



INDONESIAN GAS ASSOCIATION
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IGA Presentation

Presented by : President - Indonesian Gas Association

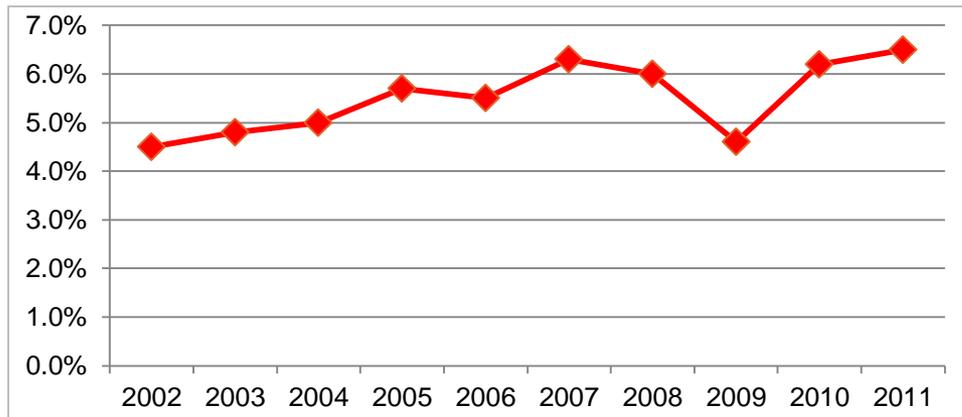
1. Introduction

Indonesia Macro Economics



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GDP Growth Rate



Source : BPS

- GDP growth for Indonesia is relatively stable at the level 4% to 6%
- With the population, gas consumption, electricity consumption is increasing
- Purchasing power of most domestic customer is increasing although still below the global market
- Domestic gas demand is progressively increasing – reduce the oil subsidy.

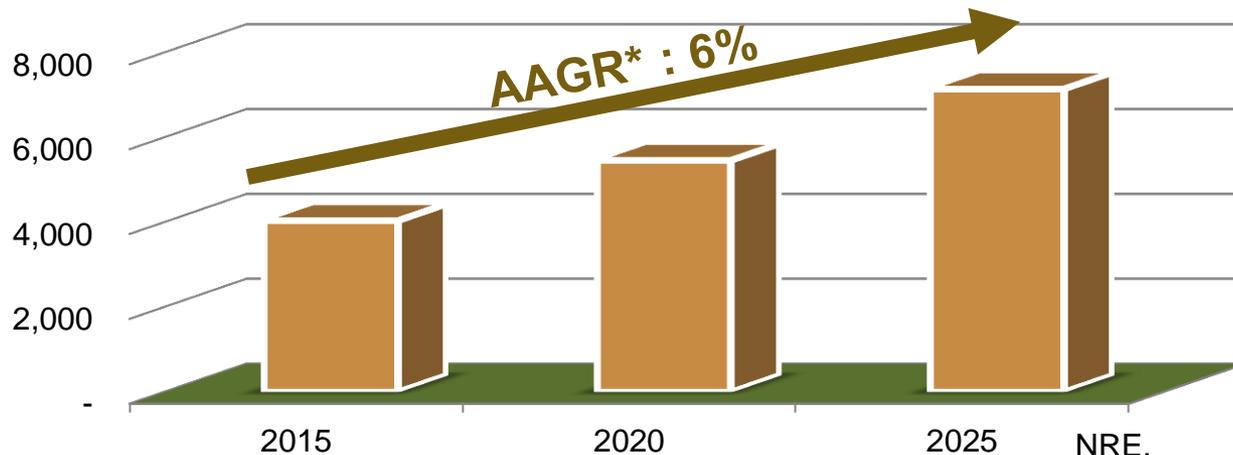
Item	
Population - 2010	237,641,326
GDP (Billion Rp)	2,463,242
GDP growth rate (%)	6.46%
GDP per capita (USD)	4,700
Inflation rate (%)	3.79%
Electricity Production (GWh)	177.256
Electricity Consumption (GWh)	159.867
Electrification Ratio (%)	67.98%
Natural Gas Production (MMSCF)	3,256,379
Natural Gas Consumption (MMSCF)	3,076,919

1. Introduction

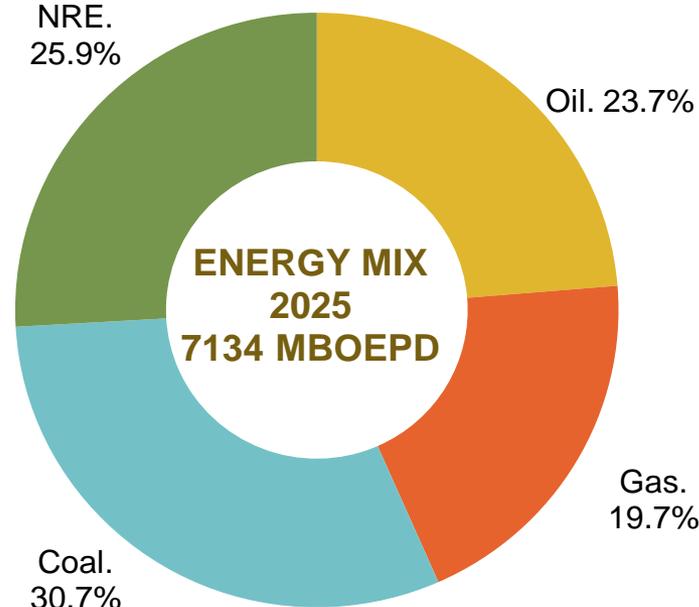
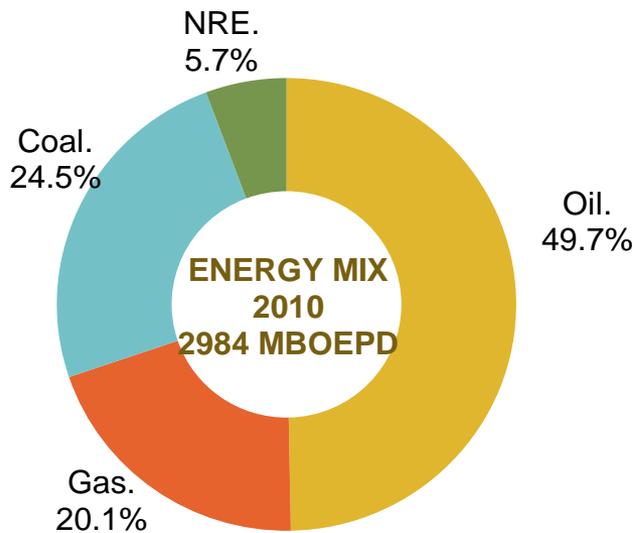
Natural Gas Role in Indonesia Energy Mix



