



State of Israel  
Ministry Of Energy

Conclusions of the Professional Team For the Periodic  
Examination of the Recommendations of the Committee on  
Examining the Government's Policy in the Natural Gas Market  
Adopted in Government Decision 442 Dated June 23 2013

December 2018

## Executive Summary

### Introduction

On October 2 2011, the Prime Minister and then-Minister of National Infrastructure (today the Ministry of Energy) Dr. Uzi Landau appointed an inter-ministerial committee to examine the government's policy in the Israeli natural gas market, chaired by then-Director General of the Ministry of National Infrastructure Mr. Shaul Zemach ("**the Zemach Committee**"). The committee's members included representatives from the Budgets Department of the Ministry of Finance, the Antitrust Authority, the Ministry of Environmental Protection, National Economic Council, National Security Council, Ministry of Foreign Affairs and Ministry of Justice. This committee was established following the large natural gas discoveries of Tamar and Leviathan in Israel's Exclusive Economic Zone, which within a short period significantly increased Israel's natural gas reserves.

The committee's letter of appointment tasked its members with examining the policy pursued in natural gas markets in the world for the purpose of learning from international experience, as well as carrying out a domestic supply-demand analysis and to accordingly recommend to the Government of Israel a government policy for developing the natural gas market while taking into account the unique characteristics of the market and combining between the needs of the domestic energy market and economic, environmental and political goals. The recommendations of the Zemach Committee were published on August 29 2012 and were anchored in Government Decision 442 of June 23 2013 with changes made by the government that will be detailed below.

The main recommendations that were adopted, with changes by the government, as part of Clause 1 of Government Decision 442 are as follows:

- To reserve 540 BCM of natural gas for the domestic market which will enable to meet the demands for natural gas for the energy needs of the market for 29 years starting with date of this decision (in place of the committee's recommendation to reserve 450 BCM which can meet the domestic market's needs for a period of 25 years).
- Natural gas exports will be subject to an approval by the Petroleum Commissioner.
- Lease holders are required to connect all natural gas fields in the lease area to the domestic market, at the timing and scope that will be determined, as part of the deed of lease, and in accordance with the conditions that are set out.
- An inter-ministerial committee will be established to promote the removal of barriers in gas sale infrastructure to consumers in and outside of the domestic market, and to define export infrastructure as national infrastructure of strategic importance.
- An assurance that the planning, allocation and construction of onshore and offshore natural gas transmission and treatment infrastructure to the domestic market will be

carried out with the government's participation, as required; A statutory regulation of the necessary infrastructure and an examination of alternatives to government participation in the planning and construction of natural gas transmission and treatment infrastructure to the domestic market.

- The gas export facility will be located in an area controlled by the State of Israel, including the Exclusive Economic Zone, unless determined otherwise in a bilateral agreement between countries.
- To work towards promoting international agreements for future joint ventures in the natural gas market.
- To determine an obligation of minimum supply to the domestic market, based on the amount of gas in the field, according to 4 categories of fields:
  - 1) 200 BCM and more – 50%;
  - 2) 100-200 BCM – 40%;
  - 3) 25-100 BCM – 25%;
  - 4) Less than 25 BCM – the minimal amount that will be determined by the commissioner

In addition, to establish specific conditions for cross-border reservoirs, the option for swap deals and their conditions, an examination of separate sales, the immediate supply to bordering countries (this decision was revised in 2015 under Government Decision 476), and to determine rules for the sale of natural gas to consumers in the domestic market that is used to manufacture products designated for exports.

In light of the provisions of Clause 1(i) of Government Decision 442, regarding the examination of the provisions of the decision five years after its approval, on 4.1.2018 the Director General of the Ministry of Energy Mr. Udi Adiri appointed a professional team that includes representatives from the ministries and authorities that took part in the deliberations of the Zemach Committee. The professional team was appointed in order to examine the provisions of Clause 1 of Government Decision 442, and in particular the implementation of the obligation to connect the natural gas fields to the domestic market, an examination which was required by Government Decision 2592 of 2.4.2017, for the purpose of encouraging small and medium reservoirs.

