LNG Demand Outlook in Asia; Indonesia Outlook

PT Pertamina (Persero)

JCCP-15
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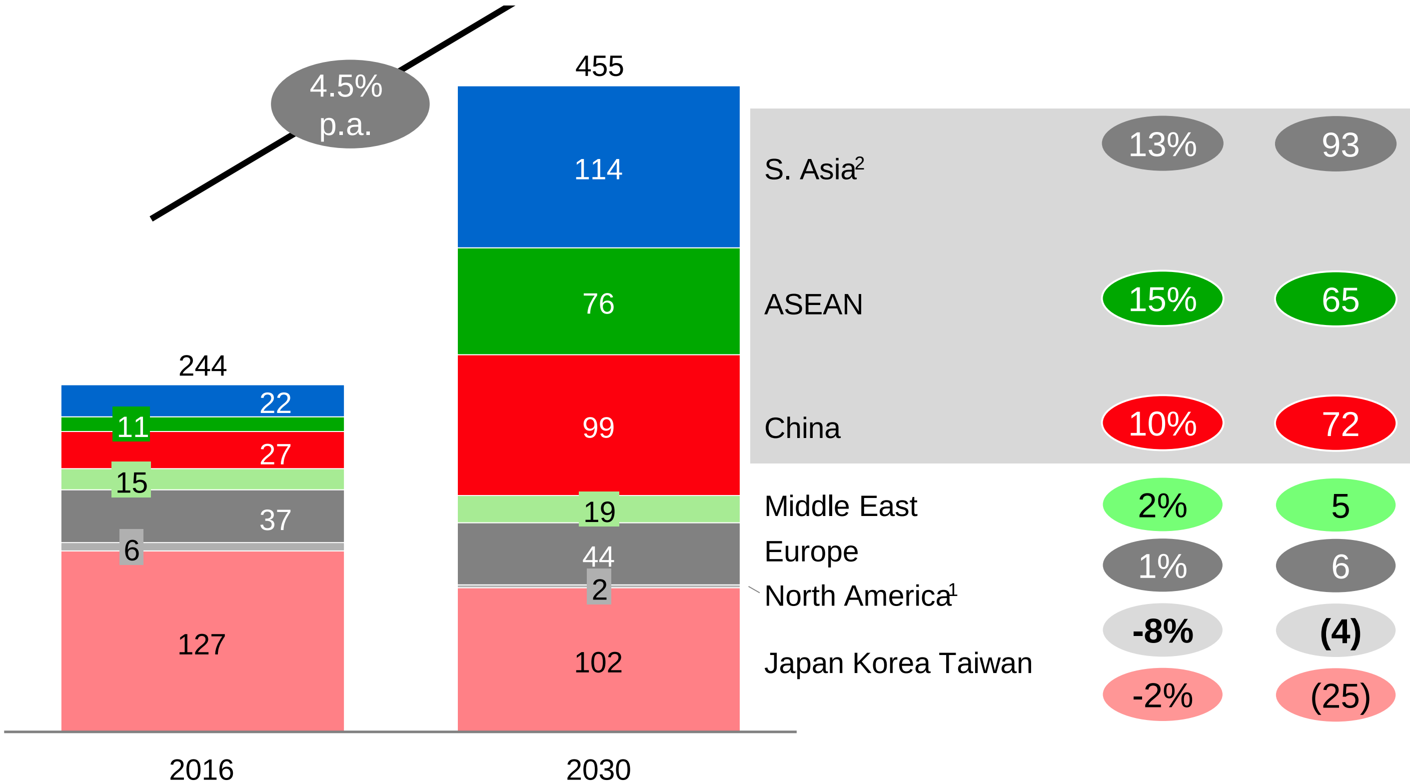
PERTAMINA

South Asia, ASEAN and China will drive the LNG demand growth out to 2030

LNG Outlook 2016-2030 , Million tonnes per annum (MTPA)



