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Global Gas Market Dynamics: Implications For East Med Oil and Gas

Athens, 8 December 2017

BMI Research - Who We Are

Breadth of Industry Coverage

- One of the world's largest, independent research house
- Unparalleled insight across 22 industries and 200+ countries

Specialists on Emerging and Frontier Markets

- Global coverage with extensive analysis across Frontier Markets

BMI Research – O&G Service Overview

O&G Forecasts For

122 Markets | 93

In-depth Industry Reports

Portfolio of Quarterly Market Reports

- 93 country Oil and Gas reports
- Include analysis and 10 year forecasts on upstream and downstream sectors, regulatory regimes and domestic competitive landscape.

Data and Forecasts

- 10 year forecasts and 25+ years of historical data for 122 O&G markets
- Crude Oil, Fuels, Natural Gas, Upstream, Downstream, Trade and Crude & Fuels Prices
- Upstream & Downstream Risk Reward Index

Projects Databases

- Upstream Projects Database
- Refining Database
- LNG Database

Global Gas Market Dynamics: Implications For East Med Oil and Gas

Evolving dynamics in the global natural gas market

- **Supply**
- **Demand**
- **Prices**

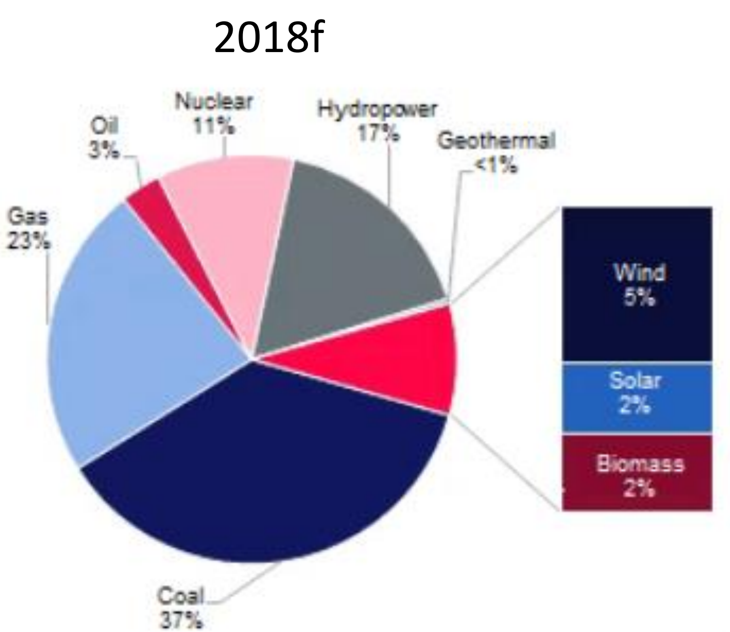
State of play in the East Med exploration & production (E&P) landscape

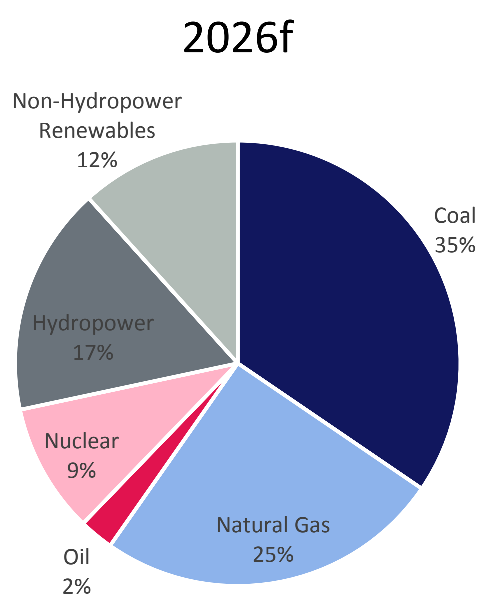
What global dynamics mean for the outlook of the region

