



European gas market

Where will supplies come from if traditional sources are declining?

Flame 2019

www.timera-energy.com

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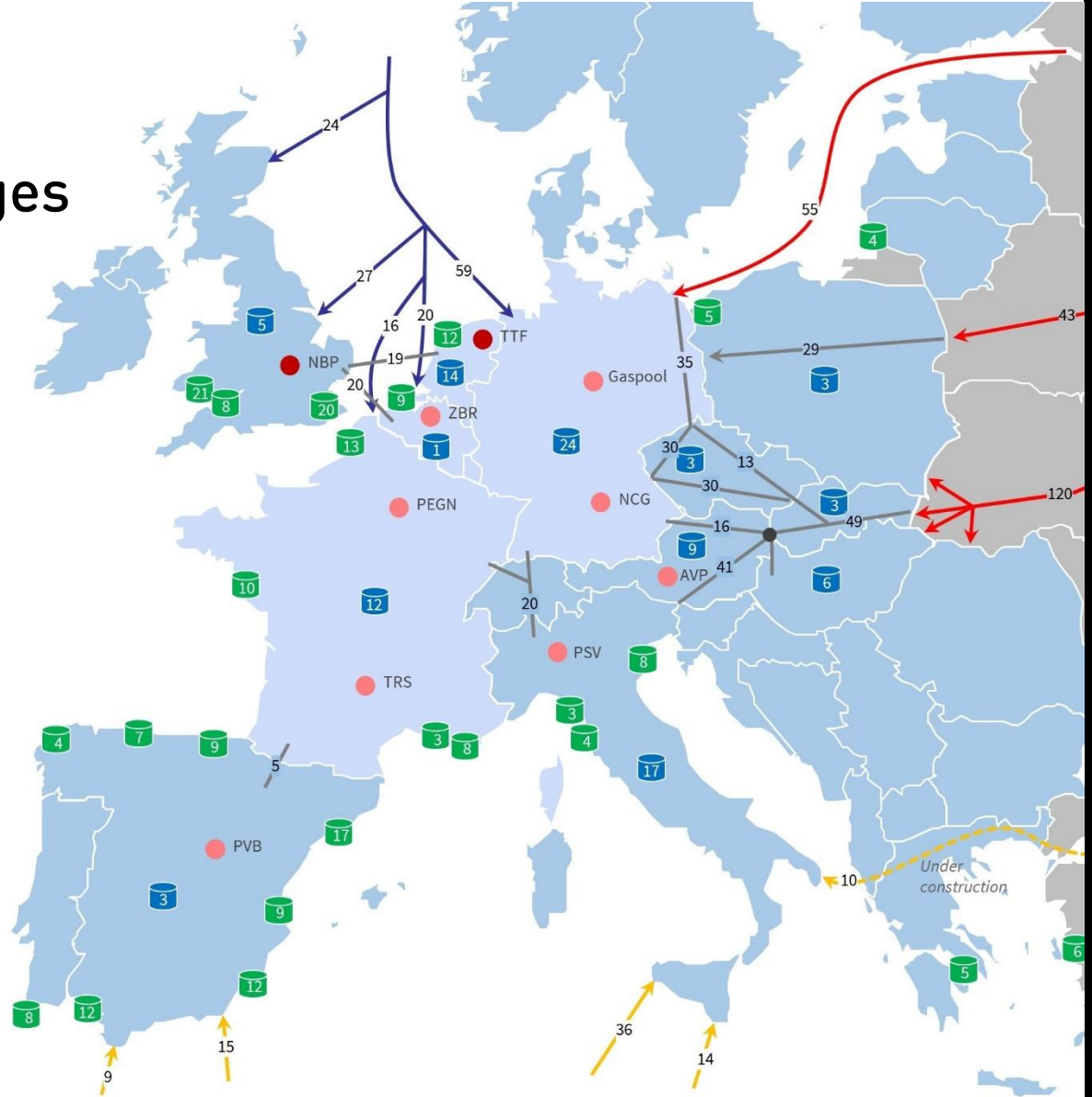
Market drivers & commercial challenges

