

Can demand for imported LNG in Asia increase because it is a `cleaner` energy source?

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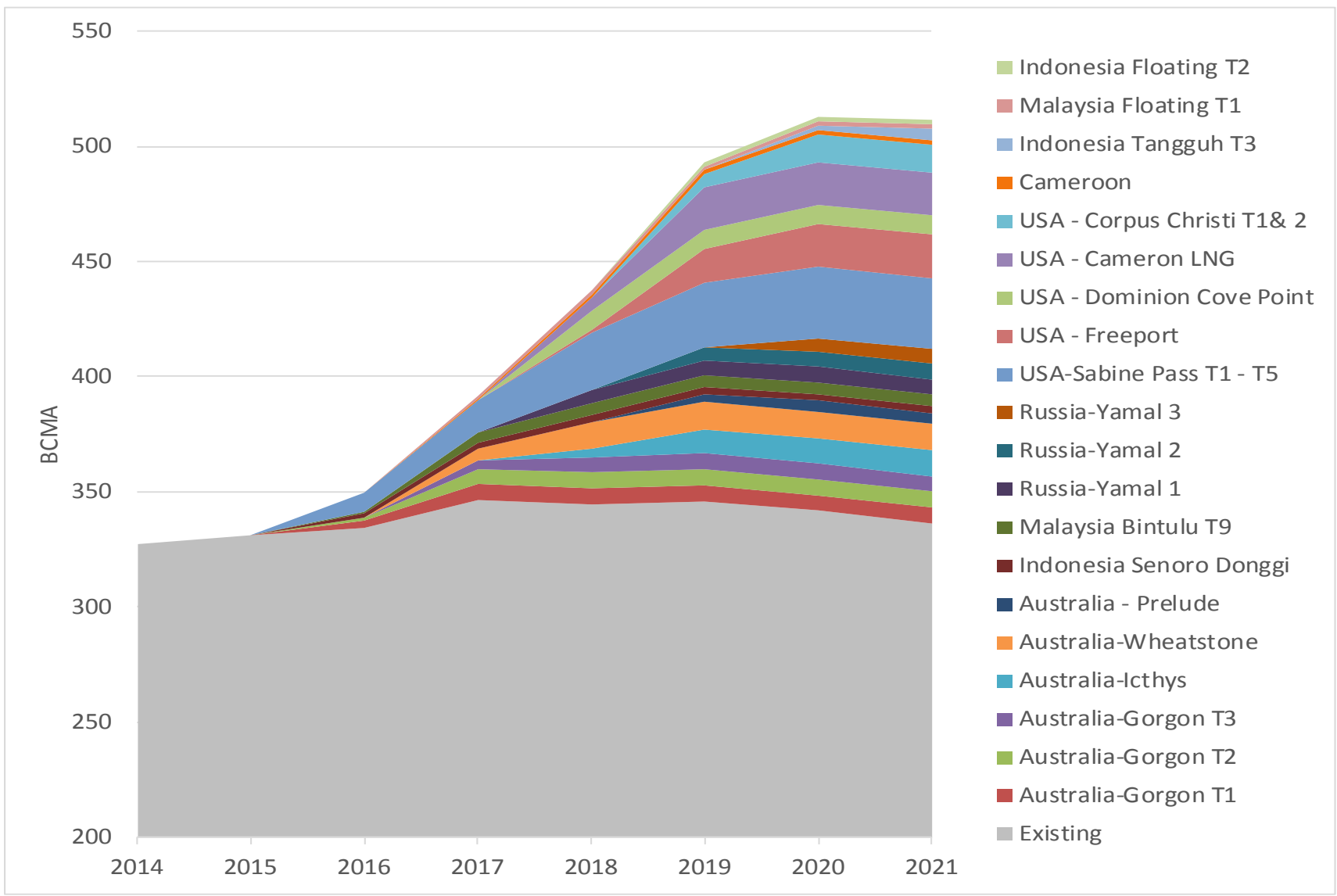
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A 50% Surge in Global LNG Supply 2014-21, mainly from Australia, US and Russia is well under way



