

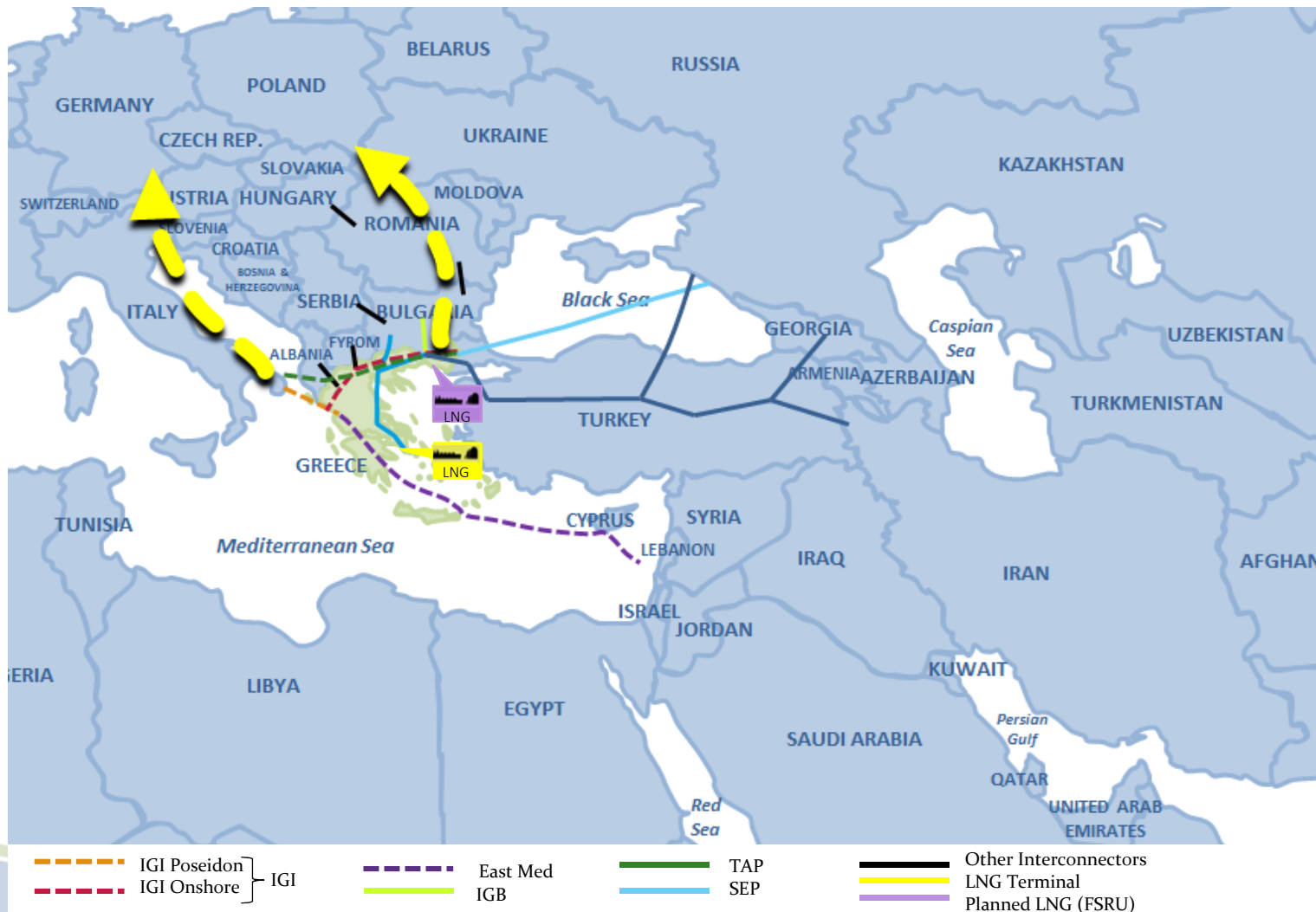
- **Energy Security Challenges in the Region**
- **The Midstream Challenge in Eastern Mediterranean**

