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Working Paper

The Levant energy basin: a geopolitical game changer in the Eastern Mediterranean?

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The Levant energy basin: a geopolitical game changer in the Eastern Mediterranean?

Fabio Indeo (EGS Korea)

Introduction

The Mediterranean Sea has always been considered as a relevant strategic corridor for the energy deliveries, given the domestic demand of the EU southern countries and the geographical proximity of the North Africa's gas producers and suppliers to the EU markets.

However, the discovery of abundant offshore gas reserves in Israel and Cyprus between 2009 and 2011 have progressively highlighted the strategic potential of the Levant Basin, shifting the geopolitical focus from the southern shore to the eastern shore of the Mediterranean Sea. Furthermore, the Arab Spring events in 2011 and the following condition of instability have dramatically showed the vulnerability of the traditional North African energy suppliers, which could have some difficulties to ensure regular supply without interruptions. The estimates of the US Geological Survey on the offshore natural gas potential in the Levant Basin have contributed to enhance the ambition of some Eastern Mediterranean countries - Israel, Cyprus and Lebanon - to become energy independent and also energy suppliers exporting natural gas to the regional and international markets. The development of the offshore energy reserves in the Levant Basin will represent an influent "geopolitical game changer" which will give a new energy status to the Eastern Mediterranean countries, potentially affecting the existent political scenario characterized by traditional rivalries which currently hampers a profitable cooperation to address threats and challenges.

The aim of this working paper is to analyze the energy potential of the Levant Basin, mainly focusing on the offshore gas reserves of Israel, Cyprus and Lebanon and the different envisaged export routes to ship the future production to the markets: the strategic decision to privilege regional or international markets, the need to achieve the necessary precondition of a scenario of security and stability to develop the energy potential, the political tensions among regional countries which hinder the realization of an Eastern Mediterranean integrated gas system represent some of the main key topics which will influence the evolution of the Eastern Mediterranean energy chessboard.

1. The Eastern Mediterranean's energy potential: an overview

The Levant basin is one of the eight significant energy basins located in the Eastern Mediterranean region, which is composed by Cyprus Basin, Eratosthenes High, Latakia Basin, Levant Basin, Judea Basin, Nile Delta Basin, Western Arabian Province, and Zagros Province.¹

The Levant Basin encompasses approximately 83,000 km² of the Eastern Mediterranean. The area is bounded to the east by the Levant Transform Zone, to the north by the Tartus Fault, to the northwest by the Eratosthenes Seamount, to the west and southwest by the Nile Delta Cone Province boundary, and to the south by the limit of compressional structures in the Sinai.²

The Levant Basin Province appears as a kind of intricate geopolitical puzzle, considering that its subsea area is shared by several countries as Israel, Cyprus, Lebanon, Syria, Egypt and Turkey.

The energy relevance of the Levant Basin has emerged after the publication of the US Geological Survey (USGS) report in 2010, which estimated that the Levant Basin may contain 3.4 trillion cubic metres (tcm) of natural gas resources and 1.689 million barrels of undiscovered oil reserves.³

In order to better understand the potential strategic relevance of the Levant energy basin, we should consider that these estimated reserves are comparable to the reserves of Iraq (which holds 3.7 tcm of natural gas reserves) and are three time bigger than gas reserves of Azerbaijan (1.1 tcm):⁴ both countries have been envisaged as energy suppliers for the EU to feed the Southern Gas Corridor, a cornerstone to support EU energy strategy aimed to diversify natural gas imports.

1 U.S. Energy Information Administration, *Overview of Oil and Natural Gas in the Eastern Mediterranean region*, EIA, Updated August 15, 2013, available online at: https://www.eia.gov/beta/international/analysis_includes/regions_of_interest/Eastern_Mediterranean/eastern-mediterranean.pdf (accessed June 1, 2016)

2 Shaul Zemach, *Toward an Eastern Mediterranean Integrated Gas Infrastructure?*, The German Marshall Fund of the United States, Foreign And Security Policy Paper, No.20, 2016, p.3, available online at: <http://www.gmfus.org/publications/toward-eastern-mediterranean-integrated-gas-infrastructure> (accessed June 1, 2016)

3 U.S. Geological Survey, *Assessment of Undiscovered Oil and Gas Resource of the Levant Basin Province, Eastern Mediterranean*, USGS, 2010, available online at: <https://pubs.usgs.gov/fs/2010/3014/pdf/FS10-3014.pdf> (accessed June 1, 2016); U.S. Energy Information Administration, *Overview of Oil and Natural Gas in the Eastern Mediterranean region*, EIA, 2013.

4 British Petroleum, *BP Statistical Review of World Energy*, June 2016, p. 20, available online at: <http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf> (accessed June 28, 2016)

However, the total reserves of natural gas in the whole Eastern Mediterranean could be larger, including two other promising energy-rich areas.

As a matter of fact, according to the US Geological Survey the Nile Delta Basin Province alone should contain estimated 6.3 tcm of undiscovered, technically recoverable natural gas reserves:⁵ in 2015 the discovery of the giant Zohr gas field in the Egyptian offshore has evidently confirmed the potential of the Nile Delta Basin.

Moreover, studies indicate that in the Aegean Sea - specifically in Greek waters south of Crete - could contain 2-4 tcm of untapped natural gas reserves and 1.5 billion barrels of oil.⁶

Therefore, total natural gas reserves in the Eastern Mediterranean could overcome 10 tcm, an energy potential aimed to boost the geopolitical ambition to transform the Eastern Mediterranean into an important energy producing region.

Focusing on the Levant Basin reserves, Israel holds estimated gas reserves of almost 1,000 billion cubic metres and an additional potential of 400 bcm. Cyprus has estimated gas resources of 120 bcm and an additional potential of almost 1,000 bcm, even if the recent unsuccessful drillings in the Cyprus Exclusive Economic Zone (EEZ) have revised down previous estimates. Syria holds 230 bcm and an additional potential of 170 bcm of offshore natural gas reserves, while the seabed of Lebanon could contain almost 850 bcm of natural gas reserves.⁷

Offshore exploration in the waters of the Eastern Mediterranean region started in the late 1960's and early 1970's: a series of wells on the shallow shelf of Israel and northern Sinai were drilled, but they were found dry.

A second exploration campaign was launched between 1975 and 1985, discovering small oil volumes in the offshore Sinai which make unprofitable to start a commercial production.

5 US Geological Survey, *Assessment of Undiscovered Oil and Gas Resources of the Nile Delta Basin Province, Eastern Mediterranean*, USGS, 2010, available online at: <https://pubs.usgs.gov/fs/2010/3027/pdf/FS10-3027.pdf> (accessed June 1, 2016)

6 Oleg Vukmanovic and Stephen Jewkes, *Greece looks out to sea for gas wealth salvation*, in "Reuters", October 3, 2012, available online at: <http://www.reuters.com/article/us-greece-gas-idUSBRE8920KF20121003> (accessed June 2, 2016)

7 Shaul Zemach, *Toward an Eastern Mediterranean Integrated Gas Infrastructure?*, 2016, p.3; Alexander Varshavsky, *Current Status of Offshore Oil and Gas Exploration in Israel*, Israel Ministry of Environmental Protection, July 2012 http://www.sviva.gov.il/subjectsEnv/Documents/EI/GOA/AlexVarshavsky_workshop.pdf (accessed June 1, 2016)

In 1999-2000 the discovery of natural gas reserves in the Israel offshore (Noa and Mari-B fields) and in offshore Gaza represented the first significant successes of the offshore exploratory campaigns.⁸

Since 2009, significant offshore discoveries have been registered in the Eastern Mediterranean, mainly in the Israel offshore: the discovery of Tamar (280 bcm), Dalit and especially Leviathan gas fields - the largest offshore discovery in the Levant Basin estimated to hold 623 bcm of natural gas - and the discovery of Aphrodite in Cyprus' EEZ in 2011 (127 bcm of natural gas) have confirmed the presence of significant quantities of natural gas in the Levant Basin, showing the great potential for offshore gas production in the Eastern Mediterranean.⁹

This perspective has been further enhanced after the discovery of the Zohr gas field in the Egyptian offshore by the Italian energy company Eni in 2015: as a matter of fact, with its estimated reserves of 850 bcm Zohr appears the largest offshore discovery in the Eastern Mediterranean, considering that Zohr should contain the same natural gas reserves as the combination of Leviathan and Aphrodite reserves.

This potential energy “bonanza” in the Eastern Mediterranean could represent a geopolitical “game-changer”, allowing to these countries to exploit domestic resources and use them both to supply international markets and to meet a growing domestic demand: in this latter case, regional countries will achieve a strategic condition of energy security, without depending on energy imports and avoiding dangerous interruptions of gas supply.

However, these offshore gas fields must be necessarily explored and developed in order to have a geopolitical and strategic impact, but at present there are numerous political, technical, and financial obstacles that need to be overcome.

Unlocking the economic and geostrategic benefits of the East Mediterranean's energy potential requires two preconditions which permanently lack in the region: political stability and security.¹⁰

8 Simone Tagliapietra, *Towards a New Eastern Mediterranean Energy Corridor?*, FEEM Fondazione Eni/Enrico Mattei, nota di lavoro 12, 2013, pp.7-8, available online at: <http://www.feem.it/userfiles/attach/2013215105594NDL2013-012.pdf> (accessed June 1, 2016)

9 U.S. Energy Information Administration, *Overview of Oil and Natural Gas in the Eastern Mediterranean region*, 2013

10 Shaul Zemach, *Toward an Eastern Mediterranean Integrated Gas Infrastructure?*, 2016, p.6; Seth Cropsey and Eric Brown, *Energy: The West's Strategic Opportunity in the Eastern Mediterranean*, Hudson Institute, December 2014, pp. 10-14, available online

On the one hand, the Arab Spring events have highlighted the condition of political and social instability in the whole Middle East and North Africa region, and the current scenario of civil war in Syria and in Libya clearly shows the existing threats for the regional energy security. Furthermore, the spreading of the Islamic State further contributes to spread instability on the region, hampering the potential development of the offshore energy sector and related infrastructures.

On the other hand, the Eastern Mediterranean region is historical characterized by regional rivalries and unresolved political conflicts which can influence and delay the production of natural gas in the region and could undermine trade and the viability of energy infrastructure projects: the long-lasting Israeli-Palestinian conflict hampers the development of the Gaza fields as well as affects Israel's natural gas export options; the still divided island of Cyprus and the tensions between Cyprus and Turkey on the exploitation of reserves; the war in Syria; the border maritime disputes involving Israel and Lebanon (at present these two countries are still officially at war); the Turkish-Greek dispute over the Aegean.

Moreover, the development and the commercialization of the East Mediterranean's energy reserves require huge investments to realize expensive exploratory drillings, the availability of modern technology and know-how to reach deeper waters and work at higher temperatures and pressures as well as to undertake seismic surveying to find additional untapped reserves.

However, international companies and investors will finance offshore activities and gas production only if these can be lucrative in the medium term and in a condition of stability and security.

Furthermore, these countries have to build infrastructures to extract these resources and bring them to market: if natural gas production in the Eastern Mediterranean is allocated to cover the regional demand, the realization of pipelines will appear the more logical option rather than LNG, considering the relatively short distances involved.

at:http://www.hudson.org/content/researchattachments/attachment/1443/2014_12_02_hudson_report_eastern_med_final_single_pages.pdf (accessed June 2, 2016)

2. Israel a new potential energy player in the Eastern Mediterranean

2.1 Natural gas discoveries in the Israeli offshore: changing the national energy status

Among Eastern Mediterranean countries, Israel is the only country which has found considerable offshore natural gas reserves: as a matter of fact, Israel has already discovered about 1.400 bcm of natural gas in its Exclusive Economic Zone, which represents more than one third of the total estimated reserves (3.400 bcm) located in the Levant Basin.

Unlocking these gas reserves will represent a real geopolitical game changer for Israel, a country traditionally dependent on energy imports, allowing it to plan a long-term energy strategy aimed to satisfy the domestic demand and to export.

