FSRU as The Vocal Point for Small LNG Distribution in Indonesia: An Owner Perspective

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1. Drivers For Gas Infrastructures Development in Indonesia
2. Indonesia Gas Supply Demand Balance
3. Domestic Gas Supply Points and Demand Points
   - Sumatera
   - Java
   - Eastern Indonesia
4. Potential LNG market surrounding FSRU nusantara regas
### DRIVERS FOR GAS INFRASTRUCTURES DEVELOPMENT IN INDONESIA

<table>
<thead>
<tr>
<th>POLITICAL</th>
<th>Government to increase the portion of gas for domestic use through Domestic Market Obligation.</th>
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<tbody>
<tr>
<td>ECONOMIC</td>
<td>GDP growth triggered macro economy activities to use more gas, especially for public utility and industries.</td>
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<td>High price oil base fuel compared with gas.</td>
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<td>Indonesian fuel subsidies are increasing as public utility demand grows.</td>
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<td>Needs for distributed power/energy supply.</td>
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<td>SOCIOCULTURAL</td>
<td>Use of gas relatively new and it is not yet used as base load to generate power/energy for public utility and industries.</td>
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<td>TECHNOLOGY</td>
<td>Use of gas requires high-tech equipment to ensure safety in operation.</td>
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<td>No extensive gas pipeline network, especially in Eastern part of Indonesia.</td>
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<td>ECOLOGICAL</td>
<td>Awareness to reduce local pollution and CO2 emissions by increasing gas portion in energy mix.</td>
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<tr>
<td>LEGAL</td>
<td>Legal agreements tools is established to cover whole business issues.</td>
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MARKET THROUGH SMALL LNG SHIPPING

1. As an anchor market for gas infrastructures development, electricity demand is scattered all over the country.

2. LNG is the most strategic solution to balance the supply-demand gap in respect to geographical condition and distance between gas supply to demand points in Indonesia.

3. Due to marginal demand in the range of 3 to 30 MMSCFD in the Eastern Indonesia, small scale LNG is the most efficient way for gas distribution. The same concept can be applied to supply LNG for small islands surrounding FSRU NR facility.

4. Small scale LNG concept is to reach “stranded” gas markets that far from existing pipeline system, and not economically feasible for pipeline extension or new pipeline construction.

5. Demand volume, geographical profile, and existing infrastructures are the main considerations to choose the right match technologies.
In order to integrate gas supply and demand among regions, it is required to accelerate gas infrastructure development, not only in strategic location but also in scattered location.

- Expected deficit in North Sumatera
- South Sumatera to remain a gas surplus region

Java shortage expected to worsen by 2020, unless new infrastructure is built to transport gas from other regions

1 Potential reserves / Current production
2 Demand shortfall as per BPHMIGAS – includes unmet latent demand
3 Sumatra demand shown indicates sales to Duri for steam flooding and excludes local fertilizer sales that are assumed to be price out by Duri and SSWJ imports

SOURCE: Woodmac, Energyfiles, Pertamina; FACTS; BPPT; PLN; PGN; team analysis
DOMESTIC GAS SUPPLY & DEMAND POINTS

Arun Regasification & Hub
Location: Arun
Capacity: 400 mmscfd
Operator: Perta Arun Gas
COD: Q 1 2015

West Java FSRU
Location: Jakarta Bay
Capacity: 400 mmscfd
Operator: Nusantara Regas
COD: Q 3 2014

Cilacap FSRU

Center Java FSRU

Bali Rec Terminal: 20 mmscfd

LNG Bontang

LNG Donggi

LNG Tangguh

Kalisat Rec Terminal
• Semberah: 5 mmscfd
• Tanjung Batu: 16 mmscfd
• Batak: 3 mmscfd
• Bontang: 6 mmscfd

Likupang Rec Terminal: 3 mmscfd
Halmahera Rec Terminal: 60 mmscfd
Pomala Rec Terminal: 25 mmscfd
Maros Rec Terminal: 10 mmscfd
Halmahera Rec Terminal: 60 mmscfd
Pomala Rec Terminal: 25 mmscfd
Maros Rec Terminal: 10 mmscfd
Halmahera Rec Terminal: 60 mmscfd
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Halmahera Rec Terminal: 60 mmscfd
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Maros Rec Terminal: 10 mmscfd

Rec terminal development

Existing pipeline
Planned pipeline
Existing FSRU
Planned FSRU & Regas

Lampung Java FSRU
COD: Q 3 2014

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1. Electricity demand for small islands near FSRU NR is supplied from power plants in Jakarta using subsea cable distribution.

2. Electricity distribution development for small islands near FSRU NR is segregated become three stages based on area*).

3. There is opportunity to develop independent power plant (IPP) and mini LNG receiving terminal in certain islands surrounding FSRU NR.

4. LNG for mini LNG receiving terminal might be supplied from FSRU NR using small scale LNG vessel (milk around mechanism).

Source:

*) PLN RUPTL
ELECTRICITY DISTRIBUTION SYSTEM DEVELOPMENT STAGE IN SMALL ISLANDS NEAR FSRU NR

- Stage 1: existing
- Stage 2: start 2014
- Stage 3: start 2015
- IPP in P. Damar is to be built to produce 10 MW electricity
SMALL SCALE LNG DISTRIBUTION FROM FSRU NR
THANK YOU