SE EUROPE HYDROCARBONS UPSTREAM WORKSHOP

MEDITERRANEAN GAS DEVELOPMENTS

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Agenda

- Country Updates
  - Israel
  - Cyprus
  - Egypt
- Infrastructure Updates
- Regional Gas Balances

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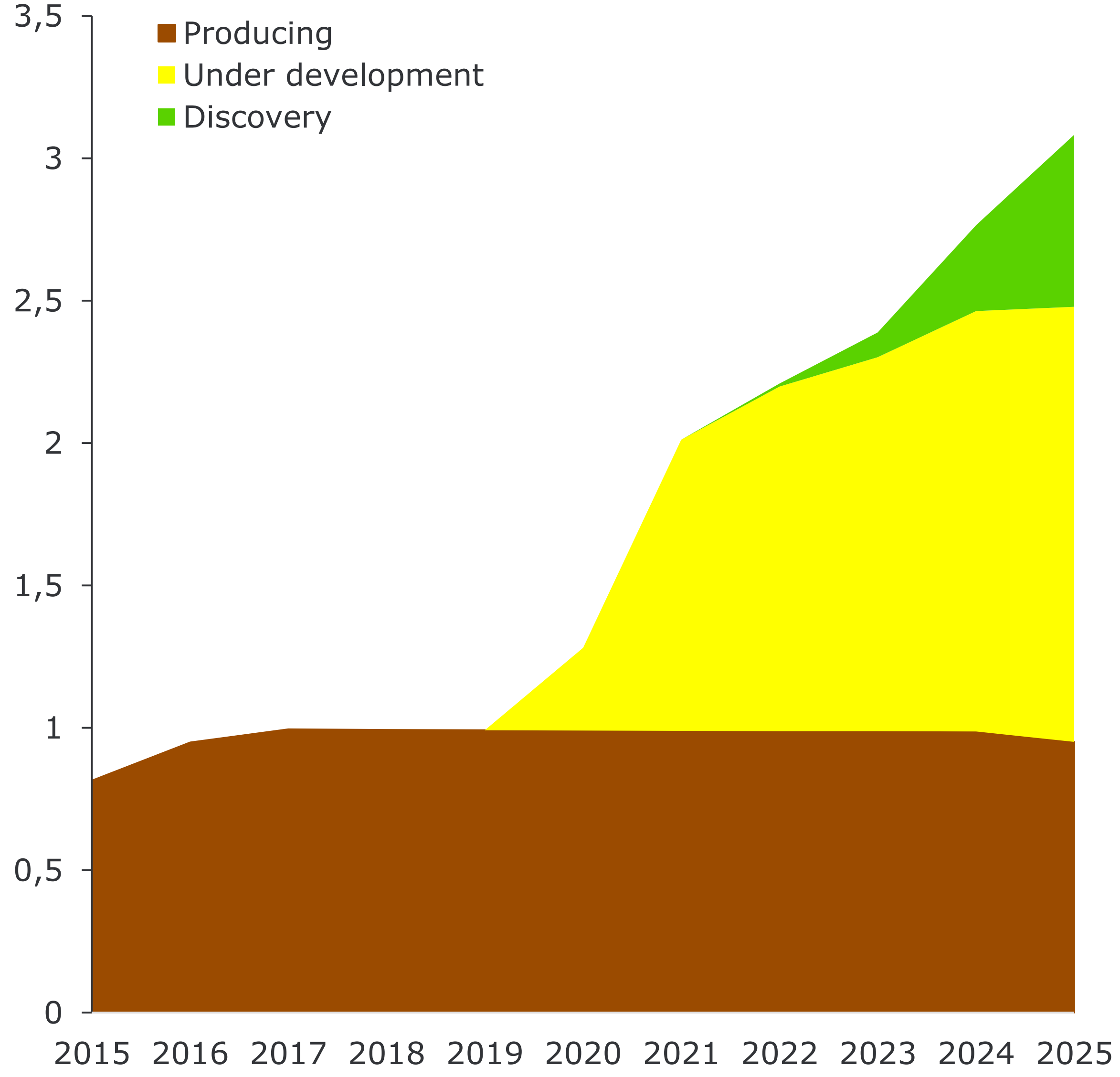
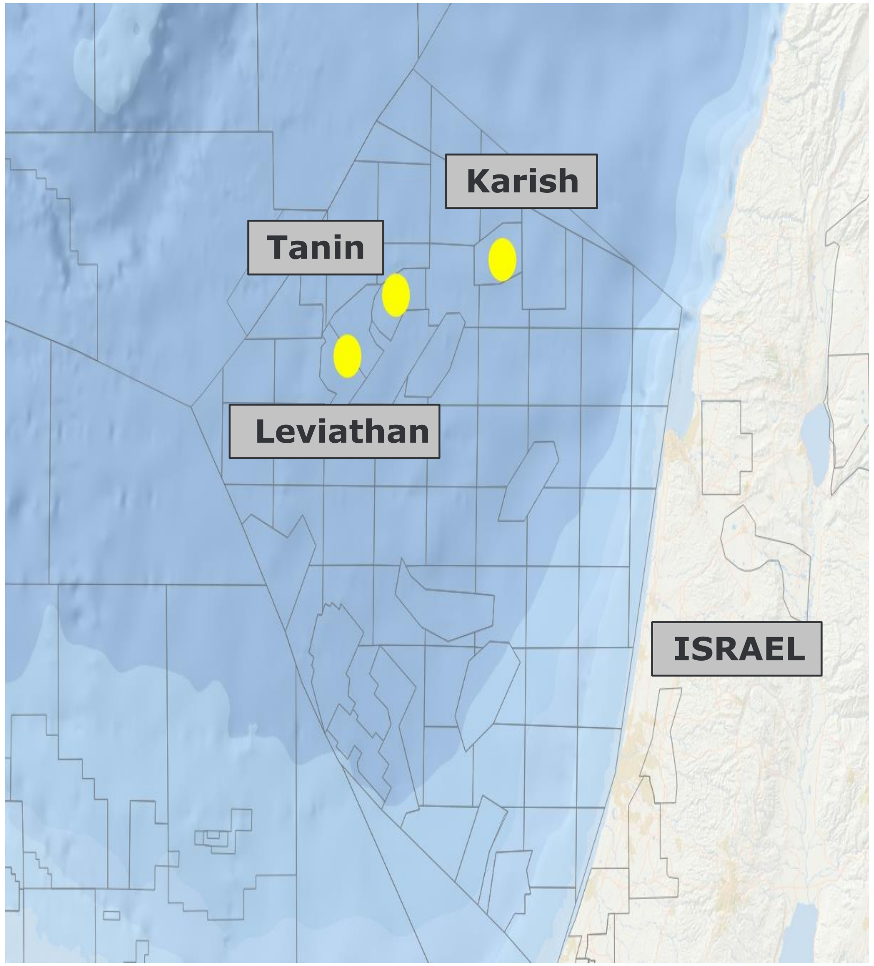
Israel’s gas production has potential to increase by 2 billion cfd

