4TH CYPRUS ENERGY SYMPOSIUM 2015

Energy: Time for Decisions

Session 2 – Natural Gas

Eastern Mediterranean: New Discoveries, Regional Prospects and Recent Updates

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December 8, 2015 – Nicosia, Cyprus

CURRENT STATE OF AFFAIRS – MAIN FACTS & TRENDS

- **South East Mediterranean – Facts**
  - Promising regional geological background
  - Big hydrocarbon discoveries within the region
  - Market with large potential for oil and gas trading
  - Deep & Ultra Deep Operations
  - New investments and recent major developments recorded

- **East Mediterranean – Regional Activities**
  - ENI activities in the energy sector of Egypt
  - Gas production in Israel – Tamar supply and exports
  - Memorandum of Understanding for cooperation in the field of oil and gas between Cyprus and Egypt
  - Cyprus, Greece and Israel cooperation for energy (gas + electricity) exports

GEOPOLITICS OF OIL & NATURAL GAS

- **Oil and Natural Gas have completely different value chains.**
  - Oil can be sent directly to the downstream markets through a wide range of existing oil refineries globally.
  - Natural gas needs to undergo treatment and then exported for distribution to markets via compression or liquefaction/regasification.

- **Oil trades globally as a commodity and being a liquid, it has a high energy density.**

- **Natural Gas has a low energy density due to its nature and trades in 3 major regions (with different price levels):**
  - North America (U.S. and Canada) regional price mark – 2.5-4 $/MMBTU
  - Europe (mostly Western) regional price mark – 6-8 $/MMBTU
  - Asia (Korea, China and Japan) regional price mark – 11 $/MMBTU (*used to be around 15$/MMBTU*)

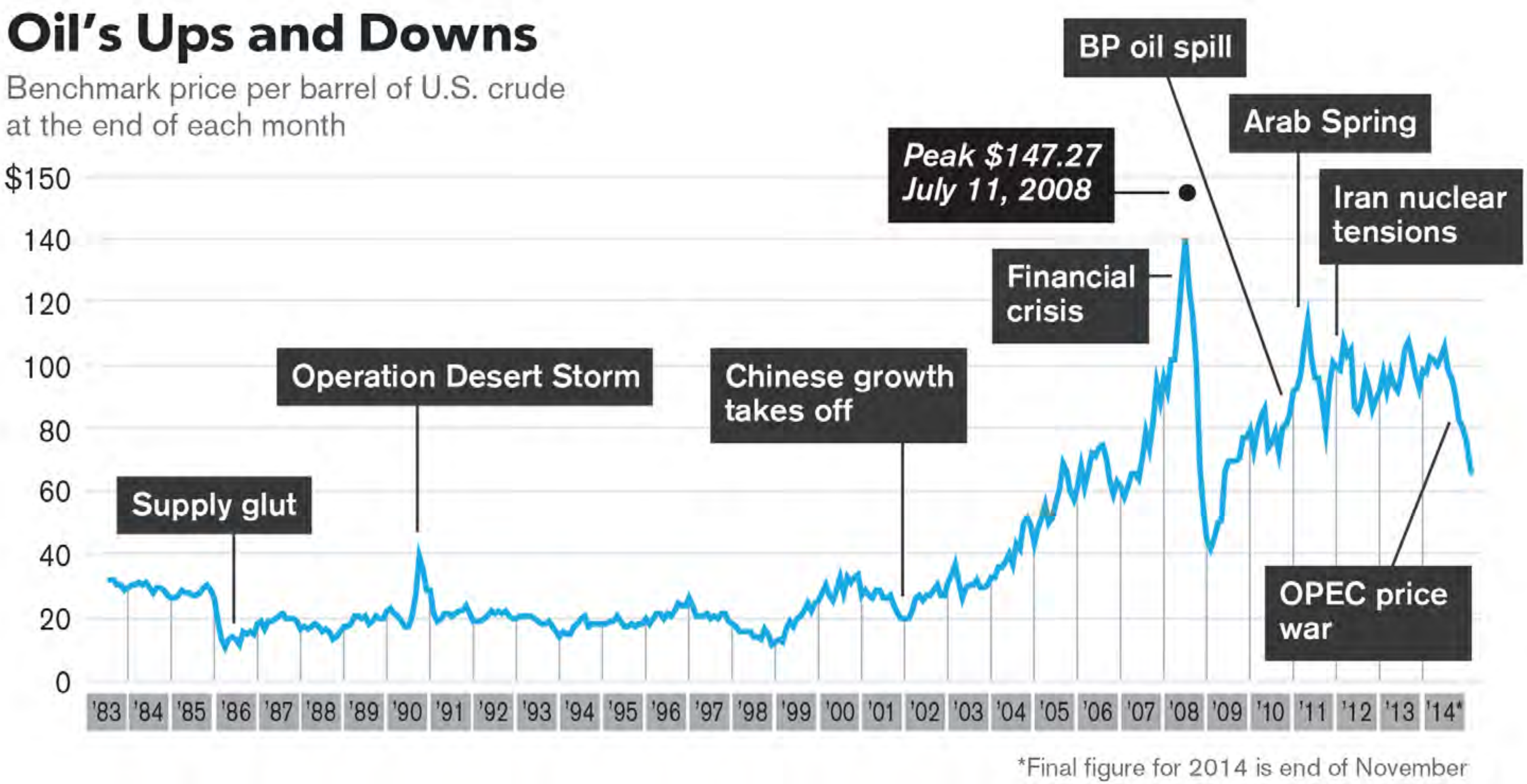
GEOPOLITICS OF OIL & NATURAL GAS

- Natural Gas is important since it is a cleaner and more efficient fuel for energy, while it has added value potential through LNG, petrochemicals and GTL (Gas-To-Liquids).

