

New Approaches to Asian LNG Market – What might happen next? And Future Pricing in LNG market

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- 1. Issues and challenges of global LNG industry**
- 2. Creating demand and expanding value chain of LNG by flexible LNG trading through enhanced liquidity**
- 3. Conclusion and Messages**

Tokyo Gas Business Domains

Our strength is derived from having experience and expertise throughout the entire value chain of LNG

Upstream Interests
1,390,000 tons equivalent*



Darwin LNG Project Barnett
 The Company's ownership share of LNG production capacity

LNG Procurement Volume

13.9 mtpa



LNG carrier Energy Advance

Company Owned / Managed Vessels

12 vessels



LNG tanker Energy Frontier

LNG Terminal Storage Capacity

3,845,000 kl



Sodegaura LNG Terminal



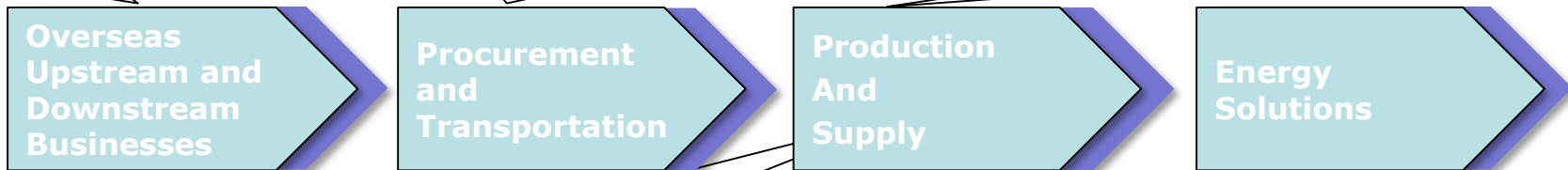
Ohgishima LNG Terminal

Generation Capacity

2,400 MW



Ohgishima Power Co., Ltd.



Gas Transmission and Distribution



High-pressure pipeline Low-pressure pipeline (polyethylene pipe) Gas intelligent meter