3 key market drivers:

1. Demand: **power sector**
2. Supply: **LNG flows**
3. Supply: **pipeline flows**

3 key commercial challenges

1. **Value capture:** value shift to prompt
2. **Portfolio construction:** supply chain refocusing
3. **Asset investment:** structural shift in risk/return profiles



Demand: Power sector is key

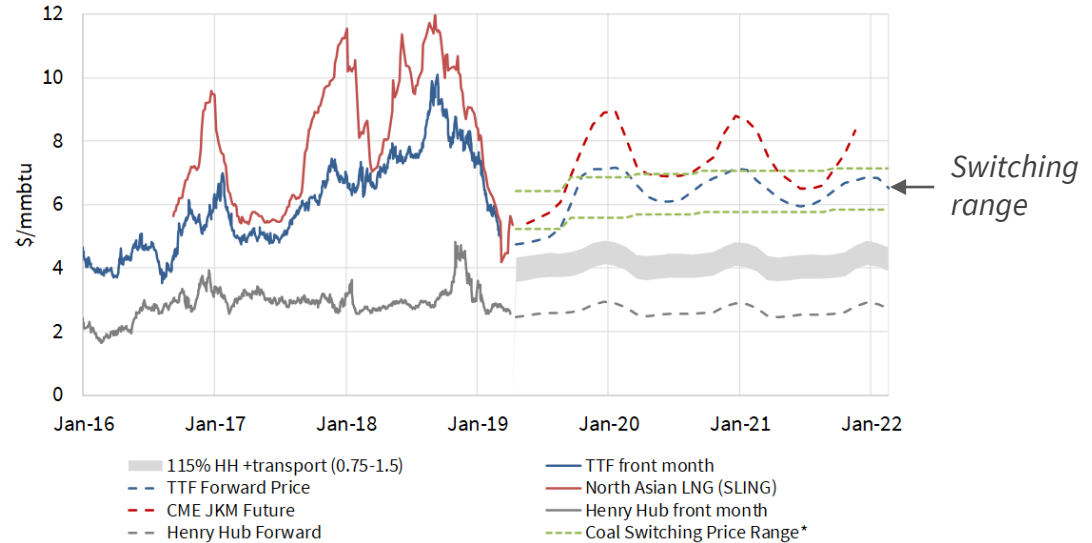
Short term:

- Price responsiveness allows Europe to absorb LNG
- Coal / gas switching key hub price anchor

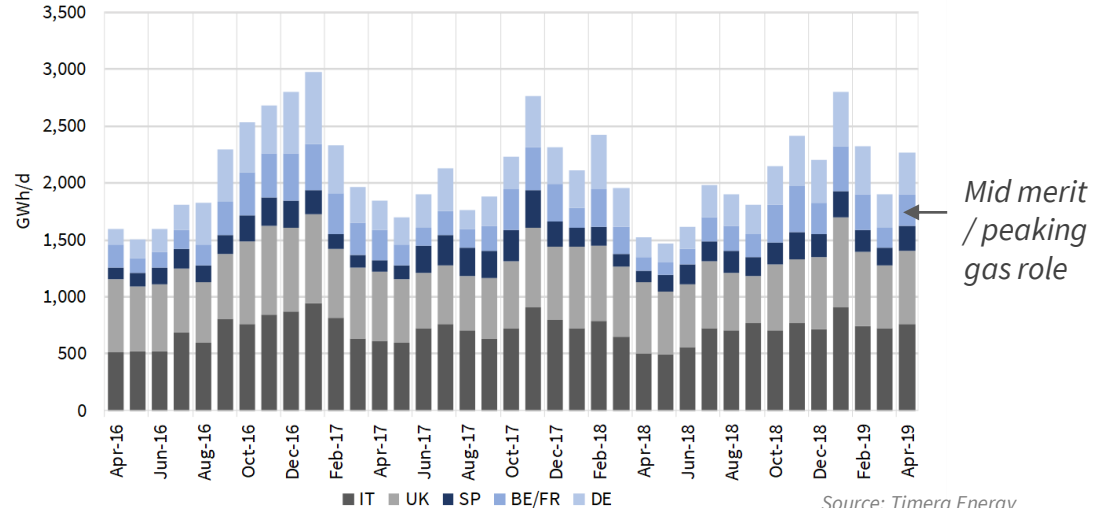
Long Term:

- Coal & nuke closures across 2020s favour gas-fired plants
- But rising intermittency → increased need for gas supply flex

Global gas price benchmarks



Power sector gas burn key markets



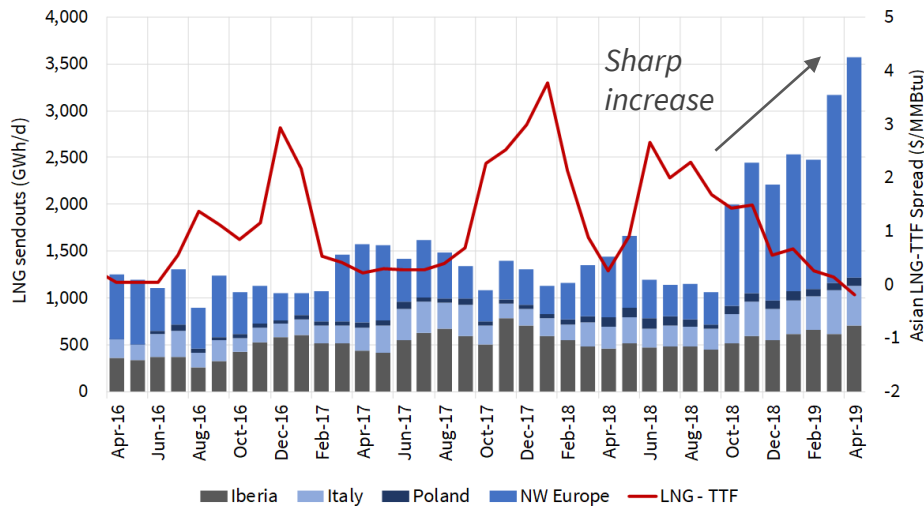
Source: Timera Energy

Supply: LNG flows

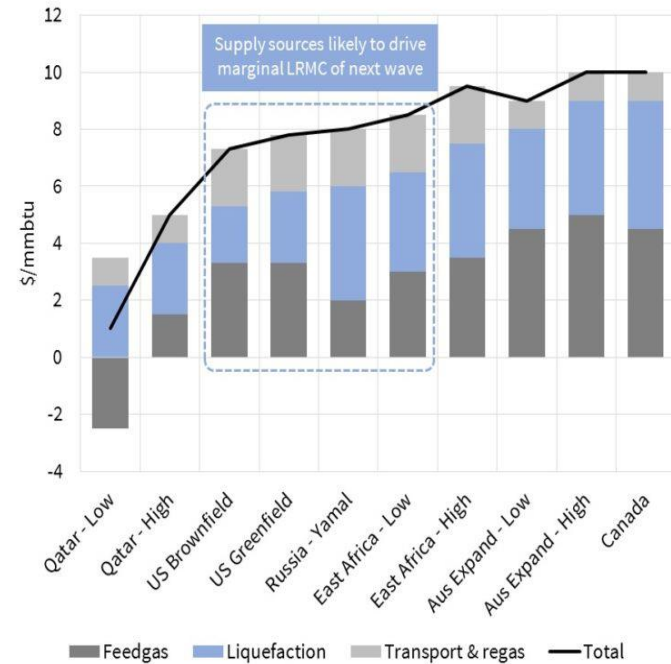
Short term:

- Growing LNG surplus since Q4 2018
- Balance of new supply vs Asian demand growth key across 2019-21

European LNG import volumes



Long Run Marginal Cost (LRMC) of new supply sources



Long Term:

- Europe & Asia need new supply across 2020s
- LRMC of marginal new LNG supply key in setting price levels

Supply: Pipeline flows

Its all about Russia

Short term:

