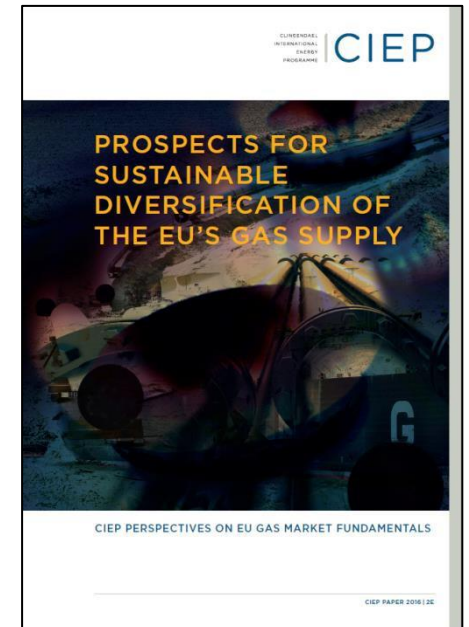
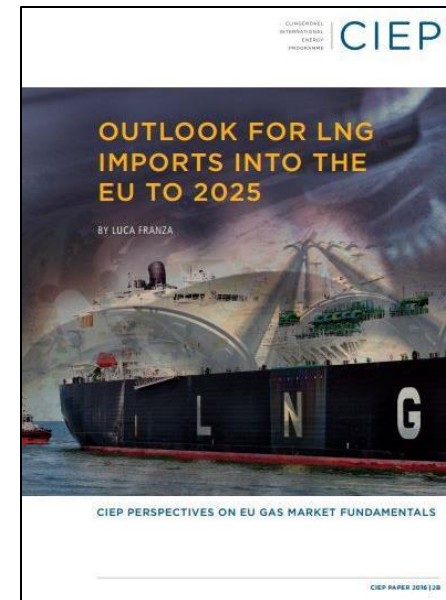
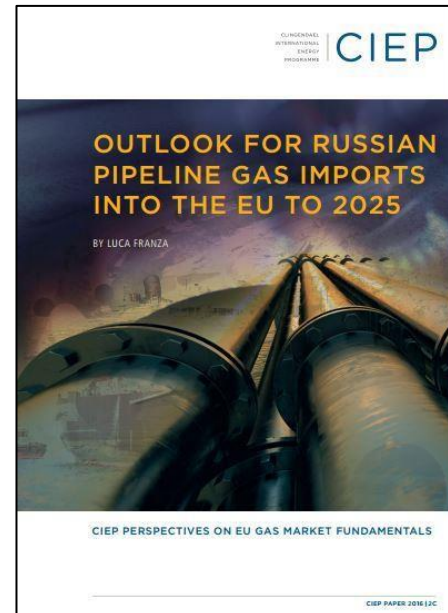
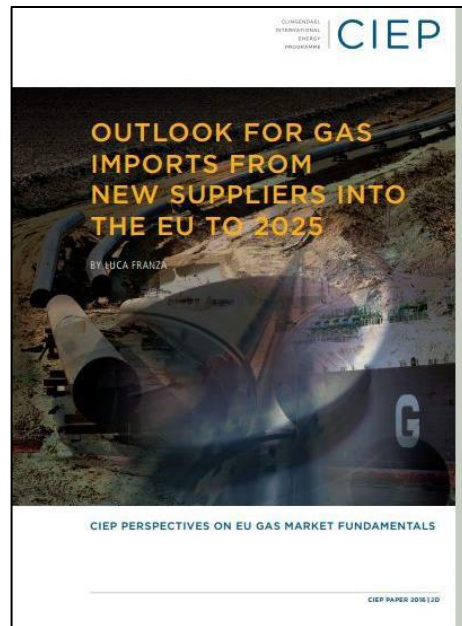
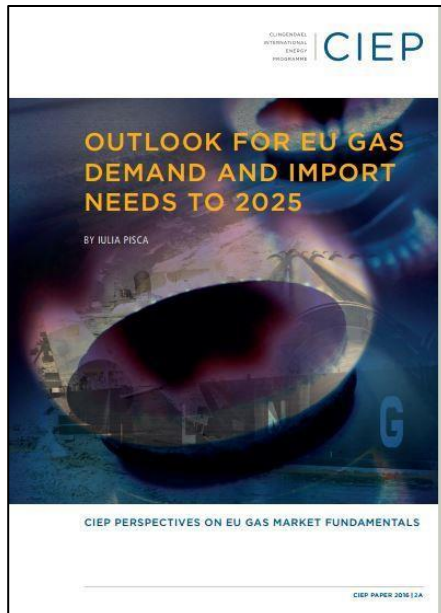