~95% LNG Demand Growth coming from China, India and ASEAN

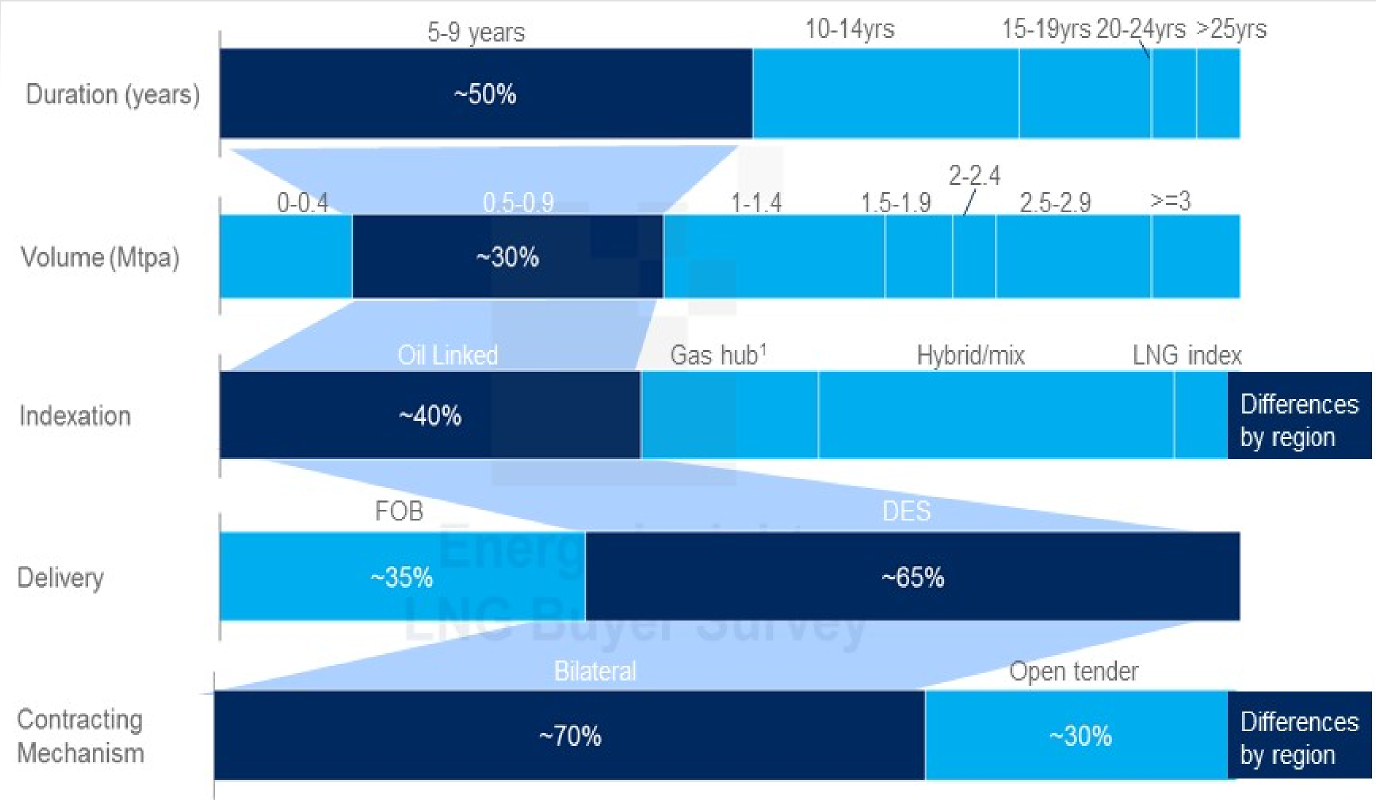
1 Includes US, Canada and Mexico 2 Include Bangladesh, India and Pakistan

SOURCE: McKinsey Energy Insights, McKinsey Global Gas Model

Contractual preferences have moved to shorter durations and smaller volumes; oil indexation remains prevalent outside the EU

