

# Ex-post Review on National and Regional Fluctuations in Demand for Energy (Electricity, City Gas, and Fuel Oil) due to Covid-19

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## 1. Introduction

How much energy demand has Japan lost due to the Covid-19-induced economic slump? Although it is difficult to measure the exact amount, this report analyzes the impact of the pandemic to the extent possible based on data. The release of electricity statistics for February 2021 by the Ministry of Economy, Trade and Industry (METI) on May 31, 2021 provided all the necessary data on the full-year actual energy demand since Covid-19 started spreading in Japan. This report looks back on the national (monthly year-on-year comparison) and regional (annual aggregate) changes in demand for electricity, city gas, and fuel oils.

Social patterns changed dramatically after March 2020 when former Prime Minister Abe requested the temporary closure of all elementary, middle, and high schools at a press conference on February 29. This report attempts to capture the changes in demand before and after Covid-19 struck through a year-on-year comparison of various energy statistics for the March 2020–February 2021 period with the previous year, taking into consideration potential factors other than Covid.

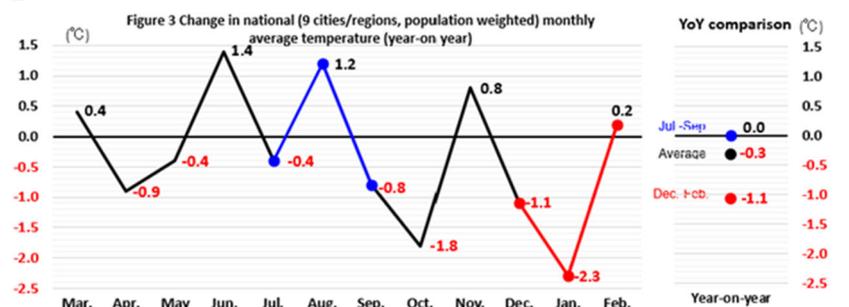
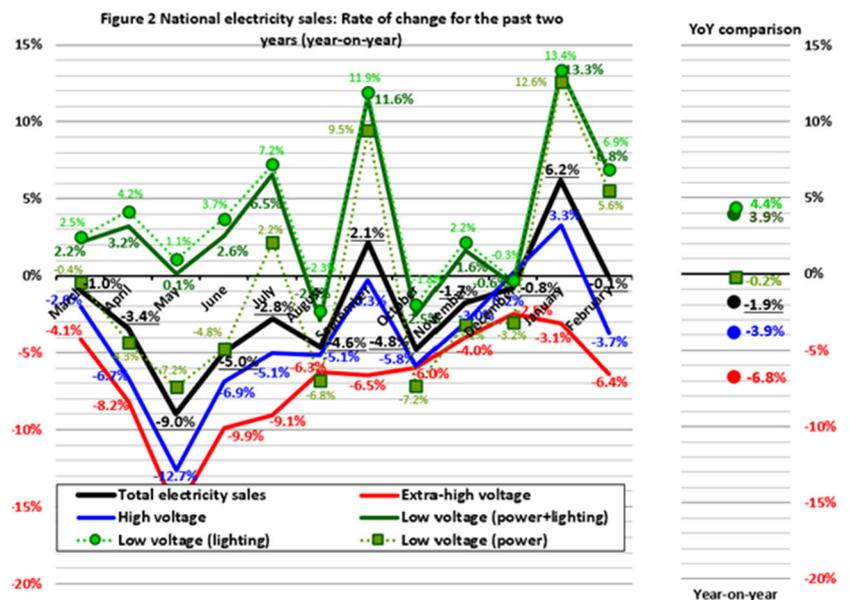
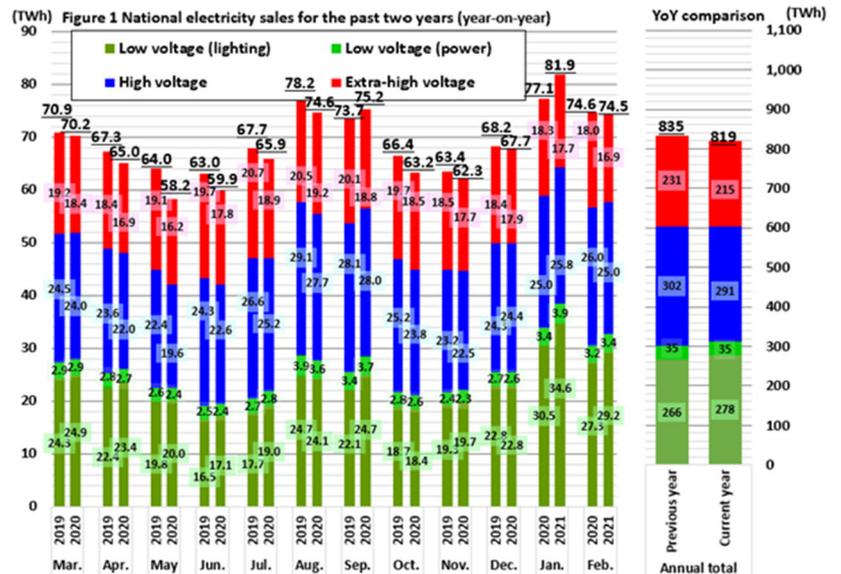
## 2. Review of national energy demand

### (1) Trends in sales of electricity

Figure 1 compares the monthly electricity sales (in TWh) for the most recent March–February period with those for the previous year based on METI’s electricity statistics. Electricity sales for the year from March through February were 819 TWh/year in total, down 1.9% year-on-year. The Figure 2 shows the rate of change (%).