- Oil has great geopolitical value (*even as oil prices are slumping, oil still remains the primary consumption fuel in most countries of the world and has a great share in total primary production of energy*).

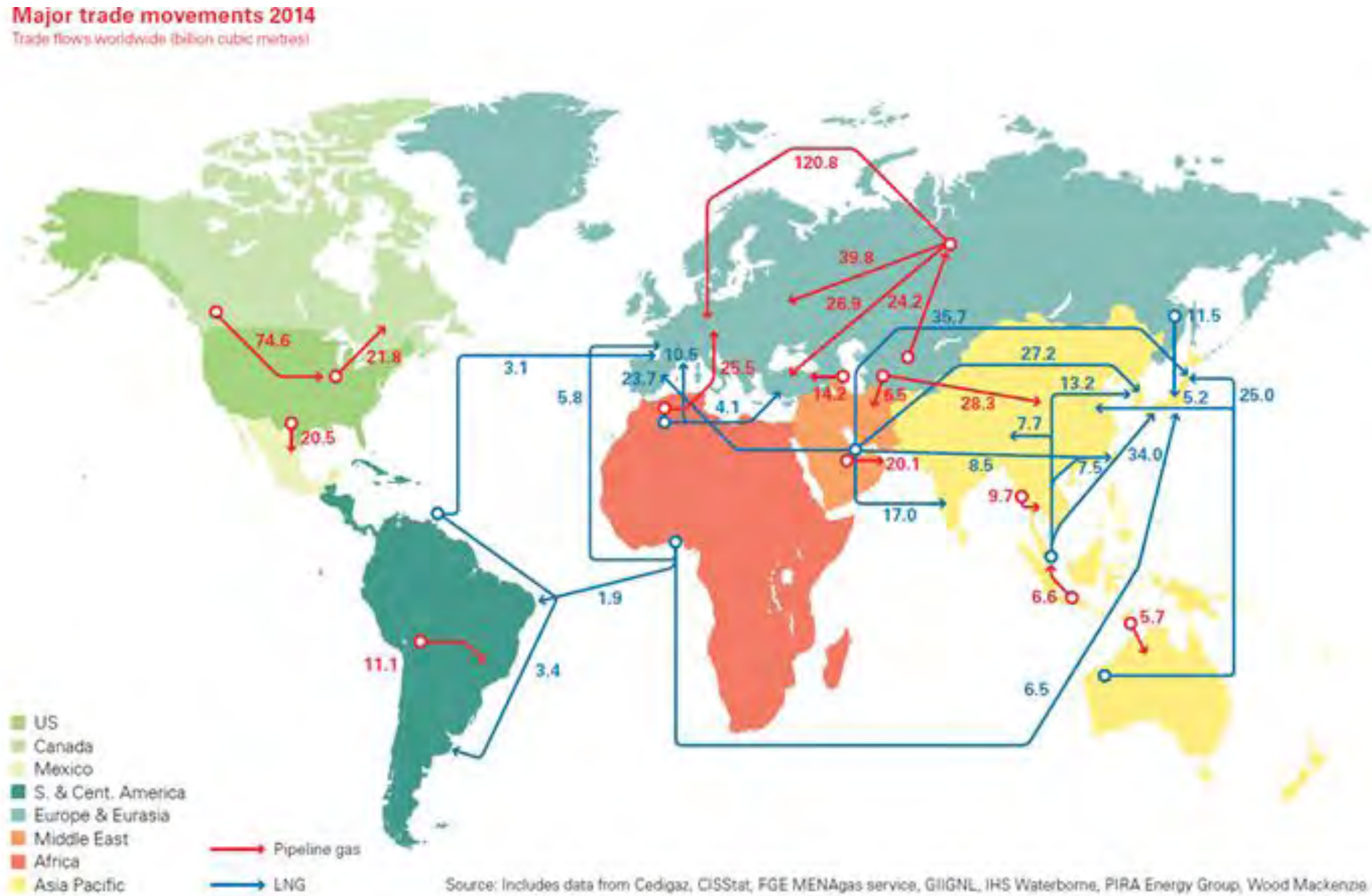
- Oil prices are mostly associated with financial and war crises, and usually affect all global energy products prices.

MAJOR OIL PRICE TRENDS



Source: Bloomberg

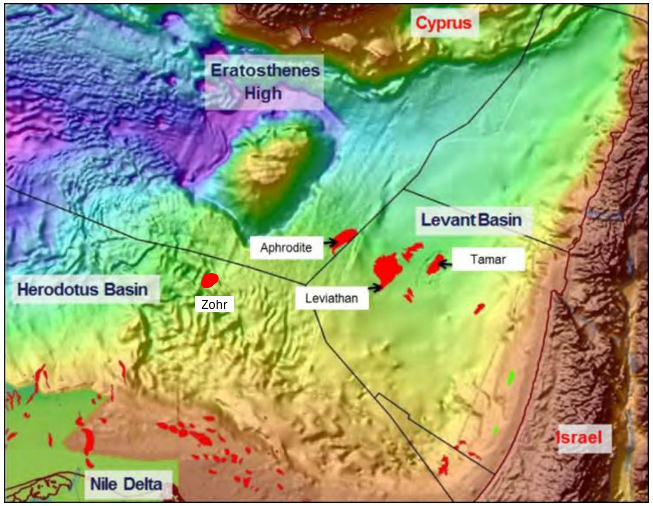
MAJOR TRADE MOVEMENTS – LNG & PIPELINE GAS



