

# Household energy costs reach new high of 300 000 yen

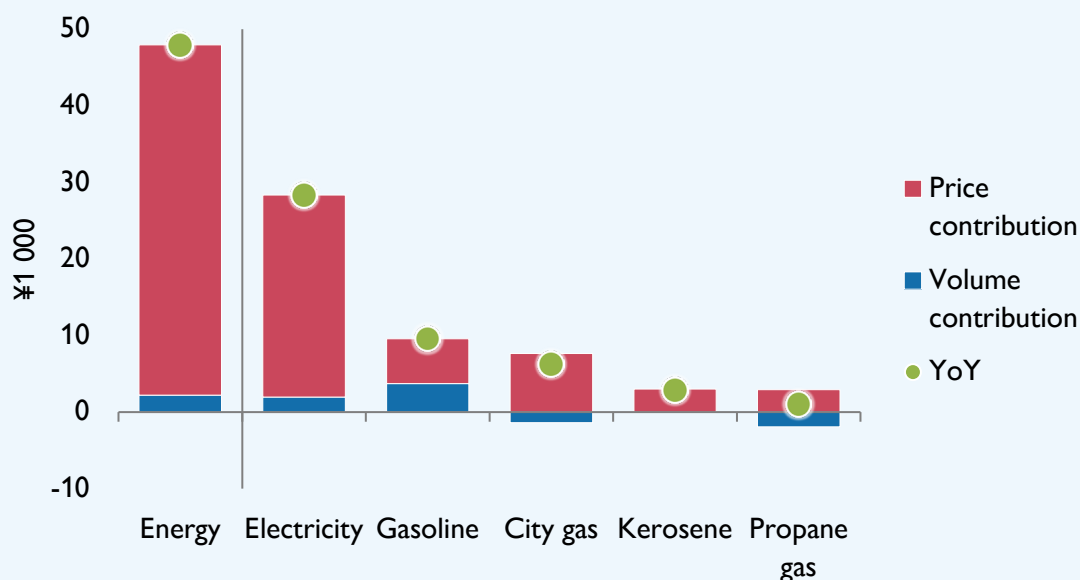
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## Summary

- Household energy costs are ballooning and are expected to reach 300 000 yen a year in 2022, a level that would match or exceed the highest ever recorded. Electricity will reach a record high, gasoline will be at its highest in eight years and city gas in seven years.
- The large year-on-year increase of ¥48 000, or 20%, is also a concern. Most of this was due to higher energy prices. In particular, the increase in electricity prices alone pushed up energy costs by ¥26 000, accounting for more than half of the increase.

Figure 1 | Decomposition of energy cost changes [2022, YoY]



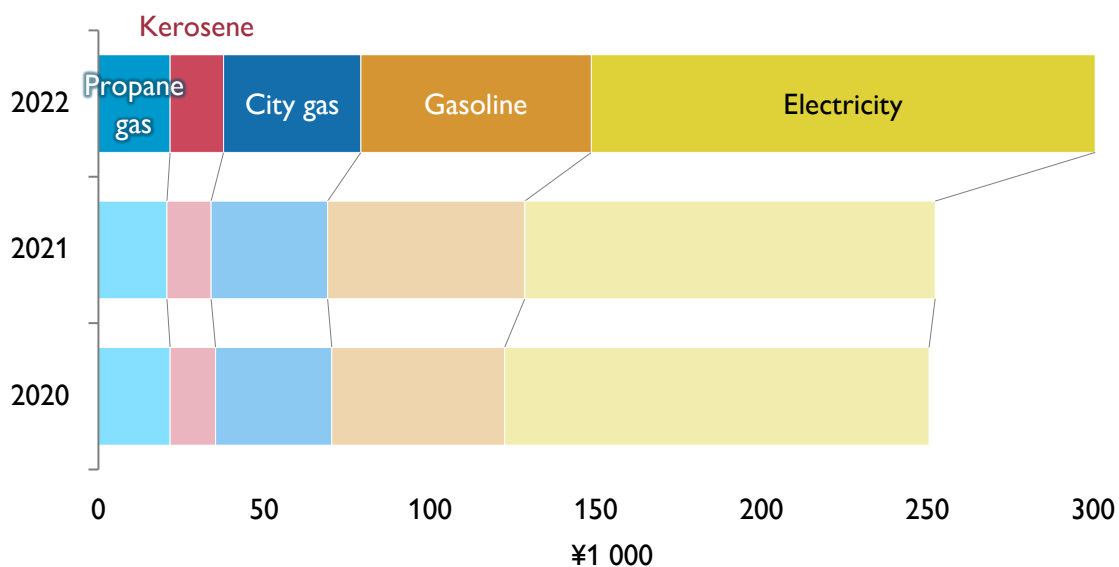
- In 2022, total consumption expenditures are also expected to increase. However, about half of the increase will come from higher spending on energy and food. Spending on necessities grew much faster than income because it was not caused by discretionary spending by households but by the rising prices of necessities.
- Domestic crude oil prices remain high, although they have softened somewhat from their all-time highs. The main cause of the high prices, however, has now shifted from international market conditions to the weaker yen. As expectations of a slowdown in the pace of U.S. interest rate hikes spread, upward pressure on the dollar has weakened. However, the depreciation of the yen has been slower to correct than other currencies. This implies that Japan will likely continue to pay more than other countries when importing energy, which is generally traded internationally in dollars.

