INDONESIA LNG: OVERVIEW AND CHALLENGES

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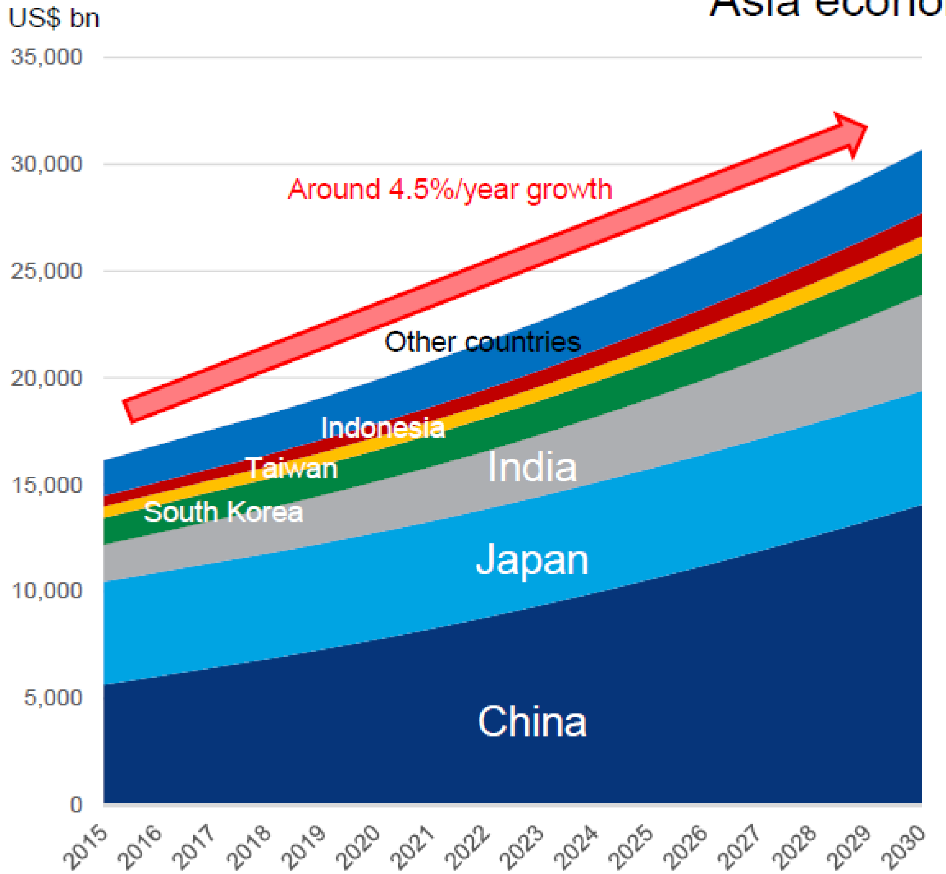
SPECIAL TASK FORCE
FOR UPSTREAM OIL AND GAS
BUSINESS ACTIVITIES
REPUBLIC OF INDONESIIA

Economic Growth – Asia GDP Outlook

Asia economic growth



	GDP (US$ Bn)			Average rate of growth / year
	2015	2030	Difference	
China	5,639.3	14,057.9	8,418.6	6.3%
Japan	4,826.6	5,342.5	516.0	0.7%
India	1,718.3	4,492.3	2,774.0	6.7%
South Korea	1,272.5	1,946.9	674.5	2.9%
Taiwan	522.5	800.5	278.1	2.9%
Indonesia	494.7	1,076.2	581.5	5.3%
Other Asia countries	1,655.1	2,953.1	1,298.0	4.0%
Asia total	16,129.0	30,669.5	14,540.6	4.4%

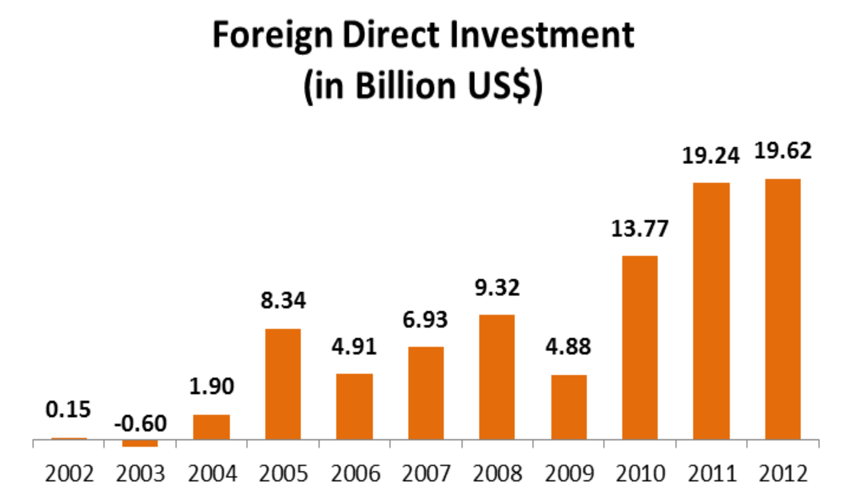
Source: World Bank, Thomson Reuters Datastream, Wood Mackenzie

- ✓ *Annual Asia GDP growth will be maintained around 4.5% from 2015 to 2030.*
- ✓ *GDP growth is driven by mainly China and India.*
- ✓ *While GDP growth in Japan is relatively low, there is still big economy which exceeds India in 2030.*

Indonesia macroeconomic has performed impressively over the past decade and been predicted still growing over next decades

Indonesia Trend Figures in the Last Decade

Source: Worldbank



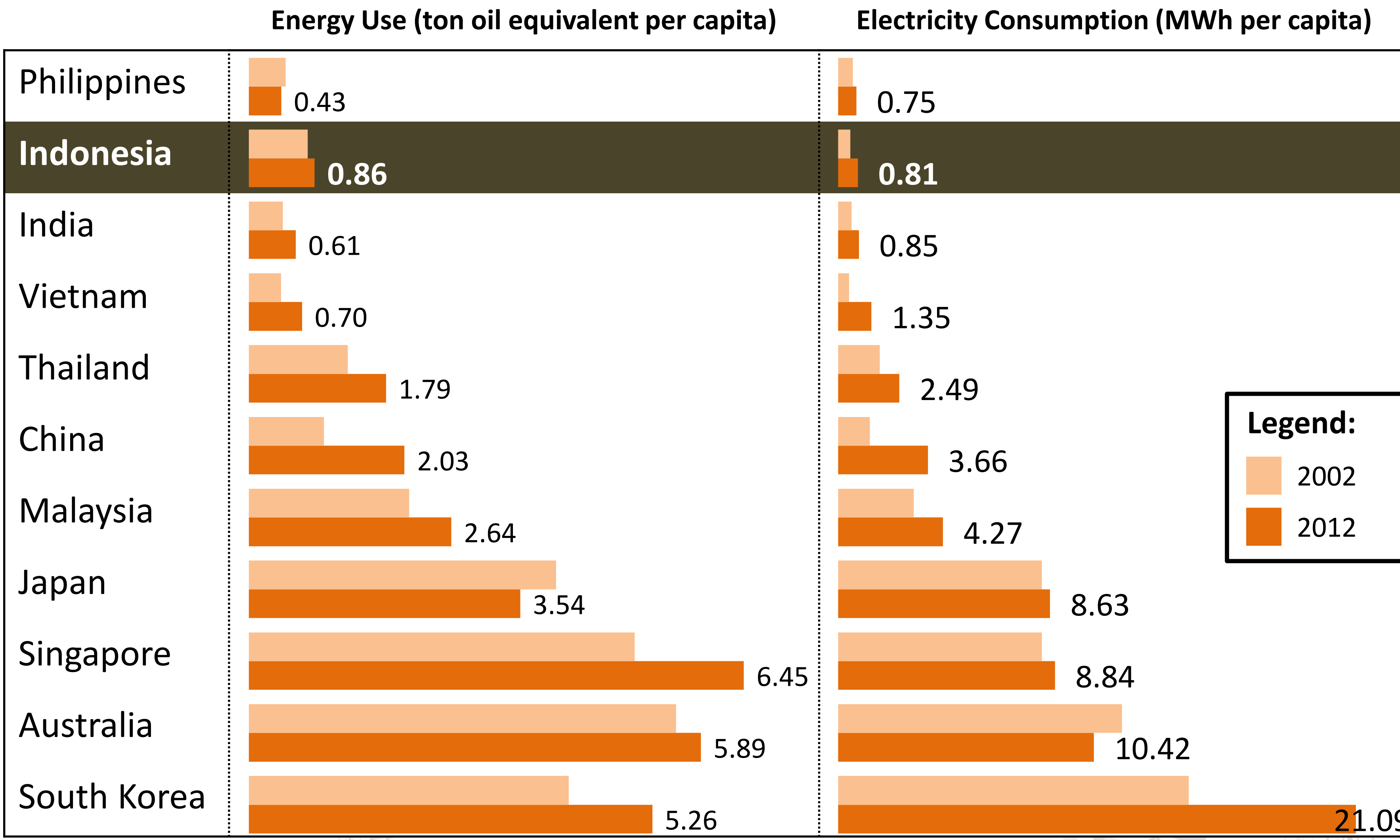
Source: Worldbank

Indonesia Figures in the next decades

Category	2012	2030
GDP Rank	16th largest	7th largest
Members of the consuming class	45 million	135 million
Population in cities producing (% of GDP)	53% (74%)	71% (86%)
Number of Skilled Workers	55 Million	113 Million
Market Opportunity in consumer (services, agriculture and fisheries, resources and education)	US$ 0.5 Trilion	US$ 1.8 Trilion

