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Energy law in Israel

Recent developments in the Israeli energy market

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The electricity sector

IPPs gaining a market foothold

Independent Power Producers ("IPPs") are steadily making progress in expanding their market share in Israel's electricity generation sector. From roughly 8% in 2012, IPP electricity production is expected to reach 25% in 2016, and 40% by the end of the decade. Their market expansion is fuelled, literally, by the availability of natural gas and facilitated by provisions in the Electricity Sector Law (1996) ("ES Law") requiring the Israel Electric Corporation ("IEC") (a state-owned enterprise) to purchase electricity generated by conventional, cogeneration, and renewable energy ("RE") IPPs. Moreover, the IEC is required to provide transmission and backup supply services to customers of licensed IPPs.

Reforming the Israel Electric Corporation

Despite over two decades having passed since the enactment of the ES Law which includes provisions for the unbundling of the IEC, reform has been slow and largely unsuccessful to date. While IPPs are gaining ground in the generation sector, the IEC still accounts for approximately 75% of electricity production in Israel as of 2016, retains its status as System Manager, and continues to provide transmission and distribution services almost exclusively. Discussions and negotiations were reinitiated in 2015, with dedicated teams appointed in 2016; however, progress is gradual as the reform efforts face opposition from powerful unions. Recent discussions have focused on ensuring the financial stability of IEC while implementing a structural change designed to bolster competition in the generation sector. To that end, the IEC may be required to conduct a material sale of certain of its assets, including power plants.[1]

The upstream Oil & Gas sector

The antitrust Quandary: creating competition with the upstream natural gas duopoly

Since the earliest discoveries of natural gas off Israel's shores in 1999, over 30 TCF of recoverable reserves have been discovered, including some of the largest discoveries worldwide at the time (the Tamar and Leviathan fields in 2009 and 2010, respectively).[2] Natural gas began flowing from offshore to power stations and consumers in 2004 through the national transmission network and was underpinned by the Tamar reservoir which came online in 2013. Since then, natural gas has been growing steadily in importance for Israel's domestic consumption, constituting over 50% of the electricity fuel basket, and the proliferation of natural gas use has benefitted investors, industry actors, and Israeli consumers. Nonetheless, during the "discovery decade," Noble Energy Mediterranean Ltd. ("Noble"), Delek Drilling Limited Partnership, and Avner Oil Exploration Limited Partnership (together, "Delek") emerged as the most prominent actors, achieving an expansive and dominating duopoly over the offshore natural gas discoveries, with holdings ranging between approximately 67-100% of several leases: Mari B, Noa, Tamar, Leviathan, Karish and Tanin, and Dalit. The duopoly's prominence was further bolstered when Egypt ceased its gas exports to Israel in 2012, leaving Tamar as the sole reservoir supplying to Israel.

The rise of the duopoly, and the antitrust response which followed, sparked a heated public debate on the lack of competition and extended to gas prices, domestic needs, and export limits. The chaos resulted in the appointment of an interministerial task force charged with restoring stability to the sector by reaching a comprehensive agreement addressing several outstanding regulatory issues with the duopoly, in addition to the antitrust matters, including prices and conditions in Tamar and Leviathan field contracts. The taskforce's efforts resulted in the Natural Gas Framework ("NGF") struck between the government, Noble and Delek.

The core NGF principles

The NGF's core principles include:

- requiring Noble and Delek to transfer their rights in the Karish and Tanin Reservoirs during a set time period;
- requiring Noble and Delek to dilute and transfer, respectively, their rights in the Tamar Reservoir during a set time period;
- establishing termination flexibility and determining set price mechanism to be proposed, in new GSPAs signed by the Tamar and Leviathan leaseholders, during a set time period;
- adopting a broad stability clause;
- establishing milestones and incentives for the development of the Leviathan field; and
- clarifying the export allowance from the Tamar field.

The NGF was initially approved in December 2015. As approved, the NGF was highly controversial and resulted in several petitions to the High Court of Justice attempting to void the agreement entirely or sections thereof. An initial High Court decision issued in March 2016 upheld the validity of the NGF as a whole, but rejected its stability clause, requiring the government, Noble and Delek to resume negotiations on the clause or risk the NGF's cancellation. Their efforts resulted in a much milder clause, approved by the government on May 22,

2016, setting forth the following principles, *inter alia*:

- future governments shall be allowed to retain independent discretion to initiate policy changes; and
- should a policy change occur, the government is obliged to positively consider offering various solutions to the natural gas actors, without committing in advance to any method.