Between January-May 2018, the professional team held a number of meetings during which its members were presented with summaries of the present factual situation as of 2018 in terms of the supply of natural gas, energy security and redundancy of supply, data on natural gas consumption between 2013-2017, updated demand forecasts for a range of 25 years – until 2042, including the issue of maximum hourly demand. To ensure stability and certainty, the team focused on examining the recommendations that require a periodic examination or those which have had a significant change in circumstances. The professional team therefore focused on examining the supply and

demand of natural gas, and to that end discussed the amount of natural gas to be reserved for the domestic market, the obligation to connect to the domestic market and the minimum required rate of supply to the domestic market each field is obligated to according to its size.

The guiding principles for the professional team throughout its work are primarily identical to the principles of the Zemach Committee and include maximizing the value of the natural resources for the Israeli public, ensuring energy security for the Israeli market, maintaining the efficient operation of the gas market, encouraging and incentivizing the development of new fields and ensuring competition among the suppliers in the market. Despite the identical guiding principles, there may be a difference in the manner the principles are implemented as a result of changes in the factual situation between the periods in which the Zemach Committee and the professional team operated, as well as the insights that were gained over the last five years. It is hereby clarified that in accordance with Clause 1(i) of Government Decision 442, changes that are included in the government decision as a result of this report will only apply to discoveries recognized by the commissioner starting with the date of the approval of the government's decision resulting from this report.

The professional team operated in light of the government decisions that were approved between 2013-2018 regarding the natural gas exploration and production segment, including Government Decision 476 of 16.8.2015 "the outline for increasing the amount of natural gas produced from the Tamar field and the rapid development of the Leviathan, Karish, Tanin and additional natural gas fields" and Government Decision 1465 of 22.5.2016 "amendment to the outline for increasing the amount of natural gas produced from the Tamar field and the rapid development of the Leviathan, Karish, Tanin and additional natural gas fields" ("the gas outline") and Government Decision 2592 of 2.4.2017 "encouraging small and medium reservoirs and declaring a state of emergency in the natural gas market."

On 16.7.2018 the professional team's interim report was published on the Ministry of Energy's website for public comments. During the publication period, comments were submitted by various stakeholders such as rights' holders, public non-profit organizations, economic consulting firms and other citizens. The professional team reviewed these comments and some were assimilated into its final report.

### **Exploration and Production of Natural Gas in Israel in 2018 Compared with 2012**

The professional team was presented with the state of natural gas exploration and production as of 2018. The team learned that in 2012, when the Zemach Committee deliberated, Israel's maritime zones contained 36 licenses and 4 leases and the outlook was for a continued and significant development of the exploration and production segment offshore Israel. In practice, between 2013-2018 drillings were not carried out in most of the licenses. In fact, since 2012 only two exploration wells were drilled offshore

Israel, both in 2013. As of the date of the preparation of the report (December 2018), there are 8 licenses and 10 leases offshore Israel.

In addition, in 2012 only two fields were connected to the domestic market, Noa and Mari-B, via a single production system, which produced 4 BCM during the peak year (2011) and negligible amounts of natural gas were produced in 2012. At present, in addition to these two fields, the Tamar field is connected to the domestic market and transmits 10 BCM a year. With the completion of the development plans of the Leviathan field, which is due to connect to the domestic market in the fourth quarter of 2019, and the development of the Karish and Tanin fields, which are due to connect to the domestic market in the first quarter of 2021, three separate and significant production systems will be connected to the market which can supply a total of at least 28.5 BCM annually (12 + 10 + 6.5), 3 BCM of which is designated for exports to Jordan. In addition, applications have been submitted to the Petroleum Commissioner for the approval of exports with a total scope of 32 BCM from the Tamar lease and 32 BCM from the Leviathan lease until 2030 to local consumers in Egypt. The market also has a buoy available for receiving LNG from a regas vessel with an additional scope of 3 BCM a year.