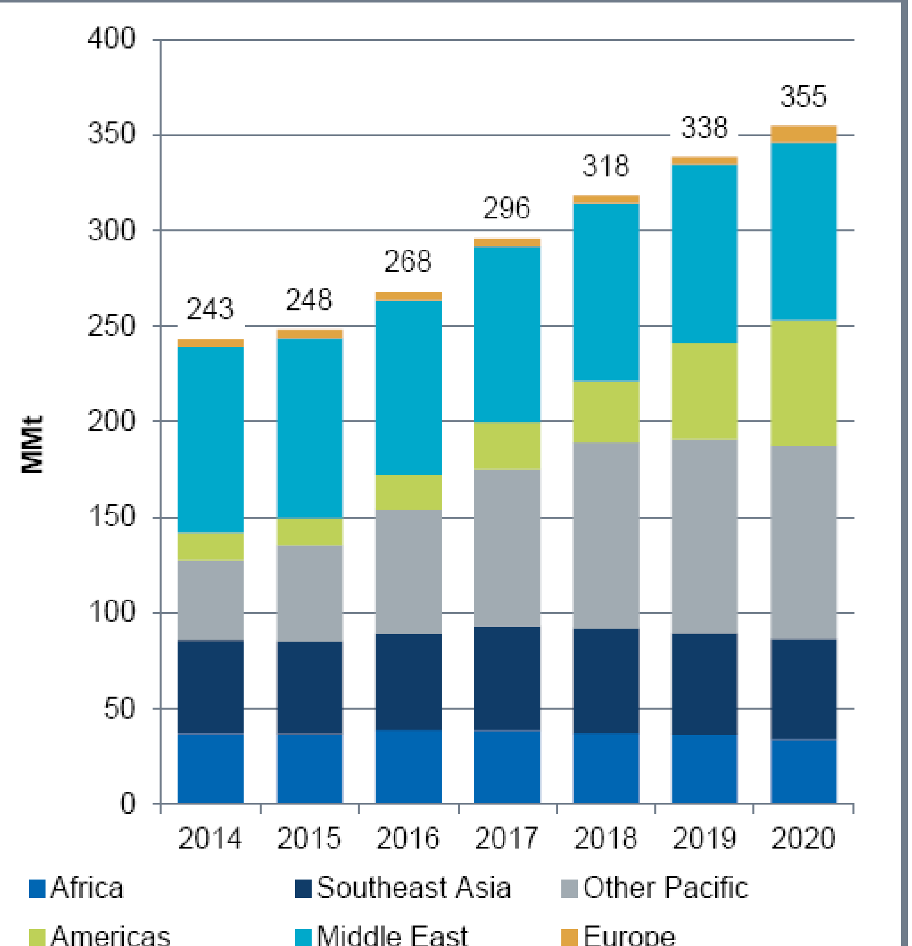
Source: Mckinsey

Along with the growth of Indonesia economy, the energy consumption was rising

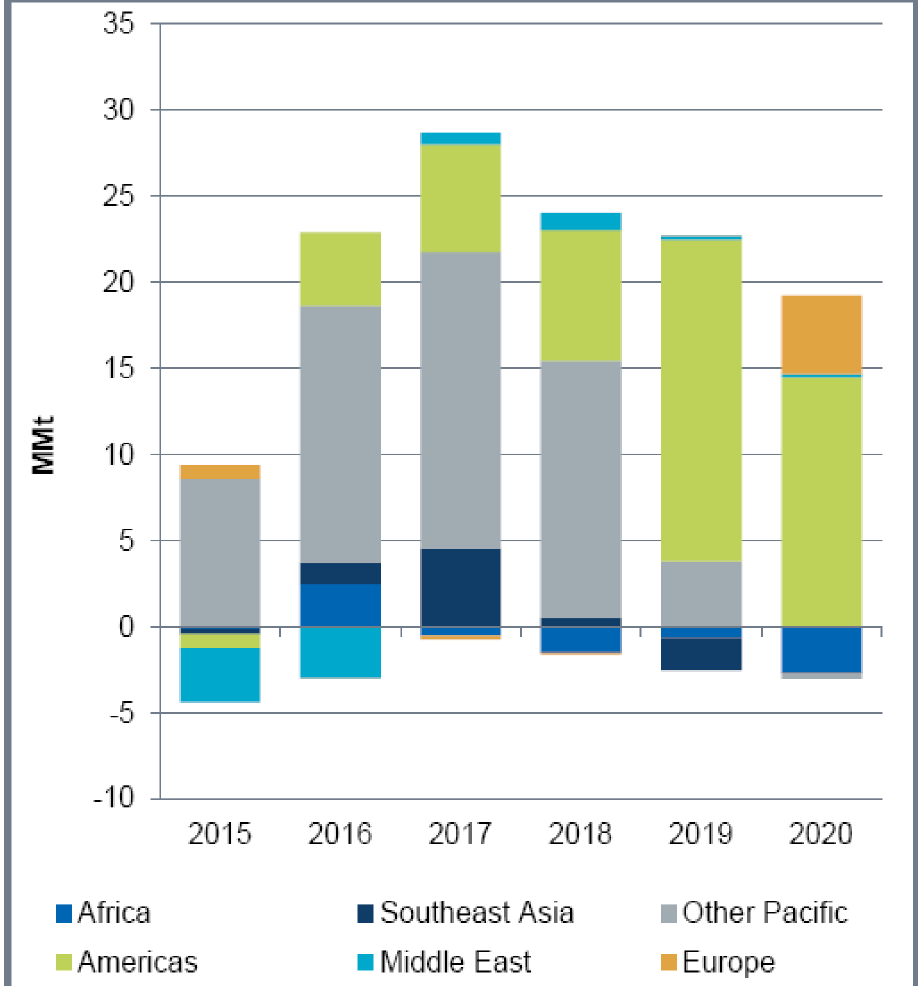


Source: Worldbank and BP Statistical Review 2013

