Prospects for Gas Demand Growth Without Targeted Policy Support

Ian Nathan
Manager, Global Gas and LNG, Research & Advisory Group
Energy Intelligence
Agenda

• Gas Competitiveness Headwinds
• Targeted Policies Support Gas Demand Growth
• Divergent Policy Priorities in Asia
China, Thailand and South Asia Drive LNG Demand Growth

**LNG Demand: 2018-30 by Region** (million tons)

Source: Energy Intelligence projections
LNG Demand Growth Headwinds Erode Market Potential

<table>
<thead>
<tr>
<th><strong>Gas Competitiveness</strong></th>
<th>LNG’s high cost relative to competing fuels could impact both short-term use but also discourage CCGT newbuilds, potentially limiting gas-fired power demand upside.</th>
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<tbody>
<tr>
<td><strong>Upstream/ Pipeline Supply Revival</strong></td>
<td>Uptick or revival in gas output or pipeline supply could limit LNG requirements. Several countries, including Egypt and Argentina, are already demonstrating reduced need for LNG, while China could benefit from additional pipeline gas.</td>
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<td><strong>Import Capacity Development Challenges</strong></td>
<td>Import capacity development challenges, particularly regulatory, commercial and logistical hurdles, have proven tricky for new markets, resulting in delays. Yet, existing markets are not immune from expansion difficulty.</td>
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Gas Has Yet to Displace Coal in Power Generation

- Gas has encountered success by displacing oil in peak-shaving.
- Further penetration will be difficult given inter-fuel competition.

Source: IEA
Further Pressure on Gas from Low-Carbon Energy Transition

- Increasingly competitive renewables—representing durable savings—are eroding enthusiasm for gas-fired power.

Levelized Cost of Electricity (LCOE): capital, operating, fuel and carbon costs over the lifetime of a project, calculated as a break-even price for electricity delivered to the high-voltage grid.

Source: Energy Intelligence
Gas-Fired Capacity Supports Renewables Growth But Newbuilds a Difficult Choice for Some

- Countries expecting dramatic electricity demand growth may be hamstrung by the need to choose cheaper fuel options.

* "Steam" is mostly coal, but also includes some heavy oil and gas. Source: KEEI
Carbon Pricing as Gas Demand Driver is Not Assured

- Market conditions could undermine carbon pricing impact.
- High carbon prices further erode the gas-fired power case.
Economic and Environmental Priorities Drive Divergent Policies in Asia

- Environmental concerns, particularly air pollution, are driving policy solutions in several Asian LNG markets.
- Implementation will vary, particularly in countries where environmental remedies compete with macroeconomic concerns.
China is the Flagship Example of Targeted Policy Impact on Gas Demand

- Mandated coal-to-gas boiler switching has helped drive growing gas consumption even higher.
- LNG imports doubled from 2016-18.

Source: Energy Intelligence, GACC
Potential for Targeted Policy Impact in South Korea

- President Moon is targeting a gas and renewables future.
- Coal preference may be difficult to unwind absent strong policy.

South Korea: Power Generation Fuels (million toe)

Source: IEA
India Illustrates Environmental and Macroeconomic Tensions

- India will encounter difficulty meeting Prime Minister Modi’s ambitious gas use goals without greater gas use in power generation.
Unlikely to See Gas-Supportive Power Sector Policy in India

- Coal’s cost advantages and socioeconomic benefits
- Growing solar competitiveness, even relative to coal
- Contravenes quest for lower import dependence
- Complicates balance of payments management
- Preference for developing domestic upstream
The Americas
270 Madison Avenue, Suite 302
New York, NY 10016
US
Tel: +1 212 532 1112

1401 K Street, NW, Suite 1000
Washington, D.C. 20005
US
Tel: +1 202 662 0700

808 Travis Street, Suite 1014
Houston, TX 77002
US
Tel: +1 713 222 9700

Europe
7 Down Street, 3rd Floor
London W1J 7AJ
UK
Tel: +44 (0)20 7518 2200

Daev pereulok 20, Office 509
107045 Moscow
Russia
Tel: +7 495 604 8279/78/77

Middle East & Asia-Pacific
15A Temple Street, #02-01
Singapore 058562
Singapore
Tel: +65 6538 0363

Aurora Tower, 1907
Dubai Media City
Dubai
PO Box 502803
UAE
Tel: +971 4 364 2607/2608

1st Floor, Freij Bldg, Sodeco
President Elias Sarkis Street
Beirut
Lebanon
Tel: +961 1 614282 & 3