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*) AAGR: Average Annual Growth Rate

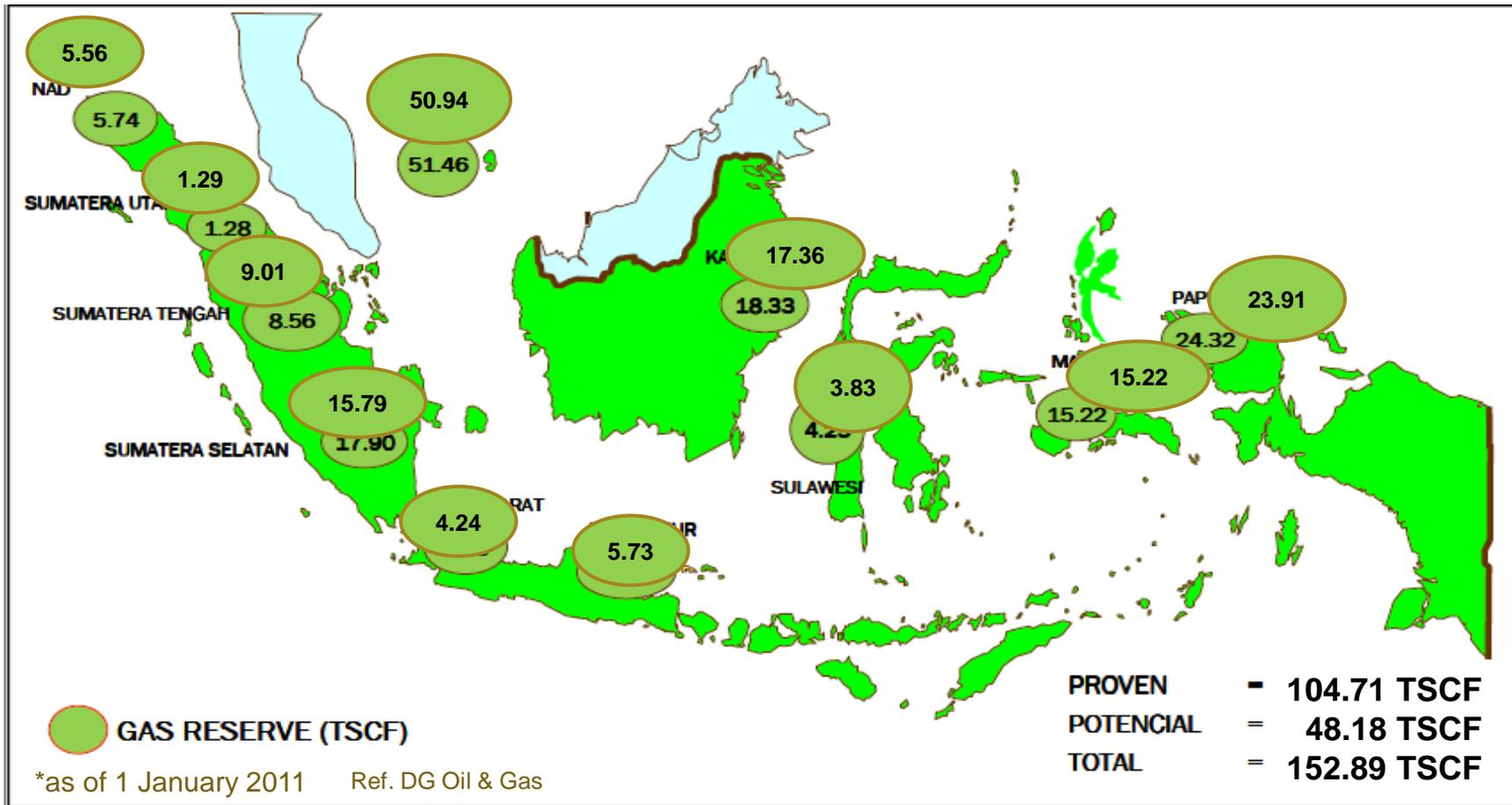


1. Introduction

Indonesia Conventional Gas Reserve*



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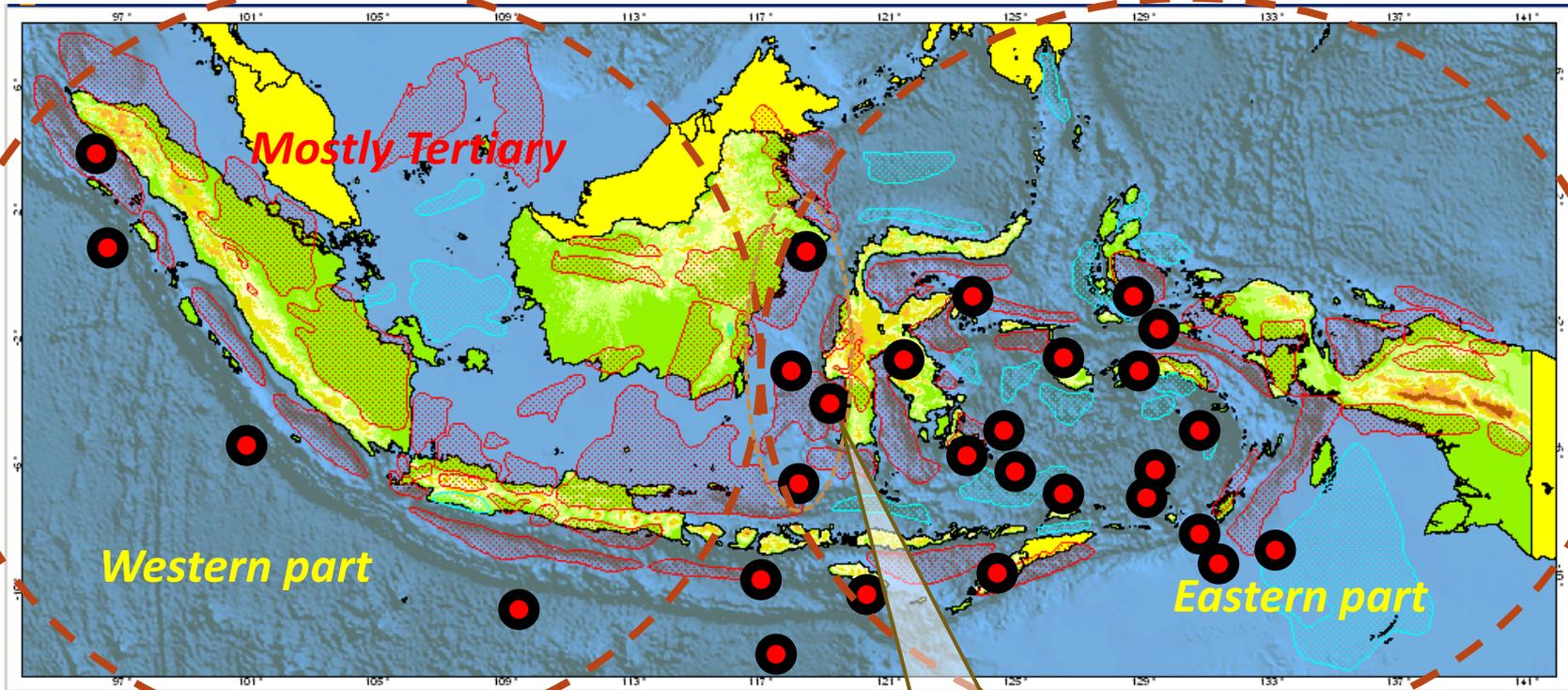
Indonesia conventional gas reserves are scattered; infrastructure development are required to bring natural gas to market/demand