Short Term LNG Supply Growth

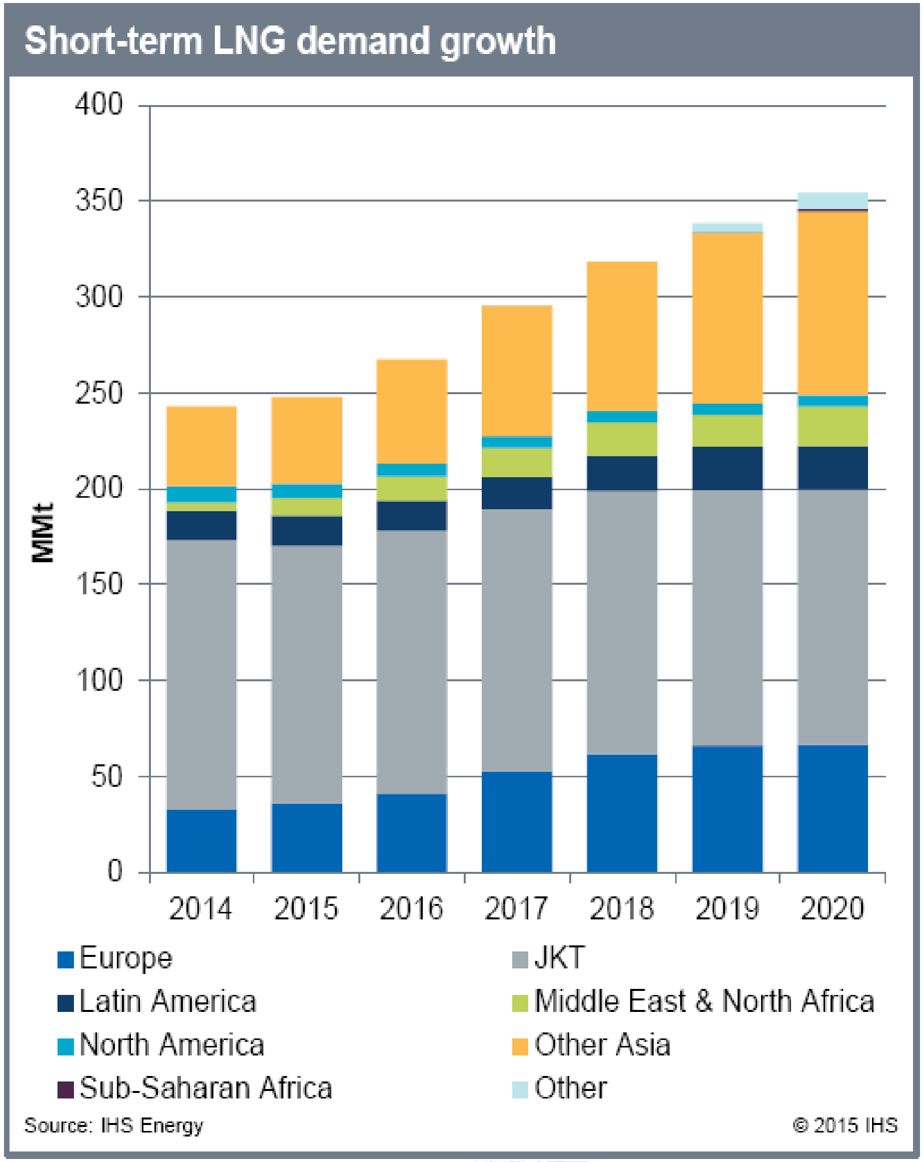


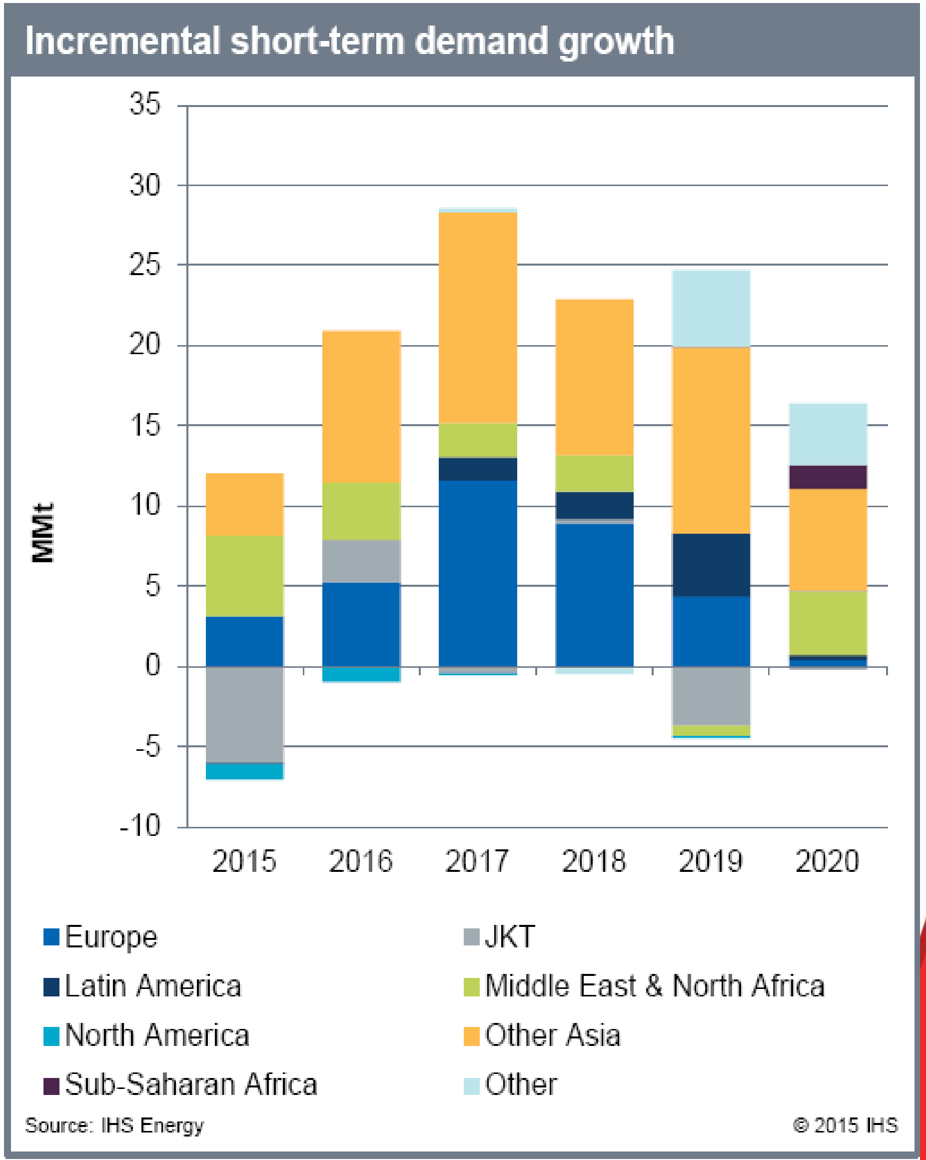
Note: Other Pacific includes Australia, Russia, Peru, Canada, and Papua New Guinea.
Source: IHS Energy



