

THE LEBANESE OFFSHORE : PROSPECTIVE HYDROCARBON POTENTIAL

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OUTLINE

- 🔥 Lebanon attractiveness factors
- 🔥 Legal framework and results of the 1st licensing round
- 🔥 Regional petroleum activities
- 🔥 Multiclient data library interpretations
- 🔥 Prospectivity
- 🔥 Potential Markets
- 🔥 2nd Offshore Licensing Round





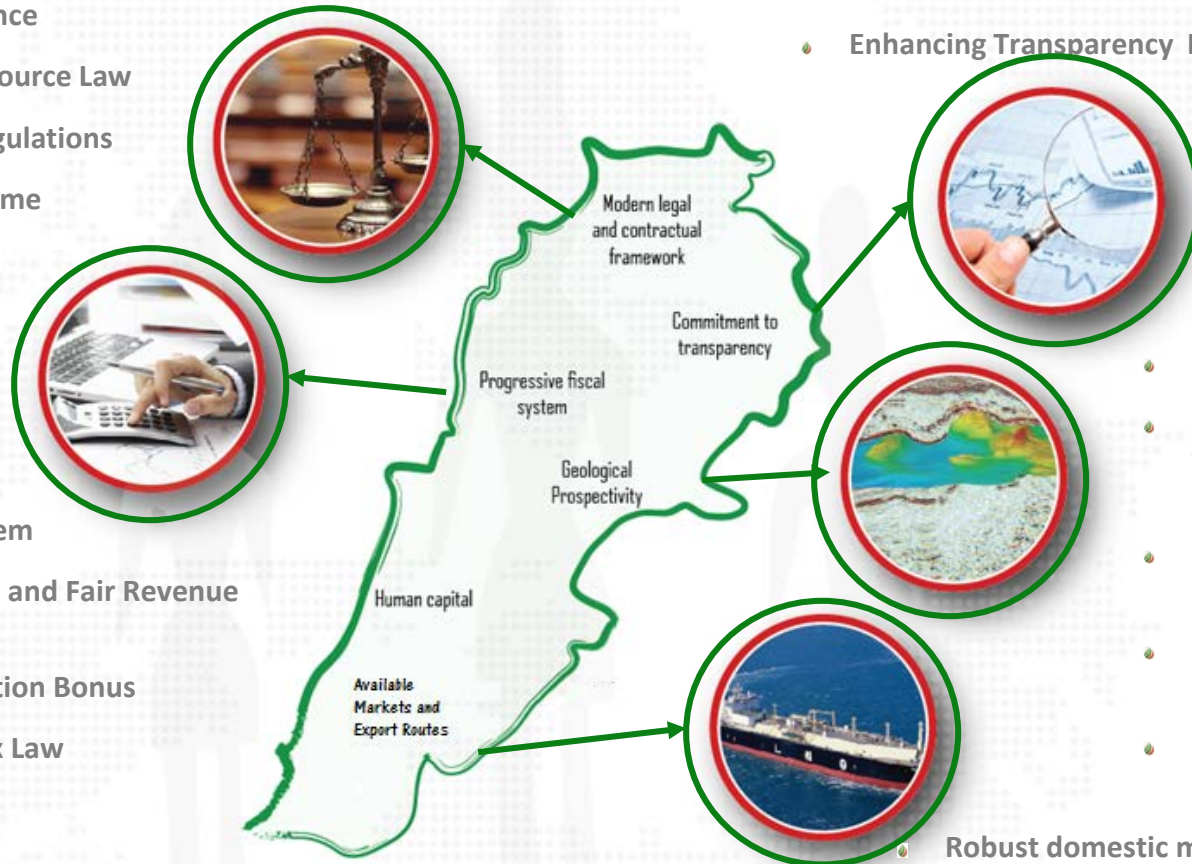
KEY CONTRIBUTORS TO LEBANON'S OFFSHORE ATTRACTIVENESS



ATTRACTIVENESS FACTORS

- Clarity, Predictability and Stability
- Three layers of governance
- Offshore Petroleum Resource Law
- Petroleum Activities Regulations
- Production Sharing Regime

- Progressive Fiscal System
- Ease upfront Liabilities and Fair Revenue Sharing
- No Signature / Production Bonus
- Modern Petroleum Tax Law



- Published Evaluation Criteria for Prequalification, Bidding and Award
- Extractive Industries Transparency Initiative (EITI)
- Right of Access to Information Law
- Enhancing Transparency Law



- Multi client Surveys
- Promising results from the Studies and interpretations
- Structural and stratigraphic traps
- Clastics and carbonates
- Biogenic gas and oil

- Robust domestic market
- Proximity to large markets
 - Regional
 - International

LEGAL SETTING AND 1ST ROUND TIMELINE



Draft Onshore Petroleum Law

**Oil & Gas transparency Law
(Oct 2018)**

**Oil & Gas taxation Law
(Sep 2017)**

**Petroleum activities regulations
(Apr 2013)**

**Access to information Law
(Feb 2017)**

**Tender Protocol , model EPA &
Blocks delineation decrees
(Jan 2017)**

OPRL – Law 132 (Aug 2010)

**Appointment of LPA
(Dec 2012)**

**RH Pre-qualification criteria
decree (Feb 2013)**

1ST LICENSING ROUND CLOSURE /OUTCOME



12th Oct 2017

Submission of
bids

14th Dec 2017

Council of Ministers
approved the
award of two
exclusive
petroleum licenses

27th March 2018

Submission of
Exploration
Plan (3 yrs)

May 2018

Commencement of
Exploration phase
upon approval of
the Exploration
Plan

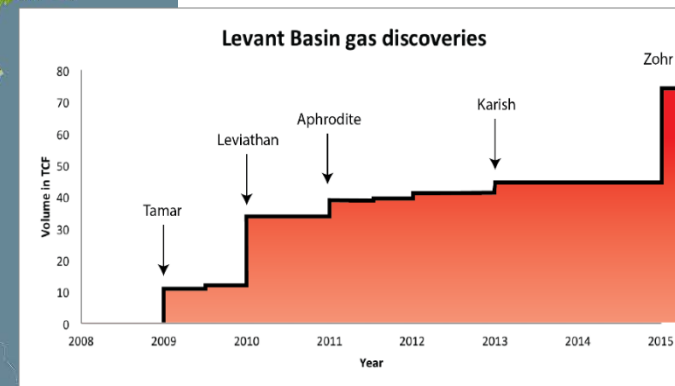
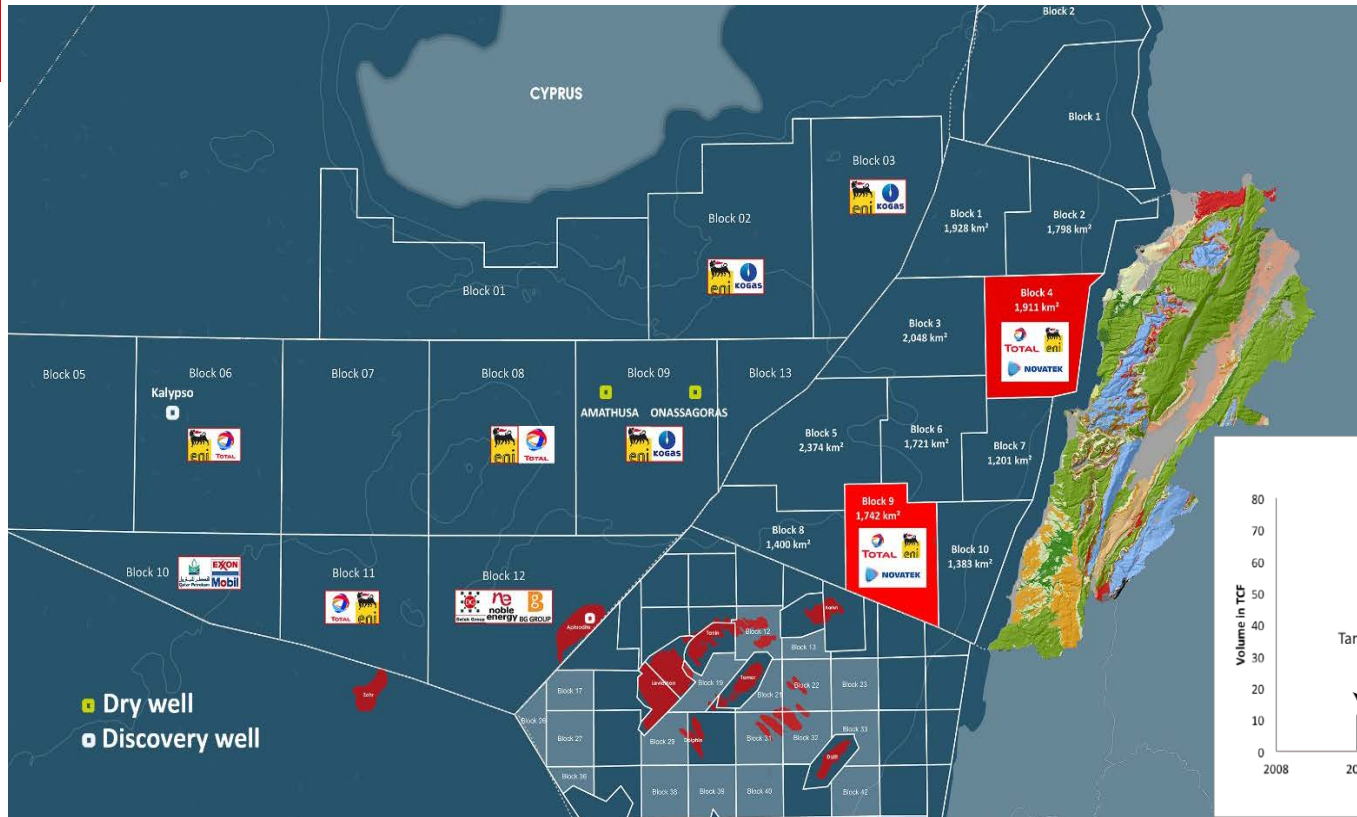
H1-H2 2018

