1 (0.6)	14.3 (3.1)	19.5 (37.8)	19.5 (38.6)	19.5 (38.6)	19.3 (35.5)
Commercial	17.2 (14.2)	28.7 (66.6)	25.4 (67.3)	24.9 (68.1)	24.9 (56.9)	26.5 (64.7)	31.9 (25.4)	33.8 (35.9)	32.7 (31.3)	26.6 (0.6)
Industry	14.4 (14.2)	25.9 (79.9)	22.9 (76.8)	22.6 (77.2)	22.6 (63.7)	23.3 (75.1)	29.5 (28.8)	31.7 (40.1)	30.6 (35.1)	23.6 (1.6)
Heat(won/Mcal)										
Residential	65.2 (-1.4)	74.1 (13.7)	65.7 (0.7)	65.2 -	65.2 -	67.0 (2.7)	89.9 (36.9)	89.9 (37.8)	89.9 (37.8)	89.9 (34.2)
Commercial	84.7 (-1.4)	96.3 (13.7)	85.3 (0.7)	84.7 -	84.7 -	87.0 (2.7)	116.7 (36.9)	116.7 (37.8)	116.7 (37.8)	116.7 (34.2)
Public	74.0 (-1.4)	84.1 (13.7)	74.5 (0.7)	74.0 -	74.0 -	76.0 (2.7)	101.9 (36.9)	101.9 (37.8)	101.9 (37.8)	101.9 (34.2)
Electricity(won/kWh)										
Residential	142.3 (-3.4)	147.8 (3.9)	143.5 (0.9)	142.3 -	142.3 -	147.2 (3.4)	166.0 (15.7)	166.0 (16.7)	166.0 (16.7)	166.0 (12.8)
General	79.4 (-5.9)	84.9 (7.0)	75.0 (1.7)	87.3 -	60.2 -	65.1 (8.1)	97.5 (30.0)	111.0 (27.1)	83.9 (39.4)	83.9 (28.9)
Industry	91.0 (-5.2)	98.8 (8.6)	89.7 (1.4)	103.5 -	73.5 -	78.4 (6.7)	121.4 (35.3)	136.4 (31.8)	106.4 (44.8)	106.4 (35.7)

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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Coal (Mton)	119.9 (-0.0)	114.0 (-4.9)	36.8 (-1.5)	9.2 (4.1)	8.5 (-7.0)	8.2 (-3.8)	35.2 (-4.3)	9.0 (-2.6)	8.3 (-2.9)	7.9 (-3.6)
- Coking coal excluded	94.4 (-0.8)	90.4 (-4.2)	28.9 (0.2)	7.4 (8.3)	6.6 (-4.3)	6.3 (-3.0)	27.6 (-4.8)	7.3 (-1.9)	6.3 (-5.1)	6.0 (-4.9)
Oil (Mbbl)	830.7 (7.1)	814.5 (-1.9)	278.1 (3.7)	66.4 (0.7)	69.4 (3.3)	64.3 (-4.2)	263.2 (-5.3)	63.0 (-5.1)	70.8 (2.0)	59.6 (-7.2)
LNG (Mton)	45.8 (10.4)	45.3 (-1.0)	18.2 (1.3)	4.8 (7.5)	4.6 (7.6)	3.4 (-1.4)	16.8 (-8.0)	4.5 (-7.1)	3.9 (-16.1)	3.2 (-5.7)
Hydro (TWh)	3.1 (-21.2)	3.5 (15.9)	0.8 (-3.7)	0.2 (-1.5)	0.2 (3.2)	0.2 (-12.8)	0.7 (-3.2)	0.2 (0.5)	0.2 (-12.7)	0.2 (-6.6)
Nuclear (TWh)	158.0 (-1.4)	176.1 (11.4)	57.3 (7.9)	14.0 (9.9)	13.9 (0.5)	13.4 (6.7)	58.0 (1.2)	13.6 (-2.7)	15.2 (9.6)	13.6 (1.4)
Others (Mtoe)	14.4 (13.8)	16.0 (11.0)	5.3 (7.7)	1.3 (12.2)	1.3 (3.1)	1.4 (5.5)	5.5 (3.6)	1.2 (-3.8)	1.5 (14.2)	1.4 (0.6)
TPED (Mtoe)	303.2 (5.1)	304.5 (0.4)	105.3 (3.0)	26.0 (4.5)	26.1 (2.3)	23.4 (-1.2)	101.1 (-4.0)	25.0 (-3.8)	25.7 (-1.5)	22.5 (-4.0)

