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## Development of Israel's natural gas resources: Political, security, and economic dimensions

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### ABSTRACT

The natural gas reserves discovered in Israel in recent years have instigated a debate on sociopolitical, international political, security, and economic issues. Examination and analysis of various policy documents that affected the final consolidation of Israel's gas policy show that the issue of natural gas discoveries in Israel is complex and characterized by many intricacies and uncertainties that create a unique collection of problems and solution. First, there are difficulties involved in setting a time frame for the public policy designed on the topic of natural gas. Second, the work division and interaction between the government, the public, and private companies is particularly complex. Third, the taxation policy must take into account benefits for the state and its residents but at the same time maintain and preserve the incentives offered to investors and developers. Fourth, it is hard to disregard the fact that the Israeli government has chosen not to bring the decision regarding the gas outline for public debate or for review by the Knesset, and fifth, the decision about how much of the gas reserves should be preserved for domestic needs and how much exported is particularly complex.

### 1. Introduction

Similar to many other countries, Israel too is in favor of a transition to natural gas as a main source of energy with many advantages for consumers, the economy, and the environment.<sup>3</sup> Israel's first natural gas reserve was discovered at the end of the 20th century,<sup>4</sup> however significant changes in the Israeli economy with regard to energy were felt only a decade later, with the discovery of the two large gas reserves, Tamar and Leviathan,<sup>5</sup> and natural gas rapidly became the main preferred source of energy for producing electricity and for use in the major industries (Shaffer, 2013).

These gas discoveries have many different effects on the national level. First of all, burning natural gas produces significantly less pollutants and greenhouse gases than other fuels, and therefore the transition to natural gas for generating energy, for industry, and for public transportation, is expected to significantly reduce air pollution. Second, the extraction of natural gas and its preservation for use by the domestic economy will enhance Israel's security, after being compelled for many years to rely on natural gas supplied by its neighbor, Egypt, and experiencing frequent hostile acts involving damage to the pipeline and

disruptions of the gas supply. Third, exporting natural gas to its neighbors in the Middle East will help Israel generate and maintain political, economic, security, and strategic relationships with countries in the region and thus contribute significantly to the country's security (Fischhendler and Nathan, 2014). Fourth, the discovery of gas reserves in Israel harbors a not inconsiderable economic potential capable of changing the face of the Israeli economy and society for many years to come.

The dilemma of deciding whether to preserve the natural gas for internal use in Israel or to export it to countries in the region has instigated (and is still the cause of) a debate on sociopolitical, international political, security, and economic grounds. From the sociopolitical aspect, the question is who are the stakeholders and who holds the rights to the gas production process: the developers and owners of the gas companies to whom the state awarded the production license and who will be able to export a large proportion of the gas in return for financial gain, or the state itself, i.e., the citizens, who are entitled to enjoy the economic benefits expected to derive from these discoveries? The international political aspect concerns the political viability of exporting gas to neighboring countries (Egypt, Jordan, Turkey, and

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<sup>3</sup> Such as: reducing the costs of producing electricity and industrial products, reducing pollution and greenhouse emissions, improving competition in the economy and promoting export, fortifying the Israeli economy, and more.

<sup>4</sup> The Noa reserve in 1999.

<sup>5</sup> In 2009 and 2010, respectively.

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others) and the question of whether it is indeed possible to form and maintain stable trade agreements with these volatile countries. From the security aspect, the question raised was what would be more beneficial for Israeli security: leaving the gas or some of it below the sea floor, which would ensure energy security for many years, or perhaps exporting the gas to neighboring countries and forming economic and security relationships with them, thus contributing to the country's existential defenses. From the economic aspect, the debate that arose concerned the economic benefits that Israel would receive from exporting the natural gas to other countries. Advocates of exporting the gas claim that the taxes and commissions the gas companies will pay the country as a result of gas sales will significantly enrich its coffers and therefore they should be allowed to export it (some of it). Then again, others claim that the export of natural gas will not have a significant effect on Israel's profits (if at all), as this would require it to import fuel or other gas in its stead and the high import costs would cancel out the profits derived from the exports.

One way or another, this issue was decided in a government resolution in 2013 that chose to adopt the recommendations of the Tzemach Committee<sup>6</sup> that was convened for this matter and advised that all existing and potential claim holders to the gas fields be required to allocate at least part of the gas they hold for the use of the domestic economy, and at the same time to let these claim holders export up to 40% of the gas. Since the discovery of Israel's natural gas fields, many reports and articles have been written on the myriad complex issues involved, and therefore the purpose of the current article shall be to examine and present all the aspects, conflicts, benefits, and challenges that may accrue to the Israeli economy as a result of the extraction, use, and export of natural gas in the coming years.

Many countries in the world have natural gas reserves within their borders and ever since the middle of the 20th century have applied various regulation processes and gas export policies, as presented in detail by Johnston and MacAvoy (2002). The most prominent of these is Russia, who is considered to have the largest gas reserve in the world, is the world's largest exporter of gas, and is responsible for supplying gas, used for industry and heating, to most European countries.<sup>7</sup> Similarly, Iran<sup>8</sup> and Qatar<sup>9</sup> as well have large natural gas reserves and apply a policy that supports the export of gas (Esen and Oral, 2016). In contrast, the US<sup>10</sup> is one of the largest producers of gas for domestic use, due to the high demand for gas in the country,<sup>11</sup> while Norway<sup>12</sup> advocates the export of its natural gas rather than domestic use.

This study depicts the gradual increase in the production and consumption of natural gas in Israel, forming a basis for further studies that will explore the effect of these trends on Israel's economy in general and its energy industry in particular. Notably, many previous studies have demonstrated the impact that developing a domestic natural gas industry has had on the energy industry of other countries around the world and on their economy. Here are several conspicuous examples:

Firstly, Russia: Ellman examined in detail the effect of the Russian energy industry (petroleum and gas) on its economic indices. He expressed doubts as to the long-term contribution of natural resources to the domestic economy and claimed that countries who are rich in

resources suffer from what he calls the "resource curse". Despite the positive economic indices presented by Russia's economy in the mid-20th century,<sup>13</sup> Ellman voiced concerns that in the middle and long term Russia's economic performance would be negative, affected by what he calls the "wealth of resources". In his opinion, this contention is particularly relevant for Russia, as the proportion of gas and crude oil exports relative to all domestic exports, as well as the proportion of revenues from this industry relative to all the country's revenues, has gradually increased until the domestic economy became dependent on its energy industry (Ellman, 2006).