1. Introduction

Challenges in Natural Gas Production



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- 20 prospects and 40 leads in Mesozoic; 3 leads in Palezoic.
- Total Risked Resources 0.39 BBO + 5.7 TCF.

6 PSC's in deep water areas

● Deep Water Area > 200m

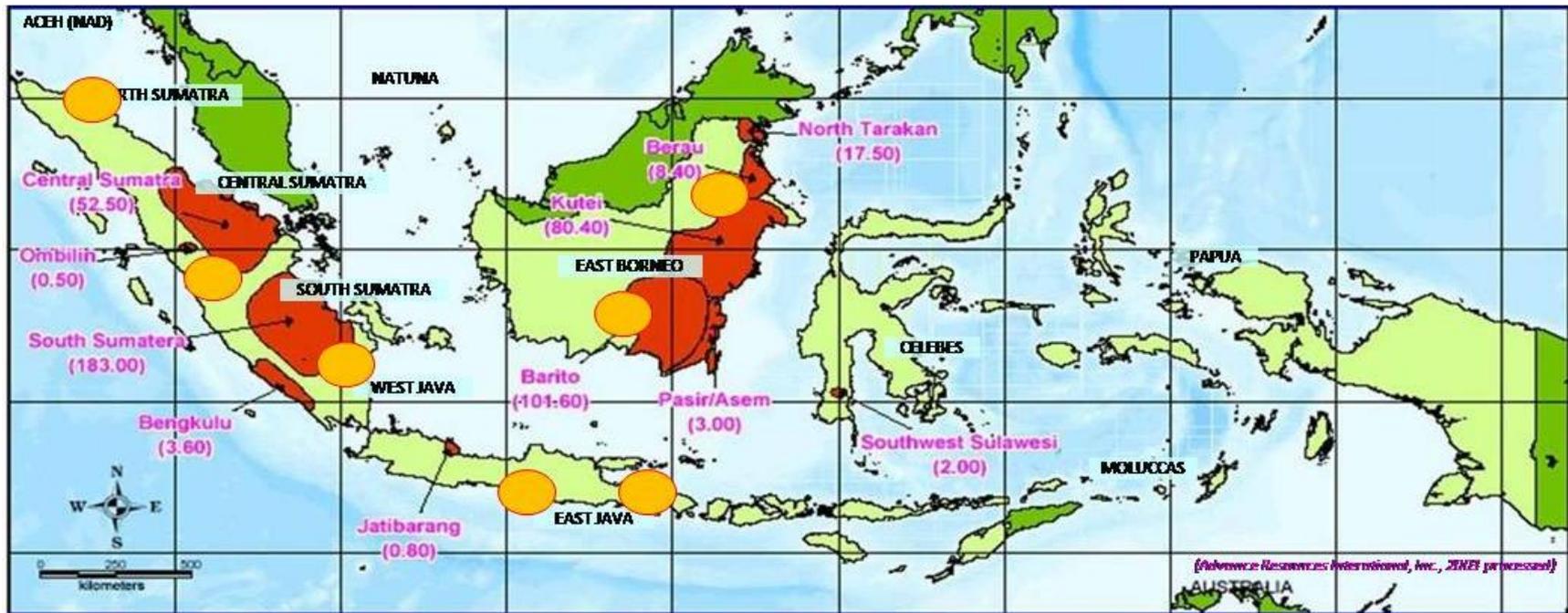
Producing natural gas from conventional reserves is becoming more and more challenging.

