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Diploma Thesis

Energy Security and Geopolitical Co-Opetition in the Eastern Mediterranean

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CHAPTER 1 - INTRODUCTION

1.1. Preamble

On the eve of the First World War, the First Lord of the Admiralty Winston Churchill decided to shift the power source of the Royal Navy from coal to oil. Its aim was to render the Royal Navy faster than the Imperial German Navy. However, this switch meant that the Royal Navy which was supplied by Welsh coal until then, would have to rely on insecure oil supplies from, what was then Persia. This was the first time that energy security entered the geopolitical sphere of interest. The second industrial revolution brought affordable access to energy resources into the spotlight for the states. Energy security is a fundamental aspect of world politics and international political economy over the last decades. Energy resources are used as principal means for the projection of economic and political influence (Stergiou 2017). It is noted (Stergiou 2017) that *“Other states are looking for “exclusive backyards” and proceed to military build-ups in order to secure themselves the control of transportation routes and to protect critical infrastructure and key energy assets. Consequently, as the competition for energy reserves is tightly intertwined with power politics, geopolitical rivalries and deep historical animosities are considered to play an essential role in energy affairs”*. Following the 1973 Arab oil Embargo, the industrialized countries focused on creating a system which would ensure their energy security in an event of supply disruption. Such an event could be catastrophic for global economy and stability. Security of supply and demand are the main concerns of countries which are dependent economically on imports and exports of oil and gas respectively (Stergiou 2017).

Subsequently energy security is considered a subject of high importance for governments all around the world, equal to national security. *“However there is no consensus regarding the exact definition of the term. Numerous definitions of energy security have been offered by researchers and policy makers. There has been some broad agreement with what it should cover, but no consensus on what it exactly should be. Changes in emphasis over time, as a result of changes in the global energy landscape, are expected”* as noted by (Ang et al. 2015). Energy security has been

defined by the UN (United Nations Development Programme 2004), as *“the availability of energy at all times in various forms, in sufficient quantities and at affordable prices, without unacceptable or irreversible impact on the environment. These conditions must prevail over the long-term. Energy security has both a producer and a consumer side”*. It is understood by the aforementioned that resource availability is a key factor to energy security. System reliability is critical too, in terms of continuous supply of energy at any given time.

Energy security is driven by different factors. Diversification of generation capacity and ease of transportation are important for the stability of prices, energy affordability and limited risk of adverse market influence. Significant investments are vital to meet the forecast growth in energy demand with emphasis in the interconnection of energy systems. Variety in energy sources is important for a diverse energy mix and fuel substitution. Lastly, political threats should be seriously evaluated since energy supply systems are an object of international interests' competition and commonly targets for terrorist attacks.

A proposed framework by (Cherp and Jewell 2011) to analyze energy security contains three main perspectives: Sovereignty, Robustness and Resilience, identifying different key risk for energy systems as illustrated in **Fig.1**. (Lucas et al. 2016) states that *“Problems related to oil security have historically shaped the “Sovereignty” perspective on energy security rooted in international relations theories and political science. The “Robustness” perspective threats are seen as ‘objective’, predictable and measurable, allowing for the quantification of energy risks. The third perspective, titled “Resilience”, is based on the uncertainty and non- linearity of energy systems, markets, technologies and societies. It searches for generic features of energy systems such as flexibility, adaptability, diversity that ensure protection against uncertainty”*.

The present work examines the key risks arising mainly on sovereignty perspective of energy security in Eastern Mediterranean. Evaluation of the current situation of all states in the area is conducted, ultimately focusing on Greek-Cypriot-Turkish relations.

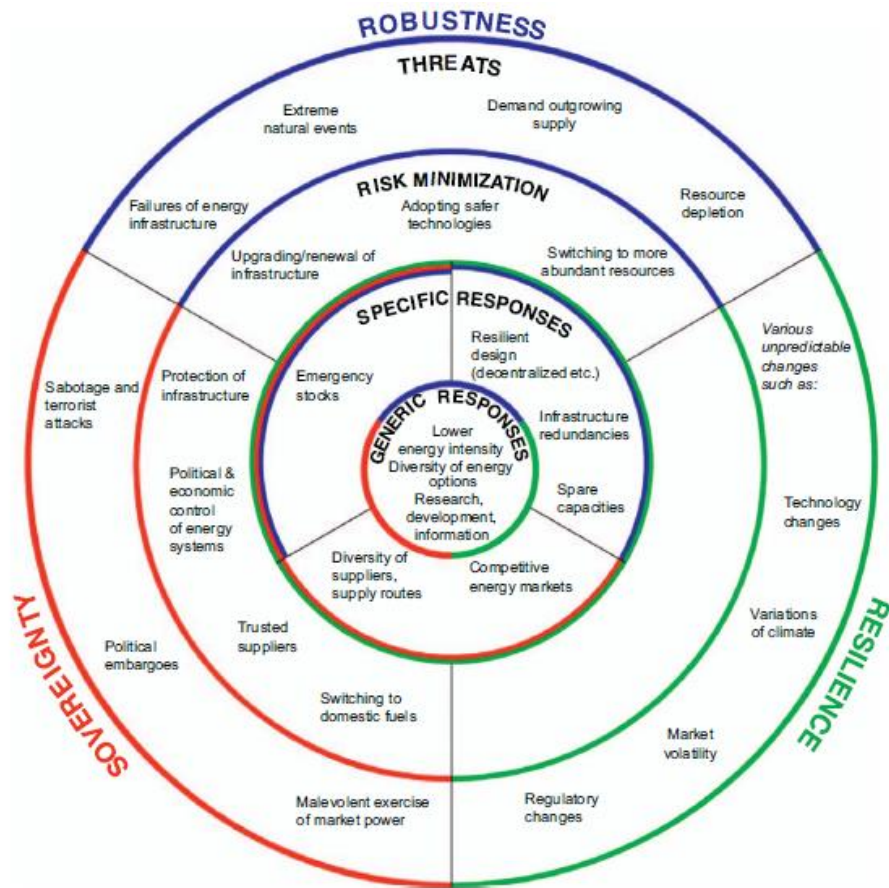


Fig. 1 – Framework to analyze energy security (Cherp and Jewell 2011).

Control over energy resources is conceptualized as the highway to energy efficiency. In Eastern Mediterranean case this has economic and political dimensions, which directly affect the energy security complex of the area. Reserves can be utilized to enhance the prosperity and development of the holder state. Simultaneously they lessen the energy dependence from other states, which possibly can constitute a political threat. It is a common political doctrine for resource-rich states to use energy as a means to promote their agenda rather than use military power to do so. In this sense producing and transit states that control reserves and pipelines or other transportation corridors, use them as political leverage on many occasions towards importing states.

(Tagliapetra 2018) notes that “Over the last decade, the Eastern Mediterranean has emerged as a potential world-class natural gas producing region. This new scenario progressively materialized as natural gas fields were successively discovered offshore of Israel, Cyprus, and Egypt”. In particular, in 2009 Noble Energy announced the discovery of Tamar natural gas field offshore Israel, followed

by the discovery of Leviathan in the same area as well as the Aphrodite gas field offshore Cyprus. These discoveries paved the way for the planning and implementation of both pipelines and LNG plants in the area as illustrated in **Fig.2**. *“These developments soon impacted geopolitical discussions as regional governments, international organizations, energy analysts, and international relations scholars advocated using the newly discovered natural gas resources as a tool to promote regional cooperation and peace”* as (Tagliapetra 2018) further notes. However, several interstate long-lasting conflicts have evolved the exploitation of eastern Mediterranean hydrocarbon resources into a major geopolitical issue

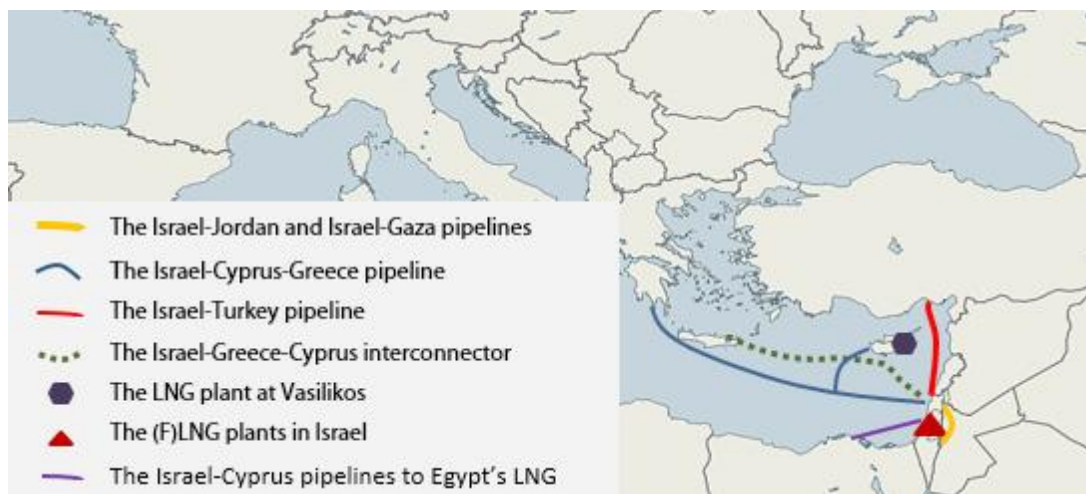


Fig. 2 - Eastern Mediterranean main natural gas export projects (Tagliapetra 2018)

The Eastern Mediterranean has a history of everlasting conflicts. Recent hydrocarbon discoveries are important not only on economic terms but also due to their direct connection to geopolitical aspirations and grand strategies of the region's states. Economic opportunities rise together with security challenges, rearrangement of alliances and threat perceptions which will be presented and discussed. It is claimed (Karbuz 2018) that *“As politics shift so does the configuration of the balance of power in line with the changing geostrategic interest of each actor. Substantial gas resources and the opportunities linked to their exploitation and transport have contributed to the shaping of a new regional balance of power in East Mediterranean”*.

1.2. Structure of the thesis

In Chapter 2 an extensive presentation of geopolitical situation in eastern Mediterranean is demonstrated. Each state is examined separately in terms of energy security, geopolitical status and future targets.

Chapter 3 focuses on the research question and the methodology followed to obtain results.

Chapter 4 is dedicated to the presentation of bilateral relations between the states and the geopolitical dynamics evolved in the area. This is essential for the creation of a game scenario that follows. The game tree, evaluation analysis and results are presented in this chapter. An extensive discussion of the results is made in the end of the chapter.

Chapter 5 includes the concluding remarks as well as suggestions for further research

CHAPTER 2 - LITERATURE REVIEW

2.1. Introduction

In this chapter a brief presentation of energy status and energy strategy of Cyprus, Egypt, Greece, Israel, Lebanon, Libya and Turkey will take place. This is substantial for the understanding of the motives of each party and its link to the main question that this research tries to respond.

2.2. Cyprus

Cyprus constitutes the easternmost bastion of European Union and a state that has been into crisis throughout its existence. Due to its geographic position and the gas discoveries of the last decade, Cyprus plays an integral role in the energy arena of eastern Mediterranean. Its geographic proximity to Suez Canal gives the potential of an energy interconnection node also, by the connection of north Africa and Europe electric grids

Oil and gas companies have invested heavily in Cyprus which has a potential of switching from exploration to production hydrocarbons and become a regional energy hub. Cyprus has so far conducted and completed successfully three offshore licensing rounds, granting licenses to oil companies on both economic and diplomatic grounds. In particular, ENI, Kogas, TOTAL, ExxonMobil, Qatar Petroleum, Noble Energy, Delek Group and Royal Dutch Shell secured exploration rights in Cyprus. This constitutes a major achievement of Cypriot diplomacy since it managed to involve Italy, South Korea, France, USA, Qatar and Israel respectively in its long lasting dispute with Turkey. The target was to gain support and protection at a diplomatic level by states whose interests are served through these companies. Granted licenses to companies are shown in **Fig.3**.

In 2011 the first gas discovery was made by Noble Energy and Delek Group in block 12 of the Cypriot EEZ. The gas reserves are estimated to 4.54 tcf of gas and Aphrodite gas field was declared commercial in 2015. In 2019 Glaucus gas field in block 10 was discovered by ExxonMobil and Qatar Petroleum, estimating to hold 5-8 tcf of gas. It is important to mention that Glaucus, Calypso and Onesiphoros gas fields were discovered in geological formations similar to gigantic gas field of Zohr. More exploration activities in the blocks issued are expected to be conducted in the future.

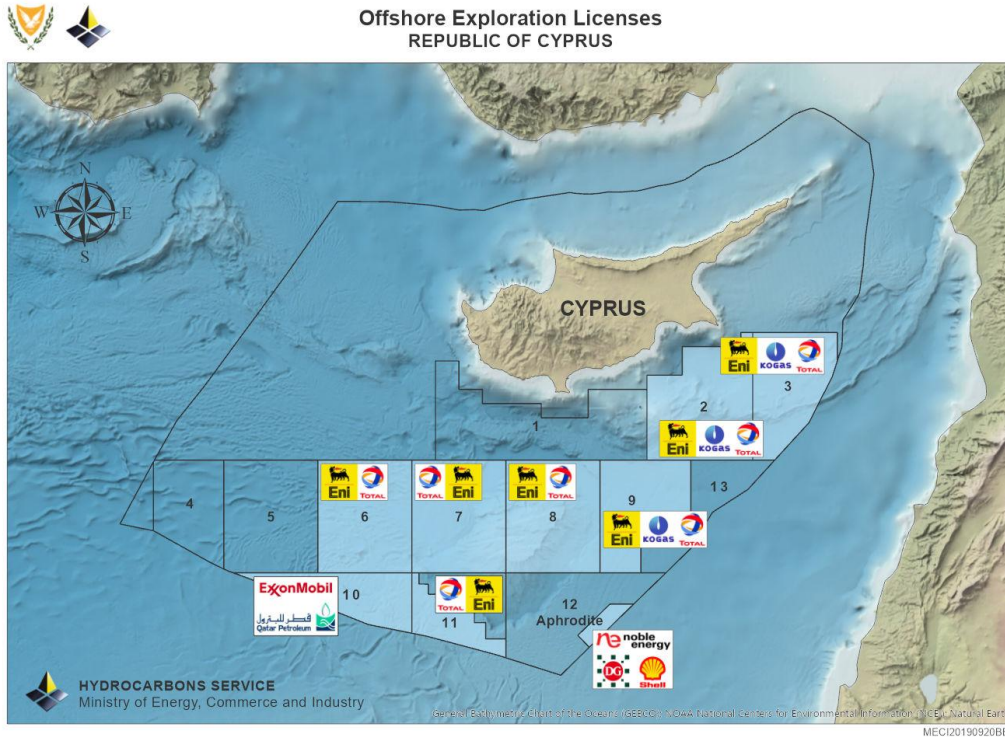


Fig. 3. - *Granted Offshore Exploration licenses, issued by the Republic of Cyprus (Ministry of Energy, Commerce and Industry of Cyprus, Hydrocarbons Service)*

Oil and gas sector are of high importance for Cyprus, since the country is currently totally energy dependent from imports. Cyprus spends around 8% of its GDP on heavy fuel oil and diesel imports. Furthermore, oil and gas sector is considered a key driver to economic growth of the country. For this reason, the National Gas Public Company (DEFA) of Cyprus assigned the project of construction of the LNG import terminal of Vassilikos to a consortium led by China Petroleum Pipeline Engineering Corporation (CPPEC) and aims in the introduction of natural gas to the island. It is expected to be commissioned in 2021 and it will include a Floating Storage and Regasification Unit (FSRU). This investment makes Cyprus even more attractive to oil and gas companies since it can be used for exports to Europe and Asia. In Vassilikos a sophisticated oil storage terminal of VTTI Dutch company was constructed also in 2014. It is used as a transshipment terminal for export of oil products, mainly to Lebanon and Israel. Cyprus takes advantage of its geographic position and EU membership status to expand its economy and deal with continuous Turkish aggression in the area. Cypriot-Turkish relations will be discussed in a following chapter.

2.3. Egypt

Egypt is a country rich both in oil and gas reserves. The majority of Egyptian producing fields are spread throughout the Gulf of Suez, the Nile Delta, Mediterranean Sea and the Sahara Desert. Egypt is the largest non-OPEC African oil producer based on (EIA 2018). Its location is of high strategic importance since it connects resource-rich countries with major energy consumers and Suez canal is an international maritime trade route that can be characterized as a choke point.

Egypt's first producing oil field is "Gemsa" which began production in 1910. However, the turning point for the oil industry in the country is located during the 1950s. Following the 1952 revolution and Gamal Abder Nasser's rise to power, foreign interest companies were nationalized along with the Suez Canal. This led to the establishment of the Egyptian General Petroleum Corporation (EGPC) in 1956. Despite the Suez Crisis of 1956 and the nationalization of Anglo Egyptian Oil Company in 1964, Egypt saw a fast growth on its oil sector. Large discoveries were made throughout its soil and joint operations of EGPC and BP led to the transformation of the country into a net exporter state by 1974. Things changed during 1990s while Egypt became an importer of oil. Population growth along with economic and industrial expansion in the country raised the oil demand and rendered Egypt dependent on oil imports as (Asvestopoulos 2018) describes. Today eight refineries operate in Egypt along with nineteen petroleum terminals. *"Egypt holds 4,400,000,000 barrels of proven oil reserves as of 2016, ranking 25th in the world and accounting for about 0.3% of the world's total oil reserves of 1,650,585,140,000 barrels. Egypt has proven reserves equivalent to 13.7 times its annual consumption. This means that, without Net Exports, there would be about 14 years of oil left (at current consumption levels and excluding unproven reserves"* according to (Worldometer 2020).

