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The Impact of COVID-19 on U.S. Gas Demand and LNG Exports

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Gas Exporting Countries Forum
April 2020

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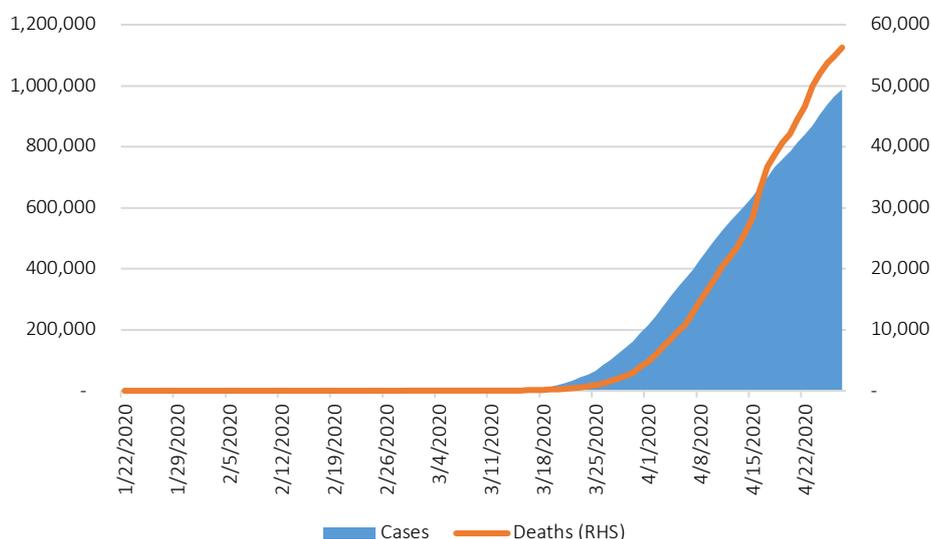
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Introduction

The novel coronavirus (COVID-19), which originated in Wuhan, China at the end of 2019, has become a global pandemic spreading across all regions and to more than 200 countries globally. At the end of April 27, 2020, there were around 3.06 million reported cases and more than 210,000 COVID related deaths globally. The epicentre of the virus shifted from China to Europe (Italy, Spain, France and Germany) and now to the U.S.

The U.S., which is the world's third populated country, has seen its cases grown exponentially from mid-March 2020 to almost 1 million cases by April 27, 2020 (see Figure 1). New York is the most impacted U.S. state with around 300,000 cases, more than any country in the world. In terms of deaths, the U.S. also has the highest number of COVID related deaths (more than 55,000) globally. The country currently accounts for around 32% of the global COVID cases and 26% of global COVID related deaths.

Figure 1: Cumulative COVID Cases & Deaths in the U.S.



Source: GECF, CSSE at John Hopkins University

Countries across the globe have taken drastic measures such as curfews, lockdowns, shutting of non-essential businesses and closure of borders to curb the spread of the infectious virus. These measures have negatively affected energy demand and economic growth due to the closure of schools, businesses, some industrial plants and lower transportation activity. Gas plays a significant role in the U.S. primary energy mix, with a share of ~31%, and a negative impact of COVID on energy demand is expected to drag gas demand downwards.

This report is aimed at analysing the impact of COVID on U.S. natural gas demand and their LNG exports as well as the implication on the global gas and LNG markets.

Government Actions to Curb the Spread of COVID in the U.S.

The U.S. is by far the largest consumer of gas worldwide and a direct/indirect impact of COVID on gas demand in the country is expected to have a significant impact on global gas consumption. Over the last two years, the U.S. was the major driver of global gas consumption and a slowdown or decline in gas consumption growth will dent global consumption. The following are some lockdown measures which have been implemented at a national level in the country to curb the spread of the virus and may negatively affect gas demand:

- January 21, 2020
 - The Center for Disease Control and Prevention (CDC) confirmed the first known case in the country
- January 29, 2020
 - White House Coronavirus Task Force established to control the spread of the virus
- January 31, 2020
 - Travel restriction were, implemented which prevents the entry of foreign nationals in the U.S. who visited China over the last 14 days
 - Imposition of a 14-day quarantine for American nationals returning from the Hubei region of China
- February 29, 2020
 - First COVID related death reported in the U.S.
 - Iran added to the travel restrictions imposed for foreign nationals entering the U.S.
- March 16, 2020
 - Announcement of “15 Days to Slow the Spread” guidelines for social distancing and isolations
 - Recommendation to close schools and avoid gatherings of more than 10 people
- March 20, 2020
 - Commencement of entry restrictions on foreign nationals who had visited 28 European Countries over the last 14 days
- March 21, 2020
 - By this date, New York, California and other large states ordered stay-at-home measures and closure of non-essential businesses and announced a ban on all non-essential gatherings
- April 2020
 - As of the beginning of April 2020, more than 40 U.S. states have implemented restrictions on business, travel and gatherings. However, some states have started to gradually ease COVID lockdown measures.

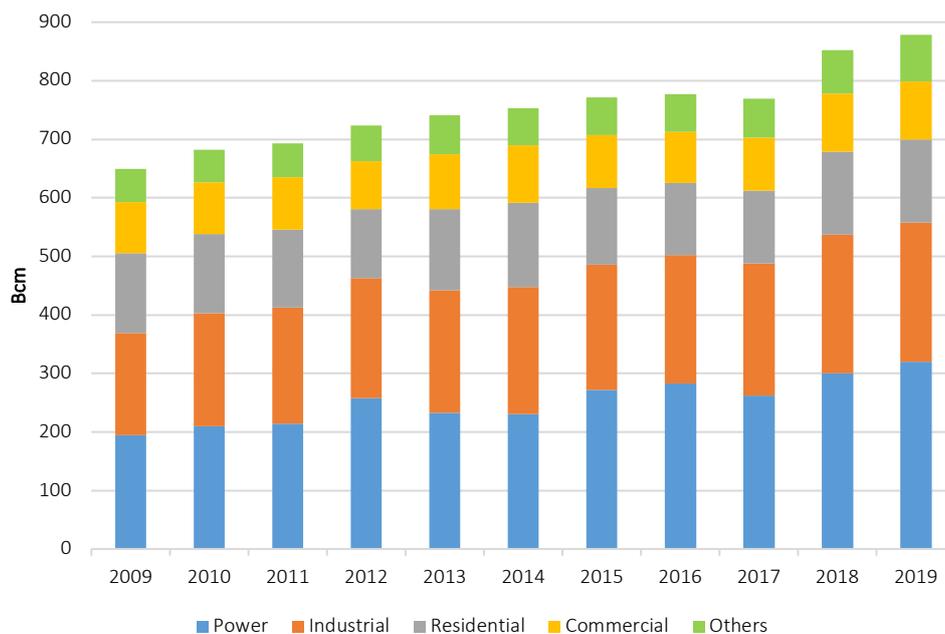
Despite the restrictions implemented in the U.S. to curb the spread of COVID, operations continue in the oil and gas industry, since it is deemed essential. The major impact of these measures are expected to affect gas demand in the power, commercial and industrial sectors.

Impact of COVID on Gas Consumption in the U.S.

As mentioned before, the U.S. is the largest natural gas consumer globally. The power sector accounts for the largest share of gas consumption in the country followed by the industrial, residential and commercial sectors. Following the global financial crash in 2007/2008, natural gas consumption in the country has trended upwards except for the dip recorded in 2017. As shown in Figure 2, between 2009 and 2019, U.S. gas consumption jumped by 35% and was driven mainly by higher gas burn, which accounted for 55% of the incremental increase, followed by industrial (27%), commercial (5%) and residential (2%) sectors.

In 2019, gas consumption in the U.S. grew by 3.1% y-o-y to 879 Bcm, which was significantly slower than the 10.8% growth recorded in 2018. The slowdown in consumption was mainly due to slower coal-to-gas replacement, due to less retirement of coal-fired power plants, a mild winter season and a relatively cooler summer season compared to 2018. The power sector continued to be the main driver of gas consumption growth in the U.S., with 77% of the incremental gas volumes being consumed in the sector in 2019.