Billion cfd





Fields	Reserves	Development Cost	Breakeven Gas Price
Karish	2 Tcf	1.6 BUSD	3.5 USD/kcf
Tanin	0.86 Tcf	0.6 BUSD	2.73 USD/kcf
Leviathan Phase 1	11 Tcf	3.75 BUSD	2.4 USD/kcf

Source – UCube October 2018

Israel’s gas production forecast development in between 2014-18

2014 – 2017 Developments

Israel has two main gas development projects – Tamar and Leviathan. The discovery set course for the increase in the country’s gas output. Despite the gas potential in the country, near term gas output rampup has been delayed due to the following reasons:

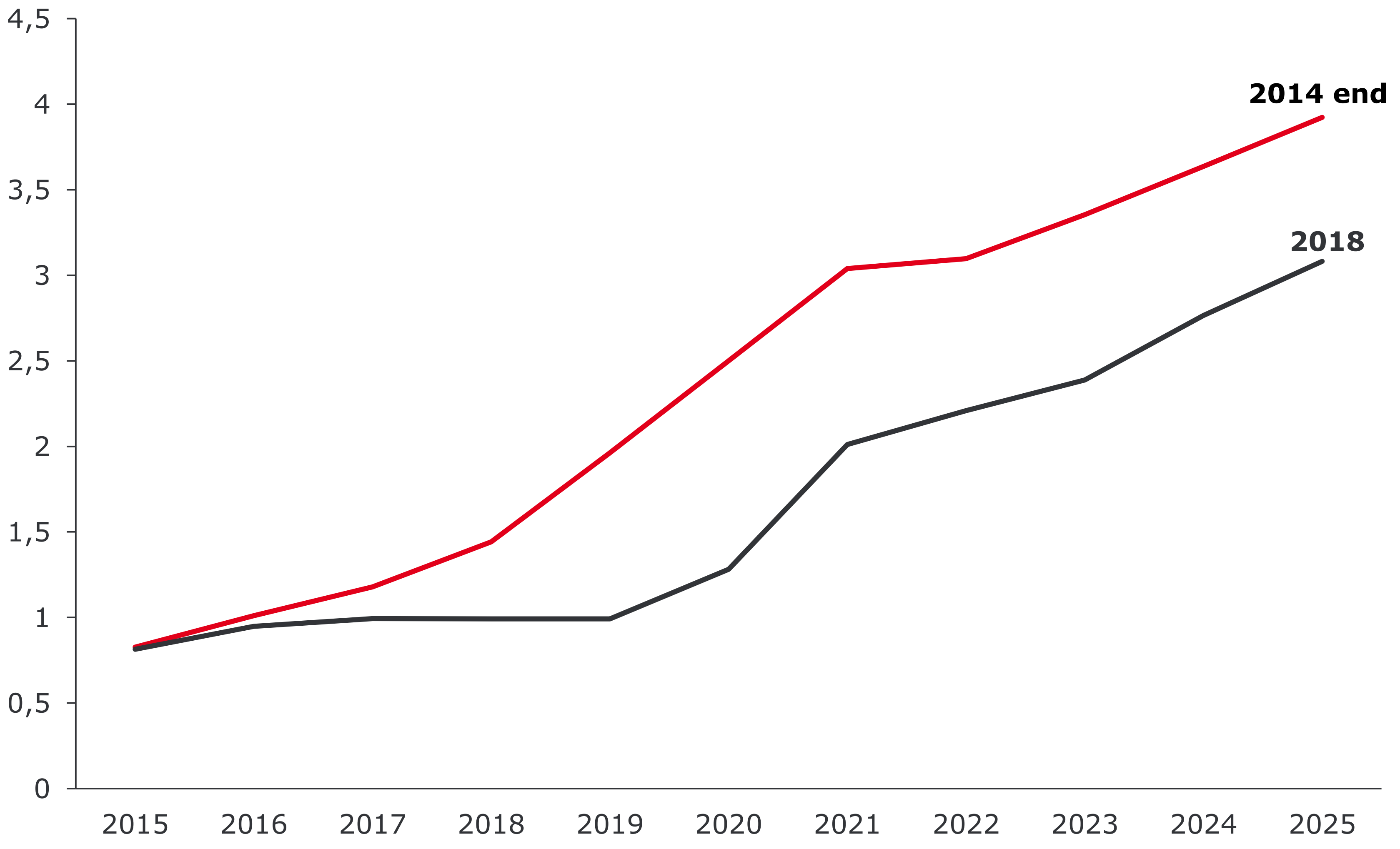
- The development plans remained on hold in between 2015-17 due to regulatory issues over the ownership of the assets.
- The gas developments were mainly focused to reduce the country’s dependence on coal for the electricity generation. During this period, the country’s domestic demand grew marginally.

Outtake capacity improves outlook

In 2017, Israel started exporting gas to Jordan. With the recent EMG pipeline, the country’s gas development phases are likely to be accelerated and hence, output is set to increase in the medium term.

