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Expert Commentary

The Vital Role of Natural Gas in Responding to Energy Needs in the COVID-19 Pandemic Era

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While human lives have been severely affected by the spread of Coronavirus across the globe, the role of global access to reliable and affordable sources of energy has been highlighted more than ever during the pandemic period. On the one hand, the effective function of healthcare care facilities is highly reliant on sustainable electricity supply. Any blackout in the pandemic period could be catastrophic for healthcare facilities. On the other hand, access to a reliable source of energy is essential for Post-Corona economic recovery. While access to the reliable source of energy and electricity is crucial for the societies in the pandemic period, a significant portion of electricity is generated from natural gas-fueled power plants. The share of natural gas in power generation mix accounted for 23% currently, and this number could significantly increase in upcoming years due to the credentials of natural gas for power generation.

Different credentials of natural gas testify the advantages of power generation from this brilliant source of energy and the vital role of natural gas in the pandemic era. First and foremost, there is evidence that natural gas-fueled power plants are more sustainable than other types, such as intermittent renewables and hydroelectricity. Furthermore, the investment required for the installation of gas turbines is lower than other power plants, which highlights its affordability during the pandemic period. Among other things, gas turbines add more flexibility to the electricity grid, as the demand for energy highly fluctuates during the pandemic. And eventually, the delivery of natural gas to the connected households and power plants is operational with limited staff numbers during the lockdown compared to liquid fuels, which needs road transportation.

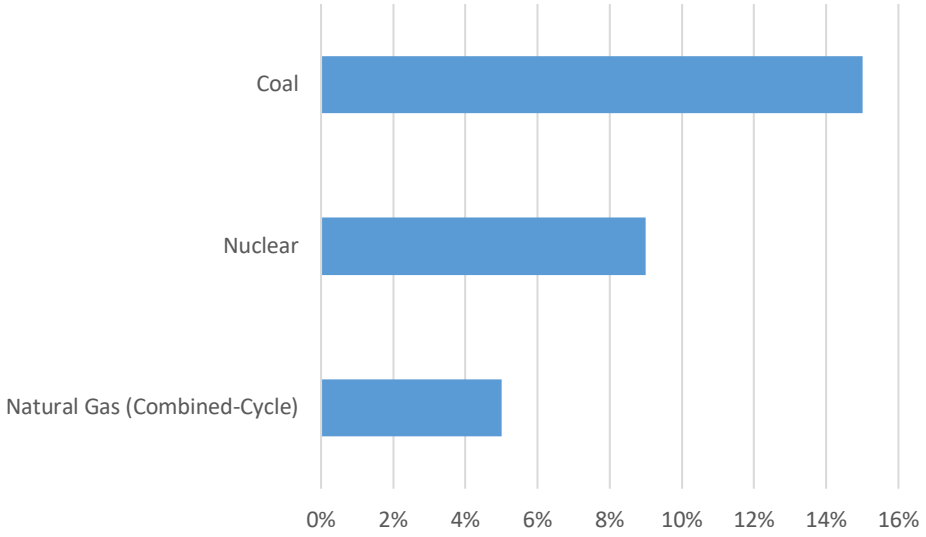
Higher Grid Stability by Natural Gas-Fueled Power Plants

Grid stability is the most critical need for the healthcare system during the pandemic period. Particularly with an increasing share of intermittent renewables in power generation, maintaining power stability is a challenge for the grid operators. In this situation, the

availability of sufficient natural gas-fueled power capacity in the grid could support the renewables with the highest degree of reliability.

Also, natural gas power plants are less prone to forced outages compared to coal and nuclear power plants. Amory B. Lovins, in his article[1] estimates that the average nuclear power plant outage accounts for 1-2% forced and 6-7% scheduled outage in the US. The forced outage for the coal power plants is 6-10%, and the total outage (forced and scheduled) is 15%. While for natural gas power plants (combined-cycle), the total outage (forced and scheduled) is around 5%, as indicated in the figure (1). The low level of outages in natural gas power plants suggests that how natural gas can improve grid stability, which is a critical factor in the COVID-19 pandemic period.

Figure 1: Power plants Outages (forced and scheduled) as a percentage of time



Source: GECF based on Forbes[1]

Affordability of natural gas for power generation in the pandemic period

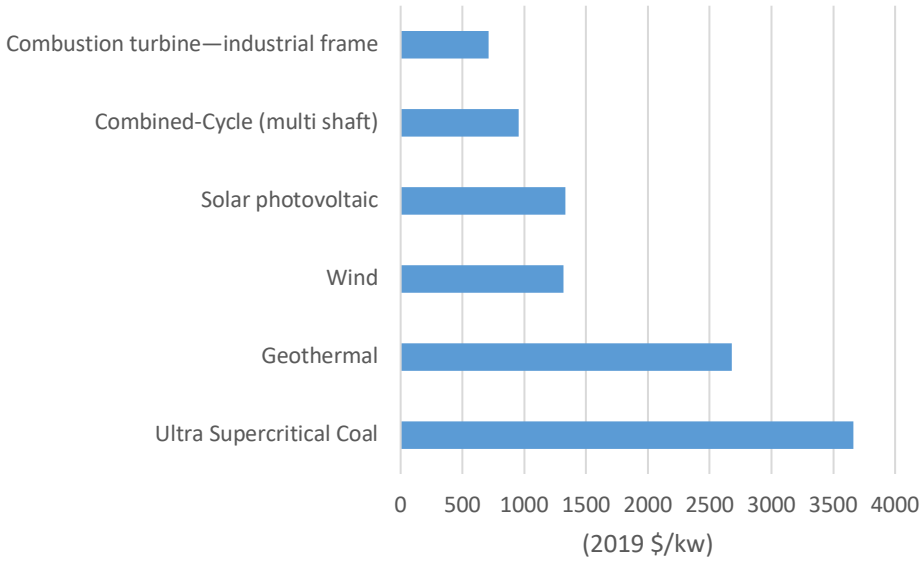
The affordability of a reliable source of energy for electricity generation is becoming more highlighted in the pandemic period. Notably, the affordability of the energy source is critical in the potential epicenters for diseases, with the majority of the population without access to reliable electricity and other energy sources. The spread of the virus in these parts of the world with poor access to electricity, which is required for the healthcare system, could be more catastrophic. Natural gas could be a solution for quick electricity generation for those people who live in impoverished areas.

