

CHANGING DYNAMICS IN THE JAPANESE ENERGY MARKET AND ITS IMPLICATIONS

Keita Enjoji

Head of LNG, General Manager

Tokyo Gas Asia Pte. Ltd.

DRIVING GROWTH



Agenda

- Changes in the Japanese Energy/Asian LNG Market
- Implications to the Japanese Energy Industry
- Introduction to Tokyo Gas's Initiatives

Changes in the Japanese Energy Market(1/2)

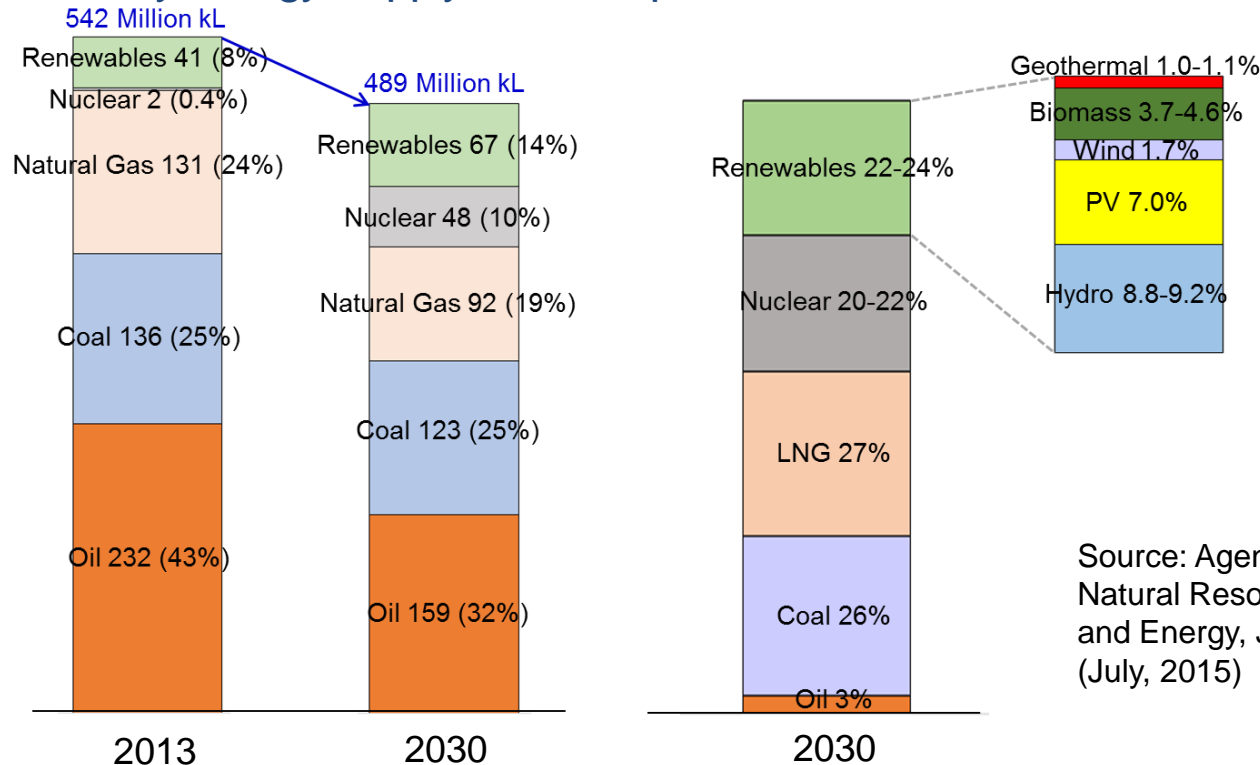
Energy Policy
& Long Term
Supply
Demand
Outlook

Three nuclear power units (Sendai Unit No1[*], No2 and Ikata Unit No3) have restarted. *under maintenance

Although another 22 reactors are in various stages of the restart process, the actual timing is uncertain.