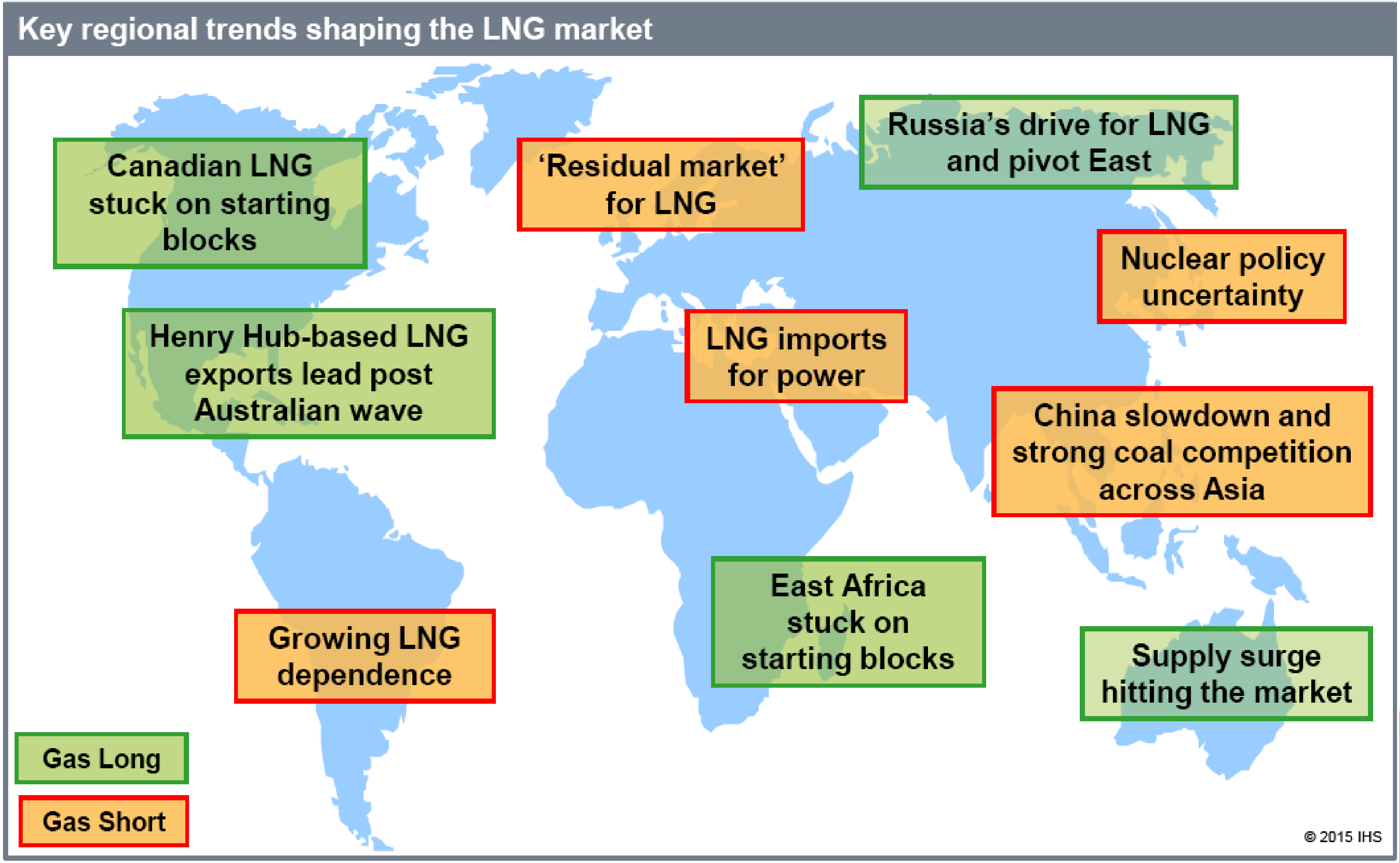
Source: IHS Energy

Short Term LNG Demand Growth

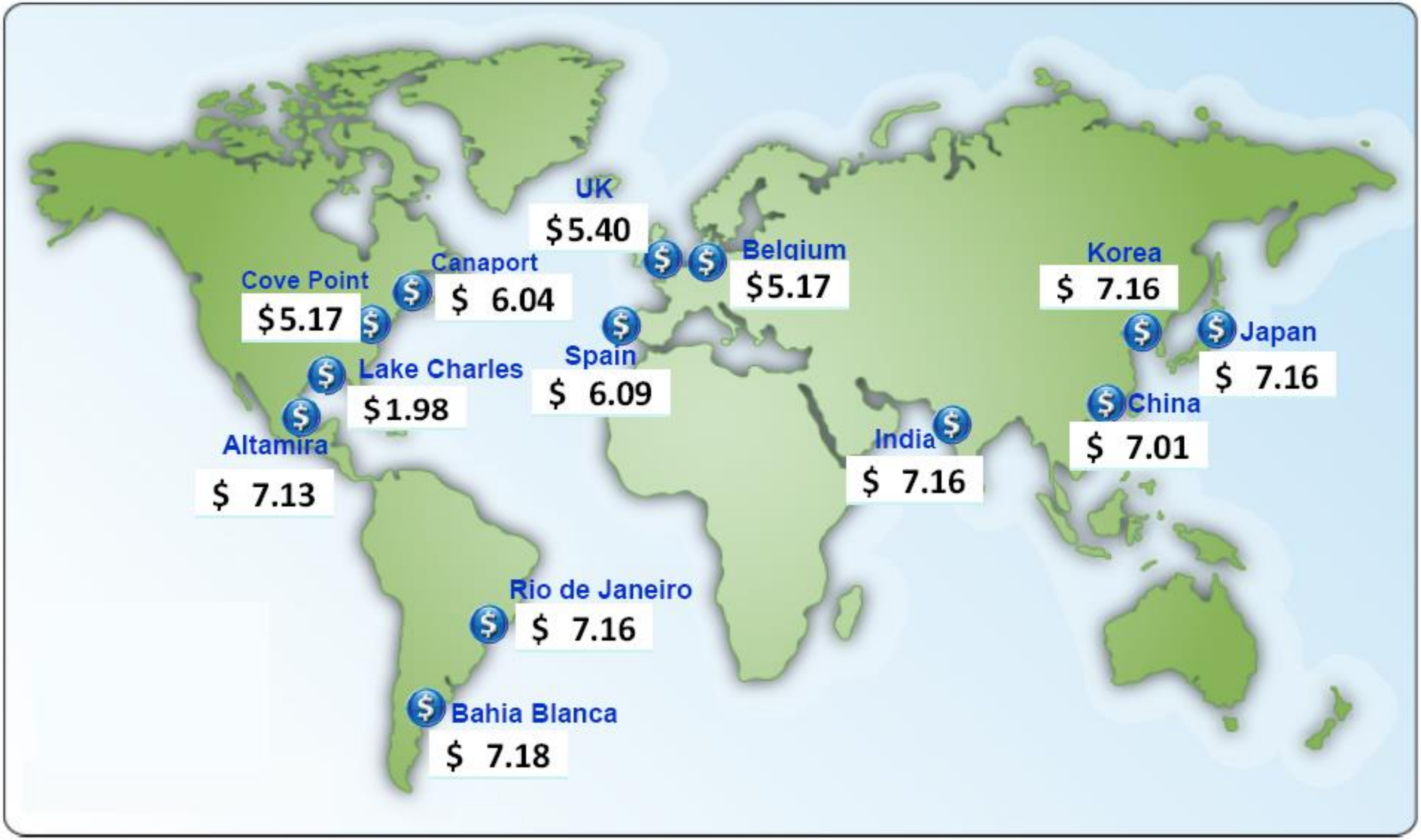




Global LNG Snapshot

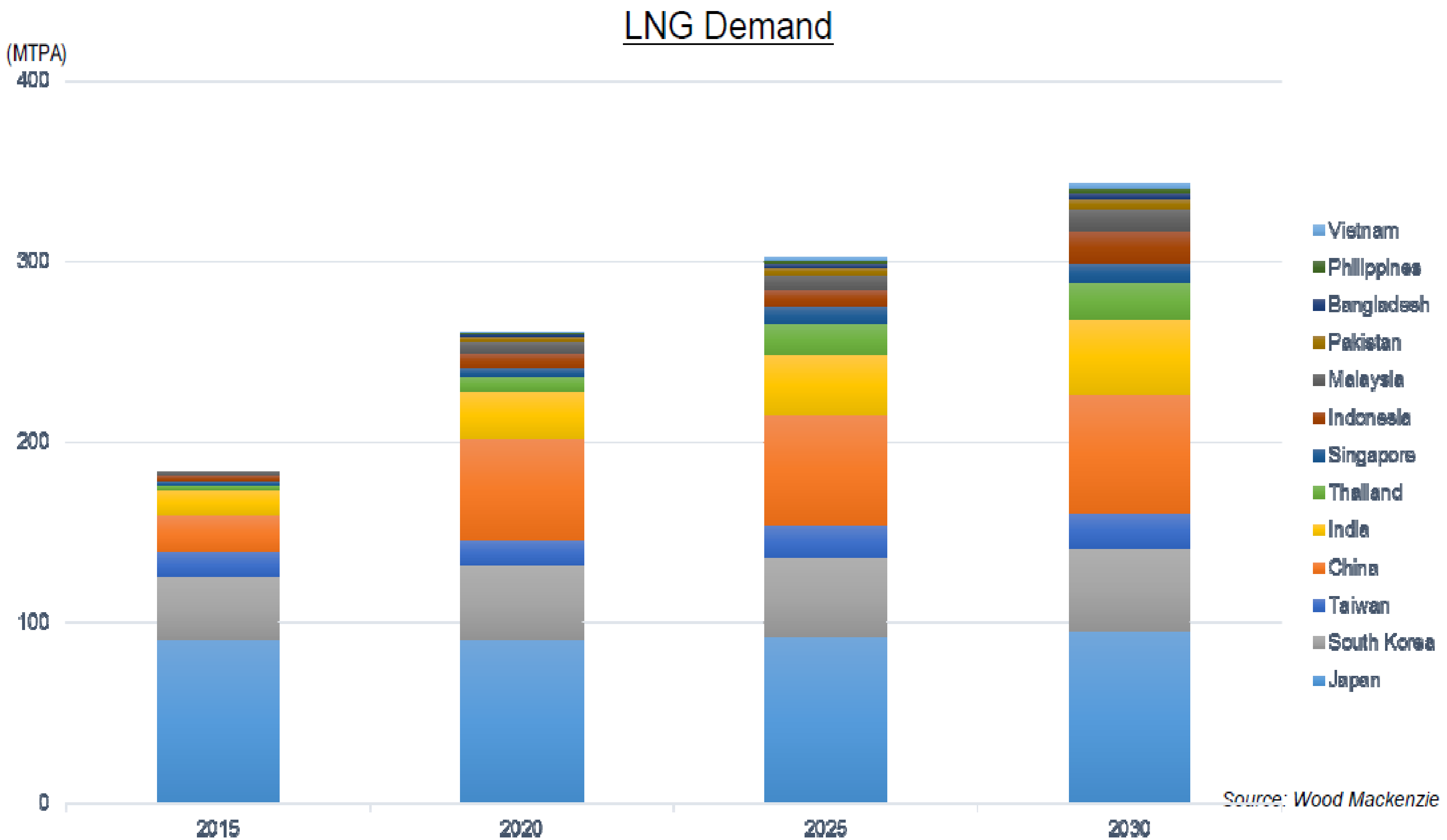


World LNG Landed Price



Source: IHS – Waterborne Energy Inc.
FERC

Asia Pacific LNG Outlook

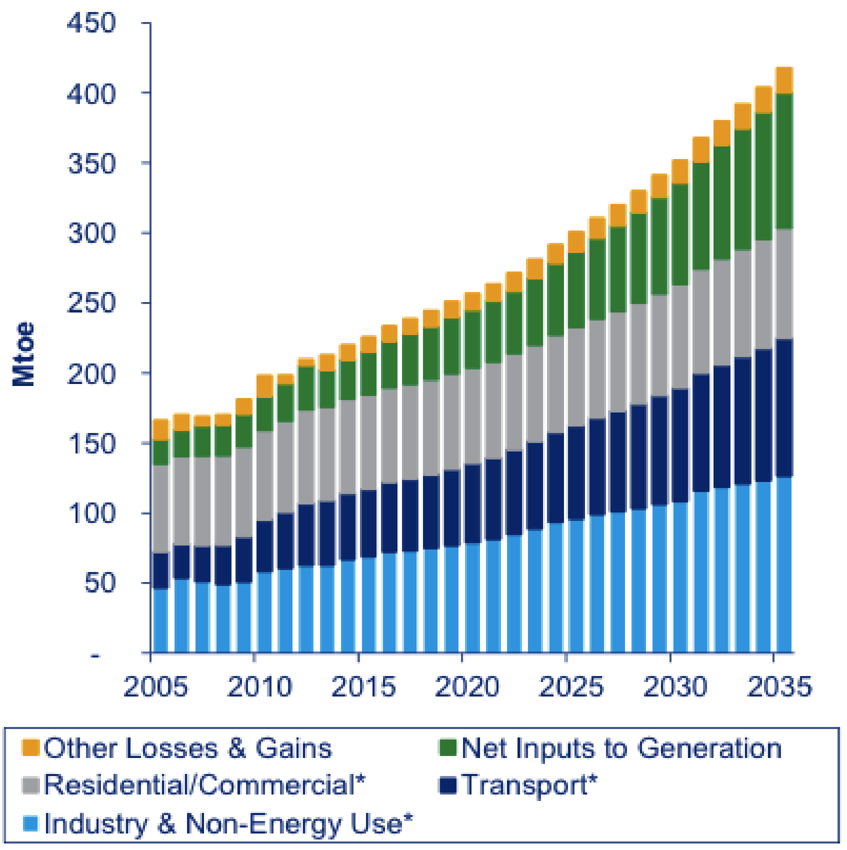


- *Asia Pacific region accounts for more than 70% of the global LNG demand.*