- High RU flows likely to continue but pipe constraints until Nord. 2

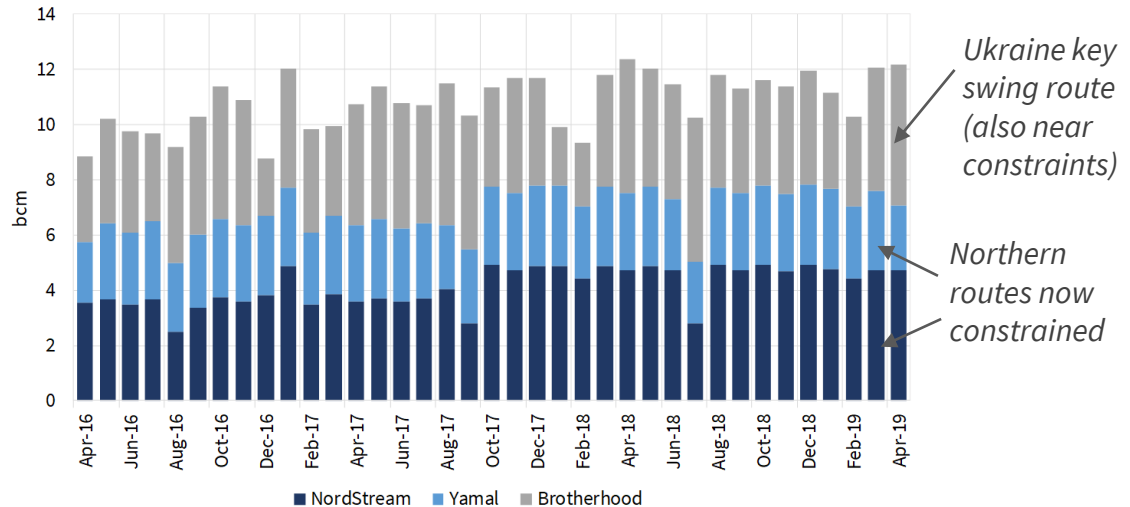
Long Term:

- RU in strong position to provide new supply... but competing against 'price taking' LNG

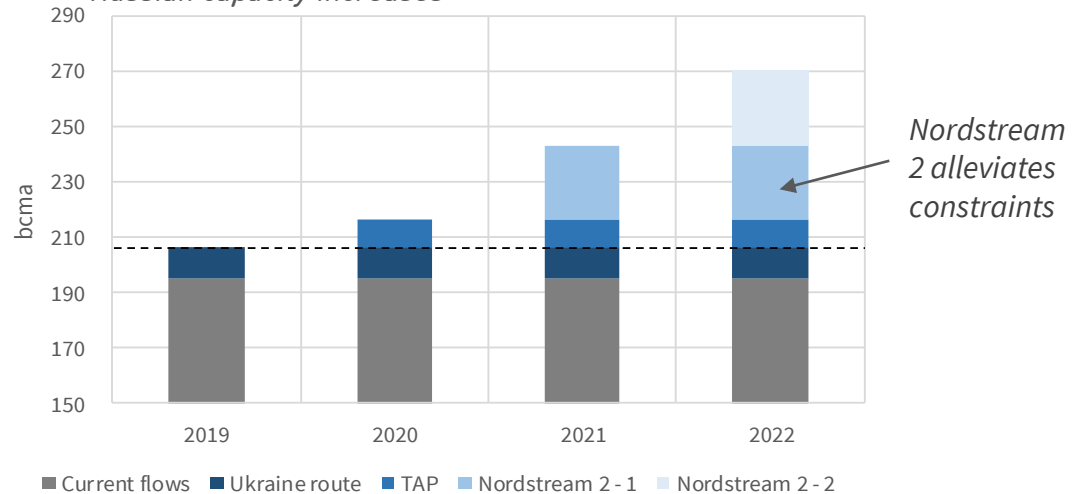
What about the North Sea?