Exploration
Activities
(Pre-drilling)

2019

Exploration
drilling

REGIONAL EXPLORATION ACTIVITIES

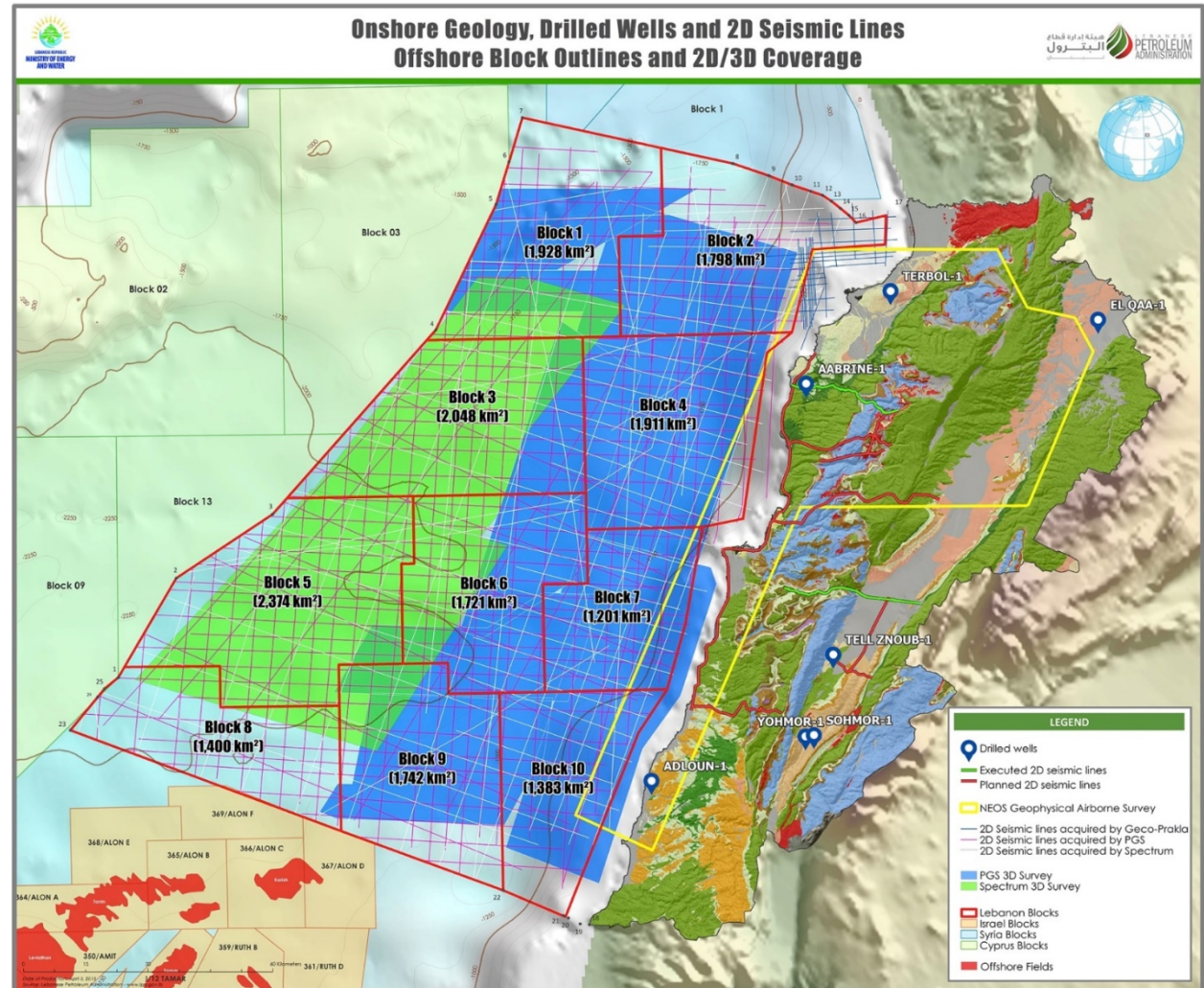


Source: IHS Market

- Passive Margin for long geologic time .
- Numerous discoveries in the region .
- Prospects mapped in Lebanon share the same trends
- Zohr was a paradigm shift in the exploration cycle
- Calypso discovery announced by ENI in Block 6 offshore Cyprus
- Two Carbonate reservoirs discoveries in 2.5 years equal in reserves /resources to 17 years of discoveries in turbidites (sand) .

AVAILABLE GEOPHYSICAL DATA

- Complete 2D coverage
- 80% of the block area acquired by 3D seismic
- 6000 km² MERG & Hyperspectral
- 70.3 km onshore 2D seismic surveys



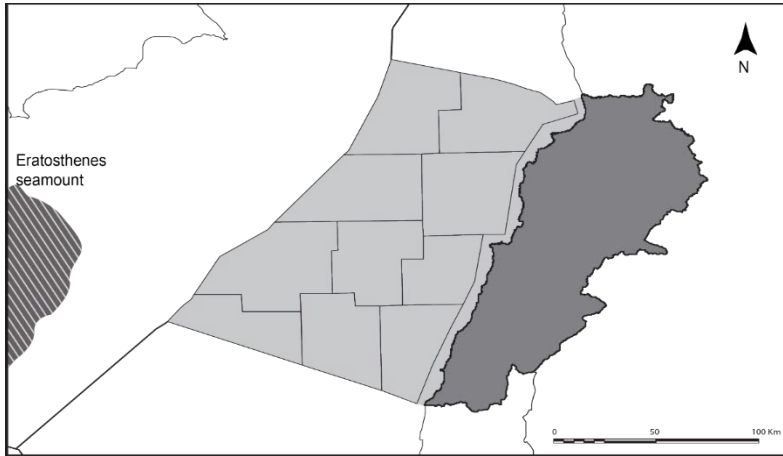
40 Companies have Licensed Lebanese Offshore Data

