NATURAL GAS UTILIZATION
IN INDONESIA

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AGENDA

NATURAL GAS UTILIZATION IN INDONESIA

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  - THE ASEAN PROVED GAS RESERVES STATUS
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  - THE WORLD ENERGY DEMAND
- GAS BUSINESS STRATEGY
- CHANGES OF GAS MARKET
- INDONESIA GAS BUSINESS
  - INDONESIA GAS BUSINESS STAGES
  - NEW OIL AND GAS LAW
- DEVELOPMENT OF GAS UTILIZATION IN INDONESIA
INTRODUCTION

**WHY NATURAL GAS??**

- Natural Gas is not Oil,
- Natural Gas is much cleaner burning than oil or coal,
- Natural Gas is one of the cleanest energy,
- Natural Gas is fuel of choice.

**NATURAL GAS IS THE FUTURE PRINCE OF ENERGY**

- The trend in 21\textsuperscript{th} century was a move away from fuels with many \textit{Carbon atoms} to fuel with few or no carbon atoms called “\textit{decarbonization},”
- \textit{Decarbonization} is the progressive reduction in the amount of carbon used to produce a given amount of energy.
INDONESIA GAS RESERVES
STATUS JANUARY 01, 2002

PRODUCING FIELDS
- PROVEN: 58.55%
- POSSIBLE: 23.30%
- PROBABLE: 18.15%

Non Producing Fields
- Producing Fields: 64.949,64 BSCF
- Non Producing Fields: 111.638,87 BSCF
- Total: 176.588,51 BSCF
INDONESIA’S NATURAL GAS RESERVES

RESERVES: 166 TCF
UNCOMMITTED: 98 TCF

SUMATRA: 35 TCF
KALIMANTAN: 47 TCF
JAVA: 11 TCF
OTHER ISLANDS: 24 TCF

NATUNA: 49 TCF
NATUNA: 46 TCF
SUMATRA: 12 TCF
KALIMANTAN: 15 TCF
JAVA: 1.5 TCF
OTHER ISLANDS: 24 TCF

*: 20 TCF additional resources are recently indicated in Central Sulawesi
The Indonesia Basin Status

Produced
Not explored yet
Have been drilled, discovered, not produced yet.
Have been drilled, not discovered yet
The ASEAN Proved Gas Reserves Status

ASEAN TOTAL: +361 TSCF

Indonesia: 51%
Vietnam: 7%
Cambodia: 9%
Philippines: 1%
Brunei: 3%
Malaysia: 29%
The World Proved Gas Reserves Status

WORLD TOTAL: ~5300 TSCF
<table>
<thead>
<tr>
<th>ENERGY</th>
<th>2000</th>
<th>%</th>
<th>2010</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>OIL</td>
<td>294.60 MMBOE</td>
<td>54.84%</td>
<td>334.45 MMBOE</td>
<td>42.69%</td>
</tr>
<tr>
<td>NAT. GAS</td>
<td>148.79 MMBOE</td>
<td>27.70%</td>
<td>210.78 MMBOE</td>
<td>26.90%</td>
</tr>
<tr>
<td>COAL</td>
<td>61.29 MMBOE</td>
<td>11.40%</td>
<td>181.09 MMBOE</td>
<td>23.11%</td>
</tr>
<tr>
<td>HYDRO</td>
<td>28.85 MMBOE</td>
<td>5.37%</td>
<td>51.93 MMBOE</td>
<td>6.63%</td>
</tr>
<tr>
<td>GEOTHERMAL</td>
<td>3.69 MMBOE</td>
<td>0.69%</td>
<td>5.27 MMBOE</td>
<td>0.67%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>537.22 MMBOE</td>
<td>100%</td>
<td>783.52 MMBOE</td>
<td>100%</td>
</tr>
</tbody>
</table>
The World Energy Demand @ 2001

- OIL: 40%
- COAL: 22%
- GAS: 21%
- WOOD: 11%
- HYDRO: 5%
- NUCLEAR: 6%
- RENEWABLE: 1%
- OTHERS: 5%

@ YR 2025 OIL DEMAND = GAS DEMAND + 120 MMBOE/D
GAS BUSINESS STRATEGY

GAS BUSINESS CHARACTERISTICS

- Product creates its own demand
- Gas has specific markets,
- Gas moves in an integrated chain. All parts of a gas chain are economically interdependent,
- Its market cannot be taken for granted,
- Long term contract dominates through to distributor,
- Decision should be taken by those whom they effect,
- The arrangement for one gas project is generally not transferable to another, because each one is highly individual,
- Displaces tradable fuels.
GAS BUSINESS STRATEGY

- Gas price is the key role of the gas business,
- Gas price is not universal,
- Principle of supply and demand balance,
- Gas transmission and distribution system is artery of the gas business,
- Propose gas pipe line & infrastructure in Indonesia + Asean + China,
- Inter states & provincial authorities cooperate to develop and invest in the end users of gas.
FROM GAS RESOURCES
TO GAS BUSINESS DEVELOPMENT