The discovery of the Israeli offshore energy “eldorado” is the result of a profitable partnership between private companies, mainly Houston-based Noble Energy and members of the Israeli Delek Group: since 1999 they have started to explore Israeli economic waters discovering Noa (1999) and then Mari-B gas fields (2000), then Tanin and mainly Tamar and Leviathan gas fields respectively in 2009 and 2011.

Following the discovery of the Tamar field (280 bcm) - the field is located roughly 80 kilometres west of Haifa in waters 1,700 metres deep - and the super-giant Leviathan field (623 bcm) - in addition to the recent discovery of the Daniel East and Daniel West offshore gas fields, with estimated reserves of 254 bcm - Israel has the great opportunity to change its energy status from dependent on imports to a self-sufficiency, which could also allow Israel to become a net energy exporter in the medium term.

Natural gas discoveries in the offshore Israel and Palestinian Territories¹¹

Country	Name of the natural gas field	Discovery date	Estimated reserves	First volumes/year
Israel	Noa	1999	1 bcm	2012
Israel	Mari-B	2000	42 bcm	2004-2013
Israel	Dalit	2009	14 bcm	2013
Israel	Tamar	2009	280 bcm	2013
Israel	Leviathan	2010	622 bcm	2019
Israel	Dolphin	2011	2 bcm	Unknown
Israel	Shimshon	2012	8 bcm	Unknown
Israel	Tanin	2012	33 bcm	Unknown
Israel	Karish	2013	50 bcm	Unknown
Israel	Tamar Southwest	2013	19 bcm	Unknown
Israel	Royee	2014	90.5 bcm	Unknown
Israel	Daniel East and Daniel West	2016	254 bcm	Unknown
Palestinian Territories	Gaza Marine	2000	28 bcm	Unknown

With very little domestic production, Israel has always been dependent on energy imports: in 2015, Israel's primary energy consumption came mainly from petroleum and other liquids (43 percent), natural gas (30 percent), and coal (26 percent).¹²

However, for long-time Israel was not able to ensure energy supply and to receive hydrocarbon imports from the regional market, due to the boycott of Arab countries

¹¹ U.S. Energy Information Administration, *Israel, Analysis*, EIA, last updated July 2016, available online at: <https://www.eia.gov/beta/international/analysis.cfm?iso=ISR> (accessed July 16, 2016); U.S. Energy Information Administration, *Overview of Oil and Natural Gas in the Eastern Mediterranean Region*, 2013.

¹² U.S. Energy Information Administration, *Israel, Analysis*, 2016

energy producers in response to the establishment of the state.¹³

Until 2000, Israel did not use natural gas in its energy mix (the same situation which currently characterizes Cyprus): in 2010 Israel consumed 5.3 bcm of natural gas, of which 40 percent supplied by Egypt and the remaining share with the domestic production of Mari-B field.

The energy cooperation with Egypt was significant for the Israeli energy security: in 2003 Egypt and Israel signed an agreement for the supply of 7 bcm of gas annually to Israel for 20 years through the Arish-Askelon gas pipeline, an offshore branch of the Arab Gas Pipeline linking Egypt to Jordan, Lebanon and Syria. These gas supply started in 2008 but after three years this pipeline was completely and definitely halted, due to the frequent disruptions linked to the sabotage of the pipeline within the scenario of the Arab Spring events in 2011.¹⁴

Furthermore, the energy security condition of Israel was also threatened by the progressive depletion of the Mari-B gas fields, which started production in 2004 and stopped producing gas in 2013.¹⁵

In order to preserve its national energy security and to compensate the halt of Egyptian gas supplies, in January 2013 Israel opened a LNG import terminal - a floating regasification and storage unit (FRSU) - located 10 km offshore at Hadera with a nominal import capacity of 4.8 bcm per year. In spite of original plans to import 2 bcm of natural gas per year, it imported only 0.55 bcm the first year of operation and 0.1 bcm in 2015 (with LNG supplies coming from Trinidad),¹⁶ even because Israel was able to start domestic production in Tamar gas field, so reducing the weight of gas imports.

In 2013 Tamar gas field came on stream, with a production totally devoted to satisfy the Israel's growing domestic demand: when it will be fully operational, Tamar is expected to produce 10 bcm of gas per year and currently it accounts for 94 percent of Israeli gas

13 Natan Sachs and Tim Boersma, *The Energy Island: Israel Deals with its Natural Gas Discoveries*, in "Foreign Policy at Brookings". Policy Paper 35, February 2015, pp. 2-3, available online at: <http://www.brookings.edu/~media/research/files/papers/2015/02/eastern-mediterranean-papers/israel-energy-island-natural-gas/energy-island-web.pdf> (accessed June 3, 2016)

14 Fabio Indeo, *The Geopolitics of Energy in Mediterranean Region: Regional Needs, Security, Logistics and Interdependency. A Perspective View*. CeMiSS Research Project 2012, Italian Military Center for Strategic Studies, Roma, 2012, pp. 12-13

15 U.S. Energy Information Administration, *Israel, Analysis*, 2016

16 *Israeli LNG Imports to Undercut Local Gas Prices – Report*, in "Natural Gas Europe", April 6, 2016, available online at: <http://www.naturalgaseurope.com/report-israel-to-import-lng-cheaper-than-local-natural-gas-28946> (accessed June 4, 2016)

production.¹⁷

Waiting for the development of new promising gas fields, Tamar production is fundamental for the Israeli energy security: in 2015, Israel consumed 8.3 bcm of natural gas, nearly all met by domestic production, while over half of Israel's electricity generation requirements and virtually all of its industrial fuel needs are met by Tamar offshore field.¹⁸

Given the future availability of abundant gas reserves, Israel will increase its domestic gas demand (18-20 bcm in 2030) as well as the shares of natural gas in the national energy mix: according a projection elaborated by the Israeli Ministry of Energy and Water's Natural Gas Authority, by 2030 over 70 percent of Israeli electricity production, and nearly half of all energy consumption, is to be fuelled with natural gas, replacing coal as the main source.¹⁹

Owning the largest natural gas reserves in the offshore Eastern Mediterranean Israel will play a pivotal role in the regional energy architecture based on natural gas production: as a matter of fact, a large scale development of the Eastern Mediterranean energy corridor seems to be very difficult without a strong commitment of Israel to export a substantial part of its gas.²⁰

However, Israeli authorities faced a long and problematic debate concerning the energy strategy to adopt towards the exploitation of the existent resources, and how allocate the future production taking into consideration domestic needs and lucrative exports.

17 John Roberts, *The Eastern Mediterranean Energy Conundrum: Options and Challenges*, in Sami Andoura and David Koranyi (eds), "Energy in the Eastern Mediterranean: Promise or Peril?", Egmont Paper 65, Joint Report by the Egmont Institute and the Atlantic Council, 2014, p.16, available online at: <http://www.egmontinstitute.be/wp-content/uploads/2014/05/ep65.pdf> (accessed June 2, 2016)

18 U.S. Energy Information Administration, *Israel, Analysis*, 2016

19 Natural Gas Authority, *The Natural Gas Industry in Israel*, Ministry of National Infrastructures, Energy and Water Resources, State of Israel, May 2013, available online at: <http://energy.gov.il/Subjects/NG/Documents/NGpresentation.pdf>. (accessed June 5, 2016; Natan Sachs and Tim Boersma, *The Energy Island: Israel Deals with its Natural Gas Discoveries*, 2015, pp.5-6; Shaul Zemach, *Israel's Exploitation of Hydrocarbons: Status quo or Quo vadis?*, in Angelos Giannakopoulos (ed.), "Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?", Research Paper No. 8, The S. Daniel Abraham Center for International and Regional Studies, Tel Aviv University February 2016, p.70, available online at: <https://www.ceps.eu/system/files/Energy%20Cooperation%20and%20Security%20in%20the%20Eastern%20Mediterranean%20small%20file.pdf> (accessed June 3, 2016)

20 Simone Tagliapietra, *Towards a New Eastern Mediterranean Energy Corridor?*, 2013, p.26

Given the hostility of the Arab world and the political uncertainty surrounding the Eastern Mediterranean region, Israel could wisely decide to retain its natural gas reserves for domestic consumption, limiting exports and enhancing national energy security: according to the estimates, the existent reserves could cover the domestic demand for over 30 years.

However, the idea to keep the natural gas exclusively in Israel will be not an attractive proposition for international investors, potentially discouraged by the limited size of the domestic market.²¹

The international energy companies are engaged in the Israel's offshore energy fields not to ensure the energy security of the country or regular supply but to monetize their discoveries and return their investments and make a profit: so, they will prefer to sell natural gas to international markets than to Israeli market.

Before 2011 Egypt suffered for a similar dilemma: as a matter of fact, the decision to keep 66 percent of the gas reserves for local consumption disincentivized further exploration and contributed to the gas shortages, triggering a condition of social instability.²²

In October 2011, the Israeli government appointed the Tzemach Committee to define a national energy strategy and to decide how to allocate the future Israeli production of natural gas. Initially, the committee established to keep 40 percent of expected reserves (450 bcm) for domestic use, while the remaining 60 percent was available for exports. However, this pro export orientation was reversed in June 2013, when the Israeli government - under considerable public pressure - decided to further limit the export of gas: 60 percent of estimated reserves are now allocated for domestic consumption, potentially covering the internal needs for almost 30 years.²³

It is necessary to observe that this government decision was based on offshore discoveries known in 2013, so these estimates don't consider the recent important discoveries (as Royee and Daniel east and west) which add nearly 350 bcm of natural gas to the previous estimated existent reserves.

Furthermore, Israeli offshore natural gas reserve could potentially be exported to the region or also in the international markets, granting to the Israeli government rising

21 Natan Sachs and Tim Boersma, *The Energy Island: Israel Deals with its Natural Gas Discoveries*, 2015, p.5

22 *Ibidem*, pp. 12-13

23 *Ibidem*

incomes from lucrative exports.²⁴

Especially the regional market appears a profitable option, considering short distances to cover, the growing demand in the area and the lack of natural gas production in the region: as a matter of fact, only Syria was an energy producer before the civil war, while Egypt can partially restore its energy exporter's role following the future exploitation of the discovered offshore natural gas reserves.

A potential decision of Israel to privilege regional markets will also have a significant geopolitical and strategic impact, involving both supplier and consumer countries in a framework of regional energy cooperation favoured by a long-term scenario of security and political stability.

2.2 Potential export routes: LNG, Cyprus and Turkey's strategic options

At present Israel has not yet decided the strategic routes of exports, whether the future offshore gas production from Leviathan and other gas fields will be directed eastward or westward - exporting to Europe or to Asia - or to the regional markets.²⁵

There are several projects concerning the realization of export infrastructures (LNG facilities and pipelines) in order to reach the markets.

The offshore location of the Israeli gas reserves make possible the development of LNG facilities to supply regional and international markets: moreover, the geographic location of the country allows to explore two different potential locations, in the Red Sea - the port of Eilat - and in the Mediterranean coast (Ashkelon, Ashod and Haifa ports). The project to realize an onshore LNG plant in Eilat - in the Gulf of Aqaba - would open to Israel the great strategic opportunity to reach lucrative Asia markets through LNG deliveries along the Red Sea.