PLAYS OFFSHORE LEBANON

Pliocene

Age Range: 5.3 ma – present

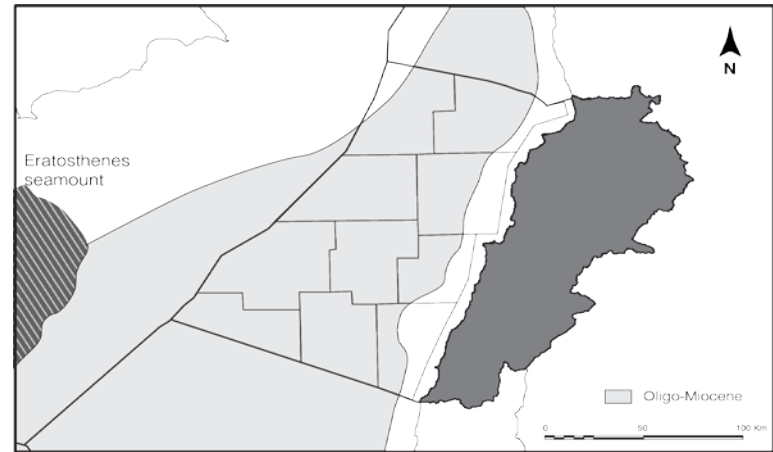
Depth Range: 1600 – 2300 meters subsea



Oligo-Miocene

Age Range: 33.9 ma – 5.3 ma

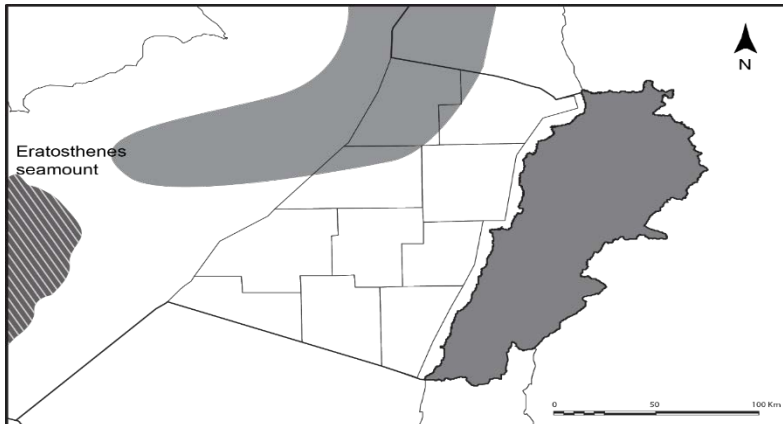
Depth Range: 3500– 6500 meters subsea



Eocene

Age Range: 56 ma – 33.9 ma

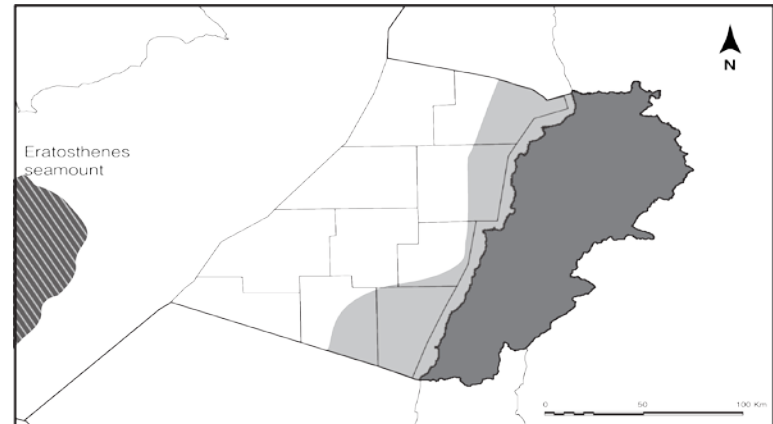
Depth Range: ~2000 – 4500 meters subsea



Carbonate

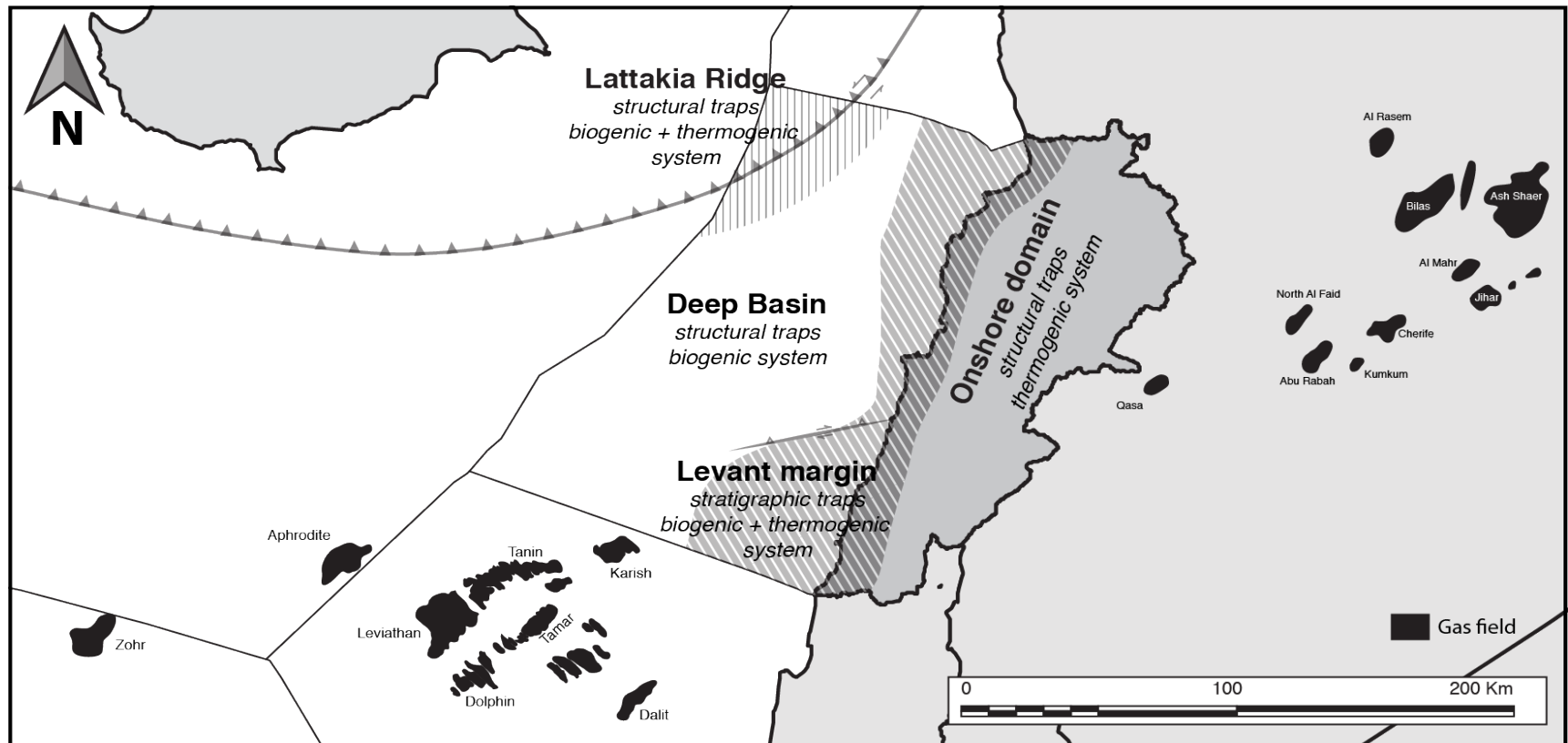
Age Range: 251 ma – 5.3 ma

Depth Range: 2000 – 8500 meters subsea

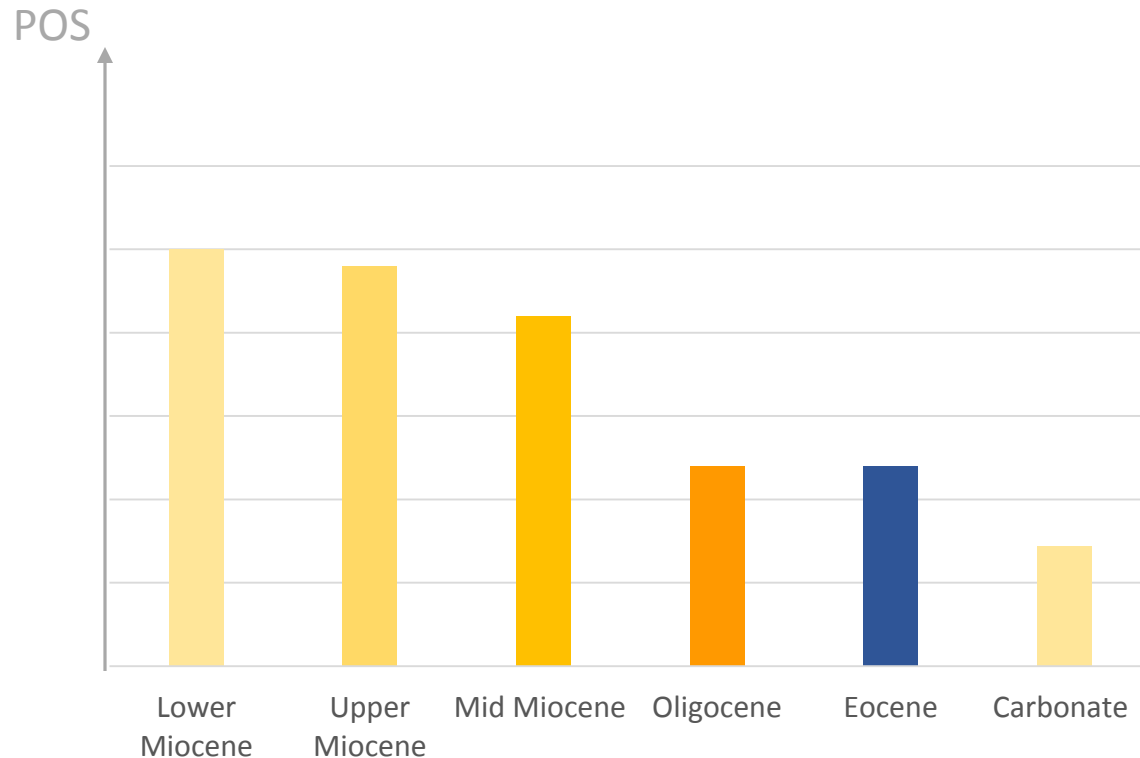


THE PETROLEUM SYSTEMS OF LEBANON

- 4 petroleum systems identified
