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EAST ASIAN GAS MARKET IN TRANSITION: INTRODUCTION

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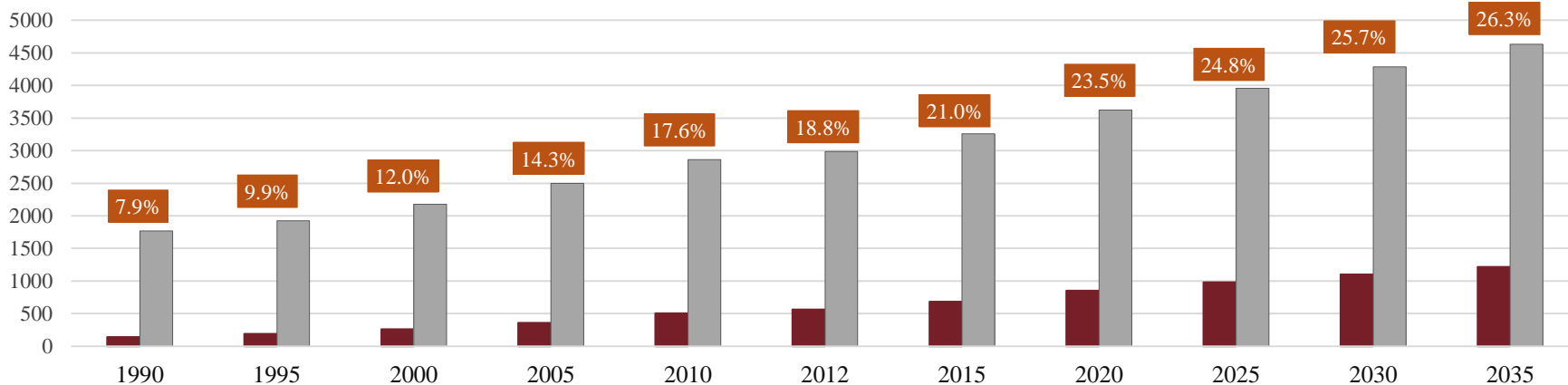
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2017.6.20

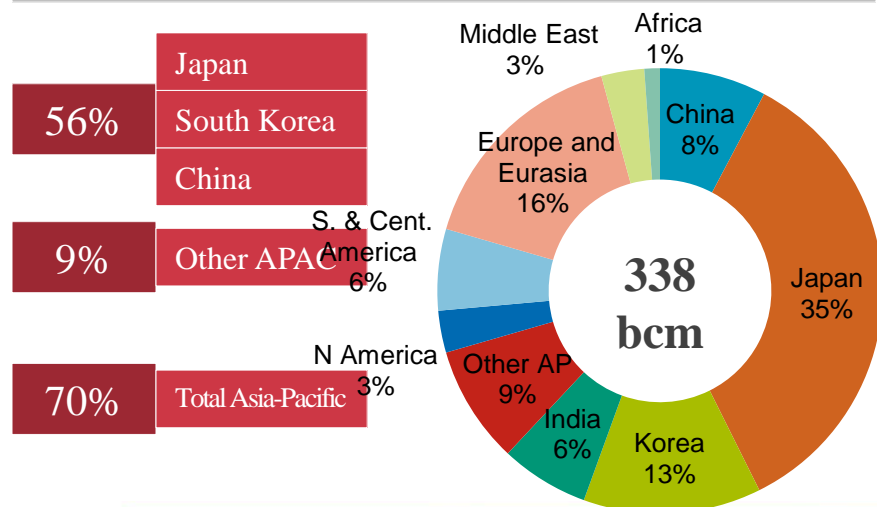
Acknowledge
The panel is supported by ESI's
'gas trading hubs and hub
pricing in East Asia' project

EAST ASIA'S NATURAL GAS SECTOR IN THE WORLD

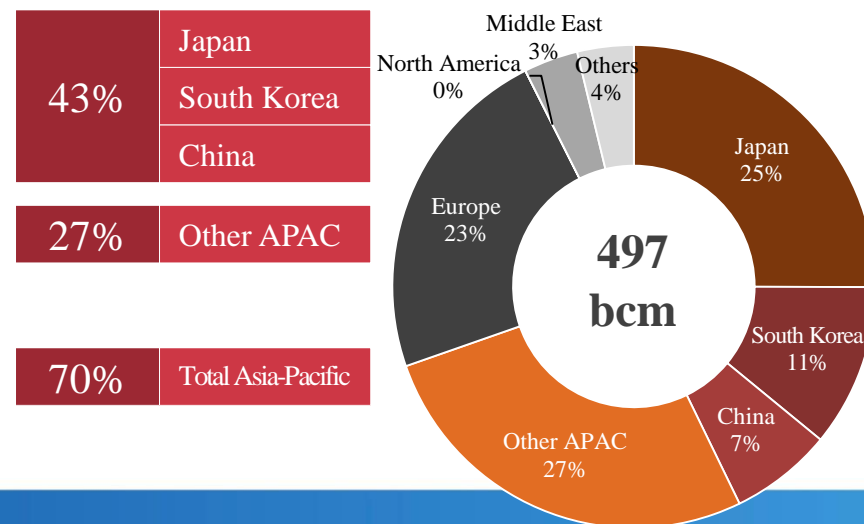
■ Asia Pacific ■ Total Natural Gas Consumption 1% Asia Pacific share



