Liquefied Natural Gas: Financing Vietnam’s large-scale high-risk multibillion-dollar greenfield LNG projects

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Introduction to Lexcomm Vietnam LLC

• Tier 1 rankings in Projects and Energy by Legal 500 Asia Pacific for 2019
• preeminent full-service Vietnamese commercial law firm with market-leading practices. Offices strategically placed in Hanoi and HCMC
  ✓ consistently ranked by prestigious legal directories Legal 500 Asia Pacific, IFLR1000, Chambers Asia Pacific and Asialaw Leading Lawyers
  ✓ regularly advises international energy companies on Vietnam’s multibillion-dollar landmark energy and infrastructure projects
  ✓ established bench of 20+ years experience Vietnam qualified transactional and disputes lawyers to assist international clients
  ✓ top-level technical legal expertise and wealth of Vietnam market experience in banking and finance, capital markets, energy and infrastructure, telecoms, corporate and M&A, dispute resolution
Vietnam’s energy security

- historical dependence on oil product imports (70%)
- export sales of crude oil
- constrained State funding for E&P operations
- Prime Minister’s Decision No. 60/QD-TTg in efforts to monetise domestic gas discoveries
- significant challenges to secure long-term gas supplies
- momentum building with pipeline of new LNG regas/LNG-to-power projects
Exploration and production
Exploration and production

- first oil from Ca Tam oilfield (Block 09-3/12 PSC) on 25/01/2019
  - jointly developed by Vietsovpetro, PVEP and Bitexco
- open blocks and farm-in opportunities available from PVN/PVEP
- relatively under-explored offshore deepwater areas with complex geology
- host government contracts - GOV issued a model form of PSC (effective on 8 June 2013)
  - field specific, focus on oil exploration, typical “carried” provision
  - natural gas aspects of granting instruments
  - royalty is not price-sensitive/“ring fenced” tax calculations
  - Government take - sliding scales based on production rates
Natural gas - MOIT forecasts

Figure 1-16: Gas supply-demand balance in the period 2016-2035 in the proposed scenario

Table 1-15: Gas supply-demand balance in the periods in the proposed scenario (billion m³)

<table>
<thead>
<tr>
<th></th>
<th>2016-2025</th>
<th>2026-2035</th>
<th>2016-2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploitation</td>
<td>125.2</td>
<td>145.4</td>
<td>270.6</td>
</tr>
<tr>
<td>Import</td>
<td>4.2</td>
<td>90.2</td>
<td>94.4</td>
</tr>
<tr>
<td>Power production</td>
<td>109.3</td>
<td>200.4</td>
<td>309.7</td>
</tr>
<tr>
<td>Other consumers</td>
<td>23.7</td>
<td>36.2</td>
<td>60.0</td>
</tr>
</tbody>
</table>

Sources: Vietnam Energy Outlook Report 2017 (MOIT)
Natural gas

• 9-10 bcm/year of gas through existing pipeline systems
  ✓ Bach Ho (associated gas)
  ✓ Nam Con Son 1 and Nam Con Son 2 (phase 1)
  ✓ PM3 CAA - Ca Mau

• strong demand growth for gas outpaces domestic production from 2020 onwards, primarily driven by power generation (>85%)

• declining production of mature gas fields (e.g. LT/LD gas fields)
Natural gas

Additional gas supplies

Blocks 05-1b & 05-1c (SV-DN)

Block 15.1 (STT-2)

Blocks 117-119 (CVX)

Block B & 48/95 and Block 52/97
Natural gas

• licence retention for significant gas discoveries: max 7 years

• upstream gas sales agreements
  ✓ long-term contracting
  ✓ pricing for natural gas - project based/oil price indexation
  ✓ take or pay - volumes and payments to guarantee income stream to Sellers

• fundamental to ensure alignment between gas and power master plans

• gas shortage of 14 bcm by 2025
  ✓ LNG supplies in High case to cover shortage of gas supply
Liquefied natural gas
Liquefied natural gas

**Shipment LNG Outlook 2019**

**LNG continues to be the fastest-growing gas supply source**

**Global gas supply by source**

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Production</th>
<th>Pipeline Imports</th>
<th>LNG Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>3,000 BCM</td>
<td>1,000 BCM</td>
<td>62%</td>
</tr>
<tr>
<td>2018</td>
<td>2,000 BCM</td>
<td>400 BCM</td>
<td>4%</td>
</tr>
<tr>
<td>2018</td>
<td>1,000 BCM</td>
<td>200 BCM</td>
<td>34%</td>
</tr>
<tr>
<td>2018</td>
<td>500 BCM</td>
<td>40 BCM</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>0 BCM</td>
<td>0 BCM</td>
<td></td>
</tr>
</tbody>
</table>