EU Gas Market Fundamentals

Prospects for a Sustainable Diversification of EU Gas Supplies

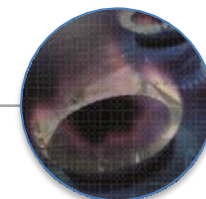
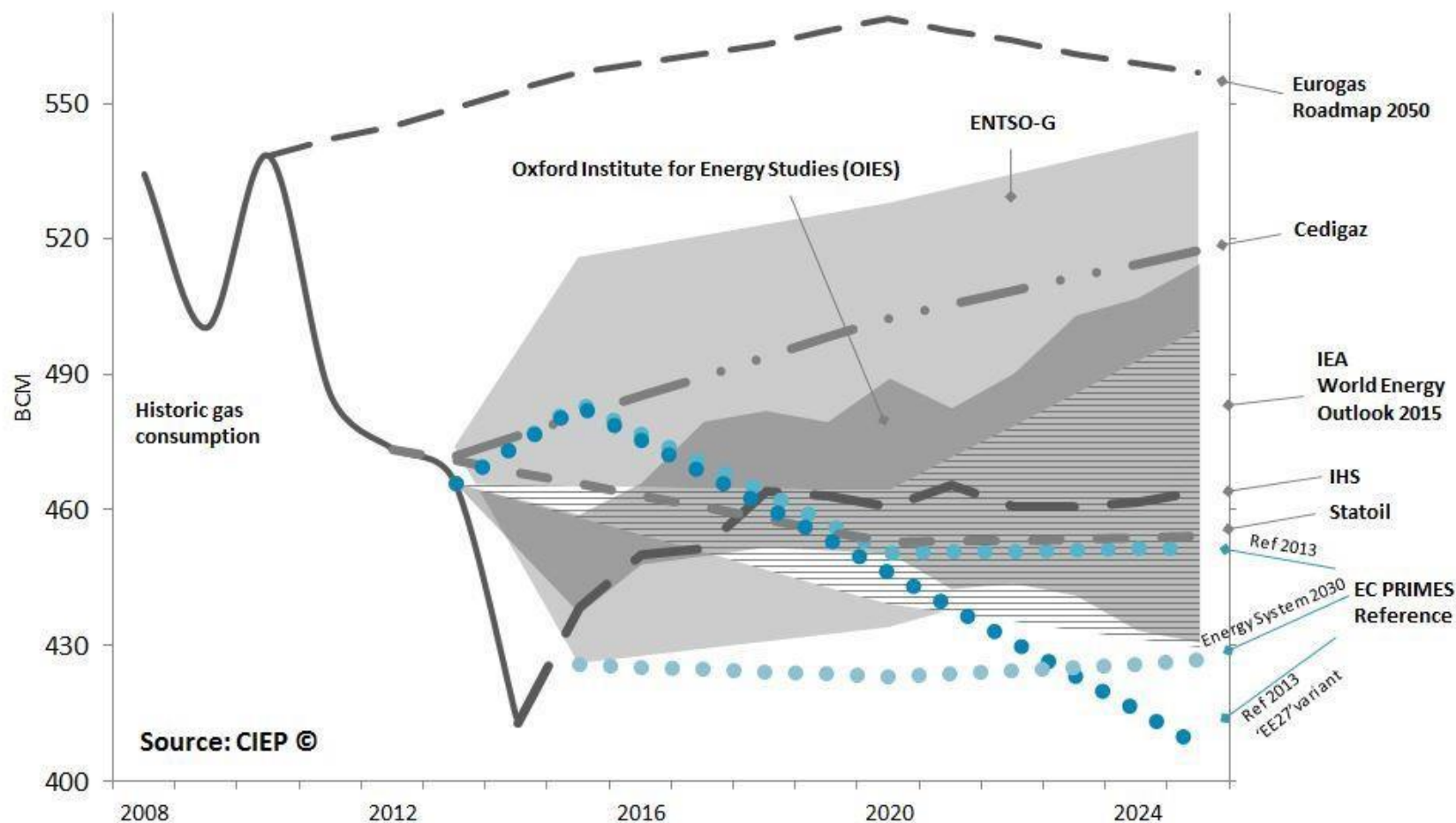


Content

- EU natural gas demand and import needs outlook
- Alternative gas import sources
 - Russia and alternative suppliers
 - LNG
- Sustainable diversification of natural gas supplies into the EU: competitive diversification