The categories for electricity statistics are aligned with those of electricity contracts:

extra-high voltage (20,000 V or more and 2,000 kW or more) for large factories and railway facilities, high voltage (50 kW) for small and medium factories, corporations, and others, low voltage (three-phase electricity of up to 50 kW) used mainly by shops for large air-conditioners and motors, and low voltage lighting (single-



phase 100 V and 200 V electricity of up to 50 kW) used by homes for power plugs and lighting. Unlike for city gas, they are not divided by purpose of use.

Figures 1 and 2 clearly indicate that sales dropped more for larger contract voltages, whereas demand for low voltage lighting even increased for most months. This suggests that Covid-19 caused extreme strain on demand from corporate production activities and railway transport while generating additional demand from residential users associated with stay-at-home advisories and working from home.

Further, the greatest decline in sales of electricity (excluding lighting) from pre-Covid levels was marked in May 2020 during the first state of emergency, with extra-high and high voltages posting double-digit falls in percentage.

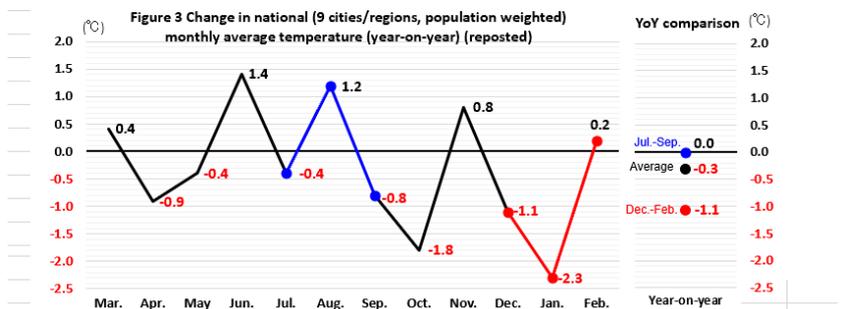
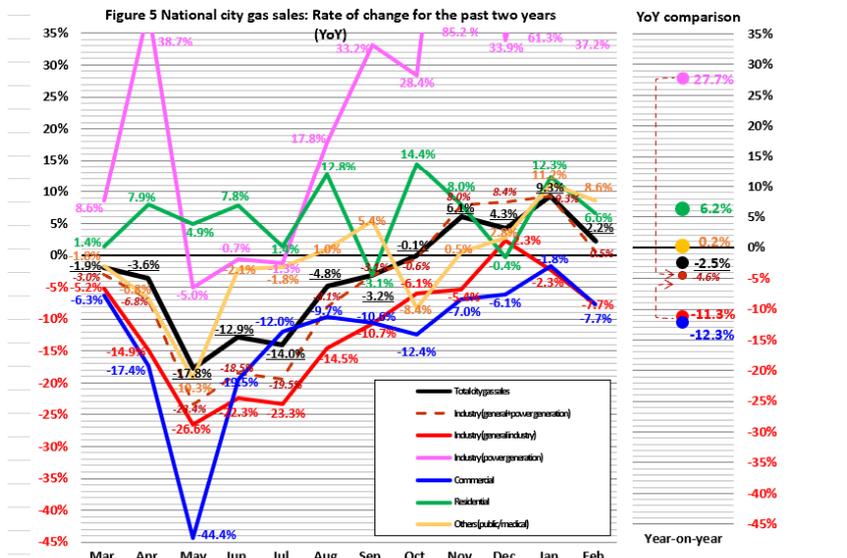
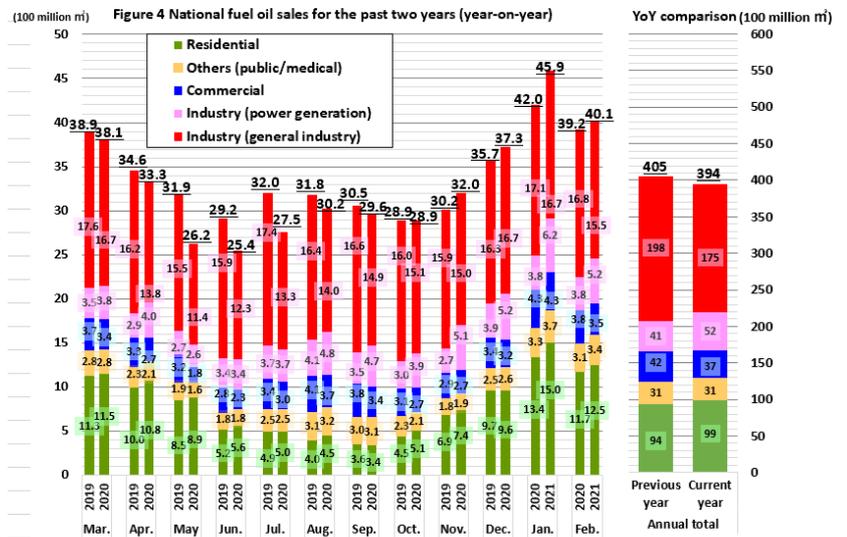
However, as mentioned earlier, not all increases or decreases in electricity sales are necessarily pandemic-related, and for energy demand in particular, the impact of higher or lower demand for air-conditioning cannot be ignored. From the increases or decreases in monthly average temperature shown in Figure 3, we can assume that while the cooling demand in summer was generally fully offset, the severe cold weather during the second state of emergency in January 2021 pushed up electricity sales, while causing the supply-demand balance to tighten. However, annual sales nevertheless dropped, even when factoring in the air temperature, indicating that Covid-19 is still continuing to hit power companies.

**(2) Trends in sales of city gas**

Figure 4 compares the monthly city gas sales (in 100 million m<sup>3</sup> [41.8605 MJ (10,000 kcal) per m<sup>3</sup>]) for the most recent March–February period with those of the previous year based on METI’s statistics on production by gas companies. City gas sales for the one-year period were 39.4 billion m<sup>3</sup>, down 2.5% year-on-year. The rate of change (%) is shown in Figure 5.