World LNG Imports (2015)



World LNG Imports (2035)



EMERGING MARKET DYNAMICS IN EAST ASIA (1)

- ❖ Demand in Japan and China
 - Nuclear plants
 - Energy mix target
 - Economic growth, pollutions, shale
- ❖ East Asia targets more flexible spot indexed contracts
 - Debates on destination clauses
 - Gas hubs are under construction or planned
 - Oil indexation
- ❖ Gas markets are being liberalizing

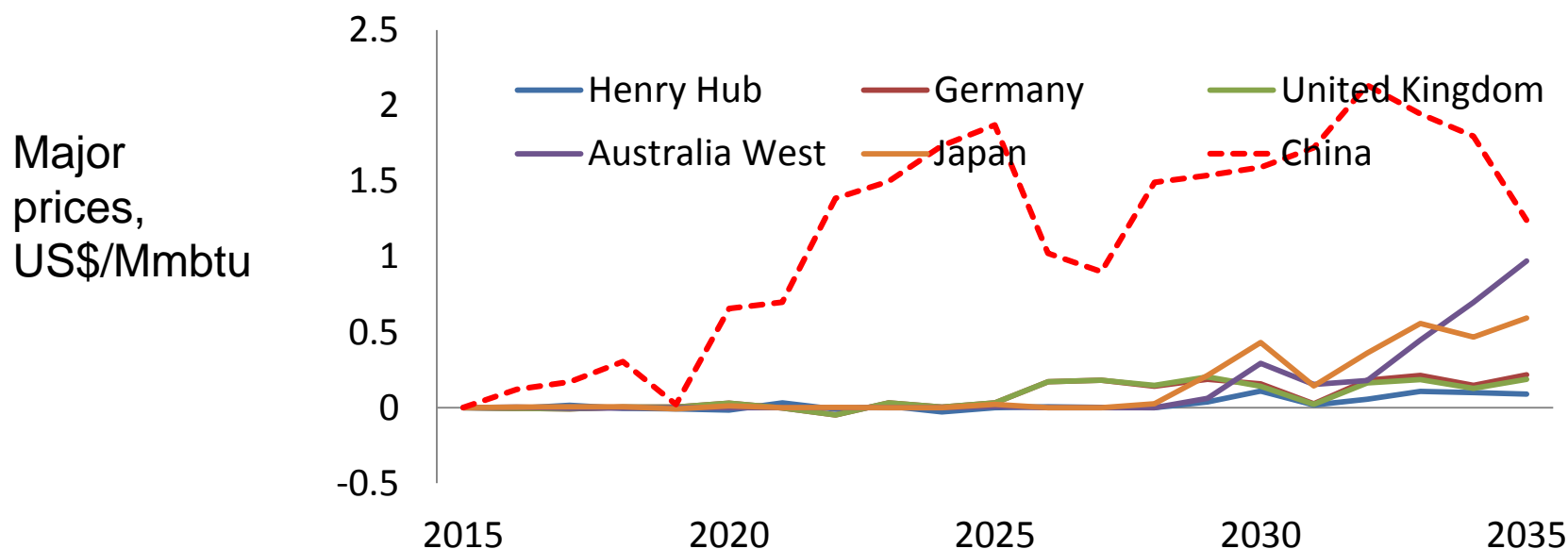
EMERGING MARKET DYNAMICS IN EAST ASIA (2)

- ❖ Flexible supply
 - Gas-on-gas competition, portfolio players, short term contracts
 - US LNG export
- ❖ Potential gas and LNG battle field, after Europe
 - China-Russia gas pipeline
- ❖ Challenges in major suppliers
 - Qatar
 - Australia

DEMAND UNCERTAINTIES

--HIGH GAS DEMAND FROM CHINA

Description	Parameter	2020	2025	2030	2035
Low Demand Scenario	Consumption	269	327	381	450*
IEA WEO 2015 NPS	Consumption	315	403	483	546
High demand scenario	Consumption	334	431	540	620



Shi, X., Variam, H., & Tao, Y., 2017. Global impact of uncertainties in China's gas market. *Energy Policy*, 104:382-394