The first discovery of natural gas was made in 1967 and production began in 1975 in Nile Delta. Egypt currently is oriented towards gas production for three reasons. Firstly, due to the aforementioned fact that the rise in oil demand made Egypt dependent on oil imports. Secondly, due to the initiative of Egyptian government to secure 25% of annual oil production for exports, as (Asvestopoulos 2018) notes. In order to achieve this target, Egypt had to channel its industry towards natural gas

consumption under the “Integrated Gas Strategy” that the Petroleum Minister adopted in 1999, according to (Stonaker 2010). Last, but not least discoveries during 90s led to substantial rise of gas reserves which gave the option to the state to adopt this new strategy. In 2015 huge gas reserves were discovered in the Zohr field of Egypt by ENI. *“The Zohr field is believed to be the largest-ever gas discovery in Egypt and the Mediterranean (ENI 2019). “Egypt holds 77 trillion cubic feet (Tcf) of proven gas reserves as of 2017, ranking 16th in the world and accounting for about 1% of the world's total natural gas reserves of 6,923 Tcf. Egypt has proven reserves equivalent to 37.9 times its annual consumption. This means it has about 38 years of gas left (at current consumption levels and excluding unproven reserves).”* According to (Worldometer 2020)

Egypt’s strategy focuses on distribution of its energy production as well. Foreign relations are an integral part of this strategy. Under this scope Egypt signed a delimitation agreement with Cyprus in 2003 and there is an initial agreement signed for an offshore gas pipeline from Aphrodite field to Egypt. Egypt signed in April 2018, a Strategic Partnership Memorandum of Understanding with EU. It also participated in the project of Arab Gas Pipeline. The Arab Gas Pipeline was built as part of a greater master plan of Integrated Gas Strategy of Egypt. This master plan targeted in gas exports by Egypt in the Middle East region. The project was initiated towards Jordan in 2001 and later included Syria, Lebanon, Israel, Turkey and Iraq. It has four sections which are illustrated in **Fig.4**. The first one extends from Arish to Aqaba in Jordan. The second extends from Aqaba in El Rehab in Jordan. The third from El Rehab to Jabber in Syria. The fourth one runs throughout Syria to Syrian-Turkish borders and Lebanon with connections to Homs, Aleppo and Tripoli. There is a future extension planned to the Turkish border city of Kilis targeting to its connection to Nabucco pipeline for delivery of Egyptian gas in Europe. Also Arab Gas Pipeline could be connected to Iraqi gas grid. The pipeline cost was approximately 1.2 billion dollars and extends up to 1200 km, but currently is out of order due to attacks that occurred in 2012 following the spread of Arab Spring in Egypt. *“The AGP was sabotaged more than a dozen times between 2011 and 2012 and resulted in substantial natural gas supply disruptions to Jordan and Israel. In 2012, Egypt halted natural gas exports to Israel by canceling its long-term supply contract to Israel because of a payment dispute. 24 AGP pipeline exports, which peaked at 0.5 Bcf/d in 2009, stopped after 2014”*, according to (EIA 2018). The

connection from Arish to Ashkelon in Israel is a smaller pipeline, which is a part of the aforementioned gas export plan. Its operation stopped in 2012, but there are plans for a reverse flow agreement of natural gas from Israel to Egypt.

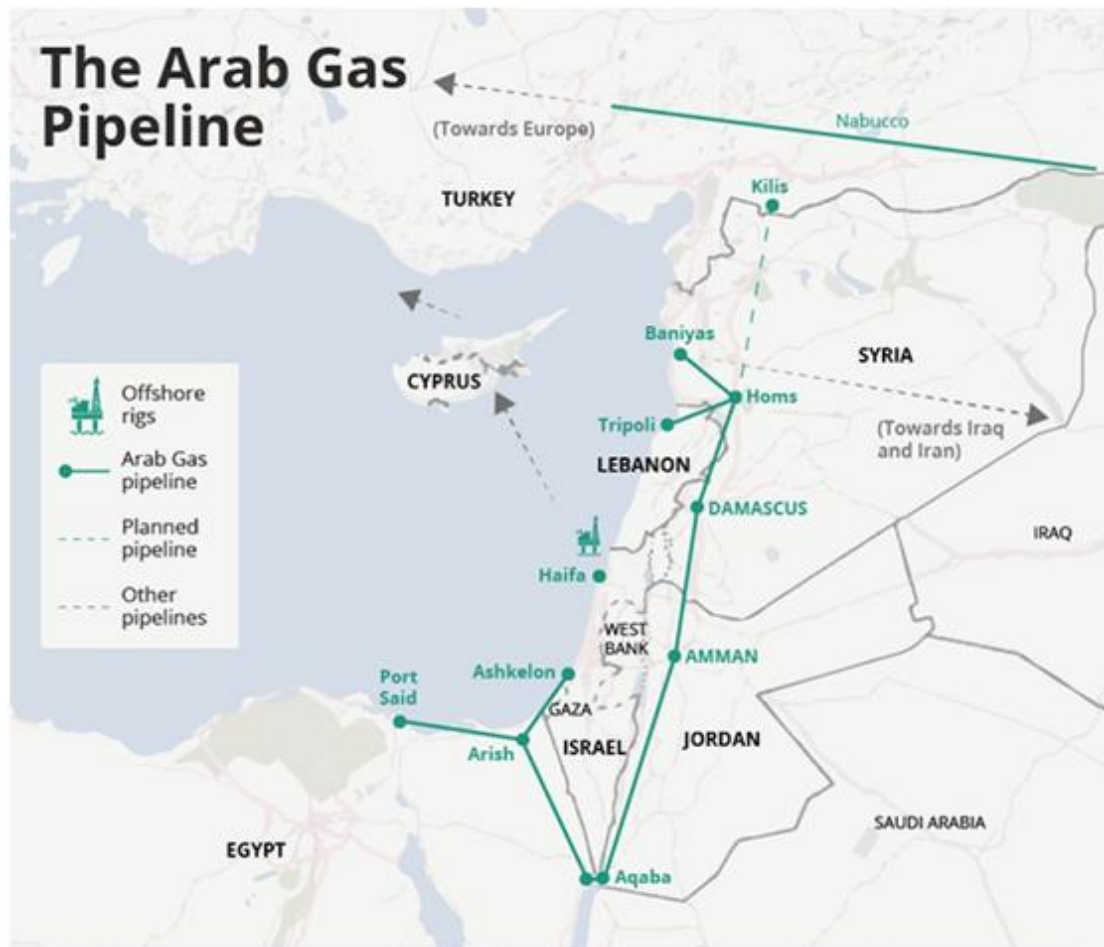


Fig.4. – The Arab Gas Pipeline (Cohrane 2018)

Furthermore, there are 29 gas treatment facilities and 2 FSRU platforms. In addition, two LNG plants have been built in Idku and Damietta, providing Egypt with more options regarding the transportation and distribution of its natural gas. They constitute a feasible option for transportation of natural gas produced in Israel and Cyprus also, given the security challenges that both countries face and the deterioration of Egyptian-Turkish relations since the coup of 2013. Egyptian relations with Turkey and Cyprus will be examined later on.

2.4. Greece

Greek economy has been into a period of severe recession following the 2008 economic crisis. However, Greece managed to return into positive growth numbers recently. Energy is one of the fields where Greek Government's strategy is based, for further growth of the economy. The country is a key player in the energy arena of Eastern Mediterranean for a number of reasons. Those include its geostrategic location, pipeline projects that transport energy from Asia to Europe, electricity grid inter-connectivity and alternative means of ensuring security of supply through offshore reserves. As illustrated in **Fig.5.**, major energy related projects are constructed or programmed in Greek territory. This doubled by the fact that certain areas of Greece have promising oil and gas potential, make Greece integral factor of the energy security of eastern Mediterranean and Europe



Fig.5. – Energy projects in Greece (Stambolis 2018)

Greece's energy consumption varies among different sources of energy. The country imports around 61% of its energy demand while the rest is covered by domestic energy sources, mainly lignite and RES. Oil and its products account for 44% of total energy consumption and its predominantly imported. Natural gas comprises 13% of the energy consumption. Biofuels, solar and wind energy increase

significantly in usage percentage over the last years. *“Future efficiency requires huge transformations in energy consumption as a whole and in its components, both in percentages and in absolute values. Greece imports the majority of its oil and gas needs, which is translated as a huge cost and low rating in terms of security of supply”*, according to (Andriosopoulos et. all 2019).

The consumption of natural gas in Greece is projected to rise up to 5.5 bcm until 2025. This will be mainly attributed to the fact that Greece plans to reduce the lignite usage of power plants and replace it with natural gas. *“Greece holds only 0.04 trillion cubic feet (Tcf) of proven gas reserves as of 2017, ranking 96th in the world. Total gas reserves in Greece are less than even a single year of gas consumption”*, according to (Worldometer 2020). Imports are mainly conducted from Algeria. Greece has the prospect of becoming a gas gate for the Balkan region. Currently, there are three entry points for natural gas Sidirokastro, Kipoi (TAP and Greece – Turkey pipelines) and Revithousa LNG terminal near Piraeus. Revithousa installation has a gas capacity of 220,000 m³ and plans for extension will give the ability to ships up to 260,000 m³ to be docked. Gastrade subsidiary of Copelouzos Group plans to create the FID for FSRU unit in Alexandroupolis which will have a storage capacity of 170,000 m³. This will be the fourth gas entrance point to the country and it is planned to be directly connected to the national gas system. It will operate in parallel to the Greece-Bulgaria inter-connector (IGB Komotini – Stara Zagora) which will be entering the country from Rodopi region. Furthermore, Greece currently has plans along with Israel, Cyprus and Italy for the implementation of the East Med submarine pipeline which will be presented in a following chapter. Other projects are the interconnection of Greece and Fyrom pipeline, the reverse flow of the Greek-Turkish gas pipeline and the South Kavala underground natural gas storage.

Domestic oil production is insignificant compared to oil demand of the country. Oil is domestically produced by two oil fields in Prinos by the private company Energean Oil and Gas SA. *“Greece holds 10,000,000 barrels of proven oil reserves as of 2016, ranking 90th in the world. Total Oil Reserves in Greece are less than even a single year of oil consumption”*, according to (Worldometer 2020). Greece is importing oil from Iraq and Russia mainly. Despite this Greece has a substantial refining capacity. Four refineries operate domestically out of which three (Elefsina, Aspropyrgos and Thessaloniki) are operated by HELPE while Motor Oil operates the fourth one in Korinthos. The majority of domestically refined products are exported.

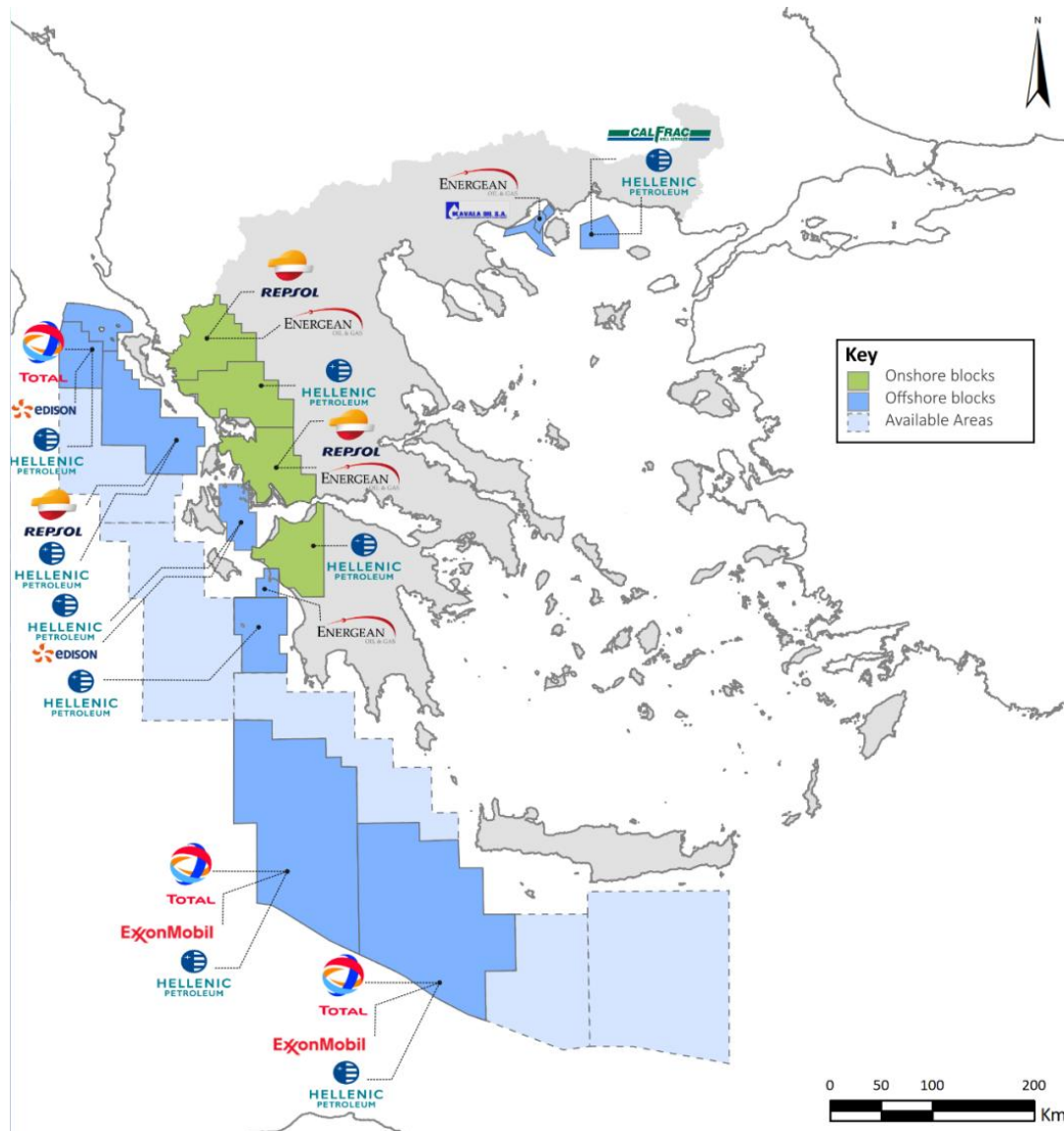


Fig.6. - *The licensed and available for licensing areas by Greece to oil companies for exploration of hydrocarbons (Bassias 2019).*

Greece intends to enter the energy arena of eastern Mediterranean by becoming an oil and gas domestic producer as well. Currently there are four onshore and nine offshore blocks for oil and gas exploration and exploitation and awarded it to companies as illustrated in **Fig.6**. West Katakolo exploitation area is being developed by Energean Oil and Gas SA. A rise in the domestic oil production is expected by those blocks, yet the oil import dependency of Greece is not expected to reduce significantly. The involvement of multinational giant oil corporations like Total, ExxonMobil, Repsol and Edison though reveals the high potential that Greece has on the oil sector as (Andriosopoulos et al. 2019) notes.

Energy security is directly linked to energy diplomacy for Greece. In this context there are bilateral and trilateral schemes of cooperation that Greece participates. The Greece-Cyprus axis is the cornerstone of energy diplomacy of both countries. Due to historic and national links of the two states, Greece and Cyprus have formed triangular alliances with Israel and Egypt. Everlasting conflicts with Turkey though are an obstacle Greece has to overcome in order to implement its strategic energy plans. In a following chapter Greek-Turkish relations will be discussed extensively.

2.5. Israel

Israel is a key state for the energy security of eastern Mediterranean. Following the world oil crises of 1973 and 1979 as well as the Islamic revolution in Iran on the same year, Israel had to adapt a national plan for energy security in order to maintain its sovereignty. Oil was gradually replaced by coal in an attempt to secure the energy supply of the country by reducing its dependency on oil rich states. Things although changed dramatically after the discovery of natural gas sources in Noa and Mari on 1999 and 2000 respectively. These discoveries changed completely the energy policy of Israel and oriented it towards natural gas. On 2008 a significant gas pipeline was constructed, connecting Egypt and Israel through Sinai. However, the pipeline was used only until 2012. On 2009 and 2010 two offshore discoveries, Tamar and Leviathan respectively, proved critical for Israel. It is proven that Tamar field's capacity is approximately 10 trillion cubic feet while Leviathan is approximately 22 trillion cubic feet of natural gas, according to (Noble Energy 2014). The extended table of Israeli gas discoveries and estimated reserves is illustrated on **Table.1**.