- Consist mainly of gas in the deep Basin (based on basin modelling)
- Liquid oil expected onshore, along the margin and possibly in the deep basin



PLAY RANKING – HIGHEST TO LOWEST



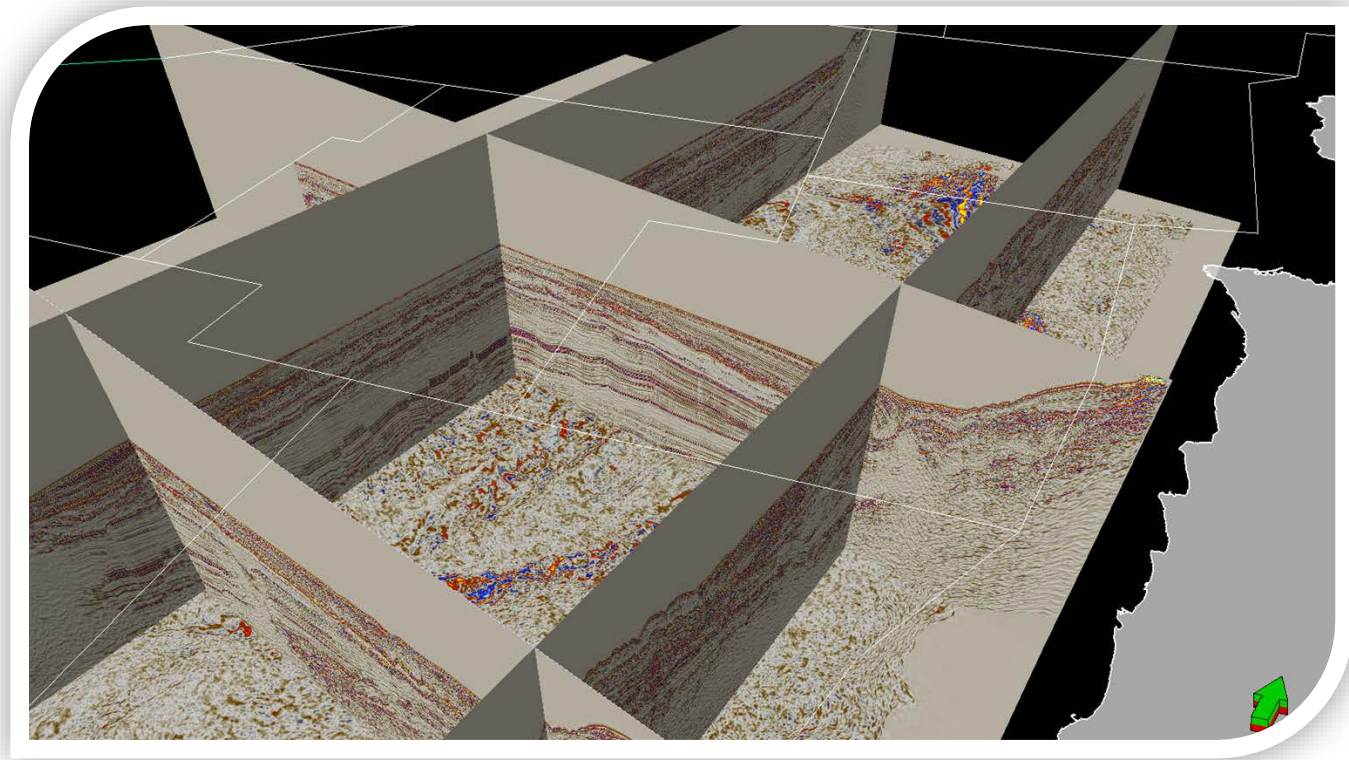
- The lower Miocene ranks first given the proven reserves in different parts of the East Med .
- Though riskier , recent carbonates discoveries increased the exploration appetite of IOCs due to the potential high undiscovered resources .

AVAILABLE GEOPHYSICAL DATA

Modern 2D and 3D Seismic data across the EEZ.

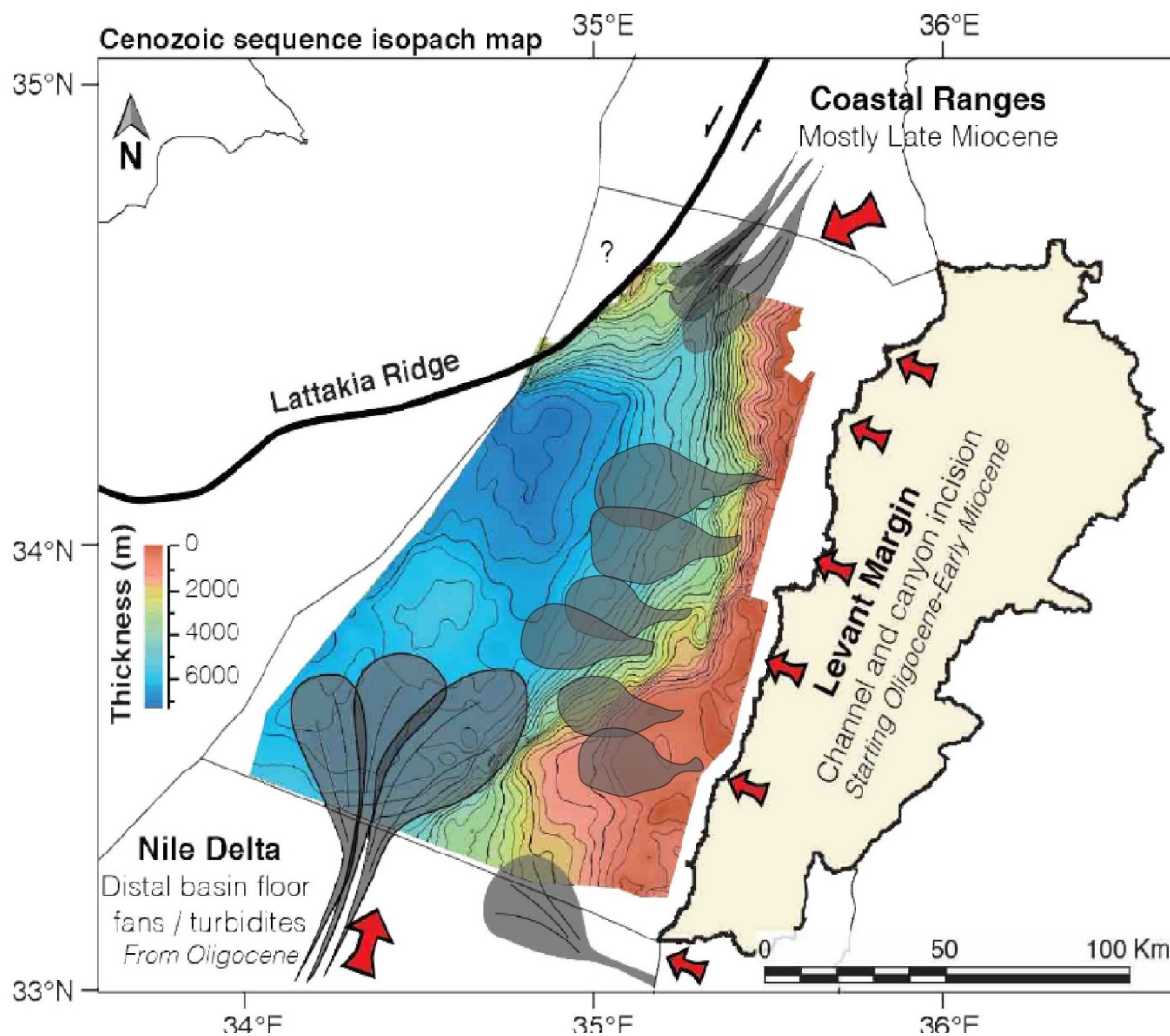
Data viewing at:

- LPA Offices
- PGS
- Spectrum

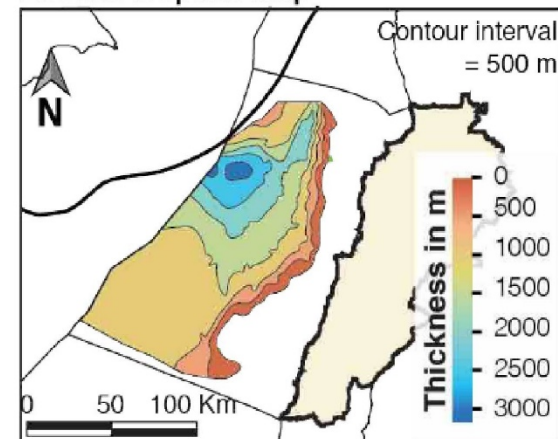


Data viewing request can be made via email: datacenter@lpa.gov.lb

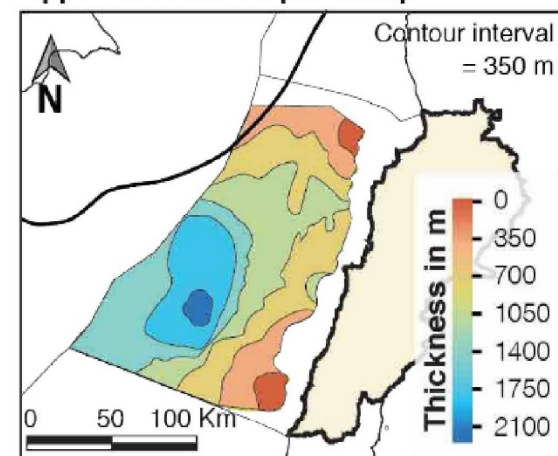
SEDIMENT INPUT



Eocene Isopach map

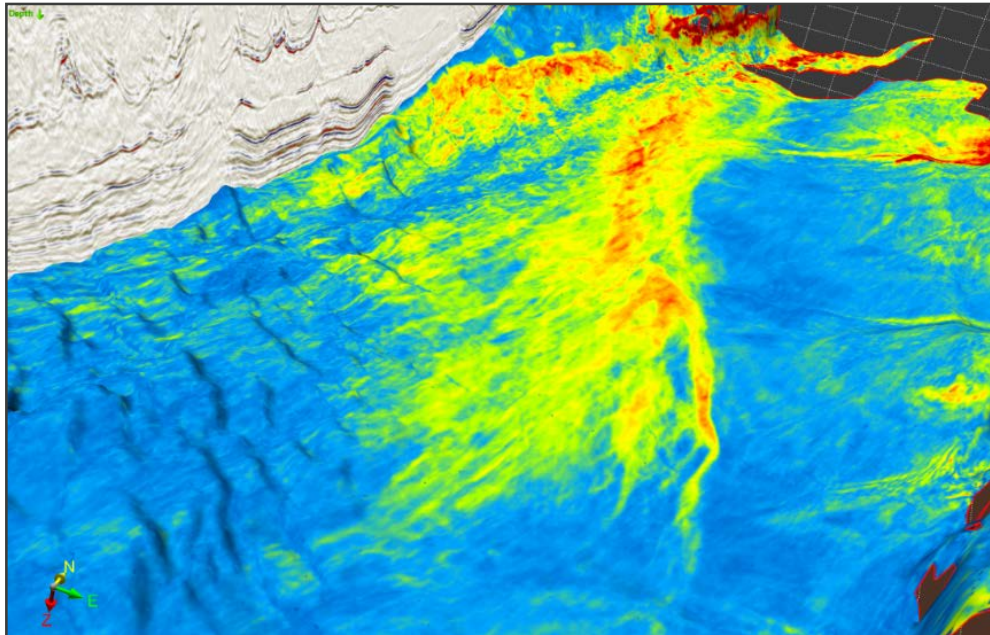


Upper Miocene Isopach map

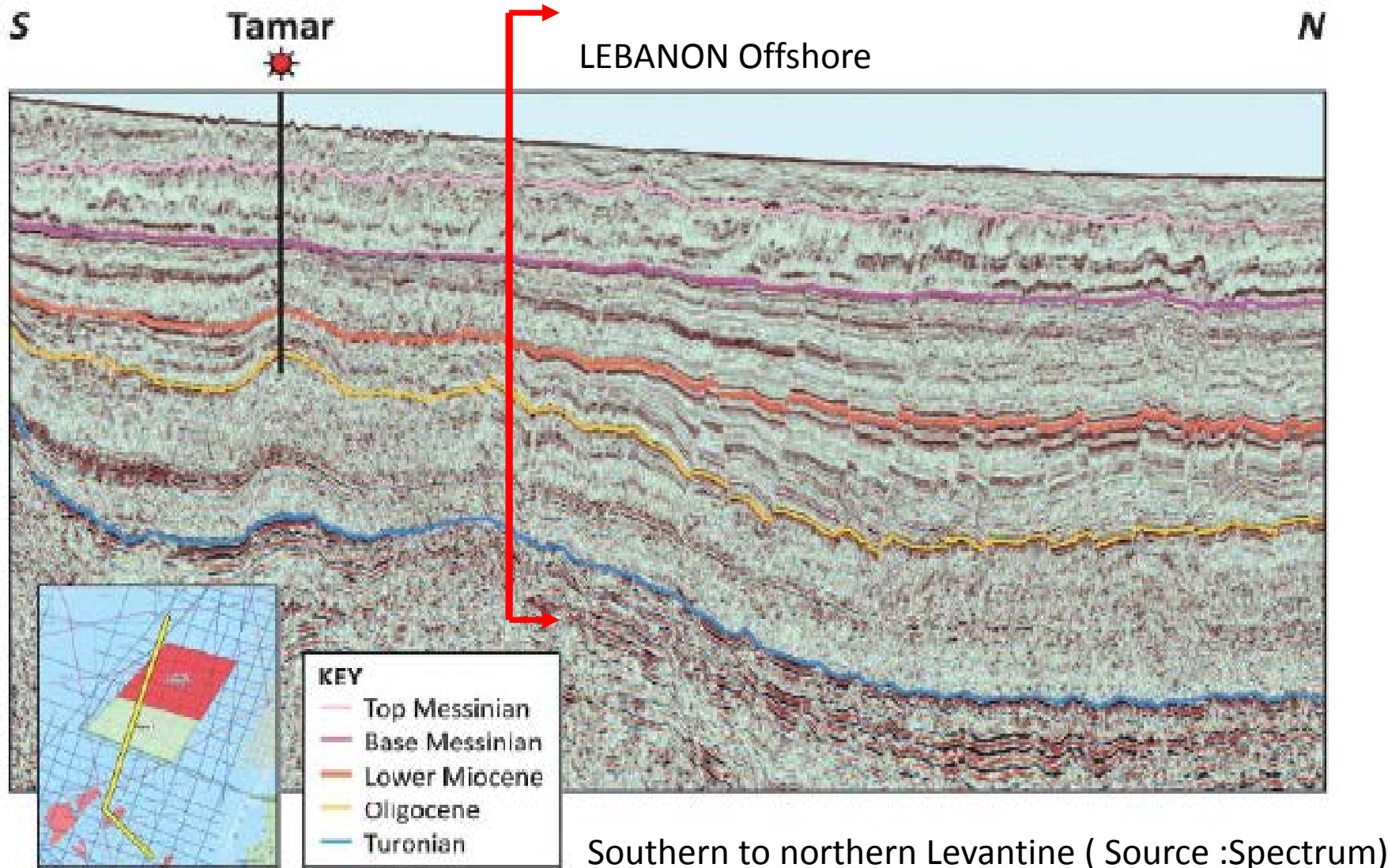


