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"Energy Options in the East Mediterranean"
A summary of IENE's forthcoming major study on East Med Energy

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FOR SOUTH-EAST EUROPE

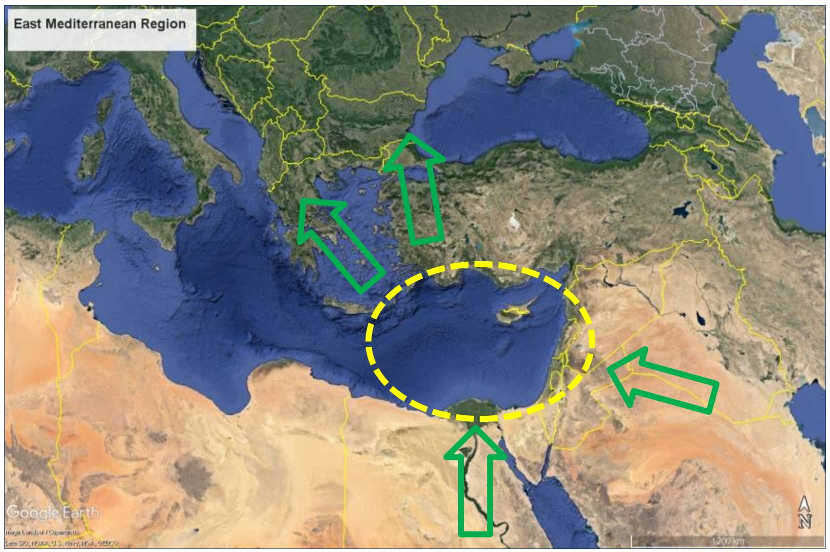
Outline

- The geopolitical importance of the region
- Economic and social parameters
- Natural resources
- Oil supply/demand
- Natural gas supply/demand
- Power generation/electricity interconnectors
- Renewables
- Hydrogen
- Energy security parameters
- Iran's gamble
- Key messages

Why the East Mediterranean?

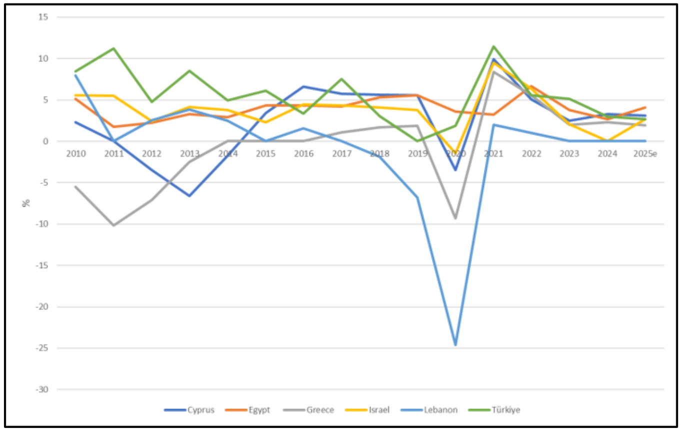
- There are several reasons why a focus is necessary on the energy options available today in the East Mediterranean area
- The cradle of western civilisation, the birth place of cross-border trade and where three main religions (Judaism, Christianity, Islam) meet
- Its opposing shores are close enough to permit easy contact, but far enough apart to allow societies to develop distinctly under the influence of their hinterland as well as of one another (David Abulafia)
- In today's interconnected digital world natural and religious barriers have not eclipsed (see Middle East conflicts over the last 78 years and the current war in Israel/Gaza)
- However, this extended region may still provide answers to today's quest for new energy supplies and transformative technologies, to help meet not only its own needs but also support energy demand in Europe
- As it happened in the past, today the East Mediterranean because of its cultural diversity and entrepreneurial spirit may lead the way in line with modern day needs
- In the past, trading in wheat, wood and wool provided the backbone of its affluence. Today, trading in energy (oil, gas, electricity, hydrogen) could lead to a new renaissance
- As in the past, even today, the East Mediterranean can be understood in terms of control of key energy routes across the sea. This is especially important in the case of energy whether oil & gas or electricity.