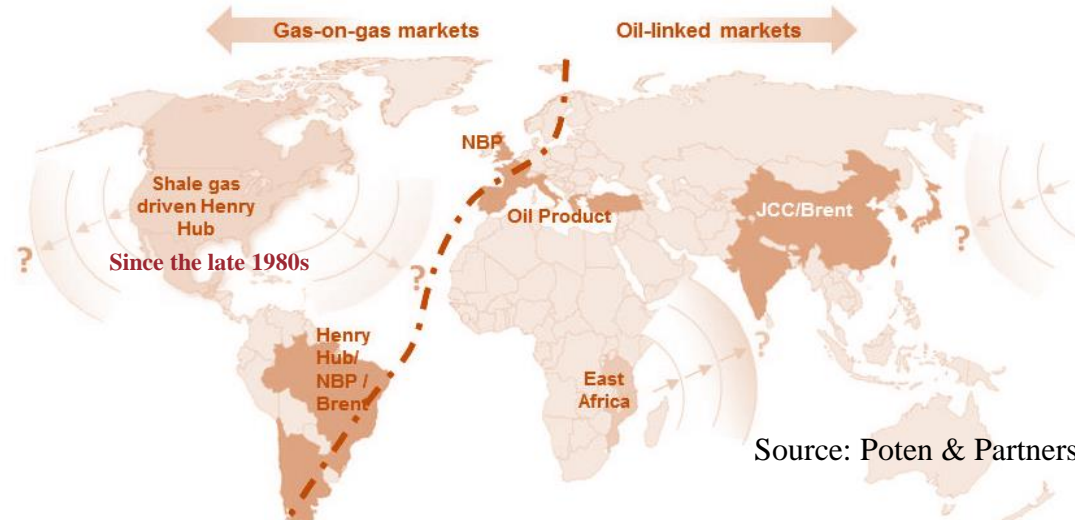
GAS PRICING MECHANISMS

GoG vs. Oil-Linked Markets

Asia – oil-linked LNG market

Europe – a hybrid market

North America – a spot market



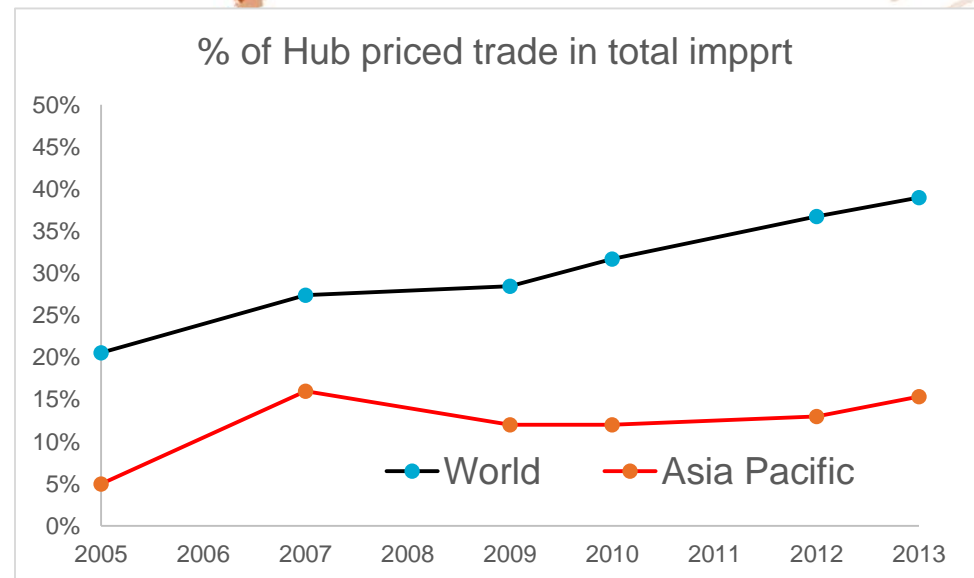
GoG Priced in Total Imports

Share of spot trade is growing

In Asia Pacific, growth is slower