Figure 2: Trend in U.S. Natural Gas Consumption by Sector



Source: GECF, EIA Monthly Gas Statistics

For YTD-2020 (until April 25, 2020), gas consumption has fallen across all major sectors, except the power sector, in comparison to 2019 (see Figures 3–6). The residential sector recorded the largest drop in consumption, declining by 11.2% y-o-y, followed by the commercial (-8.3%) and the industrial (-0.4%) sectors. In contrast, gas consumption for power jumped by 9.5% y-o-y. Although the COVID-19 lockdown measures may have contributed to the decline in gas consumption, a relatively mild 2019/2020 season in the U.S. was the major driver for the drop in residential and commercial gas consumption.

Considering the impact of lockdown measures on gas consumption in the U.S., between March 15 and April 25, 2020, it is estimated to have increased by 6.6% y-o-y to 90 Bcm, compared to the same period in 2019. It should be noted that gas consumption is estimated to have grown across all major sectors, including the power (+11.5% y-o-y), residential (7.0%), commercial (+5.2%) and the industrial (+1.4%) sectors. Despite the lockdown measures in some U.S. states, higher heating degree days (HDD) which increased by 10% y-o-y, supported the uptick in gas consumption in the residential and commercial sectors during the period in question.

The power sector is probably the sector mostly impacted by the COVID lockdown measures. Power generation fell by 3.7% y-o-y between March 15 and April 25, 2019, despite a 49% y-o-y increase in cooling degree days (CDD). Although electricity generation was lower since the implementation of lockdown measures, higher gas burn (+9.0% y-o-y) and renewables output (+4.2%), offset lower power generation from coal (-30.7%), hydro (-18.2%) and nuclear (-6.8%). Gas is the dominant fuel in the U.S. power sector with a share of 38% followed by nuclear (22%), coal (16%), renewables (12%), hydro (8%) and others (4%).

