Energy Market Transition and Energy Security in SE Europe East Med Regional Perspectives

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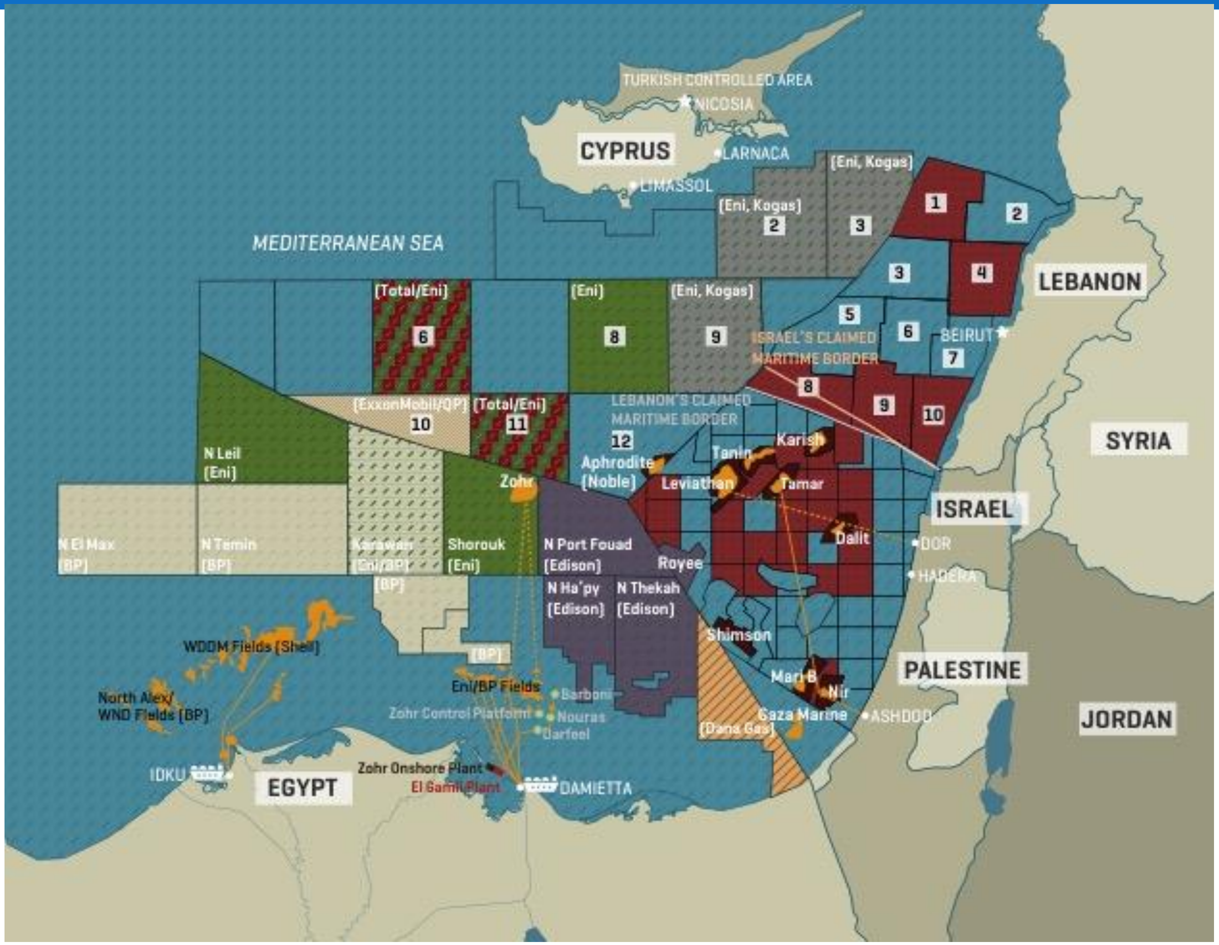
Overview

- Cyprus: It is hoped that with the Turkish elections over, Cyprob negotiations will restart
- Also drilling by ExxonMobil in block 10 is eagerly awaited
- Egypt – development of Zohr and gas market liberalisation
- Israel – deal to export gas to Egypt, but will it happen?
- Lebanon – exploration started, but EEZ disputes
- Challenging global energy markets and prices

