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Expert Commentary

Natural gas, reliable and affordable source of energy in the path to sustainable recovery

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August 2021

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Having access to clean, reliable, and affordable energy sources is essential to improving the welfare of societies. However, a significant portion of the global population doesn't have access to electricity and clean cooking methods, and the pandemic has exascerbated the situation. Moreover, the energy project delays and investment contraction during the pandemic add further risks to realising the UN's Sustainable Development Goals (SDGs) if countries do not take the necessary measures.

Meanwhile, countries across the globe are implementing stimulus packages and energy policies such as fiscal programmes and tax rebates, lowering domestic energy prices for consumers, and relaxing the energy sector's rules and requirements to mitigate the pandemic's negative impacts and to revitalise their economies. However, the destructive effect of the pandemic on the economies and energy sector has been inevitable.

To recover from these negative impacts and strengthen the economies, the countries across the globe aim to create new jobs and sustainable economic growth with least environmental impact in the recovery phase. The key to the success of economic recovery plans is to integrate socio-economic factors such as job creation with climate change issues. In this regard, natural gas as a reliable and affordable energy source could play a crucial role in bridging those parameters in the recovery phase.

Several countries have outlined their plans to place natural gas at the heart of their economic recovery plans. For instance, Australia announced a gas-oriented post-pandemic economic recovery plan, which includes replacing coal-fired power plants with natural gas-fired plants and incentivising natural gas production (Thornhill, 2020). This article attempts to explore how natural gas could interconnect and optimise those socio-economic factors and climate change objectives during the economic recovery phase based on select pieces of evidence:

Natural gas - driver of economic growth and job creation

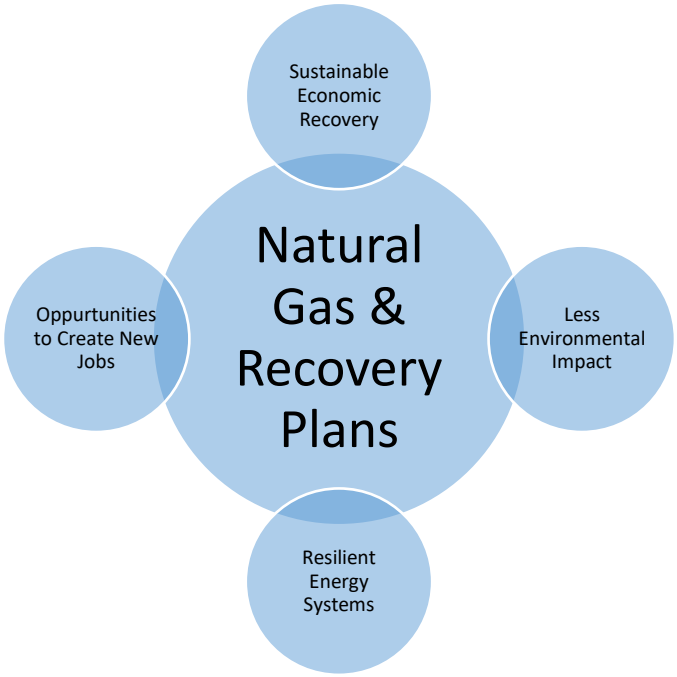
Global GDP shrank by more than 3%, and over 100 million people lost their jobs in 2020 due to the negative impacts of the COVID-19 pandemic. Meanwhile, based on the World Bank data, around half of the world population is categorised in low income and lower middle-income group. That portion of the global population has poor access or no access to clean and reliable energy, and energy-related expenses put a high burden on this demographic's income. That underscores the importance of access to an affordable source of energy for global prosperity.

Whilst some countries hold abundant energy sources, access to affordable and reliable energy sources is out of reach for millions of people, which hinders their sustainable economic growth. Several research works have investigated the impacts of energy insecurity and high energy costs on children's health and learning. These studies have found a direct relationship between inadequate access to energy and more impoverished health conditions in children living in those societies (Fuel for our future: Impacts of energy insecurity on children's health, nutrition, and learning, 2007).