Gas In Electricity

Bright Future For Natural Gas in the Electricity Mix: Fuel of the Future

Global Electricity Generation, By Fuel/Type, % Total TWh





f= BMI forecast. Source: EIA, BMI

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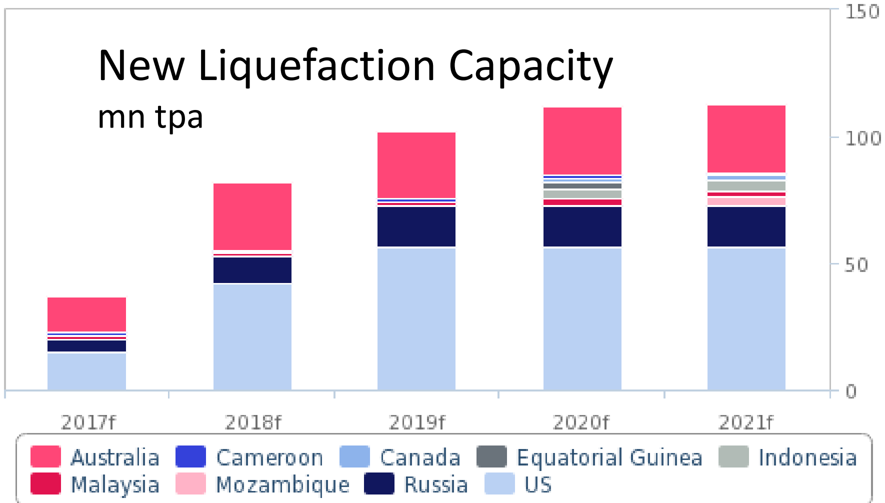
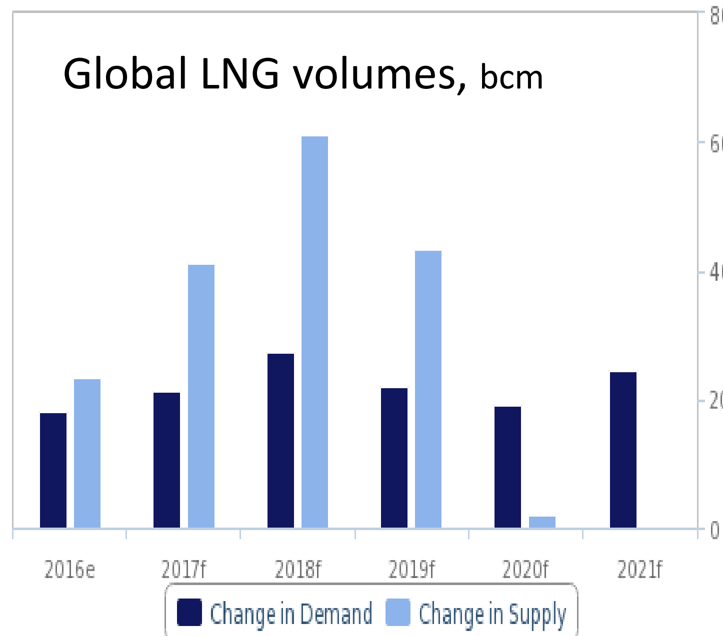
LNG Supplies – Liquefaction Capacity

LNG: Oversupply…to Ease In The Coming Decade

LNG market will be quite challenging for the next 2-3 years, with significant oversupply hitting markets
But…
More tightness in the 2020's from a dearth in FIDs since 2015





2018 New Projects Online:

- ✓ Yamal LNG (Russia)
- ✓ Wheatstone LNG (Australia)
- ✓ Cove Point LNG (USA)