Similarly, in his book published during the global economic recession, Stern too emphasizes the changes that occurred in the world gas industry since late 2008, and draws attention to the instability and uncertainty that have characterized the Russian gas industry since then. The author expresses worry and concern regarding the vulnerability of the Russian gas company Gazprom and its inability to fulfill its obligations. This concern stems, in his opinion, from insufficient investment in the gas industry in the years preceding the global recession as a result of the preference given by the Russian government to investing in the petroleum industry. Hence, the author claims that since the outbreak of the economic crisis in 2008 there are sincere doubts as to the ability of the gas company to fulfill its obligations concerning the production and supply of gas to its clients in Europe and elsewhere (Stern, 2009).

Secondly, Iran: A study that examines the relationship between natural gas consumption in Iran and the growth of its economy and attests to a positive relationship between these variables, while advocating the country's gas preservation policy (Heidari et al., 2013). Nonetheless, Ellman's "resource curse" contention (Ellman, 2006), presented with regard to natural gas in Russia, was explored in an article by Ahmed and colleagues and found true. The study, which compared Iran's natural resource production indices to domestic economic indices from 1965 to 2011, found that long-term utilization of natural resources as a major cause of growth might have a negative effect on the competitiveness of other sectors of the economy and might limit their ability to contribute to overall growth, while slowing down the economy's growth in the long term (Ahmed et al., 2016). One way or another, it appears that the demand for Iranian natural gas will keep growing in the next few decades as well, particularly thanks to the consistent demand for this resource by Asian countries to which Iran exports considerable quantities of natural gas (Carter, 2014), and therefore this industrial sector will continue to exert a dominant influence on the growth of the Iranian economy.

Thirdly, Qatar: Qatar's first gas reserve was discovered as early as 1971 in the north of the country, however it took twenty years for the economic potential of this discovery to bear fruit. To fully utilize such a discovery there are many other requirements, and many countries in the world are blessed with natural resources but have not managed to use them in order to flourish and develop. Qatar's development and the utilization of its natural resources is a consequence of its dedicated leadership, which managed to form a long-term vision and master plan for the country's development and for the rapid evolution of international economic, political, and security relationships (Ibrahim and Harrigan, 2012). These relationships enabled Qatar to obtain an outstanding global impact and to improve its national defense, since the countries in the region, who utilize Qatari gas, became significant stakeholders in its defense, and also to increase its revenues and profits to such a degree that its dependency on regional markets was neutralized (Krane and Wright, 2014).

At present, Qatar is considered to have the third largest natural gas reserves in the world (after Russia and Iran). As a result of this essential resource the residents of Qatar now have the highest per capita income

<sup>6</sup> Established in 2011.

<sup>7</sup> See: Bahgat (2010a, 2010b), Quast and Locatelli (1997), Spanjer (2007), Shadrina (2014), Åslund (2006), Ellman (2006), Stern (2009).

<sup>8</sup> See: Ahanjan et al. (2017), Agheli and Fatemeh (2016), Taheri et al. (2014), Kakaee and Paykani (2013), Maroufmashat and Sattari (2016), Heidari et al. (2013), Ahmed et al. (2016), Carter (2014).

<sup>9</sup> See: Ibrahim and Harrigan (2012), Krane and Wright (2014), Dargin (2007), Doukas et al. (2013), Hoyos and Chazan (2012).

<sup>10</sup> See: Pierce (1995), Wakamatsu and Aruga (2013), Geng et al. (2016), Huntington (2007), Jenner and Lamadrid (2013), Talus (2014).

<sup>11</sup> Most of the natural gas produced in the US is intended for domestic use, and part of it is exported to countries such as Canada, Japan, and Mexico.

<sup>12</sup> See: Klick (2008), Rømo et al. (2009), Söderbergh et al. (2009), Söderbergh (2010), Sæther et al. (2011).

<sup>13</sup> Increasing growth, a rise in the country's revenues, a drop in the unemployment rate, and more.

in the world, as well as an extremely high growth rate. In addition, Qatar is considered the most significant gas supplier in the Middle East and the fourth largest gas exporter in the world, exporting compressed gas and liquid gas to various countries in general and to Asian countries in particular<sup>14</sup> (Dargin, 2007). Moreover, it has signed many international cooperation agreements in research and development on the production of natural gas (Doukas et al., 2013).

In time, several countries became dependent on the supply of Qatari gas (Hoyos and Chazan, 2012). Then again, Qatar itself began to develop a dependency on it (as well as on crude oil), with the country's great wealth based almost completely on its revenues from natural resources (petroleum and gas), and hence its economy became vulnerable to the "resource curse" (similar to Russia and Iran).

Hence, it appears that while previous studies mostly focused on examining the economic impact of the natural gas industry on the domestic economy, the current study expands the discussion to both the security impact and the internal political impact.

## 2. Methodology

The above review of the gas policy implemented in the various countries forms a basis to which developments in Israel in this domain, described below, can be compared. The review of the global gas industry was based on a summary of academic publications that refer to each of the countries presented. Examination of the Israeli gas policy will be based on analysis of various policy documents from the different parliamentary and extra-parliamentary committees that dealt with this subject. The policy documents include, among others, the following:

A report submitted to the economic committee of the Knesset on behalf of the Budget Control Department – Research and Information Center, dealing with the impact of producing natural gas and of its cost on Israel's economy and industry (Milrad, 2014); a comprehensive document dealing with the political viability of exporting natural gas from Israel to Turkey, produced on behalf of the Institute for National Security Studies (Eran et al., 2014); a document examining Israel's natural gas industry (Laufer, 2015); a document examining the policy on use of natural gas resources, on behalf of the Knesset Research and Information Center (Ronen, 2013); and others.

In addition, the study is also based, as stated, on position papers written by various stakeholders who sought to influence the government policy portrayed in the gas outline that was eventually confirmed in 2016. These position papers include a document dealing with the outline for regularizing Israel's natural gas industry, presented to the Knesset committee about a year before the outline was approved (Keren, 2015); Holander's position paper on behalf of the Israeli Institute for Economic Planning that deals with the impact of gas discoveries on Israel's energy policy (Holander, 2014); and others. Hence, this study is descriptive by nature and it presents the features of Israeli public policy with regard to the natural gas industry.