Natural gas could play a key role in alleviating energy poverty and creating new jobs across the globe in the recovery phase. The potential to create new jobs at a lower cost and with less environmental impact is one of the brilliant features of natural gas that makes it a suitable energy source to cope with the harmful effects of the pandemic and revitalise the economies. Meanwhile, there is mounting evidence that obstruction of natural gas raised energy expenses for consumers in the past years due to inadequate energy policies implemented by certain countries.

It is worth mentioning that to precisely analyse the potential of job creation by different sources of energy, in addition to the investment required to create jobs (jobs per million USD investment), the environmental impacts also need to be considered. A study conducted by PwC (PwC, July 2017) indicates that the oil and gas industry contributed to around 8% of the U.S. GDP in 2015, and direct and indirect employment by the oil and gas sector accounted for approximately 10 million jobs. (Green, 2017).

Figure 1: Brilliant features of natural gas for economic recovery plans



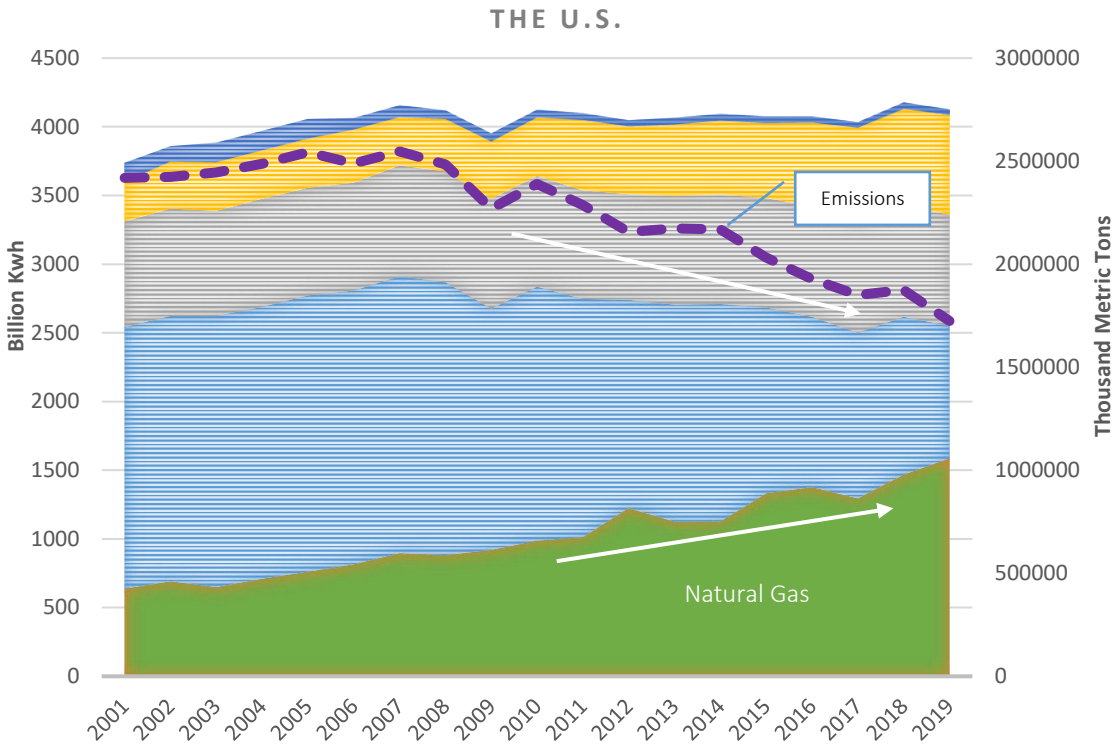
Resilient electricity supply is a necessity for clean recovery

