

*Challenges to East Med gas
Securing export markets*

FLAME

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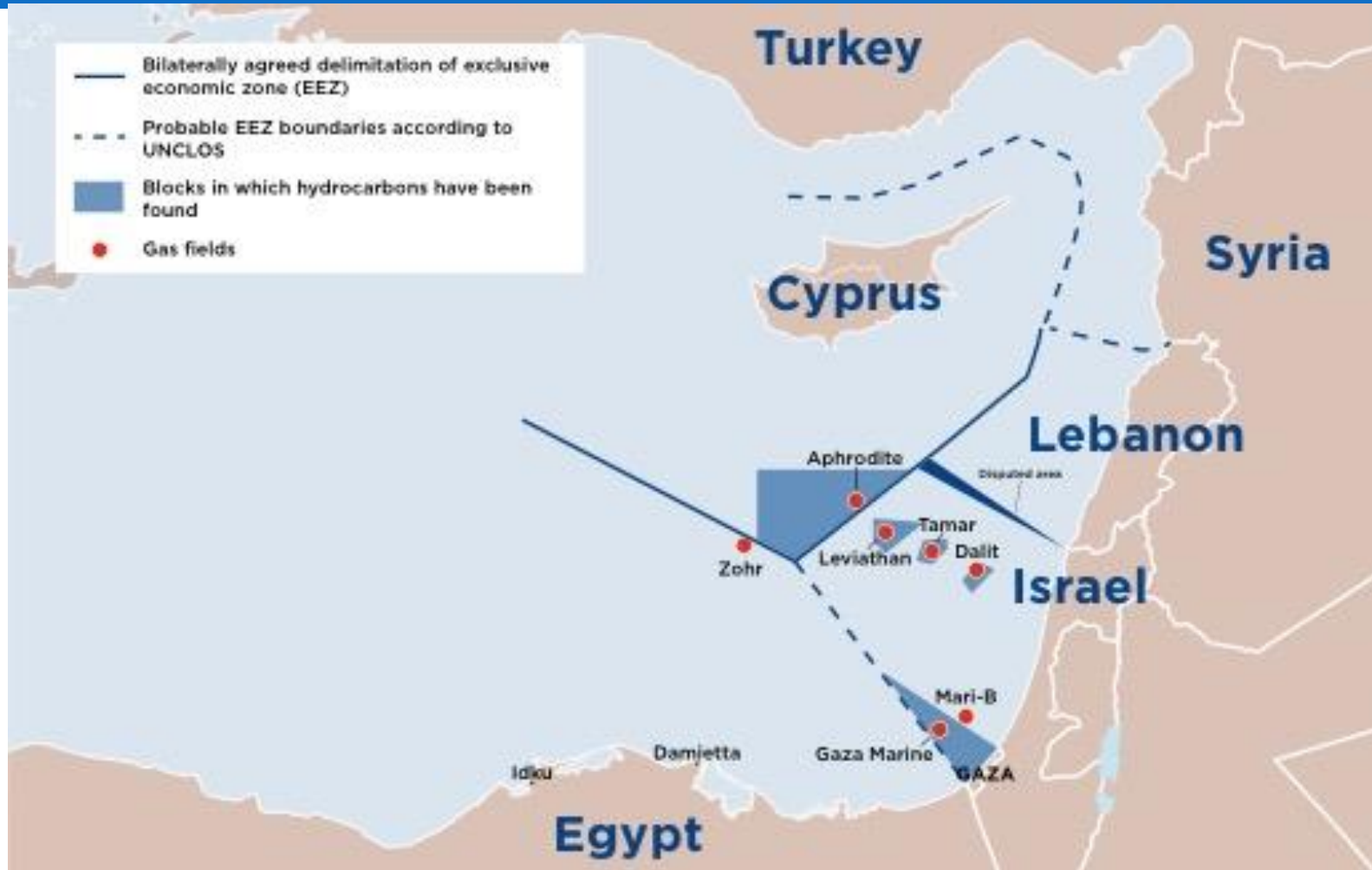
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Overview

