5th Cyprus Energy Symposium

CYPRUS: Europe's New Energy Gate

RE-POWERING THE CYPRUS ENERGY SECTOR

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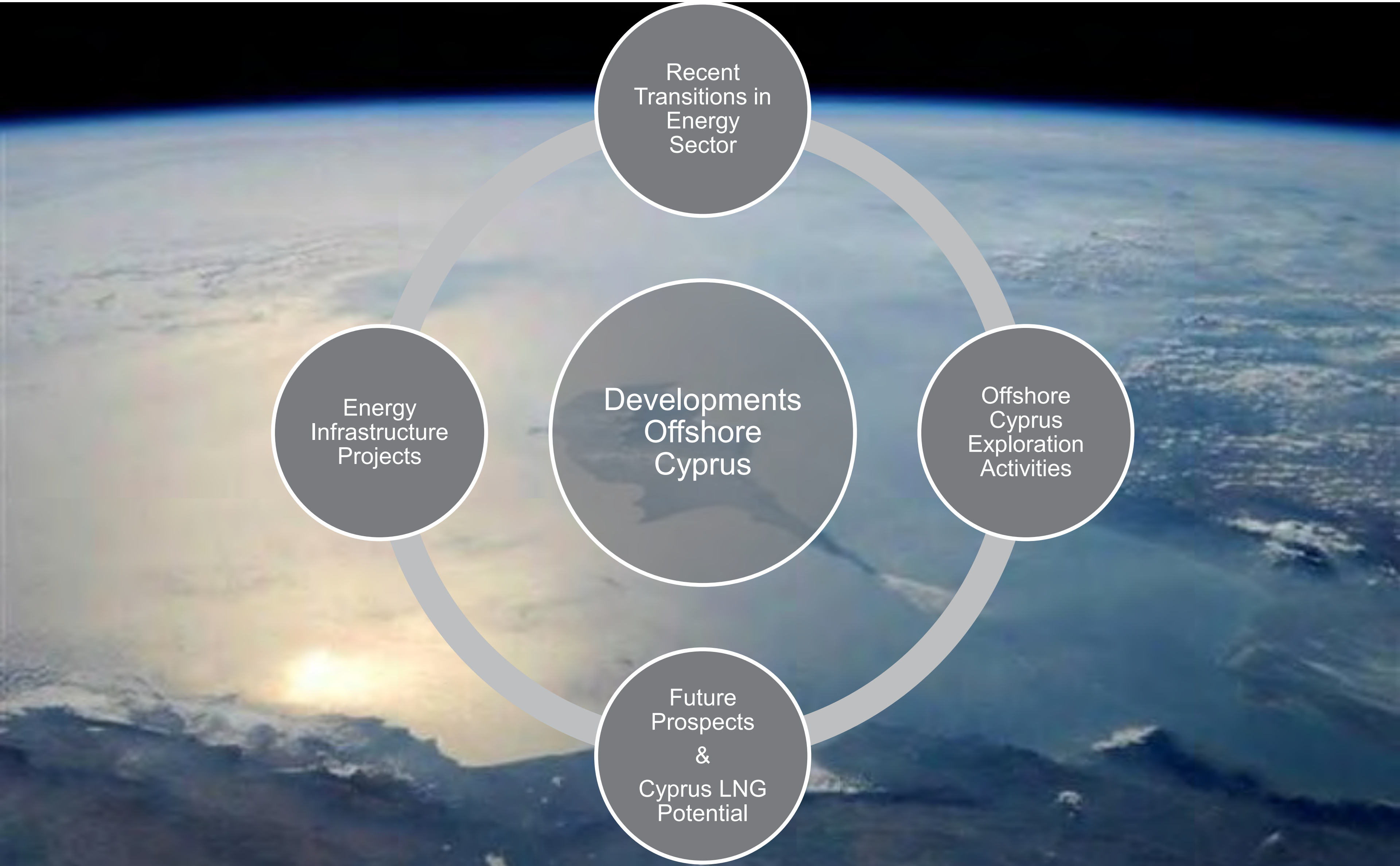
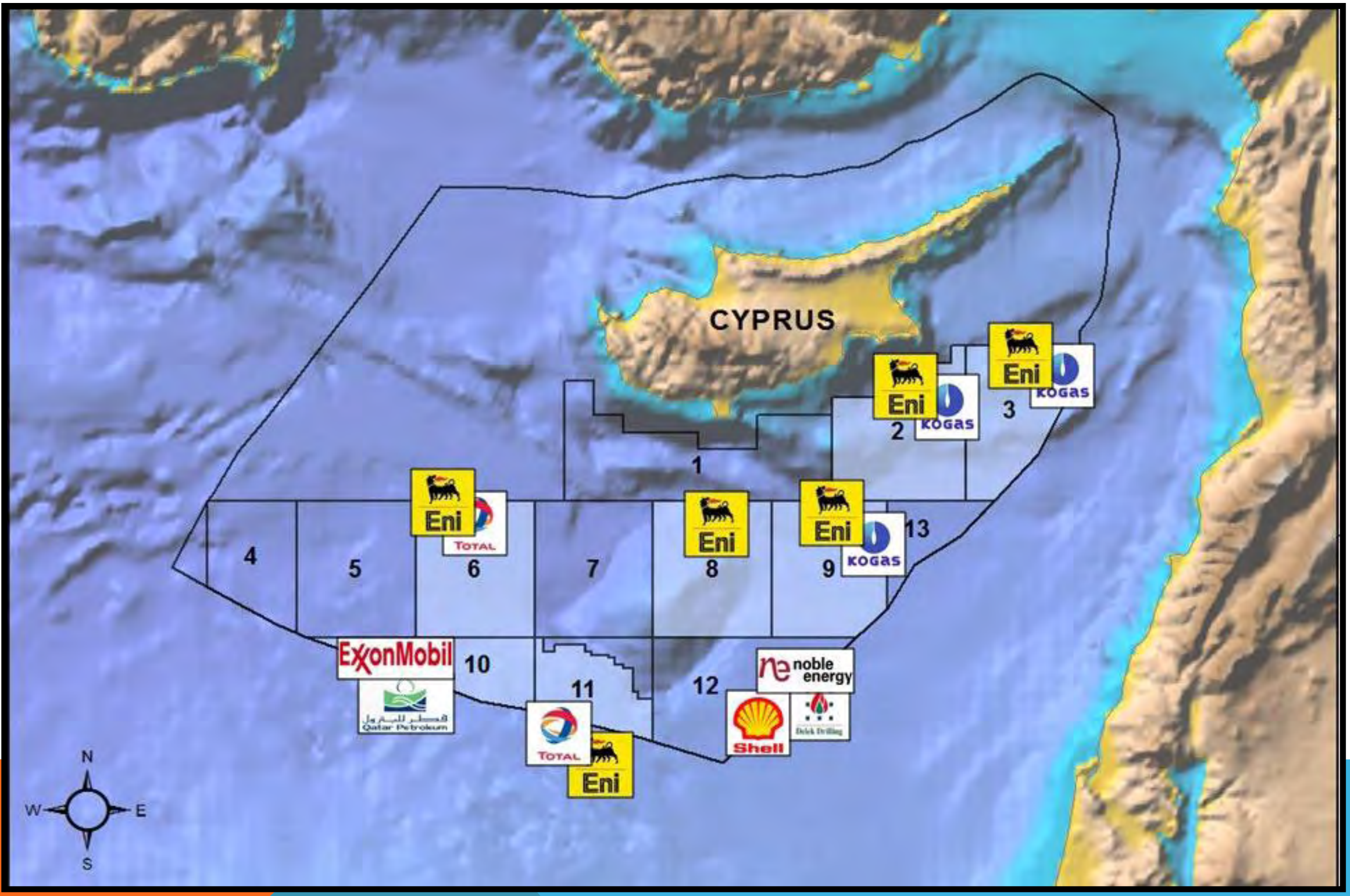
GENERAL OVERVIEW