f= BMI forecast. Source: BMI LNG Projects Database

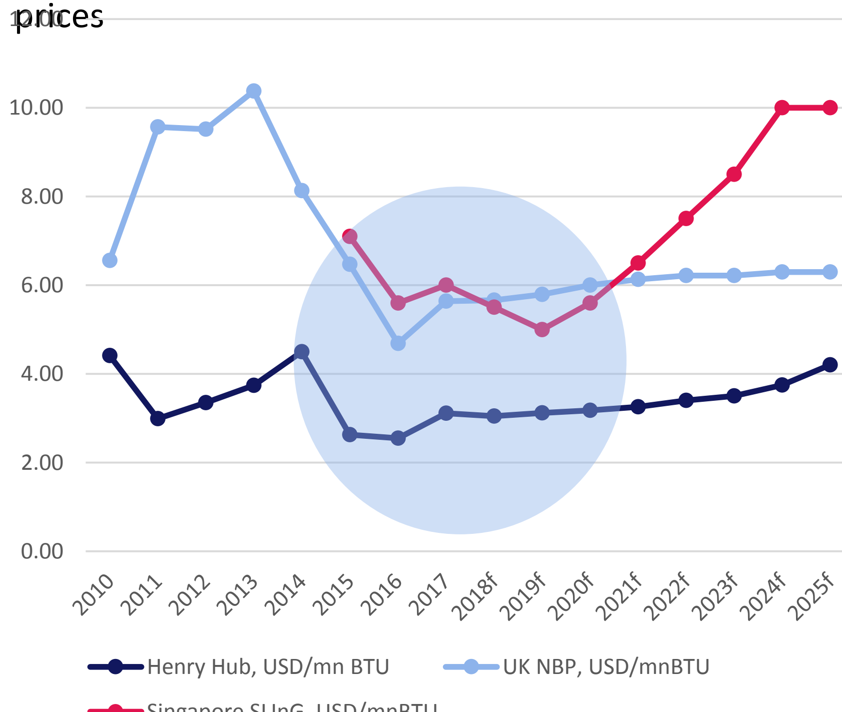
Gas Hubs Price Forecasts

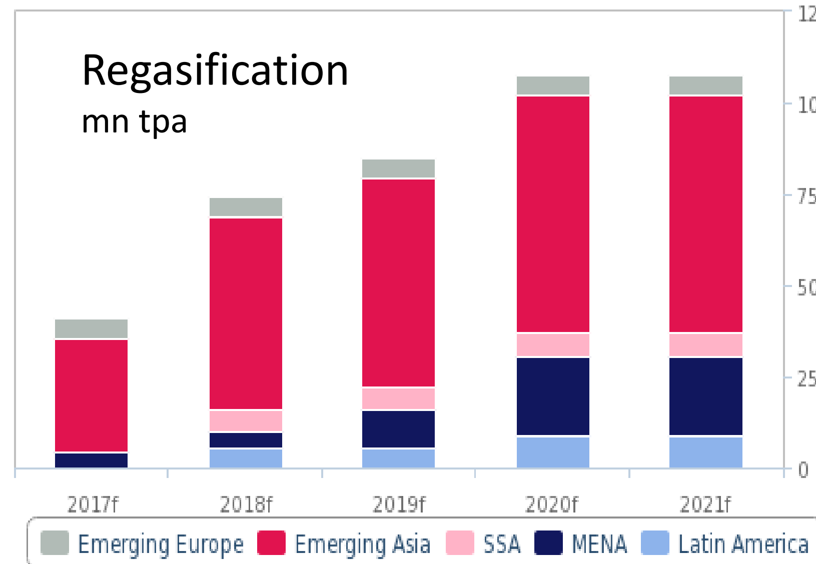
Price Convergence Reduces Regional Differences

A better supplied market has give buyers more leverage:

- From fixed to spot market contracts
- More transparency
- Driven demand for new facilities to take in LNG (regasification plants, FSRUs)

With more volumes seaborne and on the spot market, regional price differences narrow = convergence of prices





f= BMI forecast. Source: BMI LNG Projects Database

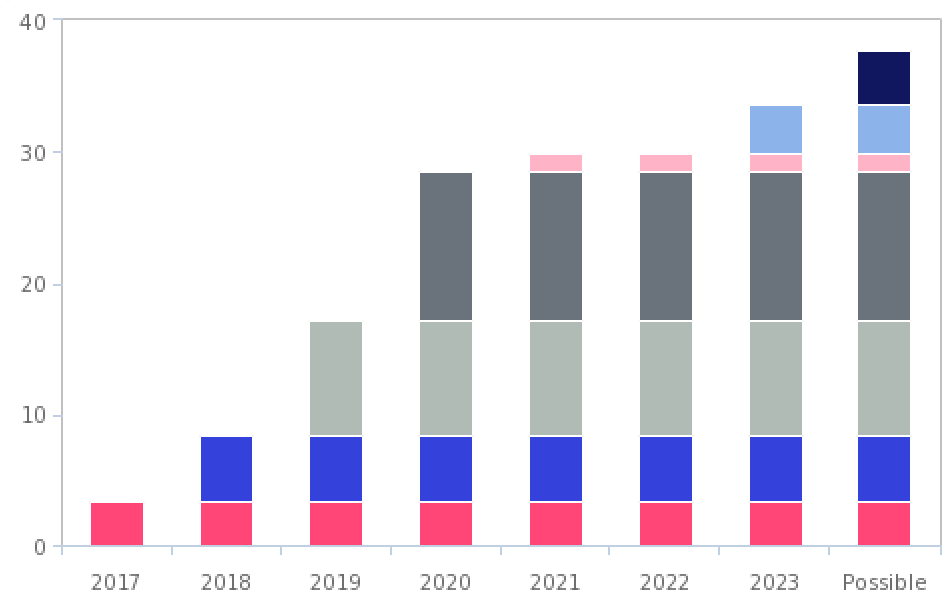
LNG Demand

Demand Robust: Emerging Markets Leading The Growth

Few years of low natural gas prices have boosted demand
Demand centre pivoting to Asia and EMs
FSRUs and LNG -to -power creating new markets for LNG suppliers