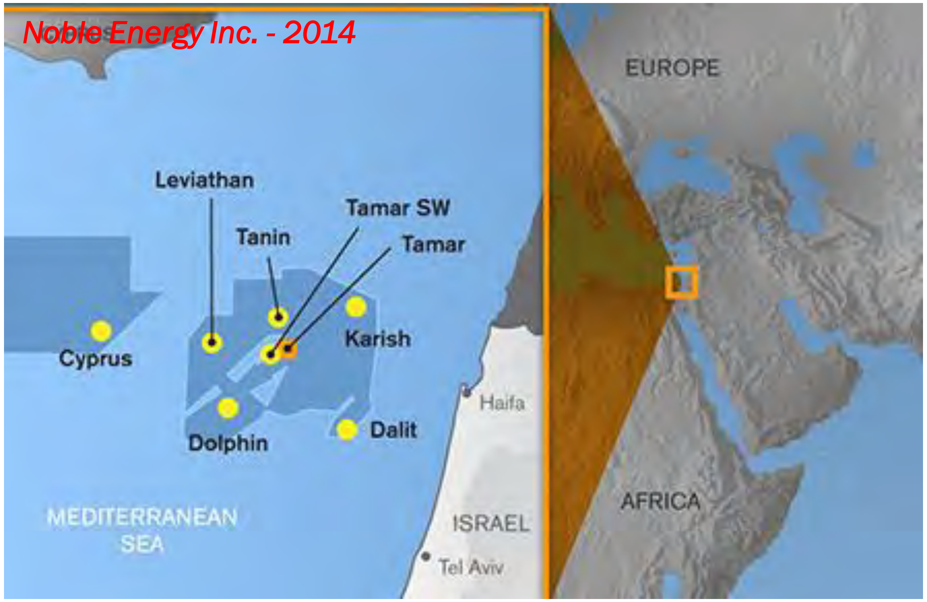
Source: BP Statistical Review of World Energy 2015

EAST MED DISCOVERIES TO DATE

- **Recent Major Discoveries (*East Mediterranean*)**
  - Producing
    - Tamar (NBL/DELEK – offshore Israel): 10 Tcf of natural gas*
  - Pending Development for Production
    - Leviathan (NBL/DELEK – offshore Israel): 22 Tcf of natural gas*
    - Aphrodite (NBL/DELEK – offshore Cyprus): 5 Tcf of natural gas*
  - Pending Appraisal
    - Zohr gas discovery (Eni – offshore Egypt): 30 Tcf of natural gas**



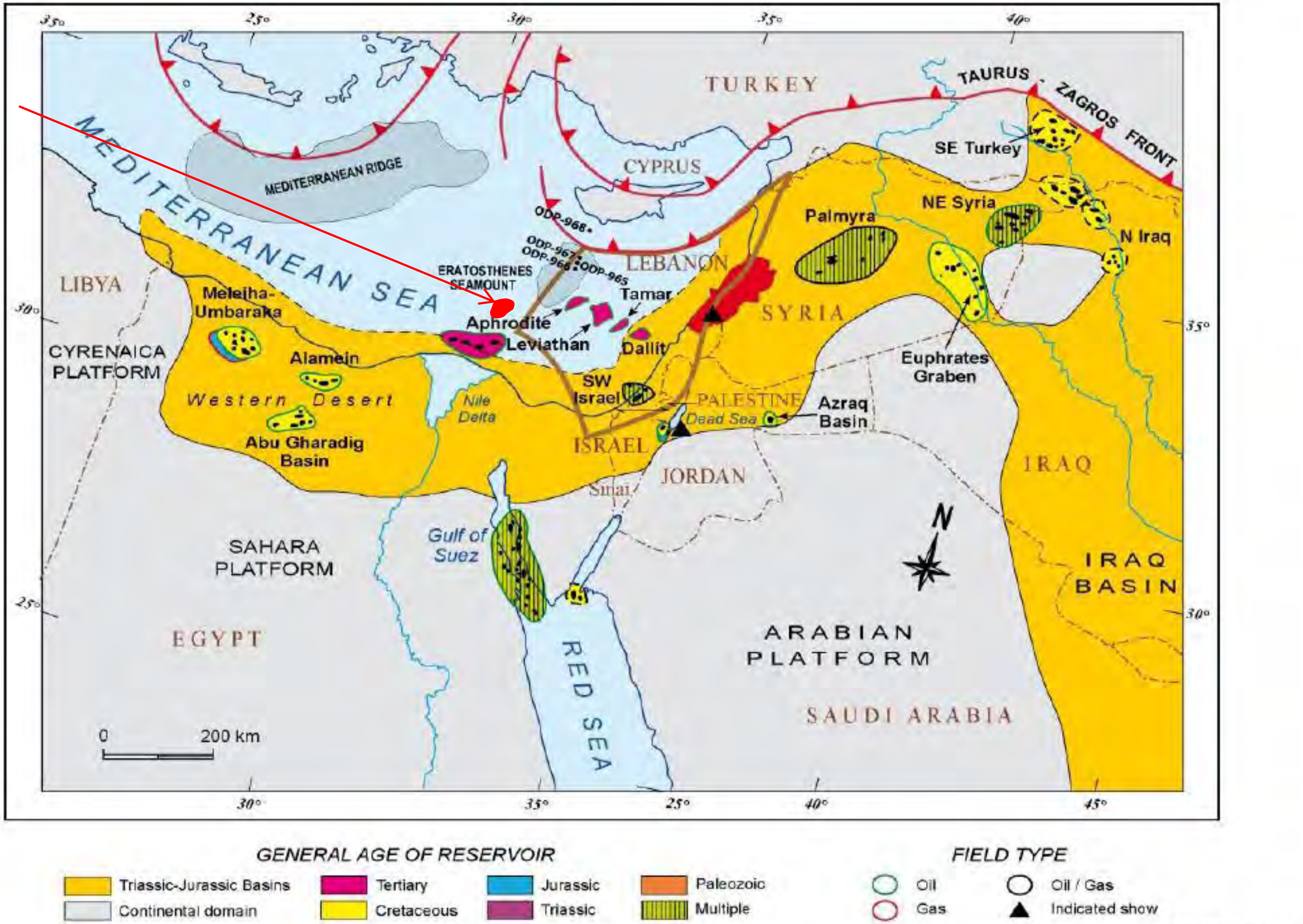
- **Other Discoveries (*offshore Israel*)**
  - Pending Development for Production
    - Dalit: 0.5 Tcf
    - Karish: 1.8 Tcf
    - Tanin: 1.2 Tcf
    - Shimson: 2.3 Tcf
    - Dolphin: 0.55 Tcf
  - Depleted
    - Noa and Mari-B