Following the NGF's final approval in mid-2016, market players are hopeful that it will usher in a new era of stability, competition, and investment opportunities in Israel's upstream sector.

The NGF in action

In the months following the approval of the NGF with its revised stability clause, there has been progress in the fulfilment of the NGF's goals. Delek and Noble have reinitiated their upstream investment, and the development plan of the Leviathan field has been approved. Noble initiated the sale of its holdings in the Tamar reservoir, with 3% purchased by the Harel Group and Israel Infrastructure Fund. In December 2016, Noble and Delek's sale and transfer of their rights in the Karish and Tanin leases to Energean Israel Limited was approved by the Petroleum Commissioner, signalling the entry of a new regional actor into the Israeli market, which is expected to boost competition.

Tender process for oil and gas exploration

Since 2012, Israel has not issued any new offshore permits or licenses, following a decision by the Ministry of National Infrastructures, Energy and Water Resources ("MOE") to "close the sea" in order to review its offshore licensing regime. In November 2016, the Minister of National Infrastructures, Energy and Water Resources ("Minister of Energy") announced the re-opening of the sea for oil and gas exploration, presenting an independent research study conducted for the MOE which estimated the quantity of undiscovered gas off Israel's shores at approximately 2,100bcm.[3] The exploration rights are to be awarded via bid round for new blocks offshore Israel, to consist of 24 search zones with a maximum area of 400km^2 each. The bid is expected to be held between 1 March -10 July, 2017.[4]

This is the first bid for oil and gas licenses ever published in Israel. To date, all licenses were awarded to applicants under the licensing regime (see Section B.1).

Bidders will have to comply with the technical experience and fiscal capacity requirements of the Petroleum Regulations (Principles for Offshore Petroleum Exploration and Production) (2016) ("Petroleum Regulations 2016"), which were finalized and published to coincide with the initiation of the bid and provide clarity to potential investors and participants (see Section F).

Finalising upstream regulation

Following the discovery of the Tamar reservoir in 2009 and the realisation by regulators and policy makers that the natural gas industry was here to stay, the upstream oil and gas regulatory framework has undergone major upheaval and revamping.

Regulators decided that the rules and regulations regarding the financial and professional capabilities of licenseholders in the upstream oil and gas sector, as well as those governing direct and indirect transfer of these rights, were insufficient in their then current form, consisting mainly of the Petroleum Law 1952. However, instead of amending the Petroleum Law by means of legislation, regulators decided to publish a myriad of regulations and rules, all in draft form, which were thereafter frequently altered. Understandably, this created great uncertainty for investors in the upstream sector.

Throughout 2016-2017, almost all of the regulations published in draft form have been published in final versions, including the Petroleum Regulations mentioned above determining financial and professional capabilities, guidelines governing the indirect and direct transfer of Petroleum rights, guidelines on guarantees and environmental protection requirements.

These welcome steps will hopefully provide a stable regulatory framework for investors active in the sector.

Additional regulation which is expected to provide greater certainty and support for investors in the upstream sector is Government Decision 2592 (Support of Small and Medium Sized Fields, 2 April 2017), which introduces a number of infant protections for such reservoirs to support their market entry. The Decision, *inter alia*: adopts the "Natural Gas Sector Regulations (Management of the Natural Gas Sector During Times of Emergency)" which establish backup arrangements between suppliers in the event of gas supply failure; approves a government investment in development of the offshore transmission system; and adopts measures to increase domestic demand for natural gas and development of local infrastructure, for example, in the transportation sector.

Increased demand for natural gas

Throughout 2016, the government took several steps which are expected to increase the demand for natural gas by replacing other fuels, thereby increasing the natural gas share in Israel's fuel basket. In 2016, the MOE published a call for the submission of proposals regarding a plan for the construction of CNG fuelling stations, which shall include governmental incentives/assistance and is expected to encourage the construction of such stations and the use of natural gas in the transportation sector[5].

In addition, in October 2016, the Ministry of Environmental Protection ("MOEP") announced the issuance of emission permits for the two coal-fired power plants (with a total capacity of 4,840MW), which will result in a drastic reduction in air pollution from said plants[6]. The permits, issued in accordance with the Clean Air Law 2008, require the closure of four coal-operated units by June 2022, and close to a 20% reduction in coal use from 2017 until the units go offline. The decision is expected to reduce air pollution in the relevant areas and is a continuation of the MOE's and MOEP's policy to minimize coal use as much as possible, following up on an order issued in December 2015 by the Minister of MOE[7] to reduce coal use in 2016 by 15%.[8] The decline in the use of coal will increase generation in plants powered primarily by natural gas.