1. Introduction

Unconventional Gas Development



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CBM

- Estimated total reserves : 453.30 TCF
- Total CBM basin : 11
- Contracts signed (2008 - April 2012) : 50 CBM PSCs

Shale Gas

- Still in early stage
- Shale gas potential is currently investigated/studied

Indonesia has a huge and promising non-conventional gas reserves as alternative sources to fulfill the demand

Key Success Factors & Enabler



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Technical

- Coal presence, coal rank, thickness, burial history
- Gas content, gas saturation, gas composition
- Permeability, well spacing, pilot
- Sufficient gas-in-place & deliverability

CBM Development

- Enabler:
- PSCM strategy
 - Standardization
 - Factory Model

Government & Infrastructure

- Strong GOI support on developing regulation regarding water disposal, land use, mineral
- Government policies and fiscal incentives / contract terms
- Access to gas markets and pipeline infrastructure
- Efficient use of existing infrastructure

Economic

Deliverability & economic

- Cost effective drilling, completions and operations
- Attractive gas price and market
- Fiscal environment, PSC terms

Surface & Environment

Surface & Environment

- Successful dewatering
- managing environmental, water, and land related issues
- Managing overlapping with coal miners
- Community & security

Preliminary Screens for Commercialization of Unconventional Gas

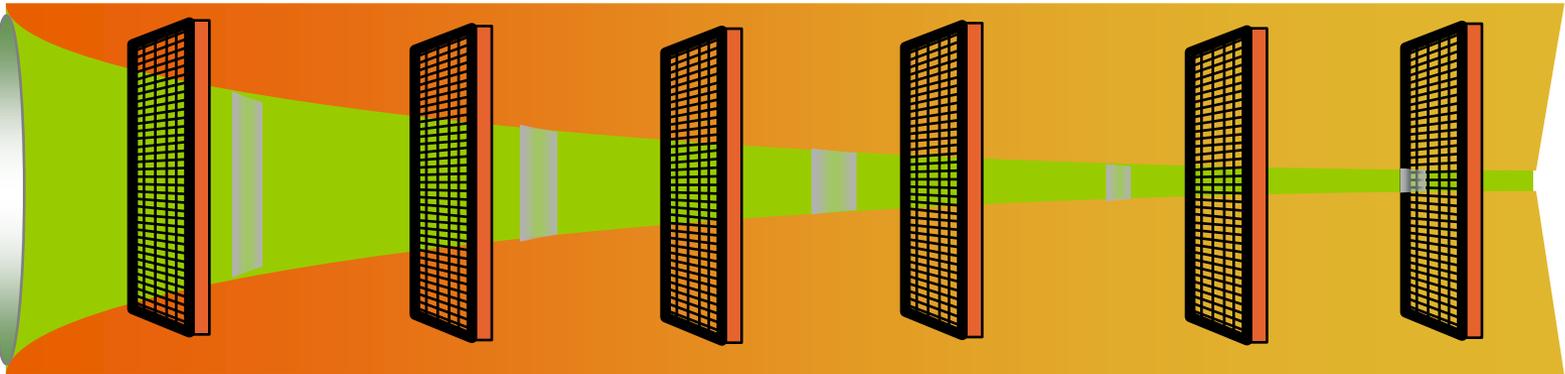


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Volume Deliverability Cost Revenue Surface condition Political & Market Infrastructure

