

IMPACTS OF THE COVID-19 PANDEMIC ON NATURAL GAS USE IN THE APEC REGION BASED ON THE JOINT ORGANISATIONS DATA INITIATIVE (JODI) DATA

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Overview

At the beginning of 2020, the COVID-19 pandemic started to spread worldwide. In March 2020, the World Health Organization declared the worldwide outbreak of COVID-19 pandemic. Many people have been infected with and passed away by COVID-19 in many countries since then. Many nations have taken preventive measures such as lockdowns and declarations of emergency. Due to these severe restrictions, human and business activities have been limited and the world economy has experienced a global recession.

The governments' response to this health and economic crisis caused an unprecedented decline in global energy consumption, especially petroleum products. Crude oil production and petroleum products consumption decreased since the energy consumption in the transportation sector decreased. For instance, consumption of motor gasoline and kerosene-type jet fuels faced a serious and substantial reduction as human activities were restricted. Natural gas demand and supply was also affected by the COVID-19 pandemic, but to a lesser extent than oil. According to the International Energy Agency (IEA), global gas demand declined in 2020 (IEA 2022).

The Asia-Pacific Economic Cooperation (APEC) region has experienced the health, economic, and energy crisis of the COVID-19 pandemic as well. This region accounted for 38% of the world population, 54% of the world's GDP (PPP constant 2017 USD), and 58% of the world's total primary energy supply in 2019 (APEC 2022). Therefore, the COVID-19 pandemic has had significant effects on the energy in this region.

Then, this paper analyses how the COVID-19 pandemic has impacted the natural gas demand and supply in the APEC region based on data reported by the Joint Organisations Data Initiative (JODI). JODI consists of eight partner organisations¹. APEC is one of the partner organisations. JODI collects the monthly oil and gas data (e.g., production, consumption, import, export, etc.) of member countries from its partner organisations (JODI 2020). APEC submits its non-OECD member economies data to IEF for JODI².

Methods

Statistical compilation and analysis of JODI and EGEDA gas data- This study provides an analysis of changes in gas production and consumption for the 21 APEC member economies' data from January 2018 to June 2022³. The analysis is based primarily on the JODI and EGEDA data but also uses additional sources for identifying the key drivers of consumption and production changes (e.g., heating degree days).

Results

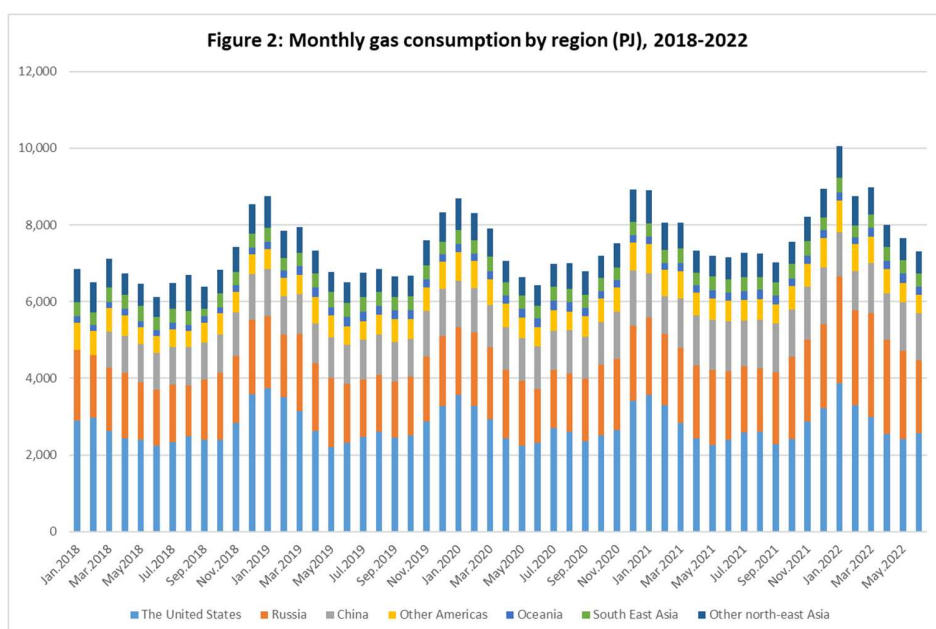
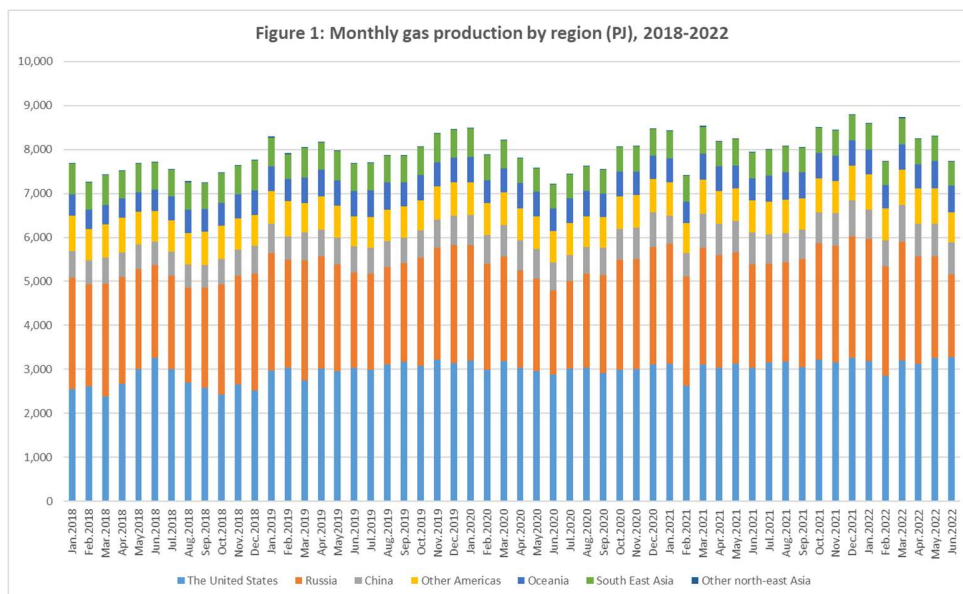
Gas production in the APEC region declined in 2020 compared with 2019. Gas production in the region reached 94.5 thousand Petajoules (PJ) in 2020, falling by 2.1% from 96.5 thousand PJ in 2019. However, it turned back to 98.7 thousand PJ in 2021 (Figure 1). From 2018 to the first half of 2022, the United States has been the top gas producer in the APEC region. In 2021 U.S. production comprised 38% of the total APEC gas production, followed by Russia (31%), Other Americas (9%), and China (8%). While the U.S. has the largest gas production in APEC, its total gas production reduced 0.4% to 36.3 thousand PJ in 2020, from 36.5 thousand PJ in 2019. The production decline was caused by decreased drilling activity related to low gas prices in 2020 (EIA 2021). Russia produced 27.7 thousand PJ in 2020, a decline of 5.7% from 29.4 thousand PJ in 2019. The COVID-19 pandemic spurred the decline in the U.S. natural gas price and a higher demand for LNG, causing more competition for Russian energy producers. Moreover, as gas demands in countries in Europe decreased due to lockdowns, the export volume of a Russian natural gas resource company declined, leading to its production cut in 2020 (Statista 2021). On the other hand, gas production in China increased by 10.1% to 8.1 thousand PJ in 2020 from 7.3 thousand PJ in 2019. To satisfy its domestic gas demand, China significantly increased its gas production in 2020. Due to vaccinations, regained human activities and economic recoveries, gas production in the APEC region increased to 98.7 PJ thousand (a 4.4% increase from the 2020 level) in 2021.