Israel’s gas production forecast

Billion cfd



Source – UCube October 2018

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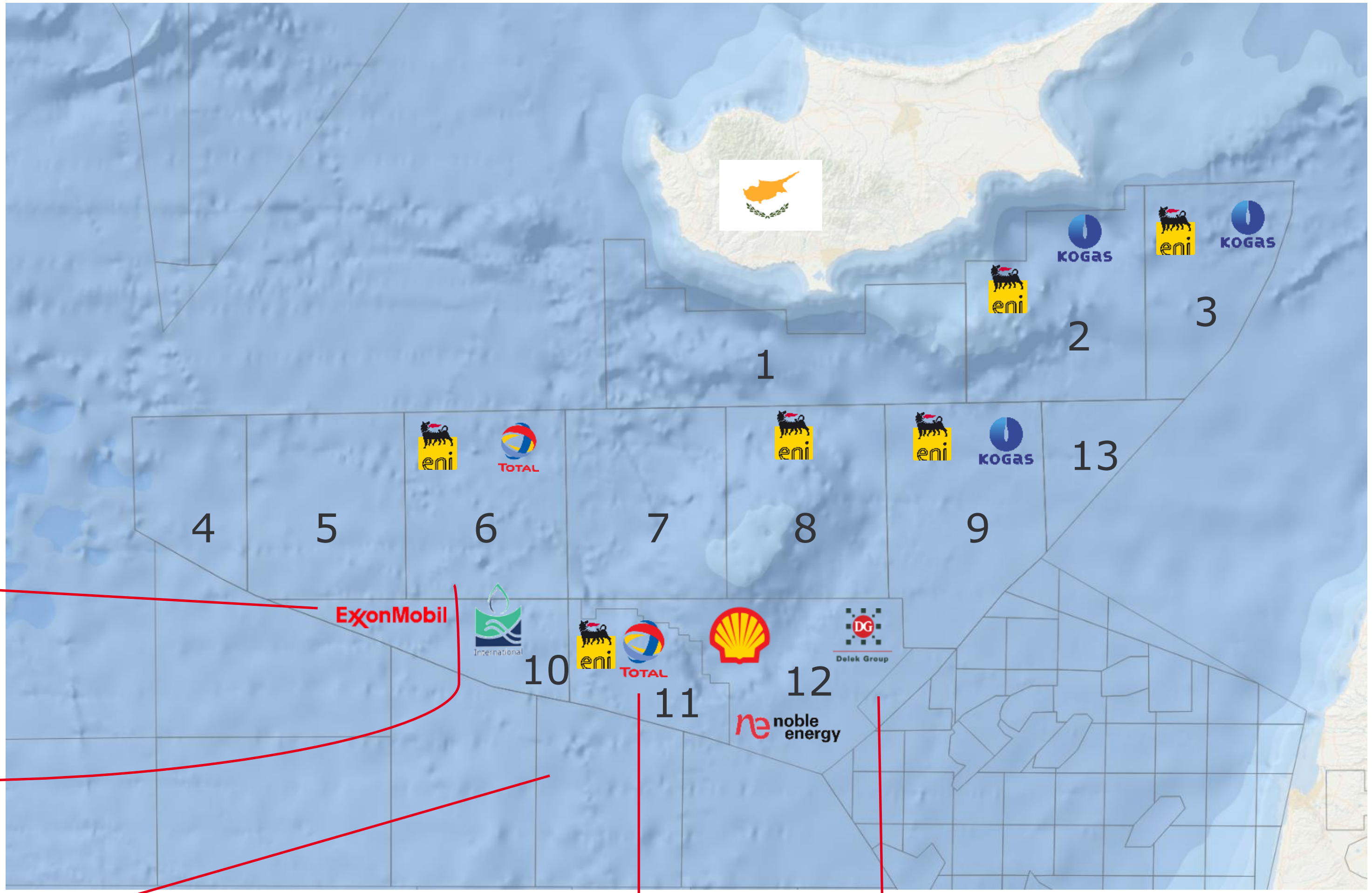
Cyprus exploration – Generating prospects



PROSPECTS

- Tie-in field development opportunity.
- Increase in exploration and development activities.
- Improved prospects for future licensing rounds.
- Gas export opportunity by increase in the country's gas outtake capacity.

August 2018 – Block 10 Encouraging Seismic

Encouraging seismic results. Initial speculations show the potential of about 15 tcf gas.

February 2018 – Calypso Discovery

Eni announced the gas discovery, Calypso and confirmed the extension of the "Zohr like" play.

August 2015– Zohr Commercial Discovery

Eni confirmed the Zohr gas discovery as the biggest ever natural gas field in the Mediterranean. The exploration results boosted efforts to tap the "Zohr Like" play in the adjacent blocks.

March 2015 – Block 11 Exploration

Cyprus and Total signed an exploration agreement, which Total will undertake in order to further assess the prospects of exploration block 11.