Increase of renewables in the energy mix

Projected Primary Energy Supply and Composition of Power Generation in 2030



Source: Agency for Natural Resources and Energy, Japan (July, 2015)

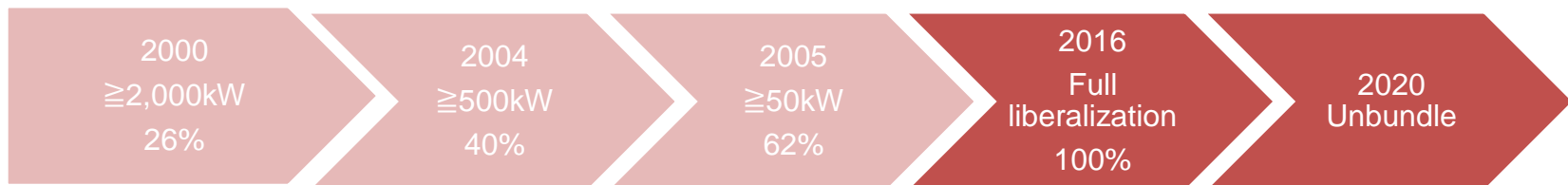
Changes in the Japanese Energy Market(2/2)

Power and Gas Market Reform

Full liberalization of Power Retail Market in 2016 and Gas Retail Market in 2017

Unbundling of Power Network by April 2020, and Gas Pipeline Network by April 2022

■ Power Market



■ Gas Market



Changing Dynamics in the Asian LNG Market

US LNG Export

HH will become one of the key indices in Asia

Uncommitted flex volumes and destination-free terms will invigorate much trading across the markets

Stimulation of LNG trading activities will lead to stronger market connectivity

Uncertainty of oil and gas prices

Oil prices may remain subdued for extended period, thus oil indexed LNG prices may stay relatively low

Delay of FID of green field LNG projects

Opportunity for new pricing mechanism for sustainable development of gas market

Other Factors

New supply: Pipeline supplies into China from Russia & Central Asia, possible new LNG supply from Canada, Alaska, Russia, and East Africa

Environmental Policies: Impact of policies, COP 21, etc.

Demand growth of emerging markets

Implications to Japanese energy companies

Energy Policy

Uncertainty of Demand/Supply

Market Liberalization

Intensified Competition

Changing Market Dynamics

Price Risk Exposure

Shift from emphasis on “long-term security of supply” to “enhancing flexibility and elasticity” and “effective use of the market”

Volume Risk
(Uncertainty of Demand/Supply)

- Development of sophisticated LNG procurement strategies
- Build up of optimization/trading capabilities
- LNG Hub concept

Price Risk

Intensified Competition

- Gas to gas, power to power competition
- Expansion of overseas business
- Formation of business alliances

Tokyo Gas's Initiative – The Challenge 2020 Vision –

- Evolution from a gas utility into a “total energy company”

Evolving into the total energy business

Accelerating overseas business

Energy Business

- City Gas
LNG Procurement/
Transportation
City Gas production
& distribution
- Electric Power
Generation
Supply & sales
- Liquid Gas
LPG Sales,
Industrial Gas
production & sales

Value Added Business Related to Energy

- Engineering Services
Comprehensive
Engineering
- Home Services
Value added
solutions for homes
- Urban Development
Real estate /
community based
solutions