### **Natural Gas Supply**

The review of natural gas supply as of 2018, indicates a slight difference in the contingent resources and reserves category (PRMS 2C+2P) between the 2012 and 2018 data. To the Tamar, Dalit, Leviathan and Tanin fields were only added the Karish and Tamar South West fields. The Zemach Committee report assumed that other than the amounts of natural gas discovered up until then, there was an additional potential for gas volumes that was classified at the time as prospective resources, and it was assumed that an additional 150 BCM would be discovered, of which 51 BCM have been discovered to date. During the period since the Zemach Committee report, 43 BCM have been consumed (40 of which from the Tamar field), compared with the demand forecast presented in the Zemach Committee report that predicted a demand of 49 BCM during this period. Since 2013, when Government Decision 442 was made, not even one single exploration well has been drilled offshore Israel. In addition, the licenses that contained prospects that were included in the calculation of prospective resources in the Zemach Committee report were relinquished without exploration wells having being drilled (Daniel East, Daniel West, Aryeh, Oz, Ruth C). The professional team believes that in order to encourage the activities in the exploration and production segment, the state should identify the reasons that led to the current state of operations and continue the policy of encouraging natural gas exploration and development, particularly with respect to small and medium reservoirs.

## **Natural Gas Demand Forecast in the Israeli Market for 2018-2042**

The review of natural gas demands in the market that was presented to the professional team included 8 scenarios that predict the demands for gas in the market over the next 25 years – the period between 2018-2042 - in the electricity, transportation, industrial and petrochemical industry sectors, based on various assumptions on the rate of growth of natural gas demand for electricity generation and the rate of penetration of natural gas in other sectors. The professional team chose to adopt the scenario by which the market is due to consume 452 BCM of natural gas during the next 25 years. The scenario allows to meet all of the government's targets in the electricity, transportation, industrial and petrochemical industry sectors, including the Ministry of Energy's policy on reducing the extent of coal use for electricity generation. The scenario also assumes meeting the government's targets for energy efficiency and electricity generation from renewable energies. The professional team decided to adopt this scenario under the assumption that it is the most likely and suitable in terms of its underlying assumptions and compatibility with the government's targets. We remind that Government Decision 442 stipulated that an amount of 540 BCM must be reserved for the domestic market. In light of the uncertainty surrounding the parameters that make up the key demand scenario, it is proposed not to change the amount reserved for the domestic market in Government Decision 442, and to ensure a supply of 500 BCM until 2042 to the domestic market, so that this volume thus includes a surplus of 50 BCM that will serve the domestic market insofar as the government's energy efficiency targets are not realized in full or, if needed, for unexpected events or additional years of supply.

It is hereby noted that according to the information available at present, it appears that the total amount of natural gas that is due to be supplied to the domestic market under the obligation of minimum supply from the fields discovered to date is expected to fully meet the natural gas demand forecast in the domestic market until 2042.

A presentation of the maximum hourly demand forecast indicates that even with the assumption of the connection of three separate production systems by 2021, a shortage is expected in meeting the demand at the hourly level in the middle of the 2030-2040 decade, and this if no new reservoirs are connected to the domestic market by then, or if the treatment and production capacity of the discovered reservoirs is not increased, or if new solutions for electricity or natural gas storage are not available to the market.

In order to prevent the future expected shortage at the hourly level, the professional team recommends to apply a set of solutions, including:

- When approving natural gas exports, the Petroleum Commissioner has the duty to take into account considerations pertaining to the hourly demand issue, particularly if exports are planned to pass through the national transmission system, and if needed to establish conditions in the export permit in order to ensure that domestic demand at the hourly level to consumers in the domestic market is met.

- The state must work towards encouraging the connection of additional fields to the domestic market, particularly near the middle of the next decade (2030-2040).
- In order to ensure redundancy for the domestic market, it is proposed not to recommend that the agreement with the regasification vessel that is connected to the offshore LNG buoy to receive natural gas from LNG tankers be cancelled (the agreement is currently valid until 2022). The cancellation of the agreement with the regasification vessel or a decision not to extend it will be examined in 2021. In addition, it is proposed to recommend that a decision to cancel or not to extend the agreement will only be made if the Director of the Natural Gas Authority has concluded that the market has sufficient redundancy to meet the maximum hourly demand in the market.