OFFSHORE CYPRUS EXPLORATION ACTIVITIES

OFFSHORE CYPRUS - EXPLORATION LICENSEES



APHRODITE

- Noble Energy (35%)
- SHELL (35%)
- Delek (15%)
- Avner (15%)

Blocks 2,3,9

- ENI (80%)
- KOGAS (20%)

Block 11

- Total (50%)
- ENI (50%)

Block 6

- Total (50%)
- ENI (50%)

Block 8

- ENI (100%)

Block 10

- Exxon Mobil (60%)
- Qatar Petroleum (40%)

EXPLORATION ACTIVITIES OFFSHORE CYPRUS

TOTAL / ENI (Block 11)

- exploration well recently concluded
- 0.5tcf of natural gas discovered (non-commercial discovery, but promising geological patterns)
- future drilling plans yet unknown

ENI / KOGAS (Blocks 2,3,9)

- 3-D seismic survey concluded
- additional exploration well speculative

Noble Energy and partners (Aphrodite)

- no further planned exploration
- planning the development of the ‘Aphrodite’ gas field

PLANNED EXPLORATION ACTIVITIES OFFSHORE CYPRUS

Exxon Mobil / Qatar Petroleum (Block 10)	• **2 exploration wells planned within second half of 2018**
ENI (Block 8)	• **1 exploration well planned within first half of 2018**
ENI / TOTAL (Block 6)	• **1 exploration well planned within first half of 2018** • **alternatively, ENI may drill in Block 3**

CYPRUS GAS MARKET & EXPORT PROSPECTS

CYPRUS DOMESTIC PROSPECTS FOR GAS UTILIZATION

Domestic market prospects:

- planned Methanol Plant (methanol production)
- thermal power stations (electricity generation)

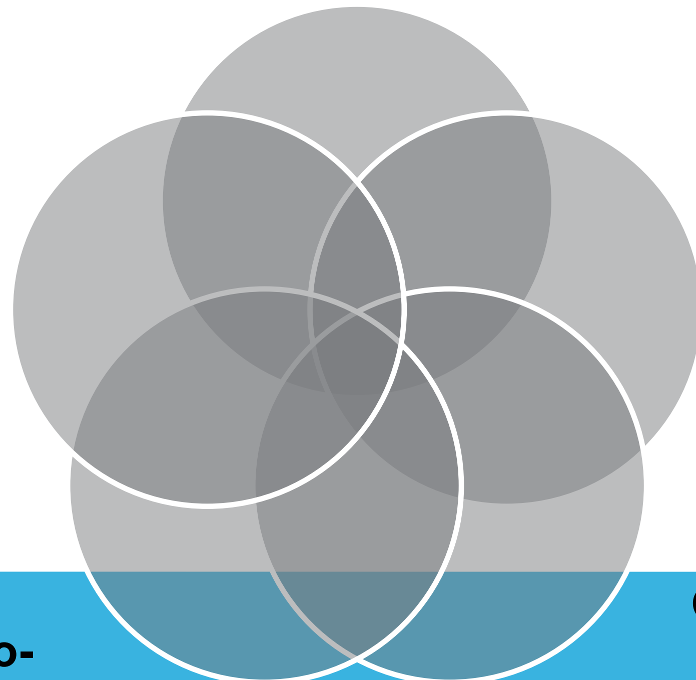
Future market prospects:

- Petrochemicals industry
- Households sector (far future)
- Transport sector (near future)

MAIN GAS EXPORT OPTIONS/ALTERNATIVES

Natural gas demand for the domestic market in Egypt

Future LNG Plant in Cyprus (for LNG exports to Europe/Asia)



Potential for LNG exports through existing LNG Plants in Egypt

Transport of electricity (gas-to-power) via the planned EuroAsia Electricity Cable Interconnector

Gas transport via the proposed East-Med Gas Pipeline (may connect to Europe via TAP or IGI)

LNG PERSPECTIVES & CYPRUS LNG PLANT

THE IMPORTANCE OF LNG

The LNG value chain promotes the use of an energy source with a smaller environmental footprint than other fossil resources

The LNG value chain also addresses the concerns of consumer nations regarding their diversity of supply, while reducing their energy dependence on countries that supply gas via pipelines

Unlike piped natural gas, a cargo of LNG can be diverted while *en route*

LNG promotes the flexibility that consumer nations need in order to manage their supply and also enables producing nations to optimize the monetization of their assets.