Energy Business

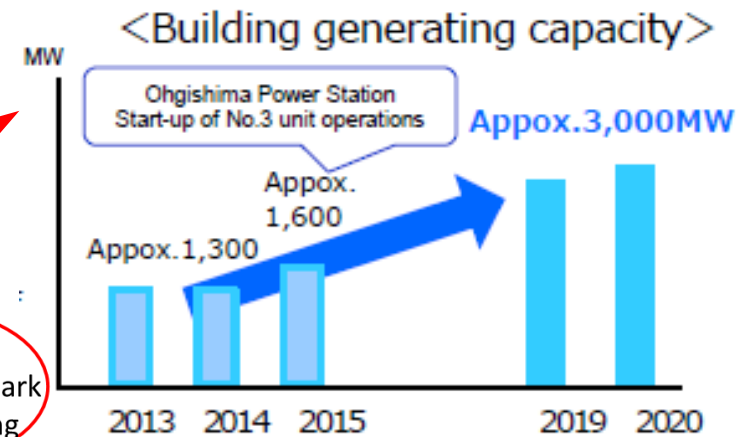
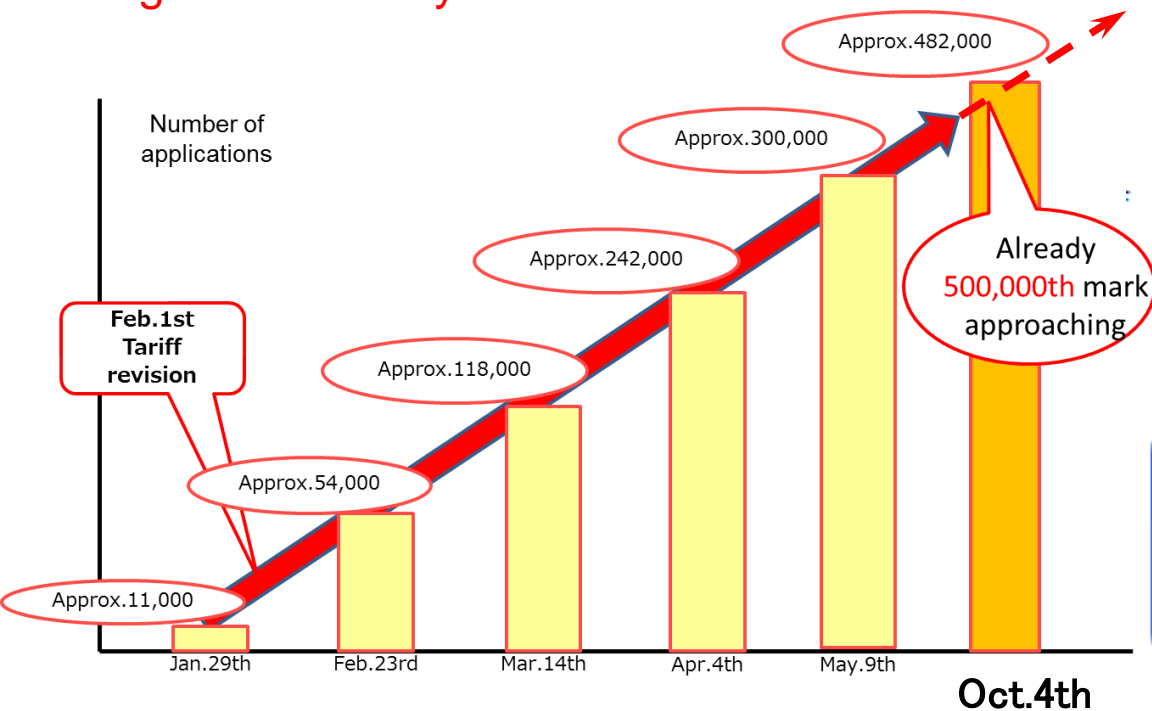
- Upstream Participation
- Mid-Down Stream Business Dev.
-Business opportunities such as, Regas
Terminals, IPPs, Gas Distribution
- Engineering and Energy Services

Tokyo Gas's Initiative – Recent Developments –

- Emphasis on **development of power and overseas business** to achieve 25% each of the total consolidated net income.

Power Business(Domestic):