** Tcf – trillion cubic feet of natural gas (gross mean resources)*
*** lean gas in place*

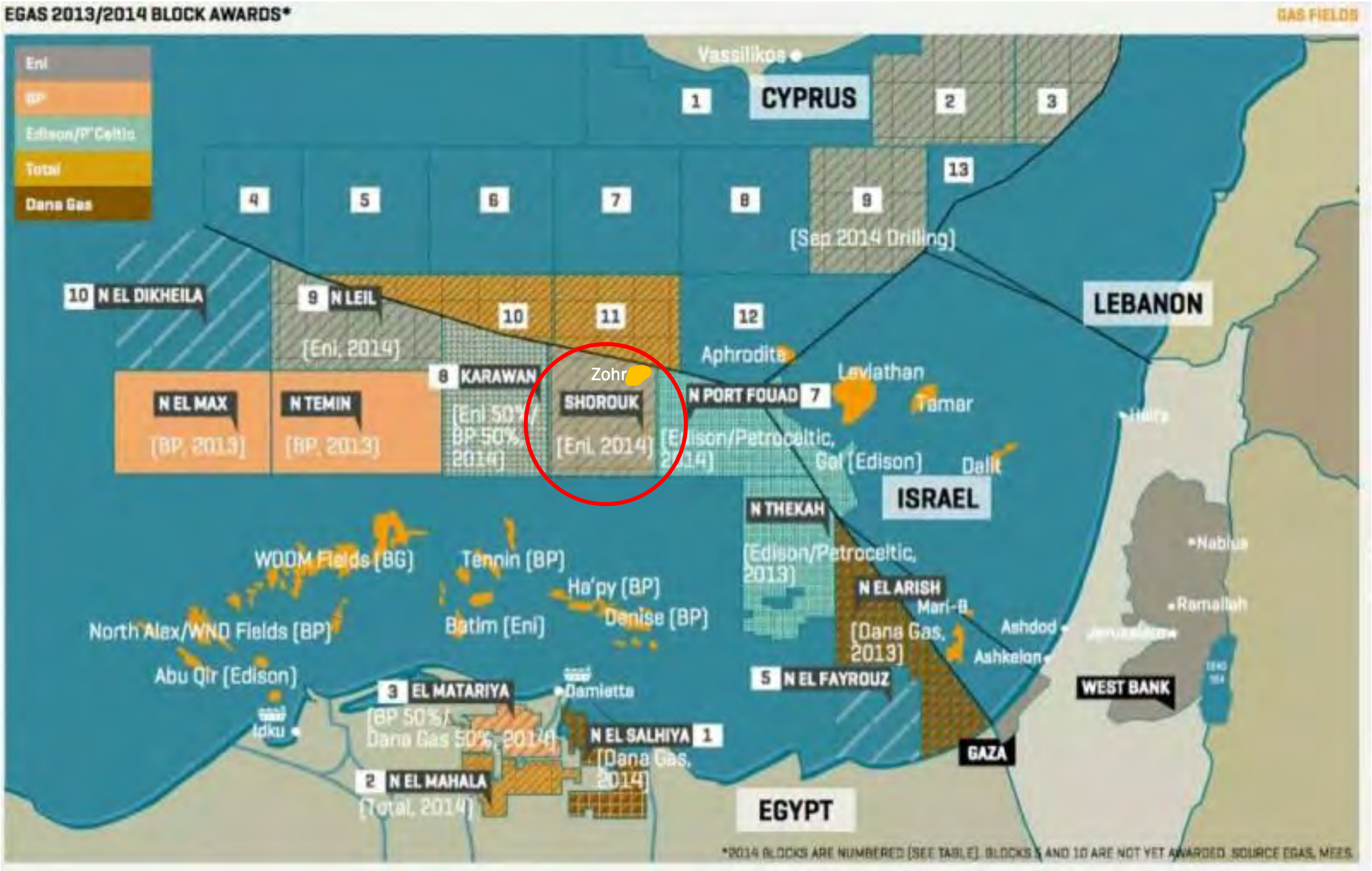
REGIONAL GEOLOGY – LEVANT BASIN DISCOVERIES