The geopolitical importance of the region



- At the crossroads between Middle East, North Africa and Europe.
- Advantageous geostrategic location (chokepoint and gateway)
- Yet in a dangerous shatter belt
- Between two regional conflict areas (Ukraine, Middle East)
- Proximity to Middle East and to major energy producers, like Saudi Arabia, Iraq, Iran
- East Med has the potential of becoming a major energy supplier to Europe
  - Prolific H/C region
  - High renewable potential
  - Energy-thirsty Europe

Economic and social parameters



- Diverse demographics, politics, and economies.
- Mixture of developed (Greece, Cyprus, Israel) and emerging economies
- Aim to exploit and export local energy resources.
- Political tensions impact countries differently.
- Energy viewed as a tool for peace and prosperity.

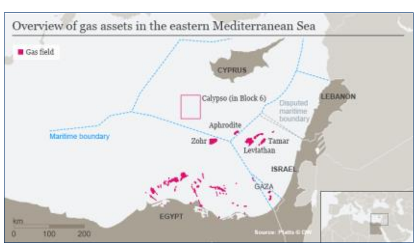
- Greece
  - 2.3% GDP growth in 2024; projected 2.0% in 2025. Unemployment at 10.5% (2024), inflation, and high public debt remain a concern.
- Cyprus
  - 3.3% GDP growth in 2024; projected 3.1% in 2025. Employment rising, inflation decreasing, and budget surplus maintained.
- Türkiye
  - 3.0% GDP growth in 2024; projected 2.7% in 2025. High inflation, productivity issues, and significant earthquake recovery needs.
- Israel
  - 0.7% GDP growth in 2024; expected to rebound to 2.7% in 2025. Stable inflation, increased military spending.
- Egypt
  - 33.4% inflation in 2024. 2.7% GDP growth in 2024, expected to increase further to 4.1% in 2025.
- Lebanon
  - Ongoing economic crisis, modest growth reversed by regional conflict. High inflation, unemployment, and unsustainable public debt.

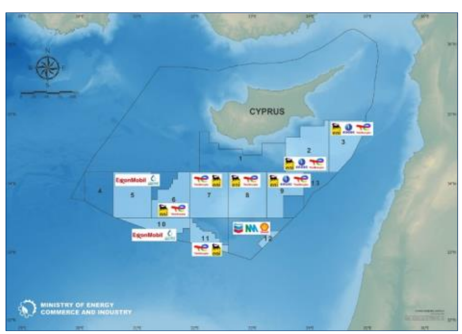
Oil and gas exploration and production

Strong position

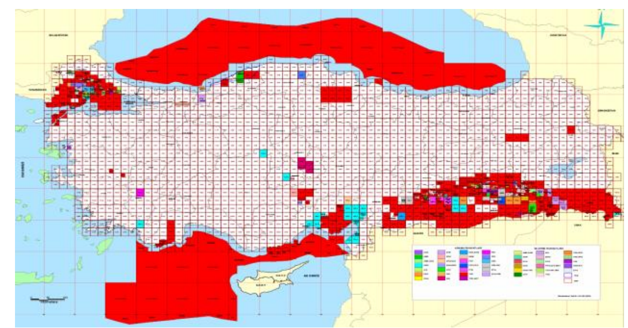
- Israel
  - Gas reserves 1,087 bcm (2022)
  - Production: 25.3 bcm/y (2023)
  - 46% exported

- Egypt
  - Oil production: 613,000 b/day (2022)
  - Gas production: 64.5 bcm/y (2022)
  - Gas production: -11%, 57.1 bcm/y (2023)
  - 65 new discoveries (2023)
  - 83 wells drilled (2023)





- Turkey
  - 414 exploration licenses (2024)
  - 157 production licenses (2023)
  - 214 wells drilled (2023)
  - Oil reserves: 1.7 billion barrels (2023)
  - Gas reserves: 710 bcm (2023)

