Journal Homepage: -www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI:10.21474/IJAR01/6780
DOI URL: http://dx.doi.org/10.21474/IJAR01/6780

RESEARCH ARTICLE

STATUS AND FUTURE CONSIDERATIONS OF THE OIL AND GAS SECTOR IN CYPRUS NIKOLAOS GEORGAKOPOULOS MECHANICAL ENGINEER, MSC IN OIL AND GAS MANAGEMENT – FINANCE AND INVESTMENT ROUTE.

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Manuscript Info

Manuscript History

Received: 19 January 2018
Final Accepted: 21 February 2018
Published: March 2018

Keywords:-
Cyprus, Hydrocarbons, Energy Policy

Abstract

Developments in the Oil and Gas Industry have witnessed a great boost in recent years in Cyprus, an *'energy island'*. The present research paper presents the legal framework regulating the Oil sector in Cyprus before proceeding in presenting current and possible future hydrocarbon discoveries *within its Exclusive Economic Zone*. Simultaneously, political issues in the South-East Mediterranean region, the delimitation of Exclusive Economic Zones and possible export options are being taken into consideration and analyzed in depth. The most prominent way to approach this topic was through studying all the interrelated issues that have an impact on the subject under analysis. The research was based on accumulating multiple data from various sources that were later evaluated. Interviews were held with experts of the SE Mediterranean Oil Sector, Energy Consultants, Economists, Negotiators, and Energy Analysts. Additionally, to ensure a sufficient sample of data, other authorities, oil companies, as well as individuals from other organizations who are actively related to the subject, were approached. The results of the study point that Cyprus is presented with new economic and geopolitical opportunities that through prudent management, cooperation, and the support of the EU could achieve the overall goals of boosting economic growth, developing the Cypriot Oil and Gas Industry, thus playing a key role in reducing the EU's dependency on energy imports by diversifying supply routes and/or supply sources.

Introduction:-

The European Union, although a large-scale energy consumer, still remains heavily dependent on energy imports from non-member states. The EU imports around 54% of the overall energy, 90% of the crude oil, and 66% of the natural gas consumed within its member states. All member states use gas for their energy needs except Cyprus and Malta. The major crude oil and natural gas suppliers for the EU are Russia and Norway followed by Algeria, while a 12% share of the EU's gas imports is holding by Qatar, Nigeria, Libya, Azerbaijan, and Trinidad & Tobago. Forecasts give a natural gas dependence of 80% by 2020. For the economy and the prosperity of the EU encouraging investments in exploration and eventually production of Oil and Gas in its member states, diversifying supply

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sources, increasing LNG imports, and developing strategic reserves are all of crucial importance (Baconi, 2017; Colombo et al., 2016; Mavrakis et al., 2006; Tagliapietra, 2017). Following the recent upstream developments in the Eastern Mediterranean, this area can be seen as a source of natural gas and as a transportation route for supplying gas to Europe. The EU wants to create a Mediterranean gas hub in the South of Europe and began viewing LNG terminals as a way to diversify its natural gas suppliers.

Cyprus is fully dependent on Oil and Gas imports (dependency rate over 93%) but follows a very important exploration program within its Exclusive Economic Zone (EEZ). The EEZ delimitation agreements with Israel, Egypt and Lebanon created excellent investment opportunities, mainly due to the fact that natural gas discoveries are flourishing in Israel and Egypt (i.e. *Zohr* and *Leviathan* discoveries) (Leal-Arcas and Abu Gosh, 2013). Despite the worldwide drastic cuts for new exploration opportunities, the past ten years have witnessed a remarkable expansion of the upstream activities in the country. Major oil companies have expressed strong interest in acquiring exploration licenses, take advantage of the Oil and Gas opportunities and strengthen their position in the SE Mediterranean region. Depending on the future hydrocarbon discoveries, Cyprus aims at positively contributing to the European energy security of supply.