Portfolio composition

% of total LNG buyers



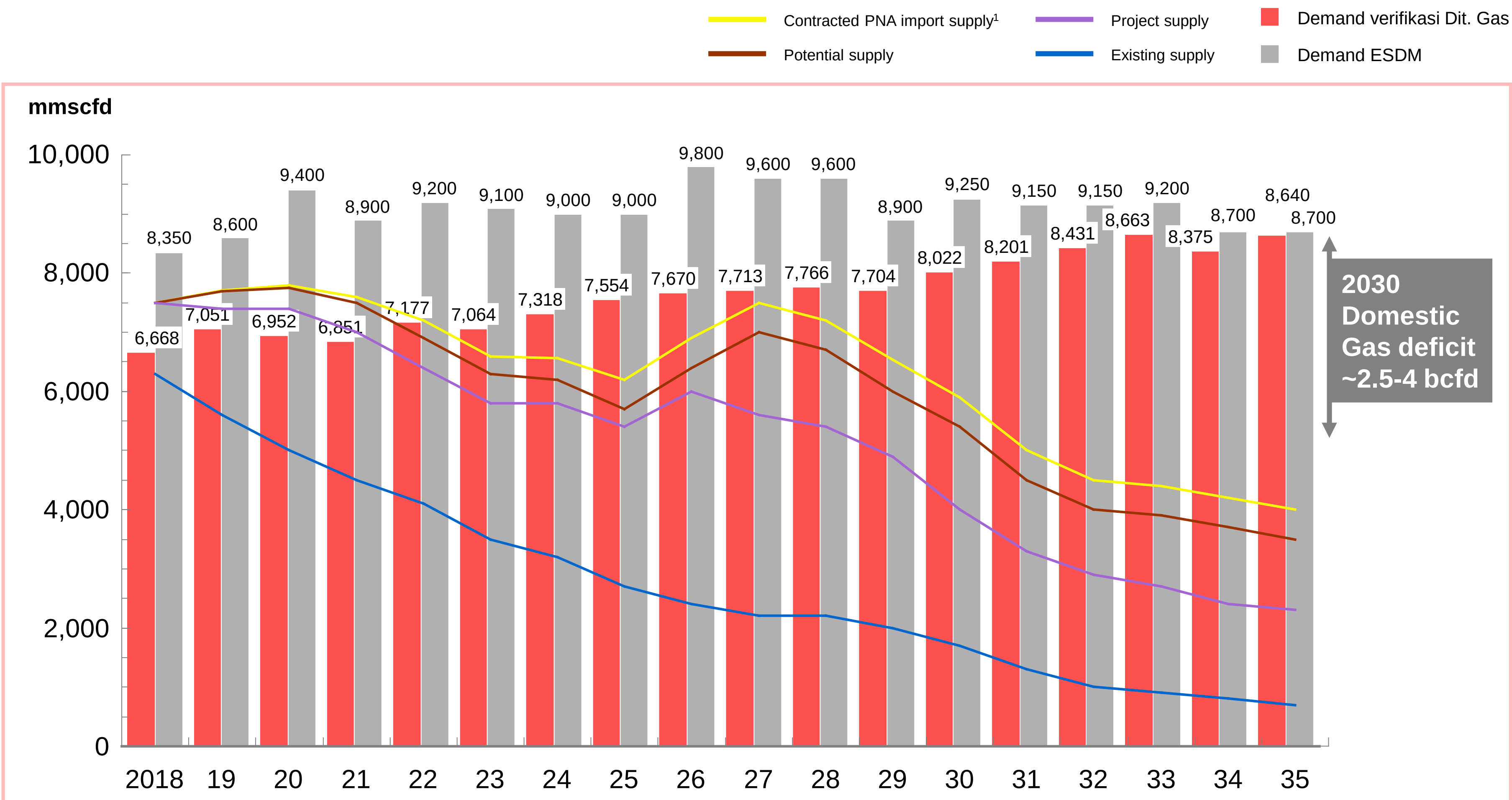
Key insights

- Buyers' future preferences for long-term contracts are shifting to **shorter duration** and **smaller volumes**, while DES contracting remains prevalent
- A straight **preference for Henry Hub indexing has subsided** vs. 1-2 years ago, in favor of **hybrid formulas** to better balance exposure
- **Marked regional differences** exist in a few dimensions:
  - A preference for **gas hub indexing is pervasive in Europe**, in SE Asia oil linkage dominates
  - **Open tenders** may prevail in M. East and S. America