### **Benefits from Exports**

The professional team examined the benefits arising from natural gas exports, such as enhancing the potential for competition in the market due to the contribution of the option to export natural gas to the economic feasibility of new investors, moving up the tax revenues to the state, contribution to the geopolitical aspect of the country and increasing the gross domestic product.

### **Rules for Special Export Tracks**

The team was presented with the need to establish rules for special export tracks, such as exports of by-products produced from natural gas, as well as secondary trading of natural gas, whether bilaterally or on a natural gas trade exchange. Regarding by-products produced from natural gas, it is proposed to determine that the Minister of Energy, in consultation with the Minister of Finance and the Minister of Economy, prepare an administrative work formulating the necessary principles of regulation and initiate regulatory amendments, including legislative amendments if required, regarding the sale of natural gas to consumers in the domestic market that is used to produce by-products produced from natural gas that are designated mainly for exports.

Regarding secondary trading of natural gas, it is proposed that insofar as a mechanism is established for secondary trading of natural gas, the Minister of Energy will initiate regulatory amendments, including legislative amendments if required, in order to regulate the operation of the mechanism. Said regulation will ensure that the export limit is met.

With respect to the issue of exports through secondary trading, in light of the above, it is proposed to determine that in order to enable the future development of a mechanism for secondary trading of natural gas, secondary trading that could be directed to exports will be limited to 3% of the total sales of natural gas to the Israeli market during the past year.

This amount will not be counted in the calculation of the total amount of gas to be guaranteed to the domestic market but will not require an export permit and will be counted as part of a natural gas field's obligation of minimum supply to the domestic market.

### **Obligation to Connect to the Domestic Market**

The obligation to connect to the domestic market was stipulated in Clause 1(c) of Government Decision 442. This clause determined that lease holders are required to connect all natural gas fields in the lease area to the domestic market, at the timing and scope that are determined, as part of the deed of lease and in accordance with the conditions set out.

The obligation to connect each producing field to the domestic market was explained in the Zemach Committee report for two main reasons: the first is to create energy redundancy and security, and the second is to increase the supply to the domestic market and encourage competition.

The review presented to the professional team indicates that the expected energy redundancy and security situation at present is fundamentally different than it was in 2012, therefore there appears to be room for a rethinking of the obligation to connect each field to the domestic market.

The professional team was presented with real concerns that the obligation to connect constitutes a major barrier to making investments in natural gas exploration in Israel. The economic costs and additional statutory and planning difficulties which the obligation to connect to the domestic market impose on the companies, create a precursory chilling effect on the exploration and development of natural gas fields. Consequently, imposing an all-inclusive obligation to connect to the domestic market at present could hurt competition as it creates a significant barrier for additional investments in the sector.

Government Decision 2592 of April 2, 2017 regarding the encouragement of small and medium reservoirs and the declaration of a state of emergency in the natural gas market stipulated that the Petroleum Commissioner must be instructed to examine the manner of implementing what is stated in the above Clause 1(c) of Government Decision 442 in order to encourage small and medium reservoirs, namely the examination that needs to be carried out and the recommendation as to revising the decision on the obligation to connect each field to the domestic market should be in view of the need to encourage the development of small and medium fields.