Zohr gas discovery (indicative location)

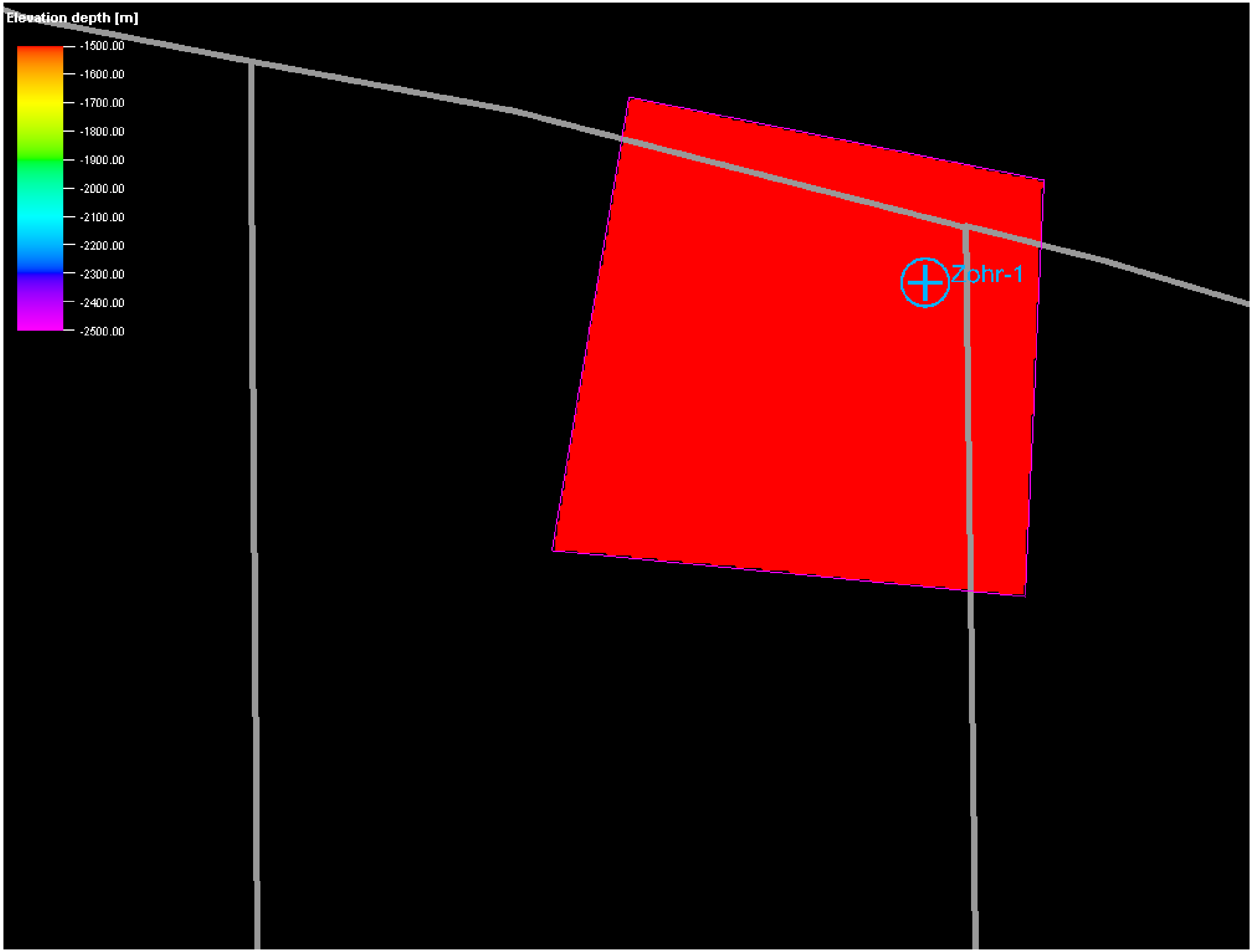


Nader (2014)