- **Global energy markets undergoing structural change**
- **Paris Climate Agreement ratified**
- **Trump's election to the US presidency affecting markets**
- **Gas glut in global markets – low gas prices**
- **FID has been declared for Phase 1A of Leviathan**
- **Cyprus' 3rd licensing round concluded successfully**
- **Cyprus and Israel need to find international buyers for their gas - export options becoming a challenge**
- **Israel and Lebanon kicked-off their first licensing rounds**
- **Egypt & Turkey: covered separately**

The East Med gas finds



Regional markets: Egypt

- Expects to become self-sufficient 2019 – start gas exports 2020
- New major natural gas discovery onshore in the Nile Delta with 15-30 tcf gas to be announced soon. More gas in Zohr
- Gas demand currently 52 bcm/y – may reach 63 bcm/y by 2021
- Egypt imports 12 bcm/y. EGAS: 2018 last year for imports
- Zohr: first gas in December at 2 bcm/y, ramping-up to 12 bcm/y by March 2018, reaching plateau of 27 bcm/y by 2019
- 12 new projects to bring additional 55 to 65 bcm/y gas by 2019
- EGAS expects resumption of gas exports in 2020
- ***Key conclusion: Egypt has enough gas of its own for domestic consumption and exports.***

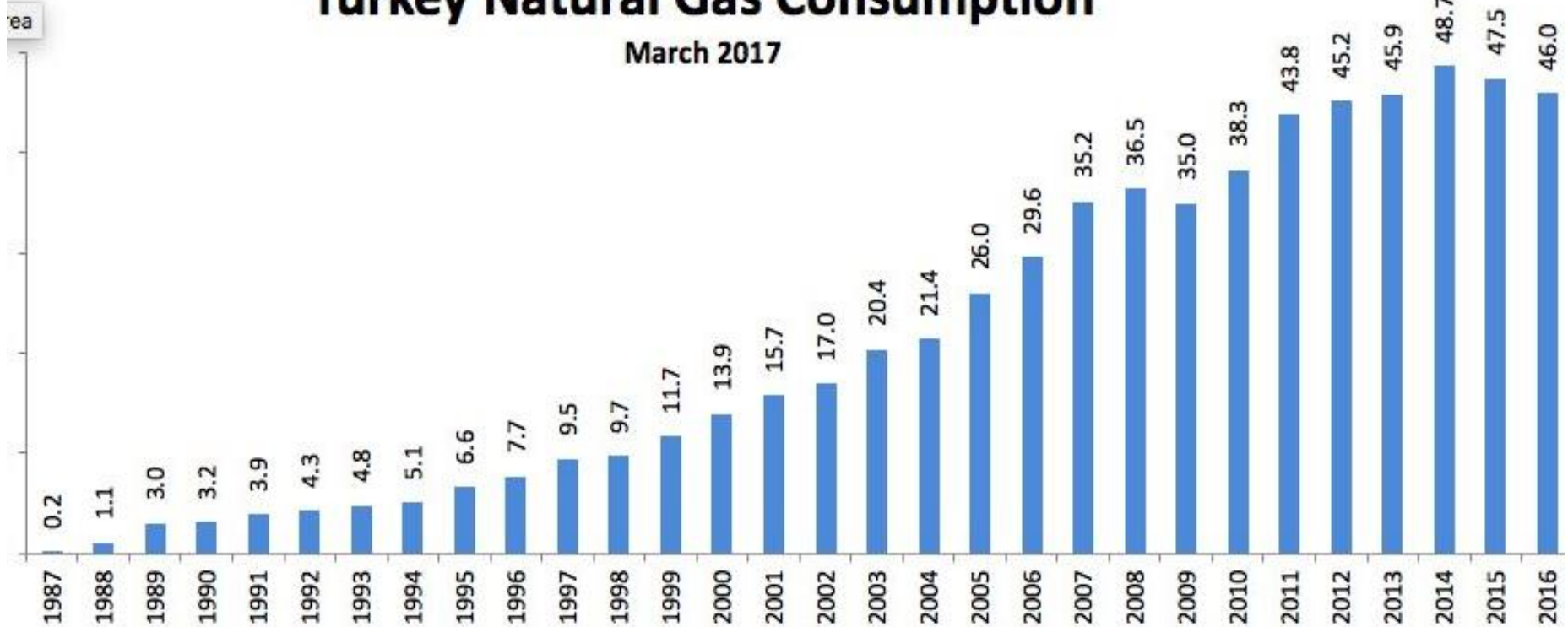
Regional markets: Turkey

- Energy security: Turkey changed energy strategy and mix
- Increased use of coal/lignite, hydro, renewables, nuclear, LNG
- Reduced dependence on gas – 2017 demand down to 46 bcm
- TurkStream back on track with two strings and 31.5b bcm/y
- TANAP to bring another 6 bcm/y by 2018
- Akkuyu nuclear power plant on stream by 2023
- Increased LNG imports and gas storage capacity
- Average 2016 price of Russian/Azerbaijan gas \$5/mmBTU
- ***Key conclusion: East Med gas has to compete and beat these prices and may no longer be an urgent priority***

Turkey's natural gas consumption

Turkey Natural Gas Consumption

March 2017



Okan Yard

www.enerjiuzmani.blogspot.com, @OkanYard

BP's Energy Outlook to 2035

Global energy scene is covered well in BP's Energy Outlook 2035

BP's key conclusion is that a major and permanent energy transition is under way

Technological improvements and environmental concerns changing the primary energy mix