Figure 3: Trend in Gas Consumption in U.S. Residential Sector

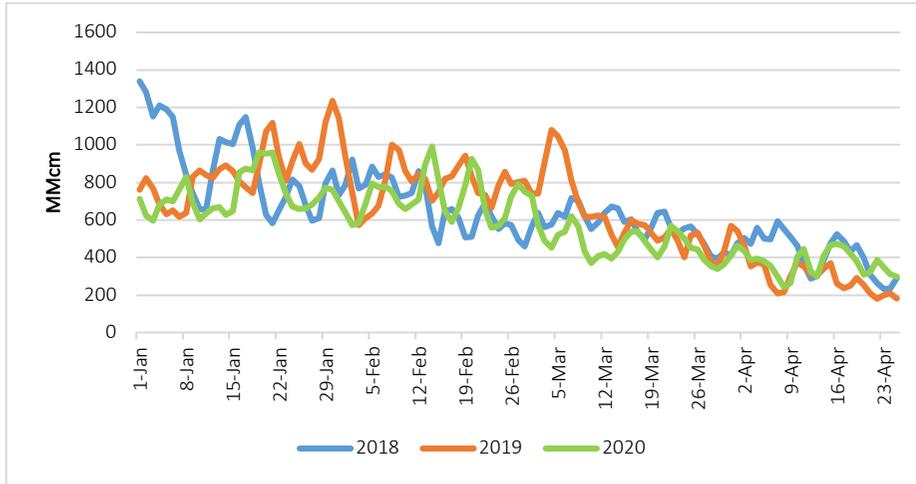


Figure 4: Trend in Gas Consumption in U.S. Commercial Sector

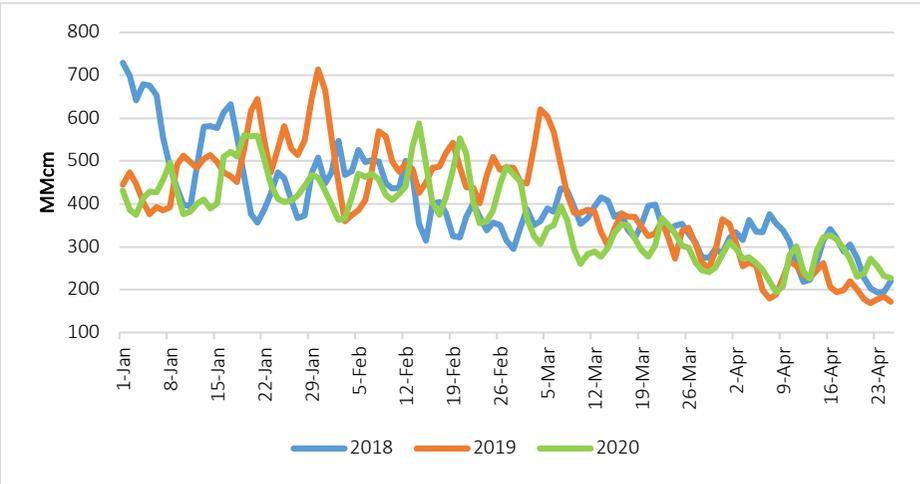


Figure 5: Trend in Gas Consumption in U.S. Industrial Sector

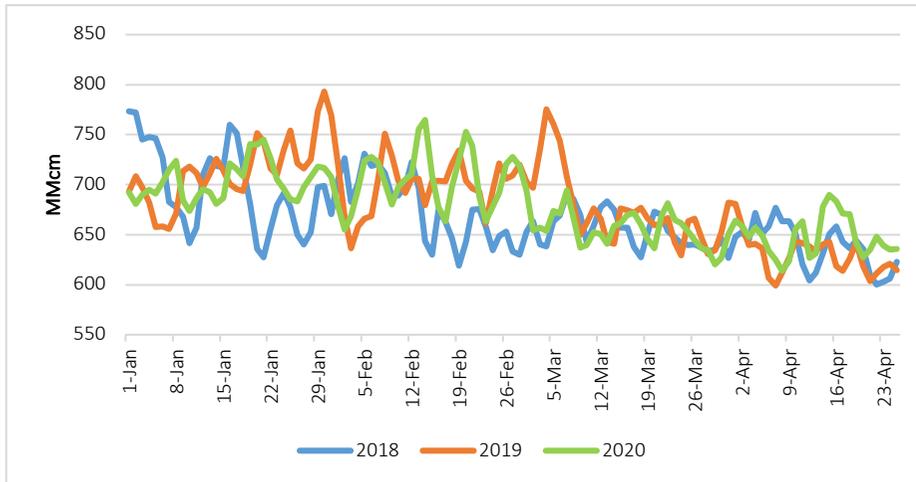
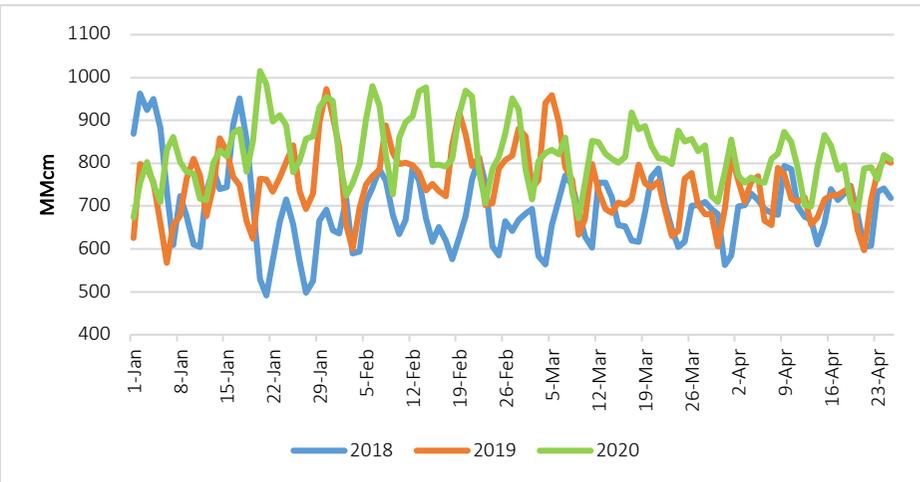