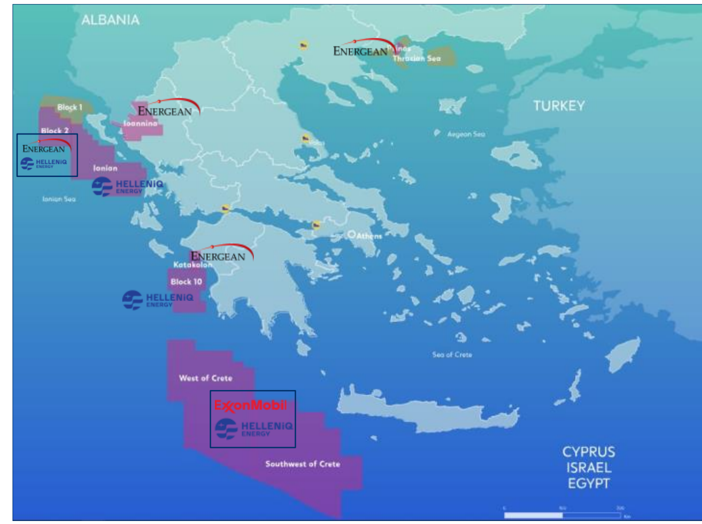


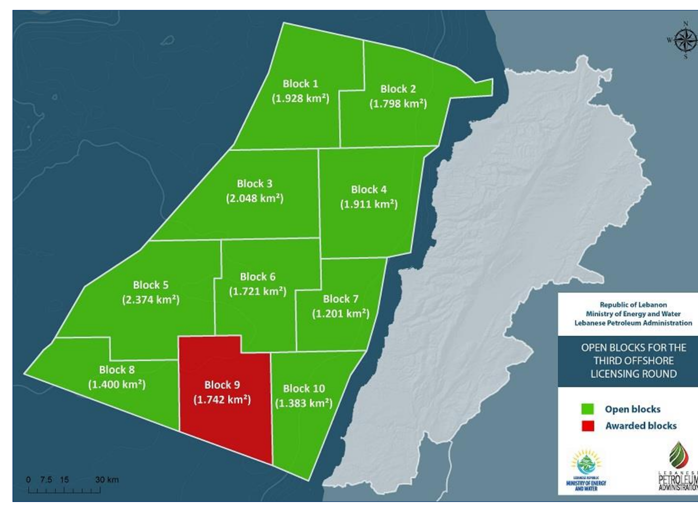
- Cyprus
  - Several discoveries since “Aphrodite” (2011)
  - “Aphrodite” development agreement pending
  - ExxonMobil/QatarEnergy spudded first well at Elektra prospect (January 2025)

Oil and gas exploration and production

Weak position

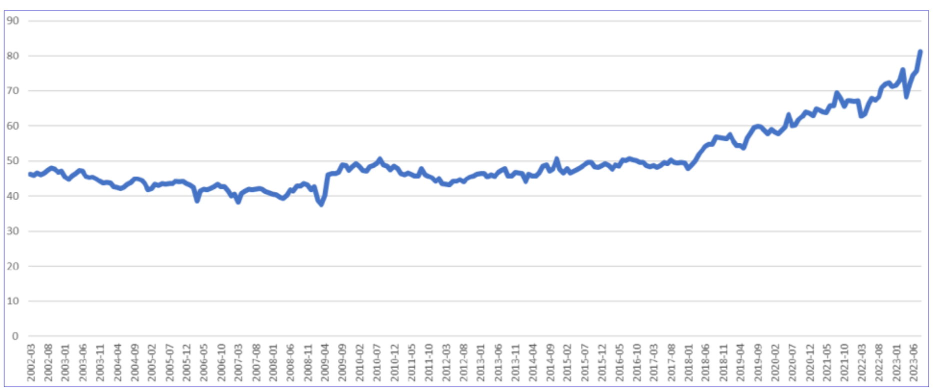
- Greece
  - 13 concessions (2020)
  - 9 active concessions today (ExxonMobil, Energean, HelleniQ)
  - TotalEnergies and Repsol left
  - 1st exploration well expected in 2025-2026 offshore Crete
  - Chevron's express of interest (2025)
- Lebanon
  - No commercial quantities
  - 3rd licensing round expires in March 2025
  - On offer all unlicensed blocks
- Syria
  - -74% oil production (2011-2022)
  - -58% gas production (2011-2022)
  - Oil and gas infrastructure command and condition