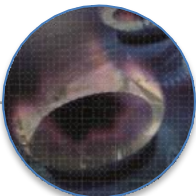
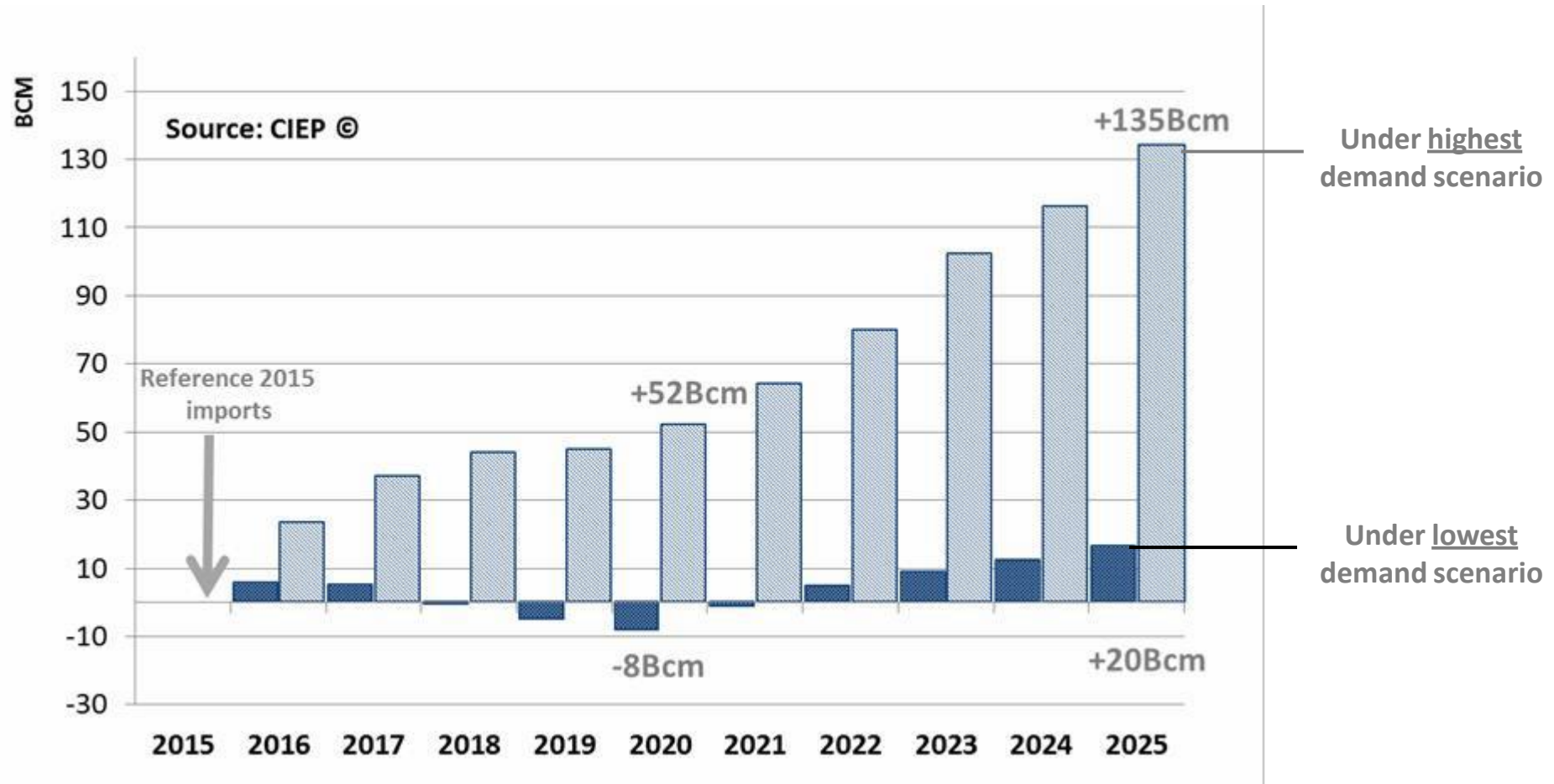
EU Gas Demand outlook to 2025, selected scenarios

