

PRACTICABILITY OF EASTMED GAS PIPELINE

**- Commercial, Financial, Technical, Security, Legal,
Reserve and Market Sights -**

Oğuzhan AKYENER / TESPAM President

Greece, Southern Cyprus Management and Israel have signed a deal for a pipeline designed to move gas from the eastern Mediterranean to Europe. This signing ceremony actually is not a new attempt regarding with the due incoherent pipeline project. More than 3 years, the due sides have been coming together, declaring the same claims about their intentions to construct such a pipeline and make smiling photos to the press but at last, nothing changes.

On the 2nd of January 2020, the triple came together again. Still, they signed new documents and agreements to show the proposed pipeline. But what changed today? Might such a project find a way to be able to be constructed?

To analyze the feasibility of gas pipeline projects, we must check and evaluate many different sights. For example,



- the reserves and available volumes to be transported in due time periods,
- CAPEX and OPEX of such a pipeline,
- technical difficulties during construction and transportation,
- market demand capacity in due sale periods,
- market prices,
- other alternative gas sellers and their competitive volumes & sale price ranges

All these factors must be analyzed as the first step of an international gas pipeline decision. In addition, in the further steps, more detailed engineering studies must be completed. To take a final investment decision (FID) for such a pipeline project, all the binding gas sales agreements must be signed with the due customers in the targeted market. If such steps cannot be made, then it's not coherent to say that the due pipeline will be constructed.

Let's have a short outlook at the East-Med Gas Pipeline project from this regard.

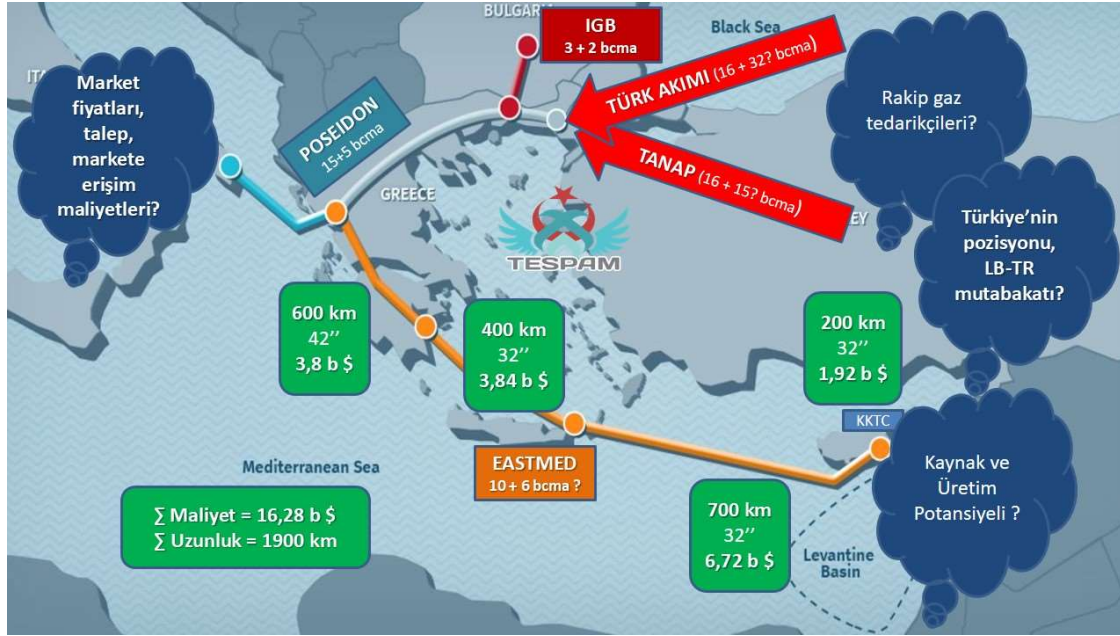


Figure. 1. East-Med Pipeline Costs

As can be shown on the figure above, TESPAM's estimations about the current costs of such a pipeline (around 1900 km) is 16,28 billion \$. These costs are changeable according to the subsea surface conditions. Hence currently neither we nor the supporters of such a pipeline do not have enough information in this concept. We expect existence of mud volcanos within the subsea route of East-Med, which will highly increase the costs. But before completing the surveys, no one can be sure about these issues. By including these kinds of unknowns, our estimations about the total costs of the East-Med differs from 10 to 20 billion of US dollars.