Gas demand 2% CAGR

**LNG imports by region**

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia</th>
<th>Europe</th>
<th>Americas Mid-East &amp; Africa</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>400 BCM</td>
<td>200 BCM</td>
<td>100 BCM</td>
<td>800 BCM</td>
</tr>
<tr>
<td>2018</td>
<td>59%</td>
<td>22%</td>
<td>9%</td>
<td>9%</td>
</tr>
</tbody>
</table>

LNG demand 4% CAGR

**LNG imports in Asia**

<table>
<thead>
<tr>
<th>Year</th>
<th>China</th>
<th>JKT</th>
<th>South Asia</th>
<th>South East Asia</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>32%</td>
<td>-8%</td>
<td>35%</td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

Asia LNG demand 3% CAGR

Source: Shell interpretation of Wood Mackenzie Q4 2018 data

Sources: Shell LNG Outlook 2019
Liquefied natural gas

LNG imports in 2017

- Japan, 84.5, 28.8%
- China, 39.5, 13.5%
- S. Korea, 38.6, 13.2%
- India, 20.7, 7.1%
- Taiwan, 16.8, 5.7%
- Spain, 12.2, 4.2%
- Turkey, 7.8, 2.7%
- France, 7.6, 2.6%
- Egypt, 6.2, 2.1%
- Italy, 6, 2.1%
- Pakistan, 5.1, 1.7%
- Mexico, 4.9, 1.7%
- UK, 4.9, 1.7%
- Kuwait, 4.3, 1.5%
- Thailand, 3.9, 1.3%
- Jordan, 3.4, 1.2%
- Chile, 3.4, 1.1%
- Argentina, 3.2, 1.1%
- Portugal, 2.8, 0.9%
- Singapore, 2.3, 0.8%
- UAE, 2.2, 0.8%
- Other, 12.8, 4.4%

Note: Number legend represents total imports in MT, followed by market share %.
“Other” includes countries with imports less than 2.0 MT (by order of size): United States, Brazil, Malaysia, Poland, Greece, Belgium, Dominican Republic, Puerto Rico, Lithuania, Netherlands, Israel, Canada, Malta, Jamaica, and Colombia.
Sources: IHS Markit, IGU

Sources: International Gas Union - World LNG Report 2018
Liquefied natural gas

Shell LNG Outlook 2019

Growing recognition of the role of gas and LNG

- Global energy demand set to grow by 18% by 2035
- LNG continues to be the fastest-growing gas supply source - more than half of LNG import growth in Asia
- Coal-to-gas switching led to 78% improvement in Beijing winter air quality in last 5 years, equivalent to 37 million cars off the road

Asian LNG imports exceed expectations again in 2018 absorbing continued supply growth

- LNG trade reached 319 million tonnes
- China became the world's largest gas importer, with LNG imports doubling over 2 years
- LNG exports grew by 27 million tonnes, half of the growth came from Australia
- LNG imports account for over 50% of India's gas mix in 2018
- Efforts to improve air quality saw China's LNG imports surge by around 16 million tonnes in 2018
- 1400+ spot cargo deliveries in 2018

Near term supply growth expected to be absorbed by Europe and Asia - continued need for investment in supply to meet long-term demand growth

- LNG trade reached 319 million tonnes
- Enough to power 643 million homes
- LNG imports account for over 50% of India's gas mix in 2018
- Efforts to improve air quality saw China's LNG imports surge by around 16 million tonnes in 2018
- 1400+ spot cargo deliveries in 2018

Sources: Shell LNG Outlook 2019 infographic

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37 million tonnes of new LNG capacity added in 2018
35 million tonnes additional supply expected in 2019 - Europe and Asia expected to absorb supply growth
Potential for growth of gas in European power sector – current utilisation of gas fired power generation capacity below 60%
21 million tonnes of new FID sanctioned in 2018
Supply investment still needed to avoid shortfall by mid-2020s
Liquefied natural gas

• Asia Pacific LNG demand grew strongly
• 50% of 2018 global demand from major Asian LNG buyers, including KOGAS, CPC, JERA and Tokyo Gas, CNPC, CNOOC, Sinopec
• LNG contracting trends
  ✓ flexible and diverse supplies
  ✓ increased liquidity and commoditisation
  ✓ spot trading continues to grow/a spot market in Asia?
  ✓ alternative pricing structures: Brent crude vs Henry-Hub/NBP indexed
  ✓ long-term offtake commitments/annual take-or-pay
Liquefied natural gas