- *Traditional markets such as Japan Korea and Taiwan constitute firm foundation with stable large demand while China and India contribute to the rapid demand growth in the region.*

Indonesia Energy Mix

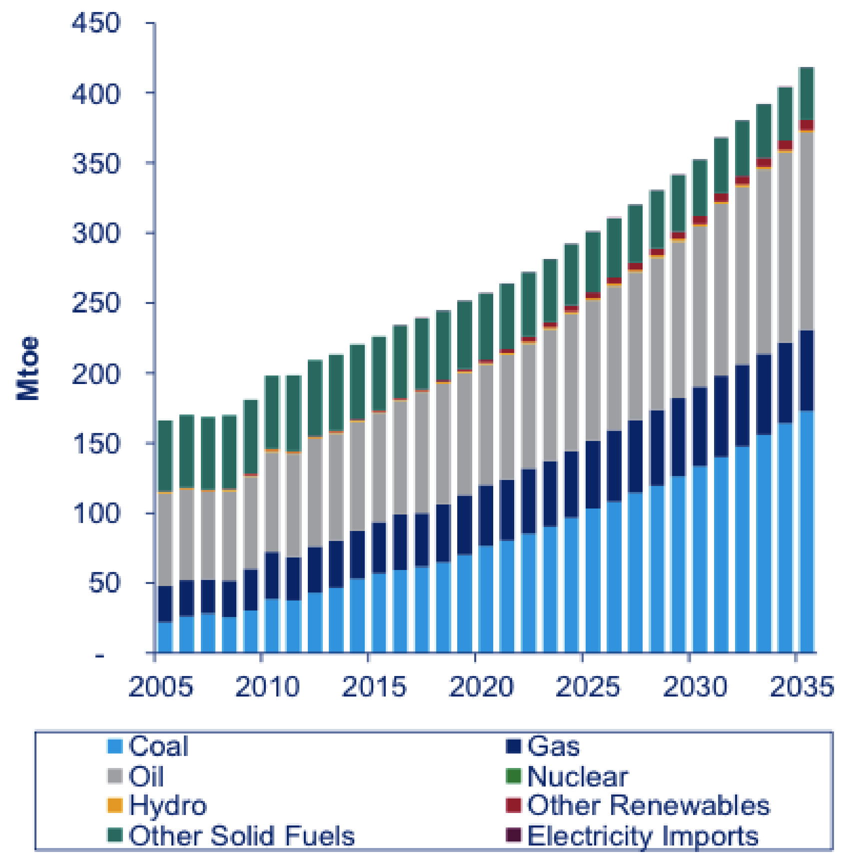
- Indonesia Energy Mix is still dominated by Oil and Gas Product

Demand by sector (2005-2035)



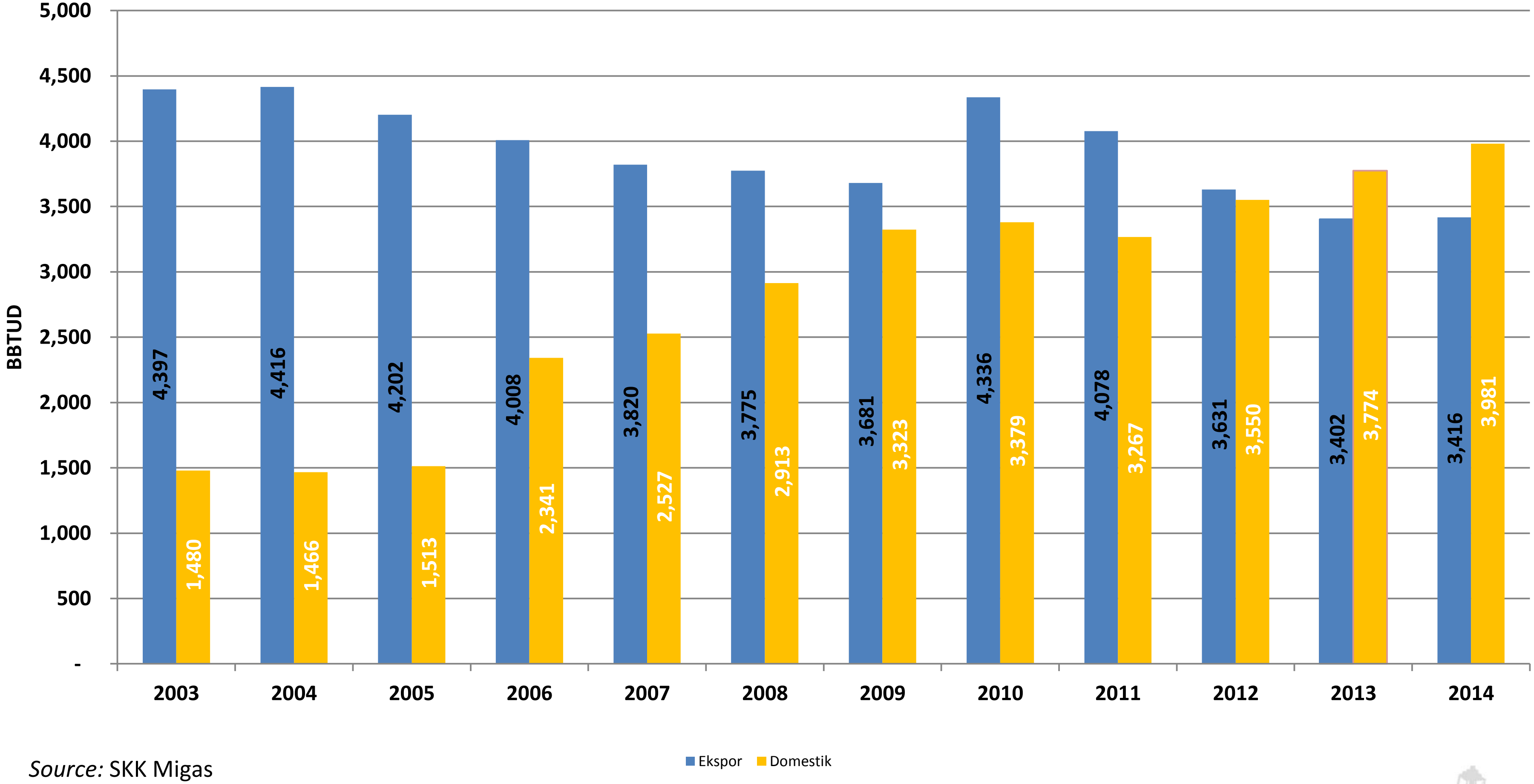
Source: Wood Mackenzie Energy Markets Service