The statistical categories for city gas are divided into residential, commercial, industrial, and others (public and medical services). Industrial city gas can be divided further based on its use—power generation and general industry—by drawing on the electricity statistics under section (1). The categories are very clear-cut and directly linked with consumer characteristics, and seem to directly reflect the impact of Covid-19, such as the year-on-year decline of 44.4% for the commercial category in May this year and the increase in demand from homes.

Figures 4 and 5 indicate that city gas sales for the March–February one-year period fell



more than electricity sales (-1.9%) with -2.5%, due in part to the double-digit fall in the general industry and commercial categories, even though city gas for power generation, which accounts for around 20% of industrial city gas demand, grew sharply in absolute terms since August 2020, and despite the high demand for heating during the cold winter. Unlike the commercial category which made a V-shaped recovery in sales after May, the sales for general industry kept posting double-digit declines until September, possibly because adjustment of production goods (by manufacturers) took longer than adjustments in commercial services.

Though the sales of city gas remained above the previous year between November 2020 and February 2021, this result is largely due to gas for power generation which has little relation with Covid-19 and the additional demand due to the cold weather. Until the sales for general industry and commercial uses normalize, the impact of Covid-19 may not be completely over for city gas companies.

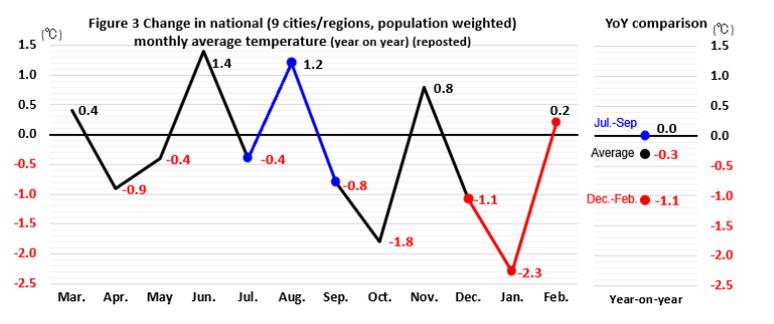
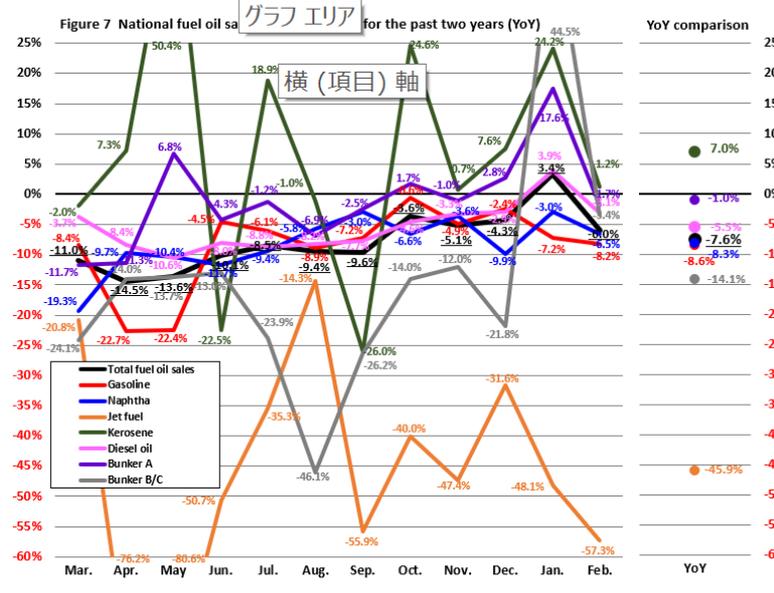
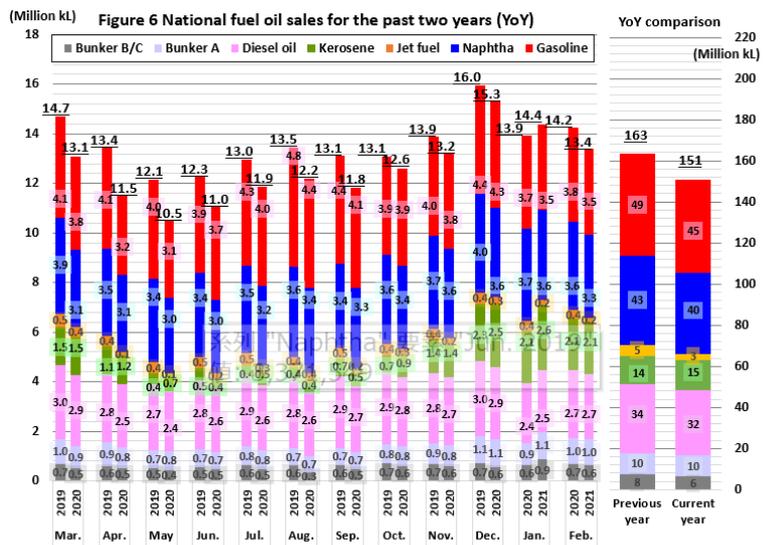
**(3) Trends in sales of fuel oil**

Figure 6 compares the monthly domestic fuel oil sales (in million kL) for the most recent March-February period with those of the previous year, based on METI's Monthly Report of Mineral Resources and Petroleum Products Statistics (petroleum). Sales of fuel oils for the one-year period were 151 million kL, down 7.6% year-on-year. The rate of change (%) is shown in Figure 7.

The statistical categories for the domestic sales of fuel oils are gasoline, naphtha, jet fuel, kerosene, diesel oil, Bunker A, and Bunker B/C.

