



DOABILITY 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. Actually, this signing ceremony is not a new attempt regarding with the due incoherent pipeline project. More than 3 years, the due sides have being coming together, declaring the same claims about their intentions to construct such a pipeline and gives smiling photos to the press but at last, nothing changes.

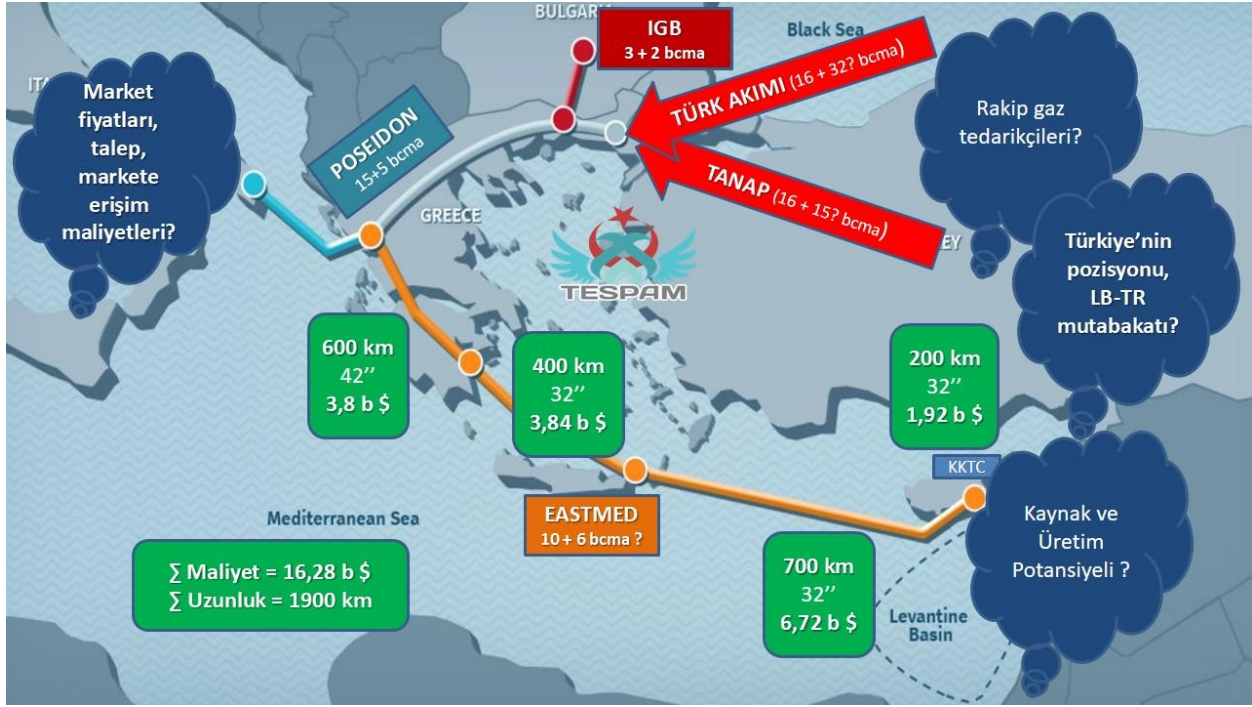
On the 2th of January 2020, the triple came together again. Still, they signed new documents and meaningless Lol's to show that they will realize the proposed pipeline. But what changed today? Might such a project find a change to be able to be constructed?

To analyze the doability of gas pipeline projects, we have to 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

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

Let's have a short outlook to the EastMed Gas Pipeline project from this regard.



Map1: EastMed Pipeline Costs

As can be shown on the map 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 EastMed, 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 EastMed differs from 10 to 20 billions 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 pipe lined depth is around 2,8 km. Through the route of EastMed, existing data shows that, some parts of the line has to 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 above map) our selected diameters and partial costs of the proposed route of the due pipeline.