Major uncertainty, hinging on policy directions in the power sector

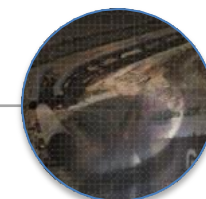
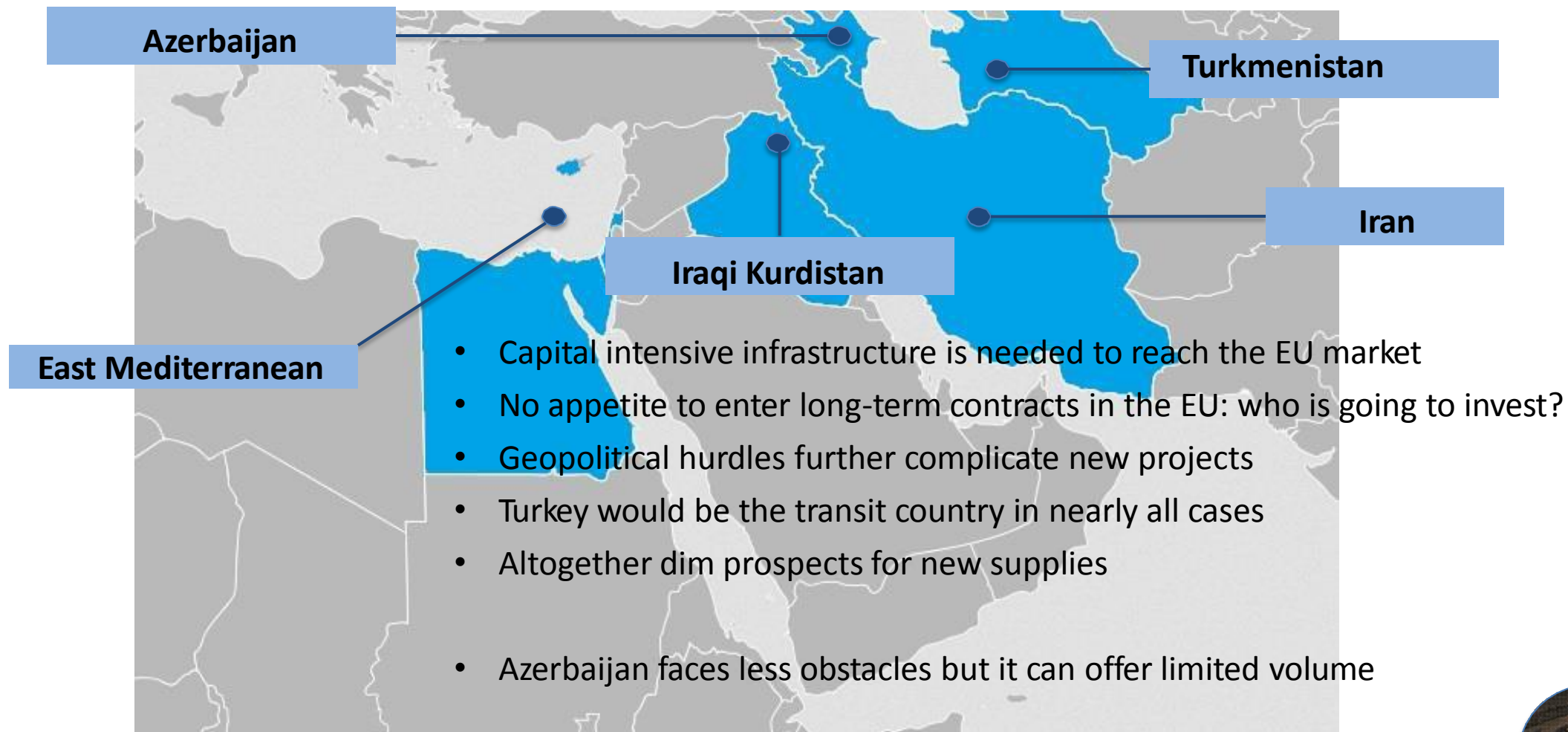


Additional Gas Import Needs Into the EU (Reference to 2015)

Due to declining domestic production, import needs rise in all scenarios but demand uncertainty hampers any drive to secure new long term supplies



Outlook for Gas Imports from New Pipeline Suppliers into the EU to 2025



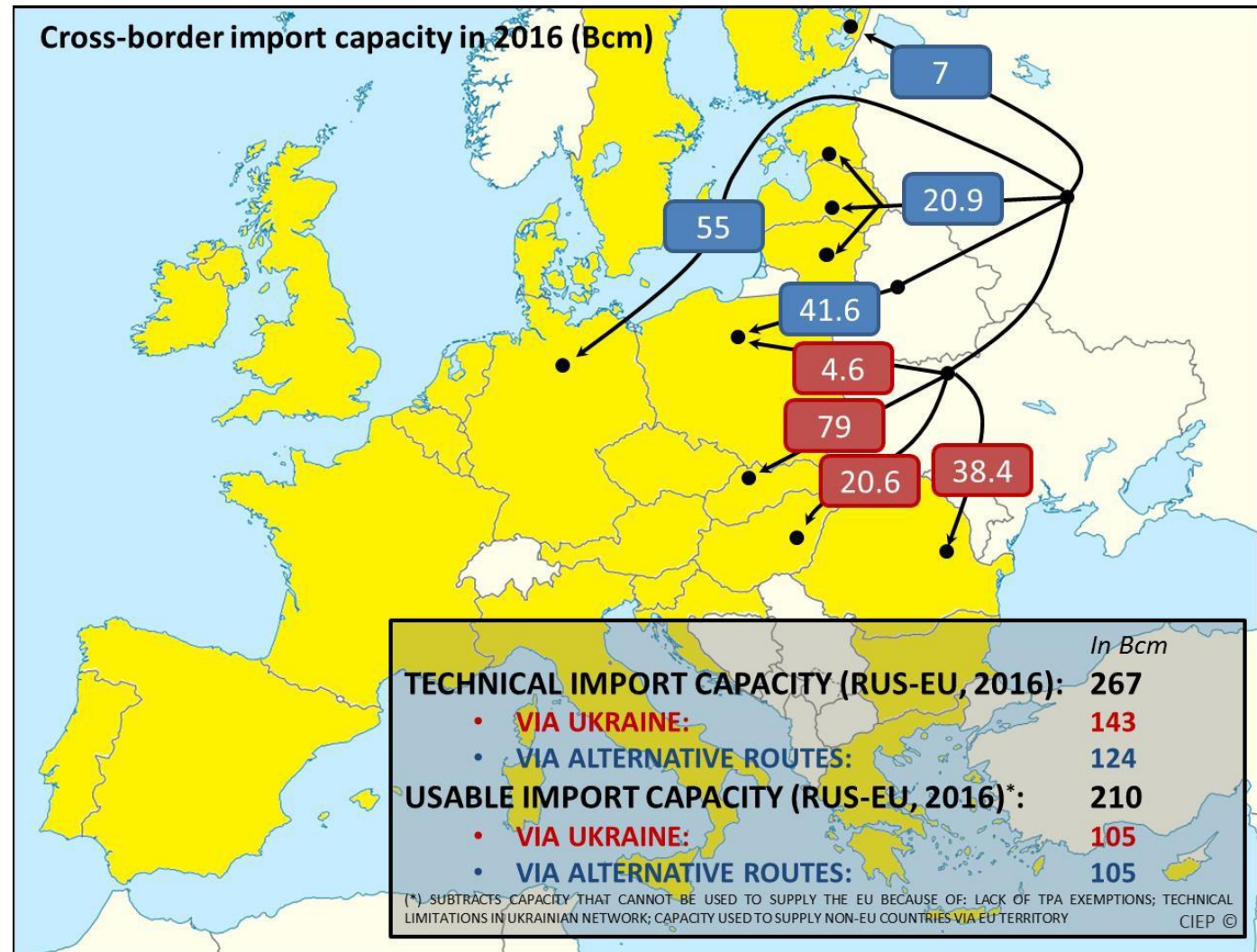
Outlook for Gas Supplies from current pipeline suppliers into the EU to 2025