Oil Supply/Demand

- Egypt is the main oil producer in the region
  - 613,000 b/day (2022)
- Turkey
  - From 40,000 b/day (2017) to 65,000 b/day (2022)
  - Anticipated to reach 100,000 b/day by 2035 (Mount Gabar discovery, December 2023)

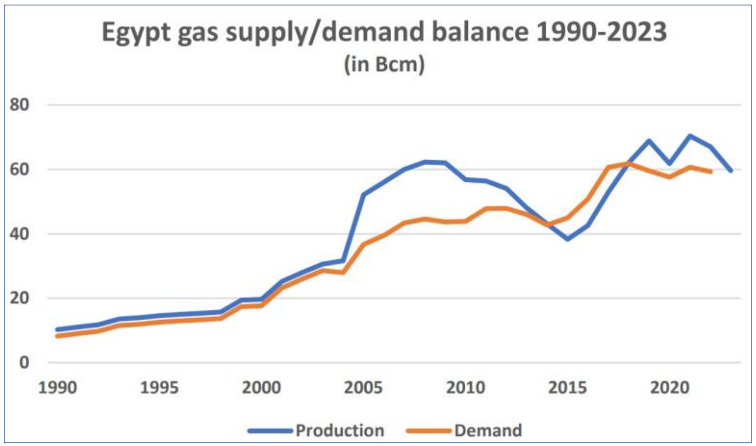


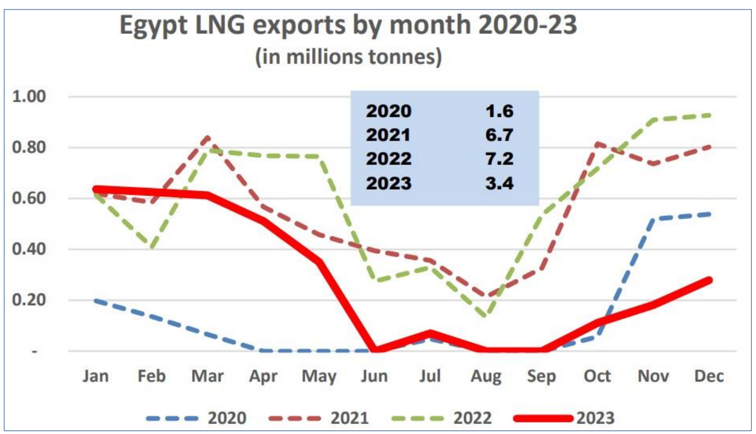
However this production is not enough

The region is a net oil importer

Natural Gas Supply/Demand

Egypt



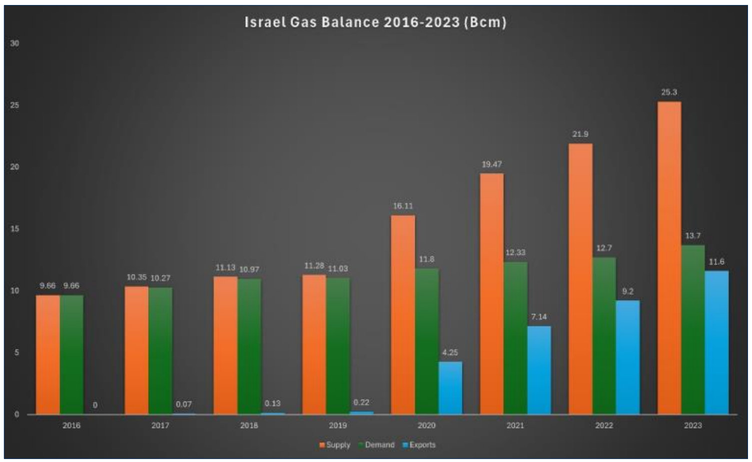


- Until 2003 supply/demand moved in step
- Production increased allowing exports
- Production declined in 2023 (summer demand)
- LNG exports stopped in 2023
- Balance was achieved from increased imports from Israel (8.7 bcm, 2023)

