A Special Flash Report

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Global Oil, Natural Gas and LNG Demand Outlook through 2022
– Uncertain Recovery from COVID-19 and Its Impacts –

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Introduction

As the COVID-19 outbreak originating from China developed into a global pandemic in 2020, the global economy plunged into the worst situation since the Great Depression. As major countries and cities imposed lockdowns and other severe travel restrictions to dramatically reduce international air transport demand, oil and other energy demand in the world recorded unprecedented declines. In such situation, we published five outlooks through 2021 concerning global energy demand including oil, natural gas and LNG under the pandemic on the website of the Institute of Energy Economics, Japan, from March 2020[3].

The pandemic is still spreading in the world instead of calming down. Since around last November when vaccination started in Europe, the United States and Israel, however, vaccination has been globally expanding. Although no optimism can be warranted because of problems regarding the beneficial and adverse effects of vaccination and the spread of mutant COVID-19 strains, hopes are emerging on an end to the COVID-19 pandemic. As each country has implemented powerful fiscal and monetary policies since the second quarter of 2020 to recover from the worst economic situation, the global economy has been moderately recovering since the second half of the year. The latest World Economic Outlook of the International Monetary Fund (published in January 2021) forecast that the global economy would grow 5.5% in 2021 in reaction to its unprecedented contraction of 3.5% in 2020. As noted above, however, how the global economy would recover from the pandemic remains uncertain along with an economic growth pace.

The COVID-19 disaster and global economic deterioration have greatly affected global energy demand. Particularly, oil demand received a devastating impact from lockdowns and a plunge in international air transport demand. Demand for natural gas and LNG, the second largest international traded energy commodity after oil, also turned down after continuing a sharp rise. In the future as well, demand for oil, natural gas and LNG as extremely important international energy trade

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[3] For instance, see Ken Koyama & Shigeru Suehiro "Analysis of the Impacts of COVID-19 on the Global Demand for Oil, Natural Gas and LNG" (03/27/2020), Shigeru Suehiro & Ken Koyama "An Estimate on the Impact of a 'City Lockdown' on the Global Energy Demand" (04/14/2020), Ken Koyama & Shigeru Suehiro "Covid-19 and the Outlook for Oil, Natural Gas, and LNG Demand in 2021" (05/08/2020), etc.

goods will dramatically change depending on COVID-19 pandemic and global economic developments.

In the abovementioned context, we analyzed global oil, natural gas and LNG demand on the assumption of global economic growth through 2022 while referring to the latest IMF World Economic Outlook. As COVID-19 and global economic outlooks are accompanied by great uncertainties, we developed and analyzed not only the Reference Scenario but also the high-growth scenario and the low-growth scenario.

1. Global economic outlook through 2022 (Reference Scenario)

The Reference Scenario for this analysis is as follows, based on the IMF's World Economic Outlook Update released in January 2021 and the IEEJ's analysis and assessment (Figures 1 and 2):

- In 2020, the global economy is estimated to have posted a 3.5% contraction, the largest shrinkage since the Great Depression and surpassing the drop during the global financial crisis.
- However, the global economy has been rebounding from the bottom in the second quarter of 2020 thanks to each country's successful economic measures (including sharp fiscal expansion and monetary easing).
- While COVID-19 vaccination is making progress mainly in Advanced Economies, the pandemic has not ended. Global economic recovery in 2021 will be moderate. In the second quarter of 2021, global GDP will restore the fourth quarter 2019 level before the COVID-19 pandemic.
- Global GDP in 2021 will grow by 5.5% in reaction to the sharp contraction in 2020.
- In 2022, COVID-19 vaccines will become available in many countries, with infections limited to a low level. As economic recovery gains momentum, global GDP will grow by 4.2%.

