EAST MEDITERRANEAN: GEOPOLITICS, PROSPECTS, CHALLENGES AND COOPERATION

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USGS’ Report shows that the Eastern Mediterranean region is a prospective and promising area with estimated significant amounts of undiscovered oil and gas.

The assessments by USGS put the level of undiscovered oil and gas resources in the Eastern Mediterranean to a total of 3.4 bil. bbl for oil and 345 tcf for natural gas in the Nile Delta and Levantine basins.

More recent estimates by Noble Energy:
- Deep Mesozoic play in both Cyprus and Israel
  - 3 bil. bbl (approximation of gross unrisked oil potential)
- Cyprus
  - 4 tcf (gross natural gas potential)
**HYDROCARBON ACTIVITIES OFFSHORE EGYPT & LEBANON**

**Egypt**
- Proven gas reserves at the end of 2012: 72 tcf*
- Total gas produced from all fields during the year 2012 reached 2.27 tcf
- Damieta & Idku LNG plants idled due to increased internal consumption.
- Continuous political instability – More investments are needed in oil & gas activities.

**Lebanon**
- Minister Bassil in 2013: “Preliminary surveys of Lebanese offshore fields show reserves of 30 tcf of natural gas and 660 million bbl of oil”
- 1st Licensing Round still pending
- Large interest from big oil companies (12 companies have been pre-qualified)

*Source: BP Statistical Review of World Energy*
In the last six years a string of successful exploration wells offshore Israel has resulted in the discovery of approximately 35 tcf of gas resources for this region.

Gas sales from Tamar (10 tcf) began in March 2013, just over four years from discovery.

The target for initial production from Leviathan (22 tcf) is 2017 / early 2018 ($6.5 billion development plan).
HYDROCARBON ACTIVITIES OFFSHORE ISRAEL

- Securing the Domestic Market
  - Israel demand growth expectation increased to 17%

- Regional Market Opportunities Evaluated by Noble Energy
  - Jordan power and industrial needs
  - Egypt existing LNG facilities
  - Cyprus domestic market
  - Cyprus LNG plant
  - FLNG
  - Turkey

Source: NBL Annual Analyst Presentation (2013)
Regarding the ‘open door’ procedure, which was launched in 2012, the Greek Government granted three concession agreements in May 2014 (after around 29 months of evaluation of the proposals received), for the areas of offshore Katakolo, offshore Patraikos Gulf (West) and onshore Ioannina.
HYDROCARBON ACTIVITIES OFFSHORE GREECE

- A second International Licensing Round was announced on the 31st of July 2014 with 20 offshore exploration blocks on offer in the Ionian Sea and the area south and west of Crete.
- In addition, on the 31st of July 2014 an Individual Express of Interest was announced regarding 3 onshore areas in Western Greece.
UNCLOS ’82 – MARITIME ZONES
In the Eastern Mediterranean region, apart from Greece and Cyprus, the UNCLOS ’82 was also signed and ratified by Egypt and Lebanon. Israel, Syria and Turkey did not sign the UNCLOS ’82.
DELIMITATION ZONES IN EAST MED

BLACK SEA
140 nm

MARMARA
(Internal waters)
90 nm

AEGEAN

MEDITERRANEAN
280 nm
TURKISH CLAIMS REGARDING CYPRUS EEZ
TPAO is offering an opportunity to earn 50% interest on its eastern Mediterranean blocks, located within the gulf of Antalya and deep offshore. The area is unexplored with many indications of an active hydrocarbon system and presence of gas. Five large structural traps with an area, varying in the range of 20-100 km² may have up to 15 tcf recoverable reserves. Potential is not limited with these structures and more structural and stratigraphic traps can be tested.

Commercial Summary:

- Eleven licenses with an area of more than 20000 km²
- 10000 km² 2D and 1000 km² 3D seismic data sets are available
- TPAO has 100% interest in all licenses until 2014
- Operatorship may be available.
- Past-cost will be available
- Minimum Work Program is required including seismic acquisition and drilling

Opportunity Highlights:
KASSINIS INTERNATIONAL CONSULTING LIMITED

TURKISH CLAIMS REGARDING CYPRUS EEZ

Explore Area declared illegally by "TRNC"

Illegal NAVTEX issued by Turkey (20 Oct. 2014) for "Barbaros" seismic exploration activity

Turkish Claims: "The maritime areas west of meridian 32°16′18″E, is part of the Turkish continental shelf"
TURKISH CLAIMS REGARDING GREECE EEZ