Source: Platts LNG Service, Rogers/OIES

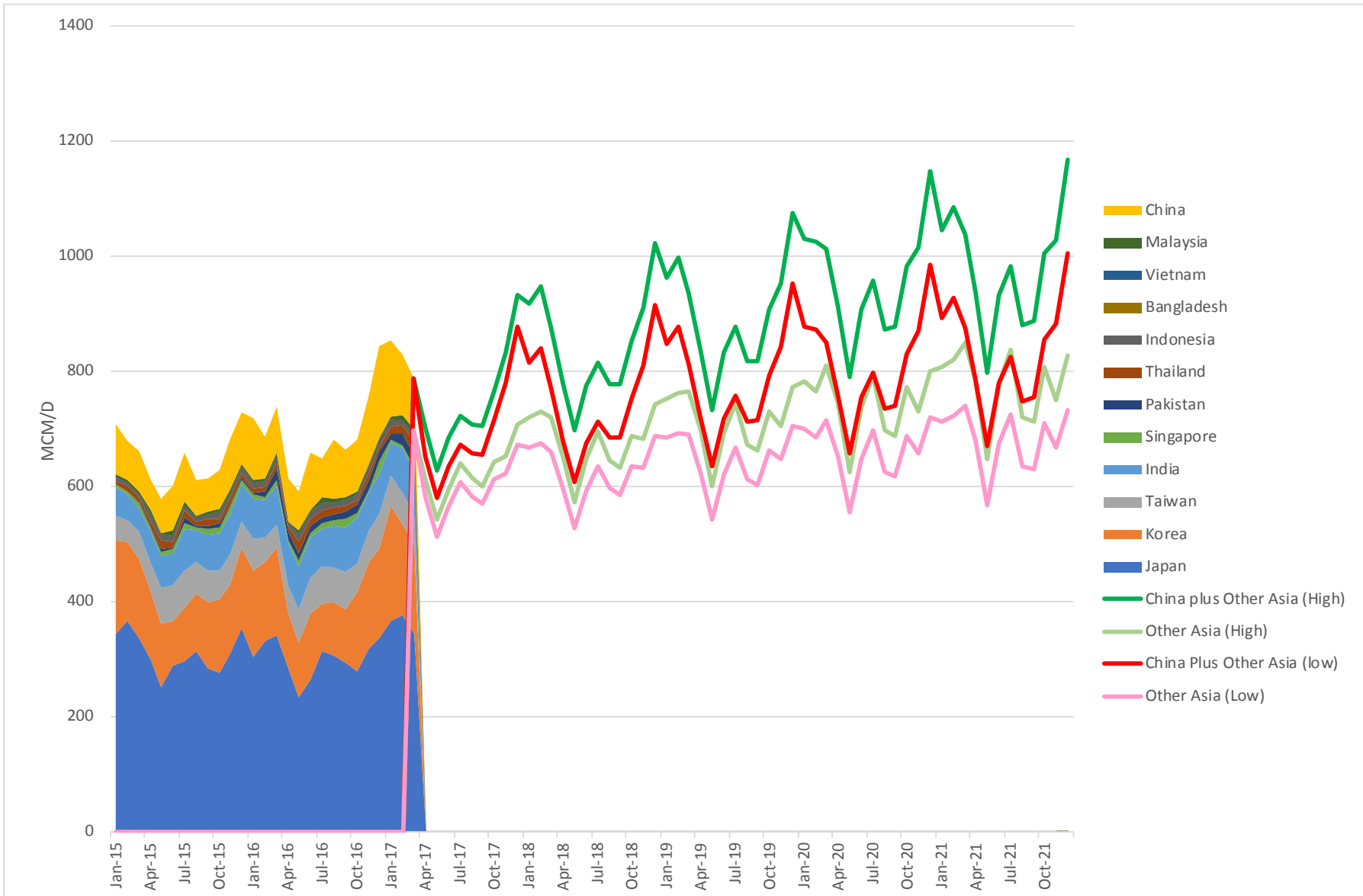


Three questions that imported LNG has to answer in Asia (and elsewhere)

- Is it `clean enough`?
- Is it cheap/competitive enough?
- Is it secure enough?