Figure 1 Global economic growth outlook

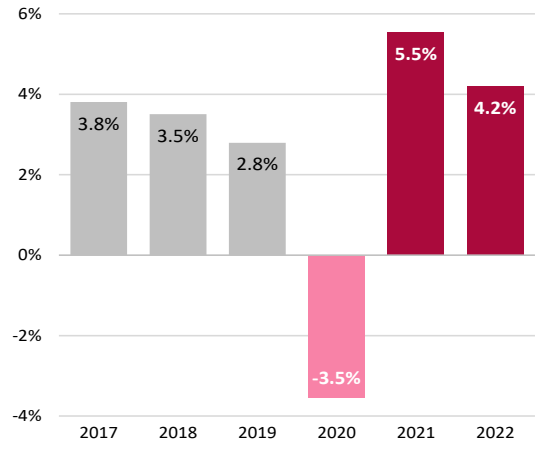
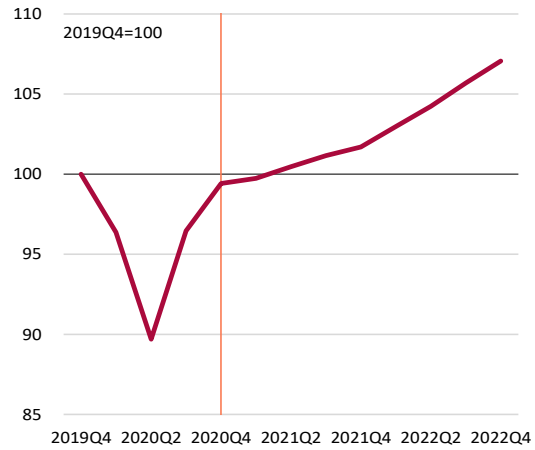


Figure2 Global GDP trend (quarterly)



Sources) IMF "World Economic Outlook Update, January 2021," IEEJ estimates

2. Global oil demand outlook through 2022 (Reference Scenario)

We developed the Reference Scenario for global oil demand based on the abovementioned economic growth outlook, while referring to past data in the Monthly Oil Market Report by the International Energy Agency. Figures 3 to 6 show an annual oil demand outlook, a quarterly oil demand outlook, year-on-year changes in regional oil demand and year-on-year changes in petroleum product demand. Key points of the oil demand outlook are as follows:

Figure 3 Global oil demand outlook

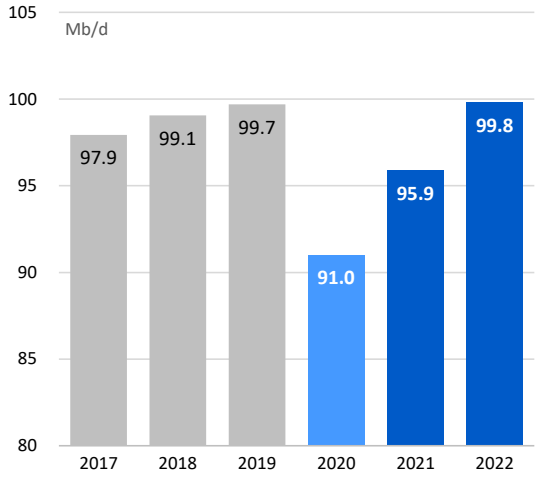
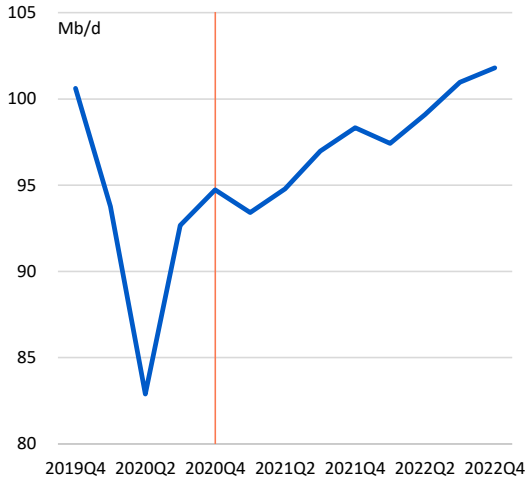


Figure 4 Global oil demand trend (quarterly)



Sources) IEA "Oil Market Report," IEEJ estimates

Figure 5 Year-on-year changes in oil demand (by region)

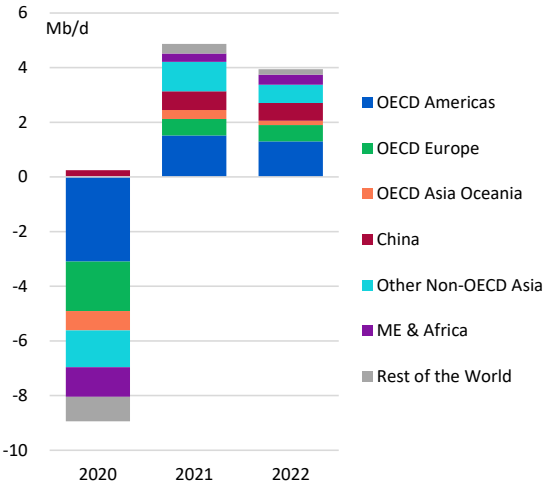
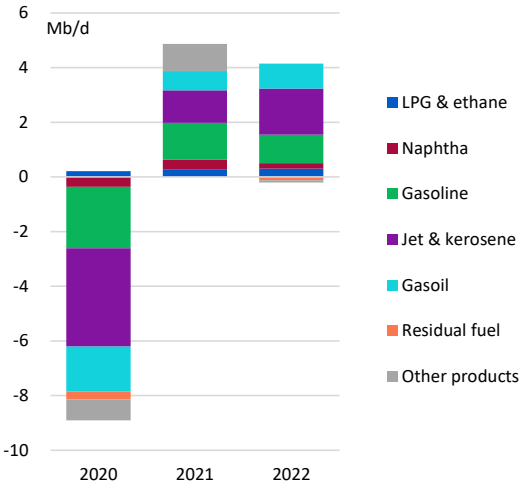