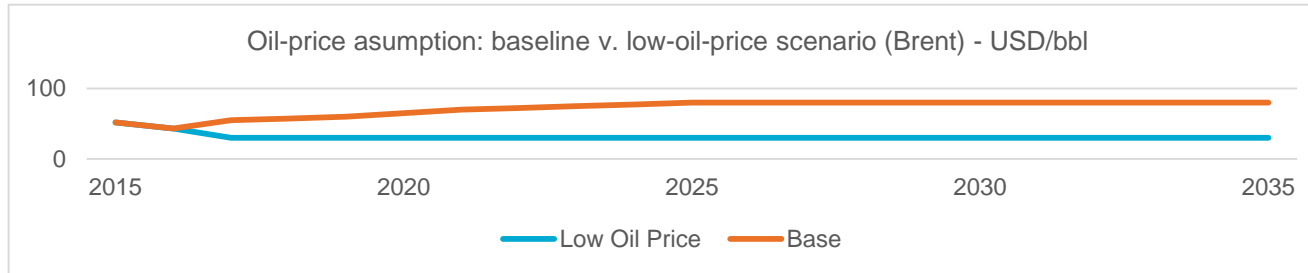
World average/2015: ~45%

Asia-Pacific average: ~18%

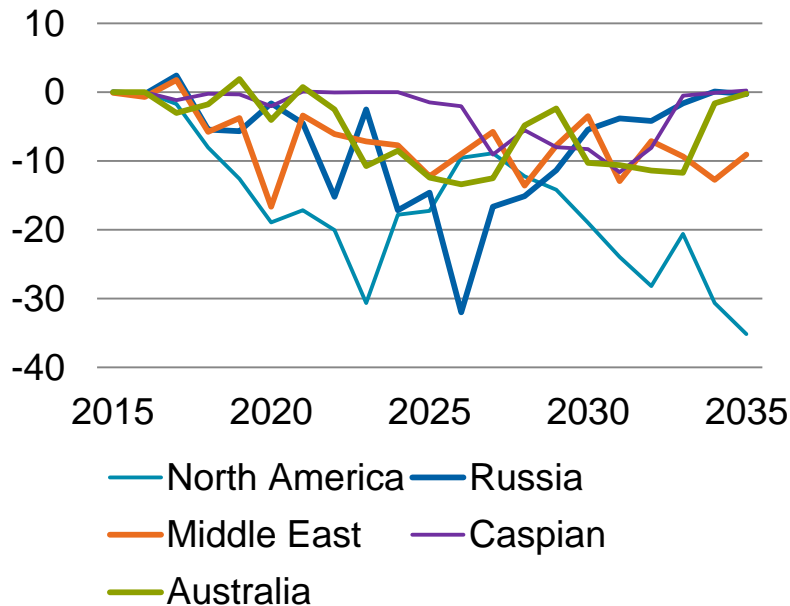


LNG PRICING REFORM

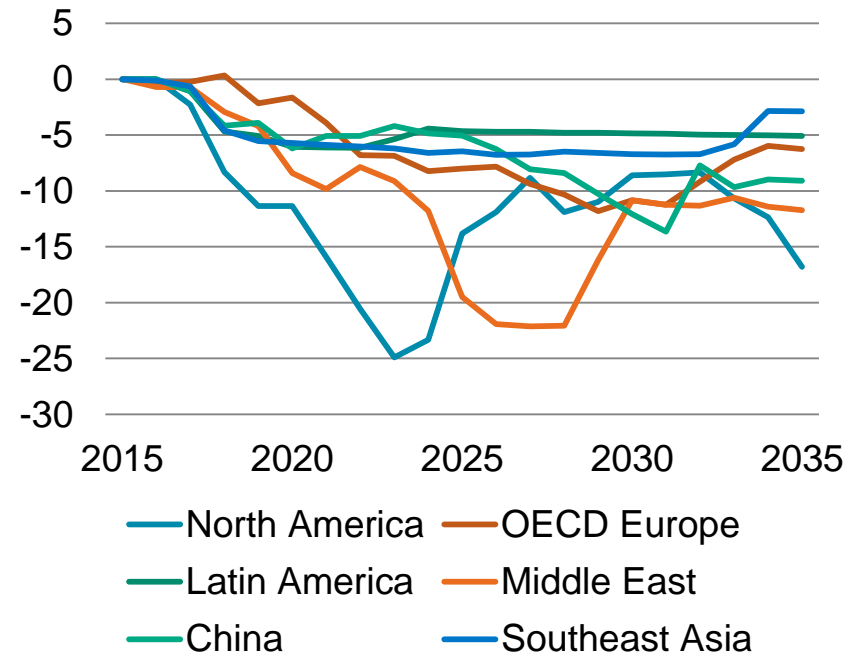
--MARKET FAILURE BY OIL INDEXATION



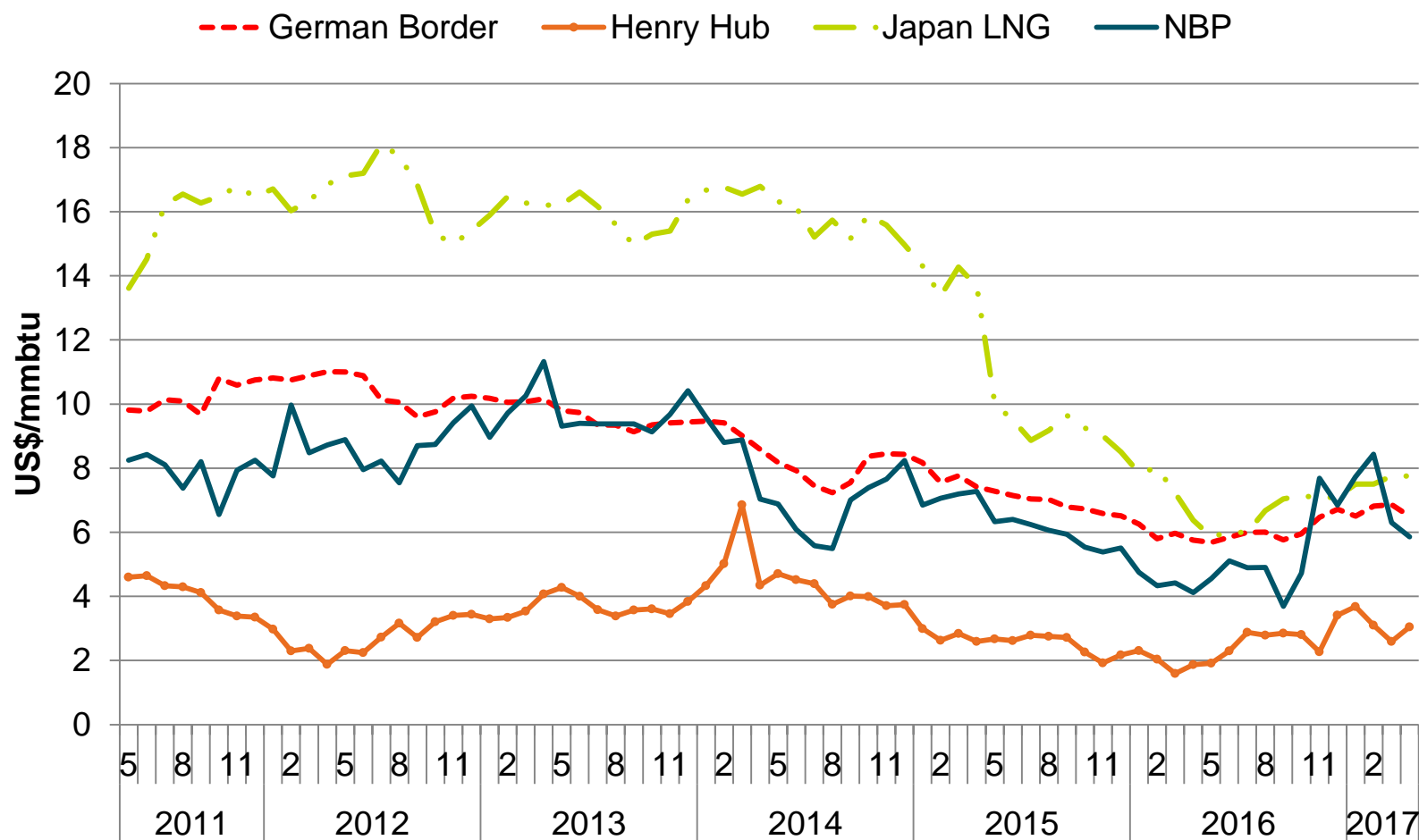
Production: low oil price v. reference