Figures 6 and 7 indicate that gasoline, diesel oil, and jet fuel, which directly reflect the drop in transport demand due to the stay at home advisories, fell drastically year-on-year in April and May 2020 as did electricity and city gas. Gasoline, which reflects the demand for leisure, commuting, and business-use vehicles, and diesel oil, which reflects that for land transport, continued to post single-digit declines thereafter, though with increasingly smaller falls. Jet fuel, which directly reflects the reduction in flights in the aviation industry, did not recover thereafter and remained at around half the level of the previous year.

Bunker B/C, whose demand bottomed out in August 2020, also suffered a great decline of -14.1% year-on-year for the full year. As the demand for Bunker B/C for power generation, which accounts for 0.2 million kL out of the aggregate sales of around 0.5 million kL, was relatively stable at -1.6% (though not shown in Figures 6 and 7), the demand for Bunker B/C



other than for power generation, which includes much of that for shipping, fell even more at -21.3%. Covid is assumed to have pushed down the demand in the shipping industry as well, though to a lesser extent than aviation demand.

Sales of naphtha shrank significantly by 8.3% for the year, given the sluggish demand for synthetic resins as domestic production of cars declined.

Bunker A remained mostly flat for the full year (-1.0% year-on-year) as the fall in demand from production was offset by the additional demand for heating and hot water in buildings, hospitals, and schools.

Kerosene, which is considered to reflect the demand of users in their homes, was the only fuel oil to grow year-on-year at 7.0%, due in part to the high heating demand resulting from unusually cold weather during the peak winter season.

Overall, sales of fuel oils for the year between March through February showed a substantial drop of -7.6% year-on-year.

**(4) Wrap-up of national energy sales**

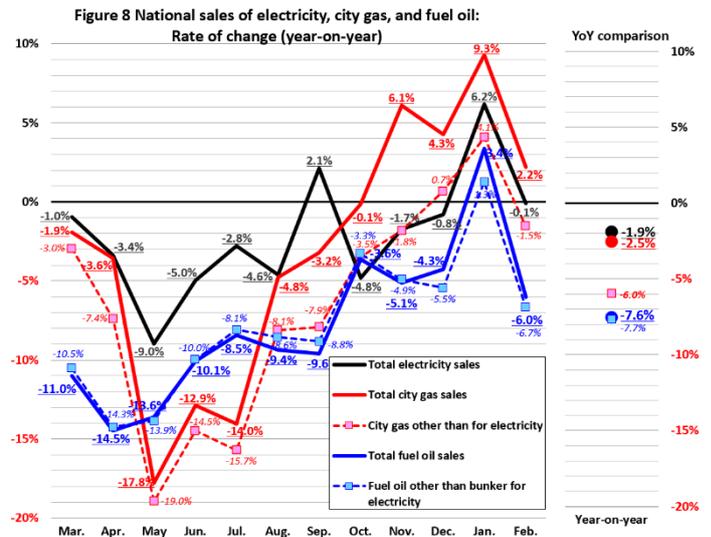
Figure 8 shows that while electricity sales were hit by Covid-19 but are now recovering, city gas declined most at one time but also recovered most, although, except for gas for power generation, only to the same extent as electricity sales, and fuel oil sales were hit harder than electricity and have yet to fully recover.

**3. Review of regional energy demand**

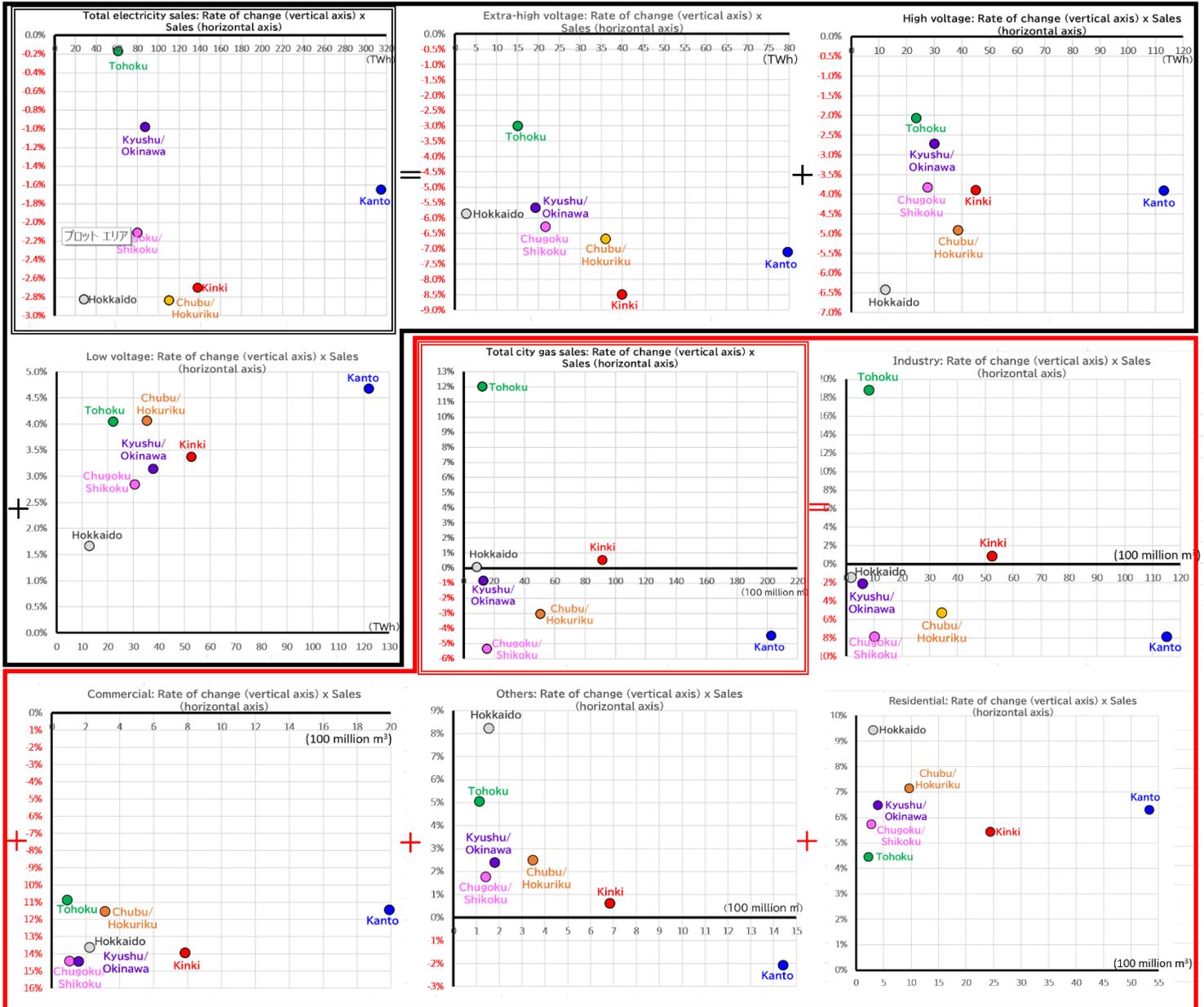
Japan’s national energy demand is the total of the sales in each of its regions spanning from Hokkaido to Okinawa, as well as the total of the sales in each category. This section analyzes the regional energy demand, examining the rate of year-on-year change (impact of Covid-19 and other factors on the increase/decrease in demand) against annual sales (contribution of the industrial, population, and energy consumption structure).