## 3. Development of Israel's natural gas industry

Natural gas was discovered in Israel as early as the 1950s in the Judean Desert, in a particularly small quantity<sup>15</sup> that was utilized for industrial plants in the area and for residential homes and small businesses in the nearby city of Dimona. The real breakthrough in this field occurred in the early 2000s, with the discovery of the Yam Tethys reserve<sup>16</sup> offshore from Ashkelon,<sup>17</sup> which in fact constituted Israel's first large natural gas reserve. Natural gas entered was first used in Israel in 2004 by the Electricity Company and by very large industrial plants that

consume natural gas under high pressure. At the same time, in 2008 Israel began to import natural gas from neighboring Egypt through an under-water pipeline from El Arish to an intake facility in Ashkelon. About a decade after the discovery of the Yam Tethys reserve, another gas reserve called Tamar was discovered in 2009, and since then it is considered Israel's largest natural gas reserve. Nonetheless, until 2011 Israel's natural gas was provided through two channels concurrently: extracted from the Yam Tethys reserve and imported from Egypt. In 2011, as a result of the deteriorating security situation in Sinai, there were many disruptions of the supply of gas from Egypt, until this ceased completely in March 2012. Thus, the Yam Tethys reserve became the Israeli economy's only gas supplier, providing some 98% of the supply of natural gas in 2012. With the development of the Tamar gas reserve, it supplied an increasing quantity of gas, with a matching decrease in the gas supplied by the Yam Tethys reserve, until the Tamar reserve became the major source of Israel's natural gas (Fig. 1).

In 2010, another natural gas reserve was discovered in Israel, called the Leviathan reserve, henceforth considered the largest gas field in Mediterranean waters and the largest deep-water gas field discovered in the world in the first decade of the 21st century. This reserve is not yet active (similar to the smaller reserves, Karish and Tanin, found in 2012) and does not contribute to Israel's gas consumption. Thus, the Tamar reserve continues to constitute Israel's only active natural gas reserve in 2017 as well. A map of Israel's main natural gas reserves is provided in the following figure:

Relying on a single supplier of natural gas (Tamar) constitutes a risk in the long term, as this reserve has become essential and critical for the Israeli economy's manufacture of electricity. For this reason, decision makers in Israel were compelled to discuss the issue of dividing the gas sources between several factors, while encouraging the involvement of the domestic industry in the gas supply process. Furthermore, there was a concern that the quantity of natural gas discovered was not sufficient to meet the Israeli economy's annual demand for natural gas (Laufer, 2015). This has always been the situation in Israel, and Israel's inability to provide its own energy needs has obliged it to remain dependent on neighboring Arab countries to provide for its energy needs. This situation has had political, security, and economic significance. Therefore, the discovery of natural gas reserves in Israel's territory has had an immediate and significant effect on its energy policy, energy security, regional status, and economy (Fares, 2013). However, beyond the anticipated future improvement in Israel's energy security, its gas discoveries can also have the effect of stimulating the development of new technologies associated with various branches of industry (such as transportation, flight, air conditioning, and more) and thus expanding the economic activity and even increasing the efficacy of existing industries, contributing to the economic output and efficacy of the Israeli economy (Shaffer, 2011).

Based on these insights, the discovery of the Tamar gas reserve, and later also the discovery of the Leviathan reserve, encouraged Israel's decision makers to examine and formulate Israel's gas policy for the coming years. For this purpose, various committees were established<sup>18</sup> in order to examine the government policy on the natural gas industry, with the aim of ensuring the energy needs of the Israeli economy for the next few decades. One of the recommendations was to designate a predetermined quantity of natural gas comprising a minimal supply for the domestic economy as an obligation of the companies who possess the rights to the reserves, based on their size. The committee's recommendations led to the formulation of the gas outline, which rapidly became the focus of sharp dissension in the government and in Israeli society, before being finally approved. The controversy concerned four major dimensions: the local public and political dimension, the international political dimension, the security dimension, and the economic dimension. Nonetheless, it is agreed that the decision concerning the

<sup>14</sup> Particularly Japan, South Korea, China, and India.

<sup>15</sup> The gas was discovered in the Judean Desert (in the Zohar, Kidod, and Har Kana'im fields) in a small quantity (about 2 BCM).

<sup>16</sup> Originally: the Noa reserve.

<sup>17</sup> Later called Yam Tethys.

<sup>18</sup> The Sheshinski Committee in 2010 and the Tzemach Committee in 2011.

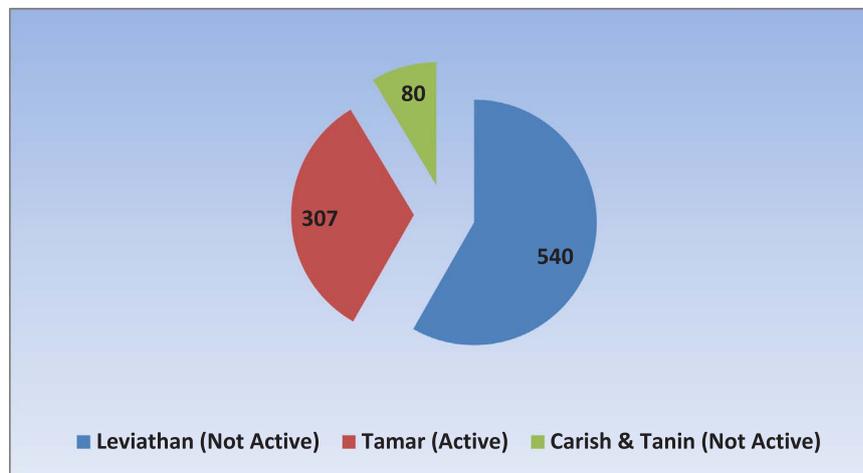


Fig. 1. Map of Israel's main gas reserves in 2017 (Billion BCM).

Source: Israeli Ministry of Energy: <http://energy.gov.il/Subjects/NG/Pages/GxmsMniNGEconomy.aspx>

Israeli gas policy must take into account many varied considerations, including preventing a monopoly, the policy on tax returns, creating jobs, diverse sources of energy, retaining Israeli gas reserves, preventing the formation of a long-term dependency from a security perspective, developing relationships with countries in the region, and creating an impetus for regional cooperation on the political sphere (Laufer, 2015).