East Med exploration blocks



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Developments in Egypt

- Egypt has just issued its last LNG import tender - 2018 last year for LNG imports
- Fast becoming self-sufficient end 2018 – gas exports early 2019
- Zohr: first gas in December, reaching 27 bcm/y plateau by 2020
- Yet-to-find gas 50tcf-150tcf. Can double production
- New licensing rounds in Med and Red Sea in 2018
- Egypt has liberalised its gas market
- Eni, Shell, Edison, BP announced plans to expand existing activities
- Aspires to become East Med's energy hub
- MoU for energy cooperation with EU

Key conclusion: Egypt has enough gas of its own for domestic consumption and exports.

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Impact on Egypt's gas sector

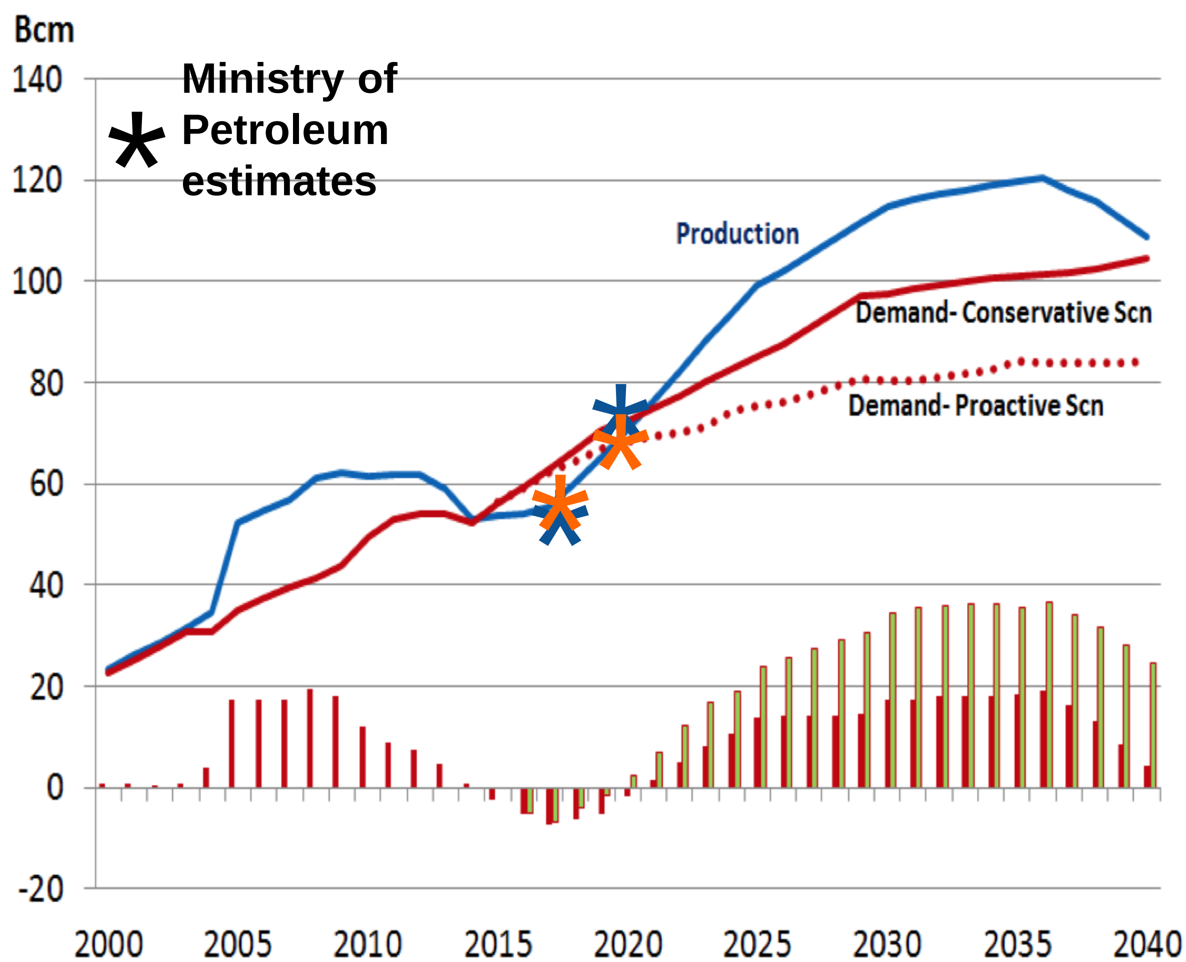
- Zohr on track to achieve 27 to 31 bcm/yr by Q1 2019
- Egypt's gas production will then reach close to 80 bcm/yr, exceeding consumption by over 10 bcm/yr
- Based on OME data, production can reach 120 bcm/yr
- Gas surplus and exports could reach 20 bcm/yr by 2025
- Will fully utilize Egypt's Idku and Damietta LNG plants with combined capacity of 17.5 bcm/yr
- Priority to resume interrupted LNG supply contracts to Europe