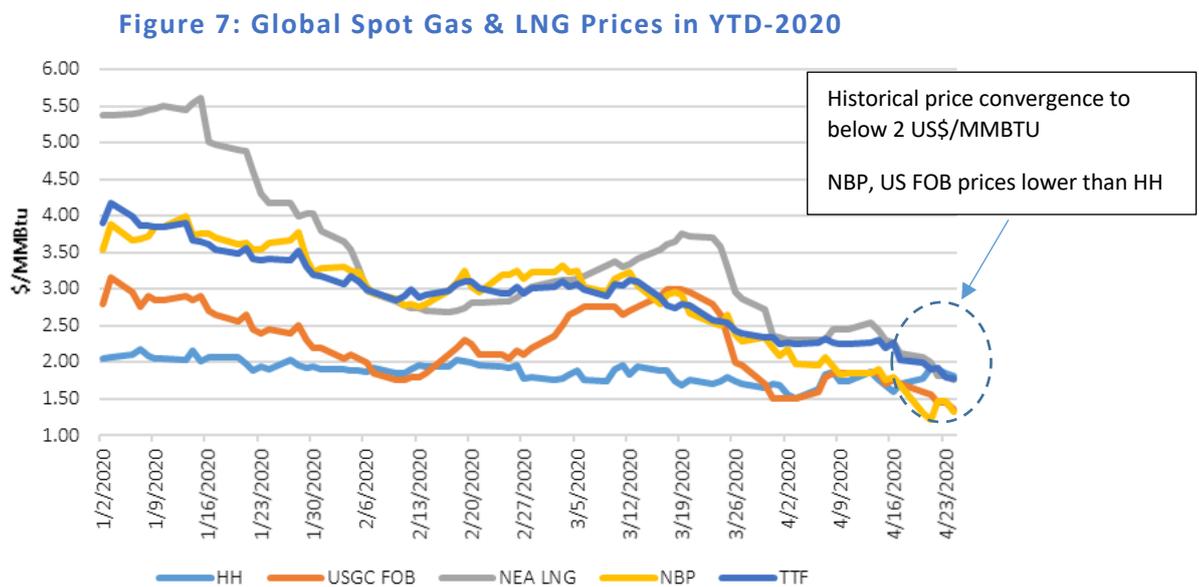
Figure 6: Trend in Gas Consumption in U.S. Power Sector



Source: GECF, Refinitiv

Impact of COVID on Gas & LNG Prices and Price Spreads

Before the COVID pandemic, global gas and LNG spot prices were trading at historic lows mainly due to an apparent oversupply in the LNG market, as LNG supply expanded faster than demand, in addition to a mild winter weather in the northern hemisphere and high gas storage levels globally. For YTD-2020, the HH spot gas price averaged \$1.87/MMBtu, which was down 35% y-o-y from \$2.86/MMBtu during the same period in 2019. Record gas production in the U.S., coupled with weaker demand, as a result of the mild winter season, and high storage levels kept the HH price depressed below \$2/MMBtu. Although the U.S. has been the cheapest gas market globally over the past few years, the bearish fundamentals in the gas market, which was exacerbated by COVID, have resulted in spot gas and LNG prices dropping below the HH spot gas price towards the end of April (see Figure 7).



Source: GECF, Argus, OANDA, Refinitiv

In terms of the futures gas and LNG prices, if shipping and liquefaction costs are considered as “sunk-costs”, U.S. LNG is uneconomical for delivery to Europe through October 2020, since the price spreads between Europe and the U.S. are negative during this period (see Figures 8 and 9). Although the JKM-HH price spreads are positive from July 2020 to April 2021, North East Asia may be unable to absorb the significant growth in global LNG supply in 2020, which is expected to come mainly from the U.S. Under such market conditions, off-takers of U.S. LNG are highly likely to cancel cargoes since they will have to incur further financial losses if these LNG cargoes are sold at a loss in the European market.