Data

- Geologic
- Economic
- Regulatory



Filter Criterion

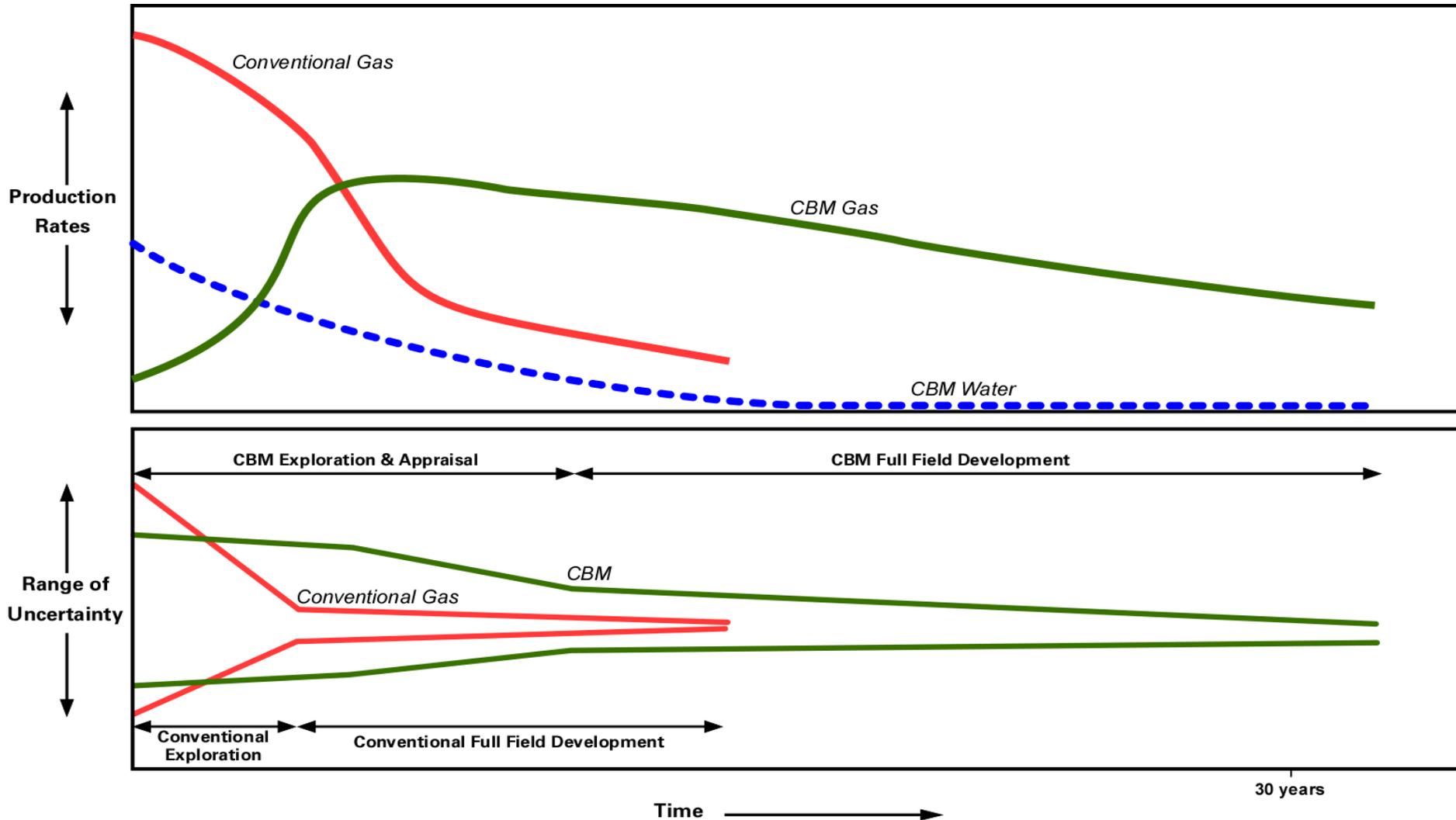
- | | | | | | |
|---|--|--|--|---|---|
| <ul style="list-style-type: none"> • Coal Depth • Coal Thickness • Coal Hydrology • Coal Seam Type • Coal Rank • Resource Scale | <ul style="list-style-type: none"> • Permeability • Cleating • Dewatering • Saturation • Maceral content • Compartments • Darinage area | <ul style="list-style-type: none"> • Drilling & completion • Govt Take • Water disposal • Pipeline • Plant presence • CO2 disposal | <ul style="list-style-type: none"> • Gas Price • Gas demand • Value chain synergy • Demand growth • Incentive | <ul style="list-style-type: none"> • Environmental • Community issues • Service industry • Surface issues • Overlapping with coal miners | <ul style="list-style-type: none"> • GOI support • Environmental agencies and public' support • Proximity to Natural gas pipelines |
|---|--|--|--|---|---|

Access depend on technical, economic and environmental viability

Greater Uncertainty, Lower Rates



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Stimulate CBM Investment



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The pace of CBM development depends largely on government ability to attract investment:

- Stable and favorable investment climate
 - Addressing CBM industry issues proactively
 - CBM favorable regulations and ease of implementation
 - Priority to Oil and Gas company on overlap area
 - Development and availability of infrastructure
 - Open access to extensive pipeline infrastructure
 - CBM fired electricity has dispatch priority
 - Sharing facilities - share excess capacity of its facilities with CBM contractor under proportionate cost sharing principle.
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 - Financial incentives to spur investments
 - fiscal regime for CBM
 - Pre – POD production
 - Provide tax exemption - during exploration
 - Market reforms to stimulate CBM priority and economic gas pricing
 - Producer can sell directly to consumer
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Indonesia Gas Strategy



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➤ Domestic:

- Near-term strategies are focused to meet domestic gas demand and minimize shortages in some areas by accelerating field development;
- Long-term strategy to be focused on meeting the expected increase demand from industrial sectors which would provide optimum value and enhanced economic growth (requires exploration, infrastructure planning);

➤ Capturing International market:

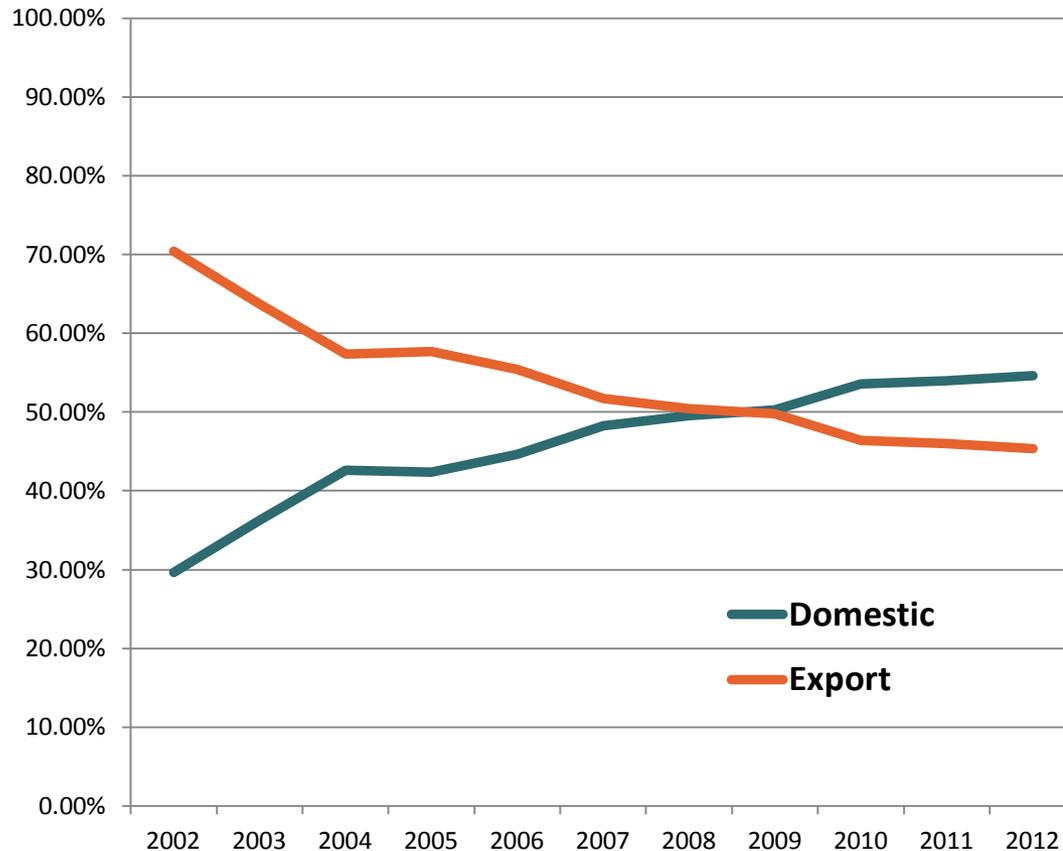
- Near term strategy to maintain existing and traditional Asia Pacific markets based on gas deliverability and commerciality of the existing projects. Improve the commerciality of the high investment gas field through LNG and Pipeline marketing by capturing premium international market;
 - Long term strategy to use Indonesia LNG and pipeline gas exports as the avenue to preserve the investment climate in Indonesian gas business pending the readiness of domestic market
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2. Upstream Challenges

Development of Domestic Gas Utilization



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Shifting Paradigm in managing natural gas in Indonesia to promote domestic utilization. There are challenges in order to supply domestic market such as:

- The **price gap** between import and domestic creates challenge in upstream economic
- Domestic infrastructure** have not fully developed creating uncertainty in domestic market utilization

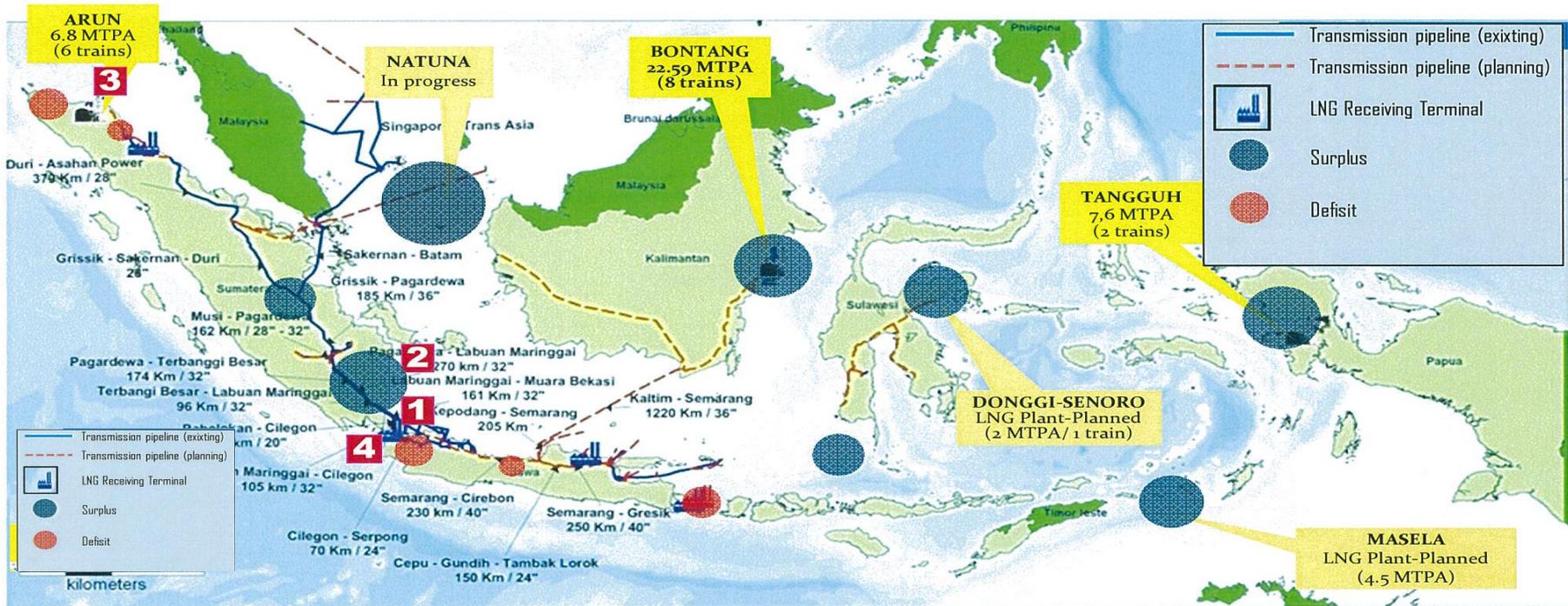
The trend to increase domestic utilization and reduce export