Regarding with the technical difficulties during the construction period, this proposed line will be the deepest one in the world. Currently, the maximum offshore depth with a pipeline is around 2,8 km. Through the route of East-

Med, existing data shows that, some parts of the line must be laid within a water depth more than 3 km. This means a world record for such a smaller, incoherent and risky project. In addition, while checking if there are available pipeline construction ships for such depths, we can see there is only a few (1 or 2). Which means higher rental prices than the expectations.

Note that, you can also see (in the figure above) our selected diameters and partial costs of the proposed route of the due pipeline.

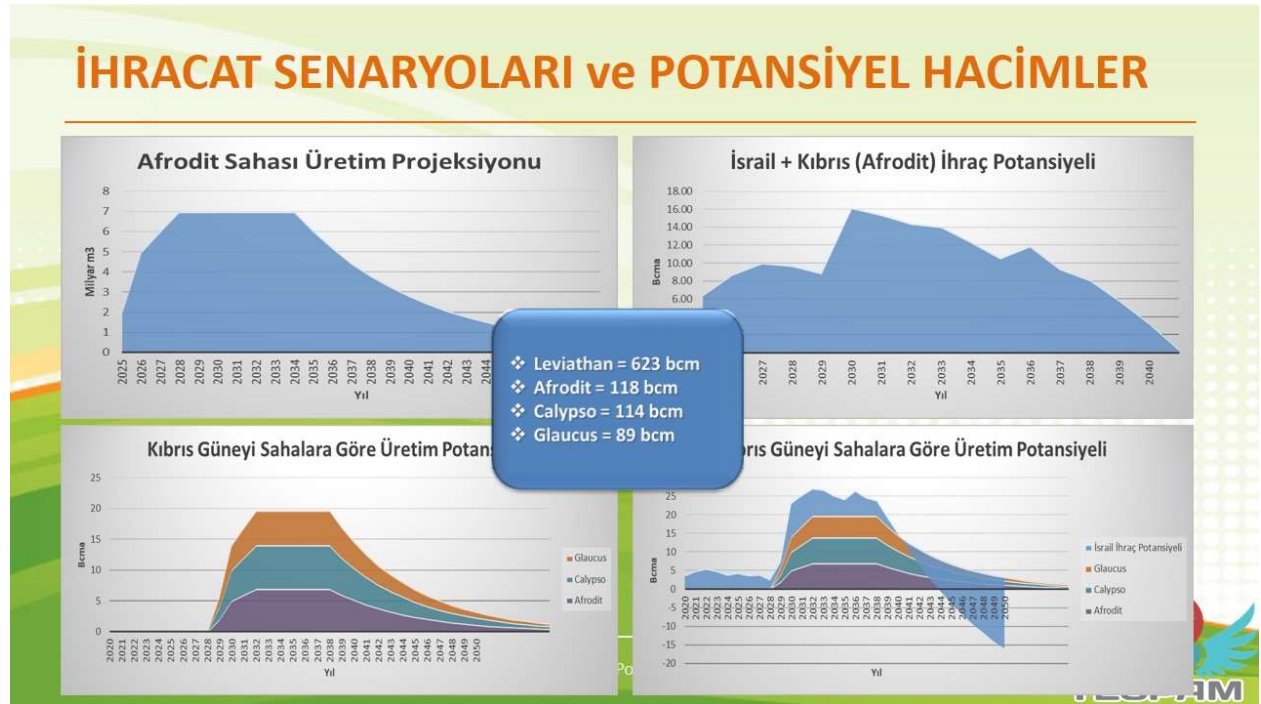


Figure 2. Due Gas Fields to Feed the East-Med Pipeline

From the sight of reserves and transportation volumes, existing discovered fields in the region are Leviathan, Aphrodite, Calypso and Glaucus. In the above figure you can see:

- our estimations about the reserves of the due fields,
- while considering the best scenarios, with all fields taken into production for around 20 years, the supply volume will reach to 25 bcm levels,
- in the upper left graph, technically most probable production profile of Aphrodite, by assuming the field will be developed and taken into production in 2025,
- in the lower left graph, technically most probable production profile of all three fields discovered in the South of Cyprus Island, by assuming the fields will be developed and taken into production in 2025,
- in the upper right graph, technically most probable production profile of Aphrodite + Israel's possible export potential in due years, by assuming the Aphrodite field will be developed and taken into production in 2025,
- in the lower right graph, technically most probable production profile of Aphrodite + Calypso + Glaucus + Israel's possible export potential in due years, by assuming the Aphrodite, Calypso and Glaucus fields will be developed and taken into production in 2025.