Gas grows faster than oil and coal – with 50% as LNG

Half the growth in energy consumption will be from non-fossil fuels

Key conclusion: A major energy transition is under way

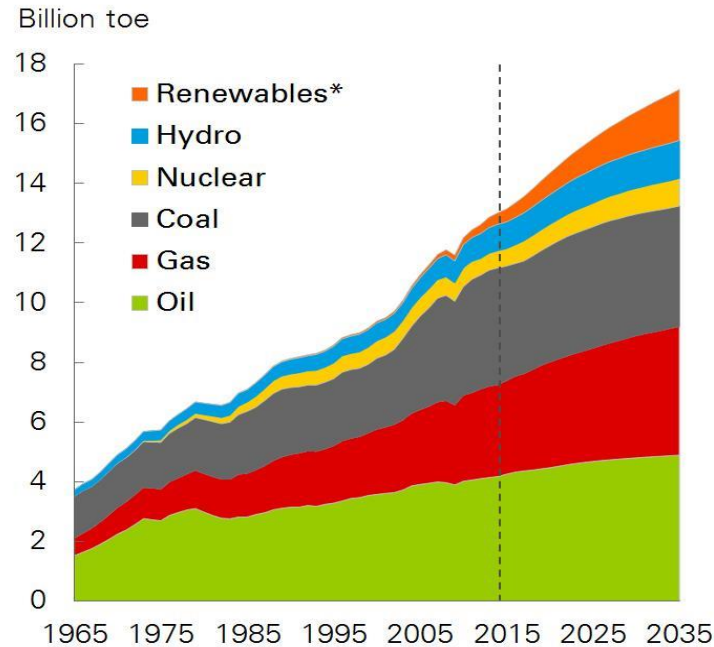
Global fuel mix transition

Base case: Primary energy

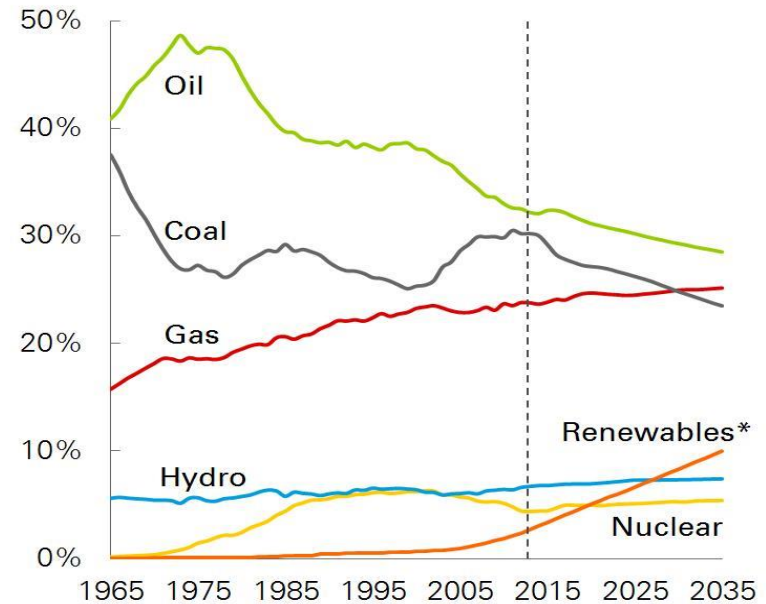


The gradual transition in the fuel mix continues...

Primary energy consumption by fuel



Shares of primary energy



*Renewables includes wind, solar, geothermal, biomass, and biofuels

Abundance of oil & gas resources

- Technically recoverable oil resources estimated at 2.6 trillion bls
- Slow growth of oil demand between now and 2050
- BP estimates only 1.25 trillion bls oil will be consumed by 2050
- Similarly, IEA says that total remaining technically recoverable natural gas resources amount to at least 781 trillion m³
- Cumulative gas demand to 2050 estimated to be 155 trillion m³
- Only less than half of the known oil and gas resources will be consumed by 2050
- ***Outcome: The world is facing a long-term oil & gas glut***