- Norway: maintaining steady supply level, potential for additional gas limited (if any) over the period under review
- Algeria: additional gas from Algeria most unlikely
- Libya: current supplies risky, no additional supplies
- Russia: only Russia has potential for additional supplies

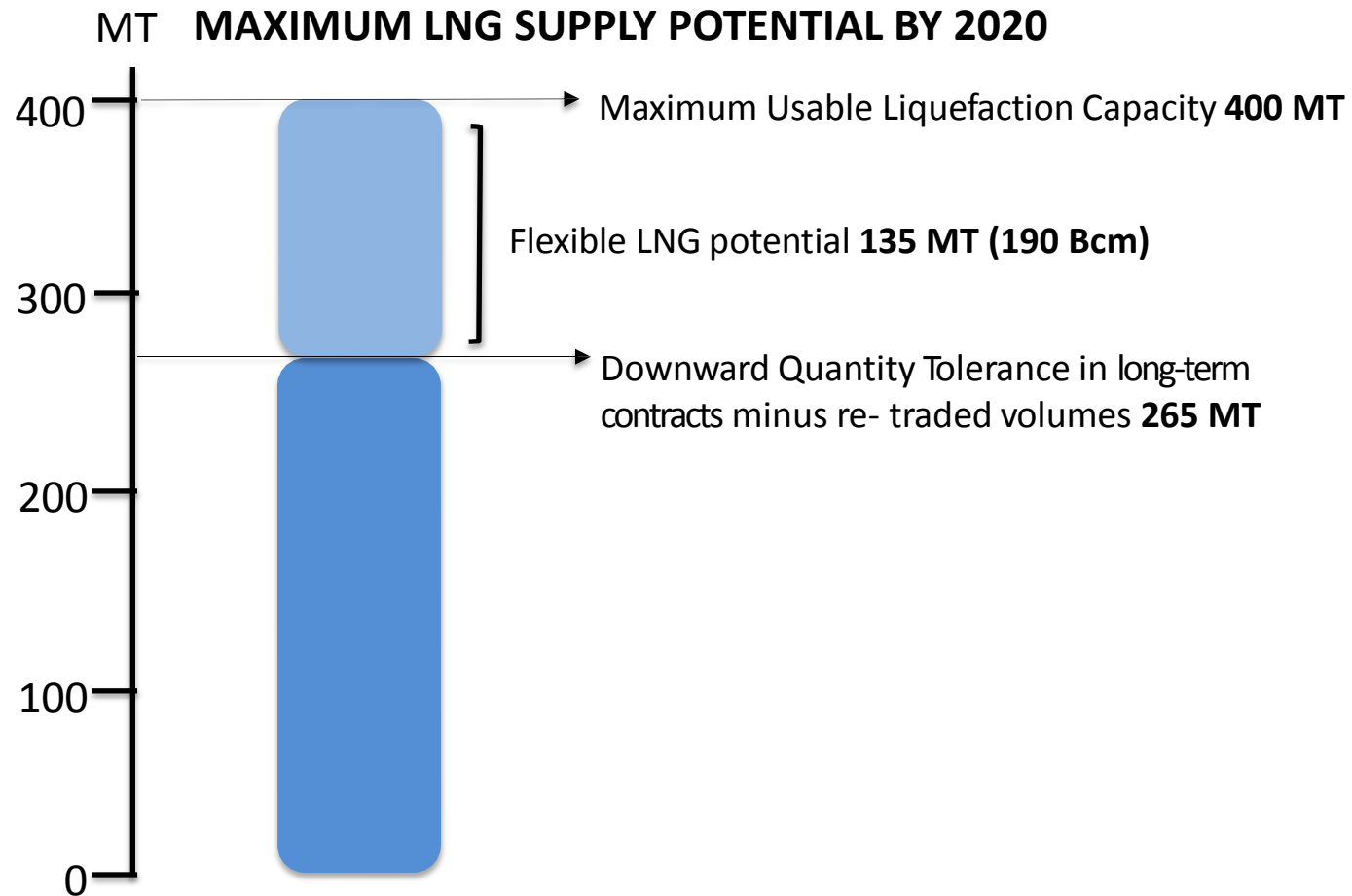


Outlook for Gas Imports from Russia into the EU to 2025

- Russian gas is very price competitive
- In 2025, contracted volumes will be around 150 Bcm, but the 'floor' is set by take-or-pay commitments (100-125 Bcm)