Consumption: low oil price v. reference



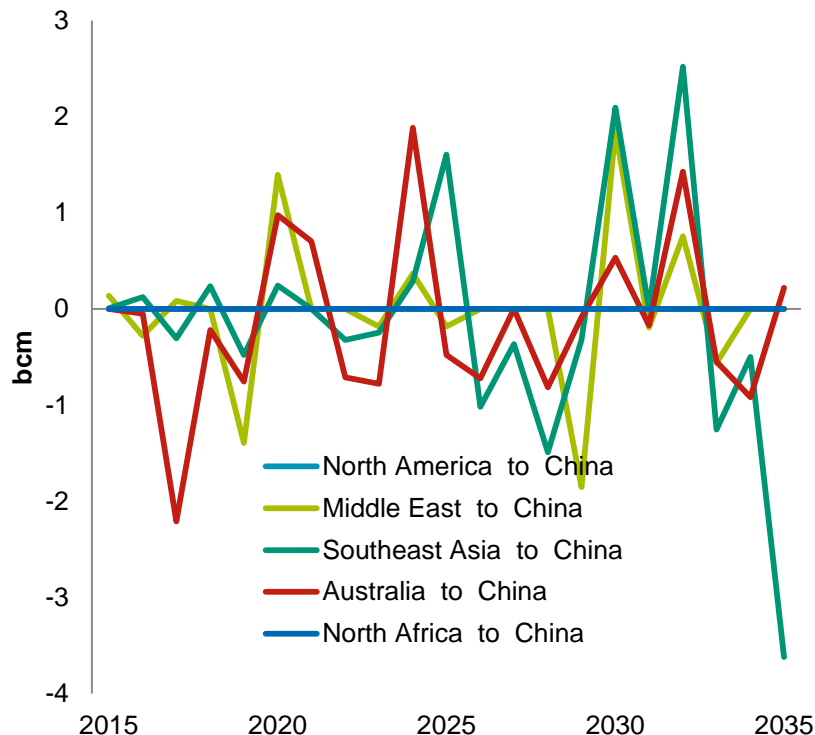
MOMENTUM FOR OIL INDEXATION



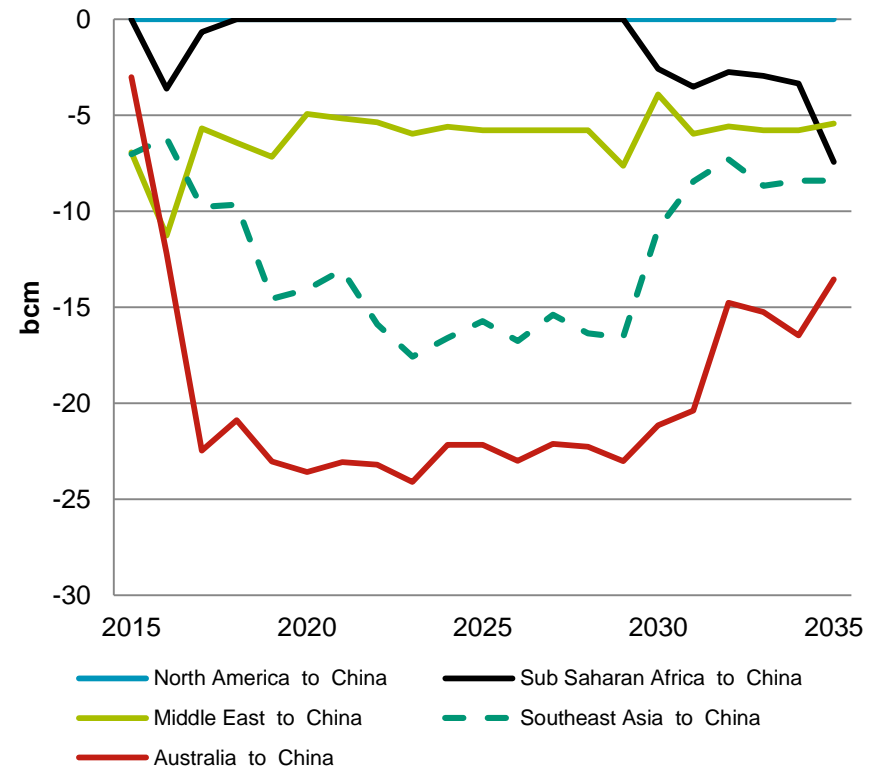
ROLE OF TAKE-OR-PAY

--- LOWER DEMAND OF CHINA

LNG flow to China, with TOP



LNG flow to China, w/o TOP



QUEST FOR GAS TRADING HUBS