Leviathan gas production could be delivered to Eilat through a new gas pipeline, even if technical problems remain due to the tight spaces for the LNG tankers in the Gulf of Aqaba and the need to improve political relations and to arrange an energy cooperation with the neighbouring Jordan. Moreover, a terminal on the Red Sea would

24 Michael Ratner, *Israel's Offshore Natural Gas Discoveries Enhance Its Economic and Energy Outlook*, CRS Report for Congress, Congressional Research Service, January 31, 2011, available online at: <https://www.fas.org/sgp/crs/mideast/R41618.pdf> (accessed June 6, 2016)

25 Pasquale De Micco, *The prospect of Eastern Mediterranean gas production: An alternative energy supplier for the EU?*, DIRECTORATE-GENERAL FOR EXTERNAL POLICIES POLICY DEPARTMENT 2014, p.7, available online at: [http://www.europarl.europa.eu/RegData/etudes/briefing_note/join/2014/522339/EXPO-AFET_SP\(2014\)522339_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/briefing_note/join/2014/522339/EXPO-AFET_SP(2014)522339_EN.pdf) (accessed June 1, 2016)

ensure that LNG tankers can bypass the Suez Canal, overcoming the traditional reluctance of the Egyptian President Morsi to allow Israel to use the Suez Canal.²⁶

However, in terms of energy security the transit of LNG tankers through the Bab el Mandeb chokepoint - connecting the Red Sea with the Indian Ocean - could represent another serious threat, potentially affecting regular gas supply because of some existent factors of instability such as the war in Yemen, islamic terrorist attacks linked to AQAP (Al Qaeda in the Arabic Peninsula) organization, piracy.²⁷

At the same time, an LNG terminal on the Red Sea will be vulnerable to terrorist attacks: so, another potential option could be to develop a liquefaction facility some 15 or 20 km inland from Eilat, in the Negev Desert.

The option to realize a LNG onshore facility on Mediterranean Coast would support Israeli energy plans to orient gas exports to the EU and to the regional markets. However, there is a domestic strong opposition against LNG plans due to environmental reasons, in order to preserve Mediterranean coasts, as well as human consequences of a terrorist or military attack on such an attractive target.

Consequently national authorities have been engaged to look for alternative solutions: among them, the realization of floating gas LNG terminals, the use of an LNG terminal located in a neighbouring country, the maritime transport in the form of compressed natural gas (CNG) - even if CNG is an untried technology - are the main options.²⁸

Concerning the use of an LNG terminal located in a neighbouring country, Egypt could be the closer and cheaper existent alternative: as a matter of fact, Israel could deliver natural gas exports from Ashkelon to Egypt - reversing the flow - through the existent onshore pipeline across the Sinai Desert, or realizing an offshore pipeline (to avoid potential terrorist attacks in the Sinai) to Egyptian LNG unused terminals at Idu and Damietta and then these volumes could be delivered to Asian or European markets.²⁹ However, similarly to the Jordan for the LNG facility near Aqaba, the

26 Simone Tagliapietra, *Towards a New Eastern Mediterranean Energy Corridor?*, 2013, p.20

27 Fabio Indeo, *Energy Security in MENA Countries: Vulnerability Factors and Future Perspectives*, Power Point Presentation given at 15th NATO Regional Cooperation Course, NATO Defense College, Middle East Faculty, Rome, March 21, 2016, slides no. 21

28 John Roberts, *The Eastern Mediterranean Energy Conundrum: Options and Challenges*, 2014, pp. 24-25

29 Matthew Bryza, *Eastern Mediterranean Natural Gas: Potential for Historic Breakthroughs among Israel, Turkey, And Cyprus*, in Sami Andoura and David Koranyi (eds), "Energy in the Eastern Mediterranean: Promise or Peril?", Egmont Paper 65, Joint Report by the Egmont Institute and the

improvement of political and diplomatic relations between these two countries will be the main precondition to achieve.

Another project envisaged the construction of an underwater pipeline to Cyprus and the construction of a joint LNG plant in Vasilikos, an area located on the southern coast of Cyprus, which should be supplied with both Leviathan and Aphrodite gas production.

The idea was to develop an LNG plant with an initial export capacity of 7 bcm of LNG per annum (which corresponds to one liquefaction train, with a capacity of 5 million tonnes), expandable to 15 million tonnes of LNG per annum (three liquefaction trains): however Cyprus' discovered offshore reserves could allow Nicosia government to allocate about 4,5-5 bcm of natural gas for exports, pushing the country to need the contribution of Israeli gas to preserve the economical feasibility of the LNG plant project.

In June 2013, Cyprus signed a Memorandum of Understanding with the Tamar consortium (Noble Energy, Delek Drilling and Avner Oil Exploration) to develop the LNG plant in Vasilikos.³⁰ The fact that at that time Noble company holds 50 percent of Aphrodite consortium and respectively holds 39 percent of shares in the Leviathan consortium and 36 percent in Tamar consortium could prefigure joint development projects of Israeli-Cypriot offshore reserves.

However Israel refused the proposal for a joint LNG facility, because Jerusalem can not depend for its natural gas export on a single route located in another country, a condition aimed to affect its energy security: only after developing another additional route to export Leviathan gas (a pipeline to Turkey or shipping gas to Egyptian LNG facilities) Israel could take into consideration a LNG plant in Vasilikos as export option. Also Cyprus has been compelled to freeze the LNG project, not having enough gas reserves to make it economically doable.

A liquefaction facility onshore Cyprus could be a solution, but this would be the first time in the world that some volumes of gas produced in one country would be exported as LNG from another.³¹

Atlantic Council, 2014, p. 40, available online at: <http://www.egmontinstitute.be/wp-content/uploads/2014/05/ep65.pdf> (accessed June 2, 2016)

30 Simone Tagliapietra, Will the European Market Need East Mediterranean Gas?, in Angelos Giannakopoulos (ed.), "Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?", Research Paper No. 8, The S. Daniel Abraham Center for International and Regional Studies, Tel Aviv University February 2016, p.107, available online at: <https://www.ceps.eu/system/files/Energy%20Cooperation%20and%20Security%20in%20the%20Eastern%20Mediterranean%20small%20file.pdf> (accessed June 3, 2016)

31 Nikos Tsafos, *Israeli Gas: Too Soon to Declare Victory*, The German Marshall Fund of the

Moreover, the energy relations between Israel and Cyprus are negatively influenced by the delay to reach an unitisation agreement that would ensure the rights of adjacent sovereign states in the event of a shared cross-border reservoir, even if these two countries signed an agreement for a maritime demarcation line dividing the two countries' Exclusive Economic Zones in 2010.

In this scenario of uncertainty, the Israeli Yishai consortium - which is engaged in explorations in the Israeli offshore - has claimed that Aphrodite field extends into Israeli waters: an unitisation agreement between the two countries is needed in order to facilitate a more efficient development programme for both the Leviathan and Aphrodite fields.³²

In addition to LNG projects, the Israeli energy strategy also envisages to realize overland and offshore pipelines to ship natural gas in the regional markets, even if these projects are seriously threatened by the regional rivalries and by the latent instability.

The implementation of the Eastern Mediterranean energy corridor - strongly supported by the EU - requires the energy cooperation among Israel, Cyprus and Greece. These three countries signed in 2012 an agreement to develop the Eastern Mediterranean energy corridor, which will be composed by two main projects:

- ⌚ the East Mediterranean gas corridor, which will allow Israel to ship its offshore gas production (mainly from Leviathan) to Cyprus by LNG tankers or by an underwater pipeline, and from Cyprus Aphrodite and Leviathan production will reach Greece through an underwater pipeline crossing Crete Island. At the beginning, the estimated capacity of this pipeline fluctuated between 30-40 bcm per year, then reduced to 28 bcm: currently, this project - which is included in the EU list of Projects of Common Interests - has an estimated capacity of 15 bcm on natural gas per year, due to the lack of available resources to fill this corridor.
- ⌚ the Euro-Asian Electricity Interconnector Greece-Israel to produce and export

United States Policy Brief, January 2016, pp. 2-3, available online at:<http://www.gmfus.org/publications/israeli-gas-too-soon-declare-victory> (accessed June 3, 2016); Matthew Bryza, *Eastern Mediterranean Natural Gas: Potential for Historic Breakthroughs among Israel, Turkey, And Cyprus*, 2014, p. 41

³² *Conflict between Noble Energy and Israel Delays Israel-Cyprus Unitisation Agreement*, in "Natural Gas Europe", November 12, 2015, available online at: <http://www.naturalgaseurope.com/conflict-between-noble-energy-and-israel-delays-israel-cyprus-unitization-agreement-26336> (accessed June 3, 2016)

electricity, which represents another pillar of the Eastern Mediterranean energy corridor based on the energy cooperation among Israel, Greece and Cyprus: in August 2013 these countries signed a memorandum of understanding to realize a Euro-Asian, 2 000 megawatts capacity interconnector capable of reaching the pan-European electricity grid.³³

The construction of a pipeline to Turkey represents an alternative and probably more affordable route, mainly after that in June 2016 Israel and Turkey have normalized their diplomatic and political relations, after 5 years of crisis linked to the flotilla incident at Mavi Marmara in 2010, which led to a significant deterioration in their bilateral relations.

Turkey and Israel aim to build by 2019 a 500 km underwater pipeline from the Leviathan offshore field to the Turkish port of Mersin, with a capacity of 30 bcm of natural gas per year, of which 10 bcm would be supplied to Turkey and the remaining volume will be delivered to Europe.³⁴

However, the envisaged potential routes to ship gas from Leviathan and others Israeli offshore fields to Turkey are all affected by tensions with transit countries.

As a matter of fact, the project to realize an onshore pipeline crossing Lebanon and Syria (probably along the route of the Arab Gas Pipeline) as well as an offshore corridor through Lebanese and Syrian waters appear not realistic, considering the civil war in Syria and the dispute between Israel and Lebanon on the development of the respective EEZ in the Eastern Mediterranean. Before the start of the civil war in 2011 Turkey and Syria almost completed the construction of a gas interconnector (with a capacity of 3-5 bcm per year) aimed to realize a kind of Eastern Mediterranean integrated gas system.

Consequently, it will be difficult to persuade energy companies to invest in this volatile scenario of instability, and the condition of energy security - based on the cornerstone of the regular supply without interruptions - appears severely threatened.

Another theoretical route could bypass unstable Syria and Lebanon crossing Cypriot EEZ: however, the potential development of this route will depend on the resolution of the

33 European Commission, *Eastern Mediterranean Natural Gas Pipeline – Pre-FEED Studies*, available online at: <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-energy/projects-by-country/multi-country/7.3.1-0025-elcy-s-m-15> (accessed June 8, 2016); Pasquale De Micco, *The prospect of Eastern Mediterranean gas production: An alternative energy supplier for the EU?*, 2014, p.15

34 Akhmed Gumbatov, *Prospects of Delivering Israeli Gas to the Turkish Market*, in "Turkish Policy Quarterly", January 26, 2016, available online at: <http://turkishpolicy.com/blog/10/prospects-of-delivering-israeli-gas-to-the-turkish-market> (accessed, June 4, 2016)

Cyprus problem, because this proposed underwater pipeline would cross the disputed “Turkish-Cypriot” territorial waters.

The implementation of an alternative maritime route to the West of Cyprus via the Lebanese EEZ is currently not feasible given the above mentioned dispute between Israel and Lebanon on the definition of the respective EEZ.

The geographic environment hinders Israel to conceive an underwater pipeline to Turkey bypassing both Cyprus and Lebanon.³⁵

Moreover, as Robert stated,

*“In considering the transit of pipelines through the EEZs of Eastern Mediterranean states, the main point is simply that although the owners of an EEZ cannot legally refuse permission for third parties to build such lines, they have the right to require full environmental impact assessments, and to play a role in determining the exact route that such a line should take. This, in practice if not in theory, ensures that their cooperation must be secured for the development of such pipelines”.*³⁶

In spite of the existent geopolitical hindrances, the theoretical Leviathan-Mersin gas pipeline could be a profitable project for both countries: Israel will have the opportunity to export its gas to the EU markets, also satisfying Turkish demand, while Turkey will be able to geographically diversify its gas imports, lessening the unbalanced dependence on Russian gas, which currently covers 55 percent of total Turkish imports. In geopolitical terms, following the realization of the Trans Anatolian Gas pipeline, as a segment of the Southern Gas Corridor - Turkey will legitimize its role as key energy hub for the European Union.