- M&A activity promoting investment & efficient use of existing infrastructure
- But still mature basin in decline (NCS from early/mid 2020s)

Russian import volumes by key entry routes



Russian capacity increases



3 scenarios for price evolution

3 key drivers of increasing supply flex value

1. Import dependency – longer supply chains
2. Power sector swing – gas on margin + intermittency
3. Ageing infrastructure – low investment this decade

Squeeze

Strong Asian demand outstrips supply

Consensus

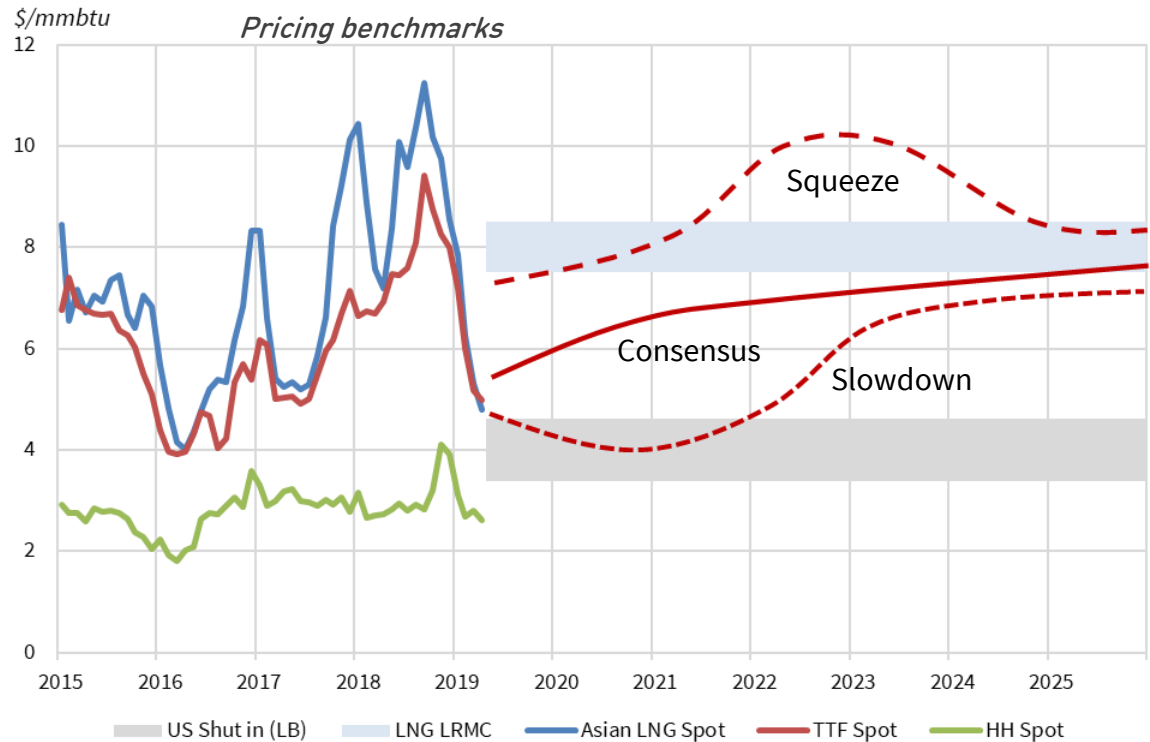
Prices gradually rise as market tightens

Slowdown

LNG spills into Europe continues (e.g. demand shock)