1 Includes NBP/TTF and Henry Hub

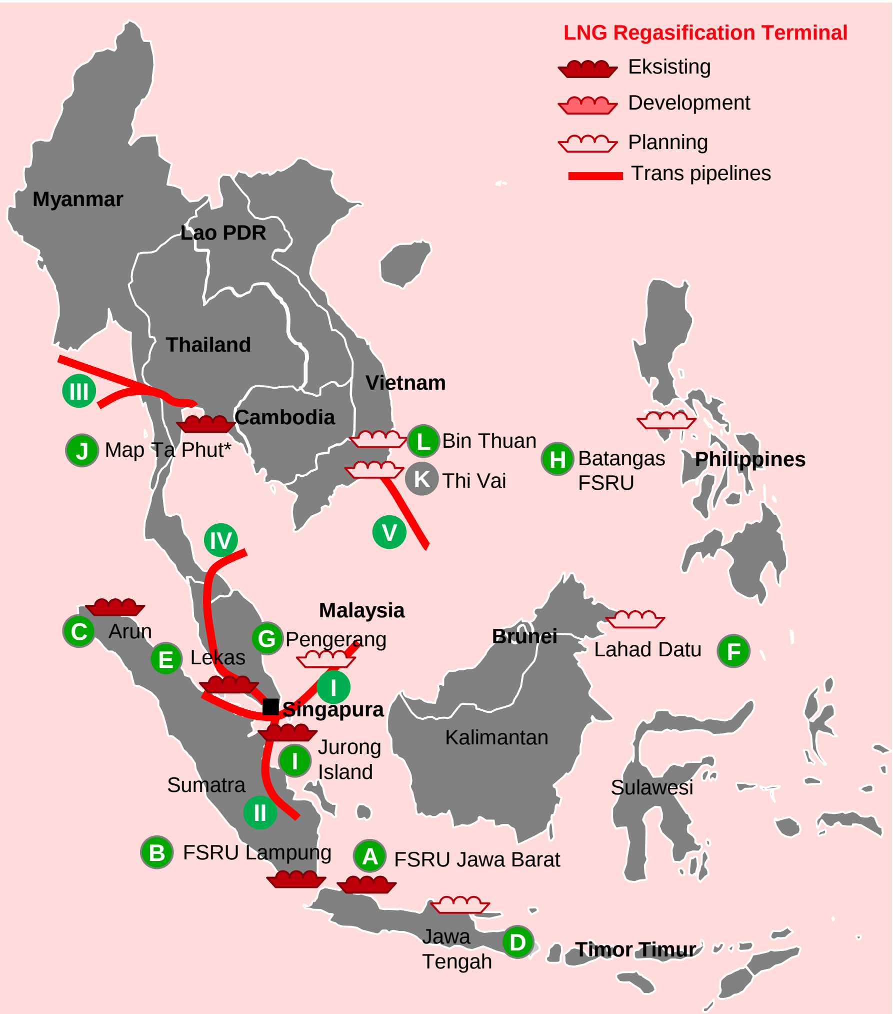
SOURCE: McKinsey's Energy Insights LNG buyer survey 2016

By 2030, Indonesia would need to rely on imported LNG (equivalent to ~2.5-4 bcfd) to replace the decline in domestic gas supply



1 Contracted PNA import supply (Corpus Cristi, TGPL, Woodside, Exxon)

ASEAN countries are investing in new infrastructure development to anticipate this increase of LNG Demand



Regas Infrastructure

Name	Capacity mtpa	Capacity bcm/y	Operated Year	Owner
A FSRU Jawa Barat	3.0	4.1	2012	Pertamina
B FSRU Lampung	3.0	4.1	2015	PGN
C Arun (Aceh)	3.0	4.1	2014	Pertamina
D FSRU Jawa Tengah	3.0	4.1	2020+	Pertamina
E Lekas (Malaca)	3.8	5.2	2013	Petronas
F Lahad Datu (Sabah)	0.8	1.1	On hold	TBC
G Pengerang (Johor)	3.8	5.2	2018+	Petronas
H Batangas FSRU	4.0	5.5	2020+	PNOC
I Jurong Island	9.0	12.2	2013+	SLNG
J Ma Ta Phut	10.0	13.8	2011+	PTT
K Thi Vai	1.0	1.4	2020+	PV Gas
L Bin Thuan	10.0	13.8	2020+	PV Gas

Pipeline Infrastructure

Connected Countries	Capacity mmscfd
I Indonesia-Malaysia-Singapura	150/250
II Indonesia (Sumatra)-Singapura	350
III Perbatasan Myanmar-Thai	410/565
IV Thailand-Malaysia	750
V Malaysia-Vietnam	270/300