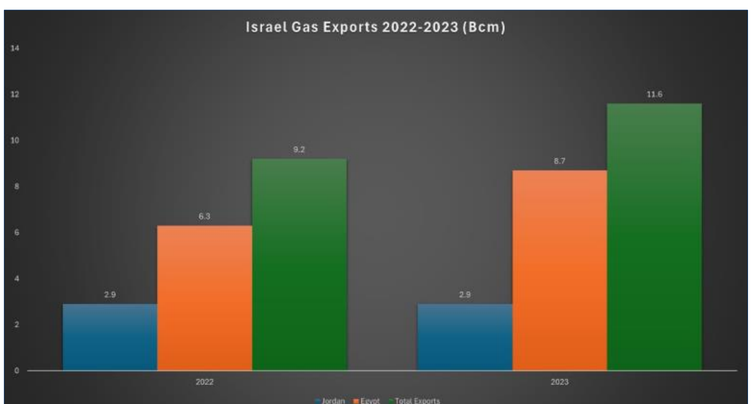
it seems unlikely that the MOU signed with the EU in June 2022 regarding exporting gas to EU will be fulfilled in the near future

Natural Gas Supply/Demand

Israel



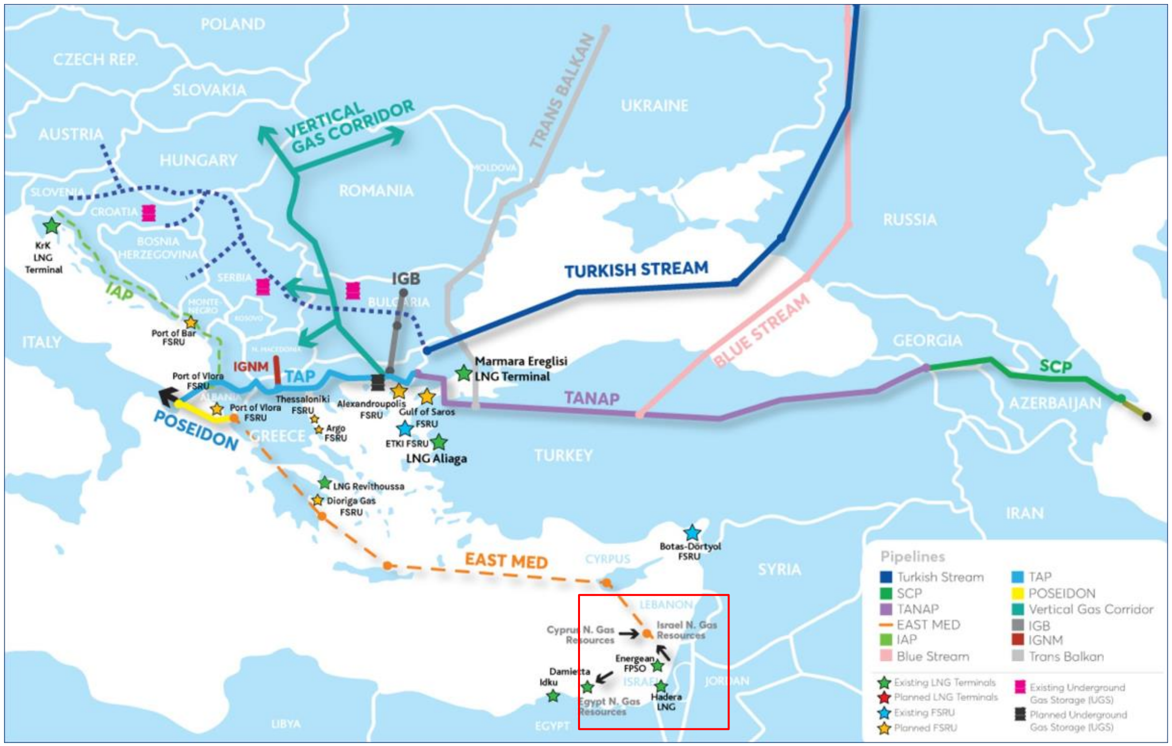
- Significant gas producer
- Gas exporter since 2020
- Exporting to Egypt and Jordan
  - 8.7 bcm in 2023 to Egypt
- No direct link to the international gas market