Liquefied natural gas (LNG) import prices remain higher than before. Not only has its price risen, but it is now well above the theoretical value based on oil prices. This suggests that even if the price of crude oil, which is the key energy price, falls to its original level, the high electricity and city gas prices that are pushing up energy bills for households will not return to their previous levels.

## Household energy costs reach 300 000 yen due to price increases

Household<sup>1</sup> energy (electricity, city gas, propane gas, kerosene and gasoline) costs are ballooning (Figure 2), and are expected to reach 300 000 yen a year in 2022<sup>2</sup>, a level that would match or exceed the highest ever recorded<sup>3</sup>. Electricity will reach a record high, gasoline will be at its highest in eight years and city gas in seven years.

Figure 2 | Household energy costs



Notes: Households of two persons or more. The figures for 2022 are estimates based on actual results through October. Source: Ministry of Internal Affairs and Communications “Family Income and Expenditure Survey”

The size of the increase over the previous year was also extremely large at ¥48 000, or 20%, in 2022. When this record increase in energy costs is decomposed into (1) the impact of an increase or decrease in energy consumption (volume contribution)<sup>4</sup> and (2) the impact of energy price fluctuations (price contribution), most of the increase is attributed to higher energy prices. In particular, the increase in the price of electricity, which is used by almost all households, alone pushed up energy costs by ¥26 000, equivalent to more than half of the increase (Figure 3). Electricity surpassed 50% of energy costs for the first time in 2020, then dropped to 49.1% in 2021 due to falling prices and reduced consumption. However, the substantial increase this time will cause it to exceed 50% of energy costs again in 2022.

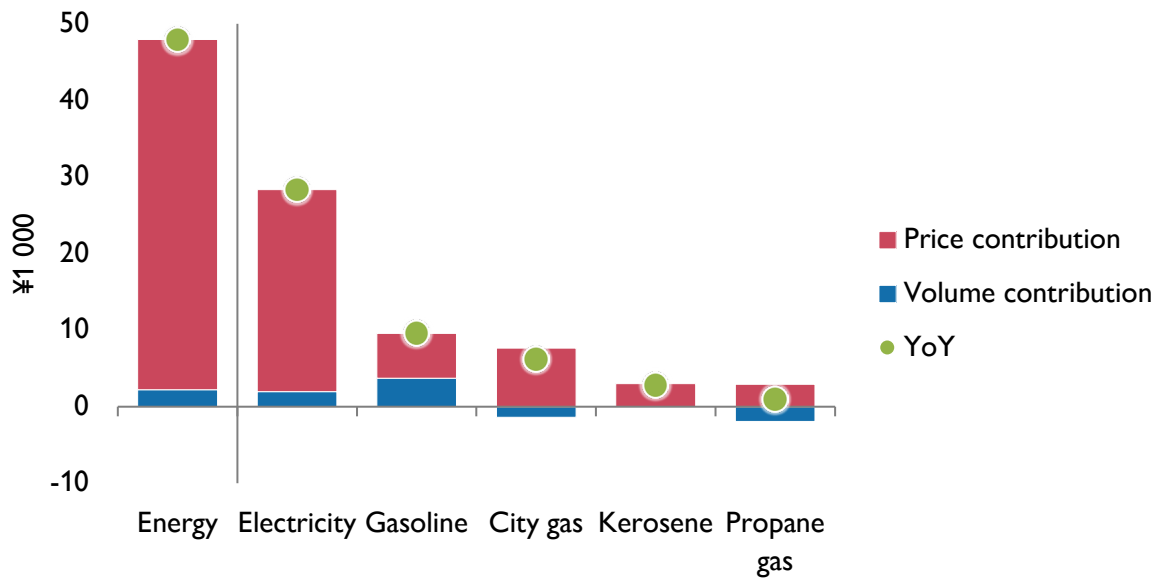
<sup>1</sup> Households of two persons or more

<sup>2</sup> It was announced that the actual results in 2022 was ¥300 107 on 7th February 2023.