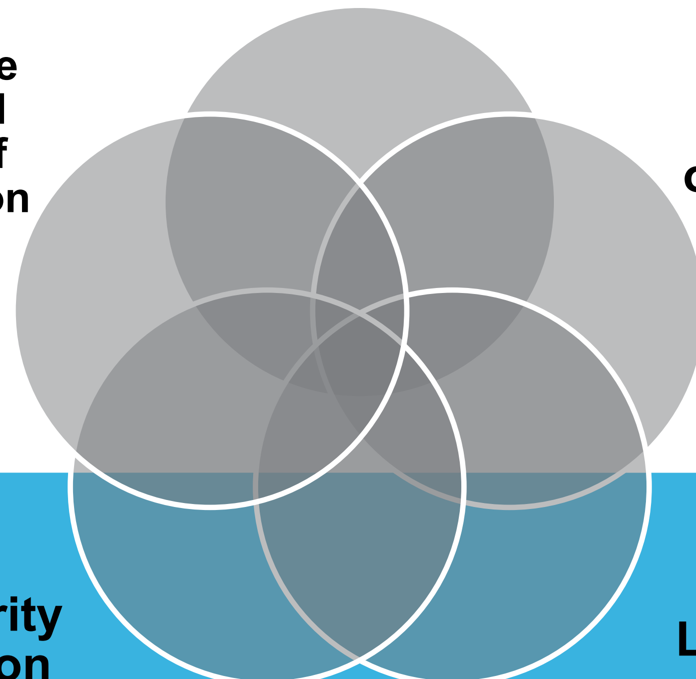
Transporting the gas by LNG carriers can in most cases offer an alternative to the challenging and costly development of pipeline systems.

THE IMPORTANCE OF AN LNG PLANT IN CYPRUS

Can still be a very good option for gas exports from regional discoveries

(the LNG Plant could be designed to process additional gas from neighbouring countries)

Will be the driving force and a common ground for the development of stability in the region (on a political and economical level)



Does not preclude other (complementary) gas export options

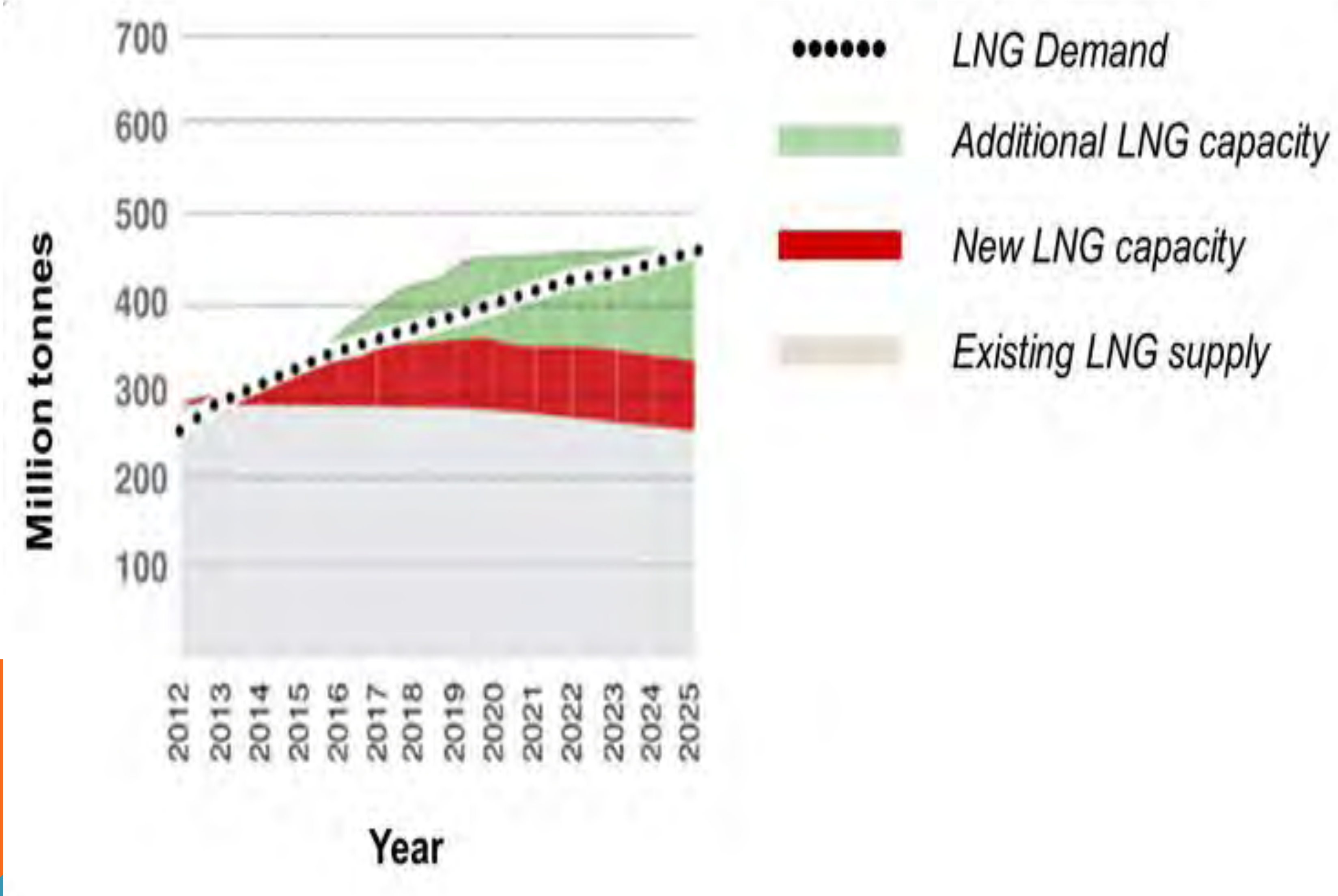
LNG offers security and diversification of energy supply