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Greece - The Gateway to Europe



IGI Poseidon



 Projects of Common Interest



Gas resources in the Eastern Mediterranean

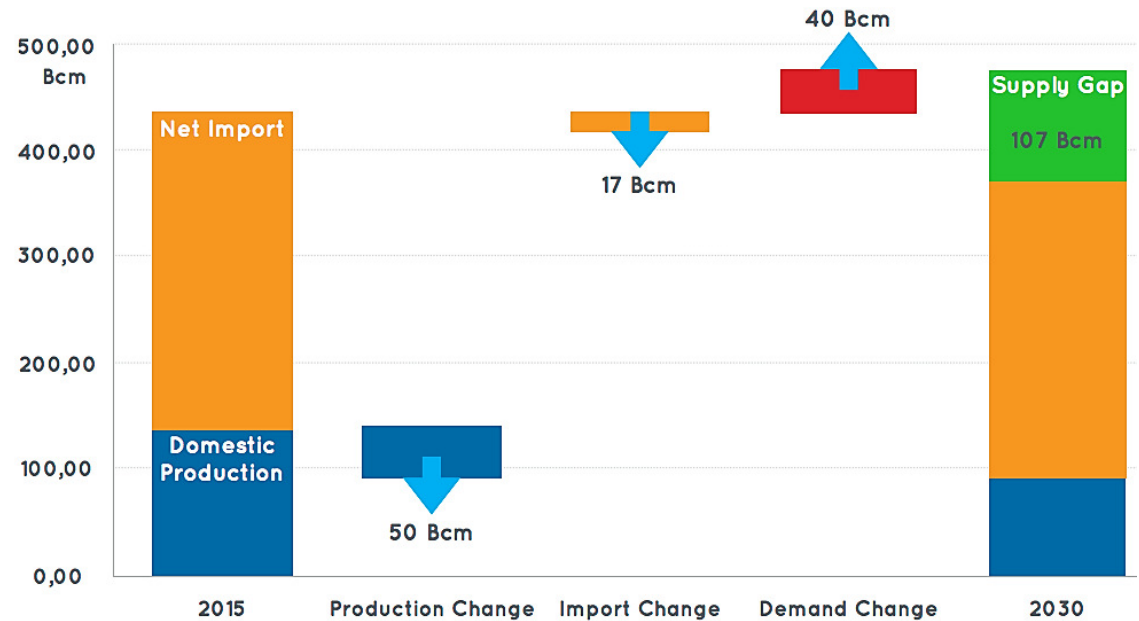


European gas market: needs of additional gas import

Under OME estimation, EU may require up to 100 bcm of new gas supply (non-traditional sources) by 2030 compared to 2015.

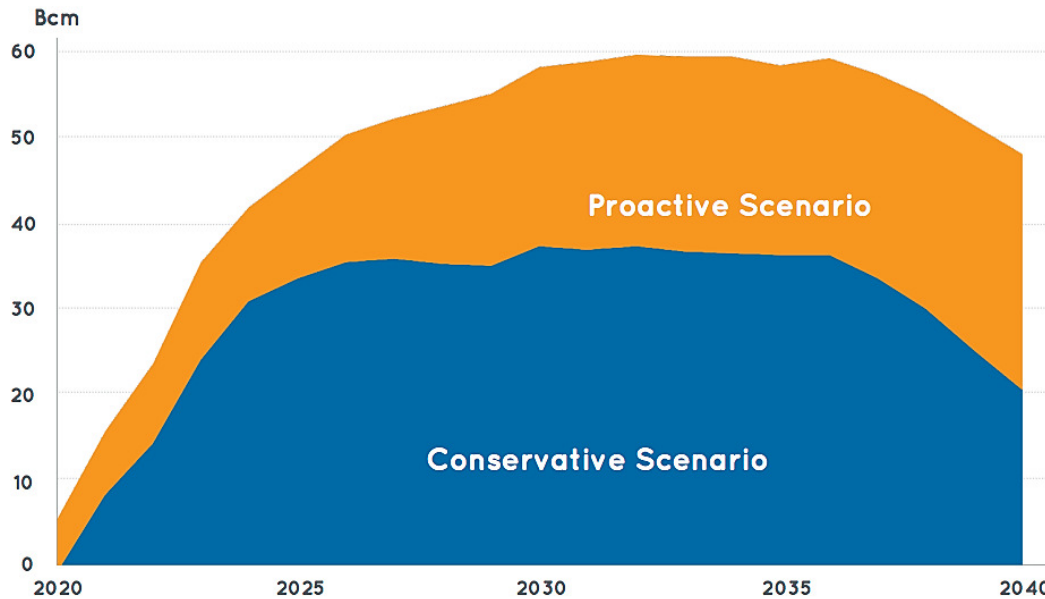
EU increased gas import requirements are mainly deriving from:

- **declining domestic production:** caused by the depletion of current gas fields, especially in North Sea (up to approx. 50 bcm less in 2030)
- **reduced gas imports from traditional suppliers:** Norway and Algeria expected to decrease the exports to EU (up to approx. 17 bcm less in 2030)
- **growing gas demand:** expected to increase in the EU by approx. 40 bcm in 2030 (still below pre-crisis levels).



Eastern Mediterranean region: export potential

Eastern Mediterranean gas volumes available for exports



The Eastern Mediterranean region export potential to world gas markets will considerably increase in the next years:

- Conservative scenario: 30 bcm/y
- Proactive scenario: 50 bcm/y

Conservative Scenario: takes into account past trends, current policies and measures.

Proactive Scenario: emphasizes energy security and environmental concerns.



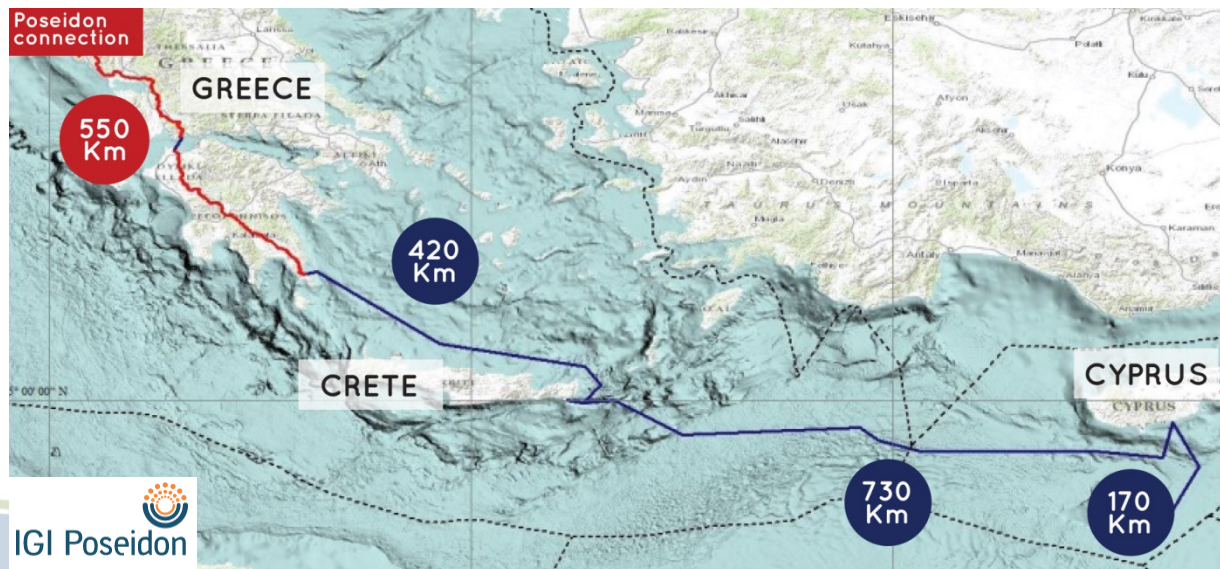
EastMed Pipeline: Project description

- The East-Med Pipeline is an offshore/onshore pipeline, approximately 1900 km long, directly connecting East Mediterranean gas reserves to Greece, via Cyprus and Crete. The Project is currently designed to transport initially 10 Bcm/y from the Levantine Basin gas fields into Greece and, in conjunction with the Poseidon Pipeline, into Italy.