2011 - Aphrodite Discovery

Noble Energy discovered the Aphrodite field off the eastern cost of Cyprus

Source – UCube October 2018

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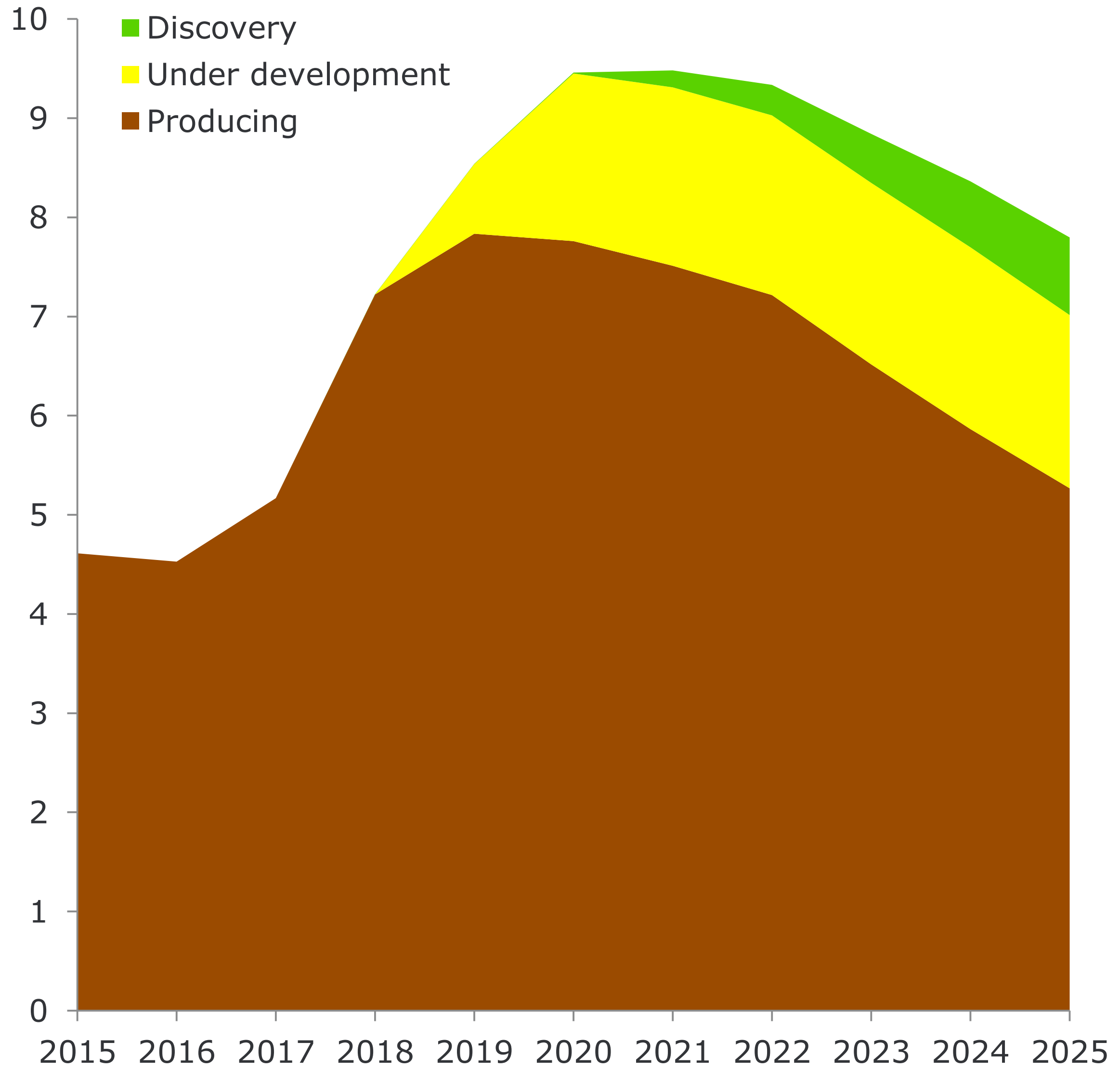
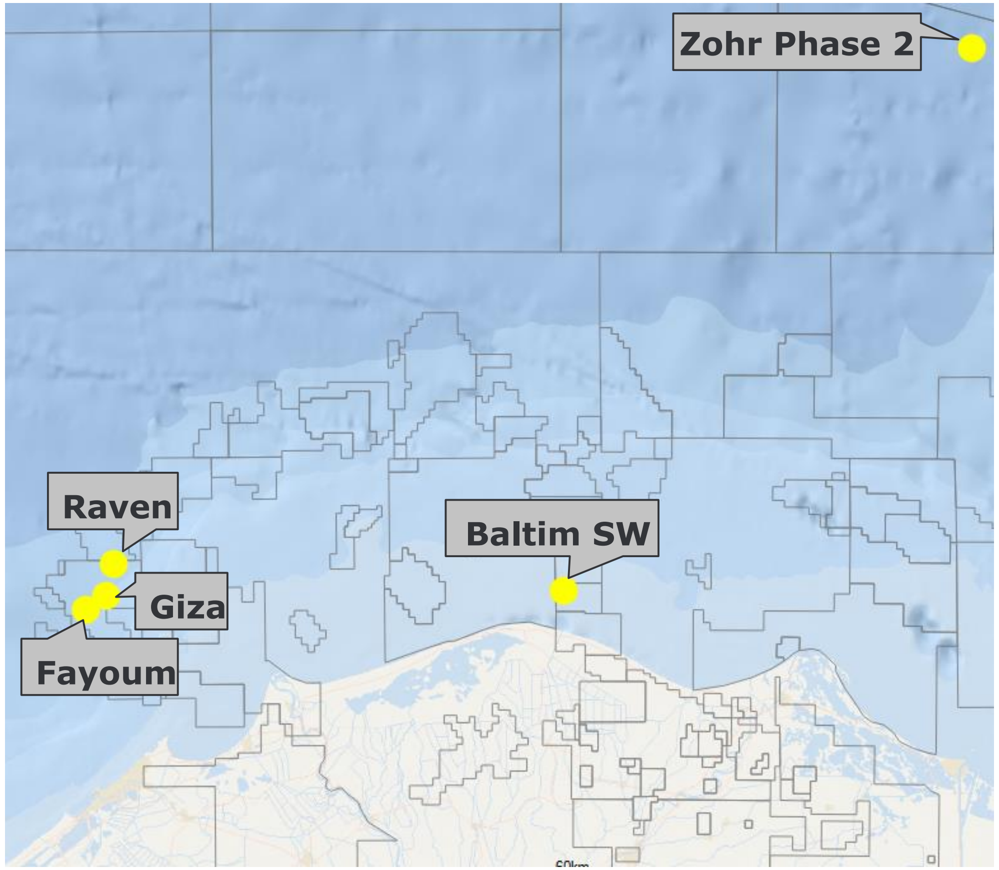
Egyptian gas developments - Altering balances

Billion cfd





Fields	Reserves	Development Cost	Breakeven Gas Price
Zohr Phase 2	5.9 Tcf	4.6 BUSD	4.55 USD/kcf
Baltim SW	0.75 Tcf	0.15 BUSD	2.38 USD/kcf
Giza	0.4 Tcf	1.5 BUSD	3.16 USD/kcf
Raven	2 Tcf	5.4 BUSD	2.59 USD/kcf
Fayoum	0.3 Tcf	1.1 BUSD	3.31 USD/kcf

Source – UCube October 2018

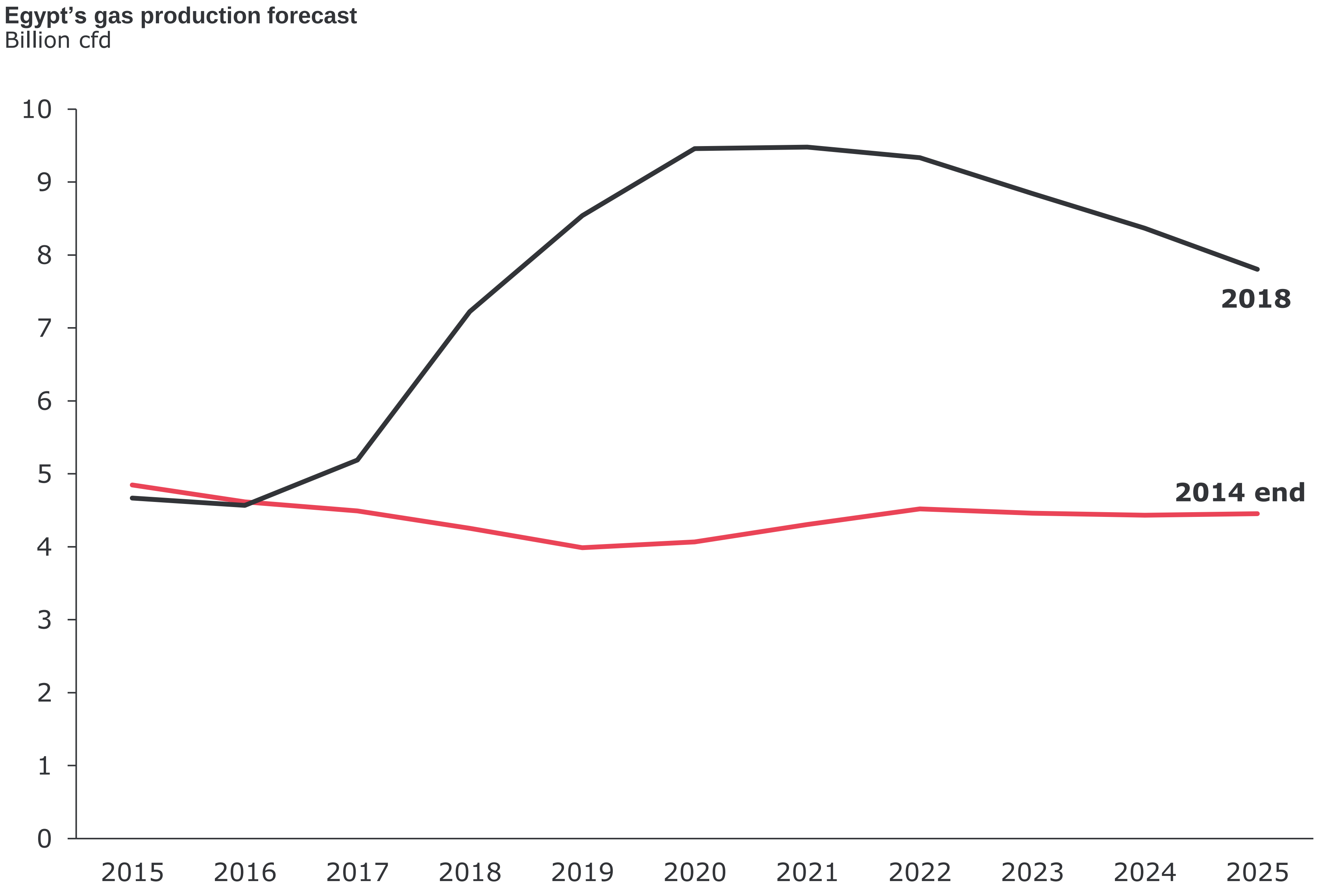
Egypt’s gas production forecast development in between 2014-18