Greek OIL/NG Exploration Permits

Turkish OIL/NG Exploration Permits
TURKISH THREATS

- Involvement of the Turkish armada and the General Staff of the Turkish Armed Forces in the Cypriot EEZ.
- Two frigates of the Turkish Navy, namely the "Gelibolu" and "Mizrach" are closely monitoring the activities of the drilling vessel «SAIPEM 10000», which is currently drilling over a potential deposit called "Onasagoras" in Block 9.
- Turkey has committed, with the issue of a relevant NAVTEX, certain areas in blocks 2, 3 and 9 within the Exclusive Economic Zone of Cyprus for seismic exploration surveys, from 20 October 2014 to 30 December 2014.
TURKISH FRIGATES IN CYPRUS’ EEZ
TURKISH THREATS

- The two Turkish warships are constantly cruising within Cyprus' EEZ.
- Additionally, a third (smaller) Turkish warship is patrolling the area near and around the drilling site of ENI in Block 9.
- During the early morning hours of 20/10/2014, the Turkish seismic exploration vessel (Polarcus vessel) under the name “Barbaros”, entered Cyprus’ EEZ and commenced seismic exploration in the area that Turkey committed with a relevant NAVTEX.
- ENI seamlessly continues with the works on the exploratory drilling in Block 9.
Cyprus, exercising its sovereign rights as derived from the United Nations Convention on the Law of the Sea – UNCLOS’ 82, signed in 2003 the first agreement regarding the delimitation of the exclusive economic zone (EEZ) with the Arab Republic of Egypt.

Likewise, agreements with the Republic of Lebanon and the State of Israel followed in 2007 and 2010, respectively.

Such actions were of paramount importance in attracting oil and gas companies to invest in the exploration activities offshore Cyprus, as well as for strengthening further the ties of cooperation with the neighbouring countries.
PAST HYDROCARBON EXPLORATION ACTIVITIES

**2006**
- 2-D seismic survey of 6,770 line-km
- Covered an area of 51,000 sq. km
- 20 x 20 km grid

**2007**
- 3-D seismic survey of 659 sq. km
- Covered a small area within Block 3

**2008**
- 2-D seismic survey of 12,000 line-km
- Covered an area of 51,000 sq. km
- 10 x 10 km grid on the western side
- 5 x 5 km grid on the eastern side
- First and biggest seismic survey to be carried out using PGS’ GeoStreamer® technology
HYDROCARBON ACTIVITIES OFFSHORE CYPRUS

- Two Hydrocarbon Licensing Rounds: 2007 & 2012
- Six Hydrocarbon Exploration Licences were awarded:
  - Blocks 2, 3, 9: Eni (80%) / Kogas (20%)
  - Blocks 10, 11: Total (100%)
  - Block 12: Noble Energy (70%) / Delek Drilling (15%) / Avner Oil Exploration (15%)
BLOCK 12 EXPLORATION ACTIVITIES

- Sept. 2009: 3D Seismic Survey (469 sq. km)
- Jun. 2011: 2D Seismic Survey (4,000 km)
- Sept. 2011: First Exploration Well Spud (5,860 total depth)
- Jun. 2013: 3D Seismic Survey (2,800 sq. km)
BLOCK 12 EXPLORATION ACTIVITIES

- June 2013: Appraisal Well Spud (5,781 total depth, drilled by ‘ENSCO 5006’ platform)
- Sept. 2013: Drill Stem Test (‘Aphrodite’ Structure)
- 13 October 2013: Noble Energy announced the preliminary results from the appraisal well
  - 3.6tcf – 6tcf NG (based on the 75th and 25th percentiles)
  - avg. 5tcf Natural Gas
  - 250 million cubic feet per day production capacity
ENI/KOGAS EXPLORATION ACTIVITIES (BLOCKS 2,3,9)

- November – December 2013
  - 2D Seismic Survey (7,000 km) in Blocks 2, 3 and 9

- September – December 2013
  - 3D Seismic Survey (4,700 sq. km) in Blocks 2, 3 and 9
TOTAL EXPLORATION ACTIVITIES (BLOCKS 10 & 11)

- July – August 2013
  - 3D Seismic Survey (2,280 sq. km) in Block 11
- October 2013
  - Coring and geochemical analysis of the seabed in Block 11
- February 2014
  - 2D Seismic Survey (1,500 km) in Block 10
PLANNED HYDROCARBON EXPLORATION ACTIVITIES

- **Block 12 (late 2014 / early 2015)**
  - Drilling of a second Hydrocarbon Exploration Well (in a new prospective structure).
  - Drilling of a second Hydrocarbon Appraisal Well within the ‘Aphrodite’ Discovery (subject to the evaluation of the well data in ‘Ishai’).

- **Blocks 10 and 11 (within 2015/2016)**
  - Drilling of two Hydrocarbon Exploration Wells (one in each Block).