Demand by fuel (2005-2035)



Source: Wood Mackenzie Energy Markets Service

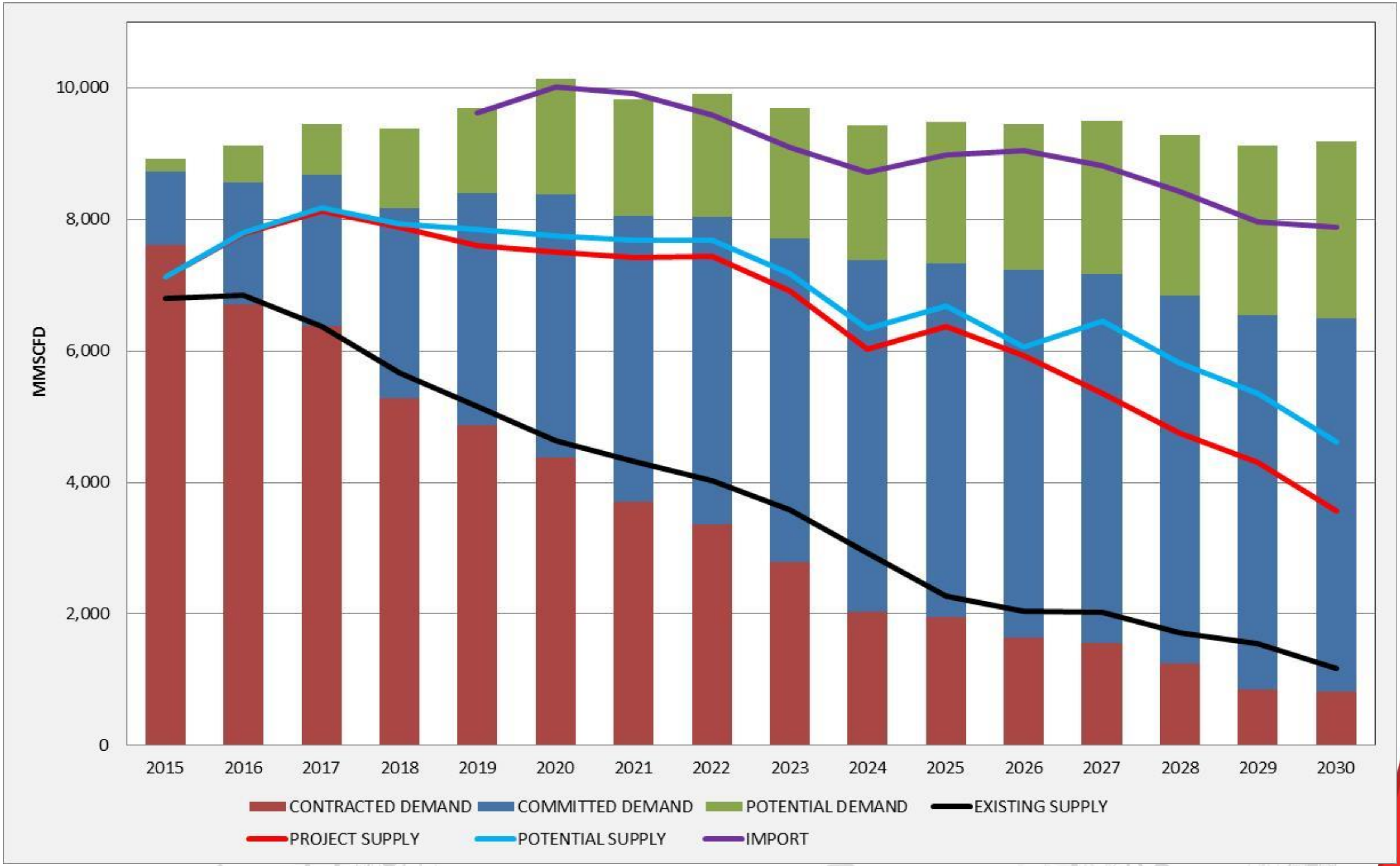
While exports are being maintained, most of additional gas supply now goes to the domestic market



Source: SKK Migas

The rising energy demand as consequence of rapid economic growth will make Indonesia more focus in supplying its domestic needs. However, exports will be maintained for existing contracts as well as to support new project developments. As domestic demand will grow in gradual manner, there is a need to implement **more interruptible mid-terms contracts to create the flexibility in domestic and export supply**.

Indonesia Gas Supply



Source: Indonesia Natural Gas Balance – Ministry of Energy and Mineral Resources

Indonesia has been a LNG producer for more than 35 years with 3 major LNG Plants

1971
First discovery of **Badak Gas Field**

1972
First discovery of **Arun Gas Field**

1977
First shipment of LNG loaded

1982
World record for safety awarded to PT. Badak

1994
First discover of **Wiriagar Deep Gas**

2002
- Gas sales purchase agreement with **Fujian, China**
- Tangguh became the **third LNG center** in Indonesia

2004
Gas sales purchase agreement with:
- **POSCO, Korea**
- **K-Power, Korea**
- **Sempra, US**
- **Tohoku**

2009
1st LNG Shipment from BP Tangguh

2010
Gas sales purchase agreement with **Chubu Electric Power, Japan**

2012
1st LNG Shipment from Badak to West Java FSRU

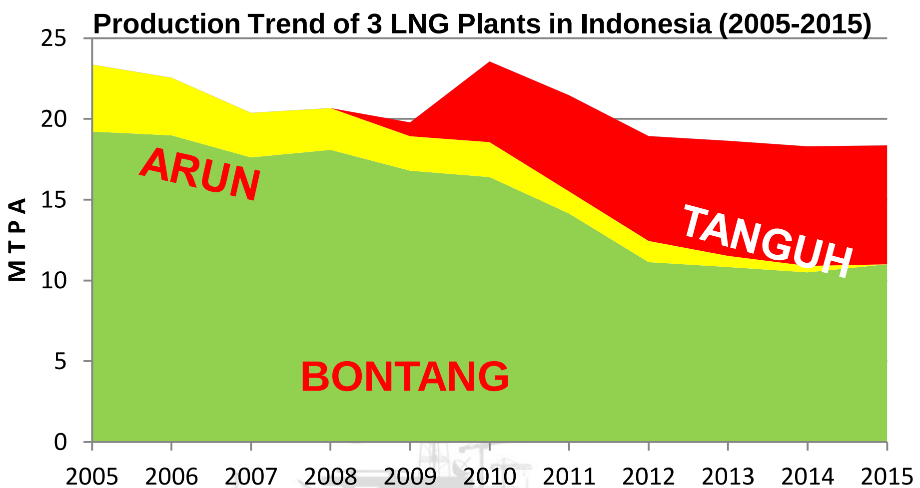
2014 & 2015
Desember 2014 – Kilang LNG Arun Berhenti Beroperasi
Januari 2015 – Arun Regasifikasi Beroperasi