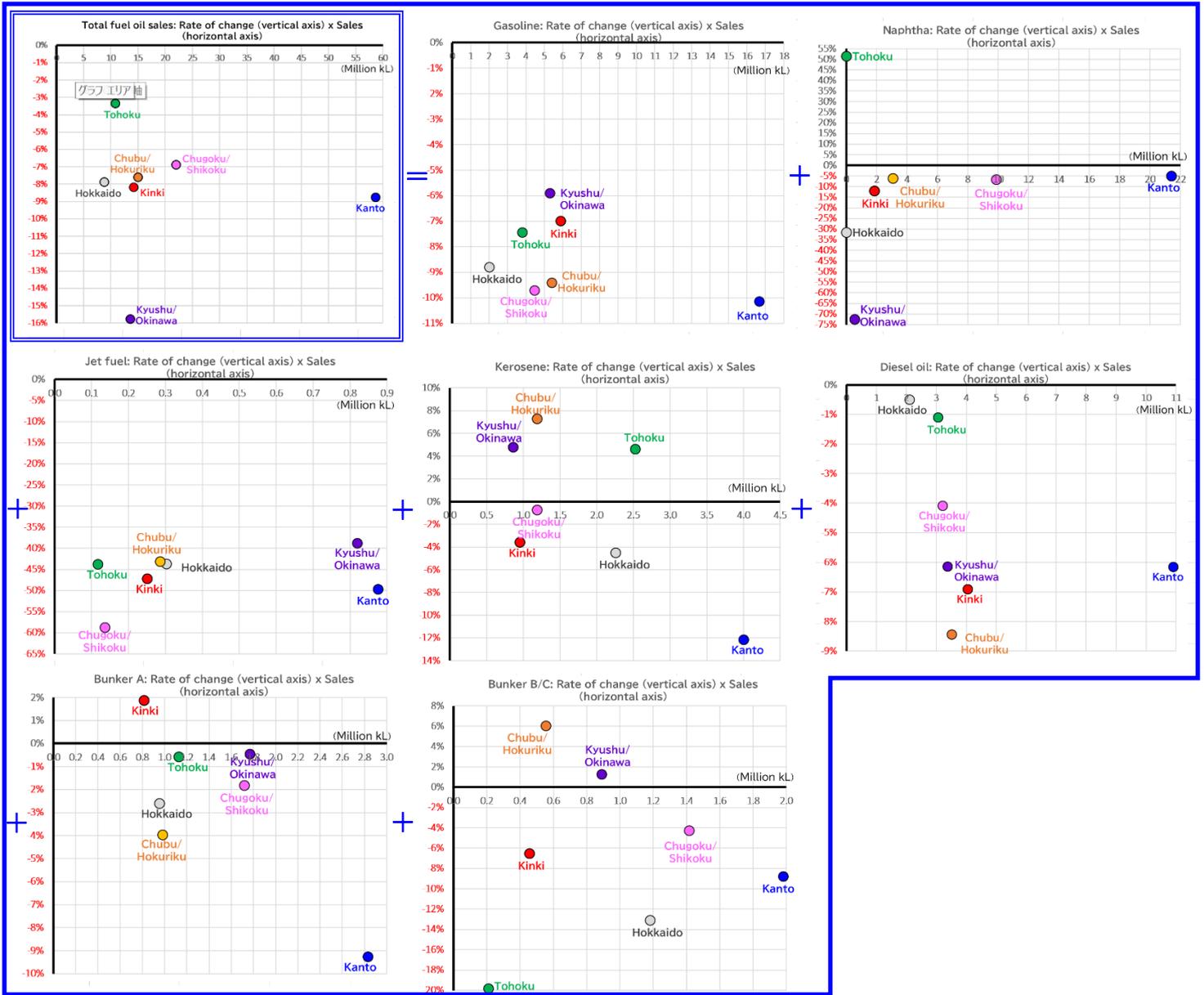
Electricity was analyzed using the prefectural electricity demand data for March 2020 through February 2021 from METI’s electricity statistics, which was used in the previous sections. The data for city gas are based on the regional appendix (the data for the nine regions under each regional Bureau of Economy, Trade and Industry, organized into seven by merging the Chugoku and Shikoku regions and the Kyushu and Okinawa regions) for March 2020 through February 2021 from METI’s statistics on production by gas companies, the same source documents as used in the previous sections. As the data for fuel oil, unlike for the previous sections, the prefectural sales statistics for FY2020 (April 2020 through March 2021) issued by the Petroleum Association of Japan were used due to the absence of regional data in METI’s Monthly Report of Mineral Resources and Petroleum Products Statistics (petroleum). This results in a one-month lag in fuel oil data compared with electricity and city gas data, but it is assumed that the results obtained from comparing the regional changes in demand using these documents would be significant nevertheless.