Figure 6 Year-on-year changes in oil demand (by product)



Sources) IEA "Oil Market Report," IEEJ estimates

- Global oil demand in 2020 is estimated to have decreased by 8.7 million barrels per day from the previous year to 91.0 Mb/d (Figure 3). Global oil demand plunged to 82.9 Mb/d in the second quarter of 2020 before rebounding (Figure 4) [4].
- Advanced Economies accounted for some two-thirds of the global oil demand plunge (Figure 5). China slightly increased its oil demand in 2020 from the previous year by containing COVID-19 infections and achieving an early economic recovery.
- Transportation fuels including gasoline, gasoil and jet fuel accounted for more than 80% of the sharp oil demand decline due to a plunge in vehicle and air transportation demand amid lockdowns and other travel restrictions (Figure 6).
- Global oil demand in 2021 will fail to restore the pre-pandemic level, with recovery being moderate. It will increase by 4.9 Mb/d from the previous year to 95.9 Mb/d (Figure 3) [5].
- Although vaccination is making progress, voluntary travel restrictions are slowing down a pickup in demand for transportation fuels. Particularly, jet fuel demand will remain slack due to international travel restrictions.
- Global oil demand will restore the pre-pandemic level in 2022, averaging 99.8 Mb/d. In the second half of 2022, global oil demand will top 100 Mb/d. Demand for all petroleum products will increase in all regions, though with growth paces varying.

3. Impacts on oil market

The substantial oil demand decline in the worst time in 2020 was a dramatic event described as "demand evaporation," triggering a crude oil price crash. The price crash prompted the Organization of the Petroleum Exporting Countries and non-OPEC oil-producing countries to launch and continue record production cuts. In this sense, a future oil demand recovery will become one of the major factors to exert great influence on the supply-demand balance and prices in the international oil market.

In the Reference Scenario for this analysis, global oil demand will steadily recover in 2021 and 2022 in line with the global economic growth and restore the 2019 level in 2022. The OPEC Plus group will have to maintain production cuts at least in 2021 while considering (1) non-OPEC oil production trends including a U.S. shale oil production increase, (2) the U.S. Biden administration's negotiations with Iran and the country's potential comeback to the international oil market and (3) potential geopolitical risks and oil supply disruptions in major oil-producing countries.

As the global oil demand rebound is expected to lead to a moderate rise in the call on OPEC Plus (global oil demand minus production by non-OPEC oil-producing countries that do not take part

[4] Our analysis in April 2020 had forecast the bottom in the second quarter of 2020 at 83.3 Mb/d and demand in the whole of 2020 at 90.7 Mb/d.
[5] The March 2021 IEA Oil Market Report forecast global oil demand in 2021 at 96.5 Mb/d.

in the OPEC Plus production cuts), the OPEC Plus group will moderately reduce the production cuts in 2021 while watching the crude oil price trend. Major factors to determine the degree of the reduction will include the global oil demand recovery, crude oil prices and global oil stock trends. Crude oil prices have entered an uptrend since last November, but their future trend is still uncertain. The OPEC Plus group will have to continue the micro-management of oil production cuts based on the supply-demand balance in the international oil market at least until global oil demand rises back to the pre-pandemic level.