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

Share of TPED by Sources

(unit: %)

	2021	2022p					2023p			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Coal	24.0	22.7	21.2	21.5	19.9	21.3	21.2	21.8	19.7	21.5
- Coking coal excluded	18.1	17.2	16.0	16.5	14.8	15.5	15.9	17.0	14.3	15.5
Oil	40.1	40.0	39.0	37.6	39.7	40.4	38.9	37.6	41.2	40.1
LNG	19.7	19.5	22.6	24.1	23.1	18.9	21.6	23.2	19.7	18.5
Hydro	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2
Nuclear	11.1	12.3	11.6	11.5	11.3	12.2	12.2	11.6	12.6	12.9
Others	4.7	5.2	5.0	4.9	5.1	5.9	5.4	4.9	6.0	6.1
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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Industry	133.0 (7.2)	130.0 (-2.2)	44.9 (3.2)	10.5 (1.4)	11.4 (0.9)	10.8 (1.0)	42.0 (-6.3)	10.2 (-3.3)	10.9 (-4.1)	9.9 (-8.1)
Transport	36.6 (5.4)	36.4 (-0.8)	11.0 (-4.6)	2.7 (-3.2)	2.7 (-7.2)	2.5 (-19.6)	11.3 (2.0)	2.6 (-4.5)	3.2 (21.4)	2.7 (5.6)
Residential	22.9 (2.6)	23.3 (1.4)	11.4 (4.3)	3.4 (10.4)	2.5 (9.7)	1.7 (3.4)	10.2 (-10.0)	3.0 (-12.3)	2.1 (-16.8)	1.5 (-11.3)
commercial	17.9 (1.7)	19.1 (6.4)	6.9 (6.7)	2.0 (12.1)	1.6 (9.4)	1.4 (5.6)	6.9 (-1.0)	1.9 (-3.8)	1.5 (-5.0)	1.4 (-1.1)
Public	5.2 (4.0)	5.3 (2.3)	1.9 (-4.0)	0.5 (-1.1)	0.5 (-5.6)	0.4 (1.2)	1.9 (-1.8)	0.5 (-4.6)	0.4 (-6.0)	0.4 (4.7)
TFC	215.7 (5.8)	214.0 (-0.8)	76.1 (2.3)	19.1 (3.1)	18.7 (1.2)	16.8 (-2.2)	72.3 (-5.1)	18.1 (-5.2)	18.2 (-2.3)	15.9 (-5.5)
Coal (Mton)	51.0 (3.6)	46.9 (-8.1)	15.6 (-6.9)	3.7 (-2.3)	3.9 (-13.9)	3.6 (-10.2)	15.2 (-2.1)	3.5 (-5.4)	4.0 (3.8)	3.7 (3.1)
Oil (Mbbl)	809.1 (7.6)	798.9 (-1.3)	271.6 (3.6)	64.5 (0.2)	67.9 (2.7)	63.3 (-3.5)	254.8 (-6.2)	60.6 (-6.1)	68.9 (1.5)	58.4 (-7.8)
- Non-energy oil excluded	350.6 (4.3)	345.8 (-1.4)	111.2 (-3.7)	28.3 (0.1)	26.3 (-6.6)	23.2 (-18.3)	110.9 (-0.3)	26.5 (-6.4)	30.3 (14.8)	24.7 (6.5)
Electricity (TWh)	520.3 (4.7)	535.3 (2.9)	182.6 (4.5)	46.5 (5.2)	44.7 (6.4)	42.7 (4.5)	181.6 (-0.5)	47.0 (1.0)	43.1 (-3.5)	41.4 (-3.1)
City gas (Bm³)	22.7 (3.3)	23.6 (3.9)	11.2 (6.9)	3.2 (12.8)	2.6 (10.5)	1.9 (8.1)	10.0 (-10.8)	2.8 (-11.7)	2.2 (-16.5)	1.6 (-14.9)
Heat:others (1 000 toe)	9.8 (6.3)	10.1 (2.6)	3.9 (0.7)	1.0 (7.3)	0.9 (0.8)	0.8 (-2.8)	3.6 (-6.7)	0.9 (-10.5)	0.8 (-10.3)	0.7 (-4.1)