As shown in Figure 9, after summing up the sales in each of the seven regions (Hokkaido, Tohoku, Kanto, Chubu/Hokuriku, Kinki, Chugoku/Shikoku, and Kyushu/Okinawa), the result of each region was plotted on a chart with year-on-year rate of change on the vertical axis and annual sales on the horizontal axis. Any regional deviations for each category were studied.



**Figure 9 Regional distribution of energy demand: year-on-year increase/decrease rate (vertical axis), annual sales (horizontal axis)**





① **Kanto and Tohoku: Kanto was strongly affected by lower demand, unlike Tohoku**

On all the charts for the sales of electricity, city gas, and fuel oil, Kanto was located at the bottom right-hand corner and Tohoku at the top-left. This was also true at the category level, except for the categories of low voltage for electricity, residential for city gas, and Bunker B/C for fuel oil. In fact, sales increased in Tohoku except in the commercial category for city gas, and in the naphtha and kerosene categories for fuel oil. While the deviations in the horizontal direction (amount of sales) can be explained by the different sizes of the economies, the vertical deviations (rate of change) could be attributed to the strong impact of the Covid-induced decrease in demand on Kanto, including Tokyo, which had a long state of emergency, as opposed to Tohoku which had fewer cases throughout and hence less damage.

② **Kanto and Tohoku: Kanto was also strongly affected by increased demand, unlike Tohoku**

Kanto is at the upper right-hand corner and Tohoku is at the bottom left-hand corner for the charts for the categories of low voltage for electricity and residential for city gas. This suggests that Kanto was also strongly affected by the increase in demand for homes due to Covid-19, in contrast to Tohoku.

③ **Kinki and Chubu/Hokuriku: Decrease in demand was greater than Kanto for electricity but less for city gas and fuel oil**

While Kinki and Chubu/Hokuriku were both more heavily affected by the decrease in demand than Kanto (located lower and further to the left), Kanto had a greater decrease in demand for city gas and fuel oil sales (located lower and further to the right) than the two regions. Kinki had a less rate of change than Kanto for extra-high voltage as did Chubu/Hokuriku for high voltage (the regions were located lower and further to the left than Kanto). The horizontal gap (amount of sales) for electricity and city gas between Kanto and the two regions suggests that activities in the industrial and corporate sectors have a greater impact (composition ratio) than the residential sector.

④ **Kinki and Chubu/Hokuriku: Ahead of other regions in switching from fuel oil to city gas, except Kanto**

Kinki and Chubu/Hokuriku are located to the right of other regions except Kanto for city gas and to the left of them for fuel oil, suggesting that they are ahead of other regions in switching to city gas, except Kanto.

⑤ **Kyushu/Okinawa: Greatest decrease in demand of all regions in fuel oil**

In Kyushu/Okinawa, naphtha sales decreased by 72.6% (1,519 thousand kL) year-on-year, posting a larger decrease than Kanto. With jet fuel sales also decreasing by 520 thousand kL, the region had the largest decrease in demand in fuel oil sales than any other region (the region's decrease in demand was not as significant for electricity and city gas).

⑥ **All regions: Experienced a decrease in demand in the commercial category for city gas and jet fuel for fuel oil**

The commercial category for city gas and jet fuel for fuel oils had little regional deviation between any regions in the country, suggesting that the tourism (travel), retail, and aviation sectors are experiencing a significant decrease in demand nationwide.

(Reference) Figure 10 Regional distribution of energy demand: numerical data

METI's Regions & Regions	Electricity sales										Extra-high voltage					High voltage					Low voltage and low voltage lighting				
	2020.3-2021.2 electricity sales (GWh)		Compared to the same period of the previous year (%)		Decrease amount (GWh)		Decrease rate (ascending order)		2020.3-2021.2 electricity sales (GWh)		Compared to the same period of the previous year (%)		Decrease amount (GWh)		Decrease rate (ascending order)		2020.3-2021.2 electricity sales (GWh)		Compared to the same period of the previous year (%)		Decrease amount (GWh)		Decrease rate (ascending order)		
	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	
Hokkaido	28,458	-828	6	-2.8%	2	2,846	-177	7	-5.9%	5	12,539	-863	5	-6.4%	1	13,072	213	1	1.7%	1	28,458	-828	6	-2.8%	
Tohoku	61,210	-105	7	-0.2%	7	15,100	-469	6	-3.0%	7	23,723	-605	7	-2.1%	7	22,387	869	3	4.0%	5	61,210	-105	7	-0.2%	
Kanto	315,119	-5,299	1	-1.7%	5	79,754	-6,122	1	-7.1%	2	113,227	-4,620	1	-3.9%	3	122,137	5,443	7	4.7%	7	315,119	-5,299	1	-1.7%	
Chubu/Hokuriku	110,320	-3,222	3	-2.8%	1	36,120	-2,590	3	-6.7%	3	38,783	-2,012	2	-4.9%	2	35,417	1,380	5	4.1%	6	110,320	-3,222	3	-2.8%	
Kinki	137,876	-3,823	2	-2.7%	3	39,986	-3,712	2	-8.5%	1	45,108	-1,832	3	-3.9%	4	52,782	1,721	6	3.4%	4	137,876	-3,823	2	-2.7%	
Chugoku/Shikoku	80,326	-1,733	4	-2.1%	4	21,780	-1,465	4	-6.3%	4	27,862	-1,114	4	-3.8%	5	30,684	845	2	2.8%	2	80,326	-1,733	4	-2.1%	
Kyushu/Okinawa	87,537	-866	5	-1.0%	6	19,418	-1,169	5	-5.7%	6	30,219	-847	6	-2.7%	6	37,900	1,150	4	3.1%	3	87,537	-866	5	-1.0%	
<b>Total</b>	<b>820,846</b>	<b>-15,876</b>	<b>-</b>	<b>-1.9%</b>	<b>-</b>	<b>215,004</b>	<b>-16,706</b>	<b>-</b>	<b>-6.8%</b>	<b>-</b>	<b>291,460</b>	<b>-11,793</b>	<b>-</b>	<b>-3.9%</b>	<b>-</b>	<b>314,382</b>	<b>11,622</b>	<b>-</b>	<b>3.8%</b>	<b>-</b>	<b>820,846</b>	<b>-15,876</b>	<b>-</b>	<b>-1.9%</b>	