SHOROUK BLOCK (OFFSHORE EGYPT) + ZOHR



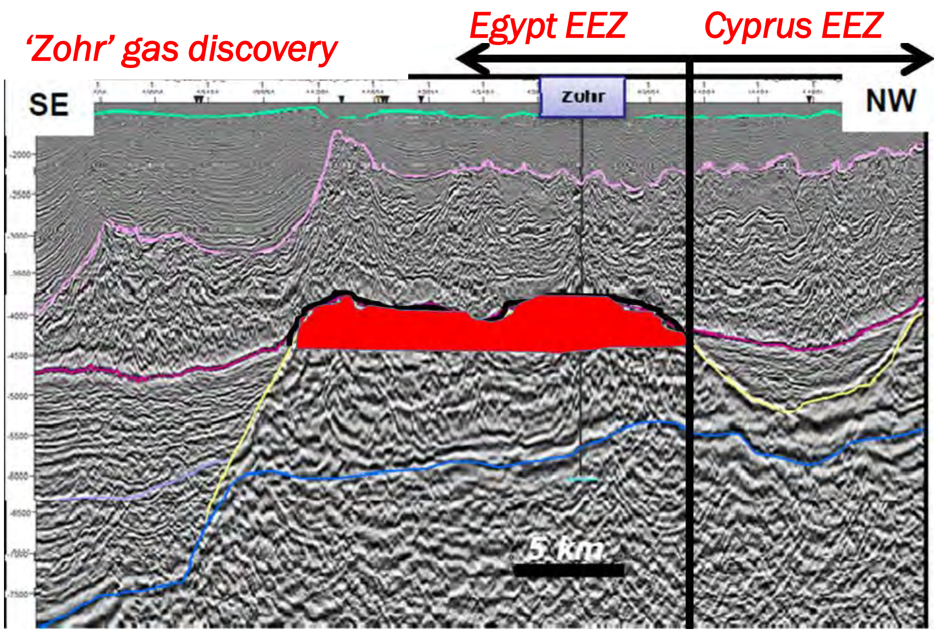
SHOROUK BLOCK (OFFSHORE EGYPT) + ZOHR



3D seismic exploration outline + exploration drilling location

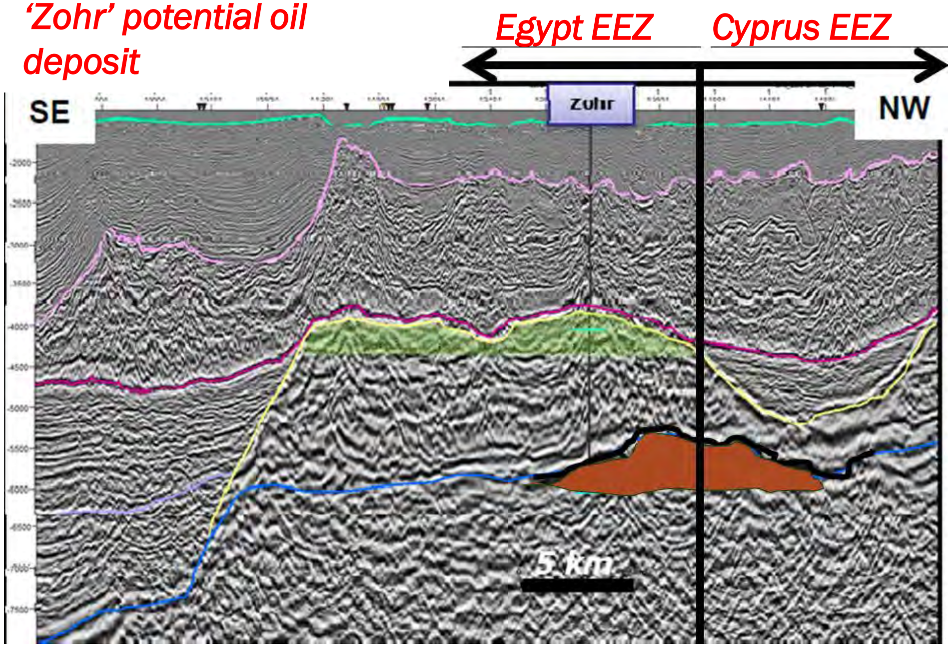
ZOHR & BLOCK 11 – GEOLOGICAL STRUCTURE

'Zohr' gas discovery



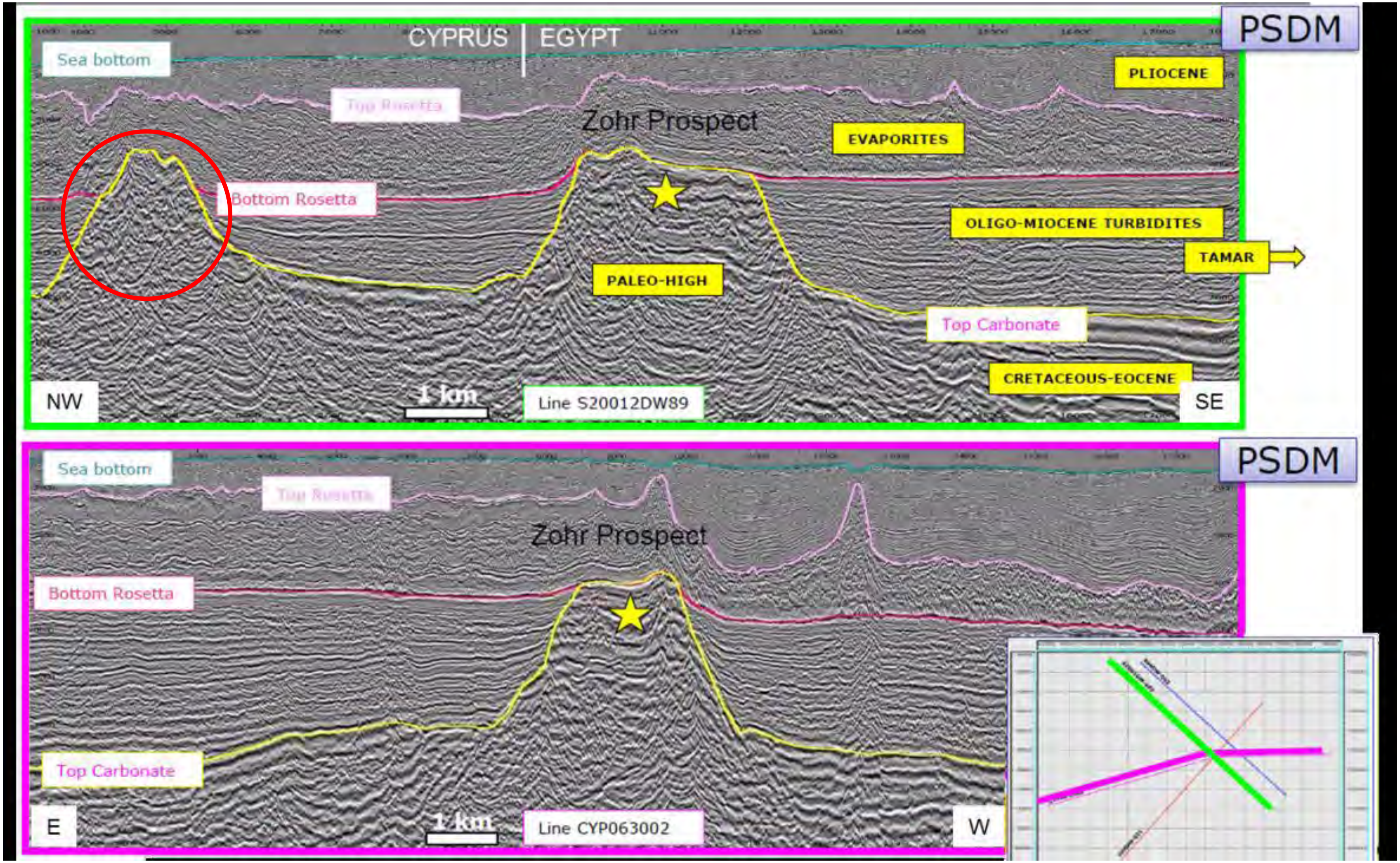
Map by ENI & Dr. Elias Konofagos

'Zohr' potential oil deposit



Map by ENI & Dr. Elias Konofagos

ZOHR & BLOCK 11 – GEOLOGICAL STRUCTURE



Zohr & Similar reef in Cyprus Block 11

CYPRUS PAST UPDATES

- **Eni has been awarded with a 2-year extension of its exploration licenses for Blocks 2, 3 & 9.**
  - The company currently recalibrates its regional geological model based on the well data acquired in Block 9.

- **Noble Energy declared commerciality of the 'Aphrodite' gas field in Block 12 and submitted a proposal for the Development & Production Plan regarding its exploitation.**
  - The relevant technical feasibility study examining 3 options of export subsea pipelines from the Aphrodite field to Egypt (Damietta, Idku and Port Said) was recently completed.
  - Talks between Cyprus and Egypt regarding the necessary agreements for supply of natural gas to Egypt are underway.