Another possible scenario may arise where U.S. LNG operators may opt to compete with European importers for flexible LNG cargoes in the Atlantic basin, from Trinidad and Tobago and West Africa. The HH futures are trading higher than European futures and at a small discount to JKM futures, which provides a higher netback for delivery to the U.S. considering the shorter distance. This could also facilitate LNG re-export operations from the U.S.

Figure 8: Futures Gas & LNG Prices

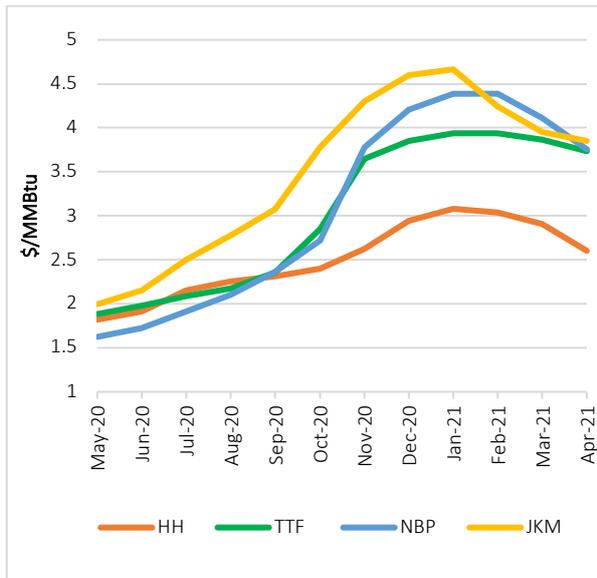
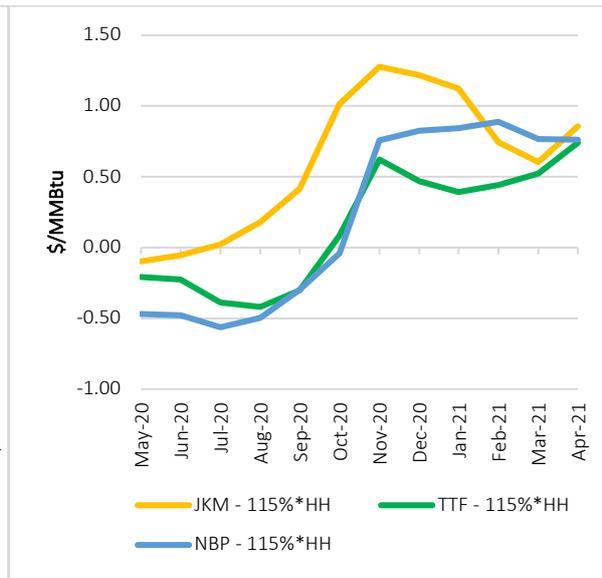