After those discoveries the Israeli state could rely on its own resources of natural gas and furthermore, it was transformed into a net gas exporter state. The discovery of natural gas resources resulted in a drastic reduction of coal use as a primary energy source. Natural Gas fields of Israel are illustrated on **Fig.7**. However, it changed the environmental policy of Israel which in the post-discoveries era was focused on renewable energy investments. In turn, the after-discoveries policy of Israel is mainly focused on gas and oil. The reasoning is that replacement of coal with gas reduces the carbon emissions, thus it can be considered an eco-friendly solution. It is explained by (Dagoumas and Flouros 2017) that *“The regulatory situation in Israeli's energy sector was stable for almost 60 years until 2011, when Israel was eligible for 12.5% of the royalties from the sale of energy supplies that were developed by the holders of development licenses, in addition to normal-rate corporate taxes. The opportunity costs affect the investor-friendly license conditions. Foreign investors that sign energy contracts with Israel are at a higher risk because they are denied the option of entering into energy contracts with the Arab states due to the Arab economic boycott”*

Table.1. – *Israeli natural gas discoveries* (Dagoumas and Flouros 2017).

Field	Reserves (est), tcf	Shareholders (%)	Date Discovered
Leviathan	17-20	Noble Energy (39.66)	2010
		Delek group (45.34)	
		Ratio oil (15)	
Tamar	9.7	Noble Energy (36)	2009
		Isramco (28.75)	
		Delek group (31.25) Dor gas (4)	
Tanin	1.2	Noble Energy (47.06) Delek group (52.94)	2012
Mari_B	1.1	Noble Energy (47.06) Delek group (52.9)	2000
Noa	0.04	Noble Energy (47.06)	1999
		Delek group (52.9)	
Dalit	0.35-0.5	Noble Energy (36)	2009
		Isramco (28.75)	
		Delek group (31.25) Dor gas (4)	
Dolphin	0.08	Noble Energy (39.66)	2011
		Delek group (45.34)	
		Ratio oil (15)	
Shimshon	0.27-0.55	ATO oil and gas (40)	2012
		Isramco (50) Modiin energy (10)	

It is further described by (Dagoumas and Flouros 2017) that “*Israel’s national policy regarding natural gas was examined during an inter-ministerial committee meeting in 2012. The important conclusions of that meeting are summarized as follows:*

- *It is not easy to identify the generally accepted international government policy concerning the development and management of natural gas*
- *There is a need to secure long-term energy for the country*

- *It is important to restore the confidence of investors*
- *The economic benefits of the national economy should be maximized*
- *The market environment should be competitive*
- *The market should allow for flexible decision making so that policy makers can react and adjust to supply-demand changes.”*



Fig.7. – *Gas Fields of Israel* (The Middle East Pomegranate 2014)

Israel’s energy transition from coal to gas had a spillover effect in both regional and international level. Since Israel became a net gas exporter state it had to redefine its national priorities and foreign relations. Since its establishment the Israeli state has been in a dispute with the Arab world in a complex and unstable geopolitical

environment. Recently relations with neighboring states of Egypt and Jordan were improved through gas exporting policy since there were contracts signed by both countries with the Israeli state. Lebanon and Israel have an open issue regarding the EEZ of the two countries as illustrated in **Fig.8**. Lebanon is claiming that Israeli projects violate its EEZ. “*East of Cyprus, Israel and Lebanon have no formal relations between them, making the establishment of mutually-recognized EEZs a daunting task. Since both states have signed EEZ agreement with Cyprus, a geographical basis might have been found. However, the areas of claim, as a demarcated vis-à-vis Cyprus, overlap. Lebanese officials, as well as Hezbollah, were quick in declaring, as early as 2010, that the northern Israeli gas fields belong to Lebanon*” as (Reis 2014) claims. Furthermore Israeli maritime blockade on Gaza doesn’t permit the Palestinians to develop their own Gas fields. Situation in Syria is a challenge to Israel as well. Last, but not least relations with Turkey are of high importance. Over the last decade they evolved from a strategic partnership to a competition, mainly due to Turkish attempts to become a regional power. Relations with Greece and Cyprus have recently leveled up into alliance status and major investments with the participation of all three states are planned, such as the East Med pipeline.



Fig.8. – EEZ dispute between Lebanon and Israel highlighted in orange.

(Signalive 2019)

Israel as an exporter of natural gas has various options to examine. “*The Tzemach committee, which was formed in October 2011, advised that there would be upper limits for the developers of the fields to export. More specifically, there is a different allowance per size of the reserves, starting from 50% for the larger ones and reaching 75% for the smaller ones*”, as noted by (Dagoumas and Flouros 2017). Oversupply in the natural gas markets though raises the difficulty for the Israeli state. This doubled by the fact that EU is considering several options to reduce costly projects such as long pipelines and prefers to avoid transit states could be a serious obstacle for Israeli gas exports in EU. The Arab Gas Pipeline seems to not be a viable solution since Lebanon and Syria are not importing natural gas through it anymore. Simultaneously Jordan is considering permanent LNG imports, to deal with the shortage in supplies received by Egypt through Arab Gas Pipeline. The development of a pipeline to Turkey although technically possible, seems impossible due to downturn in the relations of the two countries and the Syrian Civil war. In case of a marine pipeline this would have to pass through mutually delimited Cypriot EEZ and for sure Cyprus would raise serious objections to such a plan. It seems that the planned East Med pipeline is the solution that Israel chose for the export of its natural gas reserves. Recent friendly relations with Greece and Cyprus contributed to this decision. Cypriot-Greek-Israeli relations will be presented in a following chapter.

2.6. Lebanon

Recent findings in neighboring and littoral states show a promising potential for oil and gas reserves in Lebanon. The timeline for oil and gas in Lebanon starts on 1930s when the first legislation for oil exploration was adopted. Continuous rounds of oil exploration were conducted since then with no success. In February 2013 Lebanon launched its First Offshore Licensing Round with 46 companies eligible to bid after the pre-qualification round. However, in August 2014 the licensing round was postponed until April 2017 and in December of the same year bids on blocks 4 and 9 were approved as shown in **Fig.9**. In April 2019 the Second Offshore Licensing Round for blocks 1,2,5,8,10 was declared. In February 2020 a drilling ship launched exploration operations within Lebanese block 4. The drilling operations were conducted by a consortium of TOTAL, ENI and Novatek. Though in April 2020 the country's Energy Minister, Raymond Ghajar informed the public that the exploration of block 4 found no large reservoir, but several small pockets of gas. These can be indicators of a larger system that may be present elsewhere in Lebanon's EEZ, as claimed by (Azhari 2020).

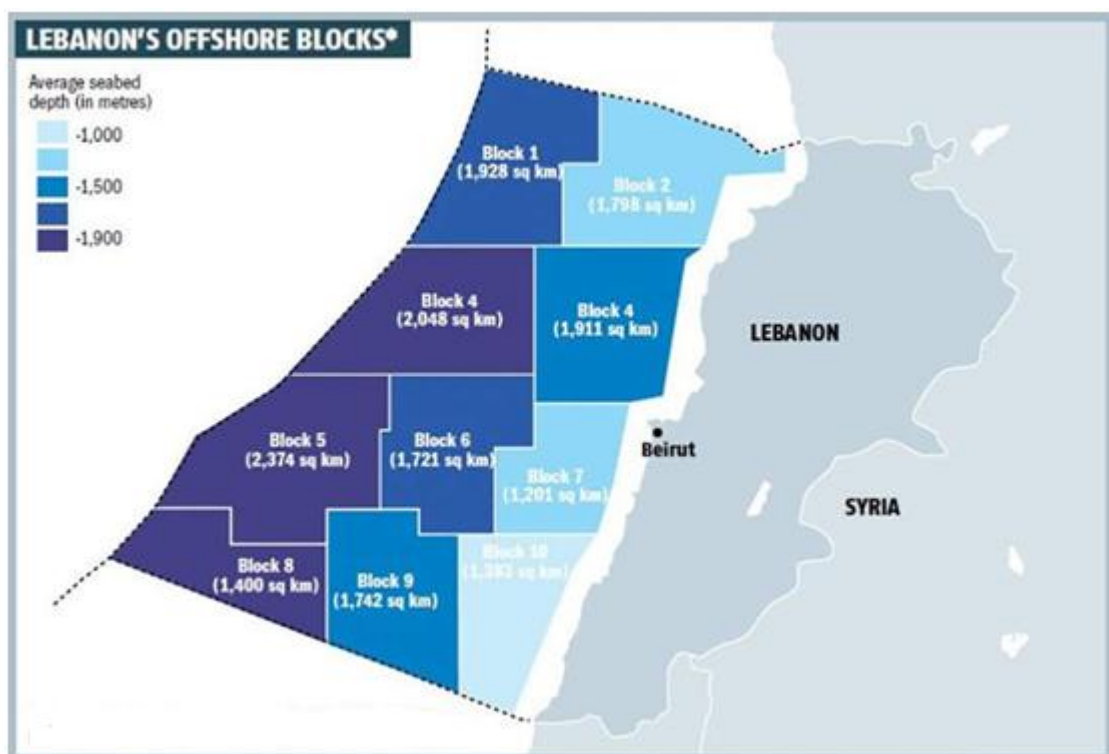


Fig.9. – Lebanon oil and gas exploration blocks (Offshore Technology 2018)

In May 2009 Lebanon submitted its EEZ Coordinates to UN, which was later clarified In June 2011. Apart from the aforementioned dispute with Israel over EEZ, Lebanon had a dispute with Cyprus also regarding EEZ. In January of 2007 Lebanon and Cyprus negotiated maritime borders and agreed in principle terms over demarcating EEZs. However the Lebanese government never ratified this agreement. Eventually this led to Lebanon’s objections over the agreement of Cyprus and Israel over their maritime borders. *In March of 2012 Cyprus informed the Lebanese Parliament that the flaws that Lebanon claim in the EEZ agreements are of no concern to Cyprus, reiterating that amending the existing treaty with Lebanon will only happen by agreement between the three countries; Cyprus, Lebanon and Israel,* as stated by (Lebanese Oil and Gas Initiative). Turkey tries to take advantage of this situation between Cyprus and Lebanon and proposes to Lebanese government to denounce the 2007 agreement and sign a new one as shown in **Fig.10**. Highlighted with red is the Turkish EEZ while the black line is the proposed limit between the two EEZ. Highlighted in yellow is the additional area that Lebanon will append in its current EEZ as defined according to delimitation agreement with Cyprus. The green line is the median line that currently delimits Cypriot and Lebanese EEZ. Block 3 of Cypriot EEZ will be apportioned between Turkey and Lebanon in the event of such an agreement. In such an event, it is not only the Cypriot EEZ that will be violated but also the Syrian one.

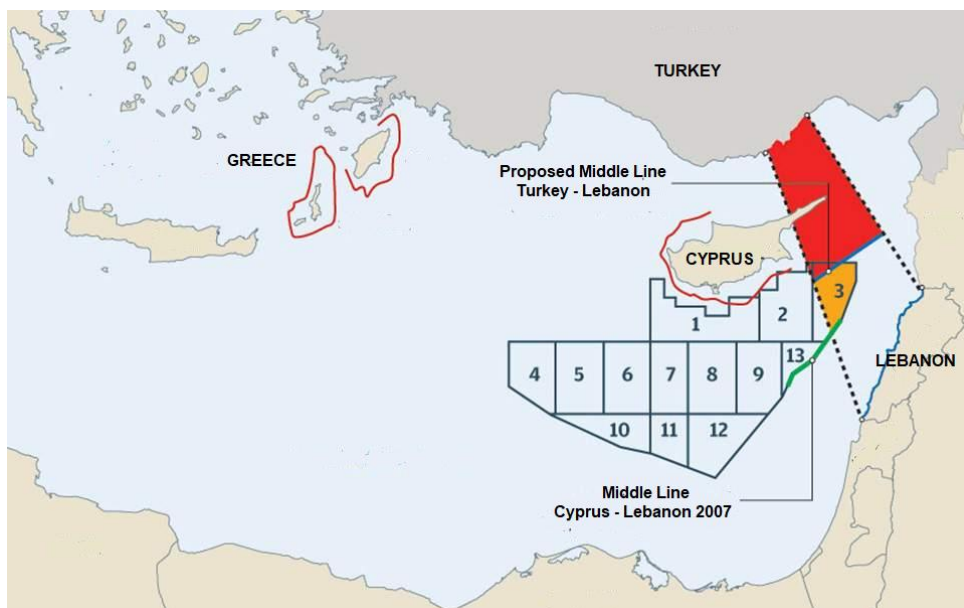


Fig.10. – *Proposed Turkish – Lebanese EEZ Delimitation agreement.*

Modified from (Syrigos 2018).

2.7. Libya

Arab Spring movement heavily affected Libya and it was a turning point in its modern history. In 17 February of 2011 a full-scale revolt occurred which led into a full scale Civil War and eventually the defeat of the loyalist to Muamar Gaddafi forces and its own death. Gaddafi was the ruler of the country for 42 consecutive years. Although the Civil War was terminated in 23rd of December of 2011, peace didn't last long. Chaos emerged in Libya as soon as 2014 again, leading to a new Civil War which lasts until today. The main belligerents are the Libyan National Army (LNA) holding the House of Representatives in Tobruk and the UN-recognized Government of National Accord (GNA). The leaders of the two opposing parties are Marshal Khalifa Haftar for LNA and Fayez al-Sarraj for GNA. Smaller fractions led by warlords participate in the Civil War in favor of the one or the other party. The Islamic State is involved also in the Civil War mainly by fighters who escaped Syria. Lately, LNA had important strategic advances in Libya, liberating the city of Sirte in 6th January 2020. Despite numerous attempts to conclude a ceasefire agreement, all the ceasefires were broken just hours after the deals by both sides.

The Civil War has brought great public unrest in the country. This affected the production of hydrocarbons in the country, which is ranked 8th in proven oil reserves worldwide and has significant natural gas reserves too, according to (OPEC 2018). *“Forces affiliated with the Libyan National Army, itself affiliated with the eastern Libyan government that is fighting the UN-recognized one in Tripoli, seized Libya’s oil exporting terminals in mid-January as well as several pipelines feeding oil from the nearby fields. This in turned prompted the shutdown of the fields, dealing a severe blow to Libya’s production that was on its path to recovery after years of outages”* as (Slav 2020) notes.

Foreign intervention plays a crucial role in the situation in Libya. Egypt supports the LNA which has an anti-Islamist character. Egypt is concerned over the spilling effect that would be caused in case Islamist groups which are backing the GNA manage to secure a victory. Russian mercenaries are believed to have involvement in the war also in favor of LNA. Jordan, Turkey and the United Arab Emirates have systematically violated the Libyan arms embargo, according to (Wintour 2019). *“The rivalries of Gulf monarchies have played out violently among feuding Libyan militias,*

while Moscow and Ankara's deployments have rendered Europe a largely toothless bystander", (Tharoor 2020) mentions. In particular, Turkish involvement in the Libyan Civil War is of high importance not only for Libya, but for the rest of eastern Mediterranean countries as well. *"For the regional players involved, Libya is terrain to exercise their agendas. Turkish officials invoke Ottoman ties to Tripoli to justify their deep involvement, but the major geopolitical dividend for Turkey has been an agreement with Serraj's government over rights to explore and drill for oil in the eastern Mediterranean"* as (Tharoor 2020) further claims.

Turkey has supplied GNA with weapons, ammunition, logistic support and according to reports (Allinson and Amar 2020) has transferred mercenaries in Libya. In exchange for this support, Turkey has managed to secure an agreement with the GNA, signing two Memoranda of Understanding, regarding maritime border demarcation and enhanced security cooperation. *"On 27 November 2019, the Libyan Government of National Accord (GNA) signed a memorandum of understanding with Turkey on Mediterranean maritime sovereignty. As soon as the memorandum was made public, it was rejected by retired General Khalifa Haftar's camp as well as a number of Mediterranean countries, most prominently Egypt, Cyprus, Greece, and Israel. Repercussions of the announcement continue despite Libyan and Turkish assurances that the GNA's Presidential Council has the power to sign a memorandum of this kind and that it poses no threat to the economic and security interests of neighboring states"* as (ACRPS Unit for Policy Studies 2020) states. In fact, this Memorandum concerning maritime zones is the *longa manus* of Turkey in the maritime area between Libya and Greece, trying to secure a piece from the hydrocarbons reserves which are believed to be enormous in the area. This Memorandum ignores completely the influence of Greek islands of Rhodes, Kastelorizo complex, Karpathos, Kasos, Crete and Gavdos and the potential EEZ Greece can claim based on International Law as illustrated in **Fig.11**. Highlighted with red is the Turkish EEZ. Highlighted in orange is the area Libya claims over potential Greek EEZ. Highlighted in blue is the area Libya would secure in case of EEZ delimitation agreement with Greece. Under these circumstances Greece expelled the Libyan ambassador. On 11th May 2020, a Joint Declaration of Greece, Cyprus, Egypt, France and UAE denounce the GNA-Turkey deal by stating that it *"cannot produce any legal consequences for third States"*, as clearly stated by (Hellenic Republic, Ministry of Foreign Affairs 2020).