GEOPHYSICAL CHARACTERIZATION

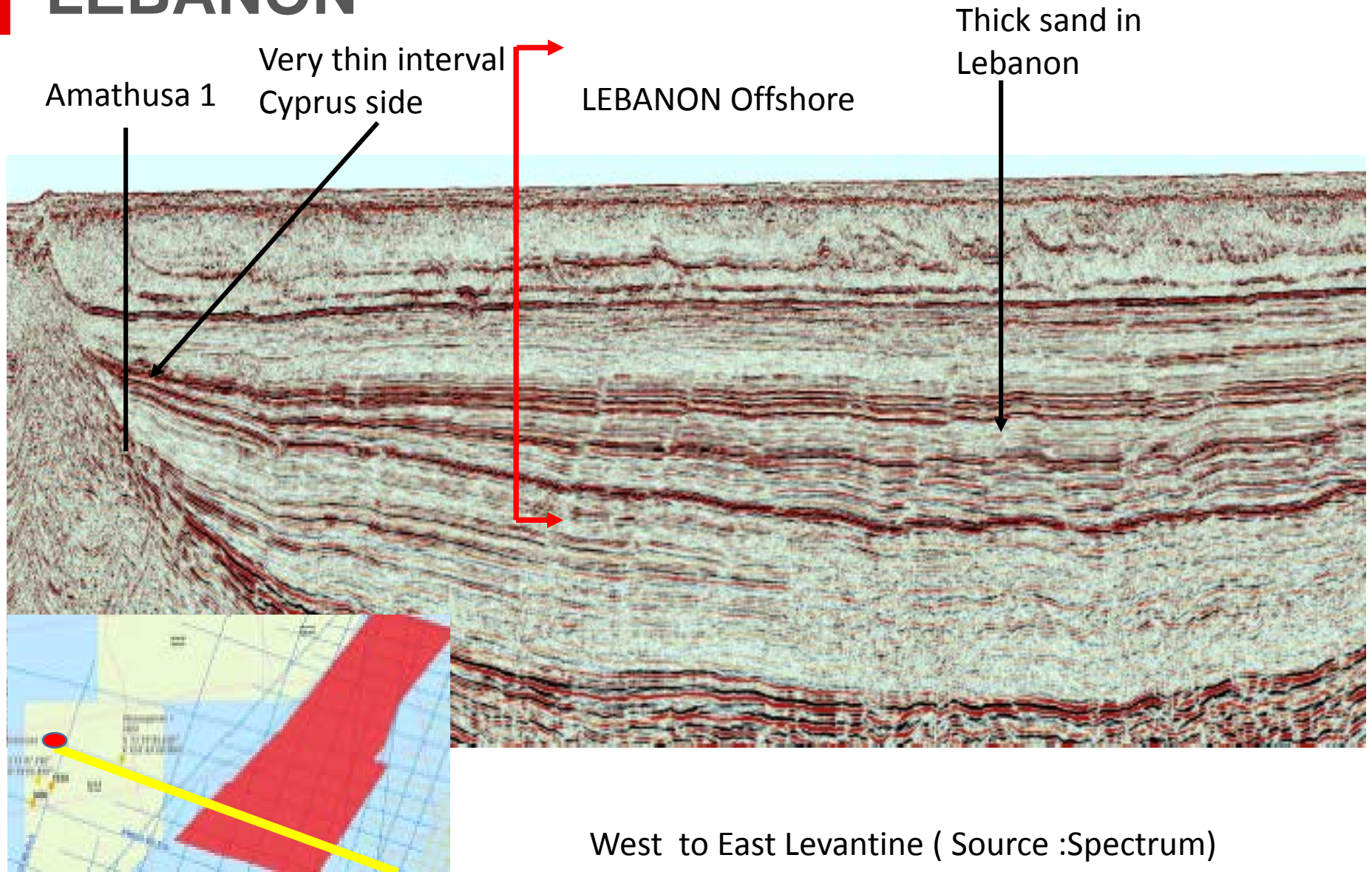
- Advanced geophysical characterization studies
- Identify sand source and hence reservoir presence
- Reduce uncertainties
- Point to likely drilling targets



SEDIMENTS THICKNESS OFFSHORE LEBANON

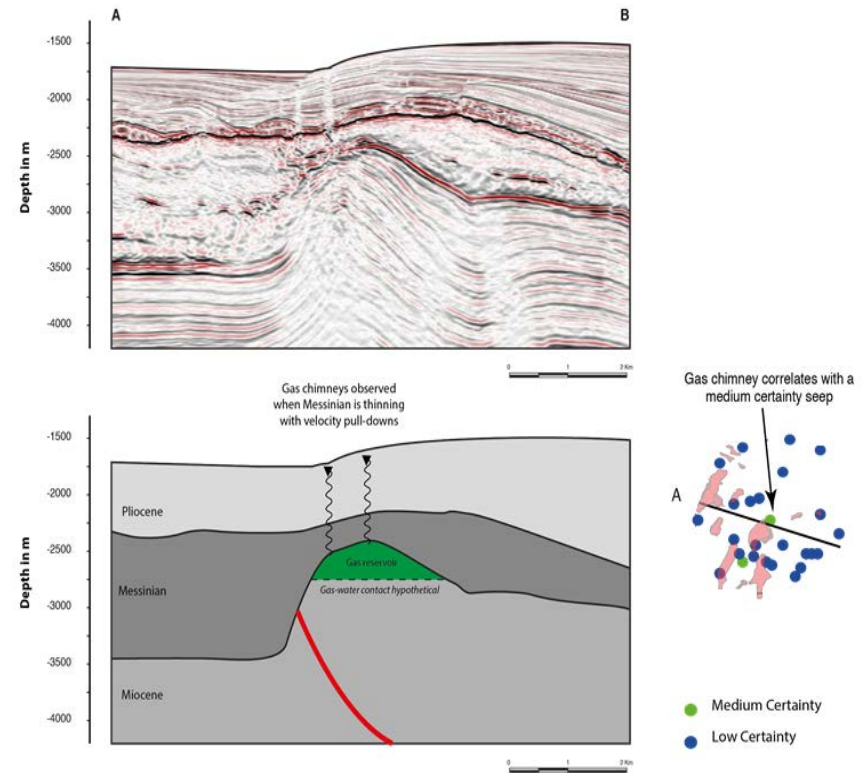
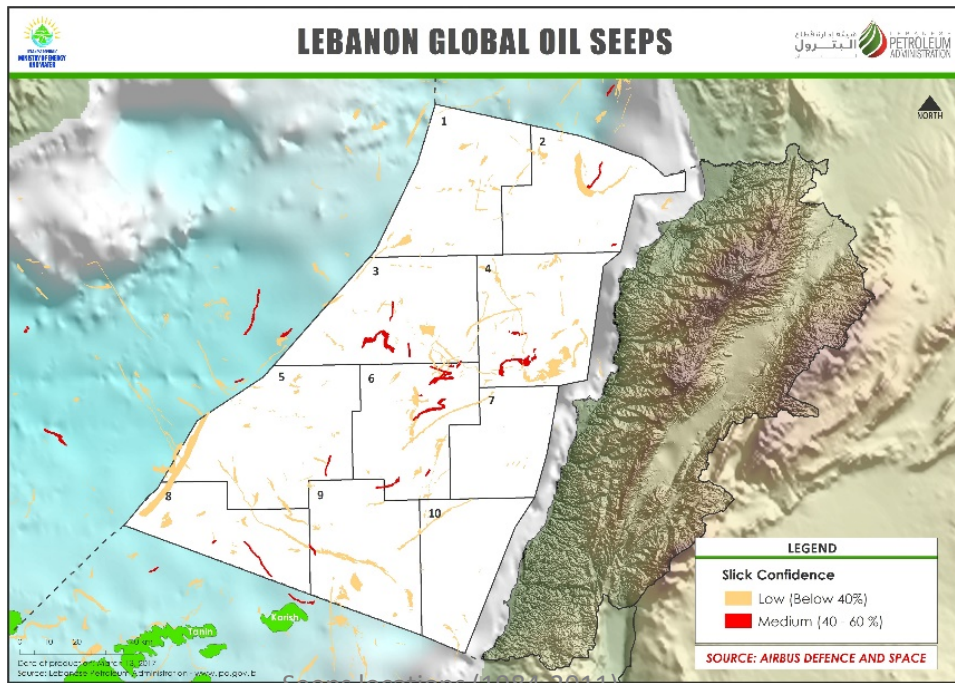