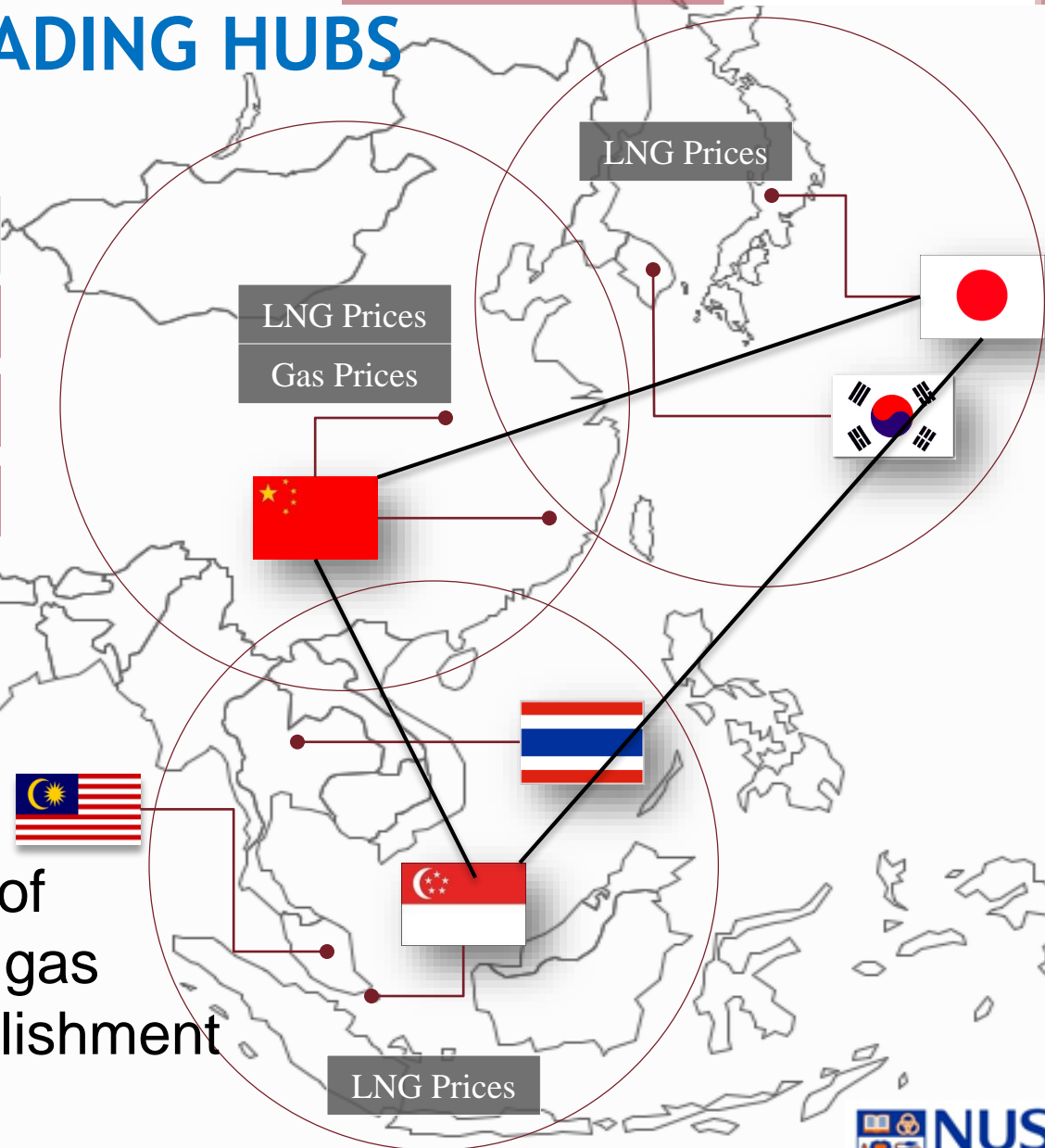
Motivations

Asia Premium (IEA, 2014)

Pricing power (Tong et al., 2014)

Inter-hub competition (IEA, 2013)

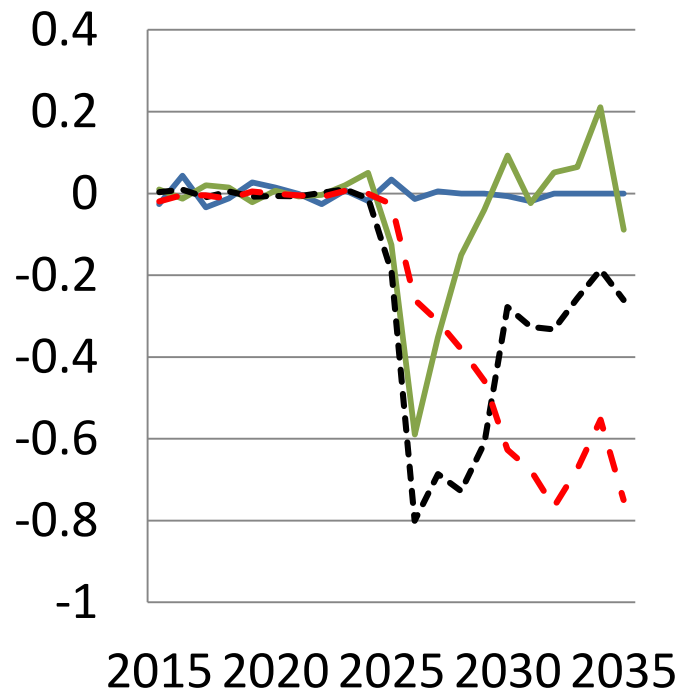
East Asia in the process of creating its own regional gas pricing through the establishment of gas trading hubs.