The process of reaching an agreement on the gas outline between the state and the private companies<sup>19</sup> was replete with obstacles from the very beginning. By law, the state was required to submit the evolving outline to the Antitrust Commissioner at the Ministry of Finance for his inspection. To the chagrin of the country's leaders, David Gilo, the Antitrust Commissioner at the time, decided that the owners of the reserves comprise a type of duopoly<sup>20</sup> (as presented in Fig. 2 below) and therefore recommended that it be dissolved and advised against approval of the outline.

For this reason the Prime Minister, Benjamin Netanyahu, asked the Economy Minister at the time, Aryeh Deri, to sign a special clause<sup>21</sup> that would let him circumvent the need to receive the approval of the Antitrust Commissioner and thus pave the way to approving the outline in the format suggested. In response, the Antitrust Commissioner resigned and his position remained vacant for a lengthy period, a fact that in retrospect helped promote the outline. Minister Deri himself, fearing sharp public criticism if he were to take part in promoting approval of the strongly disputed outline, asked the Prime Minister to let him resign from his role as Economy Minister and be appointed Minister of the Interior. The Prime Minister consented to Deri's request and appointed himself Economy Minister instead of Deri, making it possible for him to sign the clause that exempts the outline from the legal requirement to receive the approval of the Antitrust Commissioner, which he indeed did in December 2015. This course of action taken by the Prime Minister was the target of public, political, and legal criticism, and eventually led to an appeal to the Supreme Court to examine the legality of the outline in general and of the Prime Minister's conduct in particular. The Prime Minister declared to the Supreme Court that approval of the outline must be facilitated, as it will advance rapid development of the reserves, provide tax revenues for the state's coffers, contribute to energy security and state security, and improve Israel's foreign relations. Eventually, the Supreme Court decided to approve the gas outline,<sup>22</sup> ending years of foot-dragging, debates, and public disagreements.

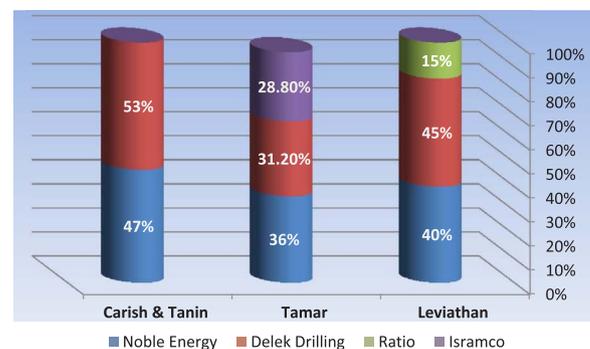


Fig. 2. Map reflecting ownership of Israel's main gas reserves (Before implementation of the gas outline).

Source: Israeli Ministry of Energy: <http://energy.gov.il/Subjects/NG/Pages/GxmsMniNGEconomy.aspx>

### 3.1. The local public and political dimension

The gas outline, which regularizes the authorizations awarded and the restrictions placed on the private gas companies and their interrelations with the state, was preceded by acute political and public criticism. This criticism concerned the claim that the gas reserves discovered in Israeli territory belong first and foremost to the citizens of the state and therefore policy makers must act to achieve an arrangement that fully extracts all benefits accruing to the citizens. The gas outline formulated was not publicized, but once the Israeli public became aware of its details prior to its approval, many demonstrations were held throughout the country in protest that the arrangement does not benefit the public and that it is not capable of leading to a potential reduction of local gas prices.<sup>23</sup>

The leaders of the protest claimed that the clandestine negotiations between the government and owners of the gas companies constitute an undemocratic, improper, and illegitimate procedure, and therefore require a real public hearing. The protestors expressed their concern of a

<sup>19</sup> Online sources: <http://www.haaretz.com/israel-news/.premium-1.664422> (4 July 2015).

<http://www.jpost.com/Israel-News/Thousands-take-to-Tel-Aviv-streets-to-protest-gas-deal-407987> (5 July 2015).

<http://www.haaretz.com/israel-news/business/.premium-1.684730> (November 7, 2015).

<http://www.timesofisrael.com/thousands-across-israel-protest-against-controversial-gas-deal> (28 November 2015).

<sup>19</sup> The American Noble Energy and the Israeli Delek Drilling.

<sup>20</sup> Control of a certain industry by two companies.

<sup>21</sup> Clause 52 of the Antitrust Law.

<sup>22</sup> Subject to a change in the clause designed the "stability clause", which refers to the restriction imposed upon the state to make any changes to the outline for a period of ten years from its approval.

monopoly in the gas industry, which might lead to exorbitant prices. They contended that the outline reflects an illegitimate relationship between money and power and that this relationship must be exposed and investigated by establishing an independent public commission. The many protests held in various towns were aimed at the government ministers who supported the outline, and particularly at Prime Minister Benjamin Netanyahu. This was a one-time opportunity for the Prime Minister's opponents and political rivals to make themselves heard and to publicly support the public protest against the outline, while voicing extreme claims against their political rivals who were allegedly acting on behalf of the wealthy while they themselves are only occupied with the public good.

Particularly conspicuous was the protest of MK Shelly Yachimovich (of the Labor Party), who strongly objected to the emerging outline and to the forced political steps that the prime minister was compelled to take in order to promote its approval by the government and called it a "filthy trick". MK Yachimovich, together with two of her colleagues from the Labor Party, MK Eitan Cabel and MK Manuel Trajtenberg, also submitted a petition on the matter to the Supreme Court, with the aim of annulling the approval of the outline.

In addition to the political criticism against the outline from outside the government, it was also strongly criticized within the government. Then Environmental Protection Minister, Avi Gabbay (of the Kulanu Party), strongly attacked the prime minister and his leadership and claimed that important information about the gas outline had been kept from the public and fraudulent information given with regard to the quantities of gas in the reserves discovered. Therefore, there is a concern that the decisions formed with regard to splitting the gas between local usage and export were based on mistaken and irrelevant information.

