Beyond the search for hydrocarbons in Greece

Hellenic Hydrocarbon Resources Management SA

Yannis Bassias, President and CEO
Zoom on Greek acreage onshore and offshore

E&P update August 2019
Recent gas discoveries

The gas tiles of Eastern Mediterranean and Black Sea

Expected gas discoveries

Recent gas discoveries and gas production

Nile delta
Technical and economical attractiveness of the SE Mediterranean

Convergence of five technical and economic reasons

Recent large discoveries of gas in the SE Mediterranean and Black Sea

New geological concept model added since 2015 in the Mediterranean

Progressive improvement of deep and ultra-deep drilling technologies

Increasing commercial importance of natural gas

Diversification of gas supply for the European market
Deep water, gas plays and time agenda for Ultra-deep waters

1 and 2, from older to more recent gas discoveries (in red). The water depths increase from region 1 to 2 and 3.
New geological concept added since 2015
If you take out 3000 meters of water, exploration will progressively move from north to south and from shallower less than 1,000 meters (yellow) to important water depths of more than 3,000 meters (dark blue).
Need for energy

United Nations World Population Projections through 2100

To keep per capita energy consumption constant at 2019 levels would require World consumption to increase to 70 times 1850 levels by 2050 and 80 times by 2100.

To keep total World energy consumption constant at 2019 levels, per capita consumption must decrease 22% by 2050 and 32% by 2100.

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Increasing production from ultra deepwater environments
Improvement of drilling technology with increasing water depth
### Challenges

- Pore pressure, fracture gradient, pressure window
- Shallow well sections
- Deep well sections
- Salt Drilling
- Tar deposits
- HPHT
- Number of casings
- Well control issues
- Rig and equipment issues
- BOP issues and limitations

### Technologies

- Enhanced topsides facilities, improved hulls, stronger moorings and risers
- Advanced subsurface tools and monitoring equipment
- Improved modelling tools for safer vessel designs from explosion hazards and violent sea events
- Development of “next generation” metocean and meteorological predictive techniques
When midstream and upstream meet

The red arrows represent the gas transportation projects EastMed, TAP and the project associated with the Neptun discovery (area 2). The arrow towards Egypt to Damietta or Iddku LNG facilities.
PIPELINE versus LNG: Dilemma or complementarities

THE EASTMED LENGTH

THE TAP LENGTH

Source: Institute of Gas Technology.
Status of gas transportation infrastructures
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