Lastly, Israeli gas will be a cheapest option for Turkey considering that an assumed price could be 199 dollars per thousand cubic metres, which will be very competitive compared to 425 dollars for Russian gas and 335 dollars for Azerbaijani gas.³⁷

³⁵ Theodoros Tsakiris, *The Leviathan-Ceyhan Pipeline: Political and Commercial Arguments Against the Construction of a Turkish-Israeli Pipeline*, in Sami Andoura and David Koranyi (eds), “Energy in the Eastern Mediterranean: Promise or Peril?”, Egmont Paper 65, Joint Report by the Egmont Institute and the Atlantic Council, 2014, pp. 47-50, available online at: <http://www.egmontinstitute.be/wp-content/uploads/2014/05/ep65.pdf> (accessed June 2, 2016)

³⁶ John Roberts, *The Eastern Mediterranean Energy Conundrum: Options and Challenges*, 2014, p.23

³⁷ Akhmed Gumbatov, *Prospects of Delivering Israeli Gas to the Turkish Market*, 2016; *Turkey plans to build a pipeline from Israel*, in “Natural Gas Europe”, December 20 2015, available online

2.3 A regional export strategy affected by traditional geopolitical rivalries and domestic hurdles

In the medium term, Israel appears to privilege a regional export strategy, mainly focused on countries as Jordan and Egypt which need to import natural gas to satisfy their domestic demand.

However, also the implementation of this regional energy strategy has been hindered by the worsening relations among Eastern Mediterranean countries.

Jordan was heavily dependent on Egyptian gas imports (over 90 percent of its natural gas needs), but in 2011 the sabotaging of the Arab Gas Pipeline provoked disruptions which exposed the country to a condition of high vulnerability. In spite of an efficient strategy of diversification - as the LNG terminal in Aqaba where the country imported Qatari gas - Jordan is desperately looking to find alternative sources of supply, and Israel appears as a potential supplier.

Leviathan partners and Jordan signed a Memorandum of Understanding in 2014 for the export of 45 bcm of Israeli natural gas to Jordan over 15 years through a pipeline under construction. However, this \$15 billion deal is not welcomed in Jordan, where activists and political parties publicly opposed any gas deal with Israel. Moreover, in 2014 Noble Energy signed a natural gas sales agreement with two Jordanian companies to provide 1.8 bcm of natural gas per year from the Tamar field for 15 years: exports should start in 2016.³⁸

Moreover, in 2014 Israel also signed a deal with the Palestinian Authority to provide 4.75 bcm of natural gas from the Leviathan gas field to the West Bank for a period of 20 years.³⁹ More complicated appears the development of the Gaza Marine gas field, which was discovered in 1999 by British Gas and was defined by the Palestinian leader Arafat as "a gift of God" for Palestinian people.

Gaza Marine field holds 28 bcm of natural gas reserves, which could be used to supply domestic markets, providing electricity for the Gaza Strip and for the West Bank through electricity swaps with Israel. However, Gaza Marine remains untapped despite its location in significantly shallower waters and considerably closer to shore than either Tamar or Leviathan: Gaza Marine lies at a depth of 603 meters compared to Tamar and

at:<http://www.naturalgaseurope.com/turkey-plans-to-build-a-pipeline-from-israel-27244> (accessed June 1, 2016)

38 U.S. Energy Information Administration, *Israel, Analysis*, 2016.

39 *Ibidem*

Leviathan at some 1700m and 1500m.⁴⁰

Several factors have been delaying the development of Gaza Marine, as the political and security challenges in the Gaza Strip and the Israeli lack of interest to exploit it, following the discovery of other larger gas fields and the current production from Tamar field which covers domestic demand.

However, a potential cooperation between Israel and Palestinian to jointly develop Gaza Marine could be profitable for both parties, in political, security and energy-economic spheres.⁴¹

Egypt is an interesting and promising market for Israel, even if the discovery of the Zohr giant gas field - with 850 bcm of estimated reserves - as well as the potential development of energy reserves in the Nile Delta could downsize Israeli ambitions.

Until 2011 Egypt was a net natural gas exporter - by pipeline to Jordan and Israel and by LNG - but at present the country is a severe energy crisis: the growing domestic demand and the delays to start production in the new discovered gas fields have pushed Egypt to import gas to meet its domestic needs.

But Egypt can also benefit of lucky geographic position as a strategic outlet for LNG exports to the international markets.

Consequently, Tamar and Leviathan partners have signed some Memorandum's of Understanding with European companies present in Egypt's LNG facilities, Idku (British Gas) and Damietta (Union Fenosa). In June 2014, the Leviathan partners signed a a \$30 billion deal with British Gas in order to supply its LNG facilities in Idku with 8 bcm of natural gas per year (half of the expected annual production in Leviathan), for 15 years. Moreover, in May 2014 the Tamar partners signed a MoU with Union Fenosa for 70 bcm of natural gas to be supplied to their LNG facilities in Damietta.⁴²

In November 2015, the Leviathan partners also signed an agreement with Dolphinus Holdings Limited for the export of natural gas from the Leviathan Project to Egyptian consumers: after one month, Israel's Minister of Energy approved the deal

40 Tim Boersma and Natan Sachs, *Gaza Marine: Natural Gas Extraction in Tumultuous Times?*, Brookings Policy Paper, No.36, Foreign Policy at Brookings, February 2015, pp. 1-2, available online at: <https://www.brookings.edu/wp-content/uploads/2016/06/Gaza-Marine-web.pdf>(accessed June 9, 2016)

41 *Ibidem*, pp. 8-11

42 Nikos Tsafros, *Egypt: a Market for Natural Gas from Cyprus and Israel?*, The German Marshall Fund of the United States, Foreign and Security Policy Paper Series 2015, October 2015, pp. 7-8, available online at: file:///C:/Users/oem/Downloads/Tsafos_EgyptEnergy_Oct15_web.pdf(accessed June 5, 2016)

based on the export of 5 bcm of natural gas from Tamar gas field - for a period of three years - via the existent East Mediterranean Gas undersea pipeline (Arish-Askelon pipeline) for "reverse flow" of gas from Israeli offshore to Egypt.⁴³

This represents the first concrete step in order to enhance the energy cooperation with Egypt. However, the arbitration decision about a legal dispute involving Egypt and Israel - ordering a potential compensation of Egyptian gas companies to Israeli one following halt of Arish Ashkelon pipeline in 2011 - could freeze the Tamar and Leviathan Partnership negotiations with Egyptian customers or with international energy companies which operate the liquefaction facilities in Egypt.⁴⁴

In addition to the geopolitical hindrances existing in the regional scenario, also regulatory and bureaucratic hurdles in the domestic sphere have delayed and postponed (by almost 18 months) the development of Leviathan gas field, hampering Israeli strategic goal to achieve an export strategy aimed to supply gas to the region and to the international markets. As a matter of fact, in December 2014 the Israeli Anti-Trust Authority decided to revoke an arrangement permitting Noble-Delek partners to develop Leviathan, declaring them a cartel, a move that will require the separation of Leviathan from Tamar and the sale of Leviathan to a new partnership.

In July 2015 the Israel's Cabinet has approved a regulatory framework that will allow the continuation of development of offshore natural gas fields. According to this deal, Noble and Delek can keep ownership of Leviathan, but they are forced to divest its holdings in the Tamar, Karish and Tanin gas fields within six years; Noble Energy will have to gradually reduce its stake in Tamar to no more than 25 percent within that same time frame.⁴⁵ In May 2016, the Israeli government finally approved a deal allowing the Leviathan partners - Delek Group is the main shareholder in the Leviathan project (44.34 percent), while Noble Energy Mediterranean Ltd. Holds 39.66 percent and Ratio Oil Exploration LP 15 percent - to begin the development on the field. Exports from the

43 Avi Bar-Eli, *Energy Minister Permits Gas Exports to Shady Egyptian Company*, in "Haaretz", December 24, 2015, available online at: <http://www.haaretz.com/israel-news/business/.premium-1.693538> (accessed June 4, 2016); *Deal envisions Leviathan gas sales to Egypt*, in "Oil&Gas Journal", November 25, 2015, available online at: <http://www.ogj.com/articles/2015/11/deal-envisions-leviathan-gas-sales-to-egypt.html> (accessed June 4, 2016)

44 *Day of High Drama Sees Egypt Freeze Gas Negotiations with Israel*, in "Natural Gas Europe", December 7, 2015, available online at: <http://www.naturalgaseurope.com/egypt-freezes-gas-negotiations-israel-after-ordered-to-pay-1.76-billion-compensation-26965> (accessed June 4, 2016)

45 *Israeli Cabinet Approves Natural Gas Agreement*, in "Natural Gas Europe", August 16, 2015, available online at: <http://www.naturalgaseurope.com/israeli-cabinet-approves-natural-gas-agreement-25070> (accessed June 3, 2016)

Leviathan field are expected to begin by 2019.

According to the development plan, Leviathan project will be implemented in two phases: phase 1 in which gas will be delivered to Israel, Jordan and LNG facilities in Egypt (owned by British Gas); and phase 2 when gas will be shipped to Turkey. In the first phase, the Leviathan Partnership will drill wells and build a floating production, storage and other facilities (\$US 6 billion of estimated costs), while Shell will realize 450-km subsea pipeline from the FPSO to Idku (\$US 1 billion of estimated costs).⁴⁶

However, this delay about Leviathan's development has pushed traditional potential buyers (Egypt, Jordan) to look for alternative suppliers triggering a regional competition because Cyprus could take over the role of Israel as energy supplier.

Moreover, the regional energy scenario is profoundly changed in the last two years. The discovery of Zohr (850 bcm of gas reserves) in the offshore Egyptian will be a threat for Israeli (and Cypriot) ambitions to become energy suppliers for Egypt. If Egypt commits Zohr production to meet its domestic needs, Israel will preserve the energy card to export gas through Damietta and Idku LNG facilities to EU or Asian markets. So Israel could reorient its strategy to Turkey but the recent improvement of the Russian-Turkish relations could restart the Turkish Stream gas pipeline project, downsizing the relevance of the Israeli potential export gas to Turkey.

Furthermore, the effect of the attempted *coup d'état* against Turkish President Erdogan could trigger a condition of long-term instability which can freeze all energy projects.

3. Offshore Levant Basin: Cyprus, Lebanon and Syria

3.1 Cyprus potential ambitions and existing challenges

When Noble energy company discovered the Aphrodite field in Block 12 of Cyprus' EEZ in 2011, Cyprus has begun to imagine itself as a future gas supplier in the regional scenario: as a matter of fact, the initial estimates of the Aphrodite field - 198 bcm of natural gas reserves - and the additional potential of gas reserves estimated in its offshore area (1.000 bcm) legitimated its ambition to become a key export hub in the heart of the Mediterranean, benefiting from its geographic position. Moreover, the discovery of gas reserves could also help Cyprus to change its energy mix, progressively

⁴⁶ *Israeli Partners Line Up Tamar, Leviathan Rig*, in "Natural Gas Europe", June 17, 2016, available online at: <http://www.naturalgaseurope.com/tamar-expansion-drilling-is-expected-by-the-end-of-the-year-30151>

abandoning oil imports and using domestic natural gas to produce electricity.

Cyprus launched prospecting activities and exploration in 2006, following the definition of 13 exploration blocks in its Exclusive Economic Zone at the south of the island, which covered the Eratosthenes seamount, the Levant Basin, and the Nile Delta.

Cyprus government launched two international tenders for exploration licenses: in 2007, a licence exploration was granted to Noble energy company for Block 12.⁴⁷

Following the success of the first drilling exploration and the discovery of Aphrodite, Cyprus government launched a second licensing round: in 2013 the Italian-South Korean consortium ENI-KOGAS awarded licenses to explore Blocks 2, 3, and 9 while the French company Total awarded Block 10 and 11.⁴⁸

On June 26, 2013, Noble and Delek companies - which composed the Aphrodite consortium - signed a Memorandum of Understanding with the Cypriot government to build a LNG facility at Vassilikos, which represented at that time the best option to ship and export gas to the regional and international markets.