2016
Chevron IDD Bangka Field on stream

2017
- ENI Muara Bakau

2019
- Train 3 BP LNG Tangguh
- VICO CBM

Source: SKK Migas



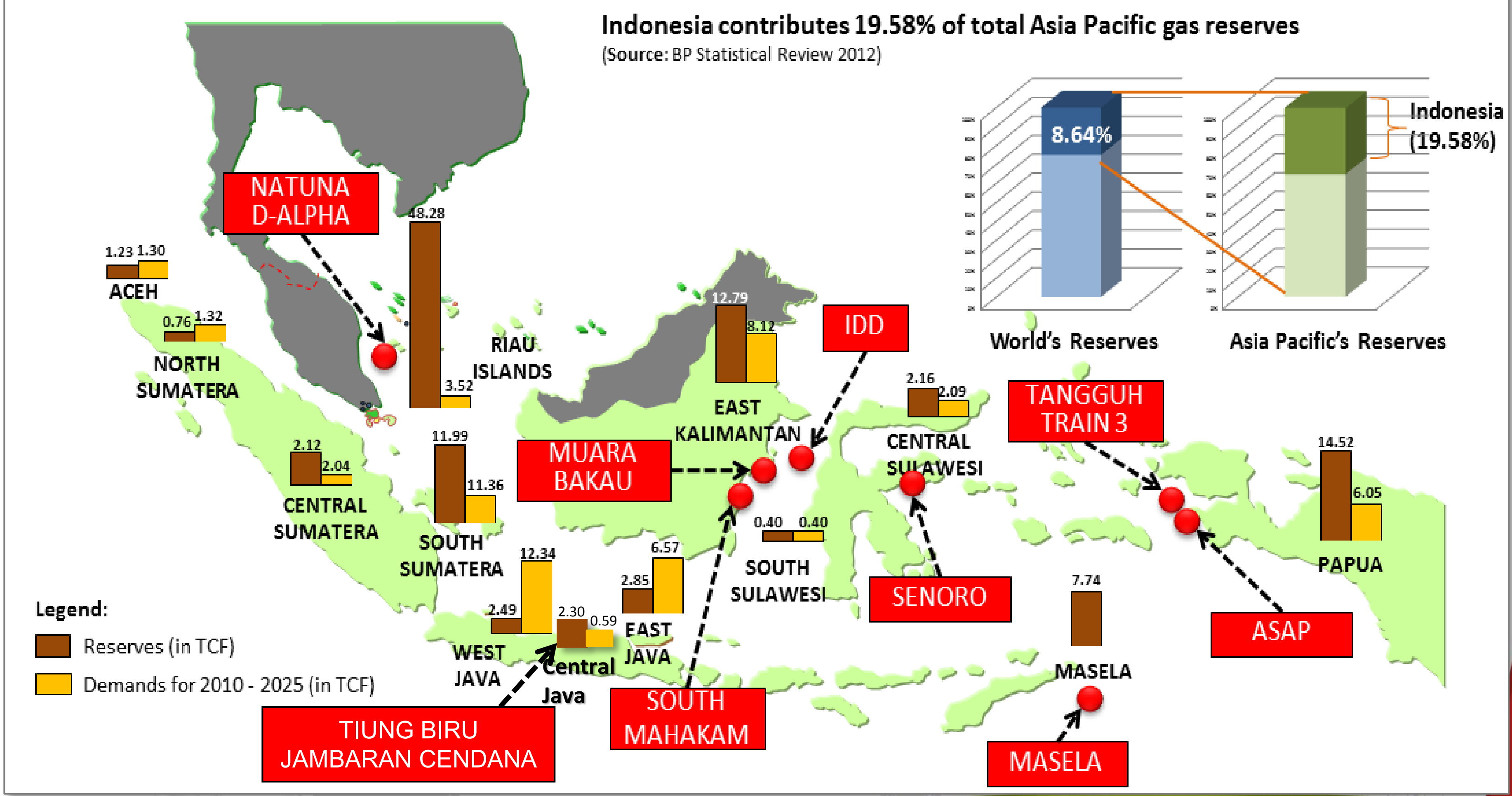
Source: SKK Migas

- Started since 1977 from two LNG plants in Arun (Aceh) and Bontang (Kalimantan), and their capacities are gradually increased to 12.3 MTPA and 22.2 MTPA respectively. Both plants reached its peak production at 29 MTPA in 1999, and had declined to 10.9 MTPA in 2014. but since 2015 Arun plant has transformed into regasification plant
- The third LNG center called as Tangguh is established in Papua since 2004 and started its production at the end of 2009, and produce 7.12 MTPA in 2013, approaching its capacity production of 7.6 MTPA.
- The fourth LNG plant in Indonesia is operated in Central Sulawesi Area called as Donggi Senoro LNG plant. DS LNG plant is designed to produced LNG up to 2 MT per year. DS LNG started its production in 2015.

Gap between gas supply in the eastern part of Indonesia and gas demand in the western part of Indonesia drive the need of gas infrastructure development

Distribution of Natural Gas Reserves in Indonesia

(Source: Indonesian Gas Dialogue 2010)