Turkey in order to strengthen the position of GNA approved on 2nd of January 2020 a bill to deploy troops to Libya. The importance of Libya is high for Turkey since in case Marshall Haftar manages to prevail, all of Turkish maritime interests in the area will be at the mercy of Greece, Egypt and Italy. Energy Minister of Turkey, Fatih Donmez, stated on 29th May 2020 that Turkey has plans for exploration activities in the area claimed by Libyan-Turkish MoU, within 2020. “*The move could further stoke tensions in the region, where Turkey has been at loggerheads for years with Greece, Cyprus, Egypt and Israel over ownership of natural resources. Turkey could also face possible EU sanctions over its operations*” noted (Anonymous 2020).

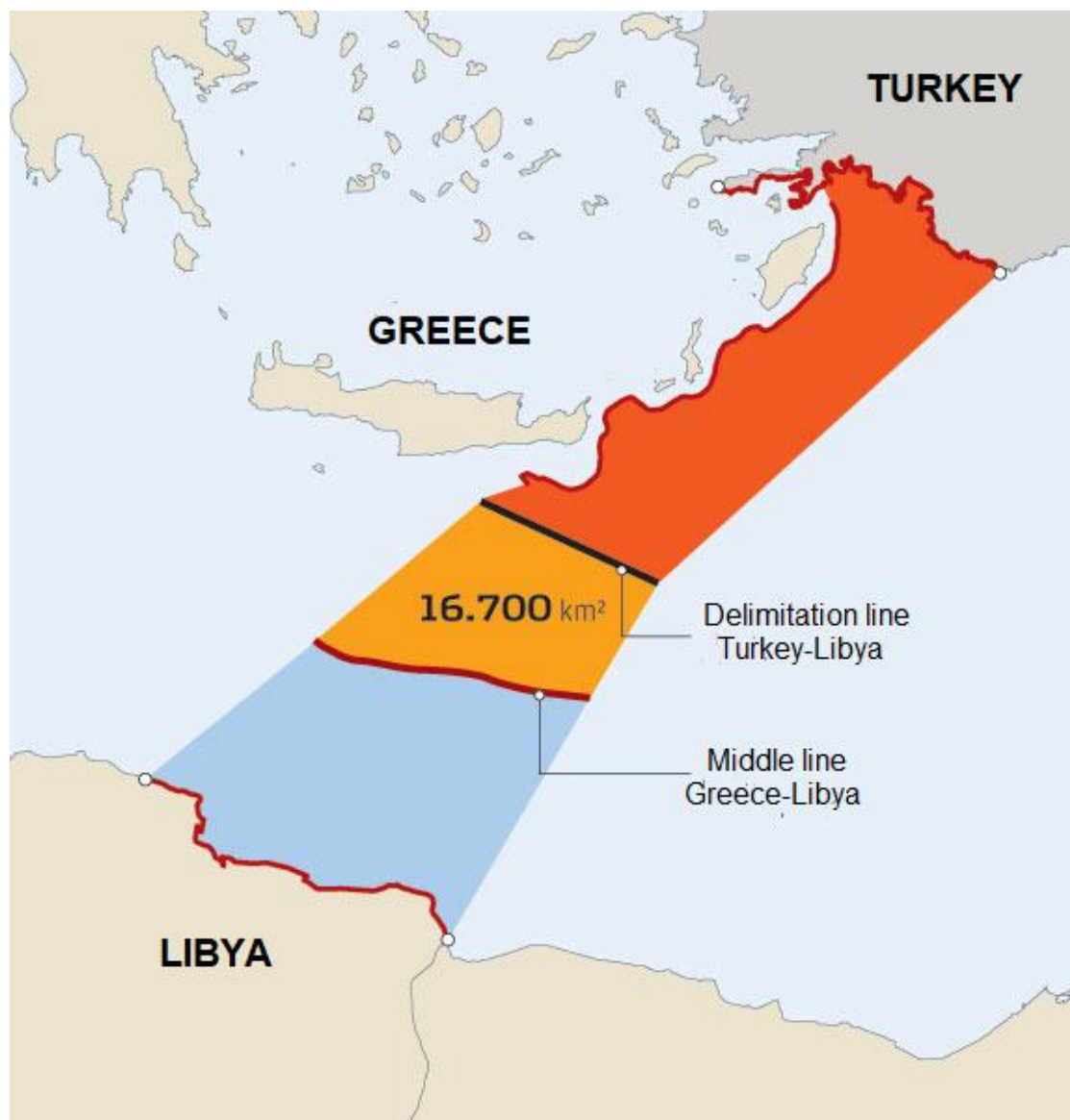


Fig.11. – Rough illustration of the agreed EEZ delimitation of Libya and Turkey under the MoU of 2019. Modified from (Syrigos 2018).

Given the public unrest that the Libyan Civil War caused in the country and the involvement of foreign powers, *“letting Libya divide into two - or more - sovereign countries would not be a bad outcome. The reality is that Libya’s three principal regions have very little in common, ethnically or economically. The division between the eastern and western portions of the country has been especially bitter for decades”* (Carpenter 2020) notes. In such a scenario though, the East part of Libya will be controlled by LNA and the MoU between GNA and Turkey will be de facto cancelled, leaving Ankara with no allies in the region. In case LNA forces manage to prevail in Libya then things will be even worse for Turkish grand strategy in the region.

2.8. Turkey

The end of the cold war in 1990s was a turning point for Turkey which redefined its priorities in international politics and focused in the development of economic relations within its neighborhood rather than the security concerns of the past decades, as described by (Aydin and Dizdaroglu 2018). Important economic and political shifts have taken place in Turkey after 2011; coupled with global geopolitical shifts, these have developed into an uncertain new trajectory for Turkey. This period has been characterized as the “*late AKP era*” by (Müftüler-Baç and Keyman 2012). AKP (Justice and Development Party) has been under the presidency of Erdogan in power since 2002, and has gradually brought Turkey nearer the principles of conservative Islam and state capitalism, according to (Öniş 2019). A serious question that rises is whether Turkey has turned to a new form of neoliberalism which involves its symbiosis with authoritarian state power. “*This authoritarianism straddles a difficult line between an amplified nationalism and neoliberal tenets of participating in a global economy*” as (Erensü 2018) points. At the same time, Turkey has adopted the role of a peripheral power that seeks to play a key role in the eastern Mediterranean energy game.

Understanding and predicting Turkey’s moves has become difficult recently due to the rapid and radical sociopolitical transformation of the country. This may partially justify the recent aggravation in the relationship of NATO with Turkey, as well as its rapprochement with Russia and Iran. The area of the eastern Mediterranean is a complex system with great geopolitical significance. NATO, the European Union (EU), Russia, Iran and China have projected their interests regionally, which are coupled with the Greek and Cypriot claims in the Aegean and the eastern Mediterranean Sea; Israeli interests in the Levant area; Egypt’s continuous rise in the regional energy game of the area; the war in Syria, Iraq and Libya; and the Kurdish Liberation struggle. In this volatile geopolitical environment, inter-state relations are critical for the energy security of the region. Therefore, it is important to understand Turkey’s national interests and foreign policy goals.

Turkish economy ranked seventeenth in the world for 2019 and its population exceeds 80 million, justifying its high energy needs. Turkey is an energy dependent

country and this affects its policy and grand strategy, given the fact that its energy consumption is expected to rise by 50% in the next decade. *Turkey holds 312,000,000 barrels of proven oil reserves as of 2016, ranking 53rd in the world. Total Oil Reserves in Turkey are less than even a single year of oil consumption, making Turkey highly dependent on oil imports in order to sustain its consumption levels. Turkey holds only 0.13 trillion cubic feet (Tcf) of proven gas reserves as of 2017, ranking 84th in the world and accounting for about 0.002% of the world's total natural gas reserves of 6,923 Tcf. Total gas reserves in Turkey are less than even a single year of gas consumption, making Turkey highly dependent on natural gas imports in order to sustain its consumption levels, according to (Worldometer 2020). Ankara's main objective is to find reliable sources from which energy can be supplied with reasonable prices and without any major risk of interruption”, as (Erşen and Çelikpala 2019) explain. Turkey imports most of its primary energy supply, with a high percentage of oil and gas import dependency. The Turkish state is focusing on a plan to reduce import dependency aiming on the diversification of supply routes and sources for imported oil and natural gas while simultaneously increasing the energy efficiency. It further aims in the increase of the ratio of local and renewable energy in the country's energy mix and the addition of nuclear energy to its energy mix, according to (Republic of Turkey Ministry of Foreign Affairs). This is Turkey's National Energy policy “Milli Enerji” for the energy supply security of the country. The main elements of this plan, as described by (Republic of Turkey, Ministry of Foreign Affairs) include:*

- *“Taking into account increasing energy demand and import dependency, prioritization among energy supply security related activities;*
- *Within the context of sustainable development, giving due consideration to environmental concerns all along the energy chain;*
- *Increasing efficiency and productivity, establishing transparent and competitive market conditions through reform and liberalization;*
- *Augmenting research and development on energy technologies“*

As described by (Erensi 2018), *“Milli Enerji, too, is not simply a governmental capture of the governance of a free market economy, but a symptom of a new hegemonic order that the AKP scrambles to establish, especially in the aftermath of the June 15 failed coup attempt in 2016. yerli ve milli (authentic and national) is the*

motto of this new era, aiming to form a nativist, nationalist, and conservative bloc around the leadership of Erdoğan. Moreover, the comeback of protectionism is not unique to Turkey; it is now a global phenomenon”.

Apart from the impact on Turkish energy market, all the aforementioned target to the transformation of Turkey as an energy hub between Europe and Asia, according to (Republic of Turkey Ministry of Foreign Affairs). This however has severe geopolitical implications in the Eastern Mediterranean since Turkish interests are opposing interests of neighboring states, mainly Greece and Cyprus and to a lesser extend Egypt and Israel.

A major advantage for Turkey is its geographic position since it is located in a path which brings Caspian and Middle Eastern hydrocarbons to the doorstep of Europe. The Kirkuk-Yumurtalik (Iraq-Turkey) and the Baku-Tbilisi-Ceyhan (Azerbaijan-Georgia-Turkey) pipelines are the ones bringing crude oil to Turkey. The natural gas pipelines are the Baku-Tbilisi-Erzurum (Azerbaijan-Georgia-Turkey), the Turkey-Greece Interconnector, the Western Route pipeline (Russia-Turkey), the Blue Stream (Russia-Turkey) pipeline, the Iran-Turkey pipeline, the Trans-Anatolian TANAP pipeline and recently the TurkStream pipeline. Aside from the pipelines Turkey imports LNG through two regasification terminals in Marmara Ereğli and Aliaga. The straits of Dardanelles are also important for international trade and in particular Russian oil shipped through them. Pipelines and LNG terminals in Turkey are illustrated in **Fig.12**.



Fig.12. – Pipelines and LNG terminals in Turkey (Republic of Turkey, Ministry of Energy and Natural Resources).

All the above renders Turkey a transit state for energy resources at first place. Turkish plan asserts the role of the energy hub in the area, through an energy transformation plan which is mainly attributed to the leverage and influence of the ex minister of foreign affairs and Prime Minister Ahmet Davutoglu in the policy making of the country. Davutoglu criticized the traditional geopolitical depiction of Turkey as a transit state which was rather passive and inactive the previous decades and perceived the role of Turkey a “central country” in an attempt to secure a main role in the world politics. The Ukrainian natural gas crises of 2006 and 2009 was a very good chance for Turkey, since Russia and EU were in need of alternative routes for energy pipelines, as explained by (*Erşen and Çelikpala 2019*).

In order to understand the ways Turkey tries to transform from a transit state into an energy hub in Eastern Mediterranean, the examination of the relation between energy security and foreign policy orientation is essential. For Turkey the good management of its energy needs its straight connected with successful economic and security policies. On Turkish perspective energy can be simultaneously an issue and a tool of foreign policy in the region. Over the last decade significant hydrocarbon reserves have been found in eastern Mediterranean. Those findings provide the potential to countries like Israel and Cyprus, of becoming exporting states while they draw the spotlight of international oil and gas companies serving interests of world scale powers in the region. However, security, legal and political challenges arise in the area since disputes over the maritime zones demarcation and the ownership of resources arise. Those will be examined extensively in the following chapters regarding the bilateral relations of the countries. Greece, Cyprus, Israel and Egypt seem to have reached an understanding and promote an agenda which serves their common interests which oppose those of Turkey. Turkey on the other hand intervenes in Libya in ways that will be discussed later on, while simultaneously tries to tempt Israel, Egypt and Lebanon in canceling their delimitation agreements with Cyprus. In the worst-case scenario for Turkey, Greece would sign maritime demarcation agreements with Libya, Egypt and Cyprus; Turkey’s naval routes would be blocked, and Turkey will be totally excluded from the hydrocarbon exploration and exploitation game in the area.

Considering the USA’s shift of attention from the Middle East towards the Pacific and its gradual withdrawal from the area, Turkey is attempting to fill this power gap.

Russia encourages Turkish involvement in theaters of operation in Iraq, Syria and Libya, since Turkey is a kind of opponent preferred by Russian grand strategy. Turkey is dependent on Russian natural gas flowing in pipelines throughout its territory and has little political maneuverability towards Russia due to this fact.

It is important to note that active involvement in Libyan Civil War is a cornerstone for Turkish grand strategy in the area. In case Turkish backed GNA manages to secure the control of Libya the benefits will be multidimensional for Turkey. The huge oil and gas reserves of Libya at this point constitute a recourse for the Turkish economy. Using Libya as an epicenter of its policy, Turkey will be able to influence political situation in Tunisia and Egypt by causing resurgence of the movement of Muslim Brotherhood. This would directly counter the influence of Saudi Arabia and U.A.E. in the area. In an ideal scenario for Turkey, it could seize control of the choke point of the Suez Canal through its political, religious and ideological affiliations within Egypt. Doubled by the Turkish-Libyan MoU on maritime zones this would render Turkey as the dominant power of the Mediterranean, since all the naval routes will be under its control. Furthermore, by controlling Libya, Turkey will be able to instrumentalize immigrant waves as leverage towards the EU through Italy, using the same doctrine as in the case of Greece. It is obvious that Turkish movements in eastern Mediterranean have alarmed its neighboring states, as well as states like France and Italy that have long historical influence in the countries of Maghreb and Mediterranean.

2.8.1. Nuclear Energy in Turkey and its geopolitical dimension

Nuclear energy is another field of investment for Turkey. Nuclear energy is considered very important in an attempt to diversify the state's energy resources and energy supply. Currently, there are two construction projects for Nuclear Power Plants while there are ongoing site selection studies for a third one. *“Turkish government signed an agreement with Russia to build the first nuclear power plant in Mersin. Akkuyu Nuclear Power Plant (NPP) is planned to start operation in 2023”*, as described by (Erdoğan et al. 2018). A second agreement was signed in 2013 between Turkey and Japan for the development of a Nuclear power plant in Sinop. A Memorandum of Understanding signed for a third nuclear power plant was signed by EUAS, Westinghouse EC and SNPTC (Chinese State Power Technology Company)

(International Atomic Energy Agency 2019). It is important to mention that *“Electricity Generation Joint Stock Company (EUAS) is a state owned company and the largest electricity generation company in Turkey”*, according to (International Atomic Energy Agency 2019). Regarding all the aforementioned projects there are serious concerns in public opinion due to the fact that Anatolia region is an earthquake zone and an environmental and humanitarian catastrophe could occur, in case of a nuclear accident caused by an earthquake.

However, the most serious concerns regarding Turkish nuclear plans appear on geopolitical level. On 4th September 2019 in an AKP members gathering at the city of Sivas, president Erdogan stated that *“Some countries have missiles with nuclear warheads, not one or two. But (they tell us) we can’t have them. This, I cannot accept.”* adding on that *“We have Israel nearby, as almost neighbors. They scare (other nations) by possessing these. No one can touch them”*, (Toksabay 2019) claims. Experts and public opinion in the West were alarmed by this statement. It is a fact that 50-90 US nuclear bombs are currently stored in the Incirlik air base in Turkey and experts publicly urge the US administration to remove them from there for various reasons, according to (Ofek 2019). *“Turkish president Recep Tayyip Erdoğan’s questioning of the international order with regard to nuclear weapons may well reflect the unspoken thinking of other regional leaders in a world in which the US has withdrawn from the Intermediate-Range Nuclear Forces Treaty with Russia and unilaterally walked away from the 2015 international nuclear agreement with Iran, and in which countries like China and Russia are willing to sell nuclear technology as well as arms with few, if any, safeguards. In addition, the international community has failed to prevent Pakistan and North Korea from becoming nuclear powers”*, notes (Dorsey 2019). Those facts raise concerns to Saudi Arabia and UAE which deal with Erdogan’s latter demand as *“an opportunistic effort to bolster his troubled bid to position Turkey as a leader of the Muslim world”*, claims (Dorsey 2019). It further raises serious concerns to Israel, simply put since *“nuclear weapons are the most efficient means by which one could annihilate the Jewish State”*, as explained by (Ferrero 2019). Israel is not a member of the Non Proliferation Treaty and it is widely believed that it maintains a nuclear arsenal. In any case the Israeli state neither confirms nor denies its possession. *“This policy—often referred to as opacity or ambiguity, and known in Hebrew as amimut, grants Israel the benefit of nuclear deterrence while sparing it the consequences of overtly flaunting global*

nonproliferation norms”, (Ferrero 2019) further notes. Moreover, Israel is already alarmed by the Iranian Nuclear Program. It is worth mentioning that on 7th of June 1981 the Israeli Air Force, conducting Operation Opera, carried an air strike which destroyed the Iraqi nuclear reactor under construction 17 kilometers southeast of Baghdad. Observing this incident, the S-400 anti-aircraft missile acquisition by Turkey and its expel from F-35 program while Israeli Air Force already operates with F-35s, could have a deeper link to the colliding grand strategies of the two states regarding nuclear energy and national defense.