<sup>3</sup> The highest to date was ¥299 362 in 2014.

<sup>4</sup> The “Family Income and Expenditure Survey” does not cover the quantity of city gas purchased. In this paper, the amount obtained by deflating city gas bills by the consumer price index for city gas was treated as the quantity of city gas.

Figure 3 | Decomposition of energy cost changes [2022, YoY]



Notes: Households of two persons or more. Estimates are based on actual results through October 2022.

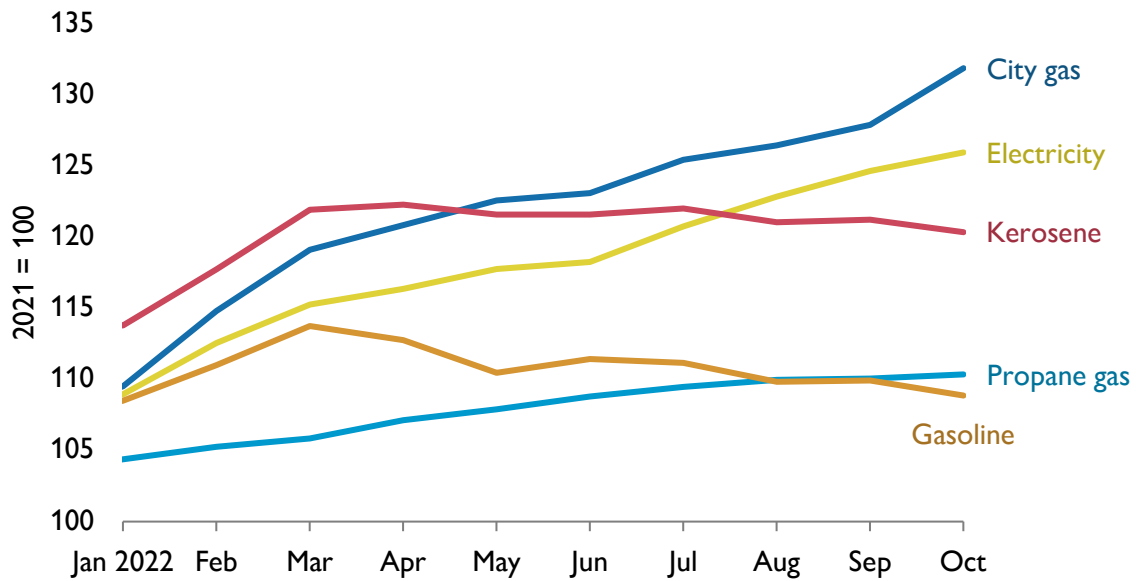
Source: Estimated based on Ministry of Internal Affairs and Communications “Family Income and Expenditure Survey” and Ministry of Internal Affairs and Communications “Consumer Price Index”

Gasoline was the first fuel to rise in price, but its contribution by higher prices was relatively small because the retail price increases have been eased by the subsidy program to curb extreme increases in fuel oil prices launched in January 2022. Gasoline consumption, on the other hand, increased for the first time since the start of the pandemic mainly due to a rebound effect following the slump in travel through the previous summer, pushing up energy costs. Its contribution is the largest among the volume contributions of various energies.

The price of city gas has increased faster than that of electricity since 2021 (Figure 4). However, unlike electricity, city gas is not used by households that use propane gas and all-electric houses, and households that do use city gas do not use it for power, lighting or cooling, so its average consumption<sup>5</sup> is usually less than that of electricity. Its price per calorific value is also lower than that of electricity, so a typical city gas bill is only about a quarter of the electricity bill. As such, the increase in city gas price will push up energy costs by just under ¥8 000. Still, this contribution accounts for about one-sixth of the total, the second largest after electricity price increases.