METI's Regions & Regions	City gas sales										Industrial					Commercial					Others (public and medical services)					Residential						
	2020.3-2021.2 city gas sales (Million m³)		Compared to the same period of the previous year (%)		Decrease amount (Million m³)		Decrease rate (ascending order)		2020.3-2021.2 city gas sales (Million m³)		Compared to the same period of the previous year (%)		Decrease amount (Million m³)		Decrease rate (ascending order)		2020.3-2021.2 city gas sales (Million m³)		Compared to the same period of the previous year (%)		Decrease amount (Million m³)		Decrease rate (ascending order)		2020.3-2021.2 city gas sales (Million m³)		Compared to the same period of the previous year (%)		Decrease amount (Million m³)		Decrease rate (ascending order)	
	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.3-2021.2	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate				
Hokkaido	872	1	5	0.1%	5	180	-3	5	-1.5%	5	224	-35	4	-13.6%	4	155	12	7	8.2%	7	312	27	4	9.4%	7	312	27	4	9.4%			
Tohoku	1,249	134	7	12.0%	7	819	130	7	18.8%	7	90	-11	7	-10.9%	7	114	5	5	5.0%	6	227	10	1	4.6%	1	227	10	1	4.6%			
Kanto	20,270	-966	1	-4.5%	2	11,506	-984	1	-7.9%	1	1,992	-288	1	-11.5%	6	1,442	-30	1	-2.1%	1	5,329	316	7	6.3%	4	5,329	316	7	6.3%			
Chubu/Hokuriku	5,057	-160	2	-3.1%	3	3,431	-192	2	-5.3%	3	313	-41	3	-11.5%	5	348	8	6	2.5%	5	964	64	5	7.2%	6	964	64	5	7.2%			
Kinki	9,140	48	6	0.5%	6	5,234	45	6	0.9%	6	784	-127	2	-13.9%	3	683	4	4	0.6%	2	2,439	126	6	5.4%	2	2,439	126	6	5.4%			
Chugoku/Shikoku	1,539	-87	3	-5.4%	1	1,016	-87	3	-7.9%	2	105	-18	6	-14.4%	2	141	2	2	1.8%	3	277	15	2	5.7%	3	277	15	2	5.7%			
Kyushu/Okinawa	1,320	-11	4	-0.8%	4	588	-13	4	-2.1%	4	158	-27	5	-14.4%	1	180	4	3	2.4%	4	394	24	3	6.5%	5	394	24	3	6.5%			
<b>Total</b>	<b>39,447</b>	<b>-1,032</b>	<b>-</b>	<b>-2.6%</b>	<b>-</b>	<b>22,776</b>	<b>-1,103</b>	<b>-</b>	<b>-4.8%</b>	<b>-</b>	<b>3,667</b>	<b>-516</b>	<b>-</b>	<b>-12.3%</b>	<b>-</b>	<b>3,063</b>	<b>6</b>	<b>-</b>	<b>0.2%</b>	<b>-</b>	<b>9,942</b>	<b>582</b>	<b>-</b>	<b>6.2%</b>	<b>-</b>	<b>9,942</b>	<b>582</b>	<b>-</b>	<b>6.2%</b>			

