Global LNG market and Russia’s new LNG strategy

18 April 2018
Key themes of emerging New Russia’s LNG Strategy

• Russia perceives a significant opportunity in global LNG market, through low-cost, globally competitive development; President Vladimir Putin ordered government to develop a new official strategy (doctrine) by June 2018; Key aspects:
  • Envisions developing 100 million metric tons per annum (MMtpa) (about 132 Bcm/y) LNG by 2035, capturing about half of global incremental demand
  • Opportunity to monetize its sizable, low-cost, essentially “stranded” Arctic gas resources
  • Key element: Develop indigenous manufacturing base for liquefaction equipment and technology, as well as supporting industrial base for support ships/Arcitc assembly bases for large modules (with major multiplier effect on domestic economy)
  • Plan is to use large modular anchored to the seabed GBS facilities; assembled at Murmansk closer to existing labor and infrastructure, then float them into place, minimizing civil construction in difficult onshore conditions of Arctic coastal areas
  • Key question becomes unit capex: Can Russia exploit its upstream bounty through low-cost indigenous manufacture of equipment and support services required?
  • Attract capital from leading emerging LNG consumers (e.g., China, India) and capture interest of major global players (e.g., Total, Shell)
  • Strategic goals of Russia’s new LNG strategy stretch far beyond just higher gas production and additional budget revenues: Aimed at creating a whole new industry
    • Spurs development of Northern Sea Route (NSR) into a major maritime shipping route
    • Opens up world markets for Russian gas: Providing a global reach not limited to overland pipeline connections
    • For NOVATEK, opportunity to decisively move beyond Russia’s domestic market and emerge as a truly global player, following up on its Yamal LNG success; its vision is to develop about half of overall Russian increment (about 50 MMtpa)
Russia’s LNG ambitions: What is actually realizable? What is questionable/speculative?

Russia’s existing and proposed LNG projects

<table>
<thead>
<tr>
<th>Year</th>
<th>Qatar liquefaction capacity in 2020</th>
<th>US liquefaction capacity in 2020</th>
<th>Australia liquefaction capacity in 2020</th>
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<td>2035</td>
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- **Sakhalin-2 (incl. 3 Train)**
- **Yamal LNG (4th Train)**
- **Vladivostok LNG**
- **Baltic LNG**
- **Arctic LNG-3**
- **Total**

- **Yamal LNG**
- **Portovaya, Cryogaz-Vysotsk, Gorskaya LNG**
- **Arctic LNG-2**
- **Far Eastern LNG**
- **Pechora LNG**

Source: IHS Markit

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Challenges posed by the global LNG market
Global LNG market looks different in the short and long term

Two periods of competition

Short term to 2022

Global oversupply

- Rapid buildup in supply
- Supply exceeds price-responsive demand
- Global prices pushed down to SRMC of US LNG

Long term

New supply required

- Global gas supply abundant
- Gas increasingly delinked from oil
- LRMC of supply drives prices

Europe is the “residual” market for global LNG

Note: SRMC = short-run marginal cost; LRMC = long-run marginal cost.

Source: IHS Markit

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Global LNG oversupply in the near term

Global LNG supply and demand balance: Outlook

Source: IHS Markit

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Opportunity gap: A crowded space for new supply

LNG supply forecast by status

Note: FID = final investment decision.
Source: IHS Markit
Base-case global LNG demand: 4.0% per year average growth to 2040

Forecast LNG demand growth from 2017

Note: MENA = Middle East and North Africa. Source: IHS Markit

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Autonomy scenario global LNG balance: New supply capacity (beyond existing and under construction) needed from ~2030 only

Global LNG exports by status versus total demand: Autonomy scenario

Notes: Based on IHS Markit start dates
Source: IHS Markit

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