Asian LNG Demand – high & low cases plus seasonality gives a 50 mt range by 2021



Source: Platts, Rogers/OIES



Mature Markets: Japan, Korea and Taiwan

Japan:

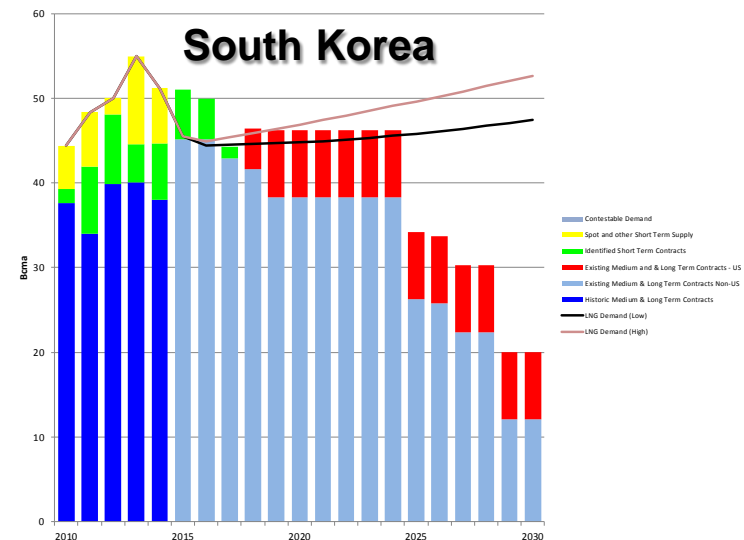
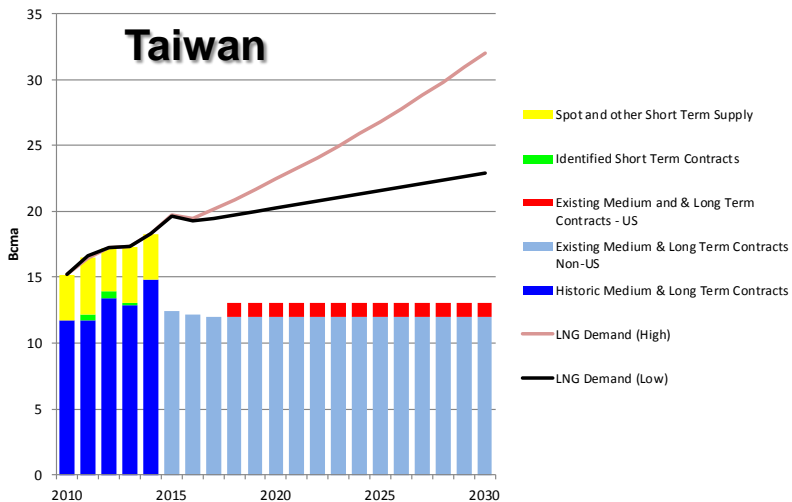
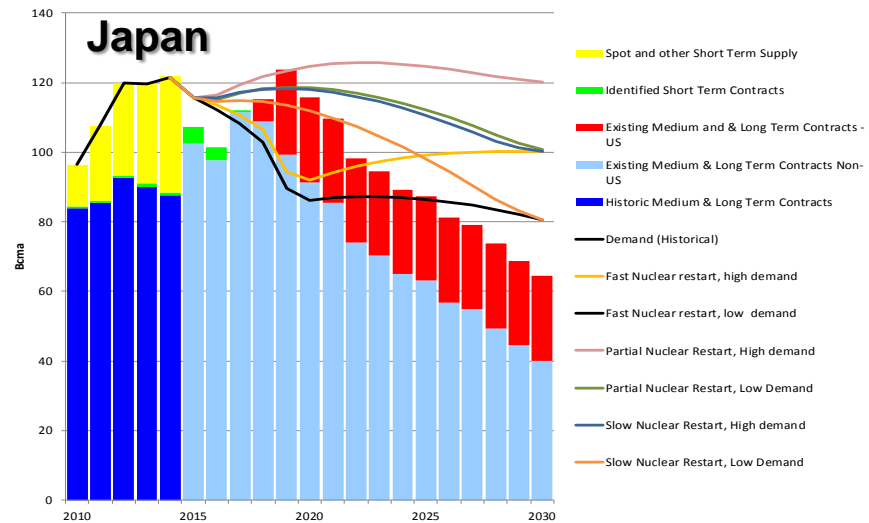
- Huge uncertainty range driven by a) pace and extent of nuclear re-start and b) achievement of energy efficiency policy.

South Korea:

- Future LNG demand growth muted by government policy to limit LNG in power sector, hoping to offset coal GHG's by renewables and nuclear.