- Russia has at least 100 Bcm of spare supply capacity above its contracted volumes
- Transport as potential bottleneck



Flexible Volumes in the Global LNG Market

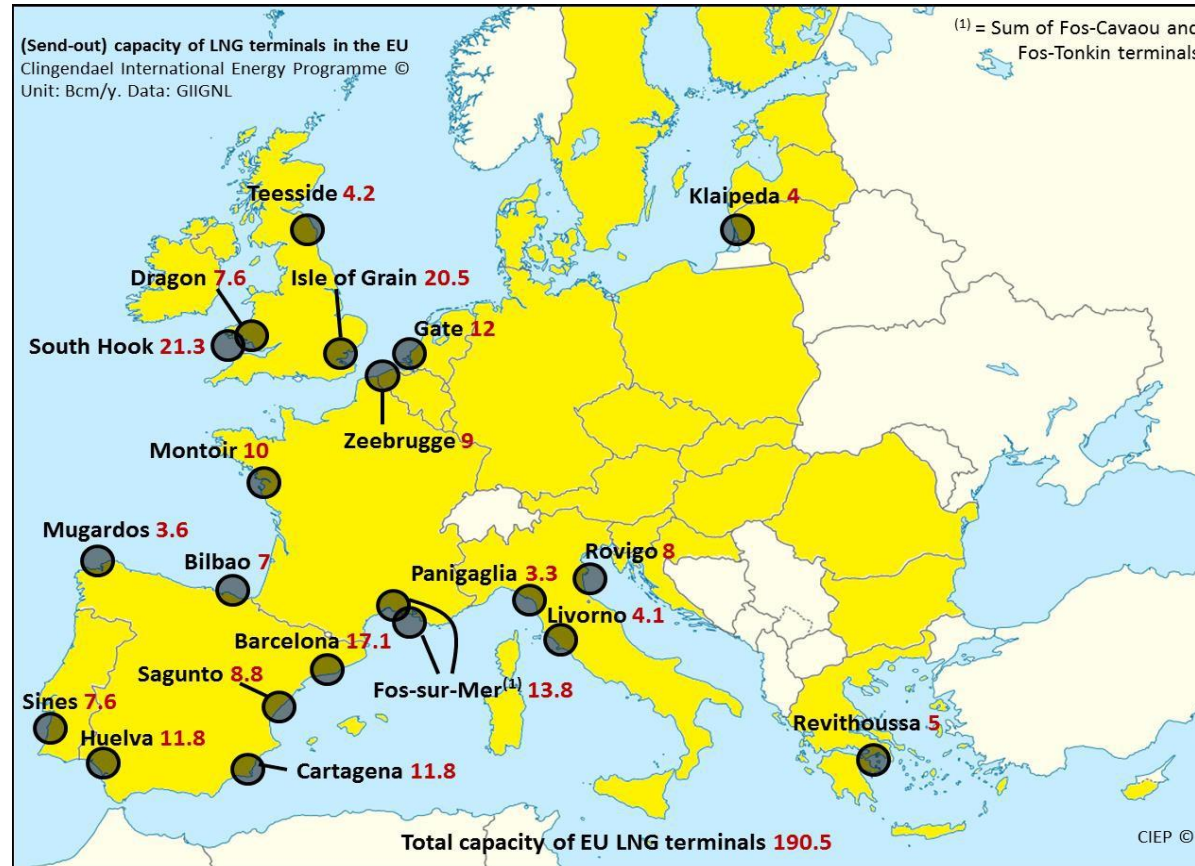


- Additional Australian and US LNG by 2020
- Flex LNG potential in 2020: 190 Bcm
- Amount of Flex LNG potentially available to the EU will depend on demand from other markets
- LNG market to remain glutted until 2023-2025
- FIDs needed in the next years to avoid a tight market in 2025
- Portfolio players can play a role in bridging the needs for flexibility and FID security