That could change either by:

- a pipeline (EastMed pipeline) or
- via Egypt (LNG plants)

Natural Gas transmission in SE Europe



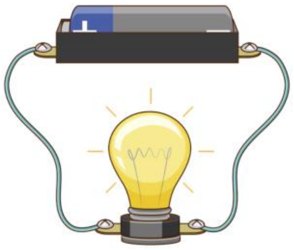
The expanded South Corridor in full operation since 2020, is the main gas transmission network in the region

Existing pipeline infrastructure in the East Med

Source: *DW*

Electricity in the East Med

- The supply of uninterrupted and competitively priced electricity in the region is of outmost importance for daily survival and economic development
- Power generation is achieved through a combination of indigenous (i.e. gas, oil, RES, nuclear) and imported fuels (mainly oil, gas, electricity)
- The big challenge for East Med electricity remains the increase of power generation from local sources
- As power generation capability increases at country level and electrification advances in view of climate goals, so is the need for cross-border interconnections
- A number of electricity interconnection projects is underway (e.g Great Sea Interconnector, GREGY, Green Aegean, etc.)
- In addition to the East Med countries the need for cross-border electricity interconnections encompasses others in the neighbourhood – Saudi Arabia, Jordan
- These are potential power generators with excess electricity capacity for export



Installed electricity capacity

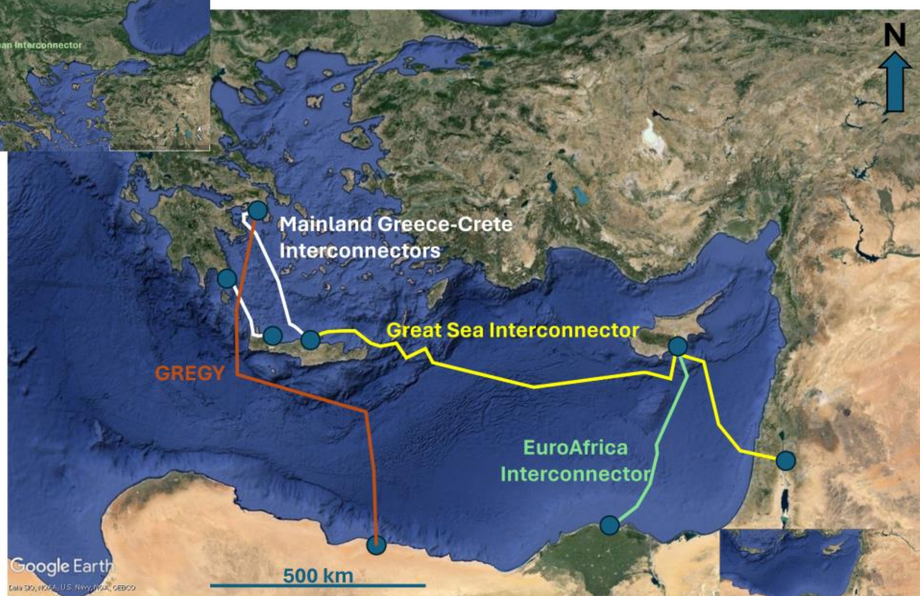
Country	Installed Capacity (GW, 2023)
Greece	24.0
Cyprus	2.1
Turkey	110.0
Israel	24.0
Egypt	60.0
Lebanon	4.1
Syria	10.0

Sources: *a) IENE Greek Energy Sector 2024, b) IENE SEEE Outlook 2025, c) LNRG Technology d) Egyptian Ministry of Electricity & Renewables, e) U.S. Energy Information Administration (EIA)*

Electricity interconnectors

Cross-border electricity connections have become vital energy conduits for the region's energy security.