Country	Project	LNG Solution
Colombia	Cartagena	Hoegh FSRU
Cote d'Ivoire	Abidjan	Golar FSRU
Panama	Colon	FSRU
Ghana	Tema	Excelerate FSRU
Pakistan	Jhang	FSRU
Bangladeh	Cox Bazar	FSRU
Bangladeh	Meghnaghat	FSRU
Ghana	Tema	Golar FSRU
Indonesia	Medan	FSRU
Hong Kong	HK	FSRU
Philippines	Batangas	FSRU
Brazil	Sergipe	Golar FSRU
Chile	Concepción Bay	Hoegh FSRU
Myanmar	Yangon	FSRU
Morocco	Jorf Lasfar	FSRU
South Africa	Richards Bay	FSRU
South Africa	Coega	FSRU
Namibia	Walvis Bay	Excelerate FSRU
Kenya	Mombasa	FSRU
Myanmar	Dawei	FSRU

LNG Demand From Potential LNG-to-Power Projects



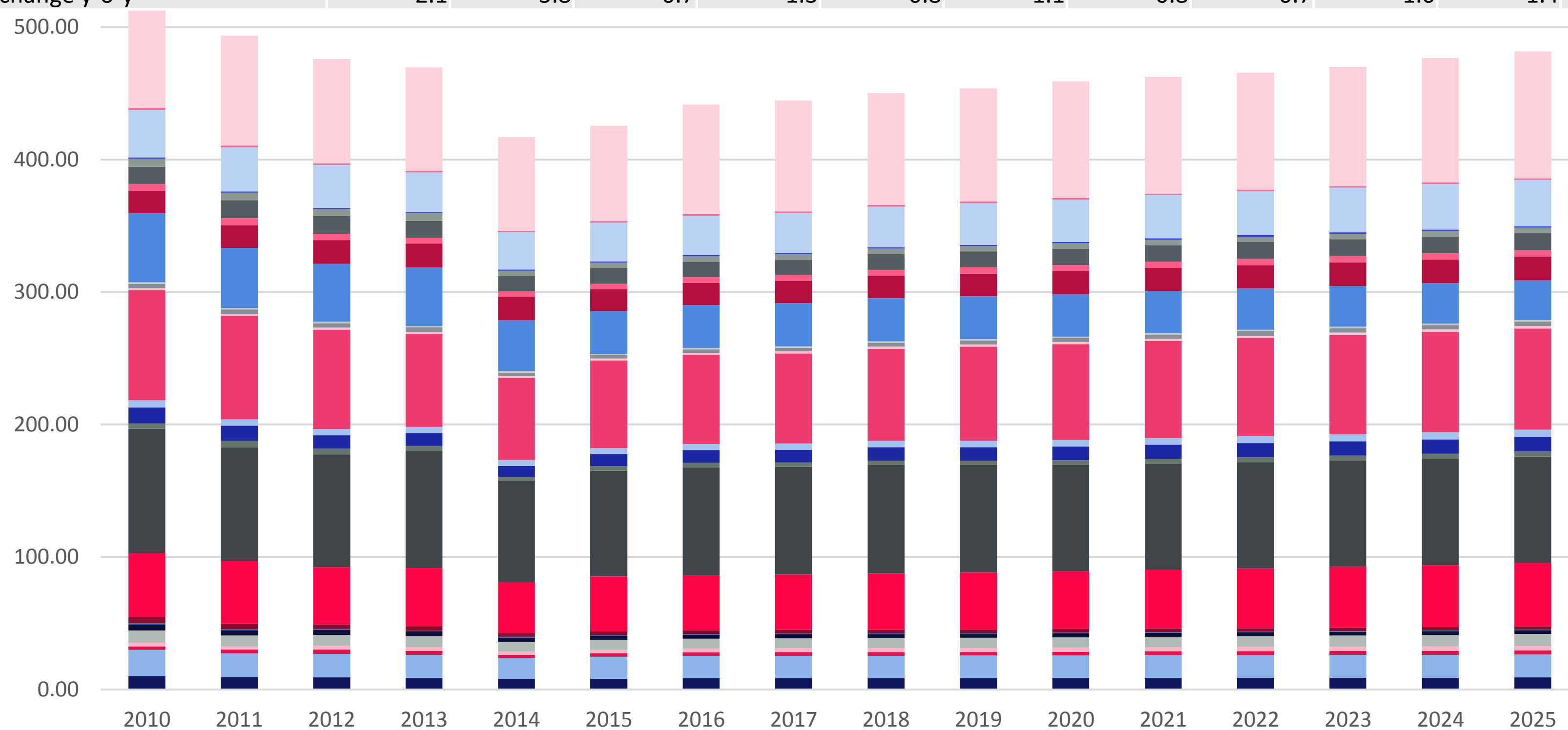
f= BMI forecast. Source: BMI LNG Projects Database