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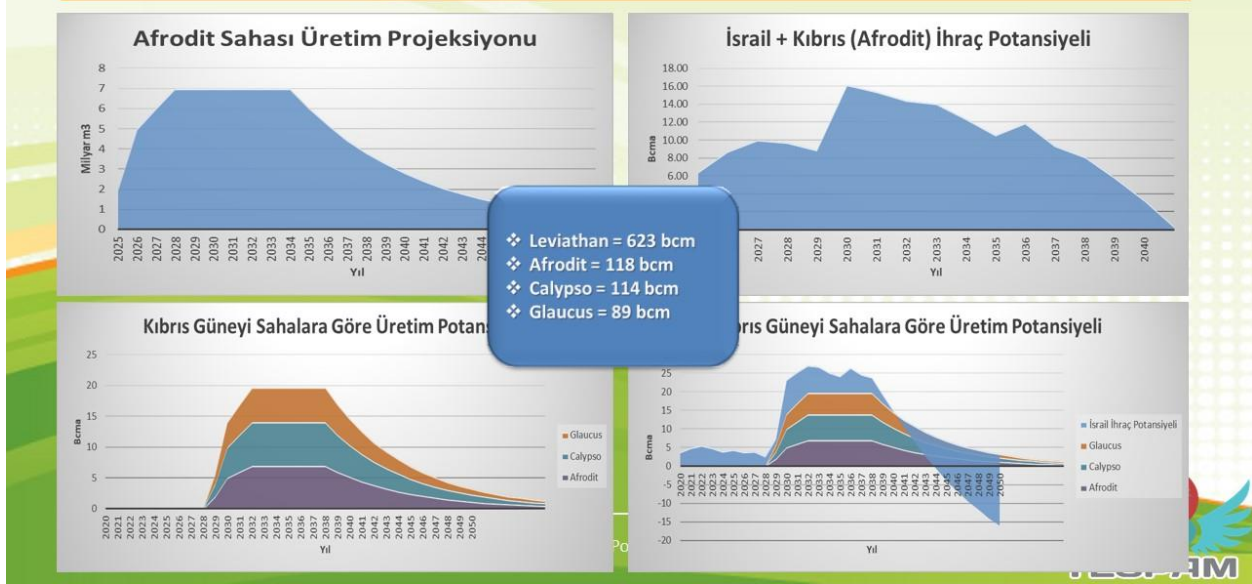


Figure 1: Due Gas Fields to Feed the EastMed Pipeline

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 bcma 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.

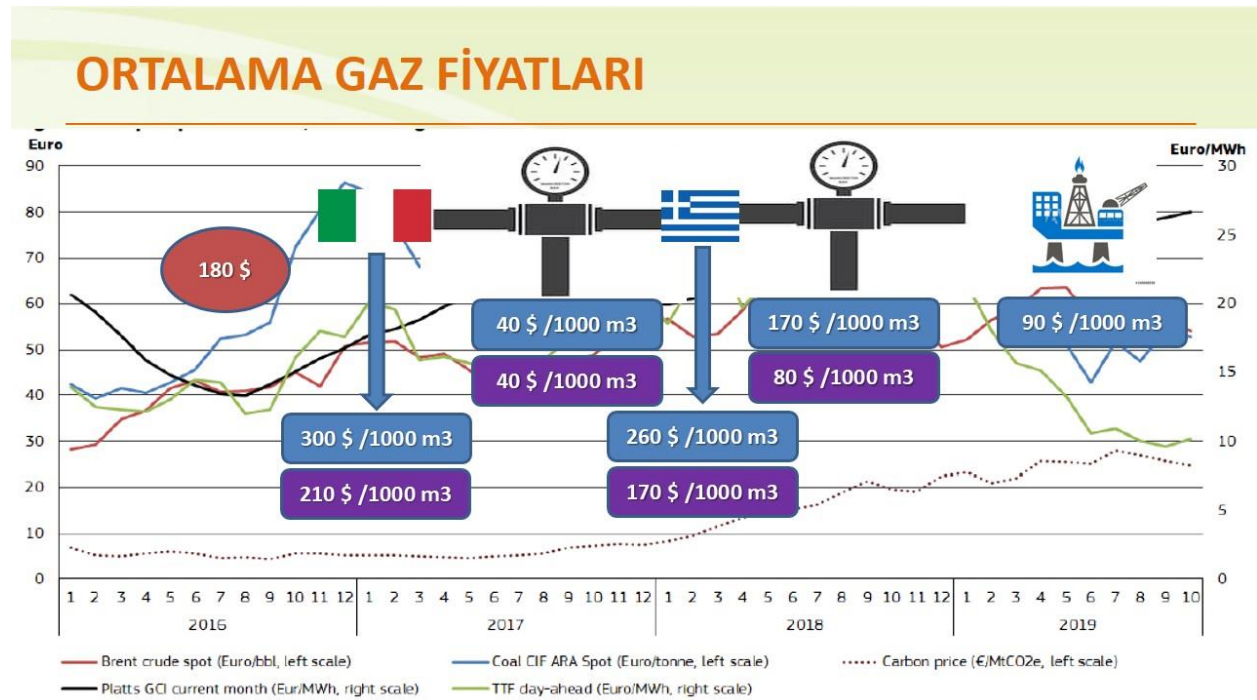
As a result of these profiles, we can claim that:

- 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's (the declared time for the first sales through EastMed) we do not expect enough volume to be able to be produced.
- This situation will affect the doability of the due pipeline!