2014 – 2017 Developments

- Egypt is the biggest energy market in the region with an extensive natural gas infrastructure. In 2015, Egypt became a natural gas importer after being a key gas exporter in the region for almost a decade.
- The change in the balance is the result of decline in the legacy gas fields and increase in the domestic gas demand. The government took following actions to reverse the trend:
- Government started to implement favorable upstream fiscal policies. These measures resulted in the discovery of the Zohr field and its fast track development.

Recent discoveries improves outlook

The recent developments ensures self sufficient energy supply for Egypt for the near term.



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Infrastructure Update – Success story in the making

Recent Developments:

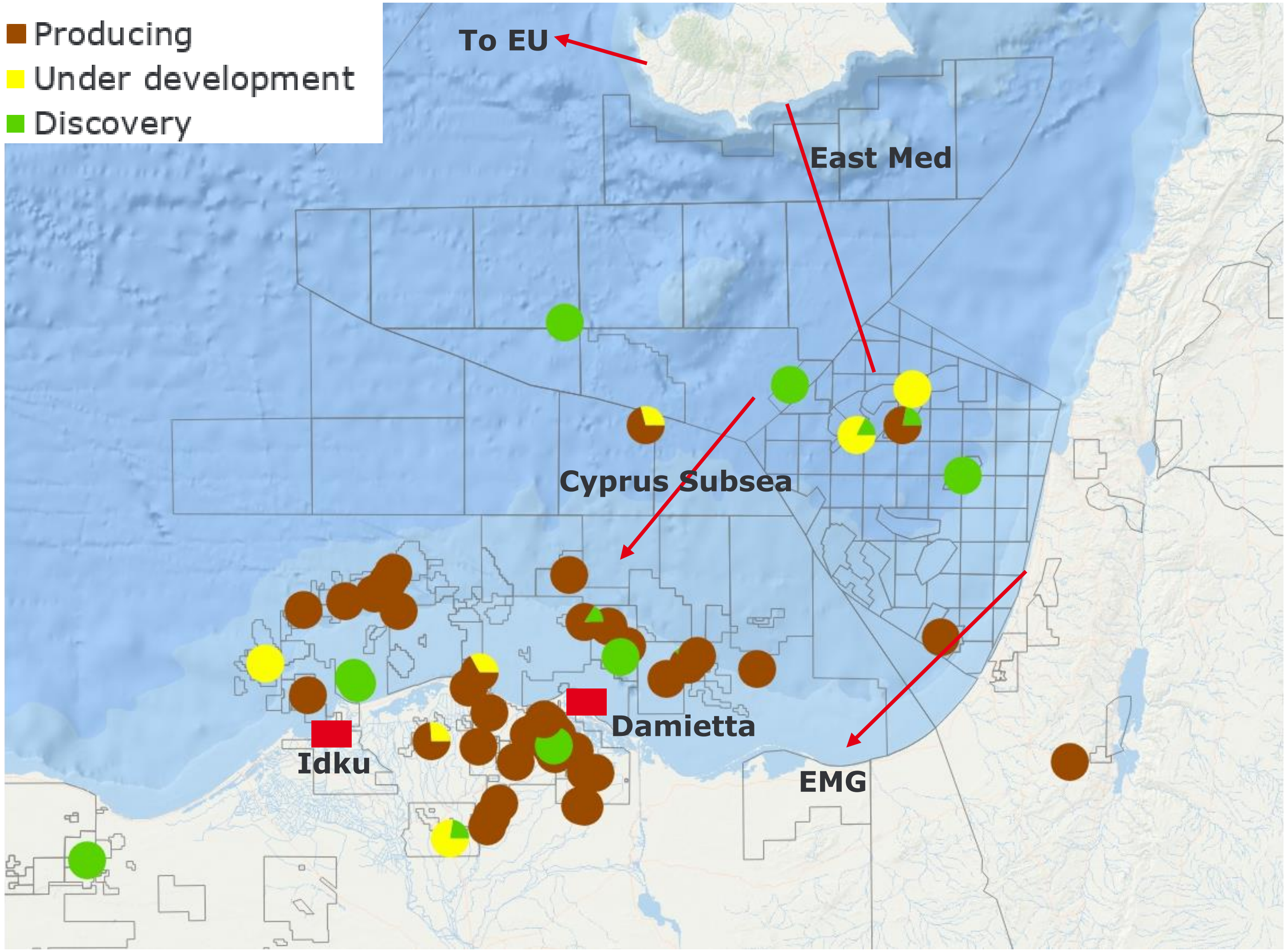
- **East Med –** Cyprus and Israel signed up to an initiative to construct a 2,000km subsea pipeline to carry 1.6 billion cubic feet of gas per day to Greece and Italy.

- **EMG Pipeline -** Noble Energy and Israeli gas operator Delek Drilling, have reached an agreement with the Egyptian partner East Gas, to support the delivery of natural gas from the Leviathan and Tamar gas fields to Egypt.