LNG offers export market flexibility

LNG PROJECTIONS

MIDDLE EAST - LNG IMPORTS PROJECTION

WORLD LNG CAPACITY - PROJECTIONS



WORLD LNG BUNKERING - PROJECTIONS

ENERGY INFRASTRUCTURE PROJECTS

EUROPEAN INFRASTRUCTURE PROJECTS

East Med Gas Pipeline

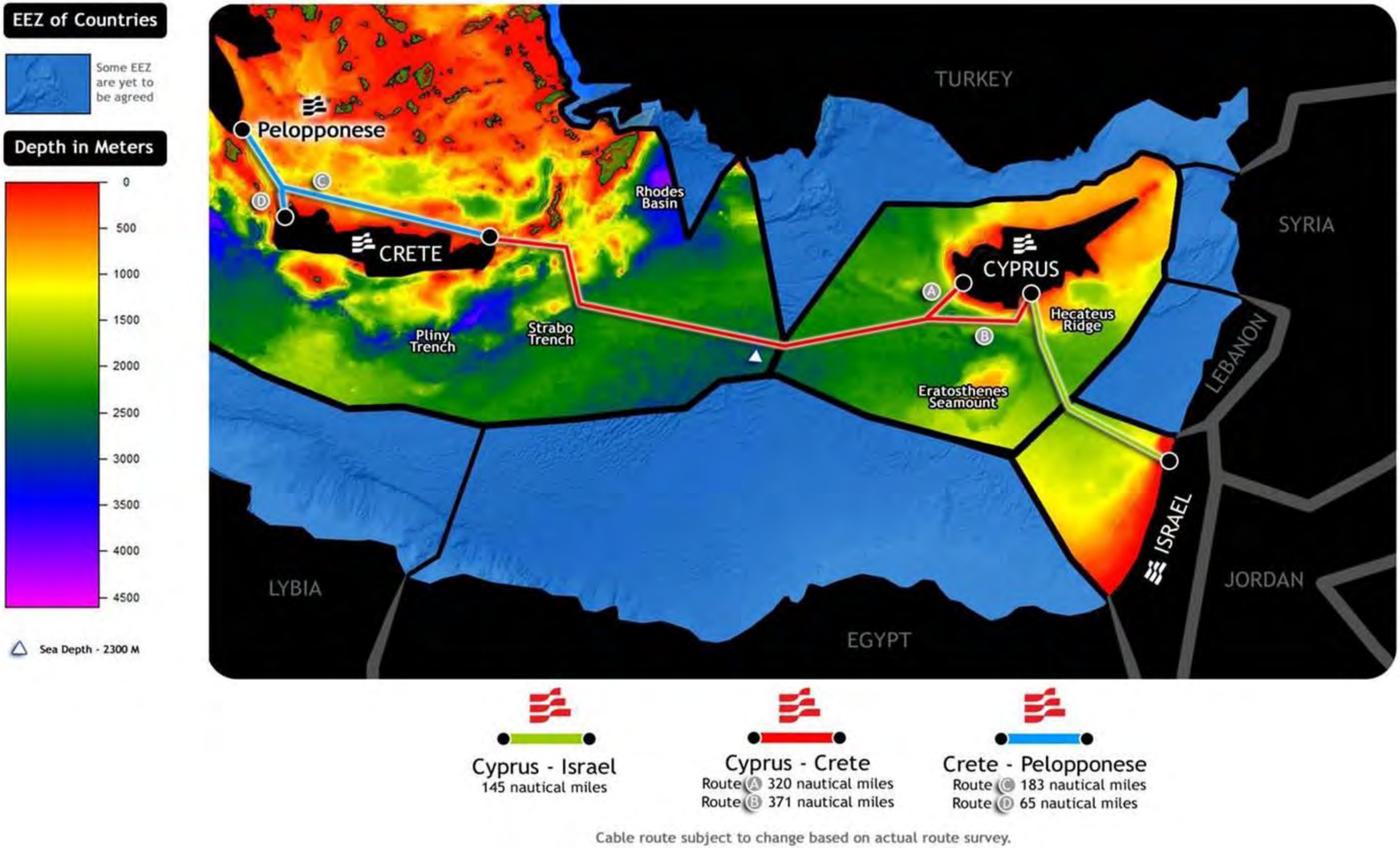
- Approved as Project of Common Interest by the European Commission
- 1,900km long gas pipeline running from Levantine basin to Cyprus, to Crete and then to Peloponnese onwards to West Greece (potential extension to connect with IGI)
- Current status: Pre-FEED studies / Next stages: FEED + Permit granting process
- Expected commissioning by end of 2020

EuroAsia Interconnector

- Approved as Project of Common Interest by the European Commission