As a result of these profiles, we can claim that:

- There is enough resource potential in the region.
- The risk is in the development scenarios of the fields discovered in the Southern region of Cyprus Island.
- There are huge question marks on technical, political, commercial, legal and financial sights of those fields to be able to be developed.

- That's why in 2025 which is the declared time for the first sales through East-Med we do not expect enough volume to be able to be produced.
- This situation will affect the feasibility of the due pipeline!

After having short outlook at the reserves and production profiles, in the figure below, we have evaluated the economical sight of the project.

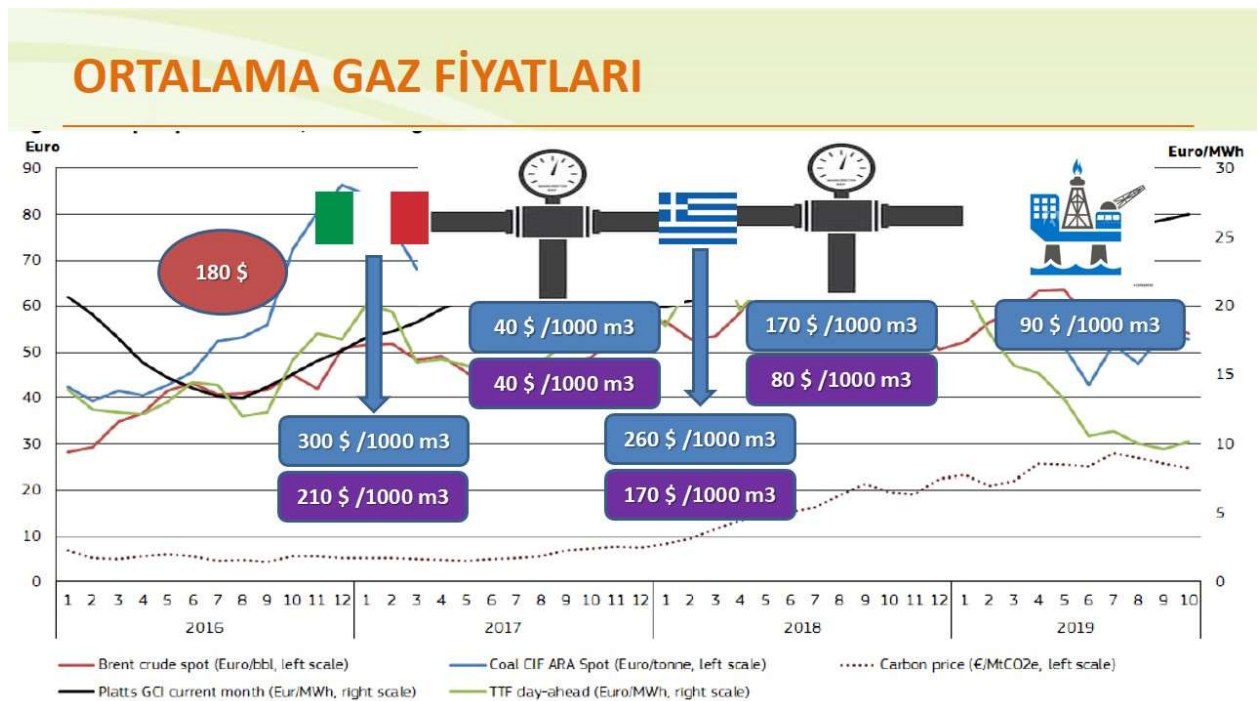


Figure. 3. Average Prices for Gas to be transported to Italy via East-Med

According our calculations:

- Average unit cost (at offshore platform) to produce gas in Aphrodite and the other due fields is around 90 \$/1000 m³

- Average unit cost to transport gas from the offshore platforms to the Greece through the proposed route of East-Med (by assuming tariff calculations are done by accepting IRR=10) is around 170 \$/1000 m³
- While assuming the cost of the East-Med is 6 billion Euros as in Edison's estimations, than the average unit cost to transport gas from the offshore platforms to the Greece through the proposed route of East-Med (by assuming that tariff calculations are done by accepting IRR=10) is around 80 \$/1000 m³
- After transporting the gas to the Greece, we see that there is not enough market capacity in Greece, so we must transport the gas to another market which can be Italy or Baumgarten in the best cases. So, again by assuming as the best case, with a new pipeline it will cost minimum 40 \$/1000 m³ to transport the gas from Greece to Italy.
- So, by neglecting the taxes and other detailed costs, total cost of East-Med gas at the Italy hub will be:
 - 300 \$/1000 m³, according to our calculations,
 - 210 \$/1000 m³, according to the Edison Company's assumptions.
- But the current average gas prices are around 180 \$/1000 m³ in Italy hub. While the spot LNG prices are much lower. So, economically, this process and this pipeline project is not doable!