2. Upstream Challenges

Domestic Infrastructure and Market Readiness



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Courtesy: MEMR

Domestic use of natural gas is limited due to the challenges in matching the production with readiness in infrastructure and domestic demand

2. Upstream Challenges

Constraints in Domestic Commercialization



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- The total length of gas transmission pipe (open access): 3,633.69 km, for distribution in Sumatera: 689.08 km and in Java: 3,144.66 km;
- LPG refinery installed capacity: 3,6 MMTPA, LNG refinery installed capacity: 42,09 MMTPA;
- Total capacity of LPG transportation: land transportation (512 MT) and sea transportation (1,455.9 MT);
- CNG land transportation: 15 trucks with total capacity of CNG 55,470 M3 ;
- LPG storage capacity 84,520 MT;

2. Upstream Challenges



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Common challenges

- Overlapping and sometimes conflicting policies and regulations between local and central government
- Challenges in the synchronization of production with infrastructure and domestic market development causing uncertainty in domestic utilization.
- The regulation and policies for unconventional gas are not fully established.

Encouraging Development

- A new policy in tax holiday in exploration activities to stimulate exploration in the search of new reserves.
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3. Infrastructure Development Challenges



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Many sections to be developed

Source : Ministry of Energy & Mineral Resources Decree No. 2700.K/11/MEM/2012

➤ Constraints of Gas Development:

- **Geographical constraints:**
 - Archipelago country;
 - Considerable distance between source & market;
- **Domestic Market constraints:**
 - Subsidized liquid fuel price;
 - Low consumer's purchase power leads to low buyer willingness to pay;
 - Low public awareness toward clean energy utilization;
- **Supply:**
 - Lots of marginal gas reserves

➤ Indonesia Perspective & focus:

- Various gas transportation mechanism to be developed (Mini LNG, CNG and pipelines)
- Provide a better business climate to support aggressive gas development;
- Proving up gas reserves;
- New discoveries both conventional and unconventional resources.

Connecting Gas Sources to the Market-LNG



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LNG Plant

Location : Lhokseumawe, Aceh
Capacity : 12.3 MTPA (design) – 6 trains
Operations : 2 – 3 trains
Production : 1978 – now
Shareholders : Pertamina 55%, EMOI 30%, JILCO 15%

LNG Plant

Location : Bontang, East Kalimantan
Capacity : 22.5 MTPA – 8 trains
Operation : 6 – 7 trains
Production : 1977 – now
Shareholders : Pertamina 55%, Vico 20%, JILCO 15%, Total 10%

LNG Plant

Location : Tangguh, Papua
Capacity : 7,6 MTPA – 2 trains
Operation : 1-2trains
Production : 2009 – now
Shareholders : BP, CNOOC, Mitsubishi, etc

LNG Receiving Terminal

Location : Labuhan Maringgai, Lampung
Capacity : 2-3 MTPA
Project Owner : PGN (100%)
LNG Source : Domestic & International Sources
Main Consumer : Powerplants and industry
On-stream Target : 2014

LNG Receiving Terminal

Location : Jakarta Bay
Capacity : 3 MTPA
Project Owner : Nusantara Regas
Pertamina(60%) PGN(40%)
LNG Source : Bontang and others
Main Consumer : Powerplants and industry
On-stream Target : Q1 - 2012

LNG Receiving Terminal

Location : Central Java
Capacity : 2-3 MTPA
Project Owner : Pertamina (100%)
LNG Source : Domestic & International Sources
Main Consumer : Powerplants and industry
On-stream Target : -

LNG Plant

Location : Central Sulawesi
Capacity : 2 MTPA LNG Plant
Shareholders : Mitsubishi 44,92%, Kogas 14,98%, PHE 29%, Medco 11,1%
Status : FID approved
On-stream Target : 2014

LNG Plant

Location : South Maluku
Capacity : 4.5 MTPA LNG Plant
Shareholders : Inpex
Status : -
On-stream Target : 2016