Gas Sales Volume

15,436 million m³

For wholesale use

14%



LNG tank lorries

For residential use

22%



"ENE-FARM" residential fuel cell system

For industrial use

47%



Regenerative burner system

For commercial use

17%



Cogeneration system

4

Challenges in the LNG industry

Challenges of global LNG industry

Potential **Oversupply** expected to continue up to mid 2020's

Future **demand uncertainty increases** in major countries

Competition against other energy such as renewables



Challenges within Japan

Liberalization progresses in the energy market

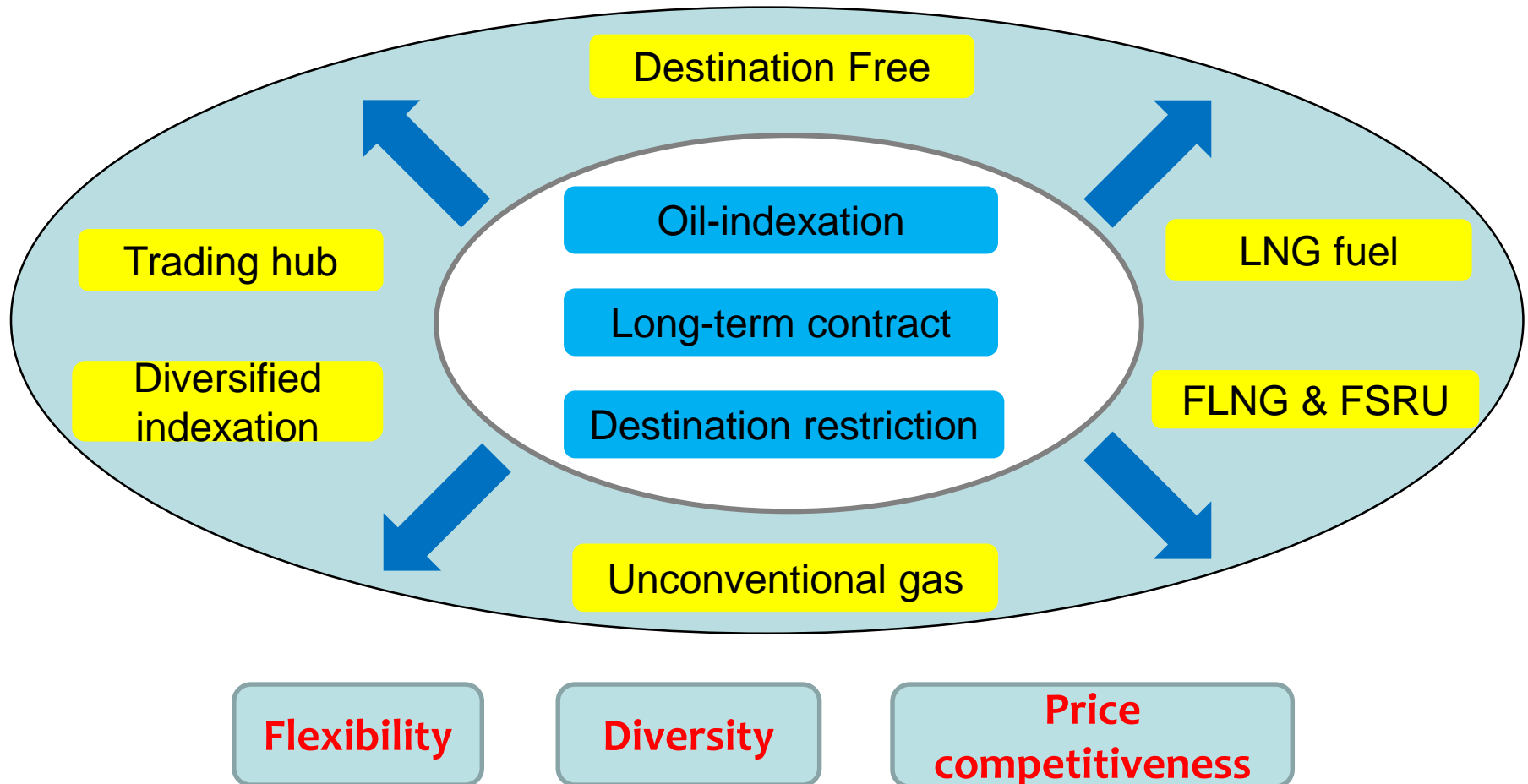
Competition intensifies within the energy sector

Change in procurement portfolio becomes essential



What is global LNG market looking for?

Global LNG market is on its way to further development supported by rising demand and new technologies



Supporting the growth of renewable energy

Natural gas plays an important role to support the fluctuating output of unstable renewable energy

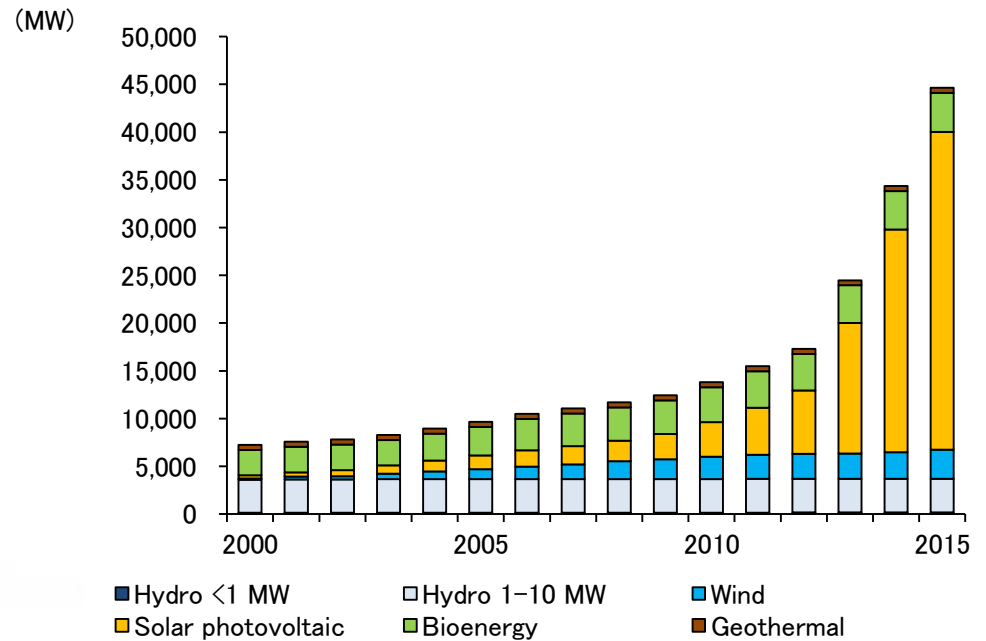


Natural Gas



Coal

RE power capacity in Japan



Source: IRENA Renewable Electricity Capacity and Generation Statistics, July 2016

How do we all survive in this low oil price condition?