- Green Aegean Interconnector, 9 GW to Europe

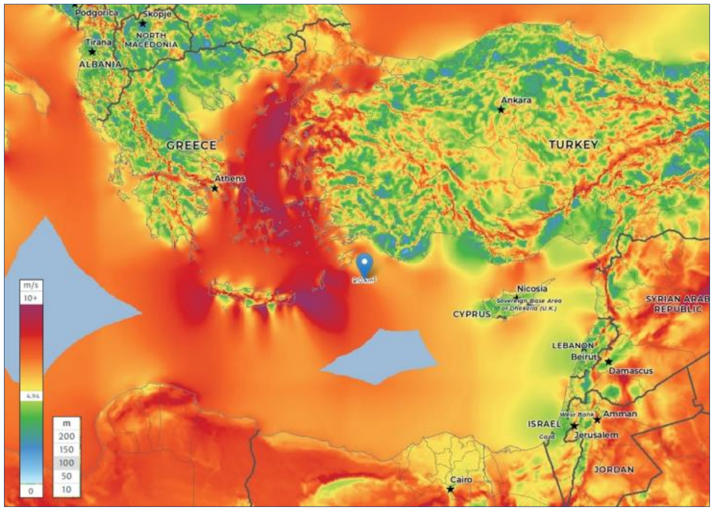


- The Great Sea interconnector took over from EuroAsia in December 2023
- Capacity: 1 GW
- Establishment of the special purpose company "Saudi Greek Interconnection" (Feb. 2024)

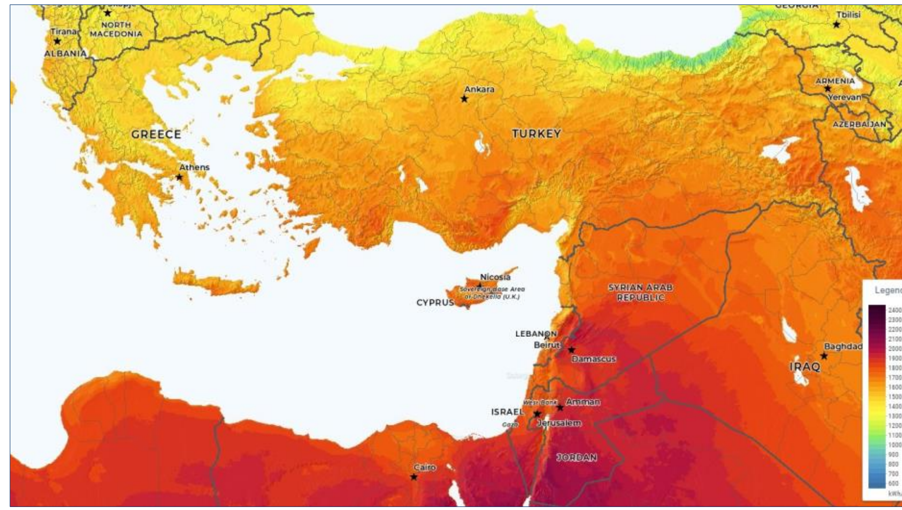
- EuroGulf Interconnector
- ProjectCapacity: 2 GW

- GREGY interconnector (3 GW)
- was specifically mentioned in the Joint Declaration on the Strategic & Comprehensive Partnership between Egypt/EU (March 2024) (although there was no reference to gas or the 2022 MOU)

Renewables play an increasingly important role in East Med energy policies



Average wind speeds (m/sec) map



Photovoltaic Power Output map

- Greece RES ambitious targets (44% total gross energy consumption by 2030) under review
- Greece, 50% electricity produced from RES (2024)
- Turkey approximately 40%
- Turkey is a rising star in the realm of geothermal energy, ranked 4th in world
- Israel is aiming for 30% RES in power generation by 2030 (<7% in 2020)
- Egypt is aiming for over 30% RES in the energy mix by 2035