Taiwan:

- LNG the beneficiary of government commitment to phase out nuclear in the 2020s while containing growth of coal.
- Future power demand growth also a large uncertainty.

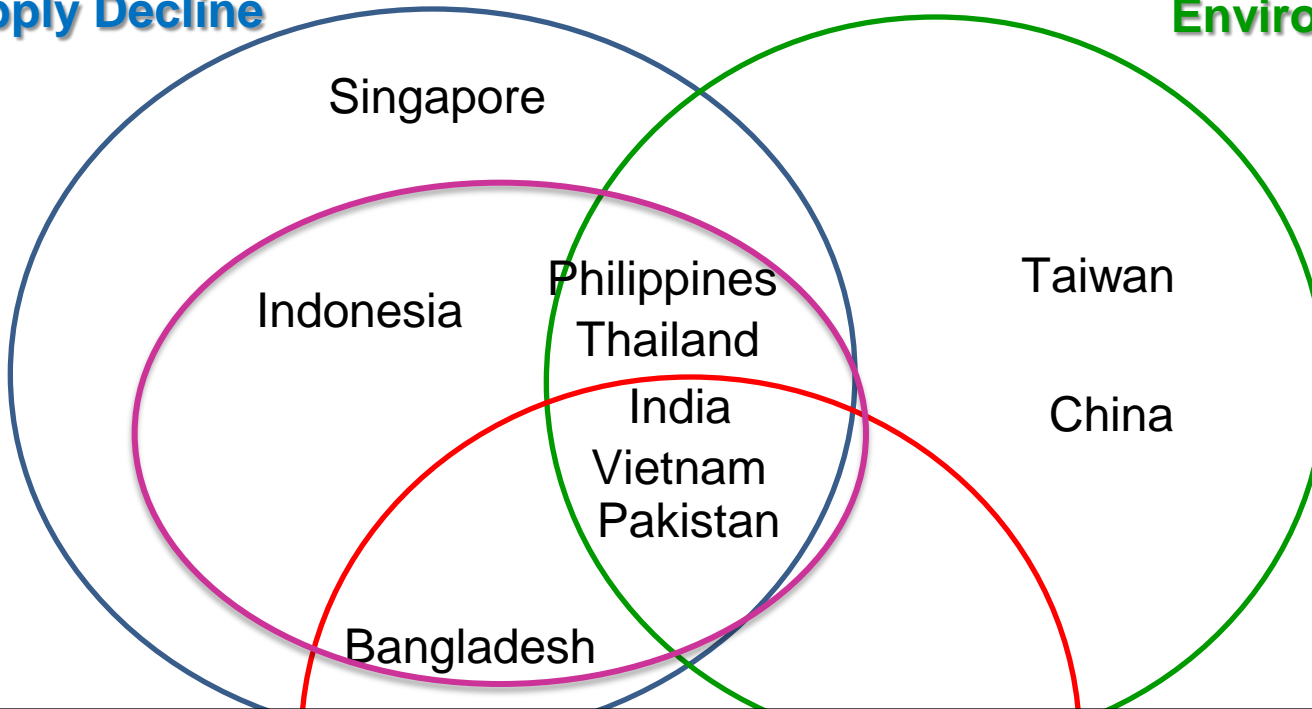


SOURCE: ROGERS, LNG MARKETS IN TRANSITION – THE GREAT RECONFIGURATION

Drivers of Future Asian Gas/LNG Demand Growth

**Production/Pipeline
Supply Decline**

**Energy Mix/Security/
Environment (Policy)**



- Potential for gas demand growth – in aggregate significant.
- Environmental challenges: air quality or carbon reduction?
- Security must become a risk/reward calculation
- Prices <\$8 still too expensive for new markets in SE Asia (and India?)