Target 1 million by end of FY2017



Kobelco Power Moka

Artist's impression of Kobelco Power Moka's Moka Power Station when completed

Tokyo Gas's Initiative – Recent Developments –

Overseas Business

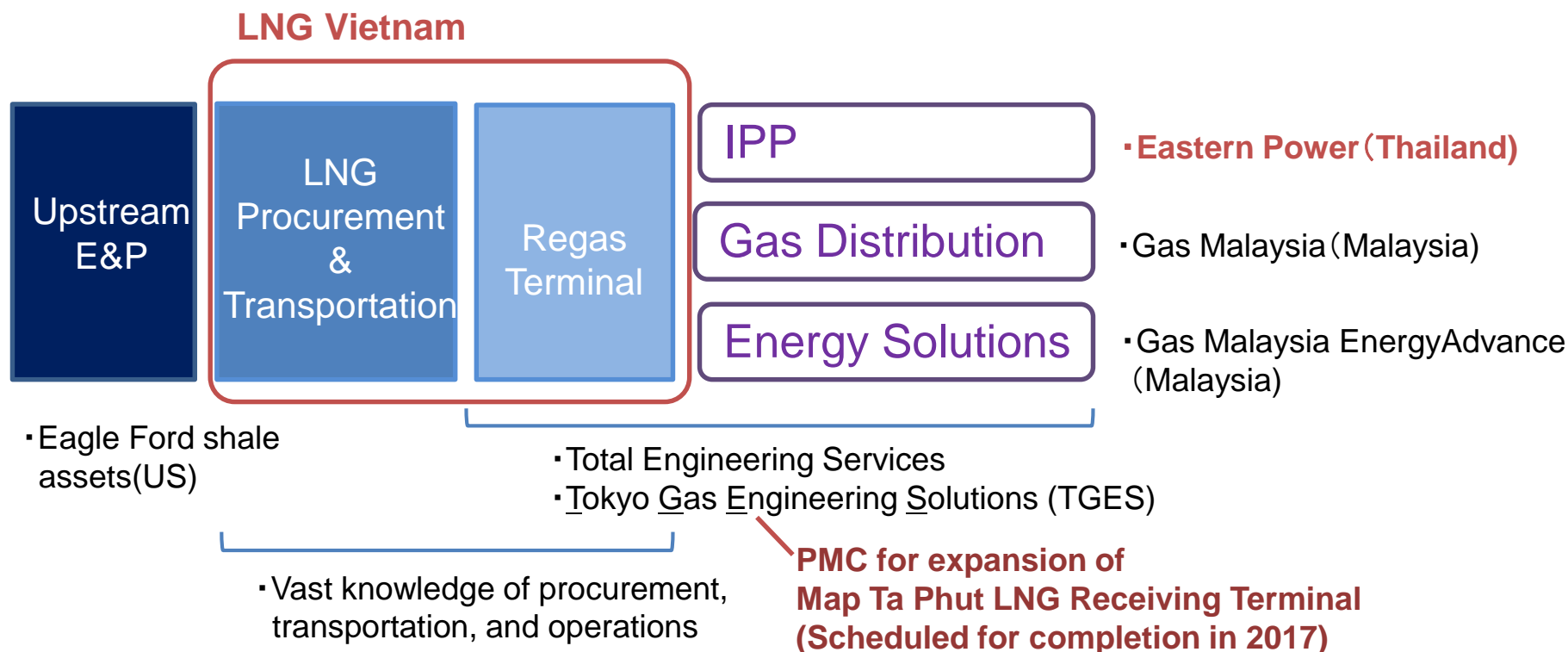
- 11 Overseas offices in 9 countries (target by 2017)
- In Asia, two new offices are planned in Ho Chi Minh and Manila
- MOU for cooperation in the ASEAN region has been executed with Pertamina, PetroVietnam Gas



Tokyo Gas's Initiative – Recent Developments –

Overseas Business:

- Leveraging the experience and expertise gained from the full LNG value chain in Japan, to expand our business domain globally



Most recent activities in Asia:



Comprehensive MOU
between PVG & Tokyo Gas in
2012

LNG Vietnam (Vietnam)

Establishment	2016
Stakeholders	PetroVietnam Gas 51%, Bitexco 39%, TG Asia 10%
Business Operation	-Construction/operation of LNG terminal -Procurement of LNG/ Marketing of gas

Eastern Power Electric Corp. Ltd. (Thailand)

Share Acquisition	2016
TG Asia's share	28%
Business Operation	PPA with EGAT

Bang Bo Power Plant (350MW)



Tokyo Gas's Capabilities and Contributions

	Upstream E&P	LNG Supply/Optimization	Infrastructure Develop.	O&M	Marketing
Seller/Producer	○ →				
Trader		○			
Tokyo Gas		← ○	○	○	○

- The LNG market could potentially be oversupplied into the mid 2020's.
- However, unlocking potential demand in emerging markets will require not only investment to develop the infrastructure, but also technical and operational expertise of handling LNG.
- Cooperation between Seller and Buyer will become of greater importance for the stable and sustainable growth of the LNG industry.

Thank you for your kind
attention