The rationale of this project was to implement a kind of Cyprus-Israel energy axe, jointly developing a LNG onshore at Vassilikos, allowing both countries to export the future production of their main gas fields, Aphrodite and Leviathan, to a regasification plant in Greece and then to the EU markets: moreover, the flexibility of the LNG solution would also open the lucrative option of the East Asian markets.

The Vassilikos LNG project - with an initial export capacity of 5 million tonnes of LNG per annum (one liquefaction train), expandable to 15 million tonnes of LNG per annum (three liquefaction trains) - represented the best and profiting option for Cyprus and Israel for several reasons.

Firstly, the territorial proximity of Israeli Leviathan gas field increased the economic and commercial feasibility of the LNG facility, following the potential realization of an underwater pipeline from offshore Leviathan field to the Cypriot LNG terminal. As a matter of fact, Cypriot existent reserves (about 200 bcm in 2013) were sufficient to justify only a single train of LNG production (with a capacity of 7 bcm per year), which is unlikely to attract commercial financing. Moreover, we can observe that Noble company was the leading company in both Aphrodite and Leviathan projects, making this project

⁴⁷ *Cyprus offshore hydrocarbon developments*, PwC, available online at: <http://www.pwc.com.cy/en/energy-utilities-mining/cyprus-offshore-hydrocarbon-developments.html> (accessed June 7, 2016)

⁴⁸ *Ibidem*

further realistic.

Consequently, for Nicosia government will be necessary to find additional discoveries in order to realize two or more production trains or to convince Israel to ship Leviathan gas production in this Vassilikos LNG project.⁴⁹

Secondly, an LNG offshore in Cyprus allowed Israel to bypass domestic opposition against the proposal to build LNG export plans in the port cities of Ashdod, Ashkelon and Eilat.

However, Cyprus has failed to successfully undertake its national energy strategy mainly because the offshore natural gas potential was lower than expected.

In summer 2013, Noble revised its estimate for Aphrodite downward to 140 bcm and then to 127 bcm, while the Eni-Kogas consortium failed to find significant quantities of gas in Block 9 in 2014 and 2015 as well as Total French company in Block 10 and 11.⁵⁰

Nevertheless, in spite of these unsuccessful attempts international energy companies have maintained their position in the offshore of Cyprus, hoping that future drillings and explorations will be more promising: in March 2015 Total decided to extend its presence in Cyprus with the aim to undertake further drilling activities in Block 11 as well as the Italian Eni and the South Korean Kogas received approval to extend their exploration license until 2018.⁵¹

Undoubtedly, the discovery of Zohr gas field in the Egyptian offshore and its proximity to the Cypriot maritime zone has influenced Total to reconsider its initial decision to withdraw from Cyprus' offshore waters: Zohr lies just 6km from the boundaries of Cyprus' Block 11, licensed to Total, and about 90km from the Aphrodite reservoir in Block 12.⁵²

49 Matthew Bryza, *Eastern Mediterranean Natural Gas: Potential for Historic Breakthroughs among Israel, Turkey, And Cyprus*, 2014, p. 41

50 *Eni, KOGAS find no exploitable hydrocarbons off Cyprus*, in "Reuters", March 26, 2015, available online at: <http://in.reuters.com/article/cyprus-natgas-eni-idINL6N0WS3M420150326>(accessed June 7, 2016); *French quit Cyprus energy search after finding nothing – reports*, in "Famagusta Gazette", January 21, 2015, available online at: <http://famagusta-gazette.com/french-quit-cyprus-energy-search-after-finding-nothing-reports-p27372-69.htm>(accessed June 7, 2016)

51 *Government extends ENI-KOGAS gas exploration by two years(Updated)*, in "Cyprus Mail", December 28, 2015, available online at:<http://cyprus-mail.com/2015/12/28/government-extends-eni-kogas-gas-exploration-by-two-years/> (accessed June 6, 2016)

52 *Ibidem*

The revised estimates of Aphrodite gas field have definitely undermined the LNG facility in Vassilikos, pushing Cypriot government to freeze this project for the lack of additional reserves - which will make it economically doable - and reorienting its strategy to a more realistic pipeline strategy.

The development of a natural gas sector in Cyprus will contribute to create a domestic demand of 1 bcm per year: within a 30-years perspective, considering 127 bcm of gas reserves and a consumption of 30 bcm, 97 bcm of natural gas will be available for export but they will be not sufficient to fuel two liquefaction trains (with a total capacity of 7 bcm each). As a matter of fact, 97 bcm of natural gas will fuel only one liquefaction train for 13 years.

Apart from Block 12 and Aphrodite, the potential of the Cypriot EEZ could be largely untapped, considering that the Block 12 partners have drilled in only two out of Aphrodite's four reservoirs. Nevertheless, Aphrodite potential gas reserves will be sufficient to meet Cypriot domestic demand for 20-30 years and also to export small volumes to neighbouring Egypt and Jordan.⁵³

In June 2015, the partners in Cyprus' Aphrodite field (Noble Energy, Delek Drilling and Avner Oil Exploration) have declared the commerciality of the Aphrodite field, also submitting to the Cypriot government a plan to build an independent floating production installation in the Aphrodite field, and an undersea natural gas pipeline would then ship the gas from the Cypriot field to neighbouring Egypt.⁵⁴

Egypt represents a profitable option for Cypriot exports: the growing domestic consumption and the Egyptian stagnant production characterize the country as an interesting market, while the unused Idku liquefaction facility would allow Cyprus to re-export gas to EU or Asian markets. In December 2013, Cyprus and Egypt signed a Common Unitisation Agreement to consolidate their respective EEZ, reconfirming the 2003 agreement.⁵⁵

53 Theodoros Tsakiris, *The Gifts of Aphrodite: The Need for Competitive Pragmatism in Cypriot Gas Strategy*, in Angelos Giannakopoulos (ed.), "Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?", Research Paper No. 8, The S. Daniel Abraham Center for International and Regional Studies, Tel Aviv University February 2016, p. 28, available online at: <https://www.ceps.eu/system/files/Energy%20Cooperation%20and%20Security%20in%20the%20Eastern%20Mediterranean%20small%20file.pdf> (accessed June 3, 2016)

54 Elias Hazou, *Aphrodite Plan Probably a Floating Unit*, in "Cyprus Mail", June 12, 2015, available online at: <http://cyprus-mail.com/2015/06/12/aphrodite-plan-probably-a-floating-unit/> (accessed June 5, 2016)

55 Theodoros Tsakiris, *The Gifts of Aphrodite: The Need for Competitive Pragmatism in*

The discovery of the Zohr gas field could boycott Cyprus' energy plans, even if Egyptian authorities have assured that the country will still need to import gas from Cyprus' Aphrodite as the Zohr field is not expected to come online before 2020.⁵⁶

Following the approval of the Cyprus government of the British Gas purchase of a 35 percent stake in Block 12 from Noble Energy in 2015, the Egypt's option as export market will be enhanced, mainly because BG operates the Idku LNG plant, which means that the BG's involvement in the Aphrodite field may secure a customer for Cypriot gas. Moreover, Nicosia could benefit from the current frozen energy negotiations between Israel and Egypt, further enhancing its potential role of gas exporter to Egypt.

Jordan is the other potential buyer of Cypriot gas in the regional market: the Jordan and Cypriot energy ministers discussed about two options - pipeline and LNG - both having Egypt as a transit country.

The main hindrance which currently prevents the export energy strategy of Cyprus is the unsolved situation of divided Cyprus between Greek Cypriots and the Turkish Republic of Northern Cyprus (TRNC) as well as the Turkey's strong opposition against Cypriot energy projects to exploit offshore gas reserves.

As an internationally recognized state, the Republic of Cyprus has the sovereign right to explore and exploit the natural resources in its EEZ, a right which is not linked to the Cyprus solution even if Nicosia recognizes that the north will enjoy revenues and benefits of the natural resource wealth within the framework of a united Cyprus.

The self-proclaimed Turkish Republic of Northern Cyprus and Turkey oppose to Cyprus offshore activities for the reason that the Greek Cypriots alone cannot legitimately represent Cyprus as a whole: Greek Cypriots and Turkish Cypriots are co-owners of the island's offshore natural resources. However, the Greek Cypriots ignored the proposal of the Turkish Cypriots to work together in developing Cyprus's offshore hydrocarbon resources.

The United Nations have attempted to deal with this delicate political situation, supporting negotiations and the establishment of a bizonal, bicommunal federation.⁵⁷

Cypriot Gas Strategy, 2016, pp. 29-31

56 Nikos Tsfaros, *Egypt: a Market for Natural Gas from Cyprus and Israel?*, 2015, pp. 12-13

57 Ayla Gürel, Hayriye Kahveci and Harry Tzimitras, *How to Build Confidence over Energy Issues in the Context of a Cyprus Settlement?*, in Sami Andoura and David Koranyi (eds), "Energy in the Eastern Mediterranean: Promise or Peril?", Egmont Paper 65, Joint Report by the Egmont Institute and the Atlantic Council, 2014, pp.61-63, available online at: <http://www.egmontinstitute.be/wp->

Even if Cyprus signed EEZ agreements with Egypt (2003), Lebanon (2007—yet to be ratified) and Israel (2010), this demarcation of the offshore borders has not been accepted by Turkey.⁵⁸

As a matter of fact, Ankara claims that the EEZ of Cyprus cut into Turkish maritime territory and in the TRNC maritime area: consequently, Turkey has always considered all Cypriot gas and oil explorations in the Eastern Mediterranean (as well as in the case of Israeli offshore initiatives) as illegal and unilateral, claiming that the demarcation of the EEZ between Israel and Cyprus must also involve TRNC and that resources be shared equally.⁵⁹

The opposition of Turkey substantially hampers the development of the energy cooperation among Cyprus, Israel and Greece, which is also affected by the need to discover additional gas reserves in Cyprus in order to realize the East Mediterranean pipeline to Greece and via Greece to Europe.

In spite of the inclusion of this project in the list of the EU's Projects of Common Interest (PCI), the support of the EU to enhance the energy security of a member state, the trilateral negotiations among Cyprus, Israel and Greece to promote this joint project, the resolution of the Cypriot problem appears the main precondition to address in order to monetize Nicosia's offshore energy potential.

Moreover, also the project to realize a pipeline route bypassing Cyprus appears unrealistic considering that this should cross Syria onshore or the disputed EEZ zone between Israel and Lebanon.

After the discovery of Aphrodite, in September 2011 Turkey and the TRNC signed an agreement concerning continental shelf delimitation, under which the TRNC granted Turkey permission to drill off all the island's coasts, including southern coastal areas controlled by the Republic of Cyprus. Moreover, Turkey has also warned to use military naval forces to stop Cyprus and Noble Energy company exploratory drilling in the

content/uploads/2014/05/ep65.pdf (accessed June 2, 2016)

58 Simon Henderson, *Turkey's Threats to Israel's New Gas Riches*, Washington Institute for Near Eastern Policy, September 13, 2011, available online at: <http://www.washingtoninstitute.org/policy-analysis/view/turkeys-threat-to-israels-new-gas-riches>.(accessed June 6, 2016)

59 Angelos Giannakopoulos: *Introduction The Eastern Mediterranean in Light of Recent Energy Developments and Their Impact*, in Angelos Giannakopoulos (ed.), "Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?", Research Paper No. 8, The S. Daniel Abraham Center for International and Regional Studies, Tel Aviv University February 2016, p. 13, available online at: <https://www.ceps.eu/system/files/Energy%20Cooperation%20and%20Security%20in%20the%20Eastern%20Mediterranean%20small%20file.pdf> (accessed June 3, 2016)

Aphrodite field.⁶⁰

This political uncertainty and the existent regional tensions will affect the development of the Cyprus' offshore reserves, discouraging international energy companies to invest in exploration activities and in the realization of transport energy infrastructures: moreover, given the current estimated reserves international energy companies will be not attracted to the allocation of the future Aphrodite production in a still non existent domestic market, preferring the more profitable export option.