4. Global natural gas and LNG demand outlook through 2022 (Reference Scenario)

As was the case with oil demand, we developed the Reference Scenario for global natural gas and LNG demand based on the abovementioned economic growth outlook, while referring to past data made available. We also considered seasonal fluctuations in forecasting quarterly demand. Key points of the Reference Scenario for natural gas and LNG demand are as follows:

Figure 7 Global natural gas demand outlook

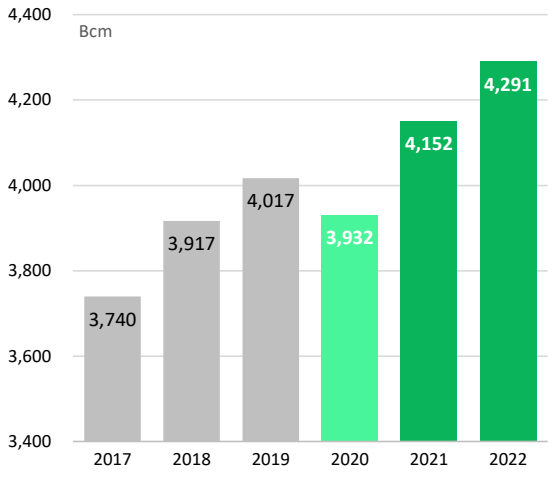
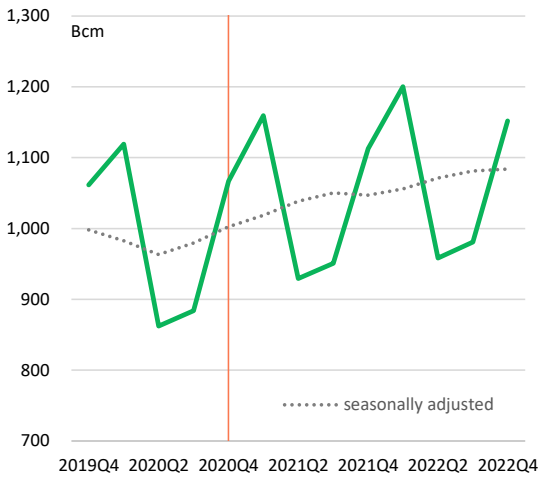


Figure 8 Global natural gas demand trend (quarterly)



Source) IEEJ estimates

- Global natural gas demand in 2020 is estimated to have decreased by 2.1% from the previous year to 3.9 trillion cubic meters (Figure 7) [6]. It has been rising back from the bottom hit in the summer of 2020. Its annual decline was smaller than that of oil demand[7].

[6] The IEA Gas Market Report released in January 2021 estimated that global natural demand in 2020 might have decreased by 2.5% from the previous year.

[7] Our analysis in April 2020 had forecast that global natural gas demand in 2020 would post a substantial fall of 7.2% from the previous year. Demand for gas for power generation might have been stronger than expected, resulting in a slower-than-forecast fall in global gas demand.

- Natural gas demand plunged in North America and Europe including Russia while increasing in China and the Middle East (Figure 11). Particularly, China is estimated to have expanded natural gas demand in 2020 by 8.0% by achieving an early economic recovery.
- Global natural gas demand will post a sharp recovery in 2021, restoring a pre-pandemic uptrend. Supported by a substantial increase in Advanced Economies, global natural gas demand in 2021 will rise by 5.6% from the previous year to 4.2 Tcm. Natural gas demand for heating and other industrial consumption will steeply expand in reaction to the decline in the previous year.
- Global natural gas demand will continue a steady uptrend in 2022, increasing by 3.3% from the previous year to 4.3 Tcm. Despite the plunge in 2020 under the pandemic, natural gas demand will clearly come back to a traditional growth path in 2021.

Figure 9 Global LNG demand outlook

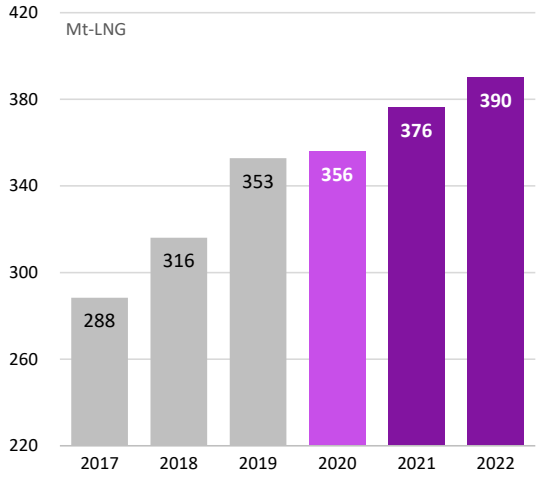
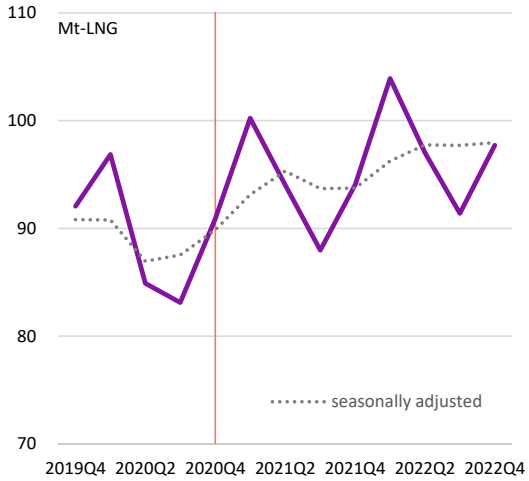