- 2,000 MW, 1520km long, subsea electricity cable (dual HVDC) running from Hadera (Israel) to Cyprus, to Crete and then onshore Greece (project to be implemented in 3 phases)
- Current status: Pre-FEED studies / Next stages: FEED and final detailed studies + Permit granting process
- Expected commissioning / phases:
  - Cyprus-Israel by end of 2019
  - Crete-Attica by end of 2020
  - Cyprus-Crete by end of 2022

EAST MED GAS PIPELINE

EUROASIA INTERCONNECTOR



TRENDS IN CYPRUS ENERGY MARKET

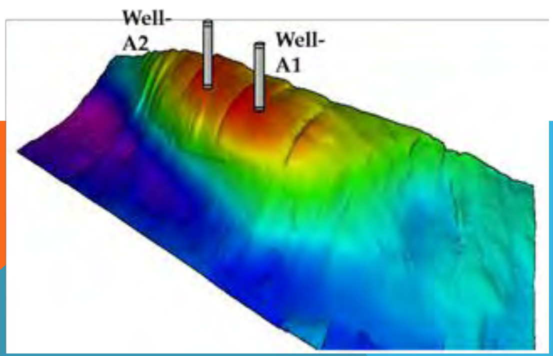
NATURAL GAS MARKET

In December 2011, Cyprus was 'blessed' with its first discovery of natural gas ('Aphrodite' discovery and appraisal well - 4.1tcf of gas in place)

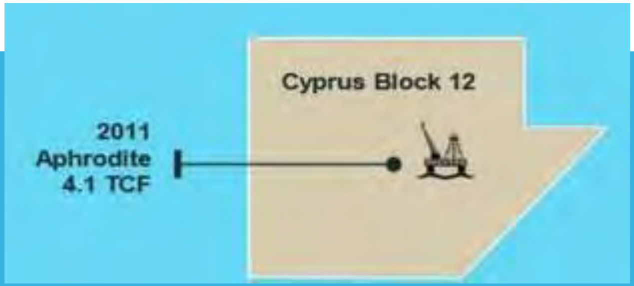
Prospects for future discoveries of gas (and potentially oil) are ever since becoming more and more promising.

