



Overview of the Oil & Gas Industry in Israel

March, 2013

Oil and Gas Exploration and Production in Israel

The development of the energy industry in Israel was rendered a tremendous boost with the discovery in 2009 of the 'Tamar' gas field, followed by an additional discovery at 'Leviathan', which turned to be one of the largest deepwater discoveries of gas worldwide' within a decade.

The Levant Basin Potential

According to U.S. Geological survey that took place in March 2010, there are an estimated **122 trillion cubic feet** of undiscovered, recoverable natural gas in the Levant Basin Province in the Eastern Mediterranean region. Additionally, the Levant Basin Province holds an estimated **1.7 billion barrels** of undiscovered, recoverable oil.

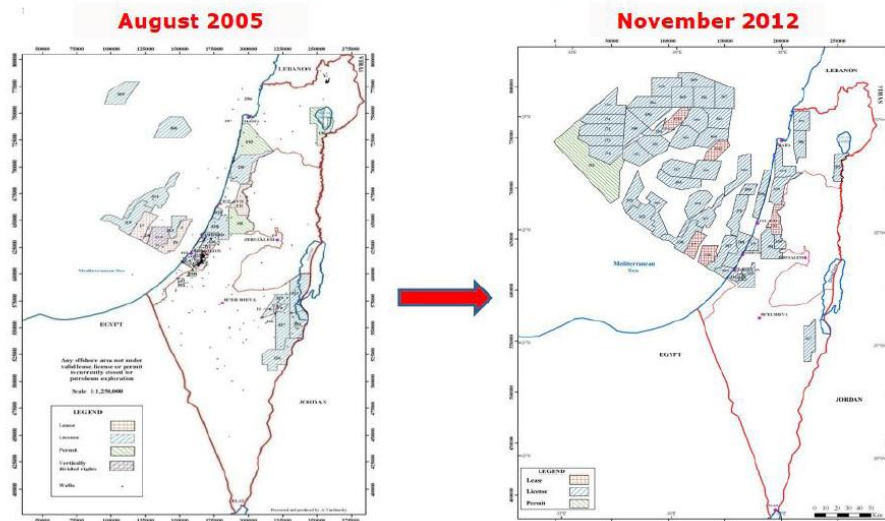
According to a Business Monitor International report from July 2012, "While gas production is set to rocket, strong potential also exists for oil, both in the form of deep offshore reservoirs and a pilot scheme for oil shale, which could potentially unlock several billion barrels of reserves."

Recent significant offshore discoveries in the Levant Basin

- "Shimshon" - August 2012, ~0.55 TCF of natural gas
- "Aphrodite" Cyprus (Block 12) - December 2011, ~7 TCF of natural gas
- "Dolphin" – December 2011, ~0.1 TCF of natural gas
- "Leviathan" - December 2010, ~17 TCF of natural gas
- "Dalit" - March 2009, ~0.7 TCF of natural gas
- "Tamar" - January 2009, ~9.4 TCF of natural gas, under development
- "Yam Tetis" – 1999, ~1.1 TCF of natural gas
- "Tanin" – Indications of hydrocarbons were reported in mid 2012 with an estimated ~1.2 TCF of natural gas

As the following diagram indicates, there has been a very significant increase in exploratory activities in the Levant Basin, over the last few years (the diagram does not include ongoing activities on the Cyprus side of the Levant Basin).

Licensed Blocks



*Source: Israel Ministry of Energy and Water Resources

Key players in the Israel Oil and Gas market

The Association of Oil & Gas Exploration Industries

The Association of Oil and Gas Exploration Industries in Israel was established in 2010, as a division within the Federation of the Israeli Chambers of Commerce, constituting one of Israel's largest business organizations. The Association is comprised of 15 companies active in the Israeli Oil and Gas industry, specializing in the exploration and production of oil and gas.

- Adira Energy
- AGR Energy AS
- GGR
- Alon Natural Gas
- Avner Oil Exploration LP
- Cassal Drilling Ltd.
- Delek Drilling LP
- Glob Exploration (Y.C.D) Limited Partnership
- Israel Energy Initiatives Ltd (IEI)
- Israel Opportunity Energy Resources, LP
- Namax Oil and Gas Ltd.
- Modiin Energy, LP
- Noble Energy
- Ratio Oil Exploration (1992) LP
- Zion Oil and Gas

International Players

- Noble Energy - Noble Energy is the most prominent one with a significant presence in the market, including a large equity stake in the Leviathan gas field as well as a local office with dozens of employees.
- Edison - submitted application to the oil committee to receive 20% of Gal Licenses
- Woodside - it was reported that Woodside has signed terms sheet for 30% stake in Leviathan field, and is soon to establish an office in Israel
- AGR Energy AS
- CDC – Caspian Drilling Company Ltd.
- Adira Energy
- GGR

Engineering projects/sub-contracting work - additional foreign companies from other countries such as Norway and Korea (Daewoo) are also involved.