- **Blocks 2, 3 and 9 (2014/2015)**
  - A series of additional Hydrocarbon Exploration Wells (minimum 3 and maximum 5 in total) will follow in other geological structures in Blocks 2, 3 and 9 within 2015.
ENI/KOGAS EXPLORATION ACTIVITIES – BLOCK 9

- Works for an exploration drilling in Block 9 have commenced on 25/09/2014
  - At this location the water depth below sea level is about 2,000 meters.
  - The well is anticipated to reach a depth of about 4,000 meters below sea bottom.
- ‘Saipem 10000’ has arrived from Mozambique and is currently performing drilling works in Block 9 within Cyprus’ EEZ, with the support of two supply/escort vessels.
  - All drilling works planned for Blocks 2, 3 and 9 will be performed by the Drillship ‘Saipem 10000’.
  - At least 4 exploration wells are planned to be drilled in these three blocks (with the possibility of maximum 6 wells in total) and the drillship will remain in Cyprus’ EEZ for about 1 year.
ENI/KOGAS EXPLORATION ACTIVITIES – BLOCK 9

- ‘Saipem 10000’ can operate at sea depths of up to 3,000 meters, while its capabilities and technical characteristics will allow the completion of the Exploration Drilling Plan in Blocks 2, 3 and 9 at a lesser time and faster pace, with less cost and greater safety.

- Results from the interpretation/evaluation of the findings from the abovementioned exploration work will be crucial for the very next steps and decisions regarding the LNG Plant.

- Currently, negotiations for the LNG Plant Project Agreement are being held between a team from various governmental organizations / departments and representatives from Noble Energy, ENI/KOGAS and Total, with which companies relevant MoUs for the Project have already been signed.
PROJECTS OF COMMON INTEREST – LNG EXPORT

Vasilikos LNG Plant

Source: Noble Energy
LNG PLANT – PERSPECTIVES AND BENEFITS

- Should be the primary option for exploitation of the Cypriot offshore gas reserves.
- Offers export market flexibility and can handle additional gas from neighboring countries.
- Will be the largest investment in the island's history.
- Will be the driving force for the enhancement, development and stabilization of the Cypriot economy, through the creation of large revenues and capital reserves, the creation of thousands of jobs, and many other opportunities in the secondary industry and support sector for natural gas and LNG.
The project (when implemented) can provide diversification and additional means for hydrocarbon exploitation (and also RES generation transfer).

Phase 1 of the EuroAsia Interconnector (which is the connection between Cyprus and Israel) could provide an ‘interim solution’ and security of energy supply to Cyprus.

- can achieve lower electricity costs through energy supplies from Israel.
CAN EAST MEDITERRANEAN REGION PLAY AN IMPORTANT ROLE TO EU’S ENERGY SUPPLY?

**Advantages**
- A promising regional geological background
- Big hydrocarbon discoveries in the region
- Many attractive major “plays” have been identified
- Greater Mediterranean region is a market with large potential for oil and gas trading
- Located at the crossroads of big international energy routes

**Disadvantages**
- A historically tensioned geopolitical setting
- Unstable political scene
- Deep & Ultra Deep Operations

- The hydrocarbon activities can serve as a catalyst towards greater cooperation and stabilization in the region
- New deep water technologies decrease the risk of the oil companies
- High oil prices and increased gas demand secure the commerciality of the hydrocarbon discoveries
CAN EAST MEDITERRANEAN REGION PLAY AN IMPORTANT ROLE TO EU’S ENERGY SUPPLY?

- Speech by President of the European Commission on the preparations of the European Council of 22 May 2013:

  “We must continue to strengthen the internal and external diversification of our supplies. This includes tapping new international sources, for instance through the Southern Gas Corridor.”
CONCLUSIONS

- Substantial natural gas deposits have been discovered in the broader East Mediterranean the last years.
- Further exploration and production opportunities will follow in offshore areas between Egypt, Israel, Lebanon, Cyprus and Greece.
- The Eastern Mediterranean is attracting international interest in hydrocarbon exploration and production investments.
- Studies performed by various organizations, indicate that by 2020, EU natural gas demand will outgrow supply, leading to a substantial gap between demand and supply.
- Gas from the Eastern Mediterranean region can substantially contribute to EU’s energy security.
CONCLUSIONS

- EU – East Mediterranean energy cooperation will:
  - Radically contribute to the development of the region and to the increase of the geopolitical stability.
  - Turn the East Mediterranean region into an area of sustainable and balanced economic development based on comprehensive cooperation and solidarity.
  - Strengthen cooperation and create the appropriate framework conditions for prosperity, dialogue, stability and peace.
  - Improve the bilateral relationships developing synergies and enhancing the continuous regional cooperation.
THANK YOU!