- **Cyprus Subsea Pipeline –** Cyprus and Egypt have signed an agreement to build a pipeline from Aphrodite deposit to Egyptian LNG export facilities of Damietta and Idku.

Impact –

- Changes in the supply balances in the region.
- Attractive for further exploration and development investment.
- Size of the discoveries ensures a self-sufficient energy supply.
- Increase in revenue.
- Alternative for South Asia, European and Middle East gas demand.



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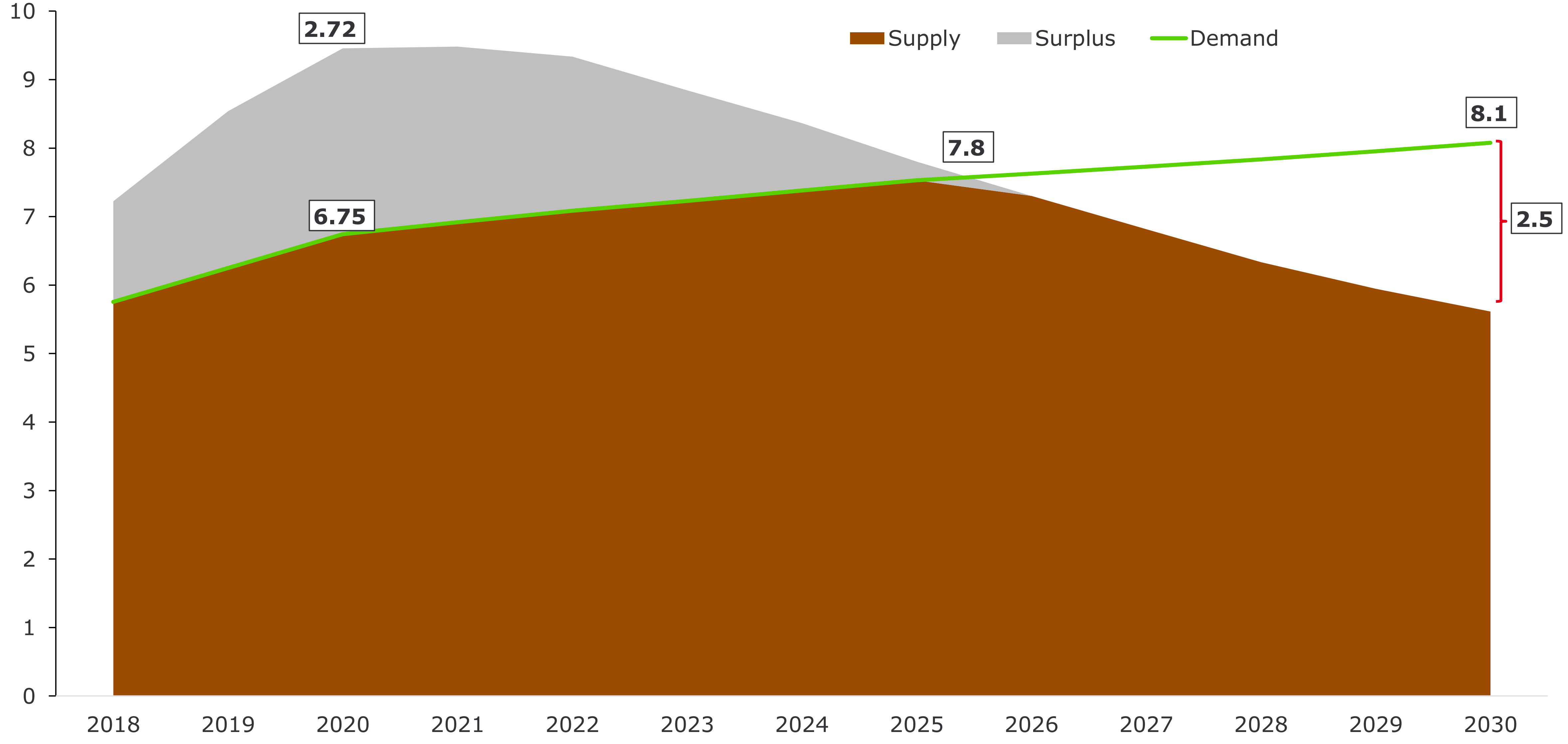
Egypt's gas supply-demand balance – Short Lived Peak