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



Graph 1: Average Prices for Gas to be transported to Italy via EastMed

According our calculations:

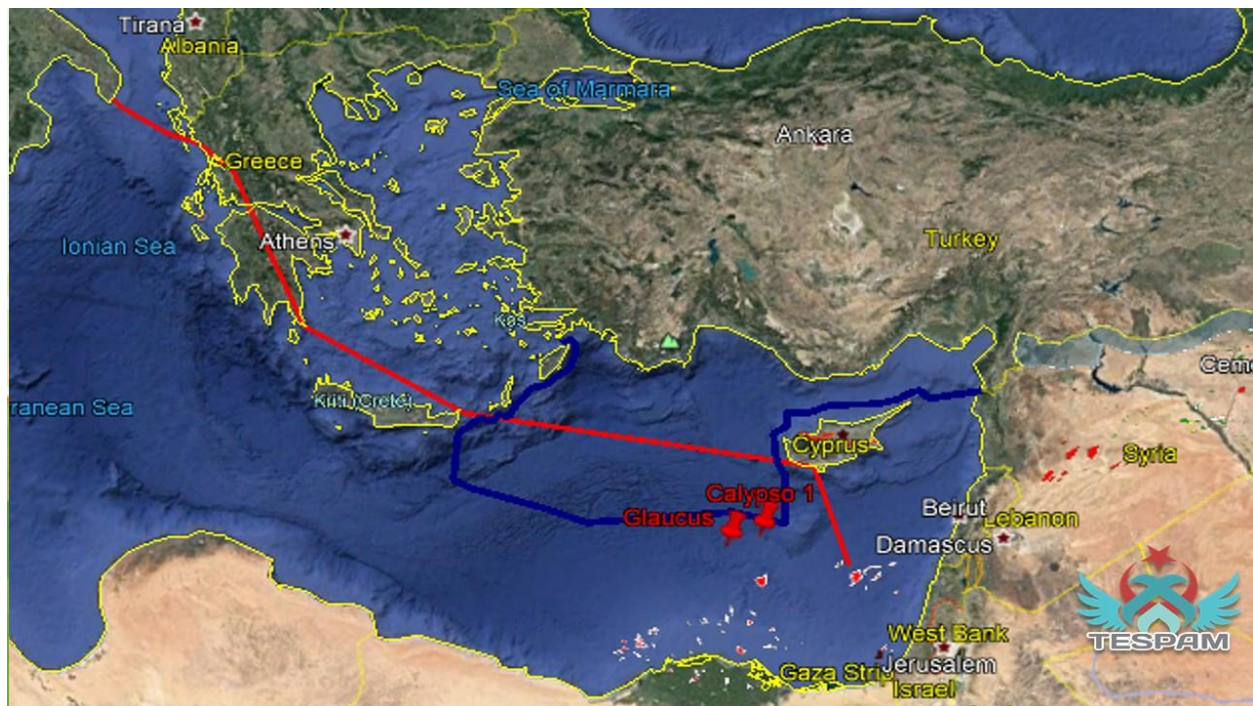
- Average unit cost (at offshore platform) to produce gas in Aphrodite and the other due fields is around 90 \$/1000m3
- Average unit cost to transport gas from the offshore platforms to the Greece through the proposed route of EastMed (by assuming tariff calculations are done by accepting IRR=10) is around 170 \$/1000m3
- While assuming the cost of the EastMed 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 EastMed (by assuming tariff calculations are done by accepting IRR=10) is



around 80 \$/1000m3 (Note that, with such a budget, it will not be possible to construct such a pipeline. In such a case, some portion of illegal money has to be included into the system.)

- After transporting the gas to the Greece, we see that there is not enough market capacity in Greece, so we have to 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 EastMed gas at the Italy hub will be:
 - o 300 \$/1000 m3, according to our calculations,
 - o 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 more 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 bcma Azerbaijan gas will be feeding the Italian market. In the near future, this capacity is planned to be doubled for further supplies. Moreover, with Turkish Stream, Russia will also supply extra 16 bcma 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 EastMed pipeline gas.



Map2: Turkish EEZ and EastMed Route



From the legal, security and political sights, the doability 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.

Turkey as being the most powerful country in the region, will not let any extortions among its and Northern Cyprus Republic's borders and rights!

From a technical look to this issue, by assuming some investors developed the Aphrodite and at the same time constructed the EastMed pipeline without getting the permission of Turkey. Not declaring a war or organizing an attack, within an accidental scenario, heavy anchor of one of the military ships of Turkey may hang out to the pipeline and make damage! Or a rudder locked ship may hit the production platform and make all the investment (16 billion \$ pipeline + 4 billion \$ upstream = around 20 billion \$) become a rubbish! This means, security and policy is one of the most important items while considering the doability of a gas pipeline project! This is not a threat but a possible fact!

To sum up, it is not logic to say much more words on such an incoherent project. EastMed gas pipeline project cannot be realized 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!