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			
			M1~4	M2	M3	M4	M1~4	M2	M3	M4
Industry	61.7	60.7	58.9	55.2	60.9	64.1	58.2	56.3	59.8	62.4
Transport	17.0	17.0	14.5	14.2	14.3	14.9	15.6	14.3	17.7	16.7
Residential	10.6	10.9	14.9	17.8	13.6	10.4	14.2	16.4	11.6	9.7
Commercial	8.3	8.9	9.1	10.3	8.7	8.2	9.5	10.4	8.4	8.6
Public	2.4	2.5	2.5	2.6	2.5	2.4	2.6	2.6	2.4	2.6
TFC	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Coal	15.0	14.0	13.1	12.4	13.2	13.8	13.4	12.3	13.9	14.9
Oil	47.9	47.5	45.2	42.8	46.0	47.4	44.7	42.4	48.1	46.5
- Non-energy oil excluded	21.6	21.5	19.4	19.6	18.7	18.4	20.2	19.1	21.9	20.5
Electricity	20.7	21.5	20.6	21.0	20.6	21.8	21.6	22.3	20.3	22.4
City gas	11.8	12.3	16.0	18.2	15.2	12.4	15.3	17.8	13.1	11.6
Heat:others	4.6	4.7	5.1	5.5	5.0	4.5	5.0	5.2	4.6	4.5

Note: p means provisional
Source: Korea Energy Economics Institute

Statistics on Energy Production Facilities

	2020	2021	2022	2023			2023		
				M2	M3	M4	M2	M3	M4
Total capacity (GW)	129.2 (3.1)	134.0 (3.7)	138.0 (3.0)	133.6 (3.4)	133.7 (3.3)	133.9 (4.3)	138.9 (4.0)	139.1 (4.0)	139.1 (3.9)
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 (2.4)	36.3 (2.4)	36.3 (5.8)	37.2 (2.4)	37.2 (2.4)	37.2 (2.4)
Gas	41.2 (4.1)	41.2 (0.1)	41.2 -	41.2 (0.1)	41.2 (0.1)	41.2 (0.1)	41.2 -	41.2 -	41.2 -
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			2023		
				M2	M3	M4	M2	M3	M4
The number of household demanding city gas (mil)	20.1 (2.4)	20.5 (2.0)	20.9 (1.7)	20.6 (1.8)	20.6 (1.8)	20.6 (1.8)	21.0 (1.9)	21.0 (1.8)	20.9 (1.7)
Registered cars (mil)	24.4 (2.9)	24.9 (2.2)	25.5 (2.4)	25.0 (2.2)	25.1 (2.2)	25.1 (2.3)	25.6 (2.3)	25.6 (2.3)	25.7 (2.2)
- gasoline	11.4 (4.1)	11.8 (3.1)	12.1 (2.6)	11.8 (3.0)	11.8 (2.9)	11.9 (2.8)	12.1 (2.7)	12.2 (2.7)	12.2 (2.6)
- diesel	10.0 (0.3)	9.9 (-1.2)	9.8 (-1.2)	9.9 (-1.4)	9.9 (-1.4)	9.9 (-1.2)	9.7 (-1.4)	9.7 (-1.5)	9.7 (-1.7)
- LPG	2.0 (-1.3)	1.9 (-1.7)	1.9 (-2.1)	1.9 (-1.6)	1.9 (-1.7)	1.9 (-1.9)	1.9 (-2.4)	1.9 (-2.5)	1.9 (-2.6)
- hybrid	0.6 (33.1)	0.9 (34.0)	1.1 (28.5)	0.9 (32.8)	0.9 (32.6)	1.0 (32.5)	1.2 (28.6)	1.2 (28.9)	1.2 (28.5)

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

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