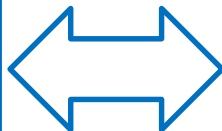
- **Common understanding**

To maintain stable growth of LNG business, competitiveness against coal, nuclear & renewables would be essential.

Seller

- Buyers should commit long-term and take volume and price risks
- Market moves cyclical
- Expectation for LNG price hike at high oil price situation

conflict



Buyer

- Intend more flexible and shorter term contracts to respond to demand uncertainty
- Sellers should take FID even with less buyer's commitment
- Expectation to competitive and stable prices
- Ready to commit if terms and conditions are attractive

Buyers are looking for creative ideas

More creative and non-stereotypical LNG contracts are essential

Let's think outside the box



Innovative ideas



Demand creation in the emerging countries

Securing access to LNG by **development of infrastructure**

Enhancing **energy efficiency, energy-savings**

Providing custom made energy solutions corresponding to the areas and their needs

Securing Supply Stability

Corporation between buyers and sellers to underpin new LNG Projects

Enhance LNG liquidity for flexible transaction, to **optimize transactions and maximize the value**



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LNG procurement Strategy

1. Supply Source

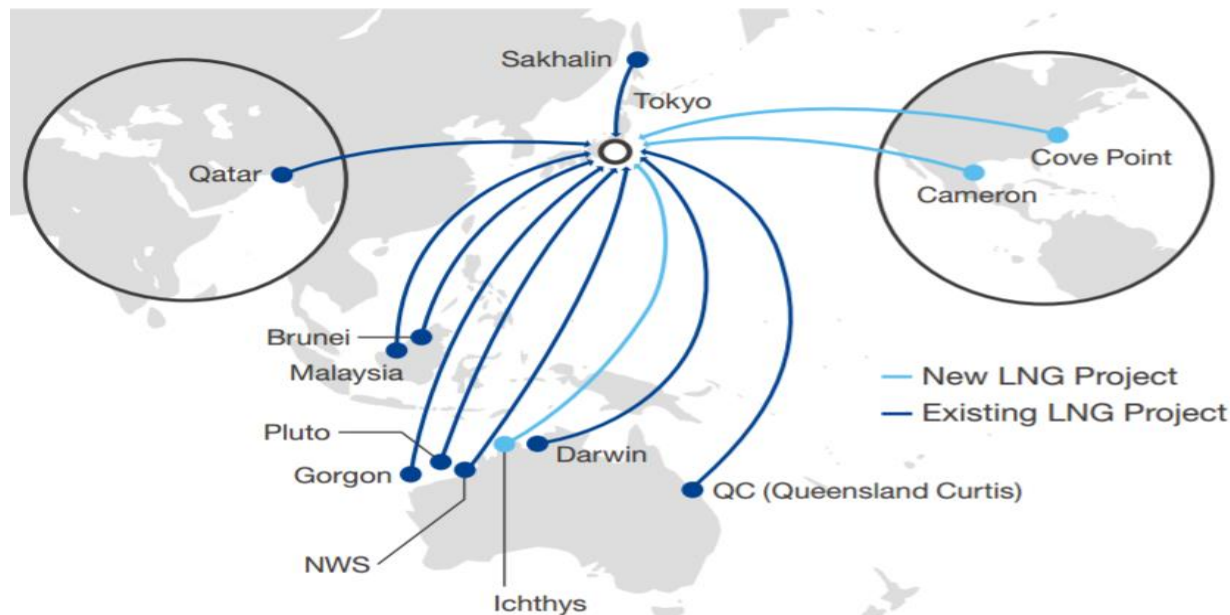
- Improve security by importing from **new regions**
- Seek for new deals with **new entrants**
- Import from unconventional LNG projects