METI's Regions & Regions	Fuel oil sales										Gasoline					Naphtha					Jet fuel																				
	2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)		2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)		2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)		2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)										
	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate													
Hokkaido	8,865	-780	6	-7.9%	4	2,030	-196	7	-8.8%	4	23	11	6	-31.7%	2	303	-235	3	-43.7%	5	10,853	-378	7	-3.4%	7	118	3	43.8%	4												
Tohoku	10,853	-378	7	-3.4%	7	3,809	-307	6	-7.5%	5	3	1	7	51.4%	7	118	3	43.8%	4	58,694	-5,637	1	-8.8%	2	16,668	-1,884	1	-10.2%	2												
Kanto	58,694	-5,637	1	-8.8%	2	16,668	-1,884	1	-10.2%	2	1,216	-129	2	-5.0%	6	876	-865	1	-49.7%	2	15,039	-1,241	5	-7.6%	5	5,413	-563	2	-9.4%	3											
Chubu/Hokuriku	15,039	-1,241	5	-7.6%	5	5,413	-563	2	-9.4%	3	3,088	-204	5	-6.2%	5	286	-217	5	-43.1%	6	14,234	-1,268	4	-8.2%	3	5,884	-442	4	-7.0%	6											
Kinki	14,234	-1,268	4	-8.2%	3	5,884	-442	4	-7.0%	6	1,834	-248	4	-11.9%	3	251	-224	4	-47.1%	3	22,032	-1,632	3	-6.9%	6	4,473	-482	3	-9.7%	2											
Chugoku/Shikoku	22,032	-1,632	3	-6.9%	6	4,473	-482	3	-9.7%	2	9,885	-716	3	-6.8%	4	137	-194	6	-58.7%	1	13,610	-2,551	2	-16.8%	1	5,317	-334	5	-5.9%	7											
Kyushu/Okinawa	13,610	-2,551	2	-16.8%	1	5,317	-334	5	-5.9%	7	573	-1,519	1	-72.6%	1	820	-820	2	-38.8%	7	<b>Total</b>	<b>143,326</b>	<b>-13,467</b>	<b>-</b>	<b>-8.6%</b>	<b>-</b>	<b>43,594</b>	<b>-4,206</b>	<b>-</b>	<b>-8.8%</b>	<b>-</b>	<b>36,822</b>	<b>-3,826</b>	<b>-</b>	<b>-9.4%</b>	<b>-</b>	<b>2,789</b>	<b>-2,346</b>	<b>-</b>	<b>-45.7%</b>	<b>-</b>

METI's Regions & Regions	Kerosene					Diesel oil					Bunker A					Bunker B / C																									
	2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)		2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)		2020.4-2021.3 oil sales (thousand kL)		Compared to the same period of the previous year (%)		Decrease amount (thousand kL)		Decrease rate (ascending order)																		
	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate	2020.4-2021.3	Compared to the same period of the previous year (%)	Decrease amount	Decrease rate																	
Hokkaido	2,260	-106	2	-4.5%	2	2,113	-11	7	-0.6%	7	955	-25	4	-2.6%	3	1,182	-178	2	-13.1%	2	2,527	111	7	4.0%	5	3,057	-34	6	-1.1%	6											
Tohoku	2,527	111	7	4.0%	5	3,057	-34	6	-1.1%	6	1,128	-7	6	-0.6%	5	211	-52	4	-19.8%	1	4,001	-654	1	-12.2%	1	10,919	-716	1	-6.2%	3											
Kanto	4,001	-654	1	-12.2%	1	10,919	-716	1	-6.2%	3	2,834	-289	1	-9.3%	1	1,981	-191	1	-8.8%	3	1,189	81	6	7.3%	7	3,526	-325	2	-8.4%	1											
Chubu/Hokuriku	1,189	81	6	7.3%	7	3,526	-325	2	-8.4%	1	982	-11	2	-0.4%	2	556	32	7	6.0%	7	950	-35	3	-3.6%	3	4,045	-300	3	-6.9%	2											
Kinki	950	-35	3	-3.6%	3	4,045	-300	3	-6.9%	2	814	16	7	1.9%	7	455	-32	5	-6.5%	4	1,189	-9	4	-0.8%	4	3,211	-137	5	-4.1%	5											
Chugoku/Shikoku	1,189	-9	4	-0.8%	4	3,211	-137	5	-4.1%	5	1,719	-32	3	-1.8%	4	1,417	-64	3	-4.3%	5	861	39	5	4.8%	6	3,378	-221	4	-6.1%	4											
Kyushu/Okinawa	861	39	5	4.8%	6	3,378	-221	4	-6.1%	4	1,770	-6	5	-0.5%	6	891	6	1	2.6%	6	<b>Total</b>	<b>12,976</b>	<b>-473</b>	<b>-</b>	<b>-3.6%</b>	<b>-</b>	<b>30,249</b>	<b>-1,743</b>	<b>-</b>	<b>-5.4%</b>	<b>-</b>	<b>10,202</b>	<b>-387</b>	<b>-</b>	<b>-3.7%</b>	<b>-</b>	<b>6,694</b>	<b>-474</b>	<b>-</b>	<b>-6.6%</b>	<b>-</b>

[Definition of prefecture correspondence in each region]  
 Nine regions under each regional Bureau of Economy, Trade and Industry, organized into seven.  
 [Hokkaido] Hokkaido  
 [Tohoku] Aomori, Iwate, Akita, Miyagi, Yamagata, Fukushima  
 [Kanto] Tokyo, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Kanagawa, Niigata, Yamaguchi, Nagano, Shizuoka  
 [Chubu / Hokuriku] Toyama, Ishikawa, Gifu, Aichi, Mie  
 [Kinki] Osaka, Kyoto, Shiga, Nara, Wakayama, Hyogo, Fukuji  
 [Chugoku / Shikoku] Okayama, Hiroshima, Yamaguchi, Shimane, Tottori, Tokushima, Kagawa, Ehime, Kochi  
 [Kyushu / Okinawa]

#### **4. Conclusion and remarks**

In regard to energy demand, our results show that electricity and city gas sales are recovering after an enormous drop, while fuel oil sales have yet to start a full recovery. There are signs that the battle against Covid-19 is being won thanks to the vaccine rollout. Though the state of emergency remains in place, the catastrophic fall in energy demand is likely to be overcome through government policies that focus on controlling the pandemic while sustaining and expanding the economy.

This report analyzed the increase and decrease in energy sales by region, as well as the national total, and confirmed some remarkable statistical deviations. It may be possible to acquire deeper insights by analyzing at finer regional levels, such as prefectures or cities, towns, and villages. To reduce GHG emissions and to make the nation's energy supply more carbon neutral toward 2050, it is essential to build a system for numerically (in quantity and percentage) grasping and evaluating the region-conscious efforts of municipalities and energy companies. To this end, I will continue to communicate the need for such a system on various occasions.

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