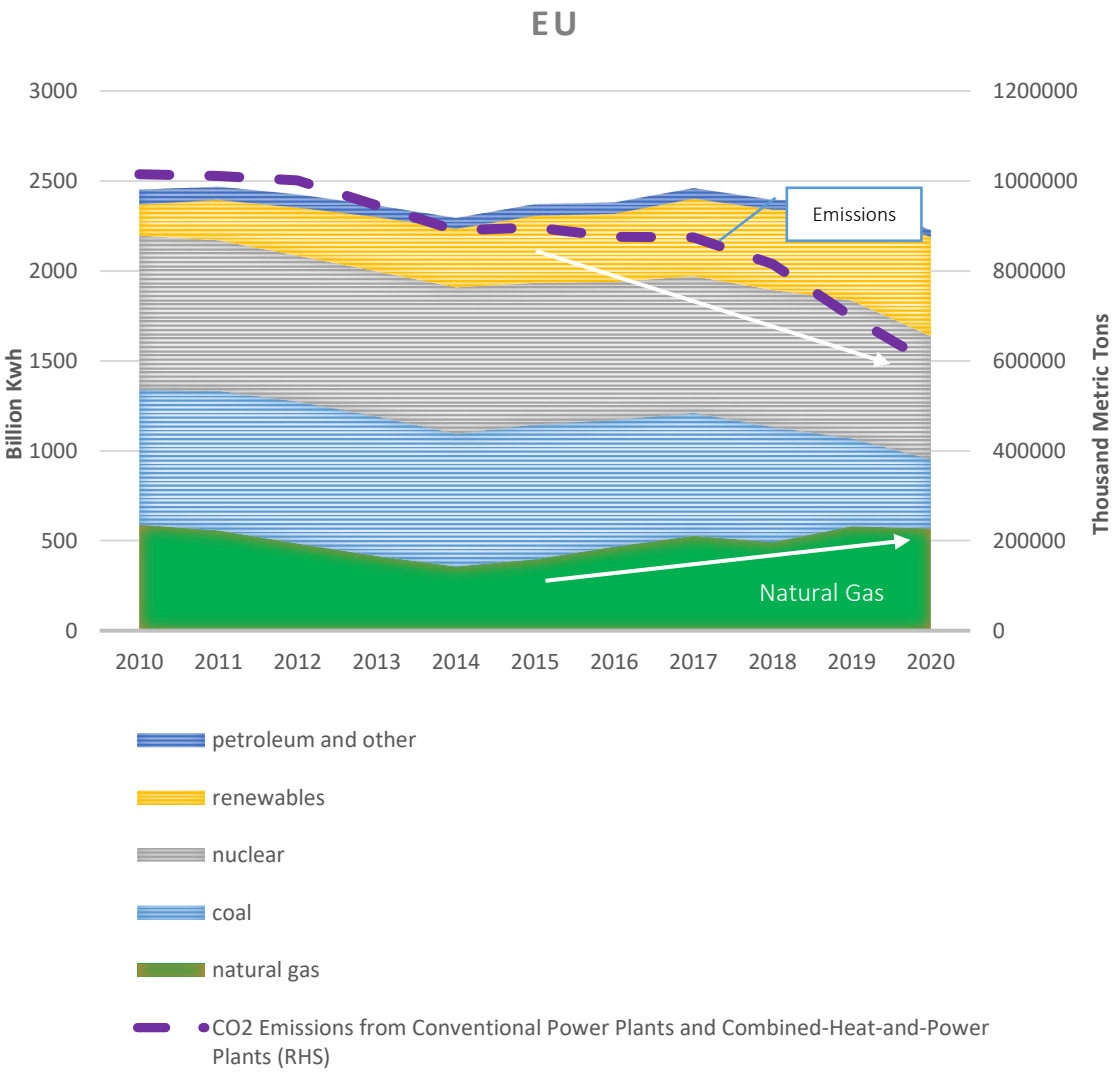
The resilience of electricity networks is an important parameter that should be considered in the recovery plans. Seasonality and intermittency of renewable sources cause fluctuation in the power grids. Natural gas-fuelled power plants could guarantee the flexibility and stability of power grids at a lower cost and with fewer emissions.