2. Contract terms

- Introduce **market price** mechanism into LNG portfolio
- Seek for trading opportunities through **destination free clauses**
- Create a best mix of LNG portfolio by introducing **shorter term deals**

3. Global LNG network

- Enter into Atlantic market and explore **inter-market transactions**
- Explore demand in **Southeast Asian market**
- Build a framework of alliances and explore **win-win business model**



LNG market looking for collaboration in many ways



Dec 2016-Centrica
Signed MOU to cut LNG shipping costs



Mar 2012-Petro Vietnam
Signed MOU towards forming a strategic alliance
Cooperation for developing LNG Value Chain in Vietnam



Oct 2016-Petronas
Signed MOU to pursue potential collaboration to further strengthen their global presence in the energy market



Feb 2015-PERTAMINA
Signed MOU towards forming a strategic alliance and cooperating for developing LNG Value Chain in Indonesia



Sep 2014-Kogas
Signed MOU to enhance cooperation in the LNG business

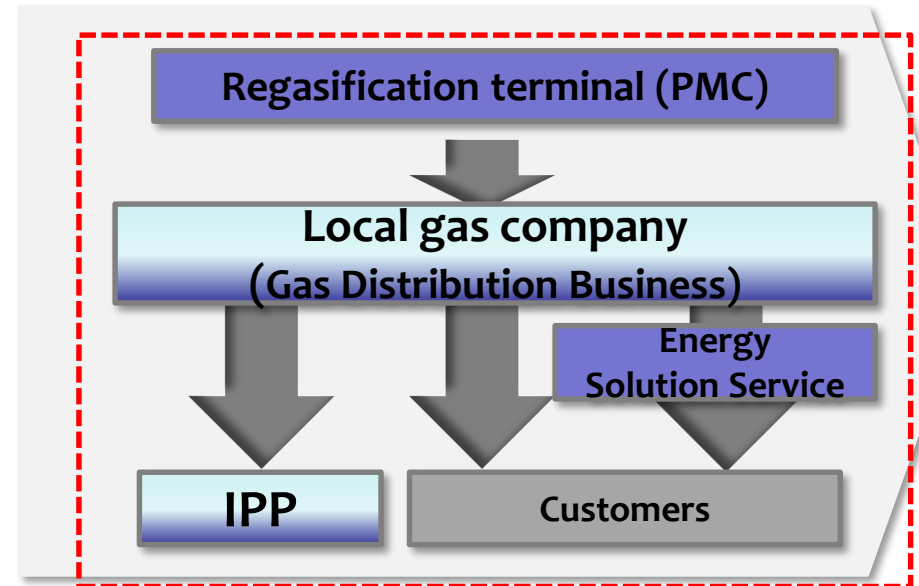


Aug 2015-CPC
Signed MOU on Strategic Collaboration

Expanding value chain of LNG

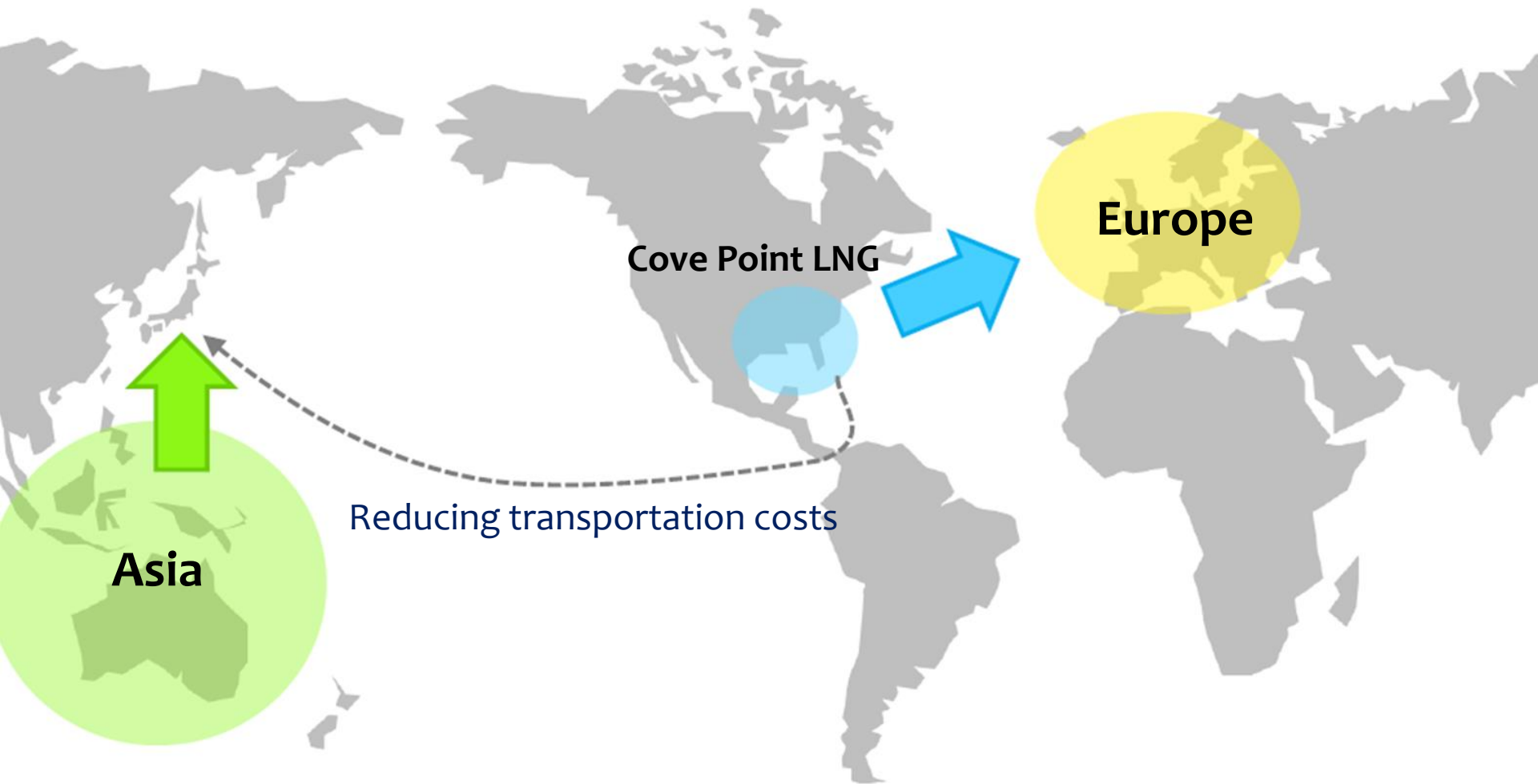
Expanding value chain investments in Southeast Asia to provide LNG vertical integrated streamlined services.

1. Engineering services (**PMC**) for construction and operation for **Regasification terminal**