<sup>5</sup> Calorific value

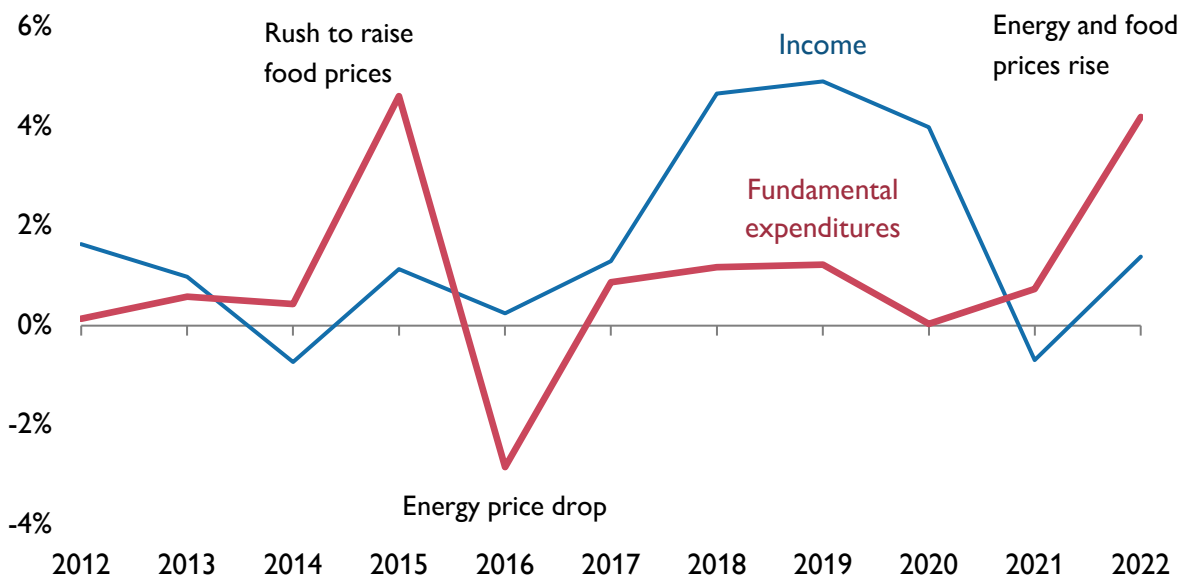
Figure 4 | Consumer price index



Source: Calculated from the Ministry of Internal Affairs and Communications “Consumer Price Index”

In 2022, income and total consumption expenditures are also expected to exceed those of the previous year. However, about half of the increase in total consumption expenditures will come from increased spending on energy and food, which are generally regarded as daily necessities. Even if income declines, energy and food must still be bought for daily life. On the other hand, even when income increases, few people are driven to spend more on these necessities than the increase in their income. In other words, a large increase in fundamental expenditures, mainly on necessities, that exceeds income growth is not the result of discretionary spending by households but reflects the rising prices of necessities. This phenomenon just symbolises the year 2022 (Figure 5).

Figure 5 | Changes in fundamental expenditures and income



Notes: Households with two workers or more. January through October for 2022

Source: Ministry of Internal Affairs and Communications “Family Income and Expenditure Survey”

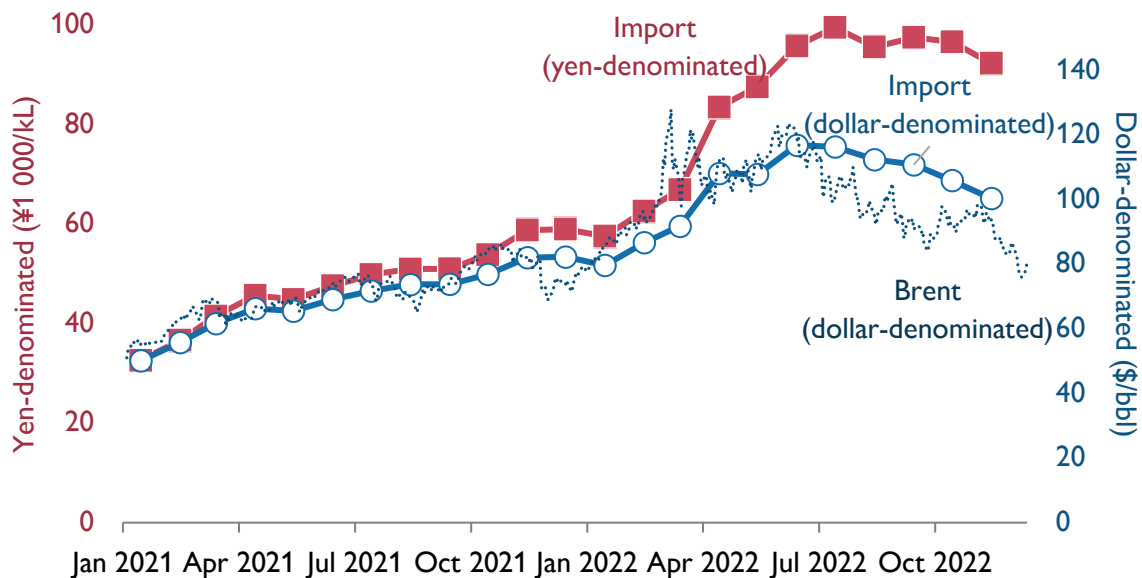
Companies that were struggling during the pandemic are experiencing some signs of recovery. Individuals are also enjoying the benefit of the easing of restrictions on travel: spending on culture and entertainment has recovered about 40% of the decline that occurred in 2020 and 2021. Nevertheless, there is little sense of improvement in living conditions, which may be partly due to the higher prices of necessities.