Although gas production decreased in 2020, the total APEC gas demand in 2020 reached 89.5 thousand PJ showing a 1.7% increase from 2019 levels of 88.0 thousand PJ. Based on this result, gas demand was lost due to the COVID-19 pandemic that restricted people's mobility, and various economic activities in early 2020, started to pick up again (Figure 2). As shown in Figure 2, Russia, China, Other Americas, and Other Northeast Asia (Japan and Korea, etc) showed increases in demand in 2020. The gas demand increase can be associated with the unexpected cold winter in 2020 in Japan and coal-to-gas switching in Korea (IEA 2021). Meanwhile, demands in the United States, Oceania, and Southeast Asia slightly decreased. Oceania showed a continuous decline in demand from 2019 to 2021 as electricity generated from natural gas in Australia continued to drop (Argus Media 2021). Same as gas production, gas consumption in the APEC region increased to 93 PJ thousand (a 3.9% increase from the 2020 level) in 2021.

¹ Asia Pacific Economic Cooperation (APEC), Statistical Office of the European Communities (Eurostat), Gas Exporting Countries Forum (GECF), International Energy Agency (IEA), International Energy Forum (IEF), Latin American Energy Organization (OLADE), Organization of the Petroleum Exporting Countries (OPEC), United Nations Statistics Division (UNSD).

² In APEC, each member is named as an economy, not a country or nation.

³ APEC has its energy database (the Expert Group on Energy Data and Analysis (EGEDA) website).



Conclusions

Based on the analysis of JODI data, the APEC region has been evidently affected by the Covid-19 pandemic, showing its decrease in gas production and increase in gas consumption in 2020. Several factors such as weather and reduced infrastructure investments affected natural gas demand and supply in this region. This analysis will be conducted in the final paper.

References

- Argus Media 2021, "Australia 2020 electricity from natural gas falls 4.6pc", June 7, 2021, <https://www.argusmedia.com/en/news/2222123-australia-2020-electricity-from-natural-gas-falls-46pc>
- APEC 2022, APEC Energy Statistics 2019, July 2022, APEC, https://www.egeda.ewg.apec.org/egeda/general/info/pdf/APEC_Energy_Statistics_2019.pdf
- EIA 2021, "Annual U.S. natural gas production decreased by 1% in 2020", TODAY IN ENERGY, March 2, 2021, U.S. Energy Information Administration, <https://www.eia.gov/todayinenergy/detail.php?id=46956>
- IEA 2021, "Global Gas Review 2020", <https://www.iea.org/reports/gas-market-report-q2-2021/global-gas-review-2020>
- IEA 2022, "Gas 2020: Analysing the impact of the Covid-19 pandemic on global natural gas markets", June 2020, <https://www.iea.org/reports/gas-2020>
- JODI 2020, "Historical Background: JODI and Oil Data", <https://www.jodidata.org/about-jodi/history.aspx>
- Statista 2021, "Natural gas production in Russia from 2000 to 2021", <https://www.statista.com/statistics/265335/natural-gas-production-in-russia-since-1998/>