Legislation and regulatory framework in Cyprus:-

To define, delimitate and establish an EEZ with all its neighboring countries, the Republic of Cyprus proceeded to the ratification of the United Nations Convention on the Law of the Sea (UNCLOS) in December 1988. In 2004 the 'Exclusive Economic Zone and Continental Shelf Law (Law No. 64(I)/2004)', defined and regulated the EEZ. It was then submitted to the Secretary-General of the United Nations. This Law was amended in 2014 by Law 97(I)/2014. Based on the *median line principle*, the Republic of Cyprus signed in 2003 a delimitation agreement of the EEZ with the Arab Republic of Egypt. The agreement was ratified in 2004. With the enactment of Law 64(I)/2004 Cyprus signed, in 2007, a delimitation agreement of the EEZ with the Republic of Lebanon, in 2010 a delimitation agreement of the EEZ with the State of Israel (ratified in 2011), while, in 2013 a '*Common Utilization Agreement with the Arab Republic of Egypt*' was signed. Concerning Oil and Gas exploration and exploitation in Cyprus 'The Hydrocarbons (Prospection, Exploration and Exploitation) Law No. 4(I) – 2007', amended by Laws 126(I)/2013 and 29(I)/2014 (Hydrocarbons Law) and Regulations No.51/2007 and No.113/2009, applies. This Law harmonized Cypriot legislation with European Directive 94/22 EC to ensure non-discriminatory access for all companies, public or private, to the prospecting, exploration and production activities. Under Law No. 4(I) – 2007 all hydrocarbons found in the territorial sea, the continental self and the EEZ of the Republic of Cyprus belong to the Republic of Cyprus. In 2015, the European Commission presented a roadmap for a "European Energy Union" aimed at ensuring supply security, the creation of a fully-integrated internal energy market, reduction of GHG emissions, encouragement of research and innovation, improving energy efficiency by 20% until 2020. However, "*energy islands*", not connected to any energy system still exist, especially in SE Europe. These islands really need an exemption *"across the board"* from the provisions of the European Union Energy Law on their market design as well as on their regulatory framework. Within this context, Directive 2009/73/EC (L211/94) *concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC*, states that Cyprus may derogate from Articles 4, 9, 37 and/or 38. Such derogation shall expire from the moment when Cyprus is not qualifying as an isolated market. The Republic of Cyprus uses *Production Sharing Contracts (PSCs)* as the legal base between the Republic and the IOC's in charge to develop the Oil and Gas reserves of the country. Cyprus Government published, as part of the second licensing round launched by the Republic of Cyprus in 2012, a 'Model Exploration and Production Sharing Contract' (MEPSC). A combination of corporate income tax (CIT), capital gains tax (CGT), immovable property tax (IPT), VAT and excise duty is applied in Cyprus. No royalties are applied.

Table 2 summarizes the fiscal regime concerning hydrocarbons exploration and exploitation activities in Cyprus. The corporate tax rate in Cyprus is at 12.5% being one of the lowest corporate income tax rates in the EU offering investors and fund promoters stability during the Oil and Gas production period (25-35 years).

TAX	%
Corporate Income Tax (CIT)	12.5%
Capital Gains Tax (CGT)	20%
Immovable Property Tax (IPT)	0.6%–0.19%
Branch Tax Rate	12.5%
VAT	19%
PSC, Bonuses, Surface Rental Fees	Yes

Table 2:- Fiscal Regime concerning hydrocarbon exploration and exploitation activities in the Republic of Cyprus (Source: Global Oil and Gas Tax Guide, 2015)