As mentioned above, the main precondition is to find additional gas reserves: Cyprus's government has declared a third offshore licensing round for hydrocarbon exploration in its Exclusive Economic Zone in order to award licenses for blocks 6, 8 and 10.

The idea is to exploit the “drawing power” of the giant Zohr gas field to attract international energy companies: the interest showed by ExxonMobil, Qatar Petroleum, Norwegian Statoil – together with the “older” Eni, Total, Delek – as potential bidders of these blocks could give more chances to Cyprus' energy ambitions to become a gas producer and a regional exporter.⁶¹

3.2 Lebanese and Syrian offshore gas reserves: an untapped energy eldorado

Lebanon is another potential country in the Eastern Mediterranean which could play a significant role as energy supplier, due to its huge oil and gas reserves located in its seabed. Lebanon's Exclusive Economic Zone is a part of the Levant Basin: according to the USGS estimates, Lebanon could hold 850 bcm of offshore natural gas reserves and 660 million barrels of oil.⁶²

With the goal to attract financial investments and the interest of the main international energy companies, Lebanese authorities gave different estimates, increasing them: according to the former minister of energy Jibril Basil, in 2013 Lebanon could benefit of 2.7 tcm of natural gas and 865 million barrels of oil.⁶³

⁶⁰ Theodoros Tsakiris, *The Gifts of Aphrodite: The Need for Competitive Pragmatism in Cypriot Gas Strategy*, 2016, pp. 29-31

⁶¹ EXXON/QP among Cyprus Bidders, in "Natural Gas Europe", July 28, 2016, available online at: <http://www.naturalgaseurope.com/exxon/qp-among-cyprus-3rd-round-bids-30813>(accessed July 30, 2016)

⁶² U.S. Geological Survey, *Assessment of Undiscovered Oil and Gas Resource of the Levant Basin Province, Eastern Mediterranean*, 2010

⁶³ *Lebanon says gas, oil reserves may be higher than thought*, in "Reuters", October 27, 2013, available online at: <http://www.reuters.com/article/2013/10/27/us-meast->

However, these governmental estimates were not supported and confirmed by exploratory drillings, and these were sharply cut down by the Spectrum Norwegian company, which carried out the first seismic survey in the offshore of Lebanon, estimating recoverable reserves at 693 bcm.⁶⁴

Following a potential development of these offshore gas reserves, Lebanon will be able to reduce its unbalanced dependence on oil and gas imports, accounting for 97 percent of its needs.

Natural gas has never covered a significant role in the national energy mix, because of the lack of endogenous reserves which obligated Lebanon to start import from Egypt, through the Arab Gas pipeline which crossed Israel, Jordan, Lebanon, and Syria. However, Lebanon benefited of Egyptian imports only for one year (2009-2010): as a matter of fact, the flow of Egyptian gas was frequently disrupted because of delayed government payments and attacks on the pipeline in Sinai. The explosion of the Arab Spring in Egypt and the following condition of instability definitely stopped this energy route of imports.⁶⁵

So Lebanon holds a huge energy potential to exploit, but domestic factors, political weakness and tensions with Israel have until now hampered the development of the offshore gas reserves.

Both Lebanon and Israel claim a maritime area of some 1,400 square km which is potentially rich of offshore hydrocarbons. Specifically, Block 9 field is some 4 km from Lebanon's territorial waters and Israel claims it as part of its EEZ.⁶⁶

For their part, according to the Lebanese authorities Israeli Tamar gas field, which lies some 35 km south of the Lebanese waters but in the Israel's EEZ, straddles at two

investmentlebanon-idUSBRE99Q07L20131027 (accessed June 7, 2016)

64 *Lebanon's Offshore Gas Estimated at 25 TCF*, Institute of Energy for South East Europe, September 27, 2012, available online at: <http://www.iene.gr/page.asp?pid=1783&lng=2> (accessed June 6, 2016); Laila Bassa, *Lebanon says gas, oil reserves may be higher than thought*, in "Reuters", October 30, 2013, available online at: <http://www.reuters.com/article/2013/10/27/us-meast-investmentlebanon-idUSBRE99Q07L20131027> (accessed June 2, 2016)

65 Bassam Fattouh, Laura El-Katiri, *Lebanon: the Next Eastern Mediterranean Gas Producer?*, The German Marshall Fund of the United States, Foreign and Security Policy Paper Series 2015, pp. 1-2, available online at: <http://www.gmfus.org/publications/lebanon-next-eastern-mediterranean-gas-producer> (accessed June 3, 2016)

66 Ariel Ezrahi, *Cooperation Prospects and Conflict Potential around Hydrocarbons in the Middle East: Israel–Egypt–Palestinian Territories–Jordan*, in Angelos Giannakopoulos (ed.), "Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?", Research Paper No. 8, The S. Daniel Abraham Center for International and Regional Studies, Tel Aviv University February 2016, p. 81, available online at: <https://www.ceps.eu/system/files/Energy%20Cooperation%20and%20Security%20in%20the%20East%20Mediterranean%20small%20file.pdf> (accessed June 3, 2016)

locations the maritime border claimed by Lebanon.⁶⁷

Moreover, when Israel discovered Karish offshore field in 2013 - which is closed to the disputed area - Lebanon expressed concerns about Israeli violation of Lebanon's Exclusive Economic Zone, considering that according to Lebanese authorities Karish is just 4km outside its territorial waters.⁶⁸

These claims are further exacerbated for the reason that Lebanon has never delineated its EEZ with Israel, also considering the these countries have not diplomatic and political relations due to the existing state of war between them.

Lebanon-Israel dispute is linked to the wider problem of the maritime boundaries in the Eastern Mediterranean, which could be managed through the application of the United Nations Convention on of Sea (UNCLOS), entered into force in 2014 with the aim to provide dispute settlement mechanisms for the delimitation of the Exclusive Economic Zones and the exercise of continental shelf jurisdiction. However, Lebanon signed UNCLOS in 1995 (together with Egypt and Cyprus, respectively in 1983 and 1988) but Israel, Turkey and Syria have not signed this Convention.⁶⁹

A dangerous escalation could be triggered in the region if exploration activities will be carried out in the disputed area: both governments have indicated that they would use military force to protect such resources and the strengthening of their naval capabilities clearly shows the risk of incidents.⁷⁰ However, until now Israel and Lebanon have avoided to undertake exploration in the disputed areas, but Lebanon could advance its rights in the medium term pushed by the strategic need to develop its domestic natural gas sector.

67 Naji Abi-Aad, *The Conflict between Israel and Lebanon over Their Exclusive Economic Zones*, in Sami Andoura and David Koranyi (eds), "Energy in the Eastern Mediterranean: Promise or Peril?", Egmont Paper 65, Joint Report by the Egmont Institute and the Atlantic Council, 2014, p.70, available online at: <http://www.egmontinstitute.be/wp-content/uploads/2014/05/ep65.pdf> (accessed June 2, 2016)

68 Bachir El-Khoury, *Lebanon's Untapped Wealth*, in "Middle East Online", November 4, 2015, available online at: <http://www.middle-east-online.com/english/?id=73890>(accessed June 7, 2016)

69 Tullio Scovazzi, *Maritime Boundaries in the Eastern Mediterranean Sea*, The Marshall German Fund of the United States, Policy Brief, June 11, 2012, p.9, available online at: <http://www.gmfus.org/publications/maritime-boundaries-eastern-mediterranean-sea> (accessed June 7, 2016); Pasquale De Micco, *The prospect of Eastern Mediterranean gas production: An alternative energy supplier for the EU?*, 2014, pp. 8-9

70 Sarah Vogler, Eric V.Thompson, *Gas Discoveries in the Eastern Mediterranean: Implications for Regional Maritime Security*, The Marshall Fund of the United States, Policy Brief, March 2015, p.5, available online at: <http://www.gmfus.org/publications/gas-discoveries-eastern-mediterranean-implications-regional-maritime-security>(accessed June 6, 2016)

This lack of delimitation of the maritime borders and the political weakness of the Lebanese government have delayed the launch of first licensing round to explore and exploit offshore reserves. The pre-qualification round launched at the beginning of 2013 attracted several of the most important international energy companies (such as Total, ENI, Shell, Statoil, Chevron, and ExxonMobil), indirectly confirming the profitable potential of the offshore reserves.

However, the inability of the Lebanese parliament to elect a new president and the formation in February 2014 of an unstable government have paralysed the decision-making process, preventing Lebanese government from passing two essential decrees that are essential to launching explorations offshore: the first was about the delimitation of Lebanon's territorial sea and Exclusive Economic Zone, while the second one was about the provisions of future Exploration and Production Agreements (EPA).⁷¹

Following this long-term deadlock, Lebanon has been forced to revise its energy plans: according to Bassam Fattouh, Director of the Oxford Institute for Energy Studies, Lebanon will be able to start natural gas production in 2020, even if 2025 appears a term more realistic, while the previous deadline was for 2017.⁷²

Consequently, in this interim period of 5-10 years Lebanon should necessarily import natural gas from abroad to meet the expected growth of the domestic demand as well as to achieve the ambitious target to increase the share of natural gas from its current level of zero to two-thirds of the fuel mix by 2030.⁷³

The realization of infrastructures to import natural gas and the implementation of a national grid of pipelines for the domestic market have become two strategic and interlinked aims for the national government.

However, the regional scenario of instability (war in Syria and the deteriorated relations with some neighbours, like Israel) prevents the realization of overland pipelines, while LNG option appears the best solution.

71 Bassam Fattouh, Laura El-Katiri, Lebanon: the Next Eastern Mediterranean Gas Producer?, 2015, pp. 4-5

72 Bassam Fattouh, Lebanon's gas export options: Timing is key, The Lebanese Center for Policy Studies, Featured Analysis, March 2015, available online at: <http://www.lcps-lebanon.org/featuredArticle.php?id=34>(accessed June 7, 2016)

73 Gebran Bassil, Policy Paper for the Electricity Sector, Ministry of Energy and Water, 2010, available online at: http://www.energyandwater.gov.lb/adminpages/page/DownloadPageFile.asp?PageFile_ID=94 (accessed June 12, 2016)

As a matter of fact, gas imports from Egypt halted in 2010 for instability reasons, while the Gasyle pipeline - conceived to deliver 1.5 bcm per year of Syrian natural gas to Lebanon - is currently unused because of the collapse of the Syrian production for the civil war.

The planned project to build a coastal gas pipeline, connecting a planned storage terminal onshore near the future Floating Storage Regasification Unit to Tyre in southern Lebanon, is part of this national energy strategy aimed to avoid instability factors which affects overland pipelines.⁷⁴

In spite of government's plans, at present Lebanon is not able yet to import LNG, due to the lack of progress in the realization of the infrastructures.

The same security concerns will also affect the future strategy of exports: it is not realistic to plan the realization of overland pipelines to ship the expected gas production of Lebanon.

Israel, Syria and Iraq (which hold natural gas reserves but they need to import volumes of gas in the medium term) are not feasible options due to the existing threats to the transport infrastructures which don't ensure to have regular energy supply. Jordan could be an interesting regional market to reach, through the existing Arab Gas Pipeline which could be used for reverse flows and the realization of a link between Lebanon and the pipeline: however, this route could be affected by disruptions linked to the regional instability, as in 2011 Arab Spring events.

Given Lebanon's geographic position in the Eastern Mediterranean, LNG option theoretically represent the best option for exports, even if this possibility is linked to the amount of natural gas that Lebanon will decide to commit for export: given the estimated reserves, Lebanon will be able to fuel one or two LNG trains (14-15 bcm of natural gas per year) ensuring their commercial feasibility.