CHAPTER 3 – METHODOLOGY

The geopolitical tension in the energy-rich belt of eastern Mediterranean has the potential to thwart energy supplies. Reference is made to certain aspects of Mediterranean states' political situation and their energy security. International and bilateral relations and their current trends are considered. The theory of realism prevails in this work and is used in order to explain the notions of energy and national security Mediterranean states and the way the geopolitical scenery is set up in the area.

All the above are integral for the in-depth evaluation of geopolitical circumstances in the area that affect the main target of this work which is to investigate the energy security of the eastern Mediterranean, analyzing the opposing interests of Turkey with Cyprus and Greece with game-theoretic tools. The system which affects Turkish foreign policy in the Eastern Mediterranean is complex and multidimensional. Turkey, in order to obtain a dominant peripheral power status, is obligated to strengthen its economic and political influence on naval arteries that range from the Aegean to the Adriatic Sea and from the Suez Canal to the Red Sea. It appears inevitable for Turkey to adopt an offensive policy in the area of the Black Sea, the Aegean and the Mediterranean. The Turkish perspective is reflected in the view "*Eastern Mediterranean consists the same system with Aegean Sea*", according to (Davutoğlu 2001).

NATO-Turkish-Russian relations are the most important factor that affects the Turkish strategy in the area. During the Cold War, NATO viewed the sovereignty of the Turkish Republic as an obstacle to the involvement of the Union of Soviet Socialist Republics (USSR) into the Mediterranean, and considered the preservation of its geopolitical position as an issue of paramount geopolitical significance, (Austvik and Rzayeva 2001) explain.

Under Erdogan's rule, the exterior policy of Turkey is based on the assumption that its geo-economic and geopolitical interests are opposed to the interest of NATO members, (Divsallar 2019) notes. Therefore, Turkey has moved further away from NATO and has adopted a policy of rapprochement towards Russia and Iran

(Ozgaslam 2018). This approach sculpts a new reality in the politics, the economy and the security of Turkey, with turbulence rising in the eastern Mediterranean. Furthermore, Turkey's relations with Israel and the Arabic countries of the eastern Mediterranean are a key point. The coalition of Athens-Nicosia-Jerusalem is a cause of alarm for Ankara, considering its strained relations with Egypt. Turkish involvement in Libya is accounted as well.

Greece and Cyprus are the main states which have directly opposed Turkish interests in the Aegean and the eastern Mediterranean, as (Iseri and Andrikopoulos 2013) point. A restrained Turkey in the Aegean Sea and the eastern Mediterranean has narrow margins to play a key role in the energy game of the area. Thus, the primary strategic goal of Turkey is the maintenance of open naval routes through the Aegean and Cyprus, as (Davutoğlu 2001) states. Equally important is the Turkish attempt of involvement into hydrocarbons exploration and production in the region, as noted by (Iseri and Andrikopoulos 2013).

The first question that this Thesis answers is: what is the status of the bilateral relations of the eastern Mediterranean countries? Given the fact that the dispute over EEZ between Greece, Cyprus and Turkey affects the Turkish strategic goals, this Thesis further focuses on the future moves of the three parties. The second question that this Thesis seeks to respond to, was addressed by (Papakostas et al. 2019) in Politeia Conference of Political Scientists 2019, in Athens as *“How will Turkey, Greece and Cyprus react given the fact that their opposing interests can seriously affect the energy security of the eastern Mediterranean”* and how this can be illustrated in a game of sequential moves?

To respond to these questions, a dual analysis is conducted. Its first part considers the current status quo of the bilateral relations of the area's states and the dynamics evolved. A primary presentation of each state's energy context was presented in Chapter 2. This will be the base of the analysis regarding bilateral relations of any two given states of the area which follows. Common or opposing interests, as well as risks for each state are presented. The second part considers the portrayal of this status quo on a quantitative model. *“A game of sequential moves was set up between Cyprus, Turkey and Greece. Interviews with two academic experts, (one in International Relations and a second one on Turkey) were taken into consideration in building the game tree, and carrying out some basic sensitivity analysis. Under this scope, a game theoretic model was formulated to develop predictions about the future interactions.*

The equilibrium of this game was studied, taking into account the results of sensitivity analysis. A game of sequential moves between Cyprus, Turkey and Greece was set up. Alternative assumptions about the structure of the game and the moves of the three players were considered. First mover advantage was assessed. Each state has the option to adopt one out of three different strategies. A range of payoffs was investigated using sensitivity analysis”, (Papakostas et al. 2019) mention.

CHAPTER 4 – GAME THEORETIC APPROACH

4.1. Introduction

This Chapter has a dual orientation. On its first part, a textual approach analysis of the bilateral relations of eastern Mediterranean countries will take place. The portrayal of geopolitical dynamics each state evolves in the area is essential for the creation of an accurate game tree. A game tree and its scenario analysis follow in the second part of this Chapter, which constitutes the response to the main question of this thesis.

4.2. Bilateral relations of eastern Mediterranean countries

For an accurate analysis of the bilateral relations of the Eastern Mediterranean countries, Chapter 2 was used as a basis. Bilateral relations of the area's states including alliances, collision of strategies and competition are essential for the deeper understanding and prediction of their future movements on the energy and political arena of the Eastern Mediterranean.

4.2.1. Cyprus – Greece – Israel relations and the East Med pipeline

Since 2011 when the Republic of Cyprus initiated a process of exploration and exploitation of hydrocarbons, a new alliance between Greece, Cyprus and Israel has emerged. The nature of the alliance is described as a “*quasi-alliance*” (Tziarras 2016), due to the absence of formal military treaty. This can be attributed to a number of problems that would arise with the neighboring states - mainly Turkey - in the event of a formal military alliance of the three states. “*The nature of this cooperation allows the three countries to maneuver politically so as not to exclude future parallel relations with Turkey. At the same time, the partnership can give the three states leverage vis-à-vis Ankara*”, as (Prontera and Ruszel 2017) explain.

“*Cooperation between Israel and Cyprus, in whose territory natural gas reserves have also been discovered, is essential for both countries. This cooperation can be manifested both on the political level – in an agreement determining economic regions, and on the economic level – for example collaborations involving conveying the gas*”, as (Cohen 2018) refers. The natural gas discoveries of Israel and Cyprus, coincided with a significant downturn in Israeli-Turkish relations. Since then the two countries evolved closer friendly relations. In December of 2010 there was an agreement between Israel and Cyprus for the delimitation of EEZ, despite the fact that Israel hasn't signed UNCLOS yet. In 2012 Benjamin Netanyahu visited Cyprus in an effort to “*promote an economic and security partnership between the three non-Muslim countries in the eastern Mediterranean*”, as claimed by (Murinson 2012). In case of militarization of any of the disputes in the area, this partnership is of high importance.

“*Israel sees Greece as a potential European center from which Israeli gas can be conveyed to various countries in the region, and it is already possible to identify*

progress in its relationship with this country”, (Cohen 2018) points. There was a remarkable improvement of Greek – Israeli relations over the last decade. *“Public opinion in Greece toward Israel was also negative, due to anti-American feelings, given that Israel was seen as a protégé of the US, the Palestinian issue, and the strong relations between Israel and Turkey in the 1990s, which made the Greeks suspicious about the common aspirations of these countries”*, (Lindenstrauss and Gavrielides 2019) claim. A group of Greek political advisors and an Israeli counterpart named *“Electra Group”* by (Tziampiris 2015), put effort in the approach of the two countries taking advantage of the downturn in Israeli-Turkish relations. Since 2012 this relationship involved Cyprus too and has evolved in cooperation over energy, security, trade and tourism issues.

The rapprochement scenario of Turkey and Israel which will eventually lead to energy cooperation between the two states, could be a major issue for Cyprus and Greece. The political relations of the two countries with Israel will not be affected, but definitely their energy security policies will have to go through a re-orientation. Despite the fact that this scenario is highly unlikely to occur, Cyprus and Greece form another quasi-alliance with Egypt in an effort to wide their regional networks and come up with contingency plans, as explained by (Tziarras 2016).

In early 2019 the Eastern Mediterranean Gas Forum was established with the participation of most of the countries of the region with the exception of Turkey and Lebanon. On the dawn of 2020 Greece, Cyprus and Israel have signed a deal for the construction of East Med pipeline which will transfer natural gas from Middle East to Europe. Turkish fears that it is being cut off of the exploitation of energy resources in the Eastern Mediterranean was fueled since the proposed project passes through the disputed naval area between Turkey and Greece-Cyprus. Definitely Turkey would prefer that any pipeline in the area would pass through its territory in order to have economic and strategic gains.

US policy in the area of eastern Mediterranean is a cornerstone for the implementation of East Med Pipeline project too. *“Even though U.S. engagement operates under the general banner of “energy,” it differs from what the United States is doing elsewhere—pushing U.S. liquefied natural gas (LNG) as an alternative to Russia in Europe or as a geo-economic counterweight to China’s Belt and Road Initiative. The East Med region has abundant energy resources, and finding a way to develop those resources drives many initiatives—there is less selling needed because*

countries are mostly trying to trade with each other”, as mentioned by (Tsafos 2019). US Congress approval of a spending package that includes the Eastern Mediterranean Security and Energy Partnership Act of 2019 undoubtedly encourages the project. “The EastMed Act is part of an appropriations bill that foresees and end to the prohibition on arms sales to the Republic of Cyprus; the establishment of a United States-Eastern Mediterranean Energy Center to facilitate energy cooperation among the US, Israel, Greece and Cyprus; Foreign Military Financing (FMF) assistance for Greece; increased International Military Education and Training (IMET) assistance for Greece, while also include Cyprus in the program for the first time; as well as require the US administration to submit to Congress a strategy on enhanced security and energy cooperation with countries in the Eastern Mediterranean”, according to (Kathimerini 2019).

The pipeline will have as its final destination Italy and will run more than 2000 km. Its transfer capacity will be 12 billion cubic meters per year and it is expected to provide around 10% of EU natural gas needs. Pipeline’s planned location is illustrated in **Fig.13**. Despite the signing of the trilateral agreement between the states, the pipeline construction is not yet sure.

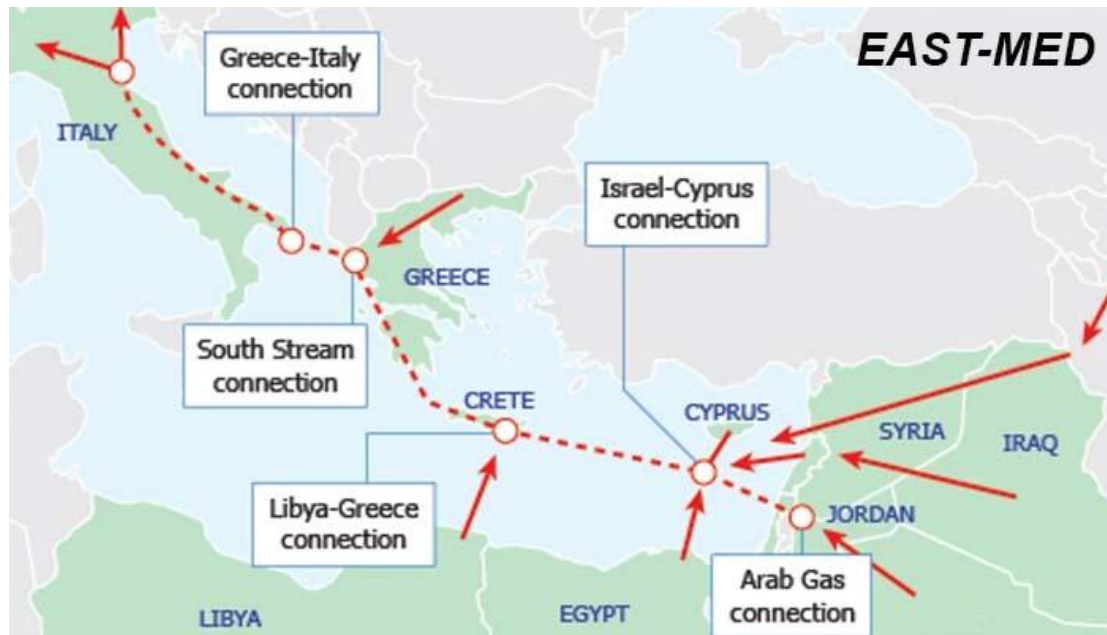


Fig.13. – East Med pipeline with possible future connections. (TANEAteam 2020)

There are three different approaches in public opinion of the three states. The first is that the pipeline should not be constructed due to the fact that it will cause raise of tension with Turkey Turkish State is strongly opposed to any energy related activity

that will not include itself. The second approach is that the pipeline should be constructed as a response to Turkish activity in the area. The third one is that the pipeline should be constructed and Turkey should be invited to participate in its implementation. This is regarded as a step that will reduce Turkish bellicosity in the area. However, East Med pipeline construction implementation should be totally examined by the three states under the scope of economic and strategic interests that it serves for each party. East Med pipeline was designed and proposed in 2013 under an obsolete perception regarding natural gas. Liquefied Natural Gas shipped from USA to Europe has changed the game in the area and is gradually reducing the importance of transnational pipelines. On the other hand, Italy being the final destination of the pipeline would acquire major leverage over the three states. In many cases the interests of Greece, Israel and Cyprus differ from those of Italy and possibly this could lead on implications in the activity of the pipeline. It is important to consider the implications that East Med pipeline could cause in the bilateral relations of Greece and Cyprus with Lebanon as well. Furthermore, Cyprus should be very careful on implications regarding Third Party Access issues. Such issues could arise under the possibility of operation of the pipeline with natural gas coming from states like Lebanon, Syria or Iran in the future.

4.2.2. Cyprus - Turkey relations

“The aftermath of the 1974 Turkish invasion and occupation of the northern third of Cyprus island was the de facto division of Cyprus. Cyprus has effective control of the 59% of the island; the area that is not under its control comprises 37% of the island. The two de jure territories of the Republic are separated by a United Nations (UN) Buffer Zone which consists 4% of the island.

Turkey does not recognize Cyprus as a state. In 1983 the Turkish side declared independence and the Turkish Republic of Northern Cyprus (TRNC) was created. Under resolution 541 of the Security Council, the UN does not recognize TRNC as an independent state. Turkey is the only country that recognizes TRNC as an independent state and has established diplomatic relations with it, as described by (Papakostas et al. 2019).

Acting according to the EEZ and Continental Shelf Law, Cyprus established an EEZ and signed delimitation agreements with Egypt (2003), Lebanon (2007) and Israel (2010), as (Cyprus Ministry of Foreign Affairs) describes. The Cyprus EEZ is shown in **Fig.14**. Those agreements alarmed the Turkish side. Given the fact that Turkey doesn't recognize the existence of the Republic of Cyprus as a sovereign state, it subsequently doesn't recognize the proclaimed Cypriot EEZ. Furthermore, Turkey doesn't accept the Cypriot claim that the Republic of Cyprus represents all the civilians of the island. Turkey also claims that the Cypriot exploration process undermines the resolution of the Cyprus dispute. Last, but not least Turkey considers the granting of exploration licenses to energy companies by Cyprus as an attempt to outmaneuver Turkey from any resources in the Eastern Mediterranean, according to (Tziarras et al. 2019). This is doubled by the fact that Cyprus, Greece, Israel and Egypt seem to form an alliance which is based on common interests which collide with the strategy of Turkey to become a hegemonic power in the region.

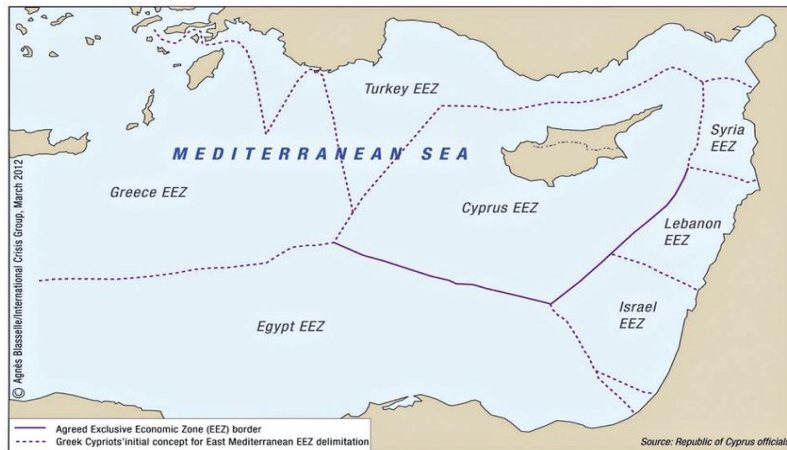


Fig. 14. - Cyprus EEZ. Continuous line depicts the agreed EEZ border. Dashed line depicts Cyprus concept for EEZ delimitation (Adamides and Christou 2016).