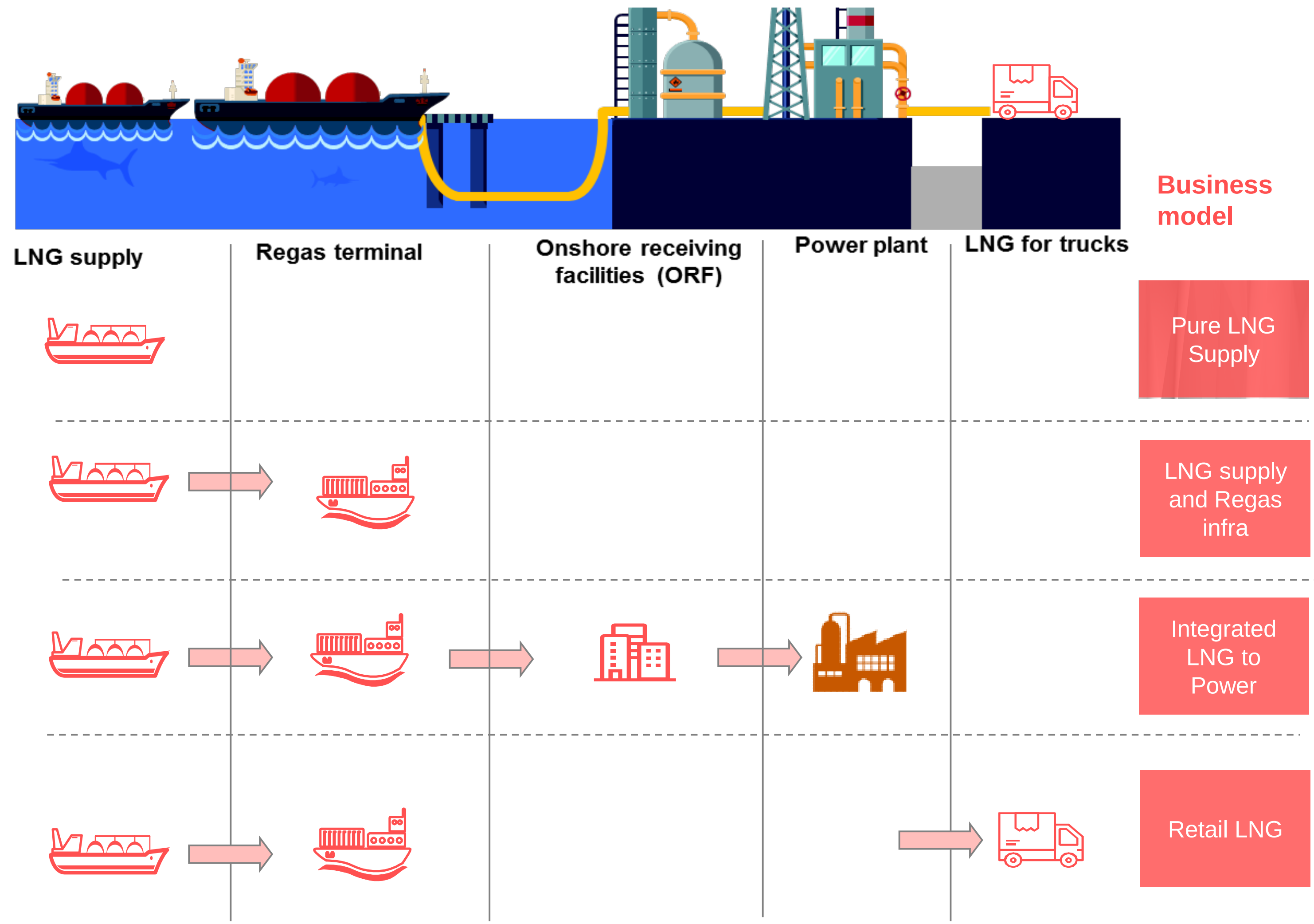
SOURCE: IEA, Enerdata

Pertamina is building a global LNG portfolio leveraging its capabilities (LNG infrastructure, commercial) and strong market position

Pertamina's business model in LNG value chain

Core LNG operational and commercial capabilities

- Trusted **LNG and Regas developer** and operator
- Reputed **LNG marketer**
- **Respected partner** in LNG and Power value chain
- Building gas and power and Retail LNG **business model**



Pertamina has a comprehensive presence across the gas value chain

Gas business

Sourcing and trading  → Transmission and distri-bution  → Pro-cessing  → LNG Infra-structure  → Marketing 

Gas, New & Renewable Energy

Pertamina Gas

- Transportation of natural gas through pipeline network
- ~2,130 km of gas pipelines
- Subsidiary in gas trading business: Pertagas Niaga

PT Badak (Bontang)

LNG provider Kalimantan

Donggi Senoro (DS) LNG

LNG provider Sulawesi

PT Nusantara Regas

JV Co with PGN, operating floating storage facilities and regas terminals

PT Perta Daya Gas

LNG provider East Indonesia

Mini LNG storage and regas

PT Perta Arun Gas

LNG receiving terminal and regasification

PT Perta Samtan Gas

LPG, NGL and CNG plant

PT Pertamina Power Indonesia

Gas and NRE power plants

Key priorities for Pertamina Gas business

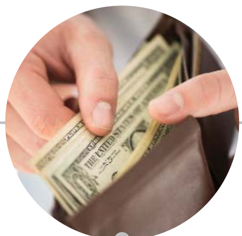
Set up affordable gas infrastructure and innovative solution

- 2120 kms of Transmission and distribution lines
- 800 mmscfd Regas infrastructure
- LNG parcel in portable tanks