- US became the net exporter of LNG with shale boom
- growing influence of the US market/Henry Hub
- transitioning from exporter to importer
- strong investor interest in integrated LNG to power developments
  - ✓ climate change - lowering carbon dioxide emissions
  - ✓ Government support on clean and renewable energy to displace coal in power generation
  - ✓ more FSRUs in service with lesser investment at remote places
Vietnam LNG regas opportunities

• Vietnam’s LNG import capacity and master plan

• requires enabling regulatory framework for LNG import and terminal use

• LNG regas opportunities

✓ Thi Vai LNG (1-3 mtpa) (LNGV as ProjectCo)

✓ Son My LNG (3.6-9 mtpa)

✓ Khanh Hoa LNG (3 mtpa)

✓ Hai Phong LNG (1-3 mtpa)

✓ Southeast LNG (Tien Giang, 4-6 mtpa)

✓ Southwest LNG (Ca Mau, 1 mtpa)

✓ FSRU Thai Binh (0.2-0.5 mtpa)
Vietnam gas-to-power opportunities

- 19,000MW from gas-fired power plants, including LNG
- MOIT’s proposed Power Master Plan No. 8 (PDP8)
- gas-fired power projects
  - Dung Quat 2 IPP (750MW)
  - Dung Quat 1 and Dung Quat 3 (750MW each) to be developed by EVN
  - Mien Trung 1 and 2 (750MW each) to be developed by PVN
- LNG-fired power projects
  - Son My 1 IPP (2,000MW)
  - Son My 2 (750MWx3), Nhon Trach 3 and Nhon Trach 4 (750MW each) to be developed by PV Power
- Options with FSRUs: lower upfront costs and short lead time
LNG value chain

Upstream natural gas E&P → Liquefaction and pre-treatment → LNG shipping

Power generation and gas distribution ← Pipelines ← Regasification and storage
Structuring considerations

- long-term “baseload” sales of LNG
- LNG procurement strategy - conventional vs FSRUs/FSUs
- structuring considerations
  ✓ onshore
  ✓ FSRU
  ✓ FSU with onshore regas
- long-term vs short-term SPA
- back-up supplies
- alignment of equity across the LNG value chain
Project development challenges

- adequacy of regulatory framework
  - regulatory approvals and permits
  - pass-through of project risks and liability allocation
  - long-term offtake agreements
- long-term economic viability
- project structuring and contracting strategies
- LNG pricing - oil-indexed vs gas hub
- LNG import terminals and infrastructure
  - capacity utilisation
  - third-party access regime/shared infrastructure
Commercial terms for LNG sales

- pricing
- contract term - supply security vs flexibility
- take-or-pay over contract year
- volume flexibility
- destination clauses
- shipping control
- aggregated parties
Project financing considerations

• funding options/long-tenor limited recourse debt financings
• back-to-back pass-through of all costs and risks
• lenders’ step-in rights
• viability gap funding (VGF) and host government support
• sponsor support obligations/change of control restrictions
• fuel procurement risk, commodity and currency risks
• creditworthiness of key project counterparties
• long-term take-or-pay liability
• termination payments and buyout provisions
• complexity of intercreditor issues and the role of ECAs/MLAs
Government support

- Key legal authorities
  - ✔ Art 12.1 of the Investment Law 2014/Art 61 of Decree 63
- Large demands for infrastructure financing in emerging markets, policy and institutional environment
- ‘Guaranteed’ revenue stream from offtaker
- Limited government support in certain critical areas
  - ✔ utility performance
  - ✔ fuel supply
  - ✔ access to foreign exchange
  - ✔ creditworthiness of Vietnam project counterparties
- Legal and practical issues upon enforcement
Government support

• GGU scope
  ✓ legal and fiscal stability
  ✓ payment obligations
  ✓ performance obligations typically excluded
  ✓ currency risk

• currency risk
  ✓ denomination, availability, convertibility and remittance

• Vietnam’s foreign exchange controls

• implications of the Prime Minister’s Official Correspondence 1604/TTg-KTN
Dispute resolution

• Choice of law
  ✓ may apply a foreign law
  ✓ English law typically selected as the governing law of key project documents

• Tiered dispute resolution provision, allow for joinder of disputes
  ✓ negotiation
  ✓ mediation
  ✓ expert determination
  ✓ international arbitration

• Investment protection in international investment treaties
## Conclusion

**Ways forward**

- Increase Vietnam’s domestic reserves and production
- Complement domestic gas production by LNG imports
- Develop a robust enabling policy and regulatory framework for LNG-to-power to “pass through” risks to downstream customers
- Need incentivised fiscal terms and gas pricing to unlock marginal gas fields and unconventional resources
- Increase institutional capacity of Governmental authorities and credit worthiness of Vietnam project counterparties
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