Three types of licenses are available in Cyprus: Prospecting license, Exploration license and Exploitation license which is primarily granted for 25 years (one renewal ability of up to 10 years). The lessee can export oil and gas to any country with the exception of entities controlled by countries hostile to Cyprus (clause 28.4 of the MPSC). In March 2014, based on the Council of Ministers' decision no. 75.903/16.10.2013, defining the provisions of the Company's Articles of Association, the Cyprus Hydrocarbons Company (CHC), a state-owned company, was established. A first licensing round, open to foreign investors was launched by the Republic of Cyprus in 2007 for a total of eleven offshore blocks within the Exclusive Economic Zone [blocks 3 and 13 were excluded]. The results were disappointing as this round attracted just three bids and only one Hydrocarbon Exploration License was awarded to US upstream Noble Energy for offshore Block 12. The discovery of the *Aphrodite* natural gas field, located at the Cypriot exploratory block 12, was announced in 2011 while, in 2016, Cyprus pronounced the gas reserves of *Aphrodite* field commercially exploitable. A second competitive international bid round offshore Cyprus was launched in February 2012 for the 12 remaining blocks. The second round can be considered as a large success since five Companies and ten Consortia submitted 15 bids for nine out of the twelve blocks and in total 33 applications for licenses were made. From this auction process, Cyprus was awarded blocks 2, 3, 9 and 11. In a third competitive bid round launched by the Republic of Cyprus, few months after the world-class super giant *Zohr* discovery, Eni has been chosen as selected bidder for Blocks 6 and 8. Block 10 was awarded to the Consortium of Exxon – Mobil and Qatar Petroleum.

Political context and economic impact:-

Several cogent analyses have been published so far on the economic and political issues in Cyprus and the South-East Mediterranean (Ashurst, 2012; Engdahl, 2013; Faustmann et al., 2012; Giamouridis, 2012; Giamouridis, 2013; Grigoriadis, 2014; Gürel et al., 2013; Gürel and Le Cornu, 2014; Hazakis and Chailis, 2013; Karakasis, 2014; Kariotis, 2011; Kassinis 2012; Khadduri, 2012; Koranyi and Andoura, 2014; Neocleous et al., 2011; Paraschos, 2013; Sozen and Faustmann, 2016; Thrassou et al., 2016; Tsakiris, 2013, 2017; Tziarras, 2016; Ulusoy, 2016; Winrow, 2009; Winrow, 2016). Cyprus, being a small country, has limited market potential as well as small-scale energy domestic needs. Hence, discovered gas within its territory is forecasted and intended to be used mainly for exports. A pipeline to Greece, which is considered to be a possible export route, could potentially give access to European networks. One of the propositions made by the Republic of Cyprus is the development of an onshore LNG plant at "Vassilikos", located on the southern coast of the island, aiming at exports towards European and Asian markets. A private sector project '*EuroAsia Interconnector*' that would allow for an underwater electricity cable to link Cyprus, Israel and Greece by 2022 was announced and the three countries committed to aid to the best of their capacity this aspiring project. The '*EuroAsia Interconnector*' is one of the '*Projects of Common Interest*' that the European Commission has approved regarding energy issues in the South-East Mediterranean region. Another proposed project is a pipeline that would link Cyprus gas fields via Crete to mainland Greece (PCI Eastern Mediterranean Gas Pipeline - *East Med*). As aforementioned it is of great importance for the European Union to diversify supply and ensure security. Towards supporting security issues, reform strategies have started being developed in the energy sector of plenty Mediterranean countries in the context of the *Euro-Mediterranean Free Trade Area* and many papers have been written in regard to such issues including, among others, Patlitzianas (2006) and Stergiou (2016, 2017). Following the significant hydrocarbon discoveries, the huge 'play opener' Egypt's *Zohr* discovery just 6km from the boundaries of Cyprus' Block 11, as well as the intense exploration activities, it is expected that Oil and Gas resources could have in the future the potential to satisfy the domestic Oil and Gas requirements and generate large export revenues. Thus, policymakers are confronted with various challenges related to these new energy opportunities. Additionally, the European Union (EU) is looking toward Cyprus, an EU Member State, as an option to diversify sources of natural gas supply while EU's projects also include the construction of LNG terminals to ensure access to flexible fuel alternatives as well as the development of small-scale LNG. Large capital investments are of course required to convert resources into reserves, especially in a period of declining oil prices, but the presence of energy giants such as ENI, Total, ExxonMobil, Qatar Petroleum and Shell in Cyprus, to explore for oil and gas, greatly encourage local expectations. Cyprus dependence on imported petroleum products is at 93%, recording an energy trade deficit (in GDP terms) among the largest in the EU. Following the natural gas discovery by Noble Energy in Block 12 and a recent lean gas discovery in Block 6 Offshore Cyprus by ENI (ENI, 2018), a radical change in the energy sector of Cyprus is expected, mostly if all other exploration activities currently under way, deliver the expected results. Based on expectations that in the near future oil and/or gas new discoveries would continue, Cyprus wants to become an LNG hub in the Mediterranean, and