Gas Resources
- Exploration
- Discovery
- Reserves Assessment
- Well Deliverability
- Gas Composition

Field Development
- Production
- Processing
- Extraction
- Transportation
- Distribution

Market
- Industrial
- Petrochemical
- Power Generation
- City Gas, House Hold, Transportation
- LNG, LPG, CNG, GTL and other related gas products
HISTORY

- Natural Gas starts to play an important role as a worldwide commodity in 1970’s decade. The crisis in oil supply in 1973 and the environmental issue have been the major reasons in stimulating an increase of gas utilization.

- Nowadays, the country’s natural gas is utilized in very wide area as feedstock for industries such as methanol, ammonia, steel industry, petrochemicals, power generation, also be found as LNG, LPG, CNG, GTL, BBG.

- More than 4.45 BSCF/D of natural gas produced in Indonesia is exported as LNG. LNG business has made Indonesia the biggest exporting country in the world.

- Since 1996 the significant changes in the LNG business, indicated by the shifting of the traditionally producer’s market to buyer’s market,

- The LNG business will become tougher in the future.
A CHANGING MARKET

1. Since 1996 the significant changes in the LNG business, indicated by the shifting of the traditionally producer’s market to buyer’s market,
2. The LNG business will become tougher and complex in the future indicated by jointly of multi seller and multi buyers,
3. The seller(s) participating to develop and invest in the end gas user(s) (downstream), or the gas user(s) participating to develop and invest in upstream sector,
4. Integrated Gas Pipe-line inter states,
INDONESIA GAS BUSINESS

STAGES

PAST (since 1963)
- Gas for fertilizer plant (PUSRI)
- Low Price
- Gas flare

PRESENT (2002)
- Gas for LNG (export)
- Gas for Power Generation, petrochemical, (domestic),
- Gas for fertilizer plants, industrials feedstock

FUTURE (?)
- Gas priority for domestic market LNG & Pipe
  Gas, Transportation
- Gas for Power Generation, petrochemical, fertilizer
  plants, industrials feedstock
- Gas for LNG & Pipe Gas, (export)
- Added Value
INDONESIA GAS BUSINESS and CONTROL
BASED ON OIL & GAS LAW No.22/2001

Article 8, Paragraph (1):
Government gives priority to the utilization of natural gas for domestic needs and has a duty to provide strategic reserves of Natural Oil to support the supply of the domestic Oil Fuel that shall be further regulated by Government Regulation.

Article 8, Paragraph (3):
The conduct of natural gas transportation activities through pipe lines that concern public interest, shall be regulated to the extent that it is open for all users.
Article 23, Paragraph (1):
Business licenses required for Oil activities and/or Natural Gas activities as referred to in paragraph (1) shall be distinguished as follows:
- Processing business licenses
- Transporting business licenses
- Storage business licenses
- Trading business licenses

Article 27, Paragraph (1, 2, and 3):
1. The Ministry shall stipulate a master plant for national network for the transmission and distribution on Natural Gas
2. A Business Entity holding a Business License for Natural Gas Transportation through the pipeline shall only be given a certain Transportation segment.
3. A Business Entity holding a Business License for Natural Gas Trading through the pipeline shall only be given a certain Trading area.
GAS PRICE BASED ON OIL & GAS LAW
No.22/2001

Article 28, Paragraph (2) :
Price for oil fuels and natural gas shall be left to the mechanism of healthy and fair business competition.

Article 46, Paragraph (1) point d, e, and f :
The duty of the Regulatory Body as referred to in paragraph (1) shall cover the regulation and stipulation concerning:
d. The tariff of natural gas transportation through the pipe line,
e. The price of natural gas for households and small scale costumers,
f. The natural gas transmission and distribution business,
INDONESIAN GAS PRODUCTION*)
Status December 2002 Production Average (MMSD)

*) The IOG Chronicle, January 2003
# Indonesia’s Top 10 Gas Producers

## Status December 2002 Estimate

<table>
<thead>
<tr>
<th>Company</th>
<th>MMscf/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total FinaElf</td>
<td>2,360</td>
</tr>
<tr>
<td>VICO</td>
<td>1,610.64</td>
</tr>
<tr>
<td>Pertamina</td>
<td>1,226</td>
</tr>
<tr>
<td>Caltex Pacific Indonesia</td>
<td>794.87</td>
</tr>
<tr>
<td>Unocal Indonesia</td>
<td>760</td>
</tr>
<tr>
<td>ExxonMobil Oil Indonesia</td>
<td>538</td>
</tr>
<tr>
<td>BP Indonesia</td>
<td>243.98</td>
</tr>
<tr>
<td>ConocoPhilips Ltd</td>
<td>153.93</td>
</tr>
<tr>
<td>PetroChina International Ind. Ltd</td>
<td>98.56</td>
</tr>
<tr>
<td>Premier Oil</td>
<td>90.36</td>
</tr>
</tbody>
</table>