However, as Fattouh highlighted, the problem for Lebanon's exports is timing: when Lebanon should start its gas exports - 2020-2025 - there will be a LNG oversupply, due to the increase of production and exports from Australia, Mozambique, North America.⁷⁵

Consequently, Lebanon should focus its energy exports to the regional scenario, given the expected growth of natural gas demand, rather than to be involved in an unfavourable competition in the global market. For instance, Cyprus could be an

⁷⁴ Bassam Fattouh, Laura El-Katiri, Lebanon: the Next Eastern Mediterranean Gas Producer?, 2015, pp. 10-11

⁷⁵ Ibidem, p.13

interesting energy partner for Lebanon, shipping natural gas exports to this potential regional hub of exports and then contributing to supply EU markets through the EastMed pipeline.

The violent conflict which is currently ravaging the country hampers Syria to develop and exploit its huge energy potential: before the explosion of the civil war in 2011, Syria produced 9 bcm of natural gas and also exported oil to EU markets.

According to the USGS Syria holds 230 bcm and an additional potential of 170 bcm of offshore natural gas reserves, located in the northern part of the Levant Basin but at present it appears impossible to plan projects to develop them.

In December 2013 Russia signed a deal with the Syria government to conduct exploration in an 850-square-mile area of the Syrian EEZ but the current war scenario has frozen Russian interests and initiatives.⁷⁶

So the Syrian offshore potential will remain untapped for long years, because there are not the conditions of security attracting financial investors and international energy companies to operate in the area.

Moreover, this condition of instability also affect the role of transit country which Syria could play, hosting in its territory pipelines fuelled by other suppliers.

In 2009 Qatar proposed to build a pipeline to send its gas northwest via Saudi Arabia, Jordan, and Syria to Turkey in order to reach EU markets. Two years later, Syrian President Assad - under Russian pressure - refused to sign the plan opting to support the so called Islamic pipeline or Friendship pipeline project, aimed to carry up 25 bcm of Iranian gas to Iraq and Syria eastward to the European market.⁷⁷

In this way Syria entered in the geopolitical competition between EU (and US) and Russia concerning energy supply to Europe and the strategy of diversification.

Russia opposed to a US-backed plan to implement an alternative route of energy imports - not under Russian control - to supply EU markets, mainly because aimed to undermine Moscow's influence in EU and the reduction of Russian gas exports.

76 Ziad Haidar, *Syria Signs Offshore Oil and Gas Exploration Deal with Russia*, in "Al-Monitor", December 27, 2013, <http://www.al-monitor.com/pulse/business/2013/12/syria-russia-sign-offshore-oil-deal.html> (accessed June 8, 2016)

77 Olgü Okumuş, *Some Reasons to Materialize Iran, Iraq, and Syria's Gas Pipeline*, in "Natural Gas Europe", February 13, 2013, available online at: <http://www.naturalgaseurope.com/iran-iraq-and-syria-gas-pipeline>(accessed June 7, 2016); Tamsin Carlisle, *Qatar seeks gas pipeline to Turkey*, in "The National", August 26, 2009, available online at: <http://www.thenational.ae/business/energy/qatar-seeks-gas-pipeline-to-turkey> (accessed June 8, 2016)

Russia supported the Islamic pipeline which involved its partner Iran and because Moscow could potentially contribute to ship gas in this pipeline developing Syria's offshore reserves.⁷⁸

4. The Levant energy basin: a new arena for the EU-Russia geopolitical competition and the role of the International energy companies

The European Union (EU) has always considered the Mediterranean region as a strategically significant area, even because the geographic proximity has facilitated the development of political, economic and energy relations.

Following the launch of the Euro-Mediterranean Partnership (EMP) and the creation of the enlarged Union for the Mediterranean (UfM), the EU has promoted a deep cooperation with the southern and eastern shores of the Mediterranean: one of the main important initiatives in the energy sector is the Mediterranean Solar Plan (MSP), focusing on renewable energy (wind and solar).⁷⁹

Before the discovery of gas reserves in the Eastern Mediterranean, the EU has focused its interest on North Africa's oil and gas suppliers. However, the Arab Spring events have highlighted a condition of dangerous vulnerability which negatively affects regular energy supply: consequently, the abundant energy resources located in the Eastern Mediterranean could allow the EU to benefit of an alternative source of oil and gas imports in the next years.

The European Union is strongly interested in working closely with Eastern Mediterranean potential producer and supplier countries as Israel, Cyprus and Lebanon, which could play a significant role as EU energy suppliers allowing the EU to achieve its energy security strategy based on the diversification of import routes, in order to lessen the dependence on Russian gas imports.

⁷⁸ Mitchell A. Orenstein, George Romer, *Putin's Gas Attack Is Russia Just in Syria for the Pipelines?*, in "Foreign Affairs", October 14, 2015, available online at: <https://www.foreignaffairs.com/articles/syria/2015-10-14/putins-gas-attack> (accessed June 7, 2016); Christina Lin, *Syrian Buffer Zone – Turkey-Qatar Pipeline*, ISPSW Strategy Series: Focus on Defense and International Security, Issue 367, August 2015, available online at: https://www.files.ethz.ch/isn/192741/367_Lin.pdf (accessed June 8, 2016)

⁷⁹ Dorothee Schmid, *Towards an Energy Revolution in the Eastern Mediterranean: Any Positive Effect for the EU?*, Neighbourhood Policy Paper, CIES, Kadir Has University, 2013, pp.1-2, available online at: [http://www.khas.edu.tr/cms/cies/dosyalar/files/NeighbourhoodPolicyPaper\(12\).pdf](http://www.khas.edu.tr/cms/cies/dosyalar/files/NeighbourhoodPolicyPaper(12).pdf) (accessed June 8, 2016)

At present, imports represent some 70 percent of gas consumed in the EU but are expected to remain stable to 2020: then, the persistent decrease of the domestic production will rise imports to reach about 340-350 bcm by 2025-2030.

The primary natural gas exporters to the EU are Russia (42 percent), Norway (30 percent) and Algeria (13 percent), while Qatar covers 7 percent of EU imports with LNG supplies.⁸⁰

Even if LNG represents a key option in the diversification strategy of routes and suppliers, also reducing the dependence on pipelines, LNG imports cover only 10 percent of the EU total demand: in 2015, in spite of a LNG import capacity of 191 bcm, EU imported less than 45 bcm of natural gas in LNG form.⁸¹

The development of the Eastern Mediterranean energy corridor has progressively become a potential profitable option for the EU, as an alternative import route to enhance its energy security. According to the EU energy strategy *"the EU should engage in intensified political and trade dialogue with Northern African and Eastern Mediterranean partners, in particular with a view to creating a Mediterranean gas hub in the South of Europe"*.⁸²

Imports from East Mediterranean will be cheaper and closer - compared to imports from Middle East and Russia - and they also benefit of a geopolitical relevance because they don't have to cross any maritime chokepoints (Hormuz, Suez and Bab el Mandeb for imports coming from Middle East) or to transit in a third country (Ukraine and Belarus for imports coming from Russia), a condition which enhance their "strategic availability" of East Med gas resources for the EU energy needs.⁸³

In 2012, the Commission gave its support to the Eastern Mediterranean corridor by including the Euro-Asia interconnector, the LNG storage facility and the offshore pipeline from Cyprus to Greece on the list of Projects of Common Interest (PCI) for the period 2014-2020.⁸⁴

80 European Commission, *European Energy Security Strategy*, Communication from the Commission to the European Parliament and the Council {SWD(2014) 330 final}, Brussels, May 28, 2014, p.15, available online at: https://ec.europa.eu/energy/sites/ener/files/publication/European_Energy_Security_Strategy_en.pdf (accessed, June 23, 2016)

81 British Petroleum, *BP Statistical Review 2016*, p.28

82 European Commission, *European Energy Security Strategy*, 2014, p.16

83 Fabio Indeo, *The Geopolitics of Energy in Mediterranean Region: Regional Needs, Security, Logistics and Interdependency. A Perspective View*", 2012, p.7

84 Pasquale De Micco, *The prospect of Eastern Mediterranean gas production: An alternative energy supplier for the EU?*, 2014, p.21

These projects will benefit from faster and more efficient permit granting procedures, and the possibility of receiving financial support because they contribute to EU initiatives aimed to integrate a common energy market and to diversify energy sources.

Since 2015 the Eastern Mediterranean energy corridor has been mentioned in the EU official documents as a new diversification option for the EU gas supplies.

In June 2015, Miguel Arias Canete, EU commissioner for Climate Action and Energy, launched the Euro-Mediterranean gas platform in the framework of the Union for the Mediterranean. The platform seeks to “*deepen energy cooperation between the EU and South and East Mediterranean countries...and is expected to strengthen security of gas supply in the region by promoting regional cooperation around gas exploration and production, by supporting the development of necessary infrastructure and by reinforcing regional gas trade exchanges, making the Mediterranean basin a major gas marketplace in the future*”.⁸⁵

In July 2015, the Energy Diplomacy Action Plan has explicitly considered a key priority on diversification of sources, suppliers and routes to diplomatically support the strategic potential of the Eastern Mediterranean region, together with other traditional energy strongholds as the Southern Gas Corridor.⁸⁶

So, the EU appears concretely engaged to develop and promote energy cooperation with Eastern Mediterranean countries undertaking a strategy which necessarily focus on Cyprus, as a EU member and also potential gas supplier as well as potential regional gas hub in the Eastern Mediterranean.

The European Commission’s vice-president for energy union Maros Sefcovic has frequently visited Cyprus in the last two years, supporting national ambitions to develop the energy sector. The EU list of Projects of Common Interests includes two projects which strongly involved Cyprus as the ‘Euroasia Interconnector’ that would connect Israel, Cyprus, Crete and mainland Greece by a 1,518-km mostly subsea cable (2000 MW) and the 1,700-km East Med gas pipeline.

85 European Commission, *Commissioner Launches Euro-Mediterranean Gas Platform*, June 10, 2015, available online at: <https://ec.europa.eu/energy/en/news/commissioner-launches-euro-mediterranean-gas-platform> (accessed June 6, 2016); The Union for the Mediterranean, *The UfM Energy Platform*, available online at: <http://ufmsecretariat.org/the-ufm-energy-platforms/> (accessed June 14, 2016)

86 Council of the European Union, *Council Conclusions on Energy Diplomacy*, 10995/15, Brussels, July 20, 2015, pp. 3,6, available online at: <http://data.consilium.europa.eu/doc/document/ST-10995-2015-INIT/en/pdf> (accessed June 5, 2016)

According to the EU Commission, the East Med gas pipeline will have an estimated capacity of 15.3 bcm of natural gas, from which 1 bcm for Cyprus' future gas demand and 14.3 bcm for EU energy needs. Currently, Technical Feasibility Studies are ongoing - the EU has provided 50 percent (or €2 million) of the total €4 million cost of studies - and they will be completed by December 2017. Its promoter is IGI Poseidon, a 50-50 joint venture of Greek state gas supplier Depa and EDF-owned Italian supplier Edison.⁸⁷

However, the Eastern Mediterranean gas reserves will have a significant impact on the EU energy security only if regional supplier countries are able to commercialize the existent reserves and mainly to discover additional resources as well as to maintain a condition of security and stability and an attractive domestic financial environment.

Furthermore, the expected capacity of the East Med pipeline (approximately 15 bcm per year) will meet Cypriot domestic gas demand but these exports could cover only a small portion of the EU total imports expected in 2030 (340-350 bcm). Nevertheless, in a geographic perspective, East Med pipeline will mostly contribute to satisfy the energy needs of the Member States in Southeast Europe (being the ones most dependent on Russian gas) which will be bypassed by the Trans Adriatic Pipeline. The key of this integrated gas system will be the Greece's main LNG import terminal in Revythousa, which will have a capacity of 5 bcm, enough to cover import requirements of Romania, Bulgaria, Hungary and Balkans countries.⁸⁸

Given that Cyprus has discovered only Aphrodite gas field (127 bcm), the East Med Pipeline project will be feasible only involving the future production of Israeli offshore gas fields: for instance, Leviathan accounts for 640 bcm of natural gas but only 40 percent of these reserves will be available for exports and these could fuel also other projects than the East Med Pipeline.