Note: Asia & Europe structurally converged

3 potential paths for European hub price evolution



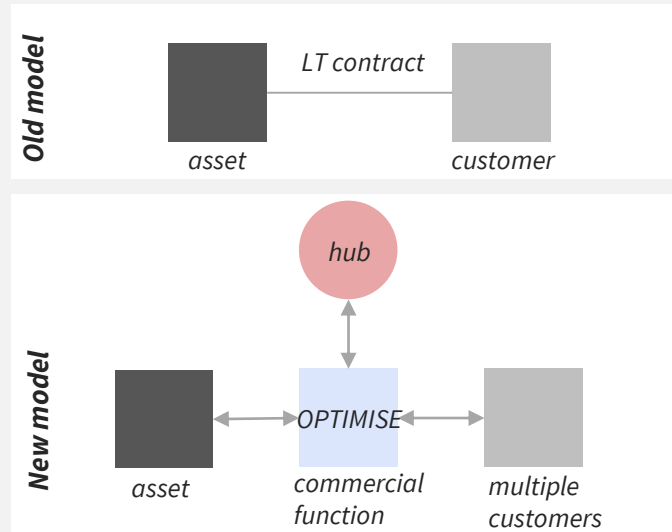
Challenge A: Value capture

5 trends impacting gas
asset value capture

Trend

- 1 Value shifting to prompt
- 2 'Shock' value rising
- 3 LT contracts rolling off
- 4 Flex value recovering
- 5 Optimisation creating value

Value capture models (e.g. pipes, storage, regas)



5 ways to boost midstream asset value

1. **Optimise asset variable costs**
(i.e. reduce cost hurdle to capture value)
2. **Optimise asset supply chain** (e.g. entry/exit, maintenance, fuel gas, linepack)
3. **Retain asset flexibility into prompt**
(i.e. capturing vs selling out flex value)
4. **Use hubs to enhance asset flex & services**
(i.e. de-link services from physical asset)
5. **Broaden/refine capacity product offering**
(e.g. customer netting, virtual products)

Challenge B: Portfolio construction

5 trends impacting gas portfolio construction

	Trend
1	Decarbonisation
2	Rapid growth of LNG
3	Power sector linkage
4	From LTCs to trading
5	Refocusing in supply chain

Gas portfolio evolution: 4 case studies



Shell

*Expand & diversify**

- **Power:** acquire retail & generation (e.g. Limejump, First Utility, Sonnen)
- **LNG:** expand supply & trading portfolio (e.g. BG, Shell Canada, Hazira India)



Equinor

Rebrand & diversify

- **Power:** 20% capex on renewables by 2030 (offshore wind key e.g. Arkona, Dogger Bk)
- **Trading:** expand gas & power trading (e.g. acquisition Danske Commodities)



Uniper

Split & expand

- **Trading:** Expand across regions & markets (e.g. US & LNG expansion)
- **LNG:** expand supply & trading portfolio (e.g. Woodside/Pavilion deals, DE regas)



Engie

Divest & refocus

- **Sales:** cut supply chain & regional footprint (e.g. upstream & thermal power sales)
- **Services:** refocus on core infra & services (e.g. grow energy services – Evbox, EPS)

*Total following similar strategy

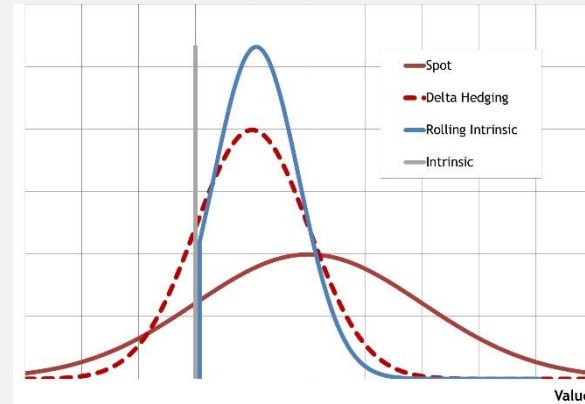
Challenge C: Asset investment

5 trends impacting gas asset investment

Trend

- 1 Uncertain gas market balance
- 2 LT contract challenge
- 3 Value shift to prompt
- 4 Risk/ return profile shift
- 5 Buyer competition

Asset valuation



Quantifying asset value requires probabilistic modelling analysis that captures asset risk/return distribution and impact of contracting strategy.

5 drivers of gas asset valuation

1. **Utilisation** Evolution of supply volumes, routes and flow patterns drive capacity utilisation
2. **Constraints** System constraints, both physical & contractual, drive capacity value premia
3. **Flex value** Interaction between physical asset flex & market price signals drives extrinsic value
4. **Liquidity access** Access to liquid hub price signals drives ability to monetise capacity value
5. **Risk/return** Ability to quantify asset risk/return distributions & price market risk is a key differentiator between investors (see diagram)



Questions?

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