Figure 10 Global LNG demand trend (quarterly)



Sources) Cediga, IEEJ estimates

- Global LNG demand in 2020 is estimated to have posted a slight increase of 0.8% from the previous year to 356 million tons (Figure 9) [8].
- LNG demand declined in Advanced Economies and expanded in Developing Economies, indicating the same gap as for natural gas demand (Figure 12). Asian Developing Economies including China recorded a remarkably robust increase.
- Global LNG demand in 2021 will sharply pick up, restoring a pre-pandemic uptrend. It will increase in all regions. While Advanced Economies boost LNG demand after a plunge in the previous year, Asian Developing Economies will drive global LNG demand growth. Global LNG demand will rise by 5.8% to 376 Mt.

[8] Our analysis in April 2020 had forecast that global LNG demand in 2020 would decrease by 8% from the previous year to 325 Mt. See the analysis in page 12 on a gap between this forecast and our latest estimate at 356 Mt.

- Global LNG demand will retain an uptrend in 2022. LNG demand will expand in all regions. Asian countries including China will continue to drive global LNG demand growth in the year. Global LNG demand in 2022 will increase by 3.7% to 390 Mt. After stagnating in 2020, global LNG demand will return to a pre-pandemic growth path from 2021 and on.

Figure 11 Annual natural gas demand changes

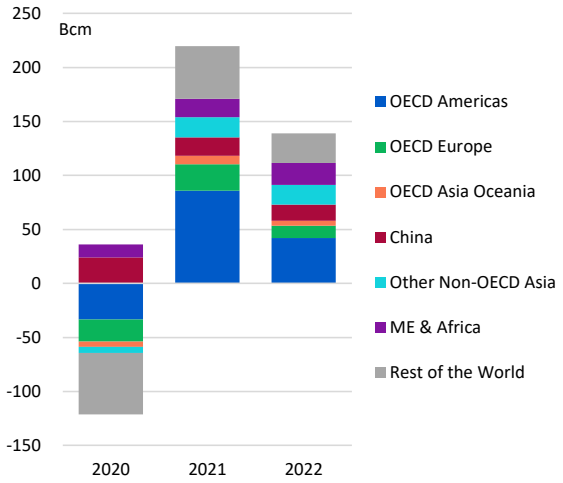
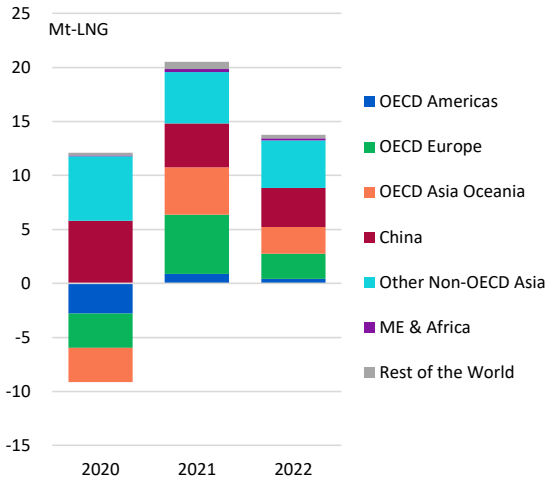


Figure 12 Annual LNG demand changes



Sources) Cedigaz, IEEJ estimates

5. Impacts on global natural gas and LNG markets

<Wild fluctuations of spot LNG prices>

The COVID-19 pandemic exerted strong downside pressure on global natural gas and LNG demand as well as oil demand, having great impacts on the supply-demand balance and prices in international markets in 2020. In the most typical development, spot LNG prices slackened. Asian spot LNG prices plunged to record lows around $2 per million British thermal units around the middle of 2020. As the price plunge stimulated demand, Asian spot LNG prices turned up in the second half of 2020. They rose further toward the turn of the year due to disruptions to some LNG supply projects, constraints on LNG tankers for the expanding Asian market and restrictions on LNG tanker traffic through the Panama Canal. In early 2021, a sharp rise in LNG demand amid cold waves in Japan and Northeast Asia unusually pushed spot LNG prices up to more than $30/MMBtu (more than $200 per barrel of oil equivalent). As the cold waves ended, spot LNG prices calmed down. The wild spot price fluctuations from 2020 indicated the characteristics and problems of a developing LNG market that lacks thickness and depth and is vulnerable to wild price fluctuations on supply and demand changes.