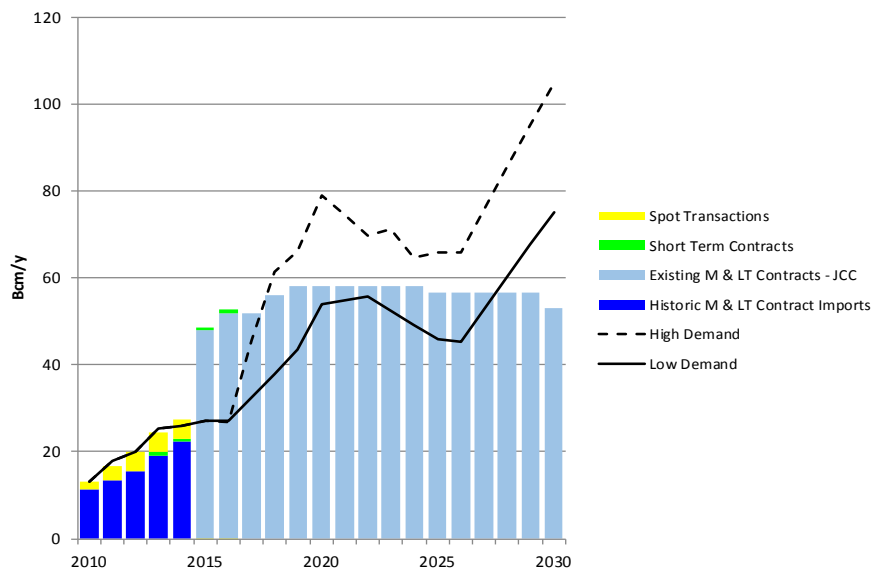
Affordability

**Problematic Investment/
Domestic Price Framework**

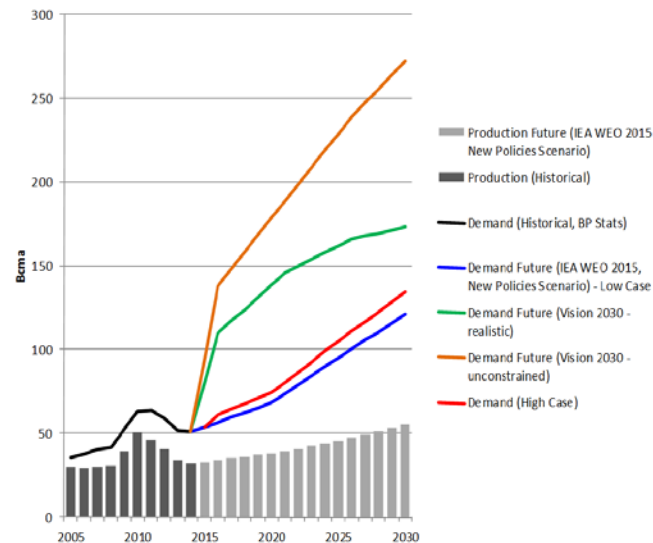


Clean Enough? Is gas demand/energy mix dependent on carbon reduction or air quality