There is evidence that the countries that increased the share of natural gas in their power generation mix have significantly mitigated the sector's CO_2 emission level. Figure (2) illustrates the share of different energy sources in the U.S. power generation mix and the level of power sector CO_2 emissions from 2001. As is evident on the graph, natural gas's contribution in the U.S. power generation mix increased from 639 billion kilowatt-hours in 2001 to 1,617 billion kilowatt-hours in 2019. At the same time, the power sector's emissions declined from 2,418,607 to 1,724,396 thousand metric tonnes in 2019. Thus, lower CO_2 emissions in the U.S. power sector is mainly attributed to replacing coal with natural gas over the past 20 years.

The other important factor is the affordability of electricity supply for the consumers. As it is mentioned previously, vast swathe of the world doesn't have access to reliable and clean energy sources. The number of people who can't afford their electricity bills has increased during the pandemic due to job losses and lower income levels. According to the available data, the overnight cost of new electricity generation technologies for combustion turbines and combined-cycle natural gas plants is lower than other technologies such as solar, wind, geothermal and ultra-supercritical coal. Even during the pandemic, the levelised cost of electricity from combined cycle gas power plants dropped significantly due to lower natural gas prices, making natural gas more affordable in the crisis period.

Figure 2: Natural gas consumption in power sector vs. Power sector emissions





Source: GECF Databank, EIA (Electricity and Environment), Enerdata (www.enerdata.com)

Sustainable natural gas supply to prevent an energy crisis

The unprecedented events such as virus outbreaks or financial crises could cause an imbalance in energy supply and demand. Like other sectors, these low probability events significantly impact the energy sector, as we observed during the virus outbreak. In the early months of the pandemic, demand dropped due to declining economic activities and restrictions; consequently, oil and natural gas prices dropped sharply.A while later, when the restrictions relaxed and economic activities resumed, the demand started to recover. At the same time, the supply couldn't outpace the demand due to the lack of investment in the previous months. In the imbalanced market condition, extreme weather is enough to trigger instability in the energy markets. This is exactly what the global markets experienced in East Asia and the U.S. at the end of 2020 and the beginning of 2021. Extreme colds in the winter and extreme hot weather in some regions in summer imposed instability and price shocks to the energy markets in 2021.

The natural gas market's response to the shocks during the pandemic demonstrates its resilience during times of uncertainty. In addition, LNG flexibility added more value to the already positive attributes of natural gas during market shocks. The natural gas suppliers, particularly LNG, continued sufficient supply of this energy source despite all the difficulties, such as restrictions and project delays, even covering the shortages of other energy sources during the pandemic. As a result, the delivered volume of LNG in 2020 rose by around 1.5% to stand at 360 metric tonnes (mt) despite all the shipping restrictions, which indicates the reliability of natural gas during unfavourable conditions.

And the last word: despite the ongoing environmental push, coal support continues

A recent study shows that 5% of coal-fired power plants are responsible for around 73% of the energy sector's carbon emissions (Don Grant, 2021). Meanwhile, the emissions component and quantity from natural gas is significantly less than coal. Despite the devastating effect of coal, under the climate plans and targets, coal support continues in some countries, and there is not enough tendency to phase out coal from their power generation mix. According to their long-term energy plans, these countries are planning to burn coal well into 2050. At the same time, in addition to the banks, which continue funding the coal projects and lending to the coal investors, the institutional investors continue to allocate a significant portion of their portfolios to the coal industry. According to recent research (Groundbreaking Research Reveals the Financiers of the Coal Industry, 2021) as of January 2021, Institutional investors hold around USD one trillion in the coal industry.

