Fifth IEA-IEF-OPEC Symposium on Gas and Coal Market Outlooks

The GECF’s Natural Gas and Coal Outlooks

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What are the main evolutions observed during COVID-19 outbreak?

- Competitive natural gas and LNG prices have been predominant in most of the regions
- Increasing awareness about the value of having a clean air after lockdowns
- Upward revision of renewables ambition
- Accelerated disengagement or downward revision of coal development plans
- EVs are promoted as part of the clean solutions and post COVID-19 stimulus packages
- Increasing commitments towards net-zero emissions
- Scaling up the deployment of gas decarbonization options (LNG offsetting; CCUS; conversion to hydrogen)
- Several announcements and released strategies to support hydrogen economies

• Post COVID-19 developments offer large opportunities for natural gas
• The deployment of gas decarbonization options reinforce the role of gas in the transition towards low carbon economies

Source: GECF Secretariat
Natural gas trade key trends: Asia’s LNG demand in focus

LNG regional markets showing resilience and quick recovery out of COVID-19 as well as becoming more interconnected.

China, India and emerging Asia LNG demand - key drivers of the long-term natural gas market trade.

Growing role of ‘green’ LNG in decarbonisation and energy transition.

Asia’s LNG trade is shifting from long-term oil-indexed formulae to more spot/short-term and hybrid pricing pattern, while enjoying higher flexibility and competitiveness.

Asian LNG demand in focus

‘Green’ LNG

Asian LNG pricing transformation

LNG market interconnectivity and resilience
Gas and LNG spot prices: 2021 vs 2020

• LNG spot prices demonstrated very high volatility in the beginning of 2021
• COVID-19 resilient Asian liquefied natural gas (LNG) prices have rocketed to record highs in January 2021 due to low stocks, a colder winter, global production outages and shipping delays, charter rates increase
• Henry Hub natural gas spot prices approached their record in February amid significantly colder-than-normal weather that affected most of the Lower US 48 states. Natural gas production declined because of freeze-offs amid high demand for heating and power. At the benchmark Henry Hub, natural gas prices reached $24 per MMBtu on February 17

Source: GECF Secretariat based on data from Argus, Refinitiv, OANDA
Oil, Gas and LNG Futures

- Oil-indexed LNG prices are forecasted to average between $7.5-9/MMBtu in 2021. Although this is an improvement from 2020, prices are expected to be lower than 2019, which results in lower revenues for gas exporting countries.
- Strong LNG demand in Asia and Europe, particularly for replenishing gas/LNG storage, and some planned maintenance activity could support strong futures prices.

Source: GECF Secretariat based on data from Refinitiv, OANDA
Global economic prospects

Global real GDP 2019 - 2050
(trillion USD 2019)

- Global GDP will be 7% or USD 13 trillion lower in 2050 than the previous 2019 forecast (size of China’s current economy in absolute terms) because of COVID-19
- Incremental population growth, mainly driven by Africa
- Asia Pacific – economic growth ‘champion’ contributing 60% of global real GDP growth over 2019 - 2050

Source: GECF Secretariat based on the GECF Global Gas Model
Global energy mix evolution 2019-2050

- Natural gas is a destination fuel, indispensable in the long-run and complementing energy transition targets to a low-carbon economy.
- Natural gas is #1 in global energy mix by 2050, its share increases from 23% today to 28% in 2050.

Global energy demand trends by fuel type

- 2014 - Coal peak
- 2025 - Natural gas overtakes coal
- 2037-2041 - Oil plateau
- 2047 - Natural gas becomes the largest energy source

Source: GECF Secretariat based on the GECF Global Gas Model

Note: Bioenergy includes traditional and modern biomass
Key drivers of natural gas demand

Global natural gas demand by region

- Post-COVID-19 recovery electrification of end-use sectors based on gas-fired generation
- A key fuel suited for medium and high-heat industrial processes as well as a feedstock for manufacturing petrochemicals and chemicals
- The rise of gas usage in land and maritime transport

Source: GECF Secretariat based on the GECF Global Gas Model

Note: 1) Industry includes gas used as an energy fuel and feedstock as well as for hydrogen generation and the production of liquid fuels;
2) Other uses include gas demand for energy industry own use and for pipeline transport.
Global natural gas trade

- Global gas trade will reach 1,990 bcm by 2050
- Global LNG trade by 2050 is 820 mt (1,110 bcm)
- LNG trade will overtake pipeline trade in mid 2030s with Asia-Pacific – key LNG importing region
- Introduction of green LNG

Source: GECF Secretariat based on data from the GECF Global Gas Model 2020
Energy-related CO2 emissions prospects

Emissions forecasts in the GECF Reference Case (RCS) and the Carbon Mitigation Scenario (CMS)

-20% gap with 2°C scenario

Fuel shares in the primary energy mix

- There is potential to reduce emissions with larger gas penetration.
- Further decarbonization of gas (e.g. through CCUS, hydrogen…) enables to bridge the gap with 2°C scenario

The CMS considers more penetration of gas and renewables, basing on larger dissemination of existing and well proven technologies.
Hydrogen scenario

- Hydrogen acting as a game changer with blue hydrogen taking a significant role
- Hydrogen demand in 2050 will reach 475 Mt

Hydrogen production share by source

%  

- Natural Gas-Based Hydrogen Generation
- Coal-Based Hydrogen Generation
- Oil-Based Hydrogen Generation
- Electrolysis Hydrogen Generation
- Bioenergy-Based Hydrogen Generation

Mostly in the form of blue hydrogen

Source: GECF Secretariat based on the GECF Global Gas Model

Hydrogen demand outlook by sector

Mt of H2

<table>
<thead>
<tr>
<th>2019</th>
<th>Reference Case Scenario</th>
<th>Hydrogen Scenario</th>
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<td>0</td>
<td>475 Mt H2</td>
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Source: GECF Secretariat based on the GECF Global Gas Model
THANK YOU