- During the period 2015-2016, IGI Poseidon has finalized, also thanks to EU financial contribution under the CEF program, with the support of first class international engineering (Intecsea and C&M consortium) and global consultancy (IHS-Cera) firms, the **PRE-FEED studies**, definitively confirming that the EastMed Pipeline Project is:

• technically feasible

• economically viable

• commercially competitive

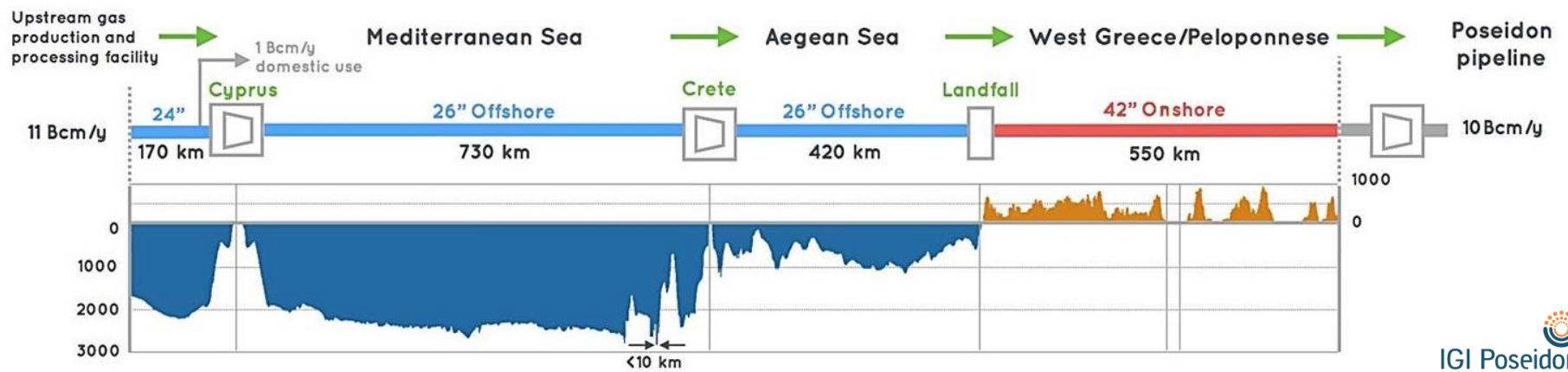


EastMed Pipeline: Technically feasible

The technical results of the Pre-FEED studies performed by the consortium IntecSea - C&M Engineering, clearly indicate that EastMed project is technically feasible:

- **Manufacturability** confirmed by leading mills in Europe, India and Japan
- **Constructability** confirmed by pipelay contractor using the current pipelay fleet

IntecSea and C&M Engineering have estimated the overall investment cost of the EastMed project in 5.2B€.



Fits with European Union doctrine in regards to optimization and commissioning of new projects diversify gas sources, route and end market