Competitive sourcing of LNG molecules

- Balanced portfolio in term of contract duration, indexation and sources





Accelerate domestic gas commercialization

Provide reliable and affordable gas to end customer

- Cost effective construction of distribution pipelines

Increase Pertamina Global LNG footprint

- Minority share ownership in LNG-backed infrastructure
- Partnership with global players

Pertamina is bringing LNG parcel in portable tank to the customer gate (virtual pipeline)

Source → Transportation → Market (Big - Medium | Medium - Small) → Customer

LNG dispenser

Road transportation (trucking)

Rail transportation

Shipping & other transportation

LNG for industry

LNG for mall/ hotel/apartment

LNG microbulk for hotel/restaurant/cafe

LNG vertical gas liquid for promotion

LNG for workshop

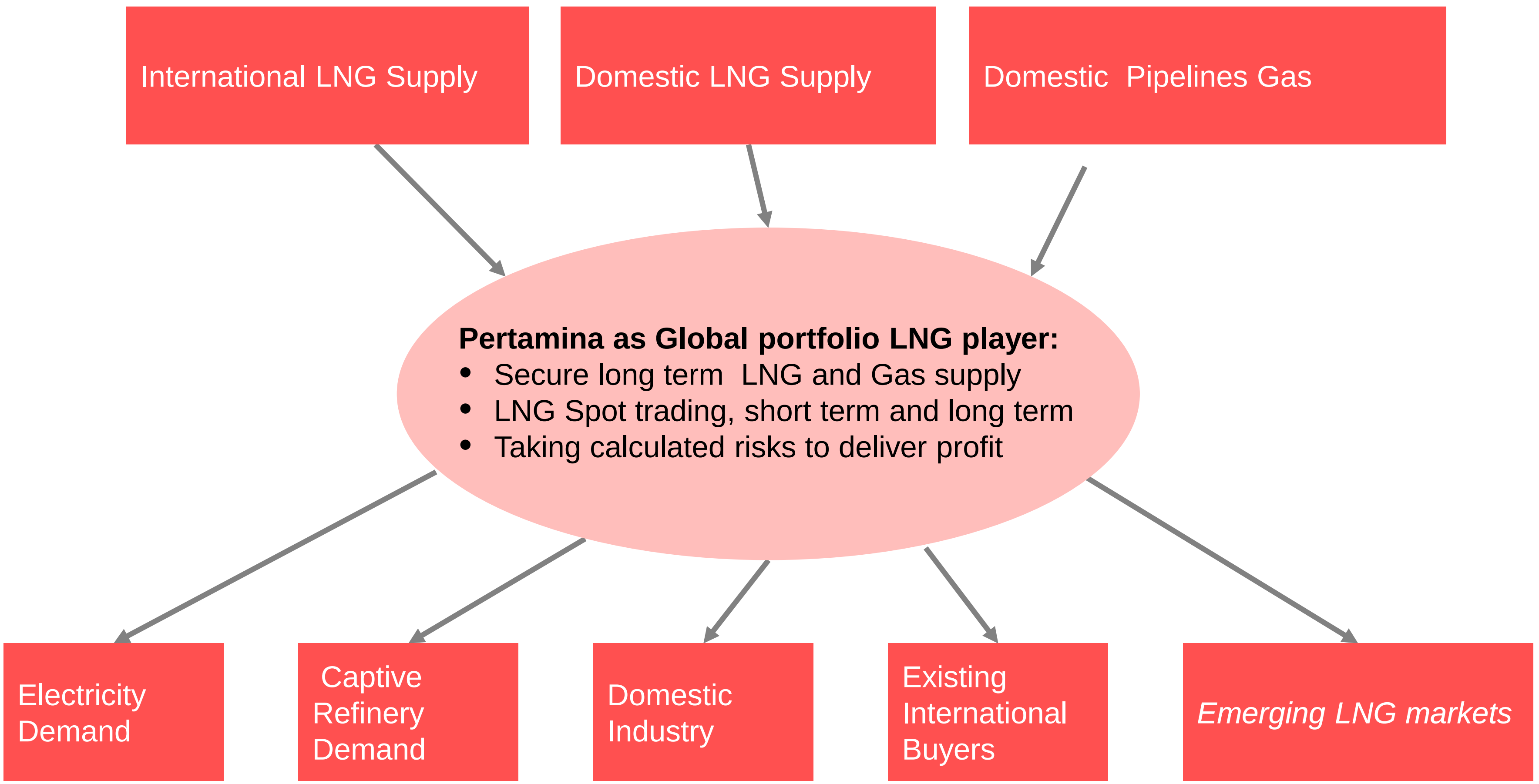
LNG for co-gen

Electricity

Eastern Indonesia

Pertamina has established itself as global LNG portfolio player

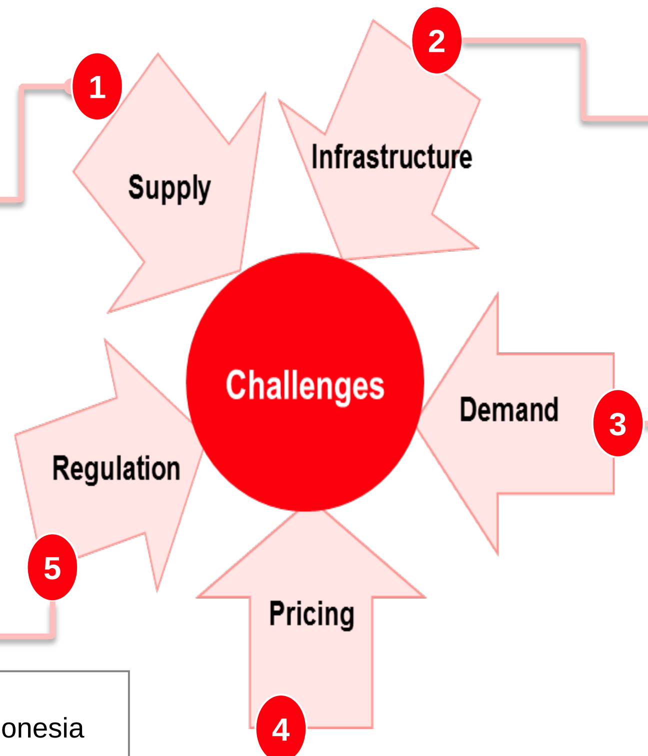
LNG &Gas supply



LNG & Gas Offtakers

Source: Pertamina

Main challenges in the gas industry in Indonesia



1

Pipeline Gas

- Limited long-term gas supply