The evolution of the geopolitical regional scenario will deeply influence the success or the failure of these projects.

The ongoing normalization of relations between Israel and Turkey could theoretically open the long-awaited new energy corridor, an underwater pipeline which will supply by 2019 30 bcm of natural gas per year to Turkey, of which 10 bcm will meet Turkish

87 European Commission, *Eastern Mediterranean Natural Gas Pipeline – Pre-FEED Studies; EC Backs 'ENDING Cyprus Isolation'*, in "Natural Gas Europe", June 1, 2016, available online at: <http://www.naturalgaseurope.com/ec-backs-ending-cyprus-isolation-29890> (accessed June 8, 2016)

88 Theodoros Tsakiris, *The Leviathan-Ceyhan Pipeline: Political and Commercial Arguments Against the Construction of a Turkish-Israeli Pipeline*, 2014, p.54

demand and the remaining 20 bcm will be delivered to EU markets. The idea to incorporate the Israeli-Turkish pipeline with the Trans Anatolian Gas Pipeline and its EU-oriented trunk represented by the Trans Adriatic Pipeline is not a negligible option, strengthening the transport capacity and the geopolitical impact of the Southern Gas Corridor. Moreover, Turkey will benefit of additional gas imports which could help the country to lessen its dependence on Russian gas, which in 2015 accounted for 56 percent of Turkish total gas imports:⁸⁹ as a matter of fact, TAP will ensure 6 bcm of natural gas to Turkey and 10 bcm to EU by 2019, while the potential involvement of Turkmenistan in the TANAP project - which holds the fourth largest gas reserves in the world - could further increase the availability of natural gas for Turkish markets.

However this profitable evolution for the EU energy strategy will be hampered by the recent rapprochement between Turkey and Russia as well as by the currently unpredictable evolution of Turkish foreign policy following the failed *coup d'état* on 15th July 2016. Turkey and Russia has expressed interest in resuming the Turkish Stream pipeline project which will have a total capacity of 63 bcm, of which 16 bcm for Turkish domestic market and the remaining for the EU markets. Even if financial cost could undermine the realization of the four expected branches, a two-string version – 16 bcm of natural gas each for both Turkey and EU – appears a realistic option.⁹⁰

Turkish Stream - as the previous South Stream project - is the Russian geopolitical tool to preserve its influence in the EU energy market, bypassing Ukraine and also boycotting the EU strategy of diversification: additional volumes of Russian gas supply will be available for the EU markets, downplaying the energy impact of the SGC and the East Med energy corridor.

This Israel-Turkey-Russia triangle can draw up different scenarios: as a matter of fact, Turkey could even support both projects, in order to diversify its strategy of imports. In this case, Israel will be able to meet only Turkish domestic market but Leviathan production will unlikely reach EU markets, given Russian opposition: at the same time, a short version of the Israeli-Turkish pipeline (10 bcm) is not economically doable, pushing Israel to ship its gas export to the East Med pipeline or to LNG facilities in Egypt.

89 British Petroleum, BP Statistical Review 2016, p.28

90 Pavel Felgenhauer, Putin and Erdoğan Prepare for a Decisive Russo-Turkish Summit, in "Eurasia Daily Monitor", vol.13, Issue: 137, July 28, 2016, available online at: http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=45687&tx_ttnews%5BbackPid%5D=228&cHash=4ed0b321b835362610946784c7ba97dd#.V6BIVvmLTIU (accessed July 30, 2016)

We can observe how Russia has attempted to extend its geopolitical influence in the East Mediterranean energy scenario, aiming to hinder a future energy cooperation between regional suppliers and the European Union in order to preserve its dominant role as EU main gas supplier

As mentioned in the previous chapter, in December 2013 Russia signed a significant deal with the Syria government to conduct offshore exploration in the promising Syrian EEZ, but the explosion of the civil war have hampered Moscow's ambitions.

Since the discovery of Leviathan natural gas giant field, Russia has established close relations with Israel, the only Eastern Mediterranean country which holds proved natural gas reserves and that the EU considers a reliable potential energy partner.

In 2013 Russian energy company Gazprom signed a MOU with Tamar partners to market LNG production from this field, but the contract wasn't approved by Israel's Energy Ministry, also considering the strategic relevance of Tamar Production for gas domestic needs and electricity production.

Moreover, Russia has always expressed interest on the Leviathan gas field: in April 2016, Russian President Putin and Israeli President Netanyahu discussed about a potential involvement of Gazprom in the development of Leviathan.⁹¹

A Gazprom's participation in the development of the largest gas field discovered in the Eastern Mediterranean will modify the planned export routes for its future production, excluding both East Med pipeline and also the underwater pipeline with Turkey, and privileging LNG option to regional and not EU markets. In the case that these route (East Med) will be confirmed, the EU will fail to achieve its diversification's goal, benefiting of additional volumes of natural gas but increasing its dependence on Gazprom-controlled imports: for instance, an East Med pipeline fuelled with Leviathan gas extracted by a consortium comprising Gazprom will not be a solution for the dependence of South East European countries on Russian gas.

In the development of the Eastern Mediterranean energy reserves and in the planning of potential export routes the involved international energy companies plays an influent role.

Among them, the Italian Eni has strongly enhanced its role in the Eastern Mediterranean, mainly after the discovery of the Zohr giant gas field in the Egyptian

⁹¹ *Putin and Netanyahu Hold Gas Talks: Report*, in "Natural Gas Europe", April 25, 2016, available online at: <http://www.naturalgaseurope.com/report-putin-and-netanyahu-in-gas-talks-29203> (accessed June 8, 2016)

offshore. Moreover, Eni also holds stakes in Cypriot offshore Blocks 2,3 and 9 in Cyprus' Exclusive Economic Zone, together with South Korean Kogas Consortium. In addition to these, we can not exclude a future role of the Italian company to develop Israeli offshore. In October 2015, Israeli Prime Minister Netanyahu and Israeli Minister of Energy Yuval Steinitz suggested to the Eni CEO to invest in Karish and Tanin offshore gas fields, developing a profitable energy partnership between these two countries.⁹²

Given its position, Eni could influence the orientation of the export routes, to deliver gas production of the Eastern Mediterranean, promoting an energy partnership linking Cypriot offshore fields with Egyptian Zohr and exporting gas through Egyptian LNG facilities.

It will be interesting to evaluate the strategy of Kogas, which is partner in the Eni-led consortium to explore Cyprus's offshore Blocks 2, 3, and 9 as well as Kogas is partner with Eni in Mozambique, holding 10 percent stakes in the Area 4 in the offshore Rovuma basin, estimated to hold 450 bcm of natural gas.⁹³

Kogas has not interest to sell gas from Cyprus (and Mozambique) to EU markets but to ship LNG to the "energy thirsty" market of South Korea, which is almost completely dependent on energy imports - about 94 percent of its energy demand - and it is the second-largest importer of LNG in the world after Japan. This orientation of the South Korean company is coherent with the aims of the Seoul's national energy strategy to geographically diversify source of imports, buying natural gas from two new suppliers.⁹⁴

Noble energy is another big player in the East Mediterranean energy chessboard, holding stakes in the main important offshore discoveries such as Leviathan, Tamar and Aphrodite in Cyprus. Consequently, Noble Energy will have a relevant influence to decide how to allocate the offshore production of Leviathan and Aphrodite, supporting the realization of the East Med pipeline or privileging LNG deliveries to Egyptian terminals. However, a prolonged failure to discover additional gas reserves in the offshore of Cyprus could push Noble Energy to revise its energy plans in the Eastern Mediterranean, exclusively focusing on the most-promising development of the Israeli offshore and

⁹² Steinitz encourages Eni to invest in Karish and Tanin, in "The Jerusalem Post", October 29, 2015, available online at:<http://www.jpost.com/Business-and-Innovation/Steinitz-encourages-Eni-to-invest-in-Karish-and-Tanin-430394> (accessed June 8, 2016)

⁹³ ENI, *ENI International presence*, available online at:
https://www.eni.com/enipedia/en_IT/international-presence(accessed June 10, 2016)

⁹⁴ Fabio Indeo, *Energy Security in North East Asia: the Vulnerability of Maritime Energy Routes and Strategies of Diversification*, EGS Working Paper, No.5, 2015, pp. 21-28, available online at: www.egskorea.org (accessed June 10, 2016)

supporting export routes which not necessarily involves Cyprus, such as LNG exports to Egypt or an underwater pipeline to Turkey rather than the East Mediterranean gas pipeline.

5. Conclusion

The development and the commercialization of the natural gas reserves located in the Levant Basin could significantly represent a geopolitical “game changer”, influencing not only the regional and international energy chessboard but also relations among regional countries, contributing to establish a long-term condition of security and stability.

Eastern Mediterranean countries should forge a framework of new strategic alliances in order to maximize the exploitation of the regional gas reserves, cooperating to develop infrastructures and working together to build a shared sub-regional security architecture.

Moreover, the idea to promote a regional cooperation in the energy field - in terms of joint offshore explorations, development of the existent reserves and their commercialization - could lead to appease the existent tensions and rivalries pushing the countries to collaborate to share economic benefits and revenues linked to the offshore resources in a reshaped regional scenario characterized by political stability and security.

A potential enhancement of the energy cooperation between Israel and Cyprus could be the first step to implement the project of an East Mediterranean integrated gas infrastructure: its offshore discoveries will allow Israel to become the main supplier of this envisaged integrated system, while Cyprus could better play the role of hub to deliver exports in the regional or international market, given its geographic location in the heart of the Eastern Mediterranean.

The international community and the United Nations should diplomatically support serious talks and negotiations among involved parties in order to solve the main geopolitical hindrance, the resolution of the Cyprus’ problem: as a matter of fact, the lack of a clear and shared demarcation of offshore maritime borders hampers the realization of the projected export corridors, reducing alternative options.

Concerning the future export routes of the Levantine gas production, the dilemma to privilege regional or international markets is also strongly influenced by the geopolitical evolution in the regional scenario: before the attempted *coup d’état* in July 2016 Turkey worked to become a key energy hub, a strategic crossroad for Israeli, Russian and

Azerbaijani natural gas exports, but in the next months Turkey could further boost its energy cooperation and partnership with Israel, to realize the underwater pipeline but also investing in the development of the Israeli offshore energy sector.

Given that financial investments are essential to develop the offshore energy sector in the Levant Basin, some countries have exaggerated the estimates of the national gas reserves in order to attract foreign energy companies, know how and financial investments. Lebanon is one of the most significant cases: according to USGS Lebanon holds 850 bcm of natural gas reserves located in its EEZ and in 2012 Spectrum, a Norwegian company that carried out Lebanon's first 3D seismic survey, has estimated the country's recoverable offshore gas reserves at 718 bcm. Nevertheless, in October 2013 Jibril Basil, then acting minister of energy, raised these estimates to 2.7 tcm of offshore natural gas reserves, although no exploratory drilling had been conducted in the offshore Lebanon.

However, at present the expected "energy bonanza" in the Eastern Mediterranean has not been materialized: in this theoretical promising scenario only Leviathan and Zohr natural gas fields hold abundant reserves which could justify long-term investments of the international energy companies in a future production and commercialisation programs.

Furthermore, we should also highlight that - among the largest offshore natural gas fields -only Israeli offshore Tamar field is currently producing natural gas, while the first production in Leviathan and Aphrodite have been delayed and this will not start before 2019, as well as in the case of the Zohr's Egyptian offshore field.

The unsolved political issues, the delayed development of the offshore energy reserves, the difficulty to find additional exploitable natural gas reserves are all factors which will downsize the impact of the Levant energy basin as geopolitical "game changer": among Eastern Mediterranean countries Israel seems to be the only country which will benefit of its energy potential, being able in the short term to become energy independent and to export small LNG volumes to Egyptian and Jordanian markets. In the medium term, the development of Leviathan and other promising offshore fields will allow Israel to realize the ambition to become a relevant energy supplier exporting its gas production and increasing its geopolitical role in the international chessboard.