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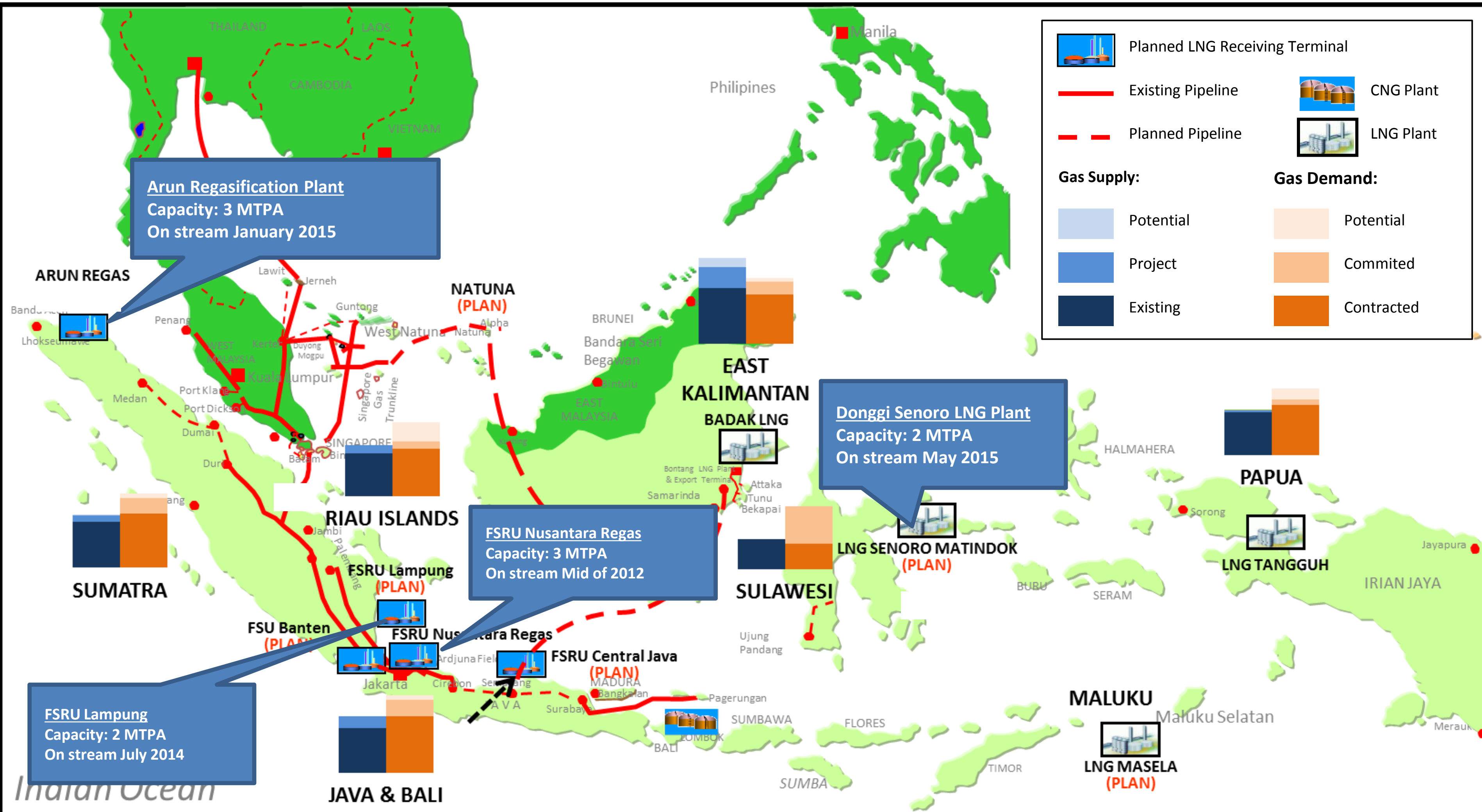
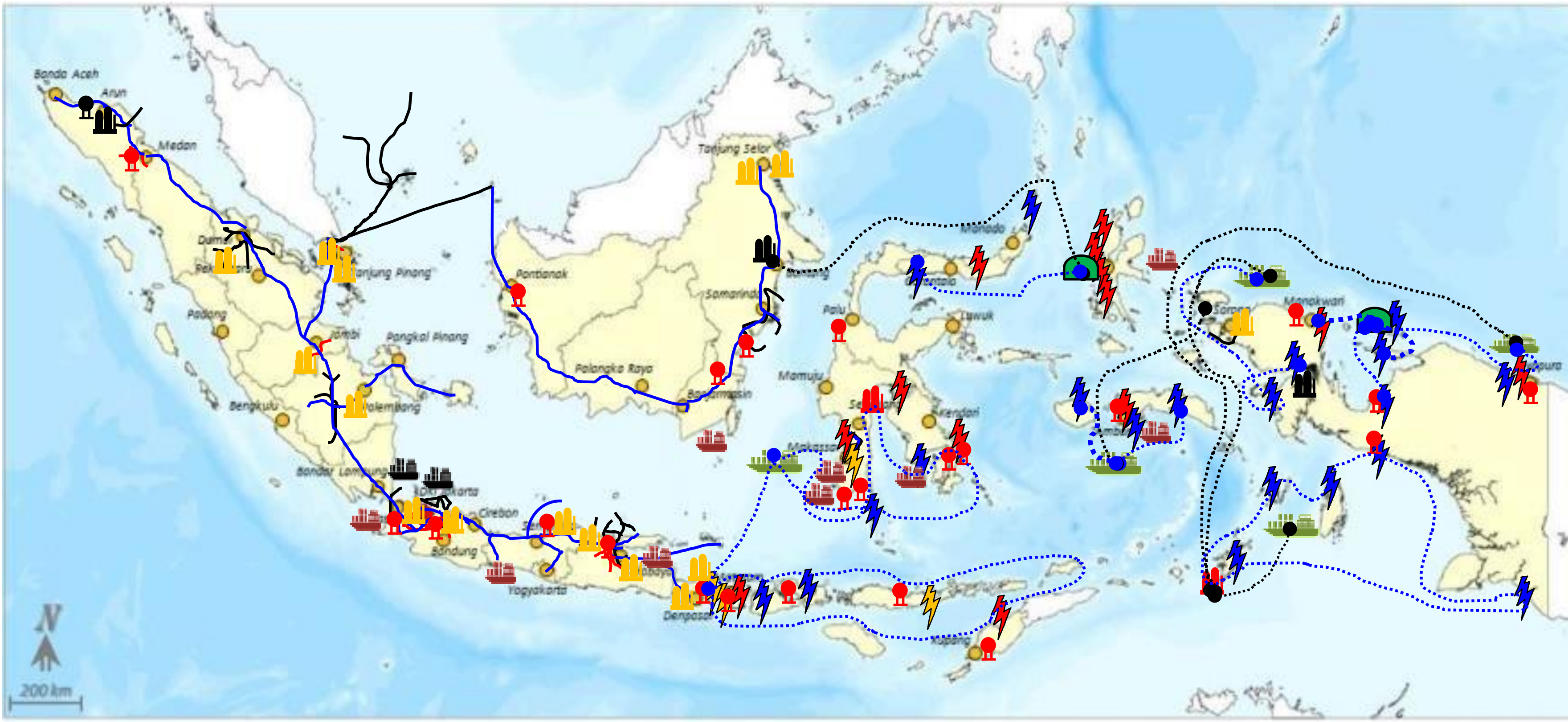
In addition to the existing gas infrastructures, new gas pipelines and FSRUs are being constructed and planned to support the domestic demand



Source: SKK Migas

INFRASTRUCTURES: Pipeline, Liquefaction, Regasification and Proposed Virtual Pipeline Power Plant—Central and Eastern Indonesia (2030)



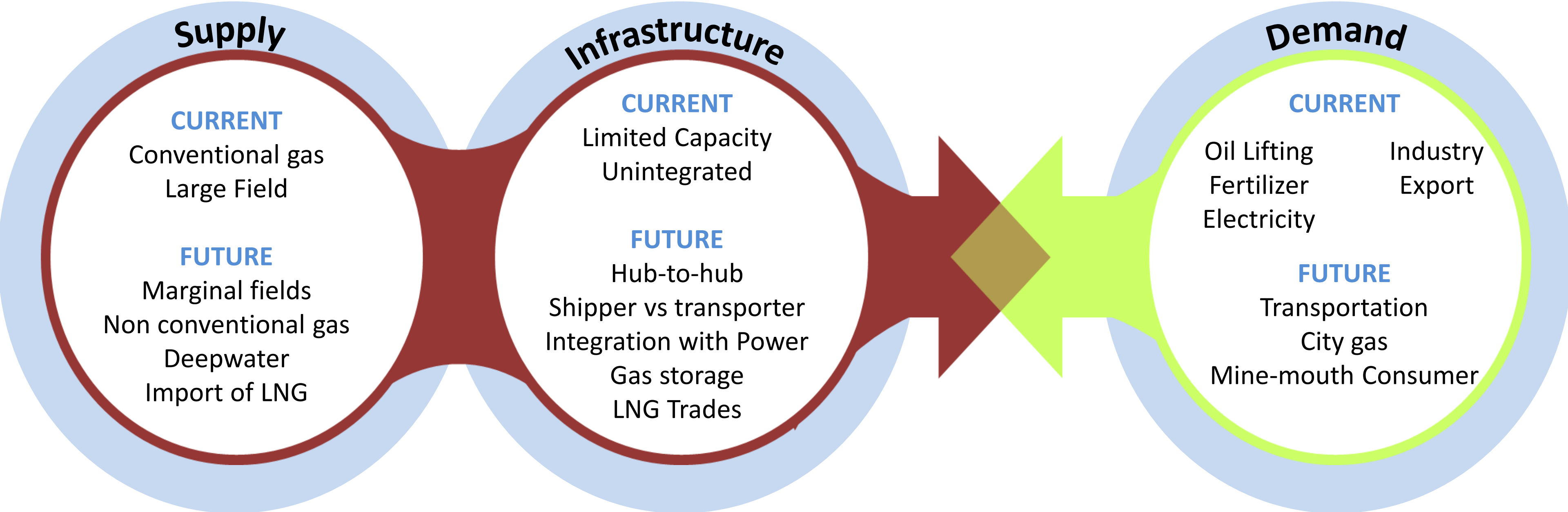
Legend

- Existing Dedicated Upstream Pipeline
- Existing Transmission Pipeline
- Virtual Pipeline from Supply
- Virtual Pipeline to final distribution
- Virtual Pipeline (Plan)
- Primary Hub
- Primary Hub (Plan)
- Plan FSRU
- Existing FSRU
- Mobile Power Plant (MPP) Plan
- Pembangkit Listrik Tenaga Gas - Uap (PLTGU) Plan
- Pembangkit Listrik Tenaga Minyak – Gas (PLTMG) Plan
- Secondary Hub/LNG Storage Tank
- Planning LNG Plant
- Planning Mini LNG Plant
- Existing Land-based Regasification
- Planning Land-based Regasification

Total Investment Needed: 24.3 Billion USD

Source: Mr. Naryanto Wagimin Presentation – Ministry of Energy and Mineral Resources

Current and Future Challenges of Indonesia LNG Industry open more investment opportunities



MORE PRONOUNCED GAS BUSINESS

End Remarks

- In meeting growing gas demand, Increasing LNG use for domestic consumption is unavoidable. Gas infrastructure will be the key.
- Oil and gas business activities not as an extractive industry per se but to generate multiplier effect to the national economy: Pro Growth, Pro Job, Pro Environment, while enhancing the local content in project development.
- Indonesia is actively constructed FSRU to support the growth of Domestic Demand
- The existence of growing domestic demand and export contracts create an opportunity to supply gas in portfolio basis.
- Significant gas base load demand can be created, as replacement of fuel base consumption, i.e. gas oil is still spread out. Once the base demand and infrastructure are in place, gas consumption will proliferate, hence creating Indonesia not only as importance LNG producers but also as LNG consumers

THANK YOU