- Mismatch between supply-demand locations
- Field development timeline is not in line with market needs
- Field economics not compatible with price regimes in domestic gas market

LNG

- Long-term supply commitments must be decided and finalized 4-5 years before delivery to ensure alignment with development of LNG infrastructure

2

- Inadequate infrastructure
- Overlap in infrastructure development: planning and utilization of infrastructure not optimized yet
- Complex land acquisition process
- Gas infrastructure master plan is not aligned with supply-demand profile

3

- Difficult to make long-term demand projections
- Anchor customers are more likely to be traditional consumers
- Demand is strongly influenced by:
  - Electricity supply plan by PLN
  - Global prices (not Indonesia-specific) for fertilizer

4

- Fixed price with annual escalation
- Price indexation with the crude oil price
- Indexation of the product price

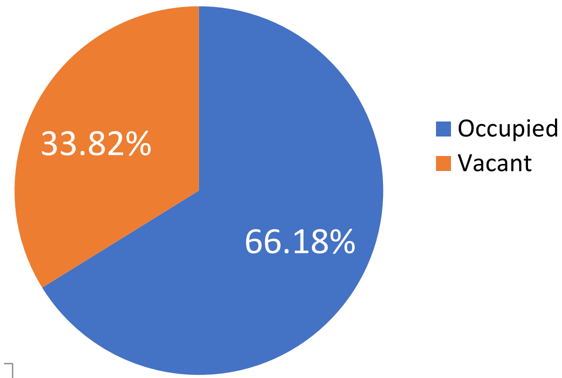
5

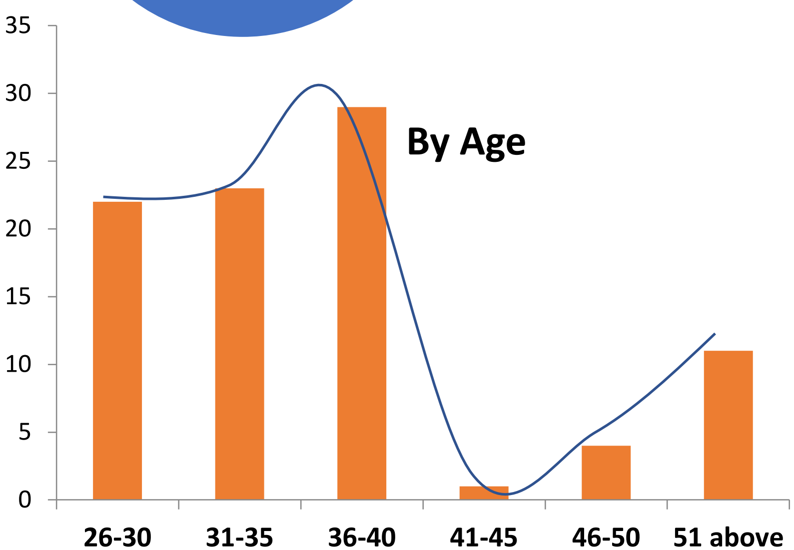
- Unavailability of gas/ LNG import policy in Indonesia
- Currency exchange risks
- Absence of fiscal incentives
- Absence of regulations that will govern reasonable margins