examines several export options. This first natural gas field is estimated to hold 4,5 TCF (trillion cubic feet) of recoverable gas reserves. Up to now, gas is not supplied to Cyprus and there is no relevant infrastructure already in place. *A key success factor* for *hydrocarbon licensing rounds* in Cyprus is the short completion time, within 9-10 months after the announcement, despite the fact that the negotiation committees have an "inter-ministerial character" with members from the Ministries of Foreign Affairs, Defense, Interior, Finance, and Environment. *Another key success factor* is the adoption of a corporate tax rate of 12.5%, one of the lowest corporate income tax rates in the EU, which offers investors and fund promoters stability during the Oil and Gas production period (25-35 years). According to Cypriot experts, under the PSC for Block 12, the Government's take will be 40 to 45% and Cyprus Hydrocarbons Company, having the responsibility – among others – to market the Government's ownership interest of produced hydrocarbons, can sell gas to the domestic market (Natural Gas Public Company – DEFA) or to other foreign markets. Cyprus is an *'energy island'*, the last member of the EU to remain fully isolated without any electricity or natural gas interconnection capacity available. According to Article 49(1) of EU Directive 2009/73

'of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC'

Cyprus is considered to be an isolated market, while, at the same time, according to Article 49(2), Cyprus is considered to be an emergent market. De Hauteclocque and Ahner (2012) analyse the opening of the gas market of the Republic of Cyprus as well as the Third Energy Package's derogation system for energy islands. Within this context they also analyse the power of the Cyprus Energy Regulatory Authority (CERA) in monitoring this gas market.

The authors conclude:-

'The Third Energy Package's derogation system for energy islands should, strictly, be used to ensure the viability and attractiveness of the investments and, in particular, should not reduce the role, power and responsibilities of the national regulatory authority, especially on the issues of security of supply, transparency and consumer protection through the proper regulation of tariffs, bearing in mind that the market will be monopolistic'.

Following the discovery of *Aphrodite Gas Field*, yet untouched, located at the exploratory drilling Block 12, the large natural gas discoveries in the Levant Basin, as well as the intense exploration activities within the maritime Exclusive Economic Zone of the Republic of Cyprus after three consecutive licensing rounds, experts agree that, despite regional politics, and territorial disputes, Cyprus is set to play a key role in the near future. An energy dilemma that arises is that the natural gas reserves of *Aphrodite Field* are more than enough to meet the domestic needs of Cyprus, estimated by experts at a maximum of 25 bcm / y of natural gas for the next 25-30 years. This represents around 10% - 15% of the capacity of the field, in the hypothesis that natural gas will cover 75% of the power sector and 50% of the industrial demand. However, when examining the option to utilize Aphrodite Field's natural gas domestically, some very important factors arise and have to be taken into consideration:

1. The remaining 85% - 90% of Aphrodite's recoverable reserves should be exported through a 15-year contract of 7-7, 5 bcm / y and through export infrastructures the location of which is still uncertain,
2. The lack of any natural gas infrastructures (overland pipelines, power plants in which fuel oil must be replaced by natural gas, industrial facilities) on the island,
3. The need to built a costly 200-km pipeline to bring the gas to the island.

One of the propositions made by the Republic of Cyprus was the development of an onshore LNG plant at *"Vassilikos"*, located on the southern coast of the island. Aphrodite's gas alone is insufficient for even a single LNG Train to be developed in Cyprus. A less expensive option, according to experts, is to send gas from Aphrodite field to Europe, using LNG terminals in neighboring countries, and more specifically the LNG terminals of Idku and Damietta in Egypt. Apart from the construction of an LNG terminal in Cyprus, several other proposals to export gas from Cyprus are being discussed. Funding opportunities and the support of the EU are critical success factors for these projects alongside the premise of exploration leading to new natural gas (and/or oil) discoveries. The following natural gas export options can be mentioned:

The EastMed pipeline, a Project of Common Interest under the Energy Priority Corridor 7 – 'Southern Corridor' them e: "Pipeline from offshore Cyprus to Greece mainland via Crete". The project aims at directly connecting the East Mediterranean gas resources to the European grid and two EU countries, Greece and Cyprus, are involved.

the use of Egypt's two LNG facilities, Idku and Damietta, for shipment to Europe. These two Egyptian LNG terminals can be used by Cyprus, despite the fact that Egypt is slowly moving closer to restarting LNG exports.
In case of new discoveries, Cyprus can become a sole exporter. Until that day, regional cooperation with Israel and Egypt is the only option for addressing gas export challenges.

Conclusion:-

The European Union remains heavily dependent on energy imports from non-member states. Nearly all of EU's crude oil and natural gas imports come from non member states while, with the exception of Cyprus and Malta, all member states use gas for their energy needs. Many countries in Central and South East Europe depend on a single supplier for most or all of their natural gas. Market-based forecasts give a natural gas dependence of 80% by 2020. A strong divergence in energy matters exists between Eastern and Western European Countries. Were we to make a basic, simple division of the map of Europe, countries located towards the western part have developed an integrated and competitive natural gas market, and have constructed LNG regasification terminals, gas storage facilities and underground storage facilities, electricity interconnectors, as well as reverse flow pipelines, while energy policies strongly support the development of renewable energies. Thus, Western Europe has become very attractive to the energy suppliers. On the contrary Eastern Europe Countries still rely much on coal or on lignite and to a lesser extent on oil, but these countries have also made significant progress concerning the development of natural gas supply infrastructures. In order to further open up the gas markets, the EU and the member states have adopted new Directives as well as new deadlines for their completion. The European Third Energy Package (March 2011), consisting of two Directives and three Regulations, is a legislative package with the aim to develop a more harmonized European internal market and to depoliticize natural gas. Moreover, as previously mentioned, in 2015, a roadmap for a "European Energy Union" was presented. Within this context Cyprus, an EU member state, aim at positively contributing to the European energy security of supply as well as to the diversification of supply routes. Up to now gas is not supplied to Cyprus, which still remains an isolated *energy island*, and there is no relevant infrastructure already in place. Cyprus has adopted a modern legal and regulatory framework. The new Hydrocarbons legislation is considered as a tool to integrate adaptation of relevant international policies, experiences and best practices. It also aims at being a business-friendly framework, and build confidence to investors by establishing competitive, clear and transparent procedures. The Republic of Cyprus uses *Production Sharing Contracts (PSCs)* as the legal base between the Republic and the IOC's in charge to develop the Oil and Gas reserves of the country. In order to evaluate the hydrocarbon potential and further promote offshore areas for hydrocarbon exploration and exploitation, Cyprus has launched, in the last decade, international calls for proposals inviting companies to apply for hydrocarbon exploration and exploitation within the EEZ. The EEZ delimitation agreements with Israel, Egypt and Lebanon created excellent investment opportunities, mainly due to the fact that natural gas discoveries are flourishing in Israel and Egypt (i.e. *Zohr* and *Leviathan* discoveries). Exploration for new oil and gas fields led to an important natural gas discovery by Noble Energy in Block 12 and a recent lean gas discovery in Block 6 by ENI within the EEZ of Cyprus. Following these discoveries, a radical change in the energy sector of Cyprus is expected, mostly if all other exploration activities currently under way, deliver the expected results. Based on expectations that in the near future oil and/or gas new discoveries would continue, Cyprus wants to become an LNG hub in the Mediterranean, and examines several export options. In case of additional new discoveries, Cyprus can become a sole exporter. Until that day, regional cooperation with Israel and Egypt is the only option for addressing gas export challenges. Cyprus is cooperating with Greece, Israel and other countries in several EU's Projects of Common Interest. The European Union has to fortify its energy diplomacy, support and expand PCI's in this part of the Mediterranean region, and also assist efforts aiming to build regional cooperation. Through *good* governance and effective management, Cyprus tries to achieve his national energy development goals.

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