In addition to the price constraints, the other important issue to consider is the other possible sellers in the targeted markets in due years. As we all know, in 2020, with the completion of TAP, 9 bcm Azerbaijan gas will be feeding the

Italian market. Soon, this capacity is planned to be doubled for further supplies. Moreover, with Turkish Stream, Russia will also supply extra 16 bcm gas for the Bulgaria, Serbia and Baumgarten markets as soon as possible. Turkish Stream's capacity will also be able to be doubled in the midterm. By considering the Italian markets, extra LNG and additional Libyan volumes are planned to be reached in 10 years. All these supply opportunities are coherent and doable. So, there is a huge question mark in the market demand volumes for East-Med pipeline gas.

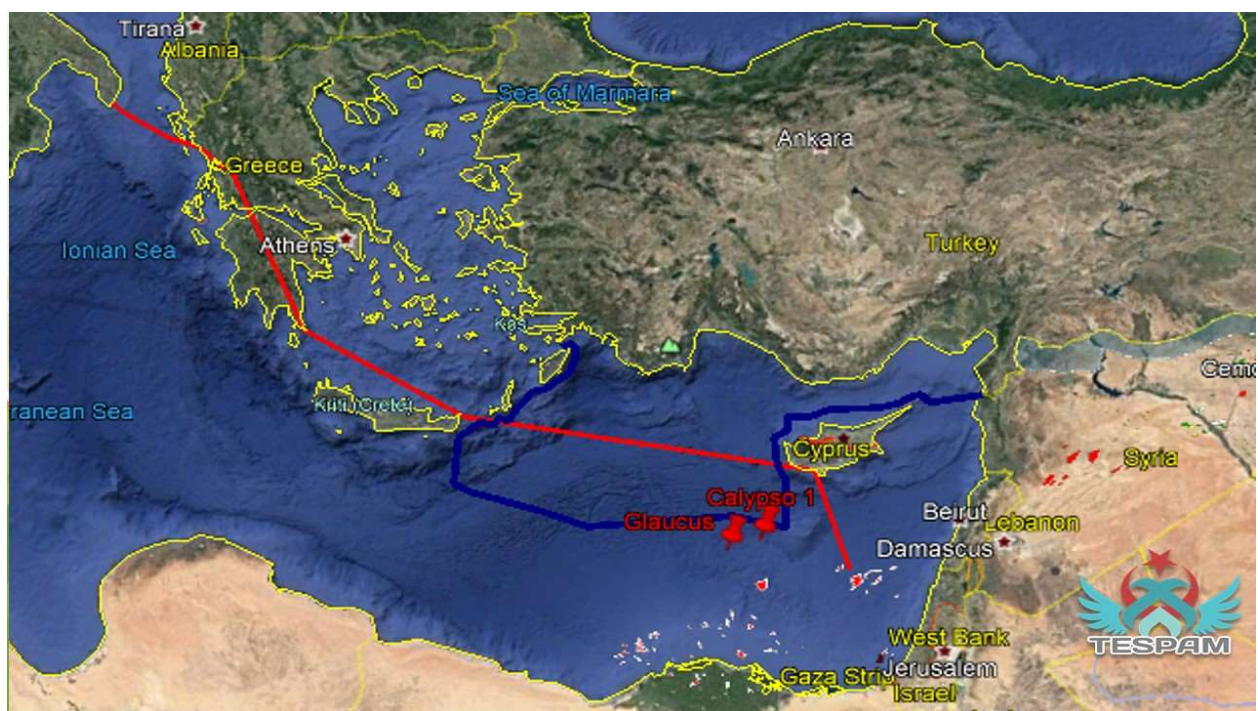


Figure. 4. Turkish EEZ and East-Med Route

From the legal, security and political sights, the practicability of such a pipeline seems again impossible. Because the route is going through the Turkish



declared (EEZ) exclusive economic zone. This means, anyone can not make any commercial activities without getting the permission of Turkey.

To sum up, it is not logic to say much more words on such an incoherent project. East-Med gas pipeline project cannot be constructed by evaluating from the commerciality, markets, economics, security and legal sights. This similar signing ceremony again seems as an inefficacious diplomatic attempt taken as a reply to the Turkish – Libyan EEZ agreement!