Hence, the public political conflict on the topic of the gas outline seems to have brought to the public agenda sociopolitical attention to core issues related to democratic rule: What is the main purpose of public policy in this type of government? Should the government be flexible and relinquish some of the public's rights in order to obtain large gains for the country's economy and security? Should the appropriate course of action be guided by the desired situation (formation of a fairer and more profitable arrangement for the state and its citizens) or by the current situation (calculating the interests of the state, society, and the wealthy)? Is it right to focus on the profits and losses that derive from a policy in the long term or should its long term consequences be examined? Are politicians influenced by their aspiration to achieve personal and party-based political benefits in acting to form public policy, or in their actions against it, and to what extent?

### 3.2. The international political dimension

The joint goals of Israel and of the new gas producers in the Eastern Mediterranean, as well as the growing energy markets, can lead to new collaborations and also create ties between rival or hostile countries. This situation provides one-time opportunities for countries in the area, including Israel. The best course of action consists of inter-state cooperation. This possibility is limited, of course, due to conflicts between certain countries in the area.

The discovery of Israel's gas reserves has an undoubtable impact on its regional status in particular and its international status in general. On one hand, this new situation can affect its direct strategic ties with neighboring countries and countries in the region (Egypt, Jordan, the Palestinian Authority, Turkey, Greece, and Cyprus) and increase regional stability, while enhancing joint economic interests between the countries. Israel's transformation into an independent producer of natural gas will enable it to reduce or even forego its dependency on foreign countries for its energy needs, and at the same time create and preserve dependency by foreign countries on Israel as a direct and exclusive supplier of natural gas or as an attractive alternative to their current gas suppliers.

Israel's transformation into a significant gas supplier in the Middle East region presents it with significant geopolitical challenges (Craig and Jones, 2013) as well as political power in the various international spheres. Nevertheless, it seems that the quantities of gas that will be produced from the reserves discovered in Israel's territory are not sufficient in order to transform Israel into a significant factor in the major markets, such as Europe and Asia. Hence, Israel will probably focus on exporting some of the gas to countries in the area and act to promote strategic cooperation agreements with them. There have indeed been disagreements between Israel, Cyprus, Turkey, and Greece for years about their maritime borders in the Middle East region (Eissler and Arasil, 2014), however it seems that now that gas reserves have been discovered in the area (in Israel and Cyprus) these countries will have more motivation to reach understandings and arrangements on this topic.

Accordingly, 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.<sup>24</sup> At the same time, the 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. However, this relationship might have negative and undesirable implications for Turkey's relationship with Israel, as Turkey will probably not be supportive of Israel-Cyprus ties so long as no solution is found to the lengthy dispute concerning the two parts of Cyprus.

Then again, the rapid growth of the Turkish economy in recent years and the lack of gas as a natural resource are major reasons for Turkey's growing interest in the new natural gas reserves discovered in countries in the region, including Israel. For many years, Turkey has been dependent on Iranian gas, and particularly Russian gas that it bought at relatively high prices. Therefore, the expectations for a growing domestic demand for natural gas are compelling it to develop additional sources. Israel is an additional source of gas for Turkey, despite the fact that the two countries have had a tense relationship in recent years (mainly since 2010).<sup>25</sup> Israel, from its perspective, is interested in rehabilitating its relationship with Turkey, and the natural gas fields discovered in its territory might be helpful in this respect. Thus, an Israeli-Turkish connection is essential for both countries economically, politically, and from a security perspective (Eran et al., 2014).

Moreover, it may be said that there is a clear economic rationale to collaboration between Turkey, Cyprus, and Israel on energy matters. While Cyprus and Israel need a commercial quantity of export routes for their gas, Turkey wishes to vary and increase its sources of gas. Such a triple collaboration can offer strong commercial incentives to all involved, however this will require a brave political vision by regional leaders, in addition to receiving the support of external players that have an effect on the chances of reconciliation and stability in the Eastern Mediterranean (Gürel and Le Cornu, 2014). In addition, Israel has a clear aim to maintain and even enhance its stable peaceful relations with neighboring Egypt. The Israeli gas discoveries and their sale to Egypt might be an important means of achieving these strategic aims.

Another international political aspect of the natural gas discoveries is associated with their potential to create and exacerbate new and existing regional conflicts (respectively). This is because the maritime borders between the countries were not defined before the gas discoveries, and hence neighboring countries, as well as the Palestinian

<sup>24</sup> Israeli Air Force planes began training with the Greek Air Force in recent years, Israeli and Greek leaders hold mutual visits, and Israeli tourists have returned to Greek beaches. Source: "What a gas! Israel and its natural resources" (2010).

<sup>25</sup> Due to the affair in which Israel took control of the Turkish ship, "Mevi Marmara".

Authority, might act to include these reserves in their jurisdiction and claim ownership of them, and thus Israel might become embroiled in legal, political, and security-related strife (Khadduri, 2012). Moreover, Israel's recognition as a significant factor in the regional energy market and, indirectly, the inevitable harm to Iran's status as the almost exclusive supplier of energy to countries in the area might worsen the tensions between Israel and Iran. Therefore, it seems that the gas discoveries will constitute both a blessing and a curse: on one hand, they are a means of improving the relationship with its neighbors, while on the other, they are an additional source of conflict.

### 3.3. The security dimension

The security dimension of Israel's natural gas discoveries involves the question of what will be more beneficial for Israel's security: leaving the gas (or some of it) below the sea floor, which will provide energy security for many years, or exporting the gas to neighboring countries and forming economic and defense relationships with them, which will contribute to the country's existential security.

Maintaining energy security means ensuring Israel's regular supply of energy. According to the forecasts of rising energy needs in Israel in future decades, and in light of the increasing instability in the Middle East and the growing threats towards Israel, it is increasingly important to maintain energy security. In order to obtain such security, a variety of sources for the energy needed by the economy must be promoted and developed, means for ensuring their supply in emergencies and crisis conditions as well and at a reasonable cost must be planned, and technologies for renewing energy that will gradually replace use of crude oil must be developed. From Israel's perspective, use of natural gas as a means of reducing its dependency on petroleum has several benefits, which include avoiding the need to purchase fuel in global markets, and reducing the flow of sales profits to Iran and other hostile players. In addition, it is necessary to act to export the balance of oil and gas in order to utilize them for political and strategic needs.

The policy document presented by the Israeli Institute for Economic Planning advocates leaving the gas below the sea floor in favor of preserving the energy capacity for two or three generations at least, and objects to the export of gas to foreign countries, in the claim that exporting the natural gas is less lucrative for the economy and the country than alternative uses in the domestic market (Holander, 2014). Moreover, limiting the export of gas and preserving energy sources for domestic use will reduce or even completely terminate Israel's dependency on foreign countries. Support for this contention is provided by Ratner, who claims that Israel's natural gas discoveries in recent years can have the effect of ending the country's eternal dependency, throughout its years of existence, on the import of energy products from foreign countries. He claims that development of the reserves will reduce Israel's need to import natural gas, coal, and petroleum products in order to generate energy (Ratner, 2012; Siddiq and Grethe, 2014).

Then again, the export of natural gas from Israel can contribute to promoting and improving its international relations with other countries in general and with countries in the Persian Gulf in particular, a region with weighty strategic significance for Israel's security (Bahgat, 2005). A historical review of business collaborations and relationships formed between Israel and neighboring Arab countries indicates that, in the past, Israel had successful collaborations with its neighbors. Examples of this are the import of crude oil from Iran before the revolution in 1979 (Bahgat, 2008), the dialogue between Israel and Iran concerning the Eilat-Ashkelon oil pipeline (Bialer, 2007), and the energy collaborations between Israel and Egypt since the 1980s, after signing the Camp David peace treaty (Bahgat, 2010a, 2010b).

In addition, the discovery of Israel's natural gas reserves might have a direct effect on the Turkey-Iran relationship, and indirectly improve Israel's security. Turkey and Iran, who constitute significant energy producers in the Middle East, have collaborated for many years and have mutual interests. While Turkey needs the gas exported from Iran

in order to meet its growing energy needs, Iran needs Turkey in which to lay its oil pipelines in order to increase petroleum exports to the various European markets. This mutual dependency is strong enough to neutralize the political disagreements between the two countries on a variety of topics, primarily the continuing civil war in Syria (Bahgat, 2014). Therefore, it may be hypothesized that Israel's future transformation into a new player in the regional energy field will position it as an attractive alternative for Turkey's supply of energy. Such future circumstances are capable of shaking Turkey's dependency on Iran and bringing to the surface the political disagreements between the countries, without Turkey worrying about sanctions operated against it by Iran, which might harm its energy security. Therefore, the less Turkey is dependent on Iranian oil the more it will depend on Israeli gas, the more Turkey is dependent on Israel the stronger the political relations between these countries will become, and the stronger these become the stronger their security ties, with a considerable effect on Israel's security stability and status in the region.

### 3.4. The economic dimension

The natural gas discoveries have weighty economic significance for the Israeli economy that might change the geopolitical balance in the Middle East and give Israel an economic advantage over its enemies. These discoveries and the expected growth of local energy sources will let Israel significantly decrease its need for petroleum imports (Ratner, 2012). The special taxation imposed on the profits from natural gas will generate financial revenues that will be collected in a designated fund to be channeled to welfare purposes for Israeli citizens and will improve their quality of life. The proportion of natural gas as a source of energy for producing electricity will grow significantly in the next decades and serve as an alternative fuel for the transportation industry (whether directly or through fuels produced from natural gas), thus reducing the costs of transporting and maintaining wares and vehicles (respectively). In addition, development of the natural gas industry may lead to development of a new and profitable industry in the Israeli economy – the petrochemical industry (Ronen, 2013). These transformations and others may contribute to increasing the profitability of companies within the economy, increase the extent and diversity of employment, contribute to reducing the costs of products and services for the benefit of consumers, and increase the taxes entering the state's coffers.

The experience of countries such as the United States, Australia, and various European countries, indicates the positive economic effect of using natural gas on the domestic industry and economy (De Silva et al., 2016; Bilgili et al., 2016). Accordingly, a document was presented to the Knesset economic committee in 2014 on behalf of the Budget Control Department – Research and Information Center (Milrad, 2014), listing the general benefits that will accrue to the Israeli economy thanks to discovery of the natural gas reserves and their utilization. First, the document's authors claim that use of natural gas will lead to a reduction of electricity production costs (for private consumption and domestic industry), as the price of natural gas is considerably lower than producing energy from other sources. Thus, expanding the use of natural gas is expected to lead to reduced electricity production costs and thus lower electricity bills both of households and, due to the expected drop in production costs, of all industries and particularly high energy consuming industries (such as water, paper, cement, etc.).<sup>26</sup> Savings in these areas might lead to a drop in the price of end products, an increase in production and employment, and consequently an improvement in Israel's social welfare. Second, expanding the use of natural gas is expected to lead to a drop in fuel costs for transportation

<sup>26</sup> From 2004 to 2013 the transition to gas by the Electricity Company and by the Israeli industry (from the smaller reserves discovered and from the import of gas from Egypt) spared the Israeli economy 28 billion shekels, and since the transfer of gas from the Tamar reserve the savings of industry alone are estimated at 1.9 billion shekels annually. Source: <http://www.themarket.com/labels/technion/1.2638222>.

and in freight costs. A reduction of these costs might affect consumers and help reduce the economic disparities between residents in the country's center and periphery. A third consequence is a direct increase in the domestic product, thanks to replacing the import of petroleum and coal with the production of natural gas, and as a result of the drop in import costs, due both to the expected rise in the Israeli economy's exports and to the increase of citizens' spare income, which can contribute to increasing private consumption. And fourth, a positive effect on the country's revenues from taxes, since the production of natural gas is taxed considerably by the country. The state enjoys three taxation sources related to gas production: company taxes, royalties, and a levy on gas profits (surtax). These revenues will be directed at two destinations concurrently: the state's coffers (company tax and royalties) and the fund for Israeli citizens (surtax), which will mostly be devoted to welfare causes for citizens of the state. An economic analysis performed by the Knesset Budget Control Department determines that the expected increase in the revenues of natural gas production companies, particularly due to gas exports, will have a conspicuous positive effect on the state's balance of commerce and on its revenues from taxes. Indeed, the drop in the price of natural gas will lead, on one hand, to a direct drop in the state's revenues, but will also contribute indirectly to a rise in its revenues due to the expected rise in the profits of the business sector and in employment and consumption (Milrad, 2014).

In contrast, the call to promote the export of natural gas from Israel as a way of increasing the profits of the gas companies and, consequently, the state's profits from taxes, encounters strict objection in the position paper submitted by the Israeli Institute for Economic Planning, which states that Israel must maintain a competitive energy industry, i.e., that it should have several concurrent energy sources for every use so that usage can follow the economic attractiveness at the time. In addition, there are those who claim that the use of natural gas for export is less lucrative for the economy and the state than alternative usages in the domestic market, and that the contention that allowing the export of gas is worthwhile and even necessary is unproven and even shaky. The authors of the position paper claim that Israel should use natural gas in the two areas that currently suffer from a significant shortage with no technological horizon for solutions in the next decades: First of all, as a competitive alternative to Israel's use of petroleum, particularly for transportation (and in other fields). Replacing the use of petroleum with natural gas in the transportation field will yield several profits simultaneously: reducing the import of crude oil and its substitutes, reducing the cost of transportation to the benefit of companies and individuals, and increasing private revenues that will help increase consumption and improve the domestic product. Second, to reduce the price and increase the output of water in Israel, using the cheap technology of producing desalinated water. All this while also expanding use of natural gas in the electricity industry and in other sectors. Use of gas to increase the efficacy of the water industry, and particularly for desalination plants, is profitable for the state and will increase the availability of significant strategic opportunities in the region (Holander, 2014).

A document written by TASC – Consulting & Capital in 2014 examined the effect of the entrance of natural gas on the Israeli industry in general and the traditional industry in particular. The authors of the document claim that before the discovery of the gas reserves and use of natural gas by Israeli industry, the latter utilized refined petroleum products and alternative fuels that cost significantly more than natural gas. Therefore, the transition to increased use of natural gas instead of the more expensive energy sources will have economic benefits for the domestic industry and will increase the companies' profits.<sup>27</sup> Moreover, a situation in which production costs will be reduced as a result of using

domestic and relatively cheap natural gas is expected to give the export-inclined Israeli companies a significant advantage in the competition against their rivals in Europe, most of whom use expensive imported natural gas. But not only the export-inclined companies will reap economic benefits from using natural gas, rather also local companies in traditional industries that do not export rather aim their produce at the domestic market. These companies will enjoy, as stated, a significant drop in production costs, which will allow them to reduce their prices and thus increase their attractiveness among the Israeli public (TASC, 2014).

The natural gas discoveries are expected to have direct and indirect impacts on the scope and structure of the Israeli labor market. Support for this forecast is provided by the fact that since 2014 the Israel Bank has been publishing its growth forecast in a special format that includes two types of data: overall growth, and growth that does not take into account natural gas discoveries along Israel's coastline. The reason is that the growth forecast is intended to let policy makers understand the economy's growth process, manifested among other things in creating new jobs. It is customary to assume that the natural gas discoveries will have a major impact on the state's revenues, and a limited impact on creating new jobs, but this seems to be mistaken.

Thanks to the development of the energy industry in the United States in recent years, many employees indirectly related to this industry have been added to the domestic labor market, such as investment bankers, analysts, economists, engineers in various fields, researchers, and scientists, as well as business development managers, employees in the various service branches, accountants, tourist business owners, and also administration and human resources experts (Weber, 2012).

Similarly, Israel's natural gas industry can lead to the development of service enterprises and advanced hi-tech products and to the establishment of work relations between the gas companies and local hi-tech companies. These collaborations are capable of further expanding and developing the Israeli hi-tech industry and contributing to enhancement of the local labor market.

Furthermore, the discovery of natural gas and establishment of the Israeli energy industry has great potential for connecting Israel with the world's energy giants and opening the door to unprecedented business opportunities. Israel's extensive future activity in gas and oil might be a springboard for Israeli entrepreneurs and start-up developers in many areas of the global energy industry. For this reason, it may be said that this is a mighty technological industry that encompasses many varied domains, in which innovativeness occupies a central place.<sup>28</sup>

#### 4. Discussion

A discussion of the design of Israel's natural gas industry reveals the combination of various different interests and stakeholders that have influenced or attempted to influence (respectively) the government policy in this area. The various interests that have affected the shaping of policy are related to economic, security, social, and political dimensions, and the various pressure groups that influenced or tried to influence the process of shaping policy were accordingly affiliated with wealthy people and companies, military and security figures, politicians and political and apolitical social groups.

The current study lists the various aspects related to Israel's natural gas policy and thus reinforces the principle that, in the process of shaping policy and its final formation, decision makers are required to correctly evaluate the various overall benefits that might accrue from the different alternatives associated with the issue, versus the various losses and threats revealed. In addition, the process of shaping Israel's natural gas policy, with its various aspects, provides answers to several basic questions that embody society's values and goals, questions that

<sup>27</sup> For example, thanks to a list of innovations and discoveries in the American energy industry (such as oil shales and new gas drillings), the United States added about one million jobs to its domestic oil and gas industry from 2007 to 2012.

<sup>28</sup> For example, improving the speed of drilling, drilling depth, drilling safety, etc.

the actors involved sought to answer when attempting to design public policy on this issue:

First of all, Israel's decision makers were required to recognize the main question: What is the public problem that must be solved or prevented? Is there some threat that requires us to change the current state of affairs? If so – is it related to a security or political problem involved in the dependency on importing energy sources from foreign countries or is it an economic problem related to the rising costs of imported energy sources? And perhaps there is no threat or problem in the current state of affairs, rather the policy is associated with the opportunity Israel has received to upgrade its economic, political, and security state.

Second, policy makers were required to evaluate the urgency of solving the problem for the purpose of preventing it or improving the situation: Will a delay in regularizing the gas outline versus the private gas companies be detrimental to Israel and lead to a loss of the various benefits that may accrue from natural gas? In such a case, the state must rapidly finalize the gas outline without properly evaluating the various alternatives and without holding a suitable public hearing. Alternately, they may be no urgency requiring rapid action under pressure and in such case it is worthwhile to put all actions on hold until the various alternatives are examined in depth and a wide and extensive discussion held in the relevant forums.

Third, the state had to extensively examine the various costs involved in the proposed policy. The economic, political, and security costs related to implementation of the gas outline had to be presented and analyzed by various professional factors versus the decision makers. And finally, before approval of the gas outline and its actual application, it was incumbent upon the state to present a well thought out evaluation of the certainty of achieving the various political goals. From the economic aspect – to examine and evaluate as accurately as possible the size of the reserves, the quantity of gas that could be produced, the demand for natural gas in Israel, the demand for imported gas from foreign countries, the viability of the planned trade agreements, and the expected volatility of the price of natural gas in particular and of other energy sources in general, and more. From the security aspect – to evaluate the positive impact of activities concerning the gas reserves on Israel's political and security status in the area versus threats resulting from the vulnerability of the reserves and their exposure to possible terrorist attacks and versus the undesirable energy dependency that might result from termination of oil imports. Following these principles is important for the policy shaping process in any democratic country on any topic, and all the more so in such a complex country, from a political and security standpoint, such as Israel.

The research findings reviewing the various aspects related to the policy of Israel's natural gas industry following discovery of the reserves are based on policy documents presented to the various Knesset committees that attempted to form government policy on the subject. These documents mostly present specific viewpoints related to the policy formed. For example, the document written by [Holander \(2014\)](#) focuses only on the economic impacts of the gas discoveries, and the document presented by the Institute for National Security Studies ([Eran et al., 2014](#)) examined the viability of exporting gas to Turkey. The document written by [Ronen \(2013\)](#) raised queries concerning the size of the reserves and their contents, the lucrativeness of exporting natural gas and the efficacy of its use for transportation. Unlike these policy documents that focused, as stated, on only one aspect, the policy document written by [Laufer \(2015\)](#) examined three of the four aspects reviewed in the current study and presented the economic, political, and security implications of producing and using natural gas.

## 5. Conclusion

Reading the various policy documents and Israeli media publications leads to the conclusion that the issue of natural gas discoveries in Israel is complicated and involves various dimensions characterized by

a great deal of complexity and uncertainty that create a unique collection of problems and ways of handling them. First of all, there is the difficulty involved in setting a time frame for the public policy shaped with regard to natural gas. Indeed, long term perspectives are clearly significant, however too distant a planning horizon regarding natural gas might have very little practical meaning as the number of factors that must be taken into account and the uncertainty concerning their impact limit even shorter term forecasts. Second, the work distribution and the interaction between the government, the public, and private companies is very complex. Since the state did not wish to cope (or was not capable of coping) with the technological challenges and financial risk involved in searching for gas and deep gas drilling, it awarded concessions to private developers. This created a situation in which the developers act as owners of the drilling sites by virtue of the concession, although the real owners of the sites and of the natural resources within them are the Israeli public and the government of Israel as their representative. The right to extract and market the natural gas was indeed granted by the government to commercial companies, but this fact does not detract from the government's authority to reach fiscal decisions on the issue for the benefit of public interests. Third, the tax policy as well, including tax on gas profits, royalties, and the scope of export, must reflect this principle. In theory, high taxes and restrictions on export might reduce investors' and developers' motivation to become involved in gas production to begin with. However, the gas reserves found and those anticipated make production sufficiently attractive, particularly considering the rise in the domestic and global demand. Fourth, it is hard to ignore the fact that the Israeli government chose not to hold a public debate or Knesset inspection of the gas outline issue. Such a debate would have ensured fundamental and proper attention to public interests. Fifth, the decision concerning the proportion of the gas reserves that should be preserved for domestic needs, and how much to export, is particularly complex. On one hand, gas exports are expected to enrich the government's coffers considerably and also serve as a catalyst for improving Israel's relations with its neighbors. On the other hand, the Israeli economy can enjoy the full benefits of the transition to natural gas only by maintaining a large reserve of gas that will serve as a stimulus for such a transition. In addition, producing energy and gas-based transportation, which reduce the emission of pollutants in these sectors, have significance for the transition of existing industries and for encouraging new industries to utilize this means in order to cut production costs and increase competitiveness versus various global markets.

Israel's political and security complexities necessitate the implementation of a different model, one that is applicable in any country with similar political and security characteristics, with Israel serving as a case study of this type of policy. Such a policy model combines a free market with government regulation, as the energy industry in general and natural gas in particular are high-risk fields that require extremely high financial investments with no assurance or guarantee that the investments will be repaid. Therefore, it is reasonable that the state will avoid assuming the risk involved in these precedential investments, thus risking public funds, and act to encourage private entrepreneurs to do this in its stead. Then again, the natural gas industry has (as portrayed above) security and political implications. In dilapidated political and security circumstances (as in Israel) the state must regulate and supervise this market in order to prevent market failures that might harm public interests related to these aspects.

This type of policy is situated midway on a continuity between two models of public policy. At one end is an intervening and controlling policy similar to that implemented in Russia since the mid-2000s, one characterized by government intervention while strengthening the state's control of local energy companies ([Milov et al., 2006](#)), and on the other is a liberal policy that lets free market powers set the rules (price, scope of export, number of players, etc.). Indeed, even in the United States, considered a country with a liberal economic policy, doubts were raised several years ago as to the suitable degree of intervention in

free market sources with regard to the natural gas industry.

Similar to the Israeli debate in 2013 concerning the quantity of natural gas that should be exported versus that which should be preserved or utilized to meet the country's internal needs, in the US as well a bitter debate ensued on the option of exporting natural gas. The increasing rate of gas production, side by side with the growing demand, confronted the government of Barack Obama, then President of the United States, with a real dilemma concerning the government's suitable degree of involvement in the free market. American policy makers were required to consider the advantages embodied by the export of gas for improving the country's balance of trade, creating jobs, and realizing geopolitical aims, versus the environmental disadvantages of accelerated production<sup>29</sup> and the possible effect on the price of the gas and its uses in the domestic market.<sup>30</sup>

Eventually, however, a more liberal policy than that implemented in Israel was formed there, following the relatively low influence of security and political aspects.

In conclusion, a natural resource such as natural gas, that is in demand but is also expendable, has a unique impact on the economy of any country. In the Israeli context, with its political complexity, unique security needs, and unstable political status, this resource has additional implications, as examined and presented above. Therefore, a government policy of maintaining control of the gas reserves, as implemented in Russia, is not necessarily appropriate for Israel, just as a liberal policy that leaves this industry to the influences of the free market, as in the United States, is not necessarily the right choice for Israel's different needs.

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<sup>29</sup> The production of natural gas from shale gas is accompanied by three main risks: water pollution, increased emission of greenhouse gases, and increased seismic activity.

<sup>30</sup> Decision makers were required to estimate whether the production rate could grow enough to meet both future domestic demand and exports. Lacking a sufficient rate of production, the concern was that gas prices would rise, which would not only be detrimental to domestic usages but exports as well could become financially non-viable.

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