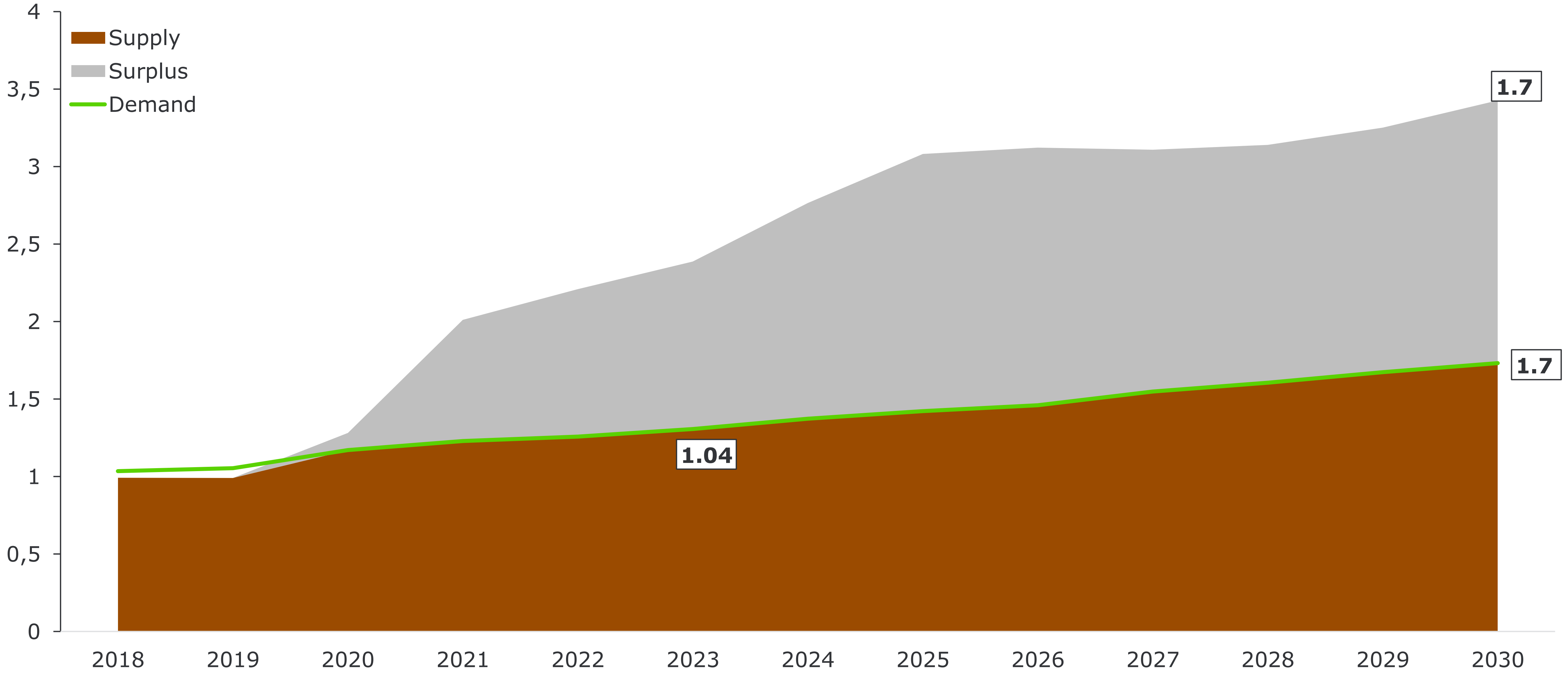
Billion cfd



Source – UCube October 2018 and Gas Market Cube Pilot

Israel's gas supply-demand balance – Surplus gas on track

Billion cfd



Source – UCube October 2018 and Gas Market Cube Pilot

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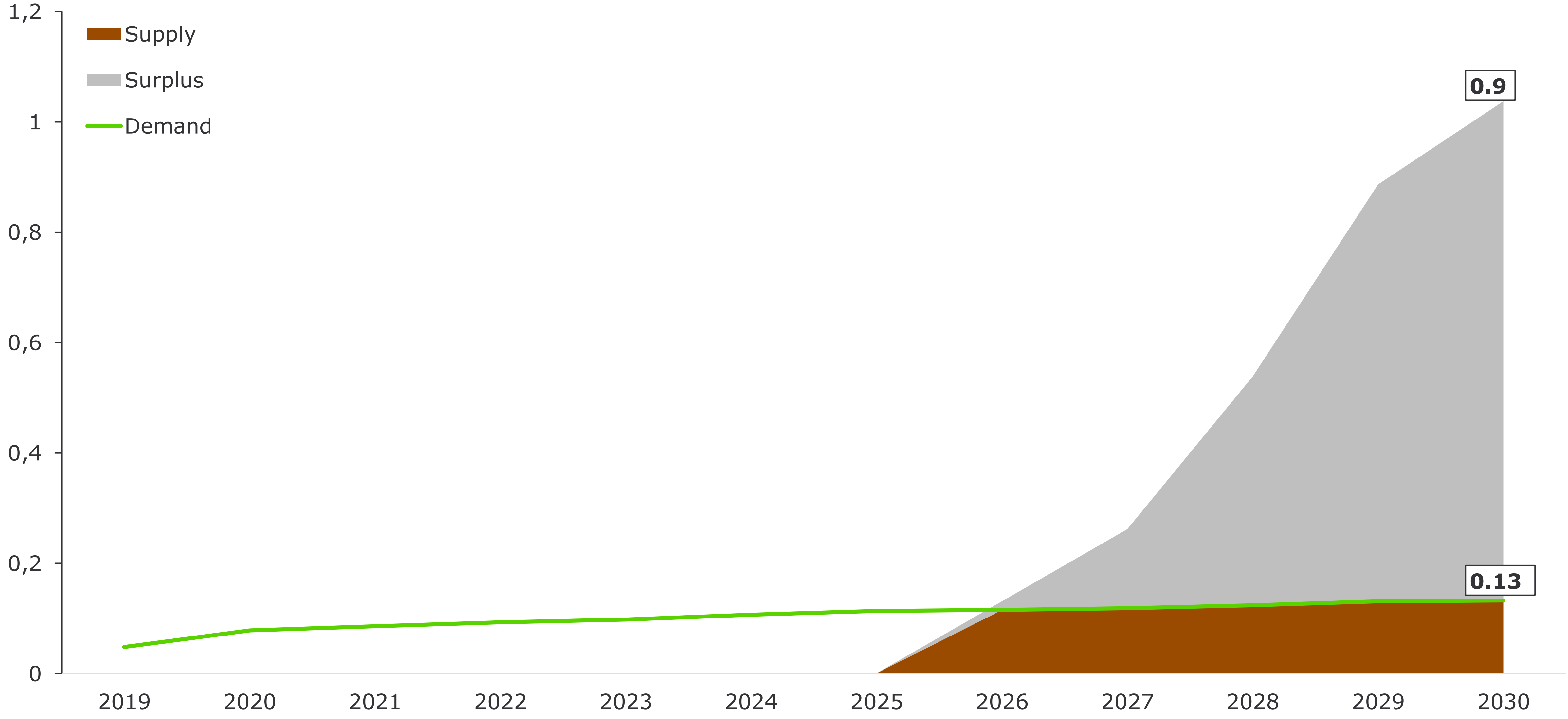
Cyprus's gas supply-demand balance – Gas exporter in the making