Egypt's Petroleum Ministry expectations of gas production & consumption (bcm)

Fiscal Year	Production	Consumption	Surplus
2016/2017	46	55	-9
2017/2018	55	61	-6
2018/2019	71	66	+5
2019/2020	81	70	+11

In line with OME data

Egypt’s gas balance



Source: OME

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Impact on Israel and Cyprus gas

- Egypt deregulation opens way for gas from Israel & Cyprus
- Private sector companies can import and distribute gas
- Israel in need to secure gas export markets
- Noble and Delek signed agreement to sell 64 bcm over 10 years to private Egyptian company Dolphinus faces serious challenges before it becomes reality – in talks to buy 37% of EMG gas pipeline
- Shell in talks to buy 10 bcm/yr over 10 years from Leviathan and Aphrodite for liquefaction at Idku and export
- But global gas prices and politics a challenge
- Success when ExxonMobil drills in block 10 in October can transform Cyprus' fortunes

Prospects in Israel

- Leviathan Phase 1A construction over 60% complete – production target end 2019
- Impact of Energean’s Tanin & Karish – undercutting Leviathan on price. Has taken FID. First gas by 2021
- News that Energean may be developing Gaza Marine
- Exports to Egypt expected to start 2020, but face challenges
- East Med gas pipeline and exports to Turkey face challenges
- First offshore licensing round – limited success – lack of export routes
- But Israel is already seeking interest for a second round

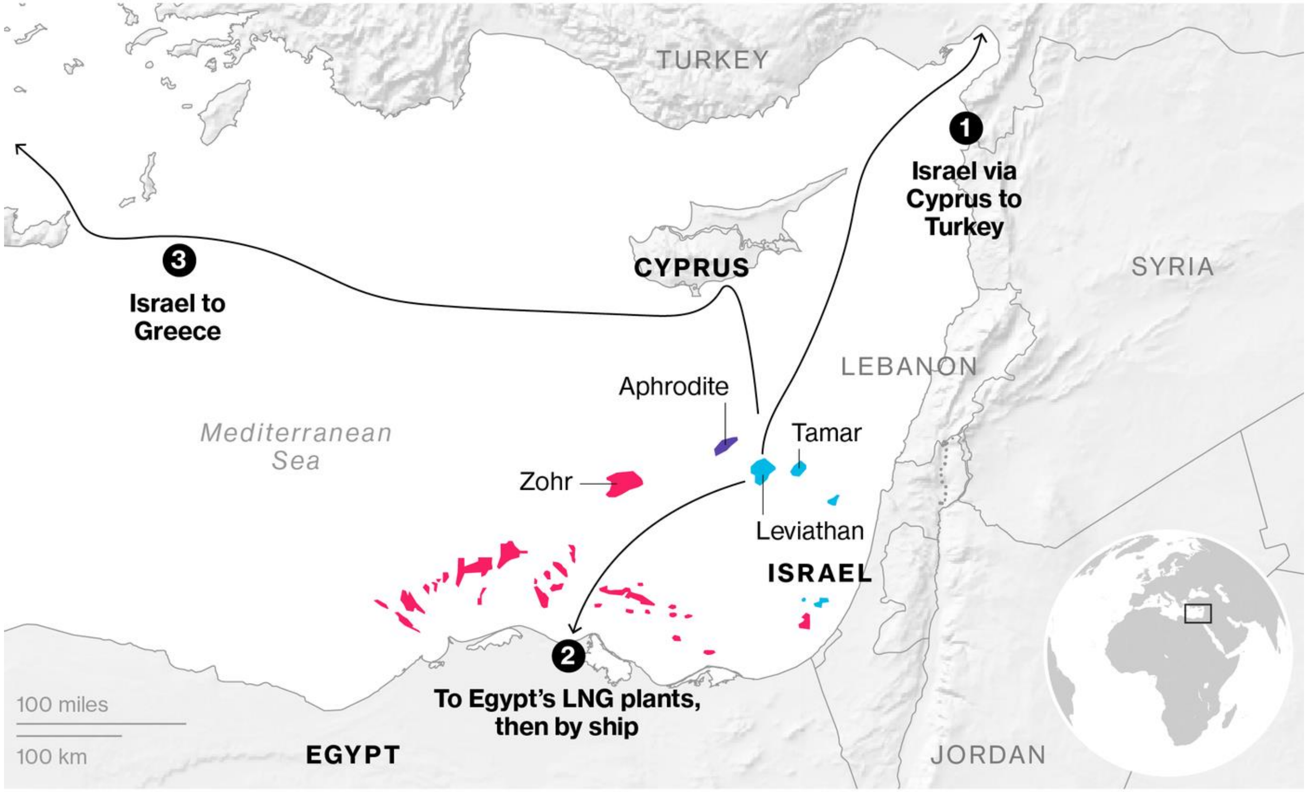
Key conclusion: Israel faces challenges securing gas export routes

