North East Asian Gas Market at a Crossroads: Prospects for Market Structure Development

Irina Mironova
Associate Researcher
ENERPO Research Center
European University at Saint Petersburg

ENERGETIKA XXI
Saint Petersburg, November 14-16, 2018
Global natural gas snapshot

**NATURAL GAS PRODUCTION WORLDWIDE AND SHARE OF CROSS-BORDER DELIVERIES**

- **2001**: 22% of cross-border trade (RHS)
- **2017**: 31% of cross-border trade (RHS)

**CROSS-BORDER NATURAL GAS TRADE**

- **2001**: Cross-border supplies (pipeline) 400 bcm
- **2005**: Cross-border supplies (LNG) 200 bcm

**NATURAL GAS PRICING MECHANISMS IN THE WORLD**

- Regulated prices
- Bilateral price setting
- Netback pricing from the end-product
- Competitive price setting
- Oil price indexation
- % of indexation (RHS)
- % of competitive pricing (RHS)

Sources: IGU, BP
Snapshot of natural gas in Asia

ASIA PACIFIC GAS TRENDS

Pipeline imports
LNG imports
Production
Consumption

PIPEDLINE IMPORTERS

ASIA PACIFIC GAS TRENDS

LNG IMPORTERS

NATURAL GAS MARKET IN THE ASIAN PACIFIC REGION IS RATHER FRAGMENTED

Mature consuming markets
- Japan
- Republic of Korea

Emerging consuming markets
- China
- India
- Thailand
- Bangladesh
- Vietnam

Markets in transition
- Indonesia
- Malaysia

Source: BP
Crossroad 1: Terms of the deals. Long-term contracts or spot trade?

NORTH EAST ASIAN GAS MARKET HAS DYNAMICS CORRESPONDS TO GLOBAL TRENDS:
MORE CONTRACTS FOR SHORTER PERIODS AND LOWER ANNUAL QUANTITIES

Source: IHS Markit
Crossroad 2: Asian hub. Possible or not?

**LNG Trade Volumes: Worldwide Volumes and Trade Outside Long-Term Contracts**

- Global LNG trade
- LNG trade outside the long-term contracts
- Share of non-LTC trade deals in overall transactions (RHS)

**Potential Natural Gas Trading Hubs in Asia**

- Singapore?
- Tokyo?
- Shanghai?
- Chongqing?

**What is the Challenge to Utilize Trading Platform?**

- Low trading volume: 38.3%
- Confidentiality: 14.1%
- Shipping: 10.9%
- Counterparty credit risk and fulfillment of contract terms: 36.7%

Growth outside long-term contracts was noticeably slower than overall global LNG trade growth. Spot trade in the Asia Pacific is complicated by the absence of natural gas trading hubs.

Sources: GIIGNL, LNG Consumer-Producer Conference 2018
Crossroad 3: Gas price setting mechanisms. Indexation or exchange trading?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Indexation</th>
<th>Price Range</th>
<th>Price Indexation</th>
<th>Price Indexation</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_{JCC} &lt; 50 \text{ USD/bbl}$</td>
<td>$8 &lt; P_{LNG\ DAT} &lt; 10 \text{ USD/mmmbtu}$</td>
<td>JCC indexation is advantageous for the buyer</td>
<td>JCC indexation is advantageous for the buyer</td>
<td></td>
</tr>
<tr>
<td>$50 &lt; P_{JCC} &lt; 65 \text{ USD/bbl}$</td>
<td>$10 &lt; P_{LNG\ DAT} &lt; 12 \text{ USD/mmmbtu}$</td>
<td>JCC indexation is advantageous for the buyer</td>
<td>JCC indexation is advantageous for the buyer</td>
<td></td>
</tr>
<tr>
<td>$P_{JCC} &gt; 65 \text{ USD/bbl}$</td>
<td>$P_{LNG\ DAT} &gt; 12 \text{ USD/mmmbtu}$</td>
<td>HH indexation is advantageous for the buyer</td>
<td>HH indexation is advantageous for the buyer</td>
<td></td>
</tr>
</tbody>
</table>

**WHAT IS MOST APPROPRIATE PRICE INDEX REFERRED IN TERM CONTRACTS FOR NEXT COMING YEARS?**
(LNG Producer-Consumer Conference questionnaire)

- **Crude oil**: 24.4%
- **Henry Hub**: 12.8%
- **JKM**: 16.2%
- **NBP**: 2.1%
- **Hybrid**: 44.4%

**ADEQUATE TYPE OF INDEXATION IN THE ASIA PACIFIC: NEITHER OIL NOR HH**

Sources: Author’s calculation, LNG Consumer-Producer Conference 2018
Irina Mironova is an Associate Researcher at the European University of St. Petersburg (EUSP), Autonomous Non-Commercial Education Organisation for Higher Education in St. Petersburg, Russia, and Chief Specialist at PJSC Gazprom. From 2013 to 2018 she worked as a research engineer at the Energy Research Institute of the Russian Academy of Sciences. Irina has taught a number of courses related to energy issues, including the following courses: "Russian Gas Strategy", "Energy Security in Asia" (EUSP, 2015 to present); "Introduction to International Energy" (Saint Petersburg State University of Economics, 2017 to present); "Introduction to Energy Policy" and "Energy Markets" (Venice International University, Italy, 2016 and 2018); "Economics and Regulation of the Energy Sector" (OSCE Academy in Bishkek, Kyrgyzstan, 2014 and 2016). In 2010-2012 she worked in the editorial office of the Security Index journal as an editor, then as Deputy Editor-in-Chief.

Graduate of the Faculty of Arts of the University of Groningen (the Netherlands) on the "Modern History and International Relations" programme (2010), graduate of the Baccalaureate of International Relations at the Urals State University in Oriental Studies (2008).

191187 St. Petersburg, Gagarinskaya St. 6/1
The European University of St. Petersburg
ENERPO research centre
http://eu.spb.ru/
imironova@eu.spb.ru