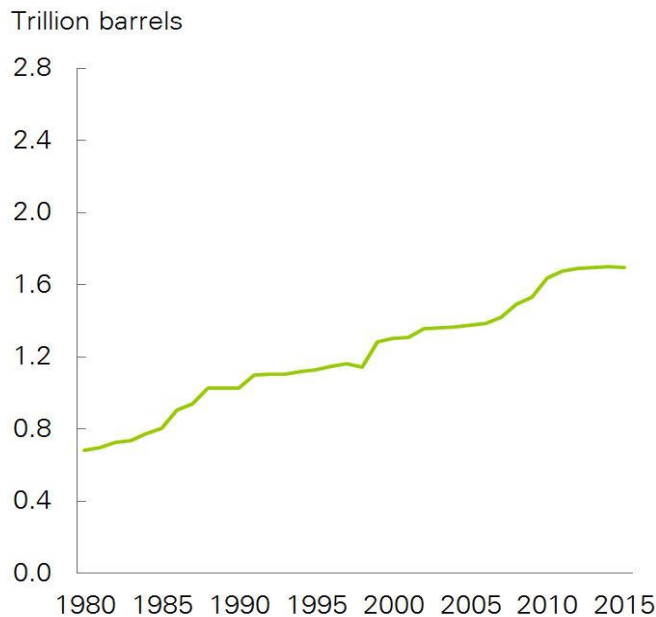
Abundance of hydrocarbon resources

Key issues: Abundant oil resources

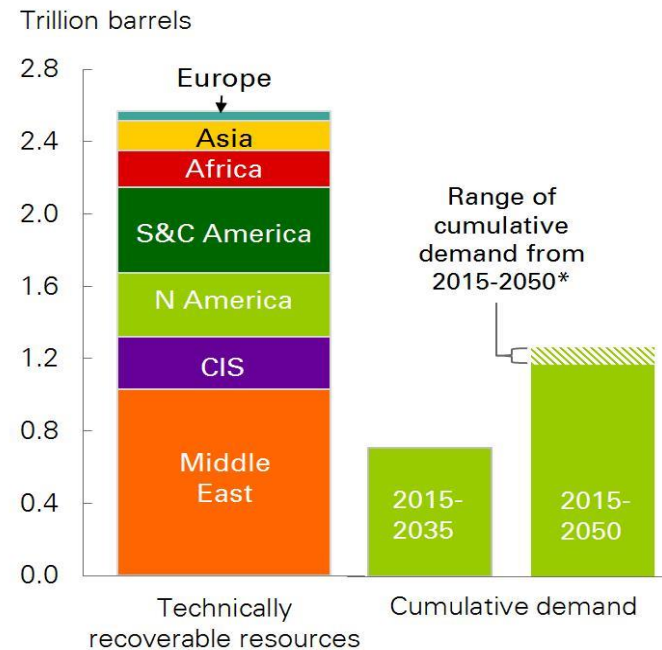
There is an abundance of oil resources...



Global proved oil reserves



Estimates of technically recoverable resources and cumulative oil demand



*Based on range of outcomes shown on page 88

Implications on global gas prices

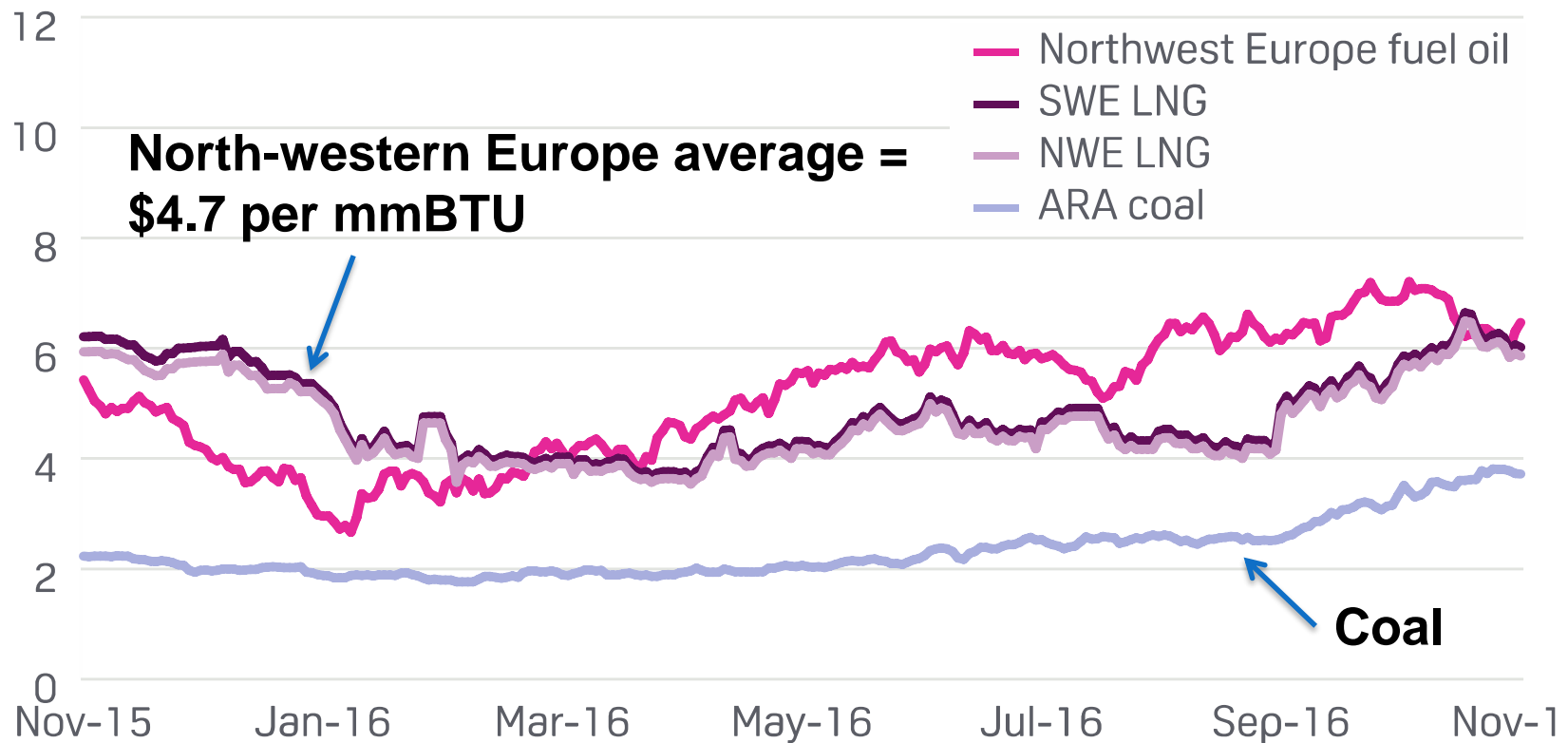
- Fast-changing global energy landscape
- Not all discovered oil&gas resources will be consumed by 2050
- Will lead to strong competition between producers to capture more limited markets
- Mostly less risky and cheaper resources will be able to be developed and compete, mainly in Middle East, US and Russia
- Low-cost producers will use their competitive advantage to increase their share relative to higher-cost producers
- Costly resources run the risk of remaining stranded
- ***Outcome: Prices are very likely to remain low for the longer term***