Meanwhile, Asian LNG prices are mostly indexed to crude oil prices under long-term contracts accounting for most of Asian LNG supply, failing to fluctuate on changes in the LNG supply-demand balance. As LNG prices under long-term supply contracts are indexed to Japanese crude oil

import prices three to four months ago, crude oil price hikes since around last November began to be reflected in LNG prices around March. Asian LNG prices will thus fluctuate depending on crude oil price changes. In this sense, we must closely watch crude oil prices regarding the Asian LNG price trend.

<Demand trend gap between natural gas and LNG>

As noted above, the COVID-19 pandemic exerted downside pressure on global natural gas and LNG demand in 2020, putting an end to the robust growth that had continued until 2019. However, there was a gap between natural gas and LNG demand trends. Natural gas demand in 2020 posted a 2.1% decline from the previous year, while LNG demand scored a slight increase of 0.8%.

A factor behind the global LNG demand rise even amid the economic slump under the COVID-19 pandemic might have been the characteristics of LNG as a good. Any LNG project requires far greater initial investment than a natural gas project, leading to continuous supply after a production launch. Although LNG supply can be adjusted to some extent in response to price drops affecting profitability or needs for flexibility regarding operation and contracts, the LNG market is basically driven by continuous supply. How to absorb (take delivery of) LNG supply in the market is important for the supply-demand balance.

In a key development seen in 2020, LNG supply became available on the market due to production launches under some projects, even amid a decline in potential LNG demand under the COVID-19 pandemic, and went to Europe as a last resort market for supply absorption. In Europe that absorbed LNG imports even amid a natural gas demand fall, pipeline natural gas imports from Russia decreased by some 20%. In other words, the LNG supply surplus was finally offset by a decline in European pipeline natural gas imports from Russia. Gazprom in charge of pipeline natural gas exports from Russia to Europe had no choice but to serve as a buffer.

While the OPEC Plus group including Russia played a key role in adjusting supply in the international oil market, Russia contributed to adjusting supply in the international natural gas and LNG market under the COVID-19 pandemic. In this sense, we will have to closely watch Russian trends in checking the supply-demand balance in global oil, natural gas and LNG markets.

6. High and low growth scenarios

In the Reference Scenario, the global economy is assumed to grow by 5.5% in 2021 and by 4.2% in 2022. As noted above, however, the future courses of the COVID-19 pandemic and the global economy are greatly uncertain. In the following, we provided the high-growth and low-growth scenarios to analyze oil, natural gas and LNG demand projections, while referring to the Upside Scenario and the Downside Scenario in the IMF outlook. The high-growth scenario corresponds to the IMF's Upside Scenario and the low-growth scenario to the Downside Scenario.

Figure 13 Global GDP levels by scenario

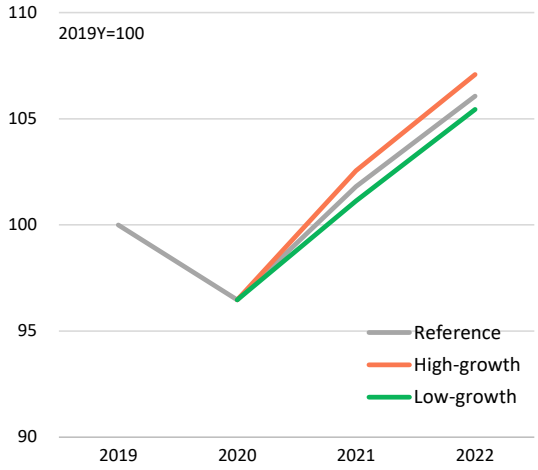
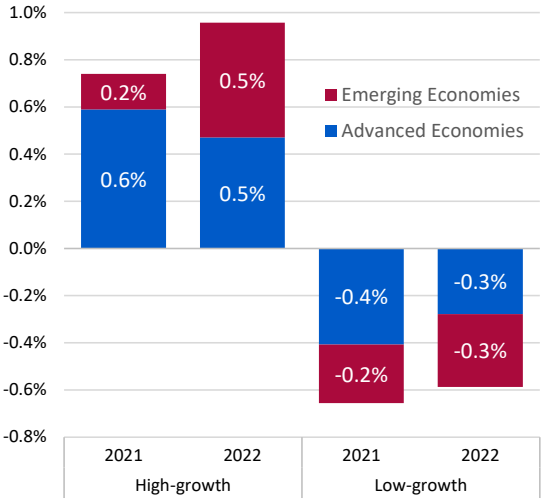