  - Noble Energy and the Government of Cyprus are currently negotiating the Development & Production Plan.

CYPRUS MORE RECENT UPDATES

- TOTAL negotiated with the Government reaching to a renewal of its license for Block 11 (*current license expires in February 2016*).

- BG acquired a 35% holding equity in Block 12 offshore Cyprus (*subject to the official approval of the Council of Ministers in Cyprus*). Noble Energy to remain as the operator of Block 12.

- Government plans for a potential 3rd Licensing Round Offshore Cyprus in the near future.
  - This is to depend on the results of the reassessment of Cyprus' EEZ geological potential – a study undertaken by Beicip-Franlab.
  - Reprocessing of the existing 2D seismic data could also be undertaken, in order to assist in the new licensing round.

CYPRUS GAS EXPORT PROSPECTS

- Potential for exports through Egypt (*assuming that the domestic market in Egypt will be satisfied by ENI's Zohr gas discovery*).

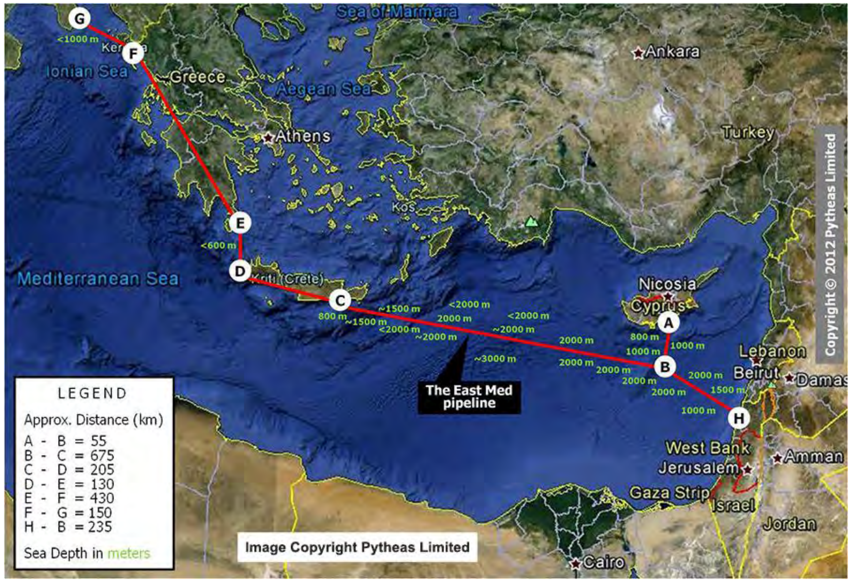
- Block 12 gas production (expected 2020)
  - Exports to Egypt possibly via Idku LNG Plant.
  - Supplies to Cyprus' domestic market.