2. Offering engineering capabilities for the gas-fired **Power Plant**
3. **Gas Distribution Business** with local gas company
4. Providing optimal **Energy Solution Service** to end-customers (energy saving, energy efficiency etc.)
5. **Sourcing LNG** from enhanced LNG procurement portfolio.



■ Tokyo Gas's Capabilities and Contributions

LNG trading will enhance inter-basin trading



Tie-up with Centrica will conduct flexible LNG trading, bridging both the Atlantic and the Pacific market.

LNG Bunkering and LNG Terminal

Loading Arms



LNG Bunkering Vessel



1000 - 2000 t/ship

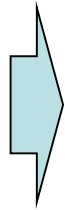


Large LNG Fuel Vessel



Can be used for
"Ship-to-Ship"

Loading Bay



LNG Truck Container



Min.; 7t/truck
Max.; 15t/truck



Small LNG Fuel Vessel "Sakigake"

First LNG Fuel Vessel in Japan



Can be used for
"Truck-to-Ship"

Asian LNG Market(Spot/Short/Mid/Long Term) will be changes in accordance with change of Market conditions.

LNG pricing should be competitiveness compared to other energy.

To realize this competitiveness for long term, LNG market pricing will be diversified not only Oil Linked Pricing but also Market Price, other Gas Hub (HH, NBP etc) will be introduced

For LNG market, Looking for business partners who can keep hand in hand to expand the market together



Ready to commit to sustainable growth and prosperity of the whole LNG industry