Gas in Europe

- Overall gas demand growth in Europe expected to remain low – according to BP it will be 0.5% per year to 2035, on average
- Key reasons are cheap coal and subsidized renewables
- But with depletion of indigenous gas, imports will grow
- Russian gas supplies to EU increasing due to low price
- US LNG trying to get in but with limited success – due to prices
- No prospect of low prices being reversed anytime soon
- ***Outcome: Costly to develop gas-fields dependent on exports to Europe may not secure such exports and may remain stranded***

European gas and coal prices

COMPETITIVE FUELS EUROPE (\$/MMBtu)



Source: Platts

The Gazprom factor

- **Gazprom settled anti-trust case with EU by adapting its contracts and approach to be more compatible with EU regulations**
- **Nord Stream 2 and Turk Stream 1&2 going ahead**
- **Gazprom has 150-200 bcm spare capacity – can sell profitably at \$3.5/mmBTU.**
- **Russia to be EU's largest gas supplier for at least two decades**
- ***Observation: Nobody can sell gas to Europe at these prices. Gazprom has the capacity and is prepared to defend its gas markets in Europe and Turkey***

Implications for East Med gas

- **Glut of resources will keep gas prices low for the longer term**
- **East Med gas must be developed at competitive prices and secure export markets within the prevailing low price environment – if it is to succeed**
- **Whichever pipeline export option is considered, prices in Europe must rise to over \$8/mmBTU to make exports from the Israel and Cyprus to Europe commercially viable – not very likely**
- **This is the main reason Leviathan and Aphrodite have not so far secured any export markets**

Observation: I find it amazing that when East Med gas exports are being discussed, the price factor is invariably ignored!

Concluding remarks

- **The East Med region is geopolitically volatile. Developing and exporting its gas is a challenge, especially in the prevailing low demand - low price environment in Europe**
- **In the longer term, and especially if Total is successful with drilling in Cyprus' block 11 this summer, FLNG may become a serious option for gas exports to Europe and the Asian markets.**
- **East Med plans need to be tempered with a dose of reality. Fierce competition to secure markets. Prices will stay low.**
- **Gas discoveries in the East Med are deep-water and expensive to develop. Collaboration will be key to keeping development costs down. Only integrated projects may have a chance to succeed. And even then it will be challenging.**