Figure 9: Futures Gas & LNG Price Spreads



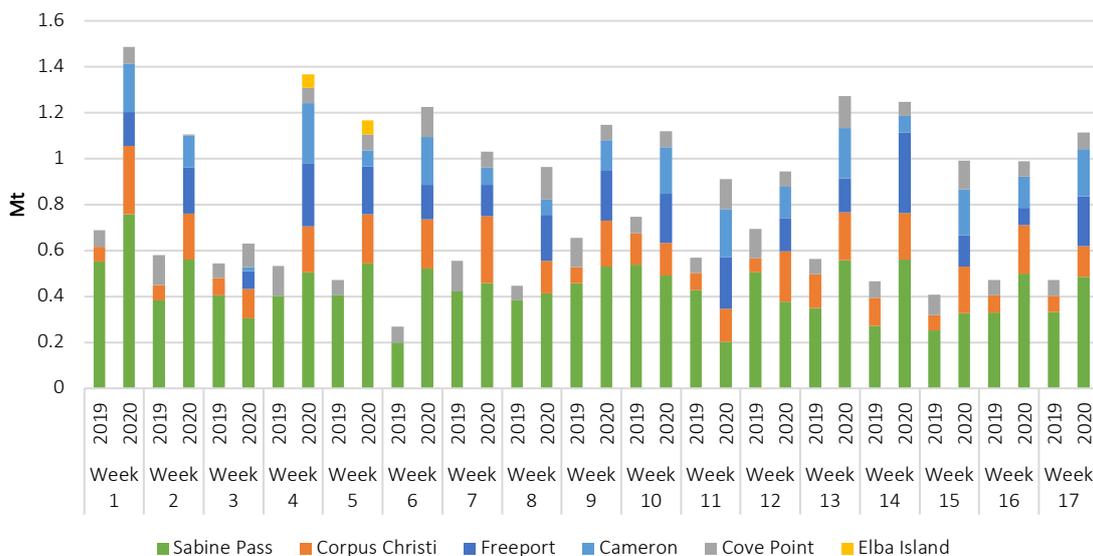
Source: GECF, CME Group

Note: Futures prices as of April 27, 2020

Impact of COVID on U.S. LNG Exports

Despite the COVID outbreak, which has dented global LNG demand, U.S. LNG exports have been resilient in 2020 thus far. As shown in Figure 10, U.S. LNG exports have risen significantly in 2020 compared to 2019. For YTD-2020, LNG exports surged by 43% y-o-y to 16 Mt, supported by the start-up and ramp-up of new LNG facilities in the country. As mentioned in the previous section, some U.S. LNG cargoes could be cancelled by off-takers due to the anticipation of weak futures prices and lacklustre gas and LNG demand globally.

Figure 10: Weekly U.S. LNG Exports by LNG Facility



Source: GECF, ICIS LNG Edge

As reported on April 22, 2020, around 20-25 U.S. LNG cargoes for loading in June 2020 were cancelled due to the weak market fundamentals. The cancelled cargoes are equivalent to between 1.4 and 1.8 Mt of LNG, which is almost half of U.S. monthly LNG exports. The LNG marketer, such as Cheniere, may choose to remarket the cancelled LNG cargoes, however, the low price environment may deter this.

Some U.S. LNG contracts allow off-takers to cancel cargoes before the 20th of month M minus 2 (M-2), where M is the month in which the cargo is loaded. Meanwhile, the notice period under some U.S. LNG contracts may be less. The negative European-U.S. gas price spreads in the coming months may result in further cargo cancellations similar to June. If LNG off-takers choose to remove a similar amount of monthly cargoes between July and October 2020, around 7-9 Mt of LNG supply could disappear from the market. Under such circumstances, this would lead to shut-ins or underutilization of some U.S. LNG facilities.

Conclusion

The U.S. has become the global epicentre for the COVID outbreak, following the shift from China to Europe. As the world's third populated country and largest consumer of natural gas, the implementation of restrictions to curb the spread of COVID is expected to have a significant impact on the global gas market. Since the commencement of these restrictions around mid-march in the U.S., gas consumption has increased compared to a year earlier. The uptick in consumption was driven by colder weather from mid-March to the end of April which boosted gas demand for heating in the residential and commercial sectors. Meanwhile, gas consumption in the industrial sector has been quite resilient and has increased by slightly during the period. The power sector appears to be most impacted by the COVID but despite a decline in electricity demand, higher gas and renewables output offset in electricity production from other sources, particularly coal.

The U.S., which has become a significant LNG player globally, continues to increase its LNG exports through the start-up and ramp-up of LNG projects. However, the outlook for U.S. LNG exports in the next few months look dim, as LNG demand destruction due to COVID coupled with the oversupply in the market has driven global gas and LNG prices to historic lows. This has resulted in a significant number of cancellations of U.S. LNG cargoes for June 2020 due to poor economics for delivery into Europe, which has been acting as a sink market since the end of 2018. Since the Europe-HH price spreads are also in negative territory until October 2020, there could be further cancellations in the months ahead. If such additional cancellations materialize, this is expected to contribute in reducing the expected LNG oversupply in the market, which could contribute to an improvement in gas and LNG spot prices. However, if the market remains oversupplied for an extended period of time, due to COVID, all the players will be vulnerable and more collaborative actions with producers, traders, consumers and financial institutions, would be necessary to mitigate the risk of COVID on the gas market and to stabilize the market in the interest of all the parties.

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