However, what has actually changed since Dec 2011 when Noble Energy announced the first discovery of gas offshore Cyprus?

Generation units are now ready for Natural Gas, some IPPs are awaiting for the gas to go ahead with their ventures, while there is also interest from the gas-based industries (petrochemicals and LNG) - but still no gas in Cyprus



Aphrodite Exploration/Appraisal wells (A1-2011 & A2-2013)



Aphrodite Gas Discovery (2011)

ELECTRICITY MARKET

Transition of the Electricity Market towards a fully ‘open’ and competitive market

- RES entering the competitive electricity energy market (a new Scheme for supporting this is now open)
- EAC now applies a functional separation system, as set by CERA (based on this system, the four basic regulated functions of EAC for transmission, distribution, generation and supply, are functionally separated within EAC)
- Wholesale supply and day-to-day trading are now open (for the interim period until transition to the fully open electricity market, after application of new ‘open’ market rules)

RECENT DEVELOPMENTS

- **Egypt is still interested in receiving Cyprus gas for its domestic market (and potentially LNG exports)**
- **Block 11 (recent) well has geological structures closely resembling those of Egypt's Zohr**
- **Poseidon Med II and Cynergy projects (funded by the EU) can be useful for turning Cyprus into an LNG hub for bunkering and trading (with associated use in the domestic market, following regasification), until local LNG production commences**
- **Cyprus Organization for the Storage and Management of Oil Stocks is planning the establishment of its own oil storage facility at Vasilikos area**
- **The retail trading companies of oil fuels (including LPG) in Cyprus are also planning the transferring of their facilities from Larnaca to new, modern, storage facilities at Vasilikos area**
- **Limassol Port is planning the development of shore base areas and a common drilling fluid plant, for the offshore drilling activities**
- **Cyprus Ports Authority is planning the restructuring of the Vasilikos Port to accommodate large LNG ships (safe haven)**
- **DEFA is planning the import of LNG and the installation of an FSRU and jetty infrastructure**
- **Energy Regulating Authorities in Cyprus and Greece reached a common decision for promoting the East Med Gas Pipeline project and for the cross-border cost allocation for this project and the EuroAsia Interconnector**
- **Further exploration drilling is planned offshore Cyprus in 2018**

PLANNED METHANOL PLANT BY DOR CHEMICALS

- **Project Main Features:**
  - max. capacity = 1,000,000 tonnes per year (i.e. about 3,000 metric tons per day)
  - feedstock = Natural gas (consumption of 1 billion cubic meters of gas per year)
  - product should meet the international standard IMPCA Grade AA Methanol (min. 99.85% purity)
  - adequate land for development site already secured
  - preliminary designs and studies have been completed
  - permitting phase ongoing

CONCLUDING REMARKS

MAIN CONCLUSIONS & REMARKS

What are the longer term export options?

- LNG
- PETROCHEMICALS
- EAST MED Gas Pipeline
- EUROASIA Interconnector

What about an interim option?

- Subsea pipeline vs. FSRU for Cyprus domestic market (gas by 2020-2022)
- Egyptian LNG and/or Egyptian domestic market
- Methanol as an alternative power generation fuel in Cyprus

How to bridge the gap from short to long term?

- Petrochemicals in combination with a subsea pipeline (a Petrochemicals Industry, such as the Methanol Plant, can create the necessary ‘bulk’ demand for gas, making the supply of natural gas from offshore discoveries a viable option for Cyprus and the electricity generation market)

Concluding, it is safe enough to say that the Cyprus Energy Sector is beginning to 'power up' for good (next step needed to boost this process is the arrival of the gas needed for booming all industry in Cyprus)

THANK YOU!