LNG Import Terminals in the EU

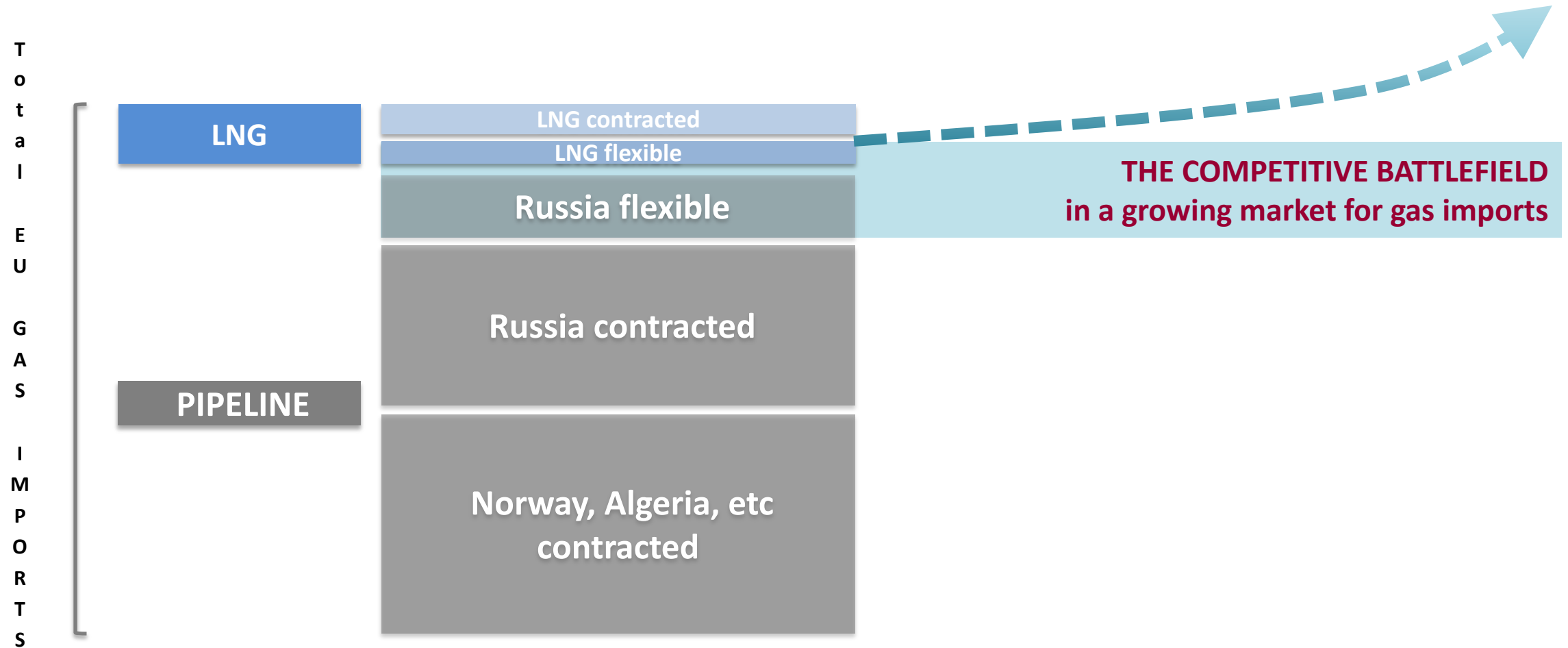
- EU continues to play the role of 'sink market' but its absorption capacity is not endless



- Additional flexible LNG will come to Europe and can be accommodated by considerable idle capacity in import terminals (45 Bcm used of 190 Bcm available)



The EU Gas Import Battlefield *



* Figure constructed to scale based on 2015 gas imports into the EU



Based on these EU Market Fundamentals what are then the
**Prospects for Security of Supply and Sustainable Diversification
of EU Gas Supplies until 2025?**



Types of Security of Supply

Definitions

OPERATIONAL

Capacity to accommodate daily variations in demand (extreme winters)

STRATEGIC

Strategy to limit risk and impact of interruptions (at source or infrastructure) in supplies at lowest costs and competitive prices

GEOPOLITICAL

Capacity to reduce probability or impact of major supply interruptions

LONG-TERM

Conditions ensuring adequacy, affordability and security of supply over the long term



Security of Supply for the EU

Traditional security solutions

STRATEGIC

- **Supply diversification**
(based on long-term contracts)
- Contractual diversification
- **Multiple import facilities**
- **UGS**

GEOPOLITICAL

- **Supply diversification**
- Relationship management,
- and/or strategic stocks

LONG TERM

- **Additional, diversified long-term contracts**
- Contractual diversification
- Multiple import facilities