Recent developments in israel's renewables sector

Israel has made strides in promoting the use of RE in energy generation in recent years. Despite an initial target of 2% electricity generation for 2007, electricity generation from renewables was still virtually non-existent in 2008.[9] That same year, however, the MOE published the first feed-in tariffs for PV, and renewable use began to grow. In recent years, the Electricity Authority ("EA") has issued a variety of conditional generation licences for wind, bio-gas, photovoltaic, hydroelectric, and biomass technologies. As of year-end 2016, renewables accounted for 2.6% of domestic energy production.[10]

Efforts to increase the use of renewables in energy production have been bolstered by governmental commitments under the Paris Agreement to reduce greenhouse gas emissions, causing Israel to take steps to raise targets for RE production and further develop the industry. To that end, the government has adopted a series of decisions setting target RE production rates (10% by 2020), promoting green construction, encouraging the replacement of coal use with natural gas, and promoting the development of new technologies through, *inter alia*, the granting of tax incentives, provision of security measures to financing entities, revision of tariffs, etc. Most recently, in late 2016, the EA announced a proposal for conducting a Vickrey-type auction for the granting of new PV project rights, which may reach a total capacity of 800-1,700MW. In addition, in 2016, the Knesset's Finance Committee initially approved a bill, which if ultimately enacted, will grant significant tax incentives to private households producing RE in an effort to boost private sector involvement in wind and PV electricity generation.

Endnotes

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Overview of the legal and regulatory framework in Israel

A. Electricity

A.1 Industry structure

For more than 90 years, Israel's electricity sector has been dominated by the IEC, a vertically integrated state-owned enterprise responsible for the generation, transmission, distribution and supply of electricity to Israel. Today, that dominance is being diminished, so that while the IEC still operates both the transmission and distribution grids almost exclusively and provides back-up services for electricity customers and power producers, IPPs are gradually but steadily gaining a foothold in the generation and supply sectors. IPPs will account for an expected 25% of total generating capacity by year-end 2016, as compared with IEC's 75%[1].

The Minister of Energy has the overall responsibility for the electricity sector, including overseeing the IEC. The Minister of Energy's role is complemented by the EA and by the Ministries of Finance, Interior, and Environmental Protection, as well as the Government Companies Authority. Reforms to the IEC and the electricity sector are additionally impacted by decisions of the Antitrust Authority.

The ES Law is the primary legislation applicable to the electricity sector. This law is designed to "regulate the activity in the electricity market for the good of the public, guaranteeing reliability, availability, quality, [and] efficiency, while concurrently creating conditions for competition and minimizing costs."[2] The ES Law established the EA, entrusting it with the exclusive and independent authority to set electricity tariffs. The EA is also responsible for establishing standards and criteria to ensure service quality.

The ES Law spearheaded efforts to reform the monopolistic sector dominated by the IEC, and to that end establishes the parameters and timetable for such sectoral reform (see below), beginning with replacing IEC's all-encompassing concession with several licences which are subject to the provisions of the law.[3]

Licensing regime

The ES Law stipulates that all electricity sectors, including Generation, Transmission, Supply, Distribution, Self-Production, and System Management (all as defined under the ES Law), are subject to a licensing regime, primarily under the supervision of the EA, with some authority reserved for the Minister. Generally speaking, applicants seeking a generation licence initially apply for a Conditional Licence for electricity production, which, following the fulfilment of certain milestones, is converted to a Permanent Production Licence (typically issued for 20 years), required in order to carry out the commercial operation of an IPP and produce electricity. In order to sell electricity to private consumers, an IPP is required to obtain a "Supply Licence" in addition to its Permanent Production Licence.

The holder of a transmission, distribution or system management licence is considered an "Essential Service Provider" ("ESP"). The Minister of Energy is vested with authority regarding the issuance, extension, and revocation of certain licences (generation and supply licences exceeding 100MW; distribution licences for activities exceeding 5% of the yearly usage; transmission licences; and system management licences). The EA retains the authority to grant the balance of licences, in addition to approving changes in licence holder control, pledges or grants of security interests in and over licence assets.

IEC and IPPs

Until recently, there was no competition at all in the Israeli electricity sector. The IEC was incorporated in 1923, and was granted concessions by the British Mandate authorities. The Mandate-era tariff setting remained largely unchanged until the enactment of the ES Law. One of the purposes of the law was to introduce competition into the electricity sector by unbundling the various electricity activities and determining timetables (which have been extended several times) regarding the revocation of IEC's licences (or at least partially) in order to create reforms for unbundling and privatizing the various electricity sectors. Nonetