



מרכז חיפה למחקרי מדיניות ואסטרטגיה ימית Haifa Research Center for Maritime Policy & Strategy

# MARITIME STRATEGIC EVALUATION FOR ISRAEL 2016

Chief editor: Prof. Shaul Chorev

Edited and produced by: Ehud Gonen



# Chapter 9: The geopolitical aspects of the gas reserves in the economic waters of Israel

# Eyal Hayut-Man and Elai Rettig

The chapter is based on a joint-committee report of the Hudson Institute (Washington, U.S.A.) and the University of Haifa prepared by Mr. Eyal Hayut-Man, the committee coordinator on the Israeli side. Additions and updates: Mr. Elai Rettig

#### General

The discovery of two large maritime gas fields – 'Tamar' in 2009 and 'Leviathan' in 2010 – has a major impact on the State of Israel on three key interconnected levels: Energy security, economic development, and the reinforced geopolitical status of Israel as a gas exporter.

**Energy security**: Ostensibly, a country's concern for its energy security should be the first and most important aspect of decision makers when devising a long-term energy policy. In practice, although energy security concerns had accompanied the State of Israel since its establishment, in the last decades, as well as in times of crisis and war, an energy shortage has not been felt in Israel.¹ Moreover, Israel imports crude oil for refinement and export of oil distillates on a scale that greatly exceeds the consumption of the local market, indicating that there is no significant problem involving the import of crude oil to Israel in large quantities. Nonetheless, energy security interests, which require long term assurance of an inexpensive, local and available energy source (after many decades of total dependence on importation from other countries) – remains central as far as Israel is concerned.

**Economic development:** The development of the economy, which coincides with development of the gas fields, stems mainly from the use of an energy source whose present and predicted price is lower for the Israeli economy compared to the use of other energy sources (primarily for electricity production, industry and transportation). This fact has a direct effect on the cost of living and production in Israel, as it contributes to the competitiveness of the export industries by lowering production prices compared to international markets. Furthermore, the transition

Incidents such as terrorist attacks on the gas transport infrastructure from Egypt (2011) or the Second Lebanon War (2006 led to a change in the fuel mix used for industry and electricity, which resulted in rising prices. Nonetheless, an energy shortage was not felt by the public.

to natural gas lowers costs related to air pollution caused by the use of coal and oil distillates (primarily in the public health sphere). Beyond the economic development stemming from the domestic use of local gas, the gas discoveries will increase foreign currency income as a result of their export, which will enable in turn an increase of exportation and development of additional infrastructure for the domestic economy. Furthermore, in recent years a new industrial branch has been developing in Israel focusing on energy technologies which better utilize the use of natural-gas.

**Geopolitical status**: Energy exports (gas in the Israeli case) are not only an economic good, but a tool of strategic significance. This is true both for the country importing the gas (which requires stability and reliability of supply) and for the exporting country, which gains significant pressure leverages over the importing countries. Nonetheless, these leverages can be a double-edged sword and work against the exporting country. This may happen if the exporter develops economic dependence on a limited number of customers who have other suppliers available for them, and can thus threaten to sever trade relations and use other alternatives. Therefore, mindful and prudent planning of the country's gas export policy is vitally important in determining the geopolitical influence that it is likely to have. We can note as an extreme example the Russian energy export policy, which constitutes a direct continuation of the Russian foreign policy. There are even those who cynically claim that Gazprom (the largest gas and oil exporter in Russia) has replaced the Red Army as a tool for achieving the objectives of the Russian foreign policy.<sup>2</sup>

# The importance of setting a structured policy for gas exports

Notwithstanding the relatively modest amount of gas available to Israel for export purposes, proper use of this amount can yield positive geopolitical results. A proper gas export policy can assist in strengthening countries with a common interest to Israel (such as Jordan and Egypt), assuage rivals (Turkey), strengthen Israel's status in Europe by satisfying part of its increasing energy consumption, and even strengthen Israel's international status by exporting gas to distant markets such as the Asian market. Due to the limited quantity of the gas for export and the high cost of establishing infrastructure for the advancement of any objective, Israel will need to select and prioritize specific objectives. This prioritizing will be done by formulating a well-organized export policy.

<sup>2</sup> Kari Liuhto: Energy in Russia's foreign policy

Gas exportation is perceived by Israeli decision makers as a source of security stability and as a catalyst for regional economic cooperation, which would highlight the necessity and the contribution of Israel to its region. This interest was particularly heightened in light of the perceived distancing of the United States from the Middle East region in recent years. Furthermore, exportation of gas to European countries is perceived by decision makers as a component in the battle against the possibility of economic boycott against Israel. The Government of Israel believes that exporting gas to Greece, Cyprus, Italy, and to additional EU member countries could help in preventing any initiatives for economic sanctions by the European Union since sanctions require a unanimous consensus. Nonetheless, it should be noted that this assumption is inconsistent with the relatively small quantity of gas that Israel would be able to supply to European countries, if it indeed chooses to do so, and that past events indicate that the exportation of energy does not prevent the imposition of sanctions on the exporting country (e.g. Russia, Iran, Iraq, Libya, Nigeria, Sudan, South Africa).

The relationship between the economic development stemming from the gas fields and exportation of the gas is complex and comprises multiple political, economic and technological variables, which interact and impact each other in a variety of channels. In developing its energy resources, Israel should promote a policy that balances between different considerations – on the one hand to ensure that the public will benefit from the development of the gas fields through royalties from exports, to guarantee a sufficient quantity of gas for internal consumption, to maintain a competitive price in the domestic market and to protect the environment. On the other hand, it should ensure that the projects are sufficiently attractive for entrepreneurs in terms of profit potential in order to guarantee that the existing gas fields are indeed developed and to attract new entrepreneurs who will explore additional reservoirs. Furthermore, Israel must make use of the gas resources in order to achieve regional stability and promote its strategic interests in the region.

### The current situation

According to geological estimates, the Tamar and Leviathan reservoirs collectively can supply gas to the local market for the next 30 years and still allow significant gas exports (40% of the total gas quantity, according to the resolution of the Government of Israel in accordance with recommendations of the Zemach

Committee).<sup>3</sup> According to estimates of the Bank of Israel from December 2015, the profits to the State from taxes and from royalties may reach, during this period, up to roughly 69-100 billion dollars.<sup>4</sup>

It cannot be determined with certainty what quantity of gas is contained in the two reservoirs and there is a dispute between experts of the gas companies and experts from the Ministry of Energy and Water Resources. According to these contrasting estimates, the Tamar reservoir contains between 246 and 280 billion cubic meters of gas, whereas the Leviathan reservoir contains between 470 and 620 billion cm. These differences, which reach up to 25% in the case of the Leviathan field, could affect the export options of Israel. Additional, smaller, reservoirs found include 'Karish' and 'Tanin' (approximately 55 billion cm collectively), as well as the 'Dalit' reservoir (approximately 8 billion cm). Furthermore, there are estimates of additional oil reservoirs under the gas fields, but exploring these reservoirs would require further investment.

The most significant development over the last year in the Israeli gas economy was the approval of the framework agreement between the government and the gas companies 'Noble Energy' and 'Delek' for the development of the Tamar field and the Leviathan field. While the Tamar reservoir has been connected since 2013 to the Israeli coast via a pipeline and provides roughly 45% of the electricity consumption of the Israeli economy (as of mid-2016<sup>6</sup>), the development of the Leviathan reservoir was delayed since it required a final agreement between the production companies and the government. This framework agreement was approved on the 17<sup>th</sup> of December 2015 and included compromises and arrangements on a range of

The Prime Minister's Office, "Adoption of the Main Recommendations of the Committee for Examining the Government's Policy Regarding the Natural Gas Economy in Israel (Zemach Committee Report)". Resolution Number 442 of the 33rd Government, headed by Benjamin Netanyahu (23.06.2013). http://www.pmo.gov.il/Secretary/GovDecisions/2013/Pages/des442.aspx

<sup>4</sup> Bank of Israel, "Bank of Israel's comments to the draft outline with regard to development of the gas fields discovered in the economic waters of Israel" (1.12.2015), pg, 9.

<sup>5</sup> Ministry of National Infrastructure, Energy and Water Resources, "Israeli Gas Opportunities" (March 2016). <a href="http://energy.gov.il/Subjects/OilSearch/documents/israeli%20gas%20">http://energy.gov.il/Subjects/OilSearch/documents/israeli%20gas%20</a> opportunitties.pdf

Israel Electric Corporation, "Quarterly Report for the Three and Six Month Periods Ended June 30, 2016" (July 2016), pg. 5. <a href="https://www.iec.co.il/investors/DocLib1/meshulav062016.pdf">https://www.iec.co.il/investors/DocLib1/meshulav062016.pdf</a>

topics, among them taxes, anti-trust, export and environmental considerations.<sup>7</sup> The most significant clause in the agreement required the gas companies to relinquish their holdings in the Karish and Tanin reservoirs and sell them to an external company, while reserving the gas to be produced from these fields to the local economy as an alternative to Tamar and Leviathan. The framework agreement was initially invalidated by the Supreme Court on the 27<sup>th</sup> of March 2016, concluding that the government does not have authority to commit to a 'regulatory stability clause' for 10 years, which was one of the conditions set in the agreement designed to ease the concerns of the gas companies that the next government may revoke the framework. Nonetheless the Ministry of Energy and the gas companies announced the signing of a revised framework agreement on the 18<sup>th</sup> of May 2016, in which a tempered version of the regulatory stability clause appeared And the agreement was approved by the government.8 Concurrently, at the beginning of 2016, the Minister of Infrastructure, Energy and Water Resources approved the Leviathan development plan.<sup>9</sup> The signing of a final agreement, as well as the ability of the gas companies to present contractual agreements with potential customers is imperative to raise financing for the project. By the end of 2016 'Noble Energy' is scheduled to make a final investment decision (FID) with respect to the reservoir.

Another significant development occurred in August 2016, when 'Energean', a Greek energy company registered in Cyprus, announced that it would purchase the 'Karish' field and the 'Tanin' field from the gas companies in a deal worth about an estimated \$148 million. <sup>10</sup> Energean had previously been active in the Israeli gas

<sup>7</sup> The Prime Minister's Office, "Outline for Increasing the Quantity of Natural Gas Produced from the "Tamar" Natural Gas Field and Rapid Development of the "Leviathan", "Karish" and "Tanin" Natural Gas Fields and Additional Natural Gas Fields". Resolution Number 476 of the 34<sup>th</sup> Government, headed by Benjamin Netanyahu (16.8.2015). <a href="http://www.pmo.gov.il/Secretary/GovDecisions/2015/Pages/dec476.aspx">http://www.pmo.gov.il/Secretary/GovDecisions/2015/Pages/dec476.aspx</a>

The Prime Minister's Office, "Amendment of the Outline for Increasing the Quantity of Natural Gas Produced from the "Tamar" Natural Gas Field and Rapid Development of the "Leviathan", "Karish" and "Tanin" Natural Gas Fields and Additional Natural Gas Fields". Resolution Number 1465 of the 34<sup>th</sup> Government, headed by Benjamin Netanyahu (16.8.2015). <a href="http://www.pmo.gov.il/Secretary/GovDecisions/2016/Pages/dec1465.aspx">http://www.pmo.gov.il/Secretary/GovDecisions/2016/Pages/dec1465.aspx</a>

The Ministry of Infrastructures, Energy and Water Resources, "Speaker message: The Ministry of Infrastructures, Energy and Water Resources has today approved the development plan of the Leviathan Partnerships for I/14 Leviathan South and for I/15 Leviathan North holdings" (June 2, 2016). <a href="http://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanOSJune16.aspx">http://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanOSJune16.aspx</a>

<sup>10</sup> Lior Gutman, "The Greek Energean Acquires the Karish and Tanin Gas Reservoirs", Calcalist (16.8.2016). <a href="http://www.calcalist.co.il/local/articles/0,7340,L-3695800,00.html">http://www.calcalist.co.il/local/articles/0,7340,L-3695800,00.html</a>

industry in the (failed) 'Sara' and "Mira' exploration licenses and it has experience in developing fields in Greece and in Egypt. Nonetheless, the company's ability to develop the Karish and Tanin reservoirs and compete in the local Israeli gas market against much larger reservoirs requires the provision of significant government incentives that have not yet been established. These incentives could include benefits to factories that choose to connect to gas from the smaller reservoirs, subsidizing the transmission system between the reservoir and the mainland, and reserving the gas to specific sectors in the economy, such as agriculture.

Meanwhile, important developments in the global energy markets significantly reduced energy prices and hindered financing of the projects. There are a few key reasons for the drop in energy prices over the course of the last two years: A glut in global supply of oil and gas in the wake of increased OPEC and Saudi output (among other reasons, as part of the struggle between Saudi-Arabia and Iran); the entry of new technologies (renewable energies and the rise of shale oil and gas in the United States); development of new oil and gas fields (in Australia and in the Caspian Sea); the rise in oil output among non-OPEC countries (Canada, Russia, etc.); and the slowing rise in demand from Asia, primarily due to the slowdown in the Chinese economy.

In addition, the European market, which is a key energy market in the region, has been undergoing changes which include an increase in consumption of gas provided by pipelines as opposed to liquefied gas. Greater competition for the European market is soon expected with the completion of a new pipeline from the Caspian Sea (Southern Gas Corridor) and additional sources overseas. Russia as a key gas supplier to Europe is already now lowering prices in order to maintain its market share.

Falling world energy prices has therefore caused development of new gas reservoirs to be less profitable and has diminished the economic power of the gas companies.

Notwithstanding the aforesaid, development of the gas reservoirs and exploration of additional reservoirs has remained a long-term strategic interest of Israel. The State is aware of this and over the last few months it has implemented several steps in order to further this interest. In an effort to attract new entrepreneurs, In August 2016, the Ministry of Energy approved, after four years during which the sea was closed to exploration, a re-opening of license distribution for oil

and gas exploration zones in the economic waters of Israel.<sup>11</sup> Furthermore, the State is attempting to encourage factories and consumers to connect to the gas infrastructure in order to increase the local demand and make the market more attractive for external entrepreneurs. Nonetheless, in many cases regulatory and technical barriers came to light that did not enable these connections.<sup>12</sup> In order to encourage regional collaborations, the government promoted, inter alia, trade agreements and political agreements with Jordan and Turkey and held a number of highly publicized meetings with senior officials from Greece and from Cyprus.<sup>13</sup>

### **Potential export destinations**

The question of how and where the gas that has already been discovered should be exported is a critical issue in the decision making of the State of Israel. Exportation of the gas is essential in order to ensure the economic viability of developing the gas fields in Israel and it has the power to yield significant economic, political and strategic gains. Neighboring countries – Jordan and Egypt – and the Palestinian Authority, as well as more distant countries such as Turkey, Cyprus and Greece, may benefit from Israeli gas. Nonetheless, the decision of where to export is also fraught with political and economic challenges, among them the impact of such export on Israel-Turkey-Greece relations, the opposition of the local populations in some of the destination countries and the various technical challenges. The dispute with regard to the quantity of gas in the Leviathan reservoir (470-620 BCM) could also play a significant role. If the lowest estimate is correct, presumably the gas for export to Egypt, Greece and Turkey (the three primary candidates to become the largest customers of Israeli gas) will not be significant. In such case, Israel will have to prioritize one destination over the other according to various considerations.

<sup>11</sup> The Ministry of Infrastructures, Energy and Water Resources, "Speaker Message: Minister Steinitz promotes re-opening the sea: The new oil and gas exploration zones in the economic waters of Israel were approved today by the Petroleum Council". Ministry of Energy website (10.8.2016). <a href="http://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanOSAug16.aspx">http://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanOSAug16.aspx</a>

<sup>12</sup> The Ministry of Infrastructures, Energy and Water Resources, "Speaker Message: The Natural Gas Authority of the Ministry of Infrastructures, Energy and Water Resources held a conference to encourage consumers in Haifa and in the North to connect to natural gas". Ministry of Energy website (12.9.2016) <a href="https://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanNGHaifa.aspx">https://energy.gov.il/AboutTheOffice/SpeakerMessages/Pages/GxmsMniSpokesmanNGHaifa.aspx</a>

<sup>13</sup> Arye Mekel, "Israel-Greece-Cyprus Summit: A New Geopolitical Bloc is Born". *Haaretz* (31.1.2016) <a href="http://www.haaretz.co.il/news/world/middle-east/.premium-1.2834779">http://www.haaretz.co.il/news/world/middle-east/.premium-1.2834779</a>

#### Jordan

Jordan needs a supply of natural gas due to the increasing demand in the local economy and the shortage of gas that it imports from Egypt. Cooperation with Israel in this sphere could help the economy and the political stability of Jordan. Notwithstanding existing plans to import liquefied gas from Oatar, the alternative of importing dry gas by pipeline will always be preferable for Jordan, both in terms of the stability of the supply and in terms of price. Consequently, Israeli and Egyptian gas has a significant advantage over other alternatives for Jordan's needs. And indeed, in September 2016, the Leviathan reservoir partnership announced that it had signed a contract for the supply of 45 BCM of natural gas to Jordan's National Electric Power Company (NEPCO) over 15 years at a cost of 10 billion dollars. Due to various political considerations, among them opposition of the Jordanian street to the deal with Israel, the sale of the gas will be made via a third-party marketing company that will not be registered in Israel. 14 This solution may also be used by Israel in other future deals. The signature of the agreement significantly increases the chance that 'Noble Energy' will approve the final investment decision on the Leviathan reservoir and that the reservoir will be developed on schedule. The gas deal also necessitates construction of an onshore pipeline that may also pass through Palestinian Authority territories and be used to supply gas to the Authority.

#### **Egypt**

Although Egypt currently suffers from a severe shortage in natural gas needed to meet the demands of its domestic economy, the large offshore gas field it discovered in August 2015 ('Zohar' field) may certainly allow it to satisfy these growing needs over the coming years. However, development of the field is expected to be a lengthy process in the course of which Egypt may still need Israeli gas. Furthermore, the gas liquefaction installations in Egypt have been underutilized over the past few years and could be used by Israel for export. It is still unclear whether the new field in Egypt will suffice for both the needs of the domestic market and for the full exploitation of these LNG facilities. This fact will affect Israel's long-term plans of targeting Europe and the global gas market as potential export destinations for Israeli gas. These plans also depend on the quantity of existing gas in the Israeli reservoirs, which may not suffice to provide

<sup>&</sup>quot;Huge Agreement: Leviathan Partnerships to Sell Gas to Jordan Estimated at \$10 Billion ". Globes (26.9.2016). <a href="http://www.globes.co.il/news/article.aspx?did=1001154440">http://www.globes.co.il/news/article.aspx?did=1001154440</a>

gas for both Egypt and Turkey while also leaving viable amounts for significant export to the European and global markets.

#### **Turkey and Europe**

The main export options to Europe are through a subsea pipeline or a naturalgas liquefaction installation (LNG). It is technically possible to lay a pipeline that transports the gas to Cyprus, to Turkey or to Greece. While a subsea pipeline to Greece apparently poses significant engineering and financial problems, the option of deploying an Israeli gas pipeline to Turkey has received reinforcement in the wake of the reconciliation agreement that was recently signed between the two countries. Such a pipeline may help Turkey decrease its reliance on Russian gas, particularly given the deterioration in Turkish-Russian relations over the past year. The business sector in Turkey is interested in cooperation with Israel in the energy sphere in addition to other available alternatives, such as purchasing gas from Qatar and from Iran (which is expected to be more expensive than the Israeli gas) and purchasing gas from Azerbaijan, which alone would not satisfy the increasing demand in the Turkish economy. Accordingly, assessments have reemerged regarding an agreement for the exportation of gas from Israel to Turkey, which would transfer to the Turkish market approximately 8-10 BCM annually.<sup>15</sup> Constructing a pipeline to Turkey would also require cooperation with Cyprus, since it would pass through its exclusive economic zone. While at first it appeared that the agreement raises too much concern among senior officials in Cyprus, it seems that Cyprus will agree to such a deal if it will come to fruition. The development of the 'Aphrodite' field, which was discovered in Cyprus in 2011 and contains approximately 125 billion cm of natural gas, is likely dependent on the development of the Leviathan field. Therefore, cooperation in the energy sphere between Israel and Cyprus is a Cypriot interest. Nonetheless, the construction of the pipeline - as well as the development of the 'Aphrodite' reservoir - is still depend on the ability of Turkey and Cyprus to come to an arrangement despite the tension between the two countries surrounding the natural gas issue and the ownership thereof. 16 An additional issue that should be considered is that adding competition in the gas market in Turkey means a decrease in the price per unit of

<sup>15</sup> Hedy Cohen, "Senior gas company officials estimate: By the end of 2017, the gas contract between Israel and Turkey will be signed". *Globes* (27.6.2016). <a href="http://www.globes.co.il/news/article.aspx?did=1001135236">http://www.globes.co.il/news/article.aspx?did=1001135236</a>

<sup>16</sup> Michael Emerson; "Fishing for Gas and More in Cypriot Waters". <a href="http://file.insightturkey.com/Files/Pdf/insight-turkey-vol\_15\_no\_1\_2013\_emerson.pdf">http://file.insightturkey.com/Files/Pdf/insight-turkey-vol\_15\_no\_1\_2013\_emerson.pdf</a>

gas that the Leviathan partners may demand. Consequently, the profitability of the exports could be less than initial estimates.

Beyond the economic aspect, exportation of Israeli gas to Turkey could help strengthen the relationship between the countries. This is particularly evident in the wake of the reconciliation agreement between Israel and Turkey that was signed in the summer of 2016 and created a common interest in a market of strategic importance. Moreover, the significant costs of laying the gas export infrastructure and the fulfillment of a long term contract may strengthen the interest of the two countries to cooperate, inasmuch as the cost of conflict or of severing the trade would be much greater than in the past. Nonetheless, it should be noted that the economic cost of disconnecting the gas would primarily fall on Israel. Israeli gas would satisfy only about 10% of Turkish consumption and in case of a disruption Turkey could compensate for the loss of Israeli gas from other sources. Israel, on the other hand, would be at a disadvantage, inasmuch as Turkey would be the largest customer of its gas. This asymmetry increases if Israel wishes to use Turkish infrastructure in order to export to the European continent. In such a case, Turkey could, at least theoretically, threaten to disconnect the Israeli gas to Europe alleging a 'technical failure' as leverage for political pressure. Nonetheless, it is unlikely that Turkey would choose such measures since it wishes to establish its position as a an important transit country for oil and gas from Central Asia to Europe, a position that requires it to project reliability and stability towards all the parties. It is also unlikely given the fact that for over a decade most of Israel's oil imports have passed through Turkey (through the BTC pipeline which comes from the Caspian Sea and through tankers passing through the Bosphorus Strait), but Turkey has never threatened to disconnect the supply to Israel, even during particularly low points in the relations of the two countries.

# **Gas liquefaction**

Gas liquefaction would enable Israel to export gas more freely to distant markets by tankers. Nonetheless, at this stage it is unclear whether it is economically feasible to construct a liquefaction installation for the gas quantities found in the reservoirs of Israel. In this context, it is possible that further discoveries of gas in the region could increase the feasibility of Israeli LNG exportation. According to the estimates, the 'Zohar' gas field in Egypt contains between 450 to 800 billion cm of natural gas. The joint output of the Egyptian field together with the Leviathan reservoir may make the gas liquefaction project worthwhile on a regional infrastructure basis. In this context, it is important to note that Egypt

already has a gas liquefaction installation, which has been underused in recent years. Nonetheless, it should be noted that the repeated attacks on the pipeline that had transported Egyptian gas to Israel in the past indicates that there are significant security challenges to cooperation with Egypt in the energy sphere, particularly with the rise of terrorist organizations in the Sinai Peninsula. Cyprus also has plans to construct a gas liquefaction installation for export purposes, but for this to materialize it is necessary to construct a pipeline and develop the 'Aphrodite' field. This option also bears a security risk resulting from the presence of infrastructure critical to Israel within the territory of a foreign country.

# **Security challenges**

In general, the gas infrastructure – the fields themselves, the pipelines connecting them to the Israeli coast and the pipelines that will be used in the future for export – could serve as targets for an attack by various terrorist organizations. This threat has led the Israeli navy to acquire four new 'corvettes' in order to protect the infrastructure. Another important step to ensure the security of the gas supply will be construction of an additional pipeline from the Tamar reservoir to the coast, as well as construction of a pipeline from the Leviathan field to the Israeli coast, so as to enable redundancies in the event of an attack on one of the pipelines (for further details regarding the challenges of protecting the gas infrastructure, see chapter 7 in this report).

In addition to the possibility of physical damage to the gas infrastructure, the natural gas discoveries also create risks of heightened tension and regional hostility. A major source of such tension is the dispute between Israel and Lebanon pertaining to the maritime delineation of the economic zones between the two countries and consequently also of their gas fields. Hezbollah has declared in the past its readiness to protect the Lebanese gas fields against Israeli 'theft'. Identification of mechanisms for negotiating with the government of Lebanon is important from both security and political aspects and helps prevent uncertainty on the part of entrepreneurs and investors in the gas fields operating in both countries. It should be noted that at the moment there is no knowledge regarding the presence of gas or oil reservoirs within the territory in dispute between the two countries, but so long as the dispute exists, exploration will not be possible.

A further issue that Israel must consider pertains to the 'Gaza Marine' offshore gas field located near Gaza, which according to estimates contains approximately 30 billion cm of natural gas. The development of this field could significantly help the economic situation in the Gaza Strip by allowing a steady supply of electricity

to the Strip. For this purpose, construction of a gas operated power station in the Strip will also be necessary. On the other hand, there is concern that the development of the field would strengthen the position of Hamas vis-à-vis the Palestinian Authority and would increase its coffers, which would lead to additional security challenges for Israel. Another question pertains to the identity of the actors who would be involved in the development – while the concessions on the field belong to BG, there is a possibility of involvement of various actors other than the Palestinian Authority, among them Jordan – which has an interest in importing natural gas and may encounter less political opposition if it imports it from Gaza instead of from Israel. Another actor that may enter the arena is Qatar, a country with extensive experience in the production of natural gas.

A final security issue pertains to the identity of the state entrepreneurs which may take part in Israel's gas ventures. In 2012, Russia's 'Gazprom' sought to purchase a significant stake in the Leviathan field, but was denied due to various considerations (among which was the refusal of the American-based 'Noble Energy' gas company to allow a Russian foothold in its reservoirs). This issue rises again in the context of possible new exploration efforts in the economic waters of Israel, as various state entities - such as Russia and China - express interest in the acquisition of exploration licenses. Israel must balance between its desire to attract new entrepreneurs on the one hand and the political and security consequences of admitting state entities into its energy market on the other hand. The admittance of Russia, or alternatively of a private company that works in close cooperation with Russia (such as the Italian 'Edison') could raise concern among potential customers in Europe, who wish to purchase Israeli gas in order to lessen their dependence on Russian gas companies, not increase it. This is in addition to the various political and security risks arising from the activity of these countries close to the shores of Israel, which would restrict the freedom of movement of the Israeli navy and would facilitate its monitoring by a foreign entity.