## Changes in factors behind energy price increases and concerns

### Foreign exchange rates

Domestic crude oil prices remain high, although they have softened somewhat from their all-time highs (Figure 6). Meanwhile, the price of Brent crude oil, one of the international marker oils, has been declining sharply since June 2022. In mid-December 2022, it was temporarily in the mid-\$70/bbl range, down by a third from its recent peak. The main cause of high oil prices in Japan has shifted from international market conditions to the weak yen.

Figure 6 | Crude oil prices



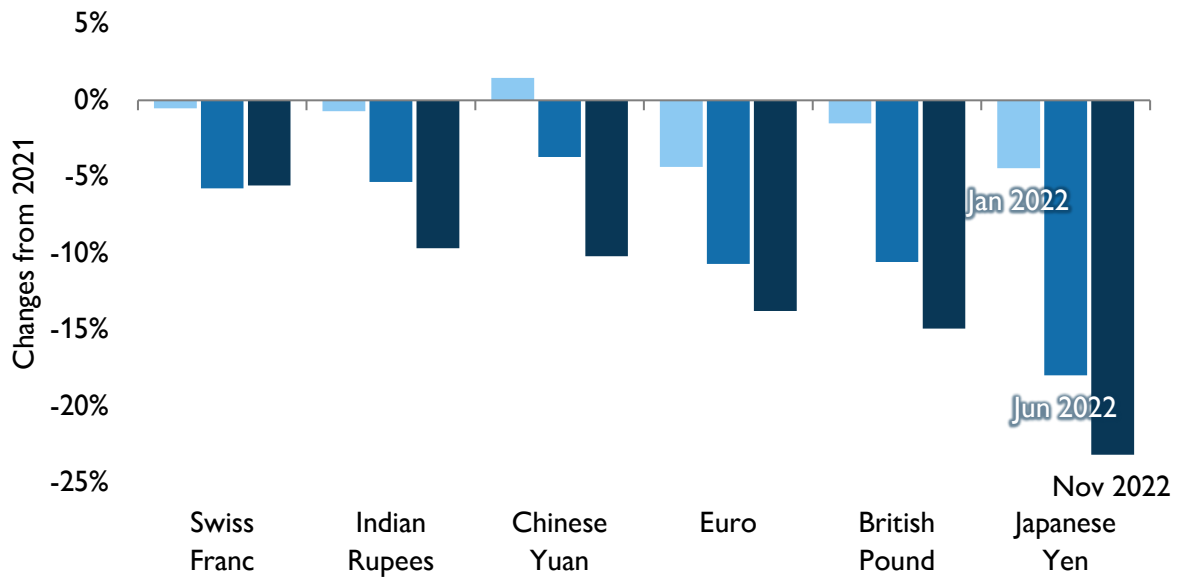
Note: November 2022 import prices are preliminary figures for crude oil and raw oil.

Sources: The Institute of Energy Economics, Japan “EDMC Energy Trend”, Intercontinental Exchange

The dollar appreciated significantly and rapidly as the United States took bold monetary tightening measures to counter inflation. However, the pressure of the strong dollar eased as expectations of a slowdown in the pace of U.S. interest rate hikes spread, and the dollar weakened after October 2022. For many oil-importing countries that have been hit by the high international oil prices as well as their weaker currency, this reversal in trend has brought welcome relief.

Japan is no exception, but it cannot celebrate freely because the yen has rebounded by less compared to other major currencies. Currently, the yen has appreciated by about ¥15/\$ from its recent bottom, but it is still considerably weaker than in 2021. Moreover, it remains far less valuable than other major currencies (Figure 7).