Downstream Companies (including processing & retailing)

In this sector, some of the noteworthy companies include:

- ORL-Oil Refineries (BAZAN), largest oil refinery and petrochemical producer in Israel
- Paz, Delek (active in both upstream & downstream) and Sonol- fuel retailers
- Israel Natural Gas Lines (single state owned licensee in gas distribution)
- Israel Electric Corporation (government owned electricity producer and distributor)

Over the last few years with changes in government regulations, new private power producers are also developing several infrastructure projects, the first ones expected to commence supply to the market by the end of 2013.

Government Regulators

The major government regulators involved in the oil & gas industry:

- The Ministry of Energy & Water Resources
 - 'Zemach' Committee - The Inter-ministerial Committee to Examine the Government's Policy Regarding Natural Gas in Israel. The Director General of the Ministry of Energy and Water Resources, Shaul Zemach who served as the Chairman of the Committee, submitted recommendations on the export policy to the Prime Minister and to the Minister of Energy and Water Resources on August 29, 2012, which are yet to be approved. The committee's recommendation*:
 - ❖ Allows exporting from Leviath 75% of the quantity of natural gas, with the stipulation that another discovery can meet Israel's domestic needs.
 - ❖ Increases the amount of gas for export to 500 billion cubic meters (BCM), as well as the amount of gas to be reserved for domestic consumption to 450 BCM.
 - ❖ Within five years from the report's approval, gas quantities for export and domestic consumption will be revised.
 - ❖ Removing the restriction on gas exports from reservoirs, the restriction of 15% safety margin at a reservoir, and the ban on large gas field owners from transferring export rights to other reservoirs.

*Source: The Ministry of Energy and Water

- ❖ The report calls for government involvement in the planning and construction of natural gas infrastructures (government will build onshore terminals and plan the offshore gas pipeline network to link fields to shore terminals).
- ❖ The Committee decided to require all gas reservoir license owners to obtain an export license and permission from the Petroleum Supervisor for export sales agreements. This condition will not apply to reservoirs jointly owned by Israel and other countries referring to the Ishai license.
- The Ministry of Environmental Protection
- The Israel Antitrust Authority
- The Israel Securities Authority
- The Ministry of Finance - involved in terms of fiscal policy and funding for large scale infrastructure projects
 - **Petroleum Taxation Law** - The law was approved on 2011, and constitutes the adoption of the 'Sheshinski' Committee's, tasked to oversee the fiscal policy on the sector.

Key elements of the law*:

 - ❖ Leave the rate of royalties at 12.5%, while implementing alternative fiscal tools for the purpose of increasing the state's share.
 - ❖ Canceling the depletion deduction.
 - ❖ The initial rate of levy will be 20% and rise gradually to 50% according to the scope of excess profits.
 - ❖ The share of the net profit for the state and public will increase from one third to 52%-62%
 - ❖ The proposed formula is of the R factor type:

$$R \text{ factor} = \frac{\text{Net cumulative revenues}}{\text{Exploration and development expenses}}$$
 - ❖ Application - the proposed changes will apply as of the date of the decision, to all oil and gas deposits, since this involves taxation of future profits.
- The Ministry of Interior - plays a role in terms of planning/zoning development for natural gas infrastructure projects, as well as public concerns related to this
- Public Utility Authority - Electricity

Ongoing Major Projects

- According to the Israeli Ministry of Energy and Water Resources, **14 exploratory gas wells** were drilled over 2011-2012. Another **13 exploratory gas & oil wells** are planned to be drilled by the end of 2013.
- According to the Israel based TASC Consulting & Capital Group, investments of over **US\$ 40 billion** will be required in the natural gas sector in Israel until 2020. According to their report, "Investments in the electricity sector are also expected to be significant, amounting to about **US\$ 10 billion** by 2020 in the generation segment only."
- Currently there are several production projects at the planning and development stage with "**Leviathan**". The largest and most significant production one is expected somewhere between 2015-2017.
- The "**Tamar**" reservoir is currently under development with first supply to the market expected in April 2013
- In order to accommodate export capabilities, related large infrastructure projects (e.g. LNG terminal) will be undertaken over the next few years.