SEDIMENTS THICKNESS OFFSHORE LEBANON



OCCURRENCE OF OIL SEEPS

- Widespread occurrence of oil seeps (over 200) suggest that offshore Lebanon is prospective.



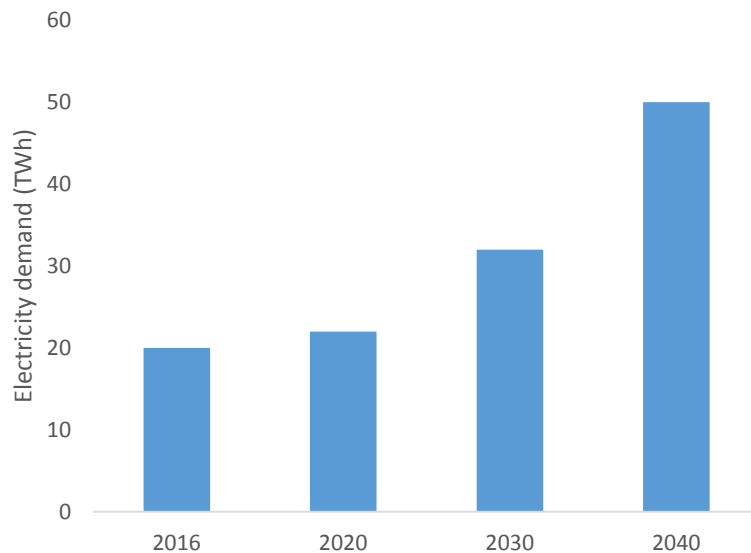
- HC seeps closely correlate to hydrocarbon indication on seismic such as bright spots and gas chimneys associated with possible migration pathways.

POTENTIAL MARKETS

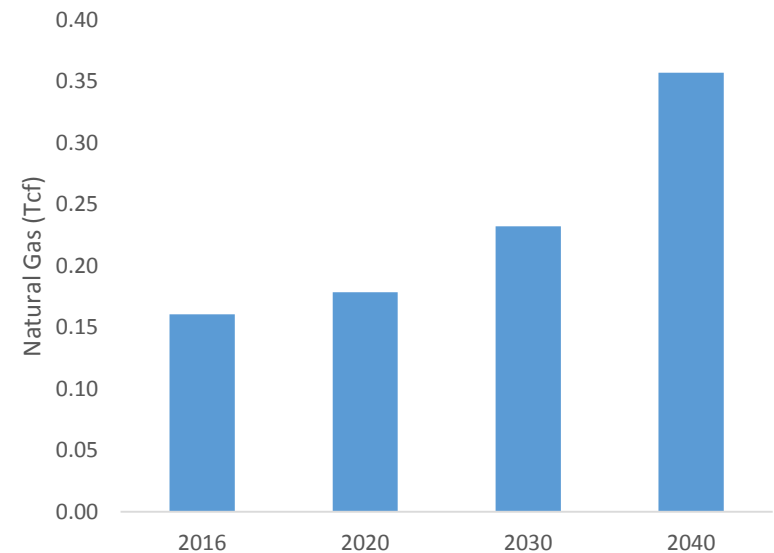
“The Minister may require that the Right Holders sell all or a portion of the Natural Gas produced from a Reservoir to the State or to an Entity that is owned by the State for use in the Lebanese domestic market. In such event, the State shall have the obligation to take the amount of Natural Gas in respect of which the election is made.” (As per EPA, article 14.8)

LOCAL NATURAL GAS DEMAND (MAINLY FOR ELECTRICITY)

Electricity demand, TWh



Total Gas demand, Tcf (by the year 2040, 70% of the demand comes from the power sector)

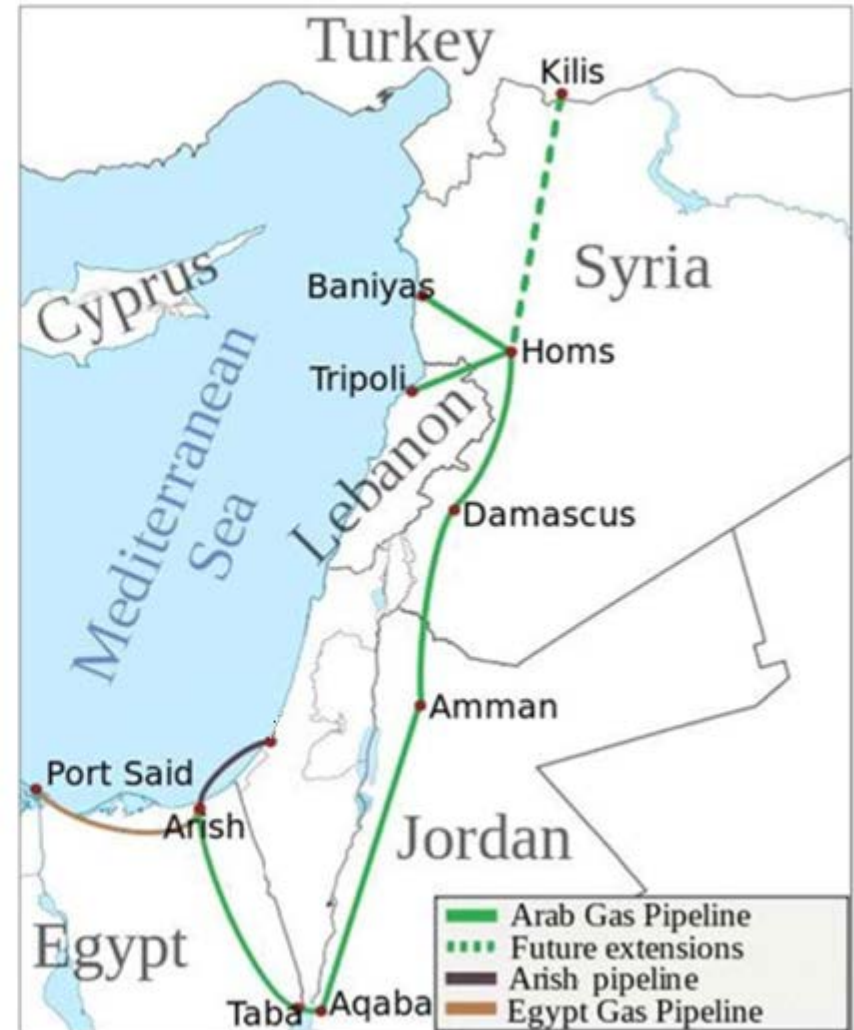


It is worth noting that sectors other than the power, can benefit from indigenous natural gas supply (i.e. Cement factories, industries, etc.)

Also important is the fact that the natural gas prices **will not be subsidized** and are going to be mainly indexed on the closest natural gas hub market.