On the other hand, the continental shelf claimed by Turkey covers almost all the claimed EEZ of Cyprus. More specifically, Turkish claims outline an area that “overlaps with parts of the Cyprus EEZ concession blocks that were announced in the context of the two international tenders for offshore hydrocarbon exploration licensing opened in 2007 and 2012, namely parts of Blocks 1, 4, 5, 6, and 7”, (Gurel et al. 2013) mention. Turkey made a delimitation agreement with the TRNC that overlaps and ignores the EEZ claimed by Cyprus, as illustrated in **Fig.15.** and TRNC itself proclaimed an EEZ which overlaps with the rest of the EEZ of Cyprus.

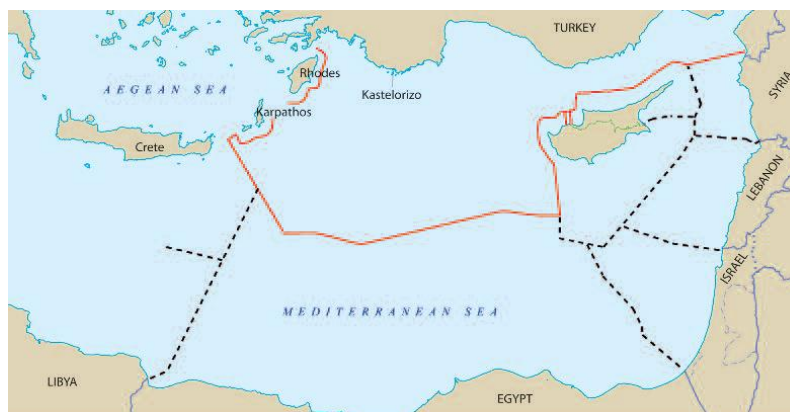


Fig.15. - Claimed Turkish continental shelf/EEZ in the Eastern Mediterranean Sea (Gurel et al. 2013)

Since then, Turkey has been following a strategy of signing bilateral agreements with the TRNC on a basis of the claimed EEZ by the two sides. Based on these agreements, licenses for exploration and exploitation of hydrocarbons have been granted to the Turkish Petroleum Company TPAO. Turkey recently sent exploration

and drilling ships in the area, violating the EEZ claimed by the Republic of Cyprus and causing tension in the area. In most of the occasions the areas licensed by TRNC to Turkey overlaps with the areas licensed by Cyprus to international energy companies as illustrated in **Fig.16**.

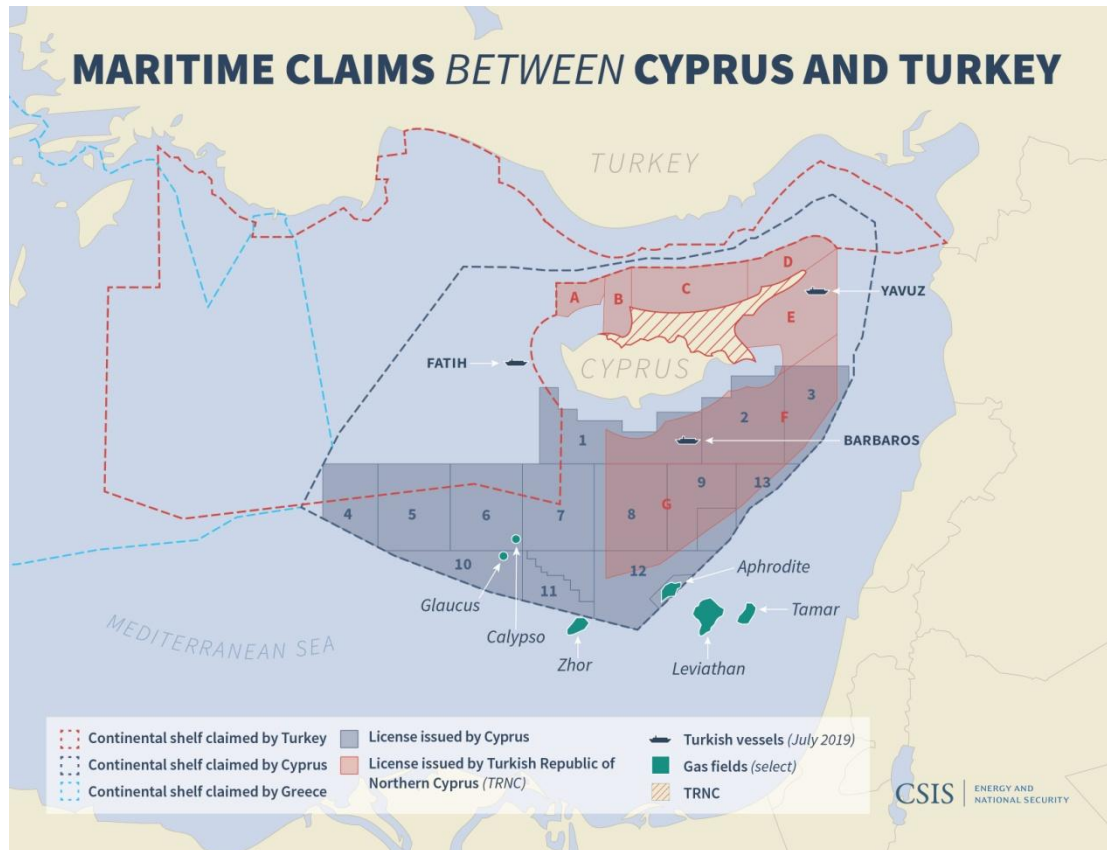


Fig.16. – Areas licensed by Cyprus (blue) and TRNC (red) and locations of Turkish drilling ships violating Cypriot EEZ as of July 2019. (Tsafos 2019b)

“According to reports of the European Parliament (Vozemberg-Vrionidi 2017) Turkey submitted a letter to the UN, threatening to invoke *casus belli* against both Nicosia and the two companies that were awarded block 6 of the EEZ of Cyprus. The document not only challenges Cyprus’ ability to conduct exploration and issue permits for certain blocks, but also asserts that a part of block 6 belongs to the Turkish continental shelf. Cyprus ignored that threat, and Turkey decided to proceed with exploration and drilling operations within the EEZ of Cyprus”, (Papakostas et al. 2019) note. A statement by the High Representative of the EU for Foreign Affairs and Security Policy (Mogherini 2019), on Turkey’s activities within EEZ of Cyprus, claimed that “we (the EU) urgently call on Turkey to show restraint, respect the sovereign rights of Cyprus in its EEZ and refrain from any such illegal action to

which the European Union will respond appropriately and in full solidarity with Cyprus". In response, Turkey's foreign affairs minister Cavusoglu sent a letter to the EU Chief of foreign policy claiming that *"Turkey should not be expected to sit idly and condone the ongoing violation of its rights and those of the Turkish Cypriots"*, according to (Daily Sabah 2019).

4.2.3. Cyprus – Egypt – Greece Relations

Relations between Greece and Cyprus on the one hand and Egypt on the other are very good since the three countries are cooperating closely in International Organizations. Relations of Greece and Egypt are developing rapidly in political, economic, defense, cultural and energy sectors, while the two states have converging positions in a series of regional issues. Cyprus and Egypt relations are good since they have supported each other's position in UN on multiple occasions. On 2002 the signing of the protocol on political consultation between the two countries took place. Furthermore, Cyprus and Egypt have signed a delimitation of EEZ agreement in 2003. In 2012 Cyprus and Egypt signed an agreement on oil and gas exploration concerning the border zones of the two countries. Relations intensified after the rise of General Al-Sisi in the Government of Egypt and the first tripartite gathering between the leaders of the three states was held in 2014. It quickly turned into a trilateral alliance over economic, political and strategic interests.

The Trilateral co-operation seems a pillar of stability in the region of eastern Mediterranean and it is valuable to the EU and neighboring countries. In the aftermath of the significant hydrocarbon reserves in the area, the co-operation grew stronger through the East Mediterranean Gas Forum (EMGF) where Turkey, being the main opponent of all three parties in the geopolitical arena, was excluded. In addition, the electrical interconnection between Greece, Cyprus, Israel and Egypt is expected to produce geopolitical and economic benefits for all parties involved. In 2018 Egypt and Cyprus signed an agreement to connect the Aphrodite gas field to liquefaction plant of Edku via a pipeline. Al-Sisi on multiple occasions has stated Egypt's political support to Cyprus over the Cyprus Dispute. Despite the close relations and co-operation of Greece and Egypt however, a bilateral agreement on EEZ hasn't yet been reached. Negotiations between Greece and Egypt began in 2004 and they are still active. Both countries though agree that the Turkey-Libya Memorandum of Understanding concerning maritime zones is illegal and that Libya's Prime Minister Fayez Sarraj does not have the legal power to sign such agreements.

4.2.4. Egypt - Israel relations

Since the establishment of Israeli state in 1948 until 1978 Camp David accords, the history of the two countries relations has been a long series of wars and conflicts. Egypt was the first Arab country to sign a peace treaty with Israel in 1979. It is commonly referred in bibliography as a “cold peace” situation, as (Dagoumas and Flouros 2017) describe. Since 1979 Egypt agreed to supply with oil the Israeli state after the withdrawal of Israelis forces from Sinai. Due to the rise of domestic demand for oil in Egypt exports to Israel stopped. However, on 2005 there was a gas trade agreement signed by the two states which foresaw in its provisions a 15 year supply of 1.7 bcm annually through the underwater pipeline from Al-Arish to Ashkelon. This led to dependency of Israel from Egyptian natural gas in 40%. Arab Spring which reached Egypt in 2011 caused a tension in bilateral relations of the two countries leading in the inevitable termination of the deal in 2012. During this period the pipeline which provided natural gas to Jordan, Syria and Lebanon apart from Israel was attacked 14 times. Under these circumstances Israel intensified its production of natural gas and diversified its import options by constructing a special buoy off the coast of Hadera which receives gas from LNG regasification vessels. Gas diplomacy between Israel and Egypt nowadays is completely different. Israel has discovered sizable amounts of natural gas while Egypt encounters shortages in resources to cover its domestic needs. Considering Israeli government uses gas diplomacy as means for securing peace in the region, a “reverse” exporting agreement between Israel and Egypt to occur in the next few years. However, Egypt’s political stability is a key factor in the contact and viability of any agreement with Israel.

4.2.5. Egypt – Turkey Relations

Egyptian and Turkish interests oppose in two major axes, the leader of Islamic world and the Energy leading state in eastern Mediterranean. Turkey and Egypt had an amicable growing relationship for decades. The January 2011 uprising in Cairo and in general the events of Arab Spring, posed as an opportunity for Turkey to expand its influence in the entire region. Thus, relations between the two countries upgraded in economic and geopolitical level. However, following the 2013 coup d'état led by General Abdel-Fatah el-Sisi and the overthrow of the Islamistic government led by President Mohamed Morsi from power, relations between Egypt and Turkey have deteriorated significantly. Turkey is regarded by el-Sisi's government as an ideological and strategic threat, in light of Erdogan's support to Islamist extremists in the region. *“Turkey considers the Arab Middle East as its backyard to exercise hegemony and influence, Sisi believes that the Turkish role is a source of turmoil and instability; thus, it should be curtailed and eliminated”*, as (al-Anani 2020) claims.

Three are the main fields where the rivalry between the two countries is obvious. The first one is the Libyan Civil War where Egypt is a major supporter of General Khalifa Haftar and the National Libyan Army (LNA) while Turkey is the main supporter of the Government of National Accord (GNA) based in Tripoli. An event that escalated the tension between Turkey and Egypt was the decision of Turkey to provide military and logistical support to GNA and the signing of the Memorandum of Understanding between Turkey and GNA regarding maritime zones. *“In a statement issued by the Foreign Ministry, Egypt stressed that the Turkish parliament's move represented a blatant violation of international law and Security Council resolutions on Libya, especially Security Council Resolution 1970 from 2011, which included an open-ended embargo on the supply of arms and military equipment to and from Libya except through the established Sanctions Committee. The statement described the two MoUs signed between Turkey and Sarraj as “illegitimate”. The statement also confirmed the unity of the Arab League position, which rejected any foreign interference in Libyan affairs during an Arab League Council meeting called by Egypt on December 31, 2019, during which the Arab League stressed that Turkey had played a “dangerous” role by supporting “terrorist” organizations and transferring “extremists” from Syria to Libya”*, as (Al-Masry Al-Youm 2020) refers.

The discoveries of huge natural gas reserves in eastern Mediterranean are the other field where the interests of the two states are opposite. Following the discovery of gigantic Zhor field in Egypt in 2015, Egyptian government tried to create economic and geostrategic alliances with Greece and Cyprus as a leverage against Turkey. Egypt's ambition to become an energy hub for natural gas trade and export, directly opposes Turkey's same plan. The newly found East Mediterranean Gas Forum (EMGF) where Egypt plays a key role as a member has as a main target the enhancement of natural gas production in the area and its export to Europe. These plans are straightly affected by Turkey's intention to explore gas fields in Libya under agreements that none of the littoral states recognize. However, Turkey trying to destroy the alliance between Greece, Cyprus and Egypt has shown some maps (**Fig.17.**) of a possible potential agreement for Exclusive Economic Zones, which as in other cases with Lebanon and Israel, ignores the rights of Greece and Cyprus. Highlighted with red is the Turkish EEZ while the black line is the proposed limit between the two EEZ. Highlighted in yellow is the additional area that Israel will append in its current EEZ as defined according to delimitation agreement with Cyprus. The green line is the median line that currently delimits Cypriot and Egyptian EEZ. Blocks 1,4,5,6,7,10 and 11 of Cypriot EEZ will be apportioned between Turkey and Egypt in the event of such an agreement. It is of high possibility that in case Morsi remained in power, such an agreement would have been reached, cancelling the delimitation agreement of 2003 between Egypt and Cyprus.

The third field of interest collision between Turkey and Egypt is the alliance between Egypt and the Gulf states of U.A.E. and Saudi Arabia. Since 2015 there is an increasing distrust between the two sides. The failed coup attempted against Erdogan in 2016, the blockade of Qatar in 2017 and the assassination of Saudi journalist Jamal Kashoggi in 2018 are the main events that deteriorated the relations of Gulf countries and Turkey. Turkey's support of Qatar and the creation of a Turkish military base in Qatar have alarmed the Gulf states. Continuous support of Erdogan to Muslim Brotherhood members and leaders only cause a further deterioration in relations. Despite political tensions, the economic relations of Turkey and Egypt grew in the past few years.

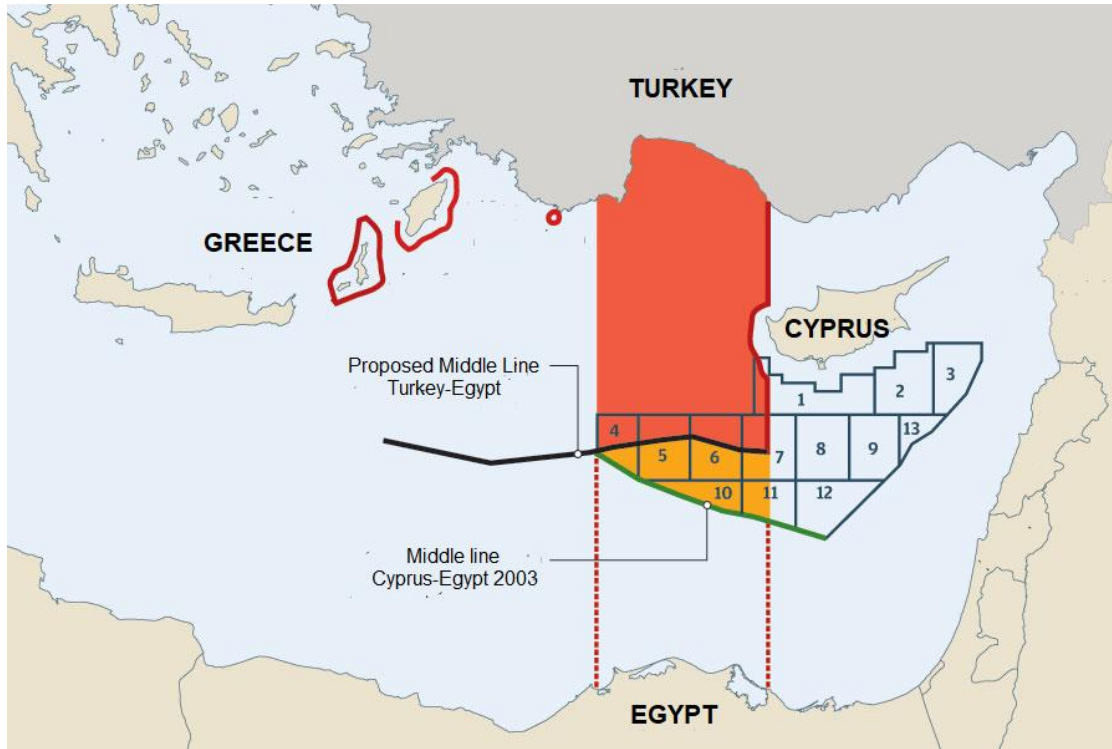


Fig.17. – *Proposed Turkish – Egyptian EEZ Delimitation agreement.*

Modified from (Syrigos 2018).