In light of the estimate that three natural gas fields will be connected to the domestic market in 2021, it is proposed that in order to balance between the need for redundancy, energy security and competition in the natural gas market, including the desire that an additional field will be connected to the domestic market by 2033-2035 during which a shortage is expected in meeting the hourly demand, and between the desire to encourage

the entry of investors into the natural gas exploration and production segment for the purpose of the rapid development of natural gas reservoirs, the professional team recommends to determine an obligation to connect to the domestic market based on the size of each field as follows:

- Natural gas fields which contain more than 200 BCM must connect to the domestic market upon development, and prior to the date of commercial gas flow.
- Natural gas fields which are larger than 50 bcm and up to 200 BCM and begin commercial production before 1.1.2028 will be required to connect to the domestic market by 31.12.2032. A further postponement of the obligation to connect to the domestic market beyond 31.12.2032 will be at the discretion of the Petroleum Commissioner who will consider for this purpose the state of redundancy and amount of natural gas reserves connected to the domestic market and he will give his decision as close as possible to the date of the approval of the discovery. Fields in this category which begin commercial production after 1.1.2028 must connect to the domestic market upon development, and prior to the date of commercial gas flow.
- Natural gas fields which contain up to 50 BCM are not required to connect to the domestic market, and this is in order to encourage their development.

The amount of natural gas with regard to the obligation to connect to the domestic market will be based on PRMS categories 2C and 2P combined, and will be determined by the Petroleum Commissioner as close as possible to the date of the approval of the discovery in the field. The amount will be calculated in aggregate for fields that produce using a single production system, and in addition the leases in which these fields are located have the same party approved as the operator; or the same party who holds more than 50% of each of said leases; or the same party approved as the operator in at least one of the leases and who holds more than 50% of another lease. The Petroleum Commissioner may, with an explained decision, decide not to calculate the amount of natural gas in the fields in aggregate.

- To encourage the connection of additional fields, it is proposed that insofar as exploration activities develop in the southern offshore area of Israel, the Petroleum Commissioner, the Director of the Natural Gas Authority and the Director of Budgets at the Ministry of Finance will consider the state's participation in the construction of an additional offshore system in the southern polygon approved in National Outline Plan (TAMA) 37/H that includes an offshore receiving terminal and its connection to shore.
- In addition, the professional team recommends that additional means will be examined for encouraging maximizing the potential economic benefits of natural gas fields, including encouraging the connection to the domestic market of fields that are not obligated to connect to the domestic market or that received a postponement of the obligation to connect pursuant to aforesaid recommendations. Such encouragement may be by way of granting positive scores in competitive bidding to

parties that commit to move up the connection to the domestic market beyond what is required of them according to the amount of natural gas in the fields, or by other methods.

**Obligation of Minimum Supply to the Domestic Market**

The professional team also addressed the question of the obligation of minimum supply to the domestic market and examined a certain distortion that was created when the quotas were set, mainly in the transition points between the levels at which the quota rate changes, so that in some cases a small field may export a much higher amount of natural gas than a larger field. In addition, after examining the costs and benefits of imposing an obligation of minimal supply to the domestic market on small and medium fields, the professional team believes that in order to continue and encourage the development of small and medium fields, the obligation of minimal supply to the domestic market should not apply to fields that contain less than 50 BCM of natural gas.

The professional team therefore recommends that Clause 1(h) of Government Decision 442 be amended, and that the calculation of the obligation of minimal supply to the domestic market will be in proportion to the size of the field and calculated according to the incremental amount, as follows:

<b><u>Amount of natural gas in the field</u></b>	<b><u>Obligation to supply to the domestic market</u></b>
Fields that contain, as determined by the commissioner, less than 50 BCM	No obligation of minimal supply to the domestic market
For each additional 1 BCM from 50 BCM to 200 BCM	50% of this amount
For each additional 1 BCM from 200 BCM and above	55% of this amount

It is important to note to this recommendation, as all other recommendations of the professional team, does not pertain to fields that have already been discovered offshore Israel and that this revision applies solely to fields in which a discovery has not been approved yet by the Petroleum Commissioner.

**Further Periodic Examination of the Conclusions of the Professional Team**

To conclude, the professional team requests to stipulate that in light of the uncertainty in the sector as a whole, particularly the uncertainty surrounding the natural gas demand forecast and the changes that could take place in natural gas supply, Clause 1 of

Government Decision 442 and the recommendations of the professional team be re-examined five years after the date of the approval of the government decision anchoring the recommendations of the team, similar to the decision made in the Zemach Committee report and Government Decision 442.