Figure 14 Deviations from Reference Scenario



Sources) IMF "World Economic Outlook Update, January 2021," IEEJ estimates

- In the high-growth scenario, COVID-19 vaccination will make progress, with new infections declining, accelerating an end to the pandemic. Advanced Economies will see faster vaccine diffusion and economic growth than Developing Economies in 2021. In 2022, Developing Economies will attain vaccine diffusion and remarkable economic growth. Global GDP will be 0.7% more than in the Reference Scenario in 2021 and 1.0% more in 2022 (Figures 13 and 14).
- In the low growth scenario, mutant COVID-19 strains will spread, with vaccine diffusion being slower, leading the pandemic to be prolonged. In 2021, vaccine diffusion will be delayed even in Advanced Economies, slowing down economic growth. In 2022, additional monetary easing will come in response to economic stagnation, easing downside risks slightly despite growth deceleration. Global GDP will be 0.7% less than in the Reference Scenario in 2021 and 0.6% less in 2022 (Figures 13 and 14).

Figure 15 Global oil demand by scenario

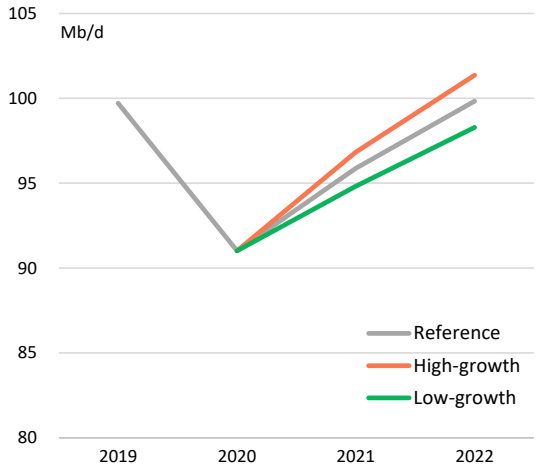
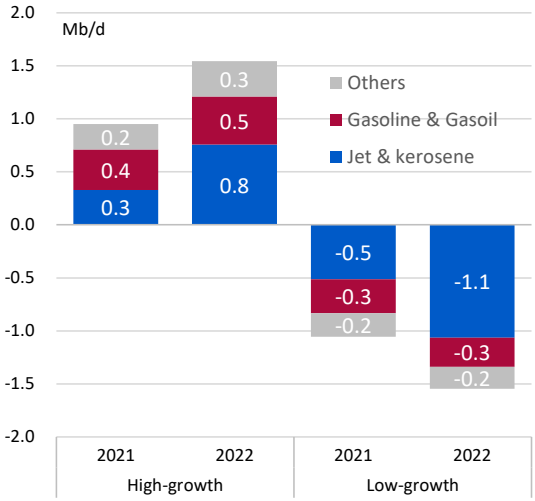


Figure 16 Deviations from Reference Scenario



Source) IEA "Oil Market Report," IEEJ estimates

- Oil demand in the high-growth scenario will be 0.9 Mb/d more than in the Reference Scenario in 2021 and 1.5 Mb/d more in 2022. As transportation demand recovers on a faster end to the pandemic, a pickup in demand for transportation fuels will make great contributions to expanding oil demand.
- Oil demand in the low-growth scenario will be 1.1 Mb/d less than in the Reference Scenario in 2021 and 1.5 Mb/d less in 2022. As an end to the pandemic is delayed, demand will remain stagnant for transportation fuels including jet fuel.

Figure 17 Global natural gas demand by scenario

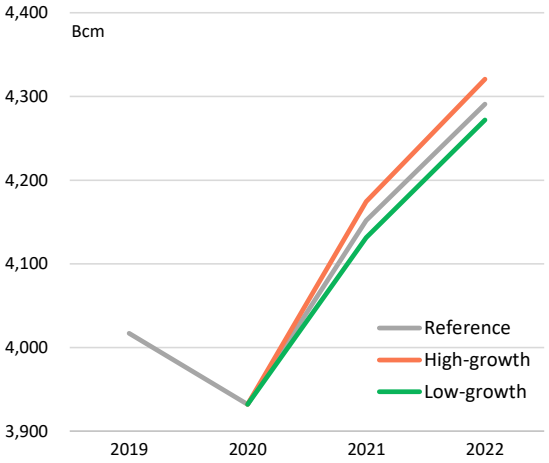
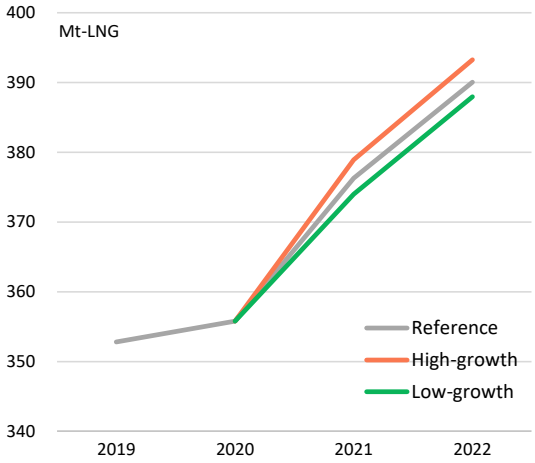