Eastern Mediterranean region: export options

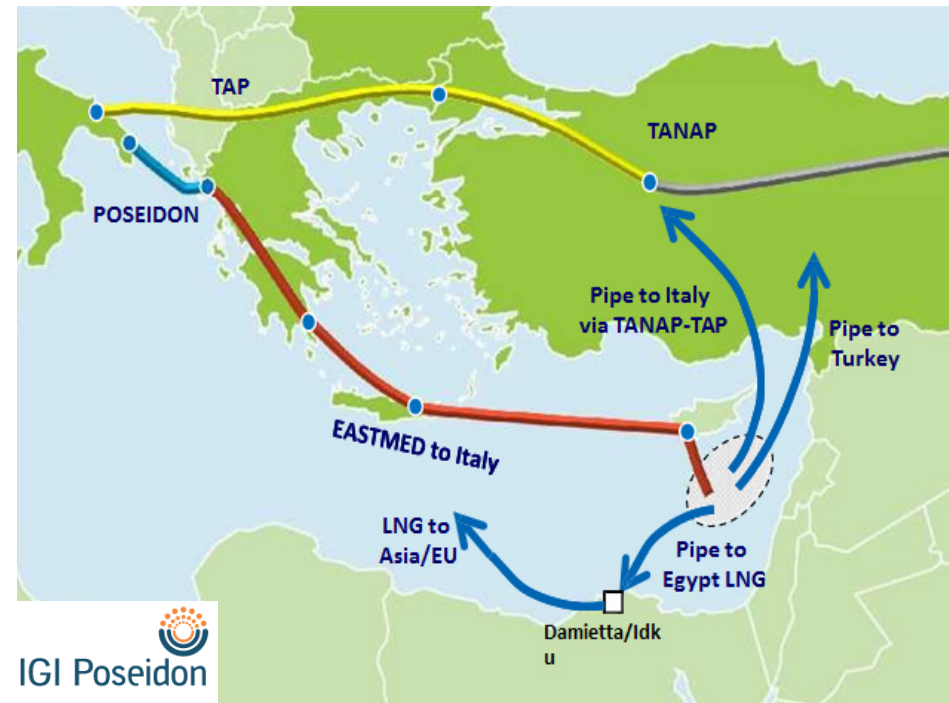
Current reserves of the Eastern Mediterranean region, without accounting future discoveries in a widely underexplored region, could support multiple and complementary export schemes.

3 main destination markets are currently under consideration :

- **Turkey**, large and fast growing market with the demand expected to rise by approx. 25 bcm in 2040
- **Europe**, by far the largest energy importer in the world with the ambition to diversify its supply sources
- **Global LNG**, well supplied market conditioned by the significant increase of global liquefaction capacity (+40% by 2020)

Several export options under assessment:

- pipe to Turkish market
- existing Egypt LNG facilities to Asian market
- existing Egypt LNG facilities to European market
- pipe to European market, using TANAP /TAP chain
- **EastMed pipeline to European market**
- new liquefaction plant in Cyprus



Economic Assessment of Supply Options for East Med gas

The global information company IHS-CERA considering the ytd exportable surplus of Israel plus Cypriot gas, which exceeds 30 bcm/y, advised that multiple export options should be pursued in parallel to facilitate gas export.

IHS highlights economical viability of the EastMed among other export options in the region:

- complementary to other export options considered not mutually exclusive: No “must-do” option has been identified
- slightly more attractive from an economical point of view of other export options to EU
- offering from a qualitative point of view more value for money :avoiding geopolitical constrains via a fully European undisputed route and ensuring access to European liquid market avoiding transit risks.



Summary

EU may need more than **100 bcm of additional net imports** to satisfy its gas demand by 2030.

Current Discoveries in Israeli and Cypriot waters are already **sufficient to support multiple export options**. Expected Future discoveries will reinforce the need of multiple export schemes.

The export options under assessment are not mutually exclusive and should be pursued in parallel in order to: i) offer sizable outlets to upstream developments; ii) incentivize new exploration activities; iii) provide options in case of constraint deriving from geo-political or commercial unpredicted events.