Table: Coal support evidence across the globe

Coal Support Evidence	**Source of Evidence**
Some countries are planning to burn coal well into 2050	Based on their updated climate plans
Institutional investors hold a significant amount of investment in the coal industry	Based on their investment portfolios
Coal investment still is increasing in some countries	Based on the countries power sector investment plans

The more significant challenge now is getting the governments to replace coal with cleaner energy sources such as natural gas. The COVID-19 has caused natural gas project delays such as liquefaction/regasification facilities and pipeline projects, which could cause more coal consumption if the countries do not take the necessary measures, threatening the realisation of their environmental targets.

There is evidence from the recent energy crisis that obstruction of natural gas was one of the main reasons for the energy systems' vulnerability. Therefore, natural gas should receive the same incentives as renewable energy sources to guarantee more sustainable and resilient energy systems.

To maximise the opportunities for new job creation, governments could invest in the natural gas value-chain as part of their economic recovery plans. The important strategy for countries is to allocate some portion of their economic recovery budgets in natural gas infrastructure projects such as pipelines, LNG receiving terminals, and natural gas-fuelled power plants. Other than investing in natural gas projects and infrastructure, countries need to promote energy policies that support natural gas, particularly its penetration in the power sector as a reliable and affordable replacement for coal.

In this regard, GECF Member Countries pursue their efforts to alleviate energy poverty and contribute to global energy security and economic growth in the recovery period by supplying natural gas to the energy markets. In short, affordable natural gas prices, the possibility of converting natural gas into hydrogen, the potential of Carbon Capture and Storage (CCS), reliability, and stability of natural gas-based power grids are among the factors that make natural gas a brilliant source of energy for the recovery period and for reaching the environmental goals.

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References

Gas Exporting Countries Forum. (2017, November). Retrieved from Long Term Strategy: https://www.gecf.org/events/the-gas-exporting-countries-forum-long-term-strategy

Gas Exporting Countries Forum. (n.d.). Retrieved from Summit Declarations: https://www.gecf.org/gecf-5th-gas-summit/previous-declarations.aspx

Gas Exporting Countries Forum. (Annual Short Term Gas Maket Reports- Editions 2020 & 2021). Retrieved from Annual Short Term Market Report: https://www.gecf.org/insights/annual-short-term-gas-market-report.aspx

Don Grant, D. Z. (2021). Reducing CO2 emissions by targeting the world's hyper-polluting power. *Environmental Research*.

EIA. (n.d.). *Assumptions to the Annual Energy Outlook 2020.* US Energy Information Administration.

Electricity and Environment. (n.d.). Retrieved from US Energy Information Administration: https://www.eia.gov/electricity/data.php#elecenv

Enerdata. (2021). Retrieved from www.enerdata.com

Fuel for our future: Impacts of energy insecurity on children's health, nutrition and learning. (2007). Retrieved from Drexel University: https://drexel.edu/hunger-free-center/research/briefs-and-reports/fuel-for-our-future/

Green, M. (2017). *American Petroleum Institute.* Retrieved from https://www.api.org/news-policy-and-issues/blog/2017/08/01/study-industry-supports-us-jobs

(2021). *Groundbreaking Research Reveals the Financiers of the Coal Industry.* Urgewald.

(2021). *Indonesia plans to burn coal well into the2050s, under updated climate plan.* Gas Strategies.

Paraskova, T. (n.d.). *Institutional Investors Hold US$1.03 Trillion Investments In Coal.* Retrieved from Oilprice: https://oilprice.com/Latest-Energy-News/World-News/Institutional-Investors-Hold-US103-Trillion-Investments-In-Coal.html

PwC. (July 2017). *Natural gas and oil industry on the US economy in 2015.*

Shokri, A. (2019). *Asessment of Energy Policies and their Impacts on Natural Gas Market.*

Thornhill, J. (2020, September). *Bloomberg.* Retrieved from Australia Unveils 'Gas-Fired' Plan to Fuel Economic Revival

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