Hydrogen

- Russia’s invasion in Ukraine has reshaped EU energy policy and has placed Hydrogen in its core agenda
- EU Hydrogen Strategy
  - Aims to diversify and decarbonize energy, reduce Russian imports, establish market frameworks, and leverage international partnerships.
- European Hydrogen Bank
  - Addresses investment hurdles, bridges cost gaps, aggregates demand, and negotiates prices with global producers.
- Greece's Hydrogen Goals
  - Targets for 2030 and 2050 include significant electrolyzer installations
  - Blending hydrogen with natural gas
  - utilizing existing infrastructure for hydrogen storage.
- Turkey's Hydrogen Strategy
  - Emphasizes green hydrogen production
  - aims for significant electrolyzer capacity
  - South Marmara Hydrogen Coast Valley Project.
- Egypt's Hydrogen Ambitions
  - Leverages strategic location and renewable energy
- Although there are several hydrogen initiatives and projects across the region, we cannot yet formulate safe estimates in terms of production in the coming years.

Energy security parameters in the East Med

- External Threats
  - Gulf tensions, Red Sea instability, and Russia-Ukraine war impact regional energy security, causing oil price spikes and rerouting of tankers around the Cape of Good Hope.
- Regional Dynamics
  - Israeli-Palestinian conflict and Turkey-Greece tensions have minimal direct impact on energy projects, while Israel-Egypt gas relationship is crucial for regional energy stability.
- Disruptions and Sanctions
  - Ukraine conflict affects Kazakh oil routes; potential sanctions on Russian LNG could increase demand for US LNG in Europe.
  - Negative impact on European gas prices.
- EU Gas Supply Agreements
  - MoUs with Israel, Egypt, and Azerbaijan aim to secure alternative gas supplies, but face challenges from Egypt's domestic demand and slow Azerbaijani field development.
- Impact from Prolonged Conflicts
  - Continued Gaza war could strain Israeli-Egyptian relations and halt pipeline projects to Türkiye; development of Gaza Marine gas field depends on a peace settlement.

Iran's aspirations and the dormant geopolitical rift

- Following the collapse of the Assad regime in Syria, Iran's aspirations in the region are now in question.
- The axis of resistance (Hamas, Hezbollah, Houthis, Iraq militias, Syrian army etc.) has suffered a major blow, it will not recover easily.
- However, the ongoing conflict in Gaza and Hamas's eventual capitulation will not deter Iran's plans.
- There is a constant danger of an overflow of hostilities in the broader Middle East.
- There is definite geopolitical impact stemming from Iran's current policies in the region (e.g. Houthis campaign against seaborne trade, oil supply uncertainty).
- Can this negative situation be contained and to what extent?
- Is Iran going to become a nuclear power?

Key messages (1/2)

- Understanding the geography of the region is of paramount importance
  - Major energy producers (for example Saudi Arabia)
  - Iran
  - Iraq
  - Gulf of Suez
  - Caspian Sea
  - Black Sea
  - European Union
- Can this region become an energy exporter to Europe?
  - Prolific H/C resources
  - High RES potential
  - BUT can it cover the regional demand?
  - Can it actually export any energy surplus?
  - For example, Egypt has reduced gas production, has stopped LNG exports
  - Greece has been left behind regarding E&P
  - How will this affect the regional supply/demand dynamics?
- Electrification
  - Can the region's grids support the energy transition?
  - If not, what must be done?
  - Can cross-border electricity interconnectors accelerate energy transition?

Key messages (2/2)

- Where does Saudi Arabia fit in?
  - Can it export electricity via Egypt but
  - It can also export via Jordan
- What about Iran and Iraq?
  - How will these two (2) countries affect the regional balance?
- Different cultures, diverse economies and never ending hostilities. Can this change?
  - How cooperation between such a diverse mixture of countries be successful?
- Turkey
  - Turkey is drifting away from the West
  - Can it return?
  - Turkey-Iran relations have affected the US-Turkish relations
  - Cyprus-Turkey, Greece-Turkey relations.
  - Turkey not willing to follow UNCLOS
  - How can there be any regional cooperation without Turkey?

Thank you for your attention!

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