Figure 18 Global LNG demand by scenario



Sources) Cedigaz, IEEJ estimates

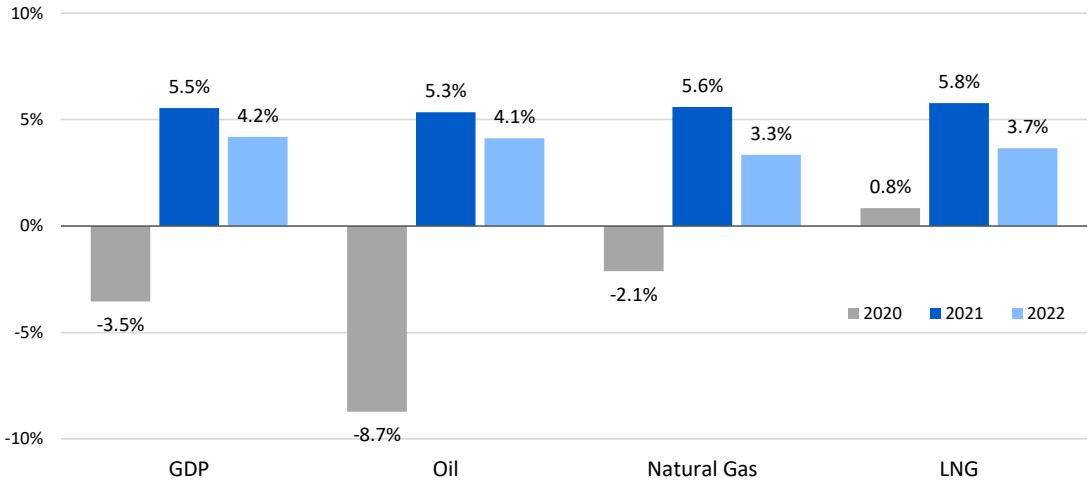
- Natural gas demand in the high-growth scenario will be 0.5% more than in the Reference Scenario in 2021 and 0.7% more in 2022. LNG demand will be 0.7% more in 2021 and 0.8% more in 2022. Gaps for natural gas and LNG will be smaller than for oil.
- Natural gas demand in the low-growth scenario will be 0.5% less than in the Reference Scenario in 2021 and 0.4% less in 2022. LNG demand will be 0.6% less in 2021 and 0.5% less in 2022.

Global oil, natural gas and LNG demand growth will accelerate or decelerate depending on the uncertain future courses of the COVID-19 pandemic and the global economy. If demand recovery or expansion accelerates in the high-growth scenario, the supply-demand balance in international oil, natural gas and LNG markets will be tighter than in the Reference Scenario. As far as other conditions remain unchanged, a faster demand recovery will exert upside pressure on oil, natural gas and LNG prices. In the low-growth scenario, however, demand stagnation will be prolonged along with the need for supply and demand adjustments. Downside pressure on oil, natural gas and LNG prices will work more easily than in the Reference Scenario. We will have to keep close watch on the fate of the COVID-19 pandemic and the global economy.

Conclusion

The COVID-19 pandemic has hardest hit oil demand and exerted relatively smaller impacts on natural gas and LNG (Figure 19). It has been found that production launches under LNG projects work to expand market supply. While natural gas and LNG demand are expected to restore the pre-pandemic uptrend in 2021, oil demand is estimated to recover its pre-pandemic level in 2022. Depending on the greatly uncertain future courses of the pandemic and the global economy, global oil, natural gas and LNG demand growth will differ from the Reference Scenario, exerting different impacts on the international supply-demand balance. We will have to keep close watch on future global oil, natural gas and LNG demand trends.

Figure 19 Year-on-year changes in the global economy and energy demand



Sources) IMF, IEA, Cedigaz, IEEJ estimates

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