Israel’s export options

Routes to Europe

Possible gas pipelines from the East Mediterranean

Cyprus field | Egypt field | Israel field | 1 Pipeline ordered most to least likely



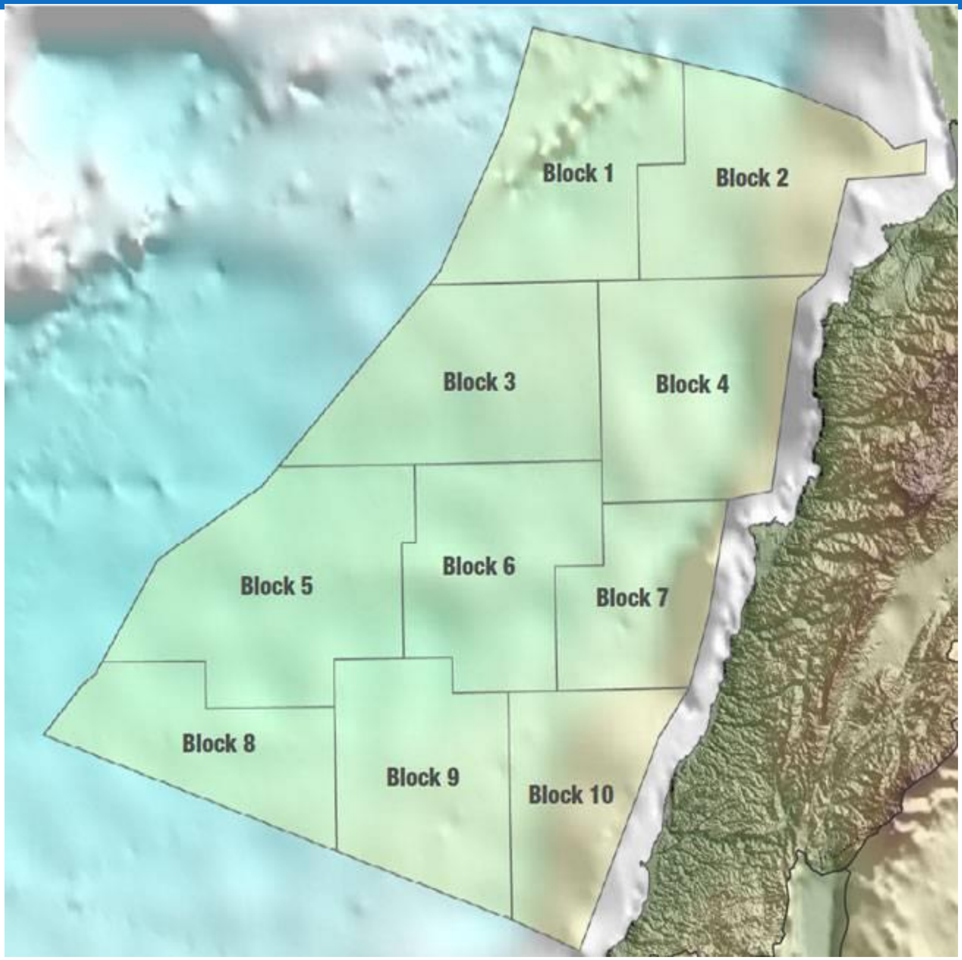
Bloomberg

Prospects in Lebanon

- Completed first offshore licensing round
- Awarded blocks 4 and 9 to Total, ENI and Novatek
- Part of block 9 in area disputed by Israel
- Total's exploration plan has been approved, effectively starting the process – first well expected to be drilled in 2019
- Lebanon preparing for a second offshore licensing round
- But Lebanon needs political stability to secure the future

Key Conclusion: It remains to be seen if Lebanon's exploration proceeds successfully

Lebanon’s offshore blocks



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Prospects in Cyprus

- **ENI successful in Feb in block 6 with Calypso – 6-8 tcf gas**
- **Turkey's intervention stopped ENI drilling in block 3 in Feb – may drill in Cyprus' EEZ with its new drilling vessel Fatih**
- **Turkey threatens to stop all activity in Cyprus EEZ**
- **Cyprus can only confront this through diplomatic and legal means – way out may be through restart of Cyprob negotiations**
- **ENI said in April it is evaluating data so far and will be considering resumption of drilling in 2019**
- **Total interested in farming-in ENI's block 8, possibly 2, 3 and 9**
- **ExxonMobil to drill in block 10 in October – good prospects**
- **Gas sales from Aphrodite to Egypt being discussed**
- ***Key conclusion: Cyprus still has reasonable prospects for gas discoveries, but sorting out Turkish threat is key***

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Cyprus to import LNG

- Cyprus about to launch tender to import LNG…yet again
- Is this an admission that gas production and exports are still a distant prospect?
- Infrastructure includes the acquisition of an FSRU, jetty, berthing and mooring equipment, and pipelines
- Has secured grant of €101 million from EU