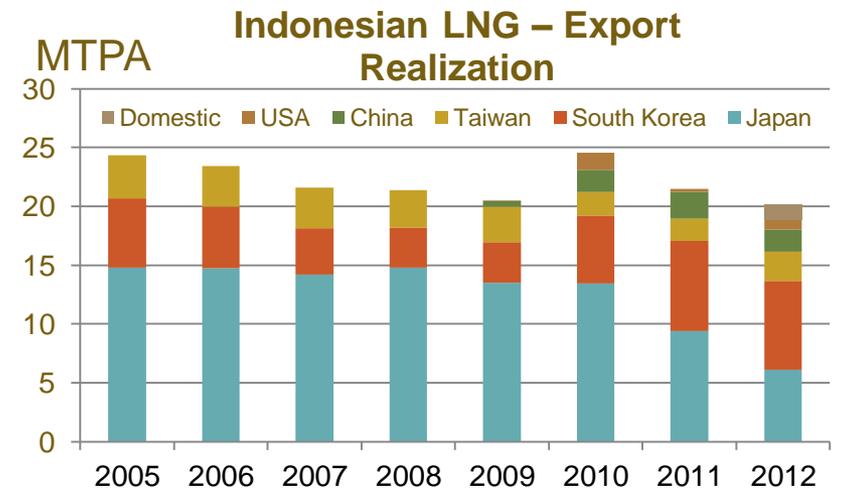
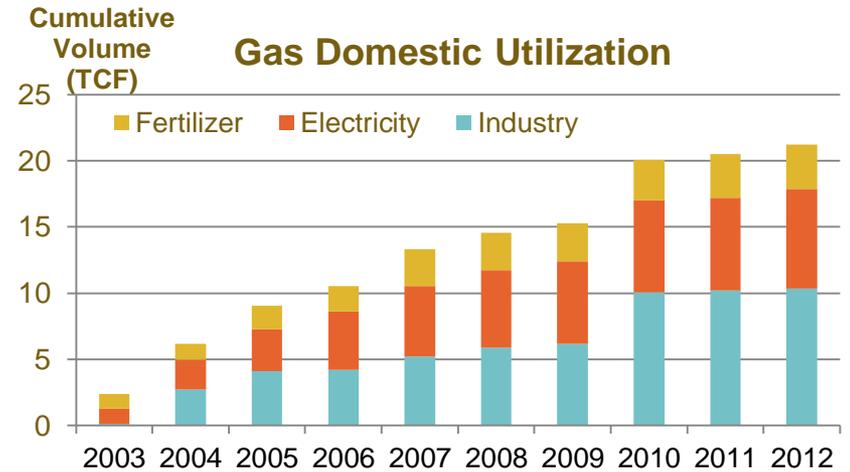
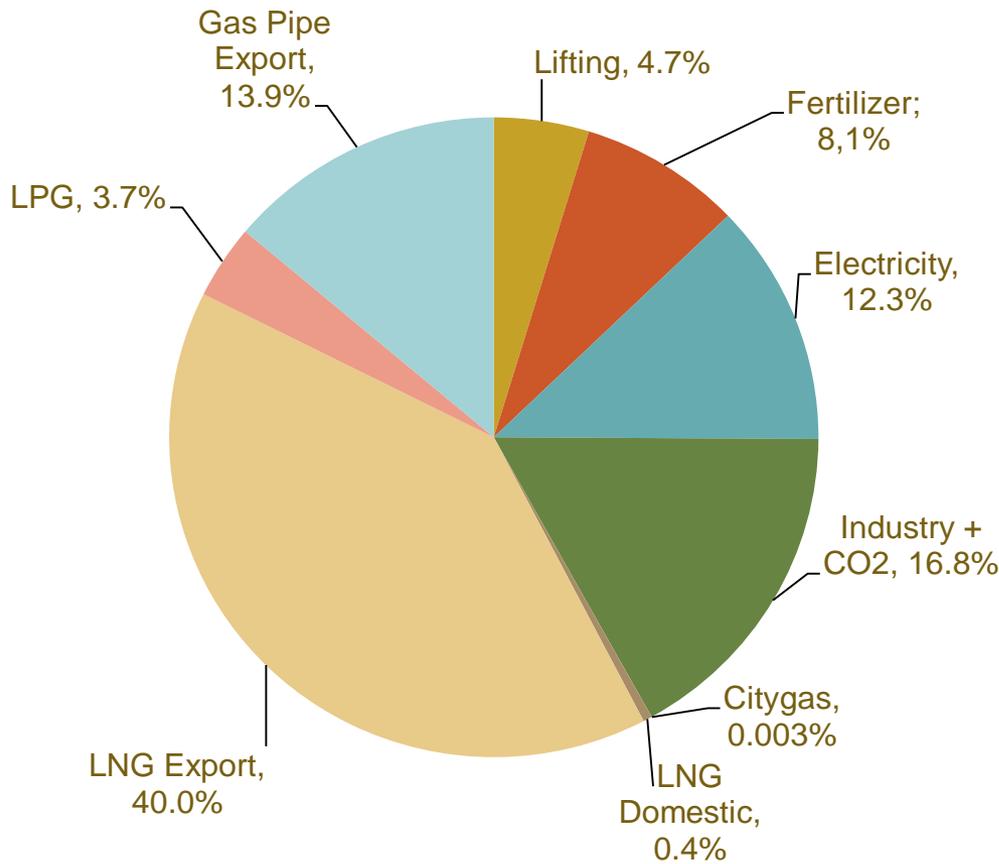


2. Downstream Challenges

Indonesian Gas Utilization



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Gas Allocation Policy Domestic Demand



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- Utilization is prioritized for Domestic demand with consideration on economic of field development. The prioritized segments are as follows:
 - Oil lifting;
 - Fertilizer feedstock;
 - Power plants;
 - Fuel or feedstock for industry;
 - The Domestic Market Obligation (DMO) is stated in the amount of 25% of the new production;
 - There is specific ramp up allocation of gas for transportation application up to 2025;
 - When there are natural gas shortage in specific area due to limited natural gas resource and infrastructure, the fulfillment for this area, existing gas allocation can be reallocated or swap as contingency plan.
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Conclusions



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- Huge potential of natural gas reserve for development – both conventional and unconventional;
 - Domestic gas price shall be competitive to stimulus the upstream investment and deliver the capability to develop national competitiveness;
 - Infrastructure planning :
 - Comprehensive and integrated analysis of gas development with the framework of National Energy Demand and Supplies
 - Open for new technologies adoption that capable to bring more options and greater competitiveness
 - Planning domestic security of supply should take full account of non-exportable energy sources
 - Coal (lower grade)
 - Renewables (hydro, geothermal)
 - Gas:
 - ✓ CBM potential.
 - ✓ Coal gasification potential.
 - ✓ Shale gas
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