- Block 12 gas monetization options
  - Pipeline to Cyprus' domestic market (great potential and opportunities exist through the planned Methanol Plant, as well as other potential for power generation purposes)
  - Export pipeline to Egypt (possibly to Idku LNG Plant)

CYPRUS GAS EXPORT PROSPECTS

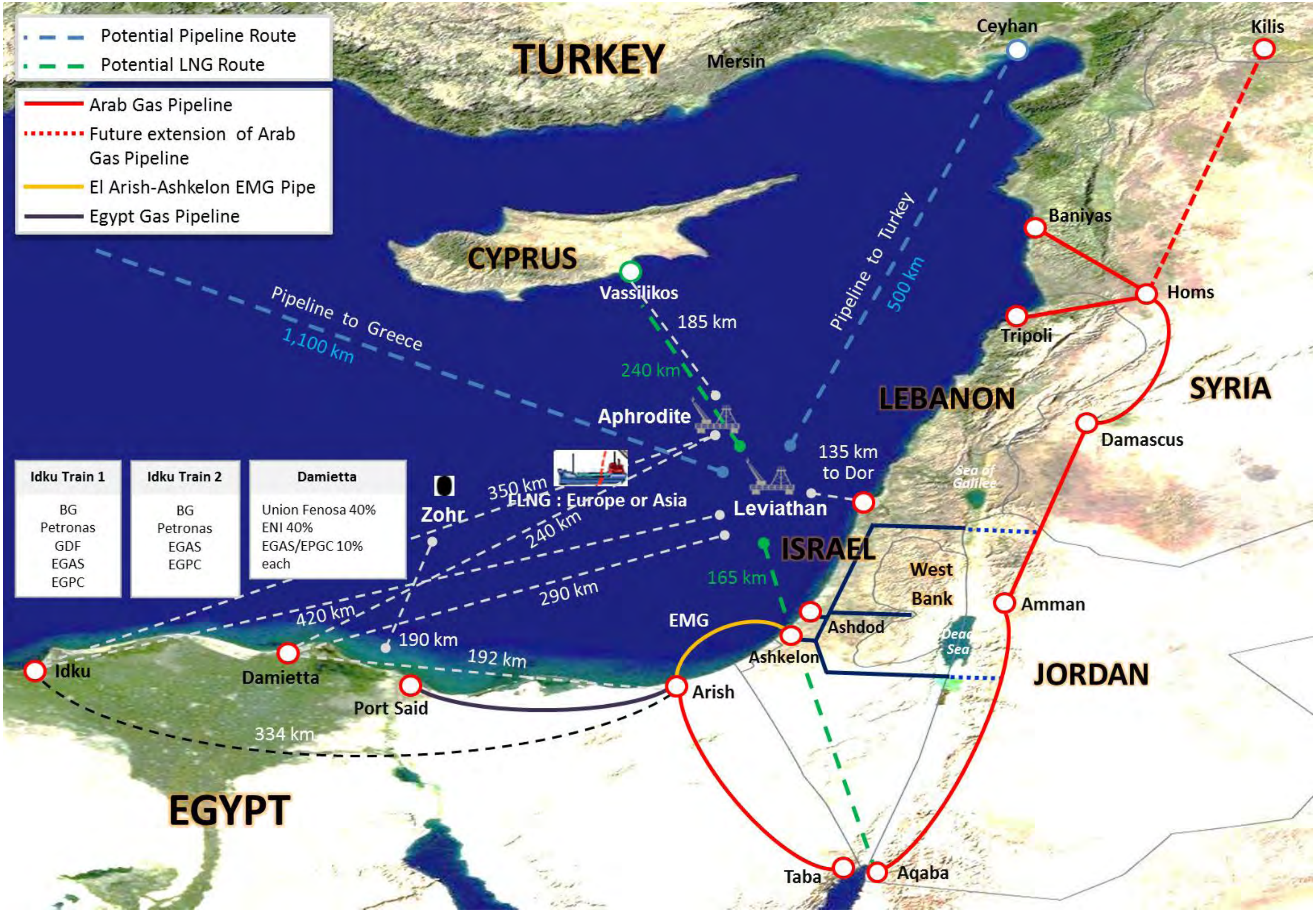
- **Proposed infrastructure projects (*approved as PCIs by the European Commission*)**
  - East Med Gas Pipeline (*subsea gas pipeline interconnecting offshore Israel-Cyprus-Greece*)
  - EuroAsia Interconnector (*subsea electricity cable interconnecting Israel-Cyprus-Greece*)

East Med Gas Pipeline



EuroAsia Interconnector

REGIONAL O&G EXPORT OPTIONS – OVERVIEW



CLOSING REMARKS

- **Cyprus vs. Israel:**
  - Aphrodite (Block 12) first gas vs. Leviathan gas field development.
  - Positive influence but negative impact to the two export projects from the ‘Zohr’ gas discovery.
  - 'Zohr' gas discovery is still at the exploration/appraisal phase, while Block 12 and Leviathan are at an advanced stage.

- **Block 12 vs. Leviathan (*for exports through Egypt*):**
  - Competing projects where time to development and destination markets are crucial factors.
  - BG involvement in Block 12 expected to have catalytic effect for LNG exports through Egypt.

WAY FORWARD FOR CYPRUS

- Need to proceed with a new exploration plan to uncover deeper targets (reprocessing of existing seismic data can help towards this), with a view to start a 3rd License Round.
- Work constructively towards the development of Block 12, for an earlier production and marketing/export of the gas.
- Give incentives for the development of a gas-based industry in Cyprus (starting from the planned Methanol Plant, following the arrival of gas onshore).
- Support both proposed infrastructure projects (East Med Gas Pipeline & EuroAsia Interconnector).

THANK YOU!