Billion cfd



Source – UCube October 2018 and Gas Market Cube Pilot

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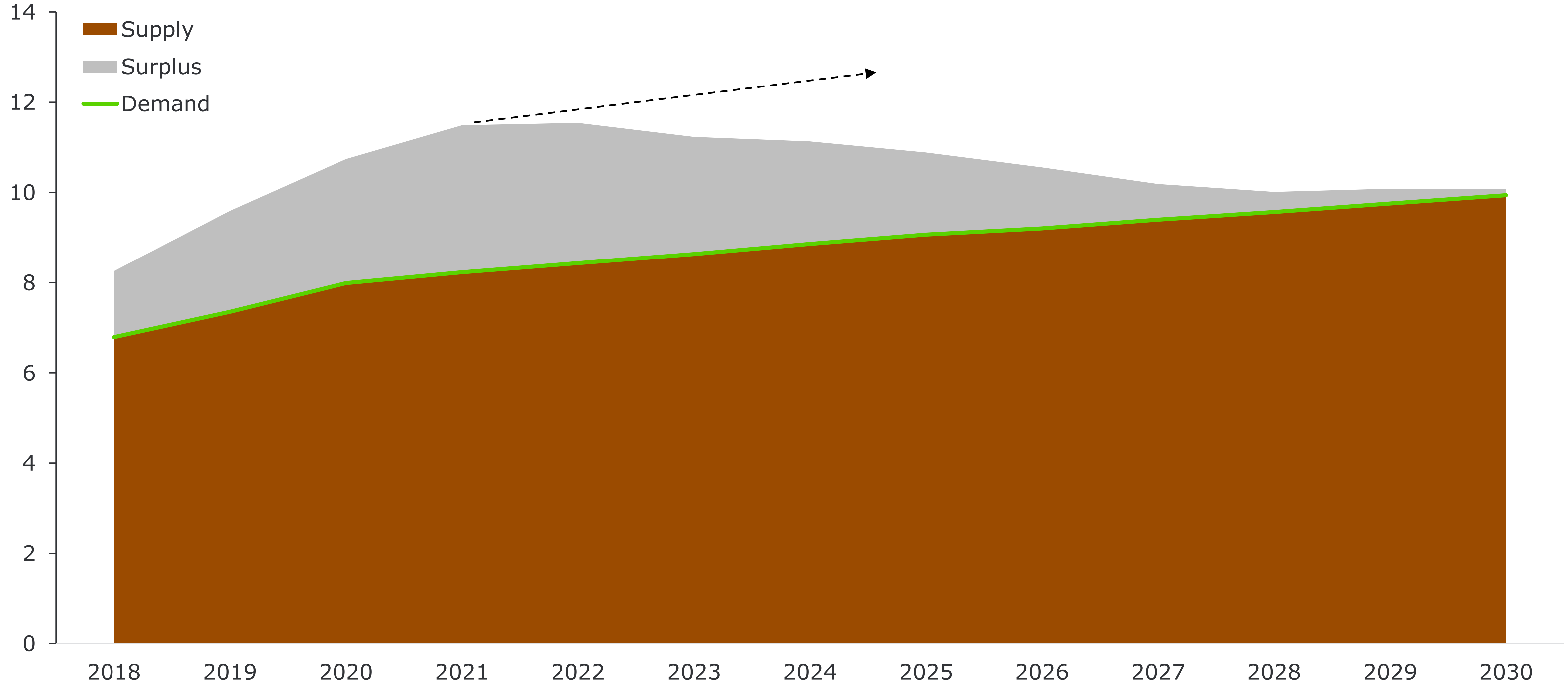
Regional gas supply-demand balance – Gas export hub

Billion cfd



Source – UCube October 2018 and Gas Market Cube Pilot

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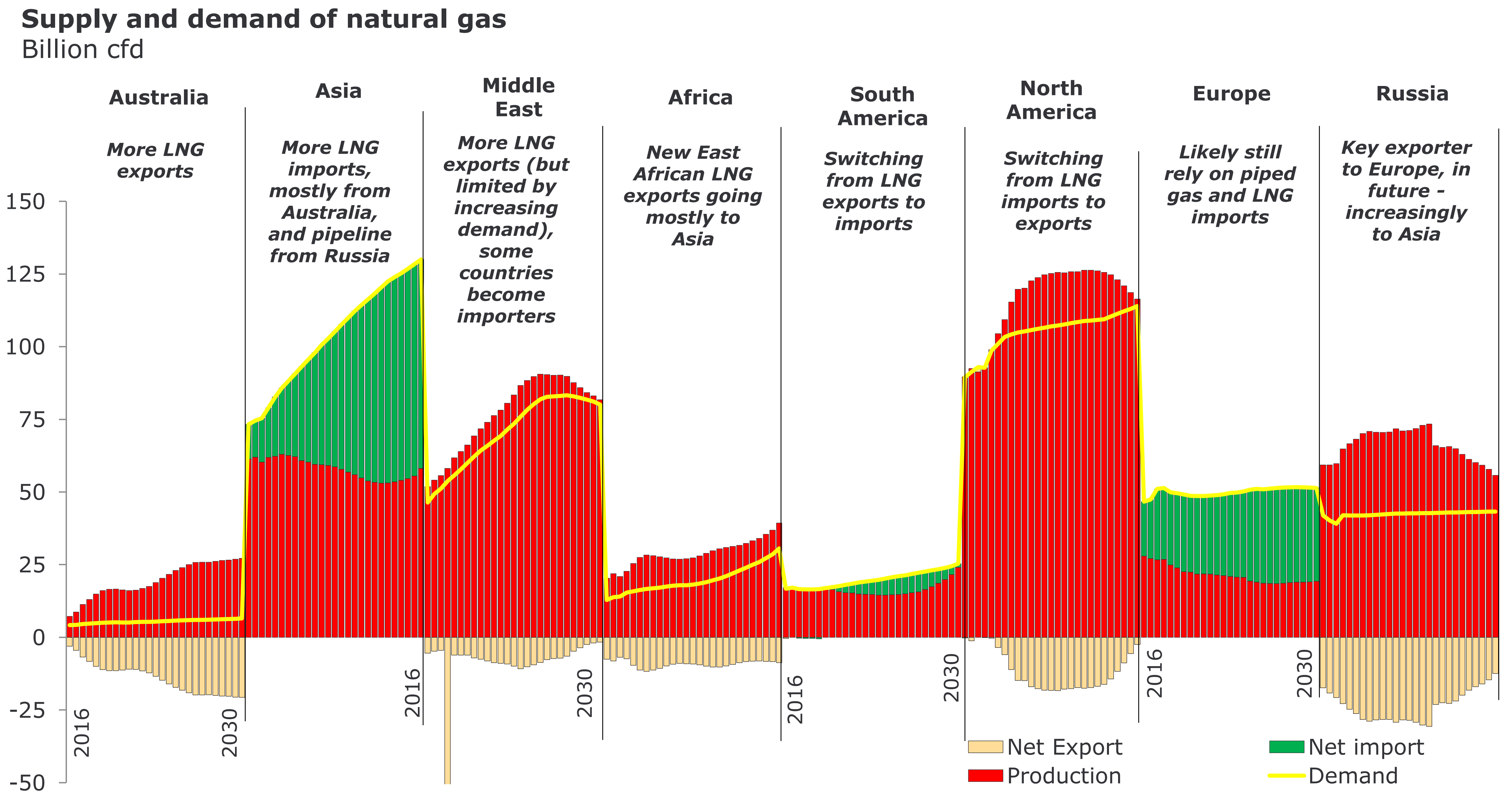
Longer distances between supply and demand of natural gas to facilitate more LNG trade



Source: Rystad Energy GasMarketsCube (Pilot), Rystad Energy research and analysis

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thank you for your attention

Office locations

Rystad Energy: Independent energy consulting and business intelligence data firm established in 2004, headquartered in Oslo with offices across the globe.

Databases: Covering energy fundamentals, upstream, oilfield services and renewable energy industries.

Analytics: Extensive library of market reports, commentaries and fact sheets.

Consulting: Leading advisor on strategy, markets and business development within the energy space globally.

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