*Source: Ministry of Finance

- An additional one-two onshore north entries points are expected to be added to the existing gas transmission infrastructure. The current two receiving terminals are located in Ashdod and Ashkelon.

Natural Gas Export

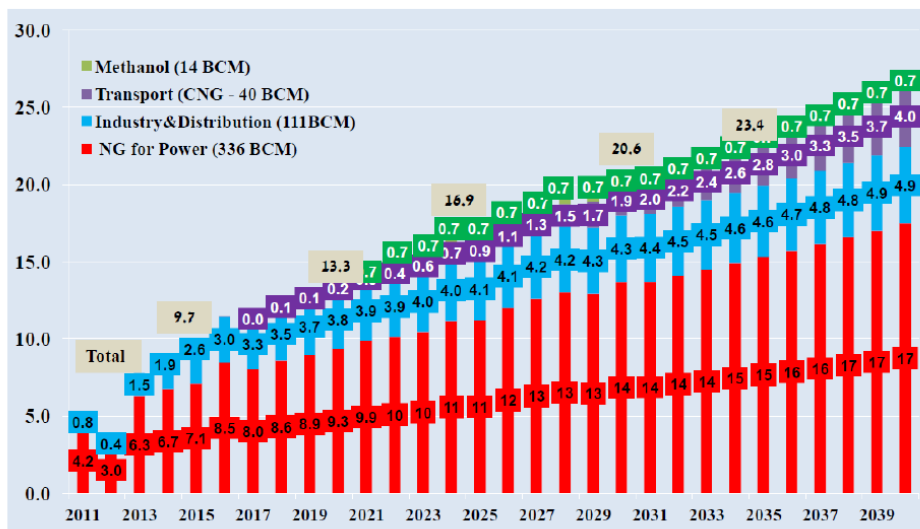
There are two principle ways through which gas could be exported:

1. Constructing the pipeline from the reserve to the target market or transmission network.
2. LNG - liquefied natural gas. The most advance and developed method of moving gas between regions.
3. FLNG - floating liquefied natural gas

Until 2004, the Israeli market did not use natural gas at all. In the summer of 2011, use of natural gas accounted for 46% of the energy used in electricity generation in Israel. This percentage is set to go as the authorities promote the use of natural gas in the local industry. Many of the future industrial plants and independent power producers will rely on natural gas as their primary energy source. By the end of the decade natural gas will be the primary source of power for electricity generation in Israel.

Future local demand for natural gas in a variety of sectors requiring related infrastructure, is highlighted by this graph:

Demand for Natural Gas By Sectors



Source: Israel Ministry of Energy and Water Resources



Service Providers Opportunities

A variety of long term and short term opportunities exist in the Israeli market. Local players are interested in business cooperation on the basis of strategic partnerships, project finance and supply chains. Opportunities exist for foreign companies willing to assist in exploration efforts in Israel not just as service providers or subcontractors, but as strategic partners as well.

There is an understanding in the market that without strategic foreign partners who can also bring major financial/funding capabilities into the market, production levels will remain limited. Since this a relatively new industry for Israel, local technical expertise is currently limited and this will create business opportunities in a variety of sectors such as:

- Chemical & Industrial Gas Processing Equipment
- Chemicals & Industrial Gases (Excl. Petroleum Based Products)
- Civil Engineering and Works
- Consultancy Work
- Corrosion Control Systems and Equipment
- Design Services
- Drilling & Blasting
- Environmental Engineering
- Exploration Technologies
- Filtration & Treatment - Gas & Liquid
- Financing
- Fire Protection
- Fuel Processing & Power Generation Equipment
- Marine Engineering (including offshore structures)
- Mechanical Engineering
- Metal Treatment & Coatings
- Mining & Minerals Processing Equipment
- Personnel & Training Providers
- Pipe work, Hoses & Pipeline Equipment
- Process Engineering (industrial)
- Pumps & Valves
- Refractory Products
- Research Organizations & Associations
- Safety & Security and Equipment

Useful Links

- Israel Natural Gas Lines - An interactive map of the current transmission system and planned projects - <http://www.ingl.co.il/en/network-map.html>
- The Ministry of Energy and Water Resources - <http://energy.gov.il/English/Pages/default.aspx>

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