A direct export route to EU would entail a reduced risk profiles both from producer and consumer perspectives:

- The Turkish and Egyptian options involve political and intergovernmental long term challenges and negotiations with a ‘gatekeeper’, with increased exposure to security of supply risks.
- **The EastMed option minimizes political obstacles and involves primarily private company commercial assessment, allowing connection to a liquid and transparent final market.**

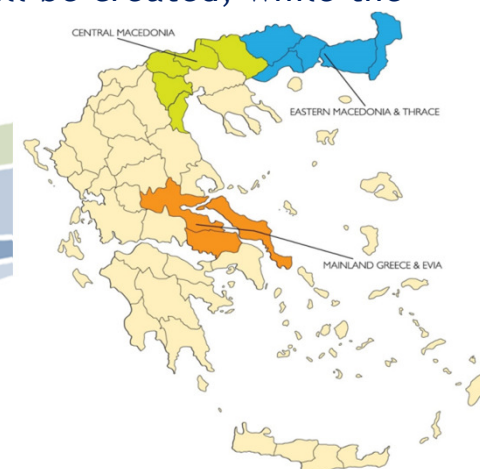
The final results of the Pre-FEED studies, performed with the support of the engineering companies IntecSea and C&M Engineering and the global information company IHS-CERA, definitely confirmed that **EastMed Pipeline Project is:**

- **technically feasible**, well within the available technology state of art, and no showstoppers have been identified;
- **economically viable and commercially competitive** compared to the other export options from the East Mediterranean region.



DEPA's Group Investment and Development Priorities:

- To create a certain **“GAS CULTURE CONCEPT”** for the Greek society, aiming to double the number of gas counters from current 355,000 to +700,000 by 2026.
- CNG / LNG technology development is planned in remote areas, islands and individual consumers.
- Gas supply to Crete and major Aegean islands within the content of standing MoU with PPC
- By 2021, will be ensuring the supply of natural gas for 16 capital cities and other smaller towns and industrial areas
- The length of the new distribution networks of nearly 1,200 Kms will be added to the 450 km of the existing network
- During the construction of the network, more than 2,000 jobs will be created, while the operation will provide at least 1,000 new permanent jobs.
- Environmentally friendly footprint and facing of energy poverty and exclusion
- Strengthen the presence in the retail market energy
- LNG promoted as a ship fuel (LNG bunkering etc.)
- Natural gas for car fueling (FISIKON brand name)



National Energy Policy

- Gateway to Europe and beyond (TAP, SEEC, EastMed).
- Destination country through the development of the internal and regional markets.
 - As a combination of the above two, **Greece, and particularly Alexandroupoli area, to become an efficient HUB for the region.**
- Focus on potential indigenous production of hydrocarbons and further development of renewables.
- Renewables and natural gas to cover 70% min of the Greek energy mix by 2026.
- Creation of a national energy stock market.
- Optimal use of the offshore physical gas storage area near Kavala.
- **The development of strategic and financially viable projects in the energy sector, in hand with an efficient national energy diplomacy, may significantly contribute to the country's forthcoming economic recovery and rate of growth.**

Draft Scenario Hub Northern Greece



Topics for further consideration and industrious discussion:

1. Gas Depoliticisation
2. Energy Market Decarbonization : A ytd evaluation and the way forward...
3. Excessive geopolitics **VS** financial viability of projects
4. Massive / asymmetric monetization of energy recourses:
an opportunity or a threat?

Gas Depoliticisation

- ❖ Politicians from all sides have been engaging in a “tug of war” issuing statements about the use of gas as a political instrument, each side seeking to blame the other. This results in a negative (business) climate for the markets.
- ❖ In the face of this situation, it is important that the energy industry unitedly rejects the politicisation of gas

This will require the following actions and commitments from all the players of the international gas industry:

-The industry needs to advocate, speaking with the right voice and based on facts:

- Basic market conditions, such as unrestricted access to gas markets,
- Rejection of political interference which distorts market and prices,
- Compliance with existing legislation,
- Commitment to secure supplies to final customers

- The industry needs to consistently make the point that less market and more regulation results in additional costs that will finally have to be borne by the consumer. A flexible market-based approach should be followed as far as possible, coupled with the appropriate market design.



Thank you for your attention