Natural Gas Demand – EU-28 Outlook

Developed Market Gas Demand Growth More Stagnant

EU- 28 Natural Gas Consumption, billion cubic meters

	2015	2016	2017	2018f	2019f	2020f	2021f	2022f	2023f	2024f	2025f
EU-28 nat.gas consumption, % change y-o-y	2.1	3.8	0.7	1.3	0.8	1.1	0.8	0.7	1.0	1.4	1.0



f= BMI forecast. Source: EIA, Eurostat, BMI

East Mediterranean E&P

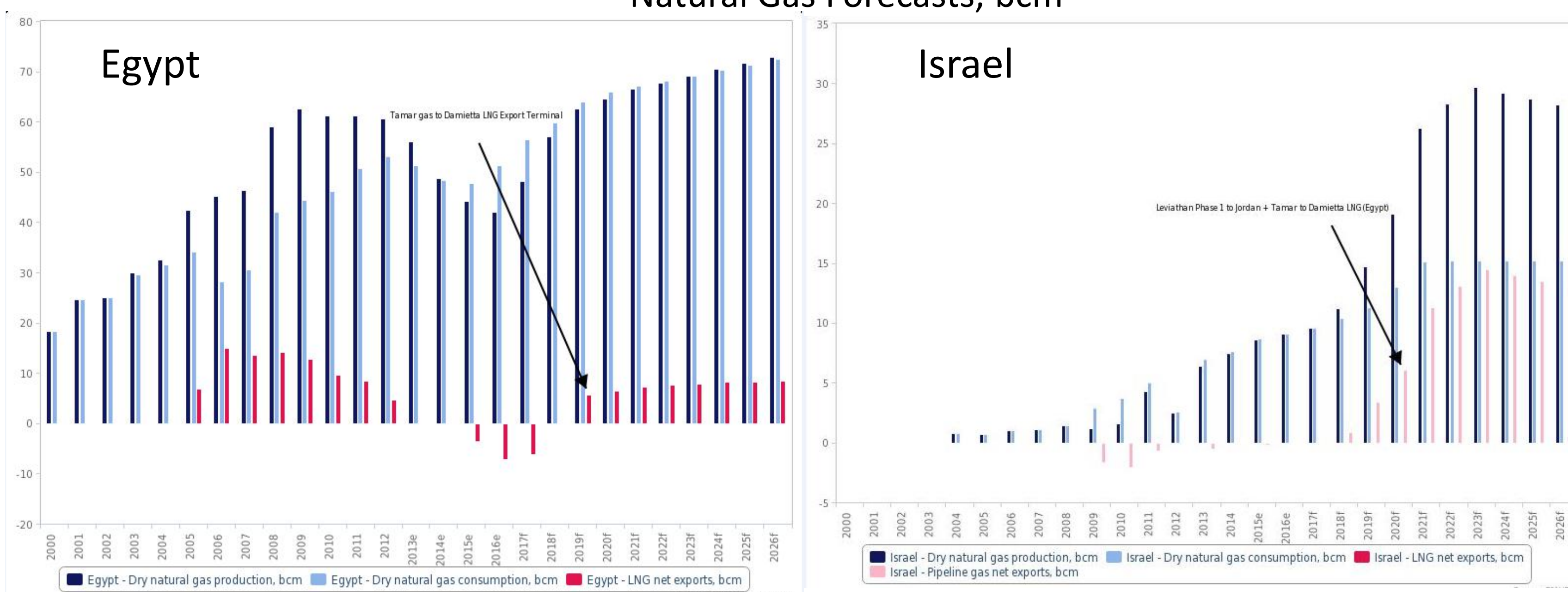
Still A Fledging Gas Play, Resources Still Assessed, Export Routes Uncertain

Strong momentum in E&P, one of the hotspots for exploration activity in 2018, esp. Cyprus.
Limited production: Majority of planned production targeting domestic markets –Israel and Egypt