4.2.6. Greece - Turkey relations

The dispute between Turkey and Greece until recently had to do with the Aegean Sea. The migration crisis, the violation of Cypriot EEZ and the Turkish-Libyan MoU created a multidimensional conflict which escalates steadily since 2019.

“Turkey’s main targets in the Aegean Sea are to maintain its sea transport corridors open, and thwart Greek hydrocarbons exploration or exploitation. The oil potential of the Aegean was in fact the primary reason that led Turkey to dispute the continental shelf during the 1970s , along with almost the entire legal regime of the Aegean”, as mentioned by (Papakostas et al. 2019).

“The continental shelf concept was not foreseen in the provisions of the 1923 Treaty of Lausanne which, among other issues, established the status quo of the Aegean Sea. In 1936 Greece decided to expand its territorial waters from three to six nautical miles (nm). In 1964 Turkey opposed this, and Greece submitted the case to the International Court of Justice (ICJ) in 1976”, as noted by (Papakostas et al. 2019). It is noted that this was prior to the ratification of the United Nations Convention on the Law of the Sea (UNCLOS); Turkey refused to recognize the jurisdiction of ICJ at the time, and Greece’s application for arbitration was not entertained, (Cubukcuoglu 2014) notes.

“Since the early 1970s, Turkey has adopted a policy of contentions and claims in the Aegean Sea. This has drawn a canvas of ever-increasing disputes, initiated by the dispute over the delimitation of the continental shelf in 1973. Greece and Turkey came to the brink of armed conflict during the 1987 and 1996 crises, which stemmed from Turkish disputes Greek sovereignty in the Aegean”, (Papakostas et al. 2019) explain. Other issues that officially Turkey puts on the table are the demilitarized status of the eastern Aegean Islands, the airspace issue and the search and rescue operations (Republic of Turkey - Ministry of Foreign Affairs). Furthermore, since the 1990s Turkish officials have developed the theory of grey zones, which questions the sovereignty of certain Greek islands, islets and rocks in the Aegean, (Heraclides 2010) mentions. Official Turkish sources (Republic of Turkey - Ministry of Foreign Affairs).claim that *“it is an incontestable fact that there are many islets and geographical features in the Aegean Sea whose sovereignty is not indisputably given to Greece. Some of those disputed geographical features lie very close to Turkey’s*

coast in the Aegean Sea. Actually this issue is one of the stumbling blocks before reaching a settlement as regards the delineation of maritime boundaries between the two countries". It is a fact that the territorial state of the Aegean islands has been regulated by the Treaties of Lausanne in 1923 and Paris in 1947 and the Turkish – Italian agreement of 1932. Article 6 of the Lausanne Treaty states that *"In the absence of provisions to the contrary, in the present Treaty, islands and islets lying within three miles of the coast are included within the frontier of the coastal State"*, as found in (Martin 1924). Article 12 of the Lausanne Treaty states that *"regarding the sovereignty of Greece over the islands of the Eastern Mediterranean, other than the islands of Imbros, Tenedos and Rabbit Islands, particularly the islands of Lemnos, Samothrace, Mytilene, Chios, Samos and Nikaria, is confirmed, subject to the provisions of the present Treaty respecting the islands placed under the sovereignty of Italy which form the subject of Article 15"*, as found in (Martin 1924). Article 16 of the Lausanne Treaty states that *"Turkey hereby renounces all rights and title whatsoever over or respecting the territories situated outside the frontiers laid down in the present Treaty and the islands other than those over which her sovereignty is recognised by the said Treaty, the future of these territories and islands being settled or to be settled by the parties concerned. The provisions of the present Article do not prejudice any special arrangements arising from neighbourly relations which have been or may be concluded between Turkey and any limitrophe countries"*, as found in (Martin 1924). Based on the aforementioned, according to recent Greek experts' claims (Syrigos 2018), there are several islands and islets on the Turkish side that Greece could contest their sovereignty since they either lie beyond 3 nautical miles from the Turkish coastal shore or their legal state is not clearly stated in the Lausanne Treaty. Those islands are namely Prokonisos/Marmara Adasi, Afisia/Ava Adasi, Kalolimnos/Imrali, Koutali/Ekinlik and Provatonisi/Kuyus Adasi. It is worth mentioning that Princes' Islands territorial state, right outside Constantinople is not mentioned in any Treaty.

"Invoking the International Law of the Sea, Greece claims the right to extend its territorial waters to 12 nm at any time. Considering Greece has sovereignty over thousands of islands in the area, in such a case it would control almost three fourths of the Aegean Sea", (Papakostas et al. 2019) note, as illustrated in **Fig.18**.

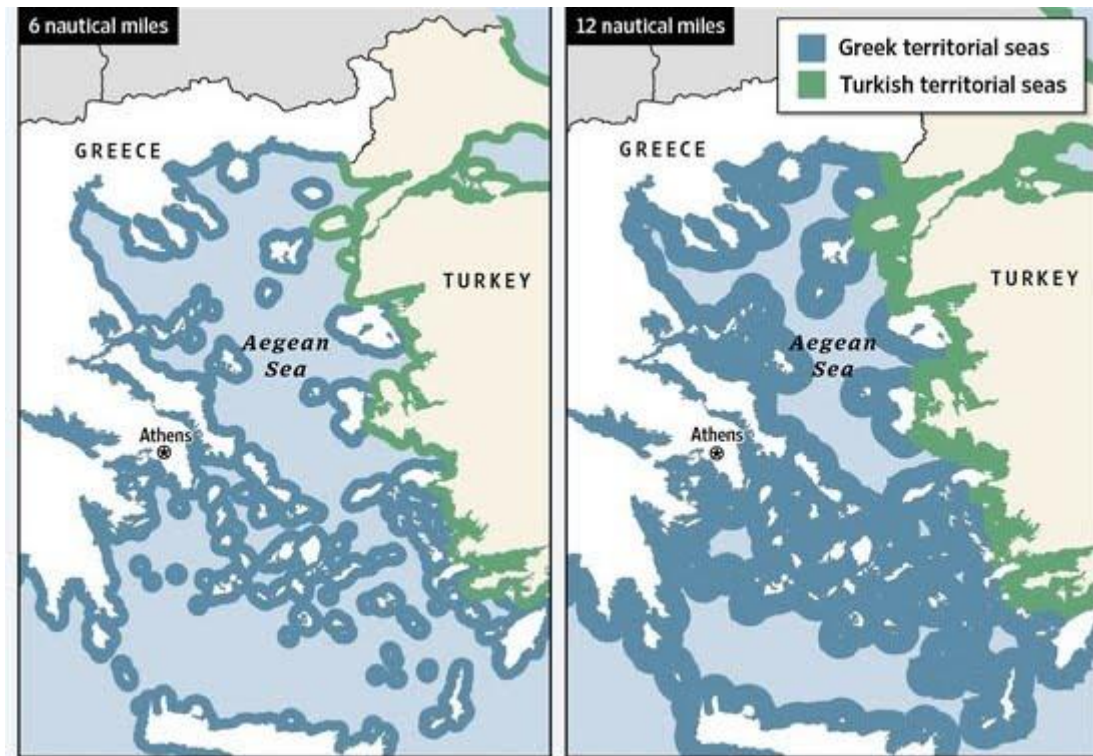


Fig.18. - Greek and Turkish territorial sea width in the Aegean in the context of 6 and 12 nm Greek territorial sea limit, respectively (Papadakis 2018).

Greece’s legal position about settlement of the EEZ dispute relates to the principle that *“islands have full right to exercise jurisdiction over their CS and coextensive EEZs as per Article 121 of UNCLOS”*, as claimed by (Cubukcuoglu 2014). Turkey contests this right on a *casus belli* issued by the Turkish National Assembly in 1995, granting the Turkish government full and perpetual competence to declare war, should Greece decide to extend its territorial waters beyond six nm. Furthermore, Turkey claims that *“Greek islands do not have rights to exert jurisdiction on the continental shelf, because they are located on the Turkish continental shelf”*, (Siousouras and Chrysochoou 2014) mention. The two different perspective of the two countries are illustrated in **Fig.19**. Despite Greece has not extended its EEZ to 12 nm thus far, it has attempted to seal agreements with Albania and Italy on delimitation of its EEZ in the Ionian Sea. On June 2020 Greece and Italy reached an agreement on EEZ delimitation of maritime zones between the two countries

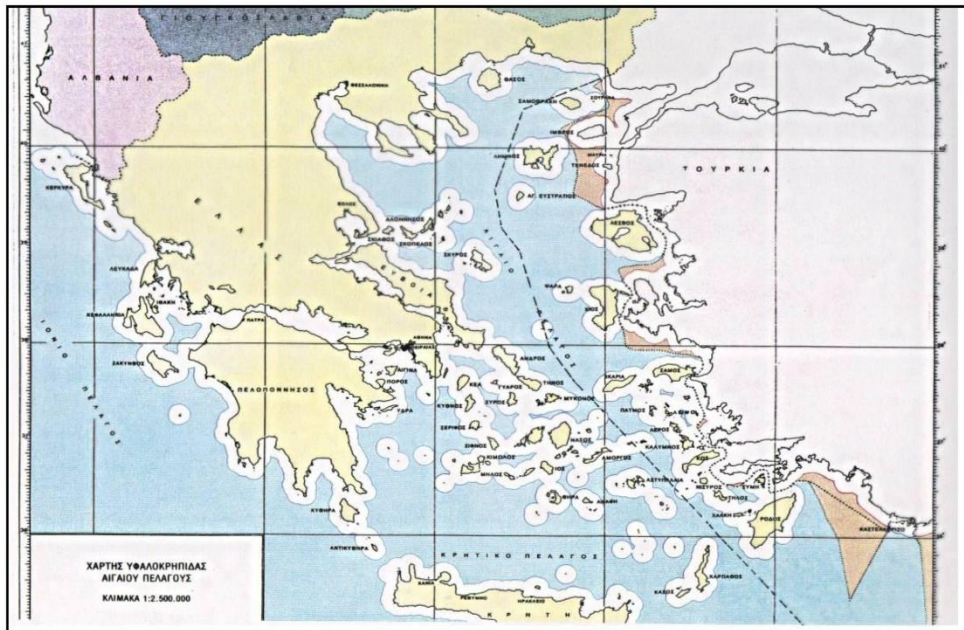


Fig.19. - *The Turkish Continental Shelf according to the Greek view (in orange) and the Turkish view (intermittent line).* (Siousouras and Chrysochoou 2014).

A new chapter in the Greek-Turkish disputes was opened on November 26th, 2019. Turkey and the GNA of Libya signed a Memorandum of Understanding which drew up the maritime boundaries between the two countries. In addition, it defined the areas where exploration and exploitation of hydrocarbons could take place. Greece immediately reacted, as the MoU was directly violating the Greek continental shelf. Greece's ambassador in the UN Maria Theofili sent two letters to the President of the UN and the President of UN Security Council outlining the reasons why the agreement violates the International Law and the UNCLOS. On December 19th, 2019 the Turkish Parliament ratified the agreement. The MoU has been denounced by Egypt and Israel too while the European Council on 12th December 2019, in its conclusions paragraph 19 stated: *"The Turkey-Libya Memorandum of Understanding on the delimitation of maritime jurisdictions in the Mediterranean Sea infringes upon the sovereign rights of third States, does not comply with the Law of the Sea and cannot produce any legal consequences for third States. The European Council unequivocally reaffirms its solidarity with Greece and Cyprus regarding these actions by Turkey."*, notes the (European Council 2019). According to reports (Nedos 2020) Turkey posted a map in the Turkish Government Gazette claiming 24 blocks for oil and gas exploration which lie on the Greek continental shelf as illustrated in **Fig.20**. If

Turkey proceeds with exploration activities in the indicated areas, a response from Greece which will lead to an inevitable escalation.

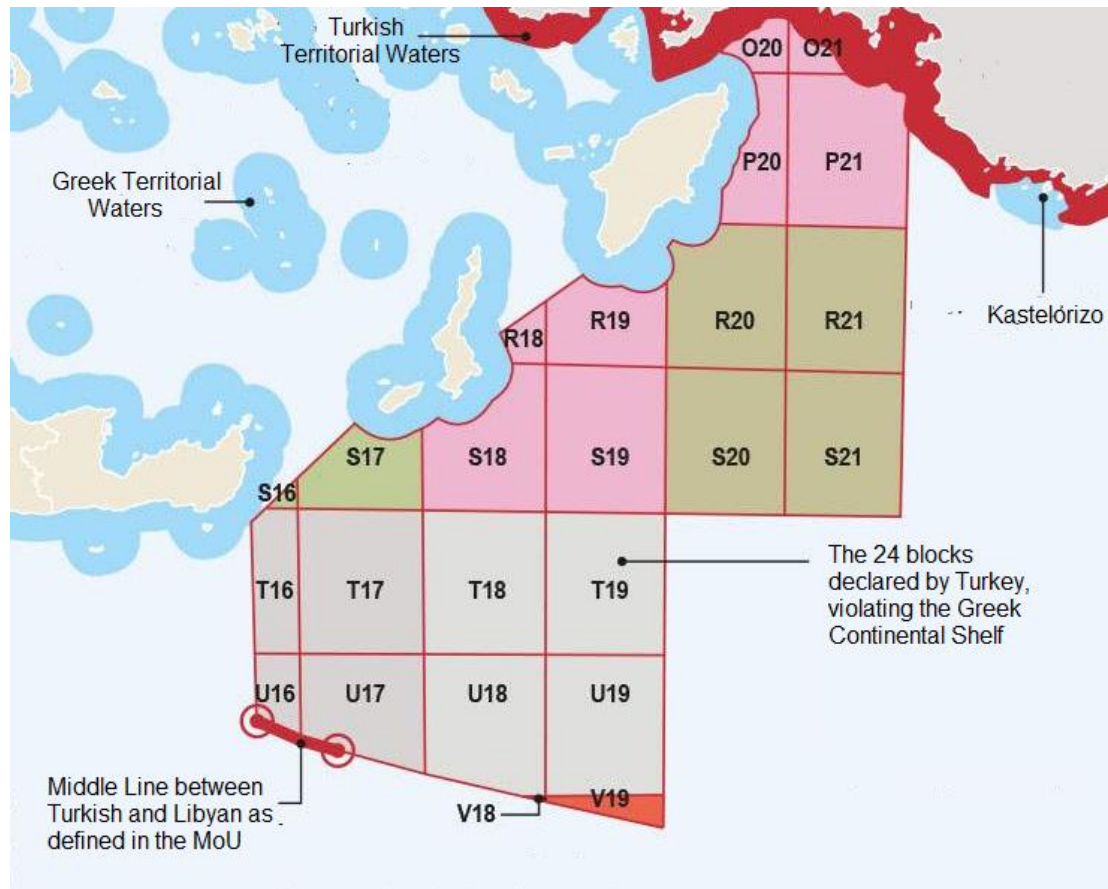


Fig.20. - *Turkish claimed blocks lying on the Greek Continental Shelf*

(Modified from: Nedos 2020)

Within the framework of the growing tension between Greece and Turkey in the beginning of March of 2020 incidents involving military and police forces of the two states took place in Evros river. Evros river is the natural land border between the two states. Turkey pushed thousands of migrants towards Greek borders in a leverage effort against Greek government. However, their entrance to Greece was prevented by Greek Army and Police forces. Turkey instrumented on multiple occasions the migration and refugee flows in the past as leverage against Greece and the EU, especially during 2015 crisis. On previous occasions the main targets were migrants were directed were the Greek islands. Turkish attempt was unsuccessful on this occasion. It is expected that Turkey will repeat this action in the future, in the context of low scale incidents between the two countries.

4.2.7. Israel – Turkey Relations

Relations of Israel and Turkey have gone through major transformation in the recent years. The two countries have signed a series of strategic agreements in 1996 and formed an alliance which was seriously damaged in 2010. AKP rise to power caused ideological and geopolitical shifts to grand strategy of Turkey. Turkey became the main supporter of Palestinians and criticized harshly the Israeli policy in the region on many occasions. The deterioration in the two countries relations began with Israeli war on Gaza in 2008-2009. In May 2010 the Israeli raid on Turkish ship Mavi Marmara which resulted in the death of nine Turkish activists, who were trying to break the blockade in Gaza, caused a record low in the bilateral relations of the two countries. The projection of Turkish offensive capabilities and intentions in the area alarmed Israel. Despite the fact that defense ties were suspended, “*commercial and economic ties continued and in fact boomed, hitting record high in volumes in 2011 and 2014*”, (Tziarras 2016) notes. In 2011 the Greece-Cyprus-Israel alliance emerged leading to the final freeze in relations between Turkey and Israel. Turkey strengthened its ties with Iran since 2011, fanning the flames of Israel’s perception of Turkey as a threat. “*In what followed, Israel and Turkey entered a brief period of rapprochement which soon returned to enmity*”, (Tziarras 2016) further notes.