Security of Supply for the EU to 2025

Security outlook for current and, if needed, additional supplies

STRATEGIC

- **COMPETITIVE DIVERSIFICATION:**
Overhang of LNG supply and Russian gas supply capacity, supported by alternative spare import facilities* offers optionality in the market;
 - Multiple import facilities
 - UGS

GEOPOLITICAL

- Supply diversification
- Relationship management
- and/or strategic stocks
- **Complemented by COMPETITIVE DIVERSIFICATION**

LONG TERM

- ~~Additional, diversified long-term contracts~~
- **COMPETITIVE DIVERSIFICATION**

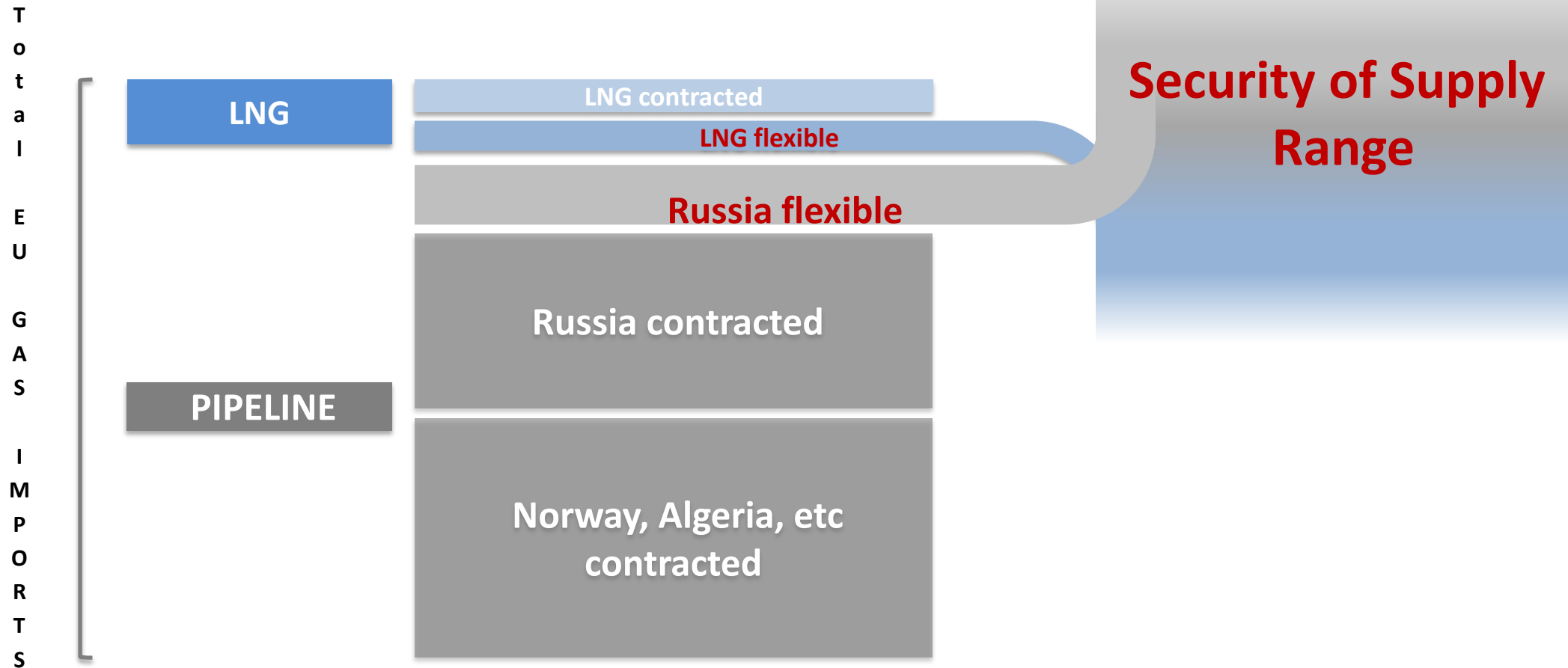
No appetite in EU market

*Currently limited import pipelines from Russia



EU Gas Security of Supply Range

In case of a disruption



Prospects for Sustainable Diversification of the EU's Gas Supply

Conclusions

The EU is enjoying a prolonged buyers' market

- Significant **supply overhang** of both pipeline gas and LNG, combined with market liquidity
- 'Competitive diversification' will offer **price competition and supply security**
- The **market share** of any supplier is **irrelevant**
- **Minimising obstacles to competition** will enhance competitive and security environment (this includes allowing additional import pipeline capacity investments from Russia)

But the "holiday" (for the EU and its consumers) does not last forever

- **The EU is not in a position to dictate the nature of the market**
- **Timely review needed** for signs of changing LNG supply/demand and business model outlook
- If Asian and/or LNG business models change to short term transactions, LNG supply to EU in a tight market will depend on EU gas prices
- If LNG supply gets tight while Asia resumes term contracts to secure new supplies, **EU will be ill-prepared to do the same (weakness of the EU buyers)**



Thank You!

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