*) The IOG Chronicle, January 2003
INDONESIA’S NATURAL GAS INFRASTRUCTURE

**Gas Pipeline Legend:**
- Existing
- Near future or future
- Under study

**LPG Plant:**
- Existing
- Future

**GTL Study:**
- Study
1. **Country and Name of Gas Field Location**

The gas resource for the Tangguh LNG project is located in the western part of Papua province, which lies in eastern Indonesia.
2. Proven Recoverable Reserve Volume of Gas Fields

Tangguh’s proven gas reserves currently amount to 14.4 TCF of which 5.8 TCF have been reserved or committed to support supplies to other LNG buyers.

The table below summarizes Tangguh proven gas reserves by field:

<table>
<thead>
<tr>
<th>Gas field</th>
<th>Proven reserves (TCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vorwata</td>
<td>10.4</td>
</tr>
<tr>
<td>Wiriagar Deep</td>
<td>3.0</td>
</tr>
<tr>
<td>Other 4 fields</td>
<td>1.0</td>
</tr>
<tr>
<td>Total Proven Reserves</td>
<td>14.4</td>
</tr>
</tbody>
</table>

In addition to the 14.4 TCF of “proven” reserves, the six gas fields are estimated to contain 3.9 TCF of “probable” reserves and 5.4 TCF of “possible” reserves.

Since 4.5 TCF of Tangguh gas reserves are required to supply a 3.5 million tons per year (mtpa) LNG train for 20 years, the Tangguh gas fields can already support a multi-train LNG development.
DEVELOPMENT OF GAS UTILIZATION IN INDONESIA

GAS PRODUCTION & UTILIZATION 2002

<table>
<thead>
<tr>
<th>Purpose</th>
<th>MMSCFD</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>35.10</td>
<td>0.45</td>
</tr>
<tr>
<td>LNG</td>
<td>5,235.00</td>
<td>66.95</td>
</tr>
<tr>
<td>FERTILIZER</td>
<td>630.50</td>
<td>8.06</td>
</tr>
<tr>
<td>P. GENERATION</td>
<td>696.50</td>
<td>8.91</td>
</tr>
<tr>
<td>GAS COMPANY</td>
<td>236.40</td>
<td>3.02</td>
</tr>
<tr>
<td>STEEL MILL</td>
<td>78.90</td>
<td>1.01</td>
</tr>
<tr>
<td>OTHER IND.</td>
<td>414.00</td>
<td>5.31</td>
</tr>
<tr>
<td>FLARED &amp; LOSS</td>
<td>491.40</td>
<td>6.28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,818.70</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

PERTAMINA & CONTRACTORS

GAS PRODUCTION 2,853.83 BSCF (7,818 BSCFD)
OPPORTUNITY OF INVESTMENT ON DOWNSTREAM BUSINESS IN INDONESIA

- PROCESSING
- TRANSPORTING
- STORAGE
- TRADING

FOR

FUELS LUBRICATING OIL GAS
MATTERS TO BE DONE

WE HAVE REMAINING RESERVE + 176 TSCF OF GAS

INCREASING GAS DEMAND IN THE FUTURE

TECHNOLOGY & INFRASTRUCTURE

MARKET AND REGULATION SYSTEM

GAS PRICING POLICY

NEED INTEGRATED STRATEGY!
Background

- Fuel component in “energy mix” in Indonesia at present is still very great (about 60%).
- At present national gas reserves have achieved approximately 170 TCF (committed and uncommitted). With the total use at present is 8.2 BCFD, so the existing reserves can serve for 30 years, both for domestic and export.
- So far the fact shows that gas utilization is still under 40% from the total national energy demands. There are some obstacles in gas utilization such as; lack of domestic infrastructures. It is therefore, in order to increase gas utilization in the country either as raw materials for industry or fuel including vehicle fuels, optimal and appropriate gas utilization strategy should be formed.
This strategy is based on among others:

- the potential supply and gas demand based on the amount of gas reserves to the geographical location of the majority of consumers throughout Indonesia
- infrastructure development and gas utilization technology
- gas price policy based on the area, sector and utilization
- types of gas utilization
- clearness of gas utilization policy
- coordination between producers, transporters and consumers and clearness of district government role in gas utilization.
CONCLUDING REMARKS

To speed up new field development project need conducive regulation investment, transparency between producer, transporter, trader and consumer,

The most critical issues in gas business development are competitive gas price, infrastructure, availability and conducive climate for investment,

By product revenues and the development of value added markets, such as NGL products, are of increasing importance given current expectations of constant real process,
Thank You For Your Attention