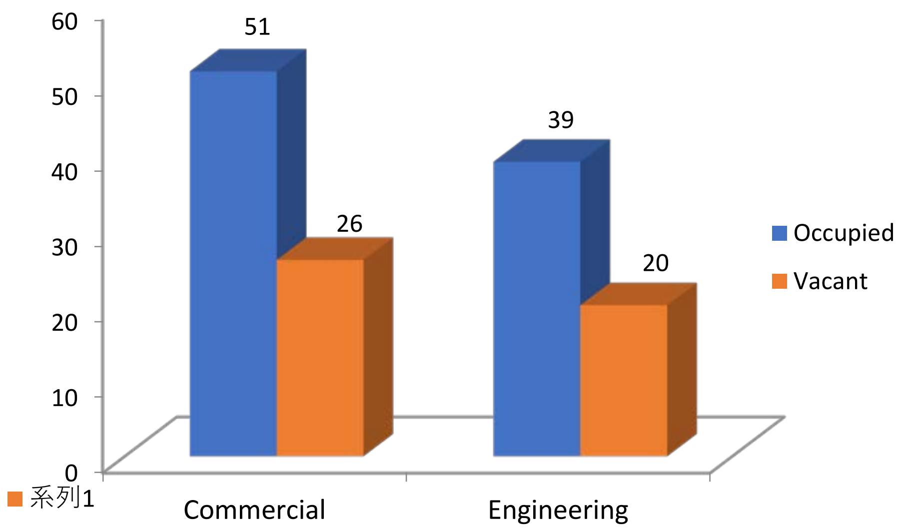
HUMAN CAPITAL DEVELOPMENT as A FUNDAMENTAL to SUPPORT GAS GROWTH IN PERTAMINA

MAN POWER STRENGTH (GAS DIVISION)

Staffing Status





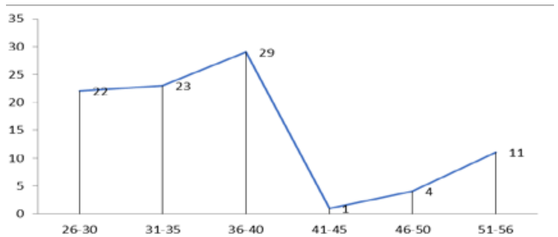


Main Challenge – Human Capital Development

1. Demographic Issue

Generation Gap

- ✓ *About 10 % of the employee will retire in the next 5 years*
- ✓ *Competency Acceleration in order to overcome the gap generation*



2. Culture

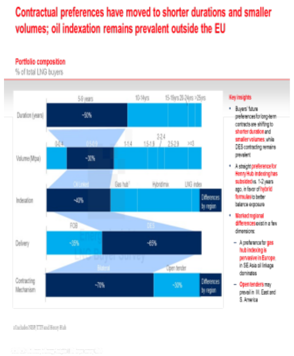
- ✓ *Silo wall within organization in Pertamina*
- ✓ *how to break silo ?*

3. Global LNG Business

- ✓ *How to Survive in the VUCA World ?*

V = Volatile
U = Uncertainty
C = Complexity
A = Ambiguity

- ✓ *Agility as a new core competency*



Talent Development Acceleration in Pertamina

ENTRY LEVEL
- General Skill
- Technical Skill

MID LEVEL
- Technical Skill
- Leadership Skill

HIGH LEVEL
- Global Leadership

Development Program

- EPDP (Early Professional Developmet Program)
- LNG Global Venture Academy
- People Leader Development Program
- PGEDP (Pertamina Global Executive Development Program)

PERTAMINA


Competitive
Able to Compete both regionally and internationally, support growth through investment, build cost effective and performance oriented culture.
Confident
Involve in national economic development as a pioneer in State owned Enterprises' reformation, and build national pride.
Customer Focused
PERTAMAX
Focus on customers and commit to give the best service to customers


Thank you

2018年7月25日プレゼンの様子＠JCCP