REGIONAL MARKETS

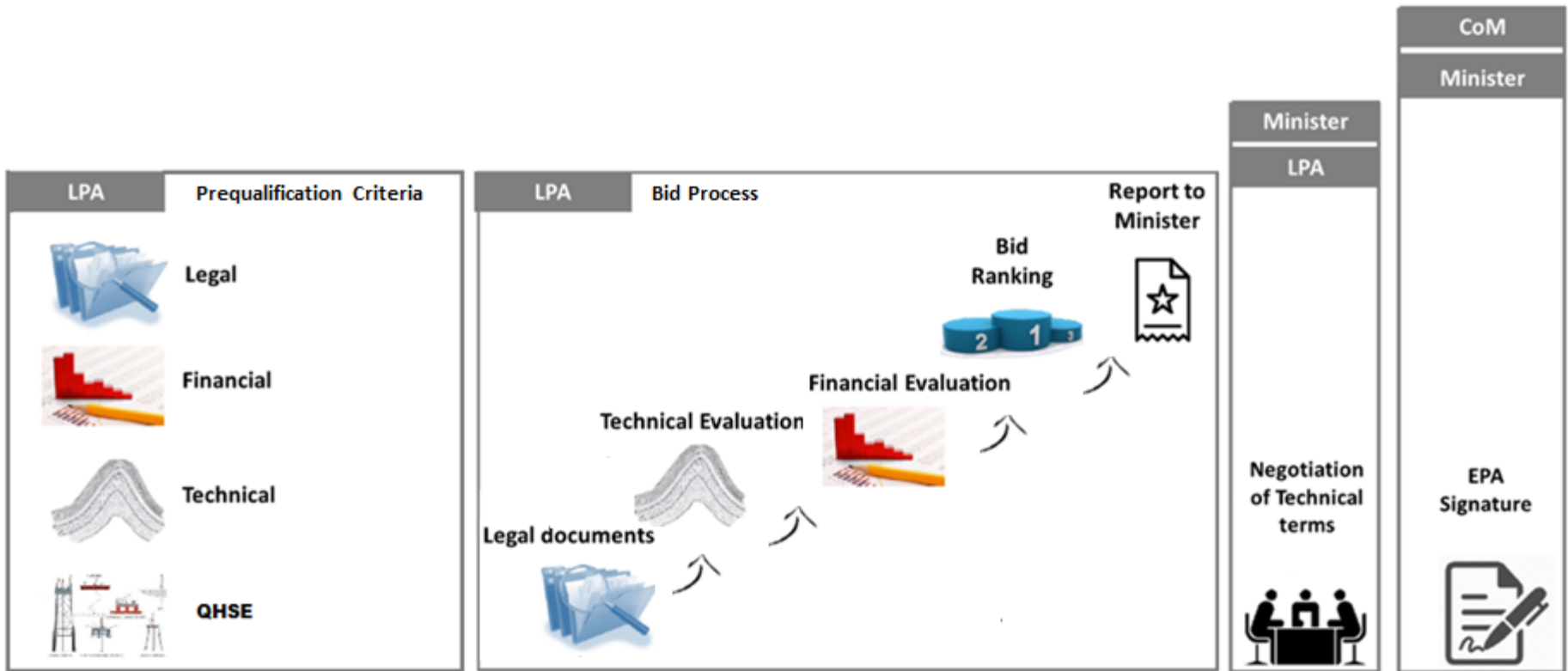
- Lebanon holds friendly relations with Syria, Turkey, Cyprus, Egypt, Jordan and the EU.
- Lebanese Natural Gas can easily reach Syria, Jordan and Egypt through the Arab Gas Pipeline.
- Turkey can be reached by an extension of the Arab Gas Pipeline or through a short offshore shallow water pipeline.
- The EU markets can be reached through Turkey.
- Lebanon can tie-in to any regional collaboration passing through Cyprus.



2ND LICENSING ROUND



2ND LICENSING ROUND PROCESS



TENTATIVE TIMELINE FOR 2ND LICENSING ROUND

	From	To
Official Launching of Licensing Round and Announcement of Open Blocks		Late 2018
Submission of Prequalification Applications	January 2019	End of April 2019
Declaration of Prequalification Results		May 2019
Submission of Bids	May 2019	End of October 2019
Evaluation of Bids and CoM approval		November 2019
Signature of EPAs		December 2019

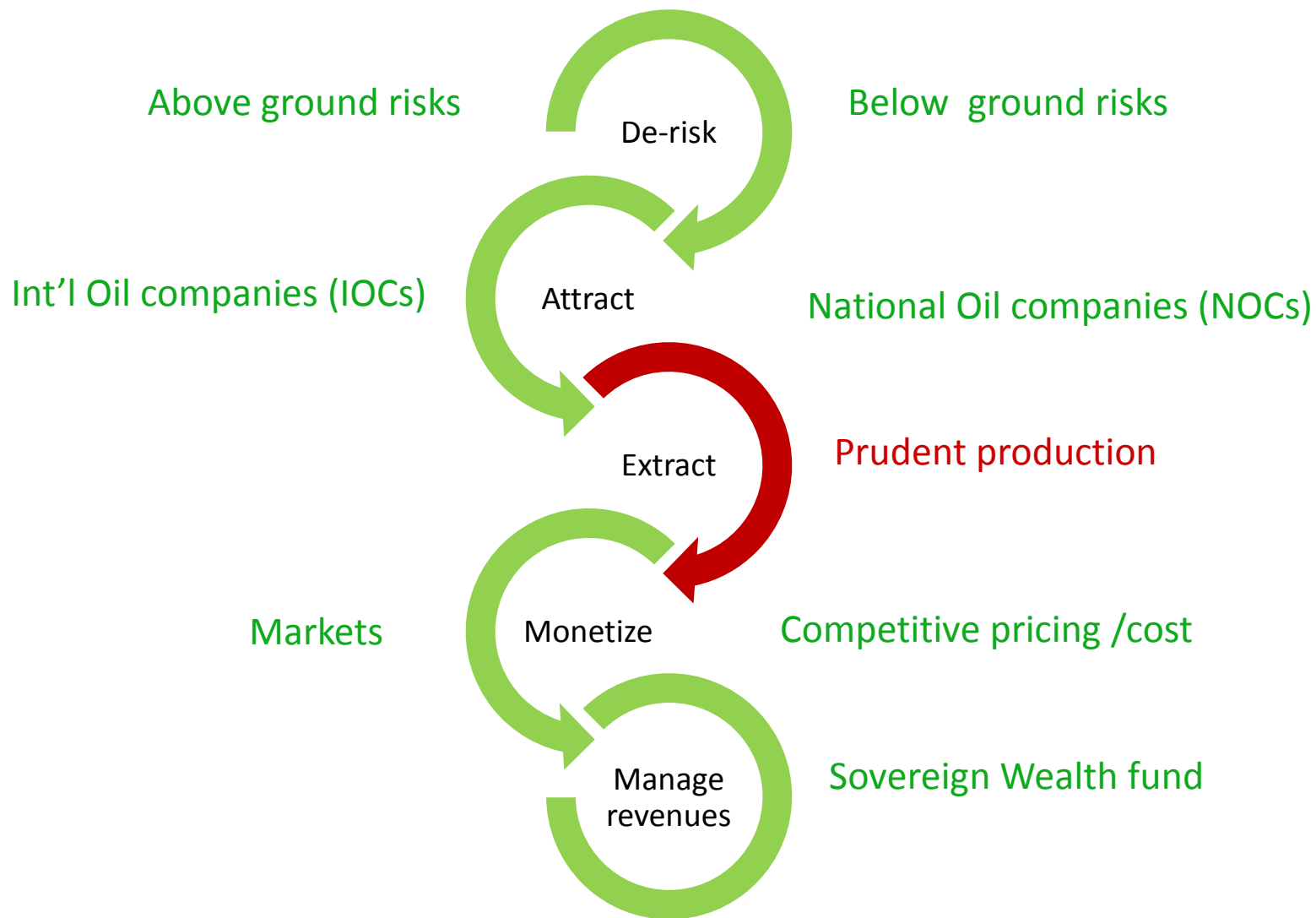


MEETING THE LPA

Event	Location	Dates
AAPG	Capetown – South Africa	4-7 November 2018
Adipec	Abu Dhabi - UAE	12-15 November 2018
Lebanon day- Petex	London - UK	(26)27-29 November 2018



CONCLUSION





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