On energy security terms Israel is seeking partners to transport and export gas. Turkey is a promising market gas exports due to its growing gas consumption, pipeline network and energy infrastructure. Furthermore, Turkish vision of becoming an energy hub has emerged. On this perspective the interests of the two countries could complement each other, according to (Bilgin 2019). However, aforementioned recent political circumstances deteriorate the possibility of cooperation. A further downturn in Israeli – Turkish relations occurred with the recent signing of the agreement for the construction of the East Med Pipeline between Greece, Cyprus and Israel. “*In terms of Turkey’s energy strategy, the possibility of a new pipeline through Turkey to Europe would contribute to its goal of becoming an energy hub in the region. As Turkey is situated at the centre of the transport routes from Levant to Europe, it hopes that any gas from the Levant will pass through Turkey en route to Europe*”, as explained by (Aydin and Dizdaroglu 2018). The tension between Turkey and Cyprus over exploration and exploitation of hydrocarbons blocked any possibility

that East Med pipeline would be built through Turkey. The fact that the East Med Pipeline circumvent Turkish claims and interests in the region pave the way for further tension between Turkey and Israel, Cyprus and Greece. Turkey in an attempt to weaken Greek and Cypriot position in the area, Turkey is proposing to the littoral states of Israel, Lebanon and Egypt, new deals that will replace the ones signed with the Republic of Cyprus. This policy was extensively described in the bibliography (Yayci 2012) and in the case of Israel, the proposed EEZ delimitation agreement is illustrated in **Fig.21**. Highlighted with red is the Turkish EEZ while the black line is the proposed limit between the two EEZ. Highlighted in yellow is the additional area that Israel will append in its current EEZ as defined according to delimitation agreement with Cyprus. The green line is the median line that currently delimits Cypriot and Israeli EEZ. Blocks 1,6,7,8,9,11,12 and 13 of Cypriot EEZ will be apportioned between Turkey and Israel in the event of such an agreement. It is interesting to notice that in case such a deal is signed Israel will be benefited acquiring an area equal to half of its existing EEZ. Apart from Cyprus, Turkey ignores the Greek islands of Dodecanese. However such an agreement is currently highly unlikely to occur between Turkey and Israel.

It is important to acknowledge though that there are several issues Israel and Turkey share interests. It was both states' wish to overthrow the Syrian regime of Assad and confront the Islamic State. *“Yet by taking into account recent Turkey–Israel relations, one could suggest that Israel remains suspicious of Turkish policies, at least as long as Erdoğan is in power – a fact that could prevent any improvements in their relationship in the immediate future”*, (Tziarras 2016) explains. In a recent report (Gross 2020), Israeli military notes that Erdoğan's aggressive policies in eastern Mediterranean is a security challenge to Israel. This mainly attributed to –claimed by Israel - close ties between Palestinian terror groups and Turkey, Turkey's increasingly bellicose actions in the region and the fact that AKP is allied with the Muslim Brotherhood.

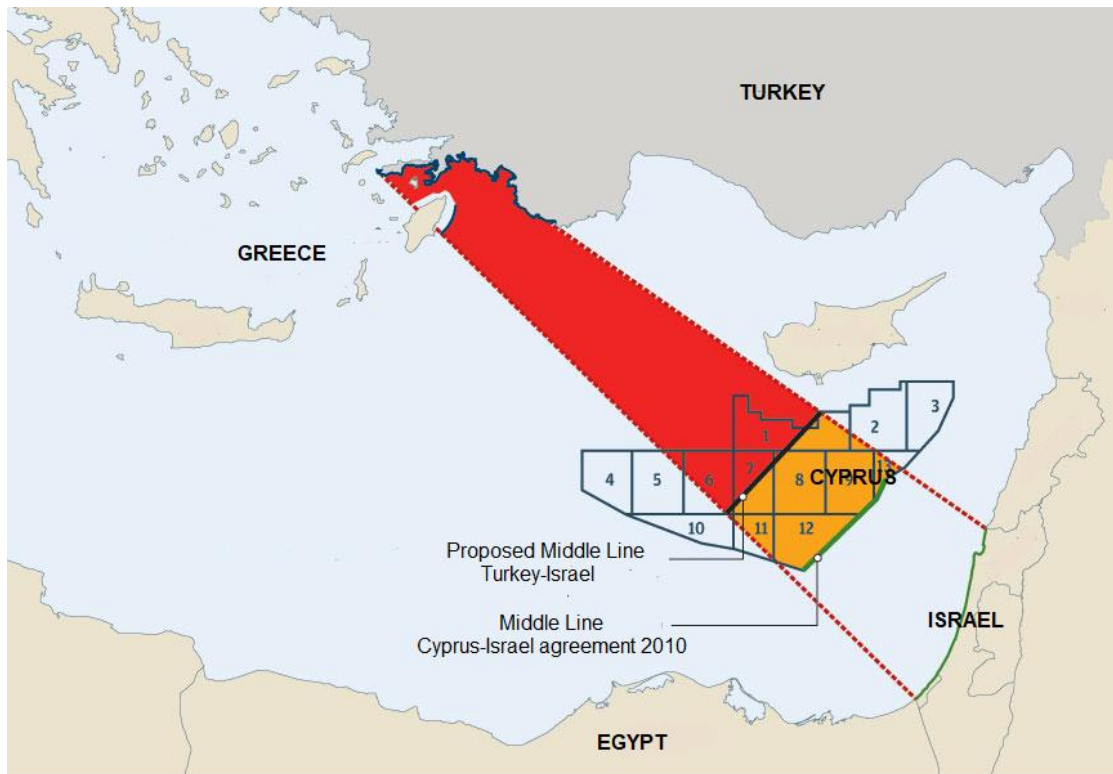


Fig.21. – *Turkey’s proposal on Turkish – Israeli EEZ delimitation agreement.* Modified from (Syrigos 2018).

4.3. Game Tree and Scenario Analysis

Taking into consideration all the aforementioned regarding the strategies of eastern Mediterranean countries as well as their bilateral relations, the game tree and scenario analysis are following. It is a dynamic game tree scenario of consecutive moves, which illustrates quantitatively the balance of power in the region, between Cyprus, Greece and Turkey.

“In this scenario Cyprus has the first move advantage. As long as Cyprus doesn’t halt exploration activities by oil companies in its EEZ and continues to follow a “strategy of the weak player” its payoffs will maximize. As “strategy of the weak player” we describe the policy of seeking to seal agreements based on international law with states and companies which share common interests and have the power to safeguard Cyprus interests to some extent too. It is impossible for Cyprus to adopt an aggressive strategy towards Turkey due to the absence of military might. If Cyprus would follow a submissive strategy towards Turkey then it would be forced to halt all exploration activities in its EEZ, cancel the contracts with oil companies and face both legal and economic consequences. Sovereignty and Integrity of Cypriot state in this case will be lost”, as explained by (Papakostas et al. 2019). The game tree is illustrated in **Fig.22**. Cyprus has the first move advantage. Thick black line shows the best strategy for each state given the circumstances.

“Considering that Cyprus will follow the strategy of the weak player, analysis suggests that Turkey will adopt an aggressive strategy. Turkey doesn’t recognize Cypriot EEZ and considers all the oil and gas explorations in the area under Cypriot license as illegal. Under this consideration, Turkey will continue to violate Cypriot EEZ both with drillships and warships. Turkey hopes that this will have a double impact in the situation. Firstly, by directly exposing Cyprus as a state which cannot guarantee the safety of oil companies in the area and subsequently forcing them to cancel or halt its operations. Secondly, by forcing Cyprus to accept Turkish claims and demands under military action threats. If Turkey follows a neutral strategy this would mean that it would lose a big cut of its claims since TRNC will have to reach an agreement with Cyprus. Most likely such an agreement will be in favor of the Cypriot side given the fact that contracts are already signed with oil companies and exploration activity has already begun. In case Turkey follows a pacifist strategy then it will eventually loose both all its claims and the claims of TRNC. The same strategy

Turkey is expected to follow as far as concerning its claims on Greek EEZ although things are a bit more complicated in this case. In the presence of Greek military might Turkey will be less aggressive and careful in case of violating Greek EEZ with drillships and warships. However, it is expected to continue to dispute the EEZ of Greek islands, given the delimitation agreement with Libya. Furthermore, given the fact that a casus belli exists over the possibility of declaration of 12 n.m. EEZ by Greece in Aegean, Turkey will try by all force to present this threat as valid to deter Greece from such an action. In any other case Turkey would be directly excluded from the energy game both in Aegean and Mediterranean and its naval routes will be blocked”, as explained by (Papakostas et al. 2019).

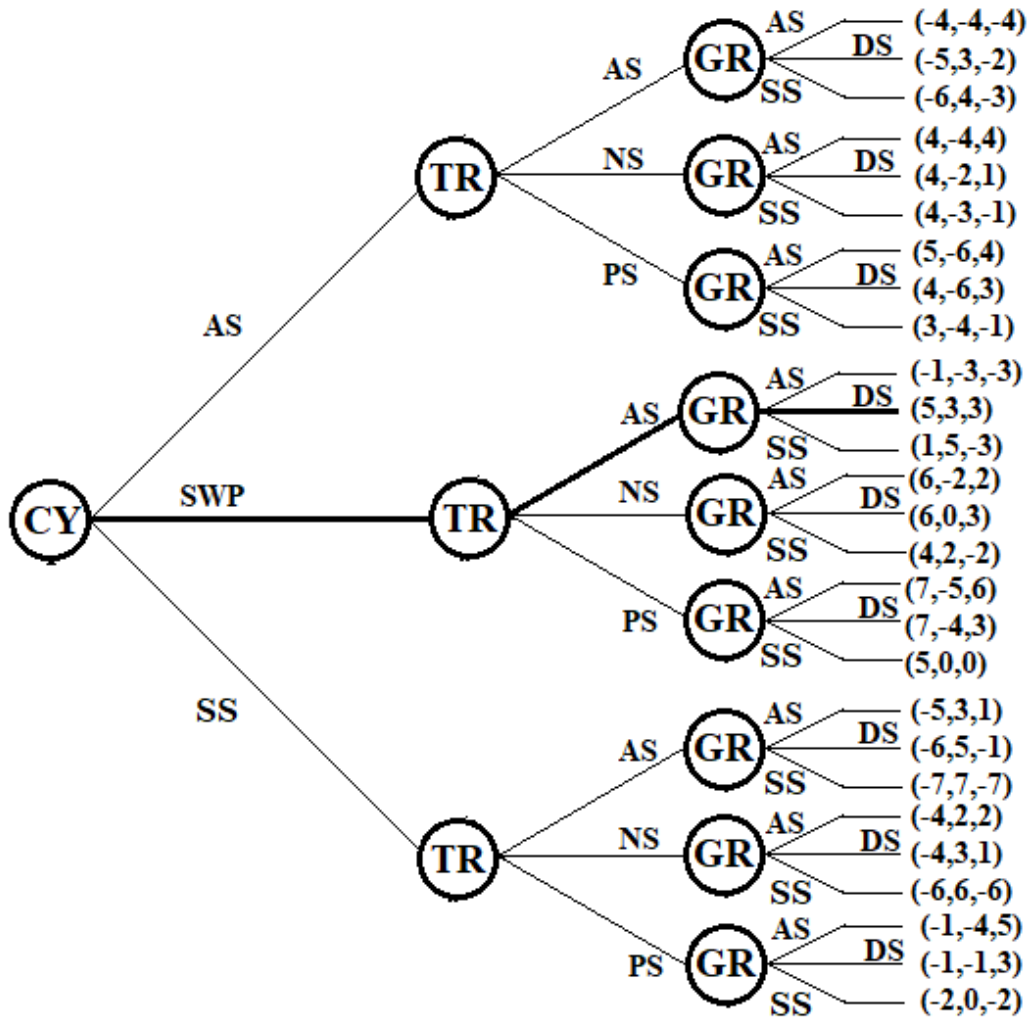


Fig.22. – Game theoretic illustration of the studied scenario. SS: Submissive Strategy, SWP: Strategy of the Weak Player, AS: Aggressive Strategy, NS: Neutral Strategy, PS: Pacifist Strategy, DS: Dispassionate Strategy (Papakostas et al. 2019)

Considering the strategies that will most likely be adopted by Cyprus and Turkey, Greece will maximize its payoffs by following a dispassionate strategy. This means that Greece will try to deter any military action by Turkey both on Aegean Sea and “Cyprus, but simultaneously will try to safeguard its rights on diplomatic level. Greece is expected to attempt to sign delimitation agreement with Egypt and Cyprus. Simultaneously Greek Government is expected to subtly observe situation in Libya”, as (Papakostas et al. 2019) explain. Greece will try by all means to thwart any activities resulting as effects of delimitation agreement between Libya and Turkey. Given the unstable political situation in Libya, Greece should be expected to attempt to seal its own delimitation agreement with Libya under favorable circumstances in the future. “An aggressive strategy by Greece is not likely since its army has adopted a defensive doctrine towards Turkey and is focused on safeguarding the state’s interests, integrity and sovereignty in the region. If Greece adopts an aggressive strategy, then a full-scale war is most likely unavoidable and this could mean disastrous results for all sides. Greece is not expected to follow a submissive strategy since this would constitute a *de facto* and possibly *de jure* acceptance of Turkish claims in the Aegean and Eastern Mediterranean. In this case, Greek islands will lie within the claimed Turkish EEZ and the next steps for Turkey will undoubtedly be to claim them as part of Turkish state. Exploration activities South of Crete will have to halt too and Greece will have to pay huge refunds to the oil companies. Lastly, this would mean that although Greece has signed the UNCLOS, it is *de facto* not applying it and will not be able to invoke it in any of its delimitation talks with littoral states in Ionian Sea or Mediterranean. The latter applies for Cyprus too in case of adoption of submissive strategy.

To sum up, the equilibrium of the theoretic game with the best payoffs for all three states occurs when Cyprus adopts the strategy of weak player, Turkey adopts aggressive strategy and Greece adopts a dispassionate strategy. A case of full-scale war is unlike since both Greece and Cyprus are not expected to follow an aggressive strategy. Turkey is not expected to follow a neutral or pacifist strategy. Greece and Cyprus are not expected to follow a submissive strategy”, as analyzed by (Papakostas et al. 2019).

CHAPTER 5 – CONCLUSION

“Using game theoretic tools to analyze situations of geopolitical conflict allows the introduction of quantitative tools. Turkey, Cyprus and Greece will continue to be entangled in an unusual sort of a chicken game where everyone understands that blinking is ultimately unavoidable. Cyprus’ main targets are to secure its oil and gas exploration and exploitation rights which will boost its economy and diplomatic status while simultaneously will act as a shield towards its integrity and sovereignty. Turkey’s main targets are to maintain its naval routes from Black Sea to Mediterranean open and participate in the hydrocarbon game of the Eastern Mediterranean. Greece’s main targets are to secure and initiate oil and gas exploration and exploitation activities both in Aegean and eastern Mediterranean while protecting its integrity and sovereignty”, as explained by (Papakostas et al 2019).

“Turkey will probably continue to violate Cyprus’ EEZ aiming to disrupt exploration or production of hydrocarbons in the area as well as any pipeline construction and installation which opposes its interests. This will affect Cyprus’ energy security. Turkey likely will try to challenge Greece over the area claimed by Turkish-Libyan MoU by sending drillships and warships, an act that will definitely cause a small scale incident in the area. Simultaneously Turkey is expected to keep pressuring Greece using immigrant waves as leverage. Turkey is unlike to get involved into a full-scale war with Greece due to Greek military might, Greece’s regional alliances and the situation of Turkish economy. In case Greece expands its EEZ in Aegean Sea to 12 n.m. Turkey most probably will choose to avoid again a full-scale war. In any case, Turkey is expected to continue challenging the Greek EEZ and continental shelf by causing small scale incidents in the area”, (Papakostas et al. 2019) point.

In a number of scenarios Turkish plans in the area could be devastated. *“In case Turkey fails to find an agreement with any of the littoral countries then its naval routes to Mediterranean will be blocked in the future and it will be excluded by the hydrocarbon game in the area”, (Papakostas et al. 2019) explain. Equal results will be produced for Turkey in case Greece manages to seal a delimitation agreement with Cyprus and Egypt. Ultimately if GNA collapses in Libya or a partition of Libya*

occurs then Turkey will be left without allies in the region. This probably will affect the energy security of the region since Turkey is not expected to accept idly any oil and gas exploration or exploitation in the area without its involvement. The same applies in cases of delimitation of Greek and Cypriot EEZ or expansion of Greek EEZ to 12 n.m.

Turkey will likely manage to secure a small part of the resource pie, probably in Libya; *“Greece will likely maintain a dispassionate stance; and Cyprus will strengthen its positions by diplomatic means bringing more countries into the game; war will be avoided. Game theoretic models become exponentially unwieldy as more players and strategies are added, so external actors are treated qualitatively. Third parties such as the European Union, Russia and Libya will affect aspects of the situation. A future reexamination of the situation as events unfold is necessary”*, as noted by (Papakostas et al. 2019).

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