China LNG Demand



Indian LNG Demand

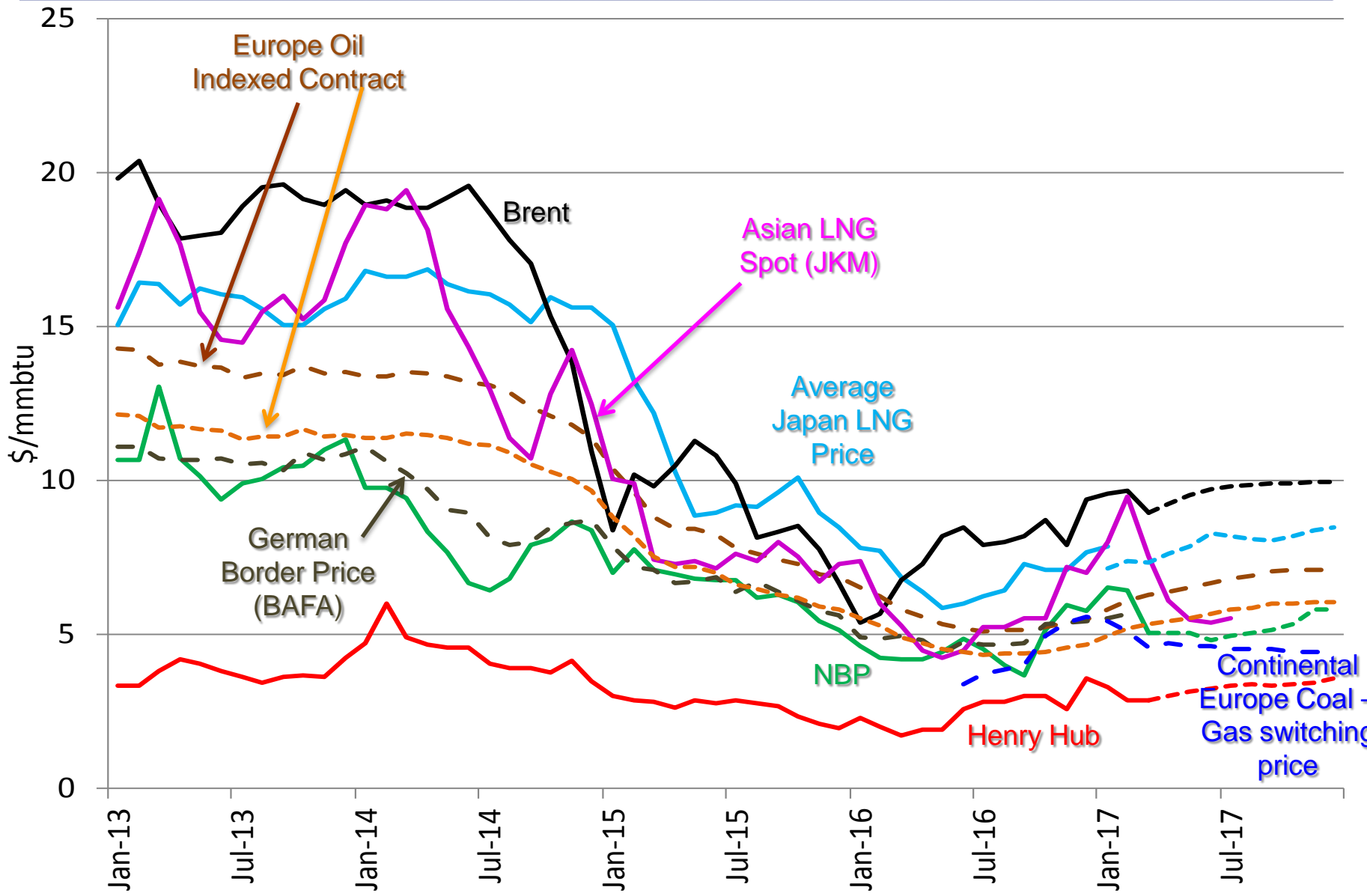


Potential for gas/LNG in China, India and elsewhere in Asia is huge
BUT:

- Does environment really matter enough to displace coal? And if so in which locations and how urgently?
- Renewables may be cleaner (and cheaper)



Cheap/Competitive Enough? In relation to coal, (nuclear?) and renewables – short and longer term



SOURCES: Platts, EIA, Argus, CME



Cheap Enough: sufficiently competitive and affordable in Asia?

- **The `Asian Premium' has disappeared**
- **But costs/viability of greenfield LNG developments remain uncertain eg East Africa, new US projects**
- **Many LNG projects coming onstream in the late 2010s are `out of the money' at today's prices – Australia, US**
- **New LNG projects must be able to:**
 - **deliver to Asia at <\$8/MMbtu (in many countries \$5-6/MMbtu)**
 - **create markets as well as delivering gas**

Secure Enough?

ASIAN POLICY ON ENERGY SECURITY:

- Still related to imports versus domestic production ('1970s definition')
- Still focussed on physical security, insufficiently related to price security
- Insufficiently related to risk/reward assessments eg destination clauses

THIS POLICY MEANS IMPORTED LNG IS REGARDED AS LESS SECURE THAN:

- domestic (and imported?) coal and nuclear power
- renewables (despite intermittency)?

But are these policies/assessments correct?



Can Asian LNG imports increase on the basis of being a cleaner energy source?

“NO, BECAUSE ENVIRONMENTAL – EITHER CARBON REDUCTION OR AIR QUALITY- ISSUES ARE NOT SUFFICIENTLY IMPORTANT IN THE MAJORITY OF ASIAN COUNTRIES”, AND:

- imported LNG cannot compete with domestic coal (and probably also international coal) prices**
- imported LNG may not be able to compete with renewables in many locations**
- imported LNG is not regarded as `secure`**

But in some countries – eg China, India, Thailand – big increases in LNG imports are possible if costs can be reduced to deliver LNG at \$6-7/MMbtu



THANK YOU

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