Figure 7 | Value of selected currencies against the dollar



Source: Calculated based on International Monetary Fund “International Financial Statistics”

Based on the concept of relative purchasing power parity, Japan’s relatively small increase in prices is expected to lead to a stronger yen in the medium term. However, the depreciation of the yen has been slower to correct than other currencies. This is attributed to the interest rate differential between Japan, which has low interest rates despite a de facto partial revision of its massive monetary easing program in December 2022, and the United States, which is tackling inflation, as well as Japan’s trade deficit, which is expected to reach a record high due to the surge in energy import payments and the J-curve effect<sup>6</sup>. This means that Japan may continue to pay more than other countries when importing energy, which is generally traded internationally in dollars.

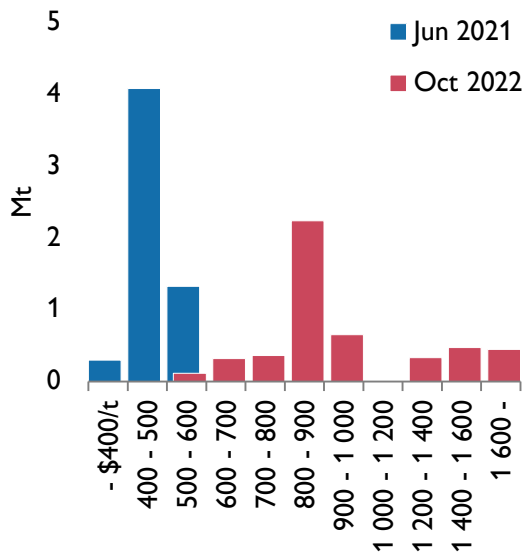
### LNG import price

Natural gas prices in Europe rose in 2021, mainly due to increased demand caused by a shortage of wind power generation, and then skyrocketed with Russia’s invasion of Ukraine. On the other hand, Japan’s dollar-denominated import prices for liquefied natural gas (LNG) have not been as abnormally high as European natural gas prices. One reason is that most of Japan’s LNG imports are based on long-term contract prices which are linked to Japan’s crude oil import prices. Under the oil price-indexed system, LNG prices do not fluctuate as radically as crude oil prices. Therefore, even if oil prices rise above a certain price range, LNG prices will rise by less in comparison. As a result, this leads to a tendency for Japanese LNG prices to be relatively low during periods of high oil prices or tight natural gas supply and demand.

However, Japanese LNG prices have begun to rise by more since the fall of 2021 than they used to. This is presumably due mainly to the effect of spot transactions, whose prices soared reflecting the tight supply and demand (Figure 8). As a result, the price has not only gone up but is now well above the theoretical value based on the oil price, and is becoming visibly overpriced relative to oil prices (Figure 9).

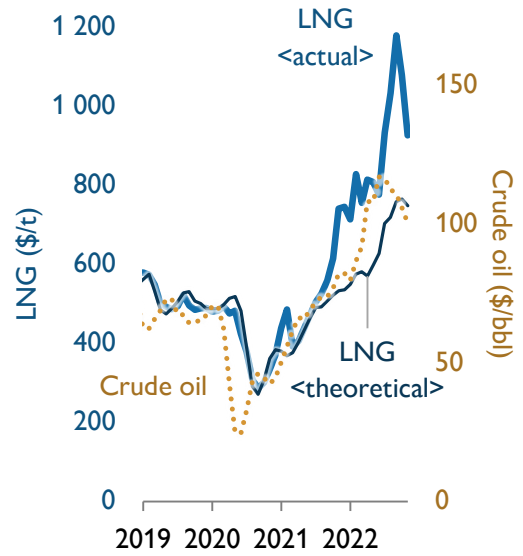
<sup>6</sup> Depreciation of the home currency usually improves the trade balance through an increase in exports and decrease in imports. However, trade and production structures take time to adjust. Therefore, in the short term, the ballooning effect of import value through the rise in import prices in the local currency will outweigh the increase in exports, and the trade balance may in fact worsen.

Figure 8 | Distribution of LNG imports by import price



Note: Calculated from data by import partner country and by customs  
Source: Ministry of Finance "Trade Statistics"

Figure 9 | Actual LNG import prices and theoretical values based on crude oil import prices



Note: Theoretical values are estimated based on the relationship between LNG import prices and crude oil import prices in 2018-2020.

In Japan, LNG is the main fuel for power generation and accounts for 95% of city gas feedstock. If the high price of LNG is not resolved, even if the crude oil price, which is the key energy price, subsides to its original level, the high electricity and city gas prices, which are pushing up energy costs for households, will not return to their previous levels.

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