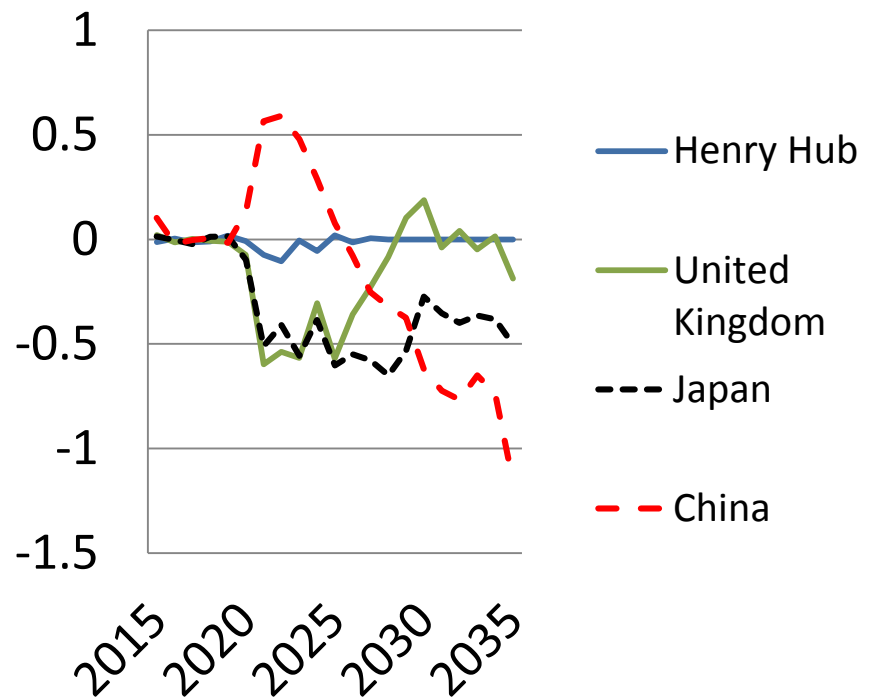
IMPACT OF HUB INDEXATION

---MAJOR GAS PRICES, US\$/ MMBTU

Hub price vs Base

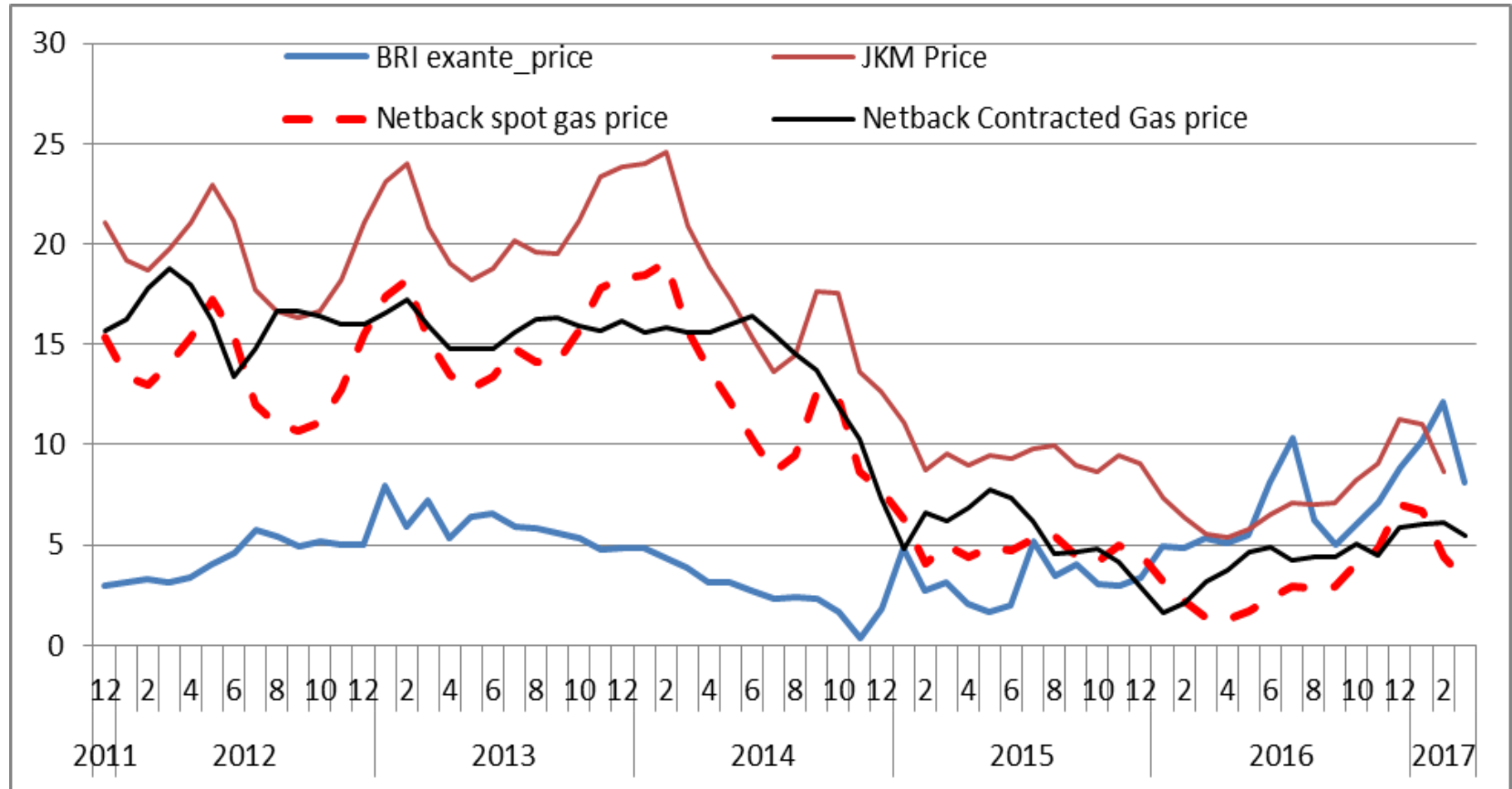


Hub pricing & No DS vs Base



Source: Shi, X, and H. MP Variam, 2016. Gas and LNG trading hubs, hub indexation and destination flexibility in East Asia. *Energy Policy*, 96: 587-596.

AUSTRALIA'S PROBLEM



KEY QUESTIONS

- ☐ What is the outlook of gas market and its implications for East Asia?
What are the drivers of gas demand in Asia?
- ☐ Can gas compete with coal and renewables in Asian energy markets, in different time horizon?
- ☐ What the emerging changes of gas trade practice, such as shorter and more flexible terms? What are their implications?
- ☐ What the progress and plan for Russia gas industry that may have impact on East Asian market?
- ☐ How has East Asia responded and is going to response to the gas market dynamics?

DR. KEN KOYAMA

Dr. KOYAMA also takes a position of Visiting Professor at Graduate School of Public Policy at the University of Tokyo, and Specially Appointed Professor at Institute of Innovative Research at Tokyo Institute of Technology.

His specialized field of research is: energy security and geopolitics of energy; and analysis for global energy market and policy issues with emphasis on the Asia-Pacific region.

He has served as a member of energy policy related advisory councils and committees of Japanese government in many occasions. He also plays a role as: a member of International Advisory Board, Energy Academy Europe (Netherland), International Advisor (Chair in Energy Economics) at Energy Commission of Tenaga Nasional University (Malaysia) and Visiting Senior Fellow at Institute for International Economic Studies.

He was awarded the BrandLaureate's "Brand Personality Award 2016".

He was awarded the degree of: (1) B.A. in Economics in 1982 from Waseda University, Tokyo, Japan; (2) M.A. in Economics in 1986 from Waseda University, Tokyo, Japan; and (3) PhD in 2001 from CEPMLP, University of Dundee, Scotland.



Chief Economist and
Managing Director,
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DR. TATIANA MITROVA

Scientific advisor at the Energy Research Institute of the Russian Academy of Sciences (ERI RAS), Research Scholar at the Center on Global Energy Policy at Columbia University, Senior Visiting Research Fellow of the Oxford Institute for Energy Studies (OIES).

More than twenty years of experience in the analyses of the Russian and global energy markets, including production, transportation, demand, energy policy, pricing and market restructuring.