Besides, there is evidence that the cost of building and installation of a gas turbine and combined-cycle technologies remains lower than other electricity generation technologies such as solar, wind, geothermal and Ultra-Supercritical Coal (UST). Based on EIA's report[2],

[1] Amory B. Lovins, "Does 'Fuel On Hand' Make Coal and Nuclear Power Plants More Valuable?", Forbes, 2017

overnight cost of building a combined-cycle (multi-shaft) power plant is less than 1000 (2019$) per kilowatts in the US, while to build an Ultra Supercritical Coal (UST) power plant more than 3500 (2019$) per kilowatts of investment is required.

Figure 2: Total Overnight Cost of New Electricity Generation Technologies



Source: GECF based on EIA[2]

Flexible Grids with Gas Turbines

In addition to the typical daily and seasonal peak demand for electricity, the Corona-virus pandemic also imposed severe shocks to both the demand and supply sides of energy, which added more fluctuations to the energy networks, including electricity grids. While the demand for energy slumped during the pandemic period, by opening some parts of the economy, the demand for electricity and natural gas will gradually increase. These fluctuations require flexible sources of electricity supply to the grid, which can be switched on and off easily and quickly.

Indeed, gas turbines and combined-cycle power plants could increase or decrease their power output quickly; therefore, natural gas could be a reliable source of adding flexibility to electricity grids, which highlights the critical role of natural gas in the pandemic period. Also, in addition to power plants, on the upstream side of the natural gas value chain, the LNG producers or field operators can schedule their maintenances for the low demand period. Moreover, the design of the gas-processing unit in the field allows going from minimum to maximum production in a few hours; this flexibility is valuable for the grid operators as well. The flexibility of natural gas also highlights another aspect of this source of energy for the

[2] U.S. Energy Information Administration, Assumptions to the Annual Energy Outlook 2020: Electricity Market Module

pandemic period. Therefore, increasing the share of gas-based power generation should be an essential part of the energy transition.

Natural Gas Fuel of Choice for Post-Corona Economic Recovery

The governments are trying to reopen some parts of the economy while putting their nation's health on the top priority. The abovementioned credentials of natural gas, such as its affordability, higher grid stability, and flexibility in natural gas-fueled power plants, highlights the vital role of this source of energy for the COVID-19 pandemic era. However, the importance of natural gas is not limited to the pandemic period, and natural gas can play a crucial role in the post-corona period for economic recovery. The vital role of natural gas as an environmentally friendly, affordable, reliable, accessible, and flexible natural resource for ensuring economic development and social progress, which is more highlighted in the pandemic period, has been addressed in several GECF guiding documents (statues, Long term strategy and Summits declarations). Indeed, this feature of natural gas is reiterated in the GECF Heads of State and Government Summits, In particular, the fifth Summit, which was held in November 2019 in Malabo, Equatorial Guinea, acknowledged "The vital importance of natural gas and development of related infrastructure for ensuring global energy security and more sustainable and resilient energy systems".

Besides, the spread of Coronavirus could negatively affect the energy transition for the post-corona period if the energy policymakers do not take the necessary measures. For instance, the pandemic could slow down the investment in energy infrastructure and delay energy projects such as coal to gas switching projects. Meanwhile, the low level of natural gas prices, that is seen nowadays, is an opportunity for the natural gas consuming countries to materialize their environmental goals by increasing the share of natural gas in their energy mix. In this regard, natural gas producers will remain committed to finding adequate terms that accommodate current market conditions to ensure a resilient supply of natural gas to consumers in the COVID-19 pandemic era, as well as Post-Corona economic recovery period. GECF Member Countries have demonstrated their efficient responses to market shocks by accommodating the market conditions. Indeed, their role in sustaining the supplies of natural gas following the Fukushima disaster is historical and reinforced the partnership of GECF with its partners. In the current crisis, GECF has shown resilience in accommodating an unprecedented low gas and LNG prices driven by a destroyed gas demand by the effect of COVID-19.

References

[1] Declaration of Malabo, Fifth Summit of Heads of State and Government of the GECF Member Countries, November 2019, Malabo, Republic Equatorial Guinea

[2] GECF Annual Workshop on Promotion of Natural Gas, December 16th 2019

[3] Amory B. Lovins, “Does 'Fuel On Hand' Make Coal and Nuclear Power Plants More Valuable?”, Forbes, 2017

[4] U.S. Energy Information Administration, Assumptions to the Annual Energy Outlook 2020: Electricity Market Module