- Leviathan Phase I contracted to Israel & Jordan
- Karish & Tanin to Israel
- Zhor to Egypt

Leviathan (expansion) + Aphrodite = pre-FID – **how do you monetise these, and, future resources?**

Natural Gas Forecasts, bcm



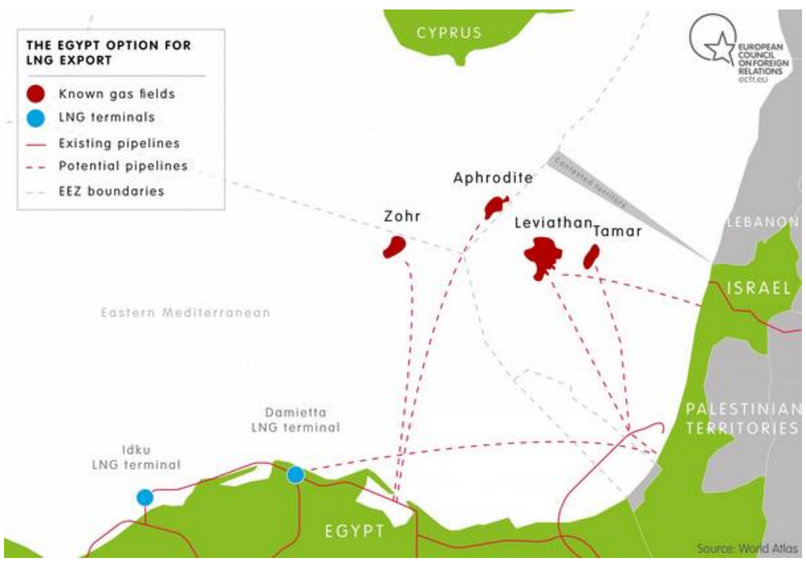
f= BMI forecast. Source: EIA, National Sources, BMI

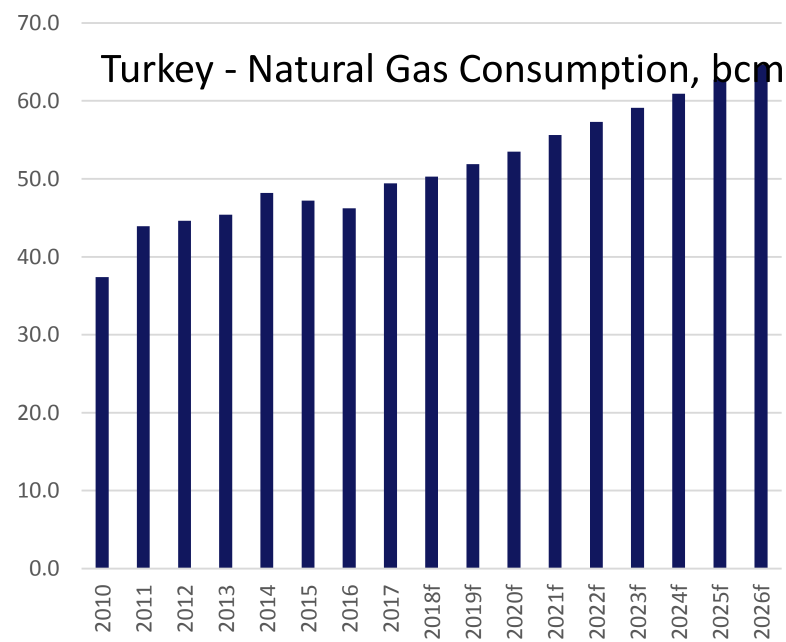
East Mediterranean E&P

Gas Market Dynamics Suggest That This Is A Regional Play

Major demand centres in the immediate neighbourhood seem like most commercially viable option to monetise resources.

Egypt LNG export terminals: Damietta and Idku
Strong demand upside from Egyptian market >> older gas fields depleting fast, new power generation
Turkey => by far the largest natural gas importer in the East Med region. 2 FSRUs planned.





f= BMI forecast. Source: EIA, National Sources, BMI
Map: European Council on Foreign Relations

Key Takeaways

Natural gas is the fuel of the future, will have a major role in future electrification

LNG market in transition: from oversupply to balance in the 2020s

Emerging markets drivers of new natural gas demand – LNG-to Power and FSRUs

European natural gas consumption growth stagnant, and many supply options

East Med resources currently targeting domestic markets, but questions on future monetisation

Gas market dynamics suggest that East Med is a regional play

Egypt, Turkey and (possibly) Italy major demand centres in the coming decades