Head of the annual “Global and Russian Energy Outlook up to 2040” project

Member of the Governmental Commission of the Russian Federation on fuel and energy complex.

Member of the board of directors at Unipro (former E.ON-Russia).

Assistant Professor at Gubkin Oil and Gas University and Visiting Professor at the Institut d'Etudes Politiques de Paris (Sciences Po) Paris School of International Affairs.

Dr. Mitrova is a graduate of Moscow State University's Economics Department. She has more than 120 journal publications and four books.



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DR. ANDREW SECK

Dr. Seck joined Anadarko as Vice President, LNG Marketing and Shipping in November 2016. He has more than 25 years of experience working in the international oil and natural gas industry and began his career as a wireline engineer working for Schlumberger. Following his doctoral studies, he spent eight years in Russia with Shell including an assignment with Sakhalin Energy Investment Company where he marketed the first sales of Russian LNG into Asia/Pacific. Following a corporate planning assignment with Shell in Houston, he joined Qatargas Operating Company Ltd. where he worked for almost six years as Assistant Director, LNG Marketing, East of Suez, with the responsibility for maintaining and growing Qatargas' LNG sales portfolio throughout the Asia-Pacific region. At the beginning of 2015, he joined Uniper Global Commodities SE as Regional Head of LNG, Asia based in Singapore.

Dr. Seck holds a Ph.D. from CEPMLP, University of Dundee, Scotland and a Bachelor of Science in geological engineering from Queen's University, Canada.



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XUNPENG SHI, PHD

Xunpeng serves as the President of the [Chinese Economics Society Australia \(CESA\)](#) and an Associate Editor of *Journal of Management for Modelling*.

Previous he has been working in Singapore, Brunei and Indonesia on energy policy with an ASEAN and East Asian focus.

Prior to starting his PhD study in 2006, Xunpeng had various management and professional positions in China's leading energy institutes and central government agencies.

His areas of expertise include the Chinese economy; natural gas pricing, energy market integration and connectivity, renewable energy, and energy efficiency with a regional focus of ASEAN, and Northeast Asia.

He graduated with PHD and Master degrees from the Australian National University, a LLM degree from CEPMLP, University of Dundee, and a Bachelor degree from China University of Mining and Technology.



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