- Two tenders: FSRU/infrastructure – Supply of LNG by 2020
- Issue of tenders scheduled for Q2 2018, making them imminent
- Small gas quantities < 1 bcm/yr - may increase electricity costs
- Should give preference to solar

Global markets and prices

- East Med: a long way from discoveries to exploitation and sales
- Message from IP Week and BP's Energy Statistical Review: abundance of global energy supply and low oil and gas prices
- Global natural gas demand expected to increase provided it remains competitive
- The world is awash with oil, gas and LNG and with US shale on the resurgence, and renewables penetration unstoppable and coal holding its own, competition to secure markets will be fierce

Impact of oil and gas on East Med regional markets

- The East Med and Middle East regions are geopolitically volatile. Developing and exporting oil and gas is a challenge, especially in the prevailing low demand - low price environment globally
- Disputes are often the result of competing oil and gas interests and unresolved border and EEZ disputes, particularly in the East Med. And more often than not diplomacy is sidelined by aggressive action
- Turkey’s warship intervention in Cyprus’ EEZ has now altered the balance and has increased the risks in the region
- With the US re-imposing sanctions on Iran it may complicate this picture even further

Impact of oil and gas on East Med regional markets

- Egypt is successful in exploiting its hydrocarbon resources and liberalising its energy markets
- Solution of the Cyprob could go a long way in improving regional geopolitics in East Med. But is this going to happen? With Turkish elections over negotiations expected to resume
- East Med oil and gas plans need to be tempered with a dose of reality. Fierce competition to secure markets
- Low gas prices are posing their own challenges on aspirations to export East Med gas.
- The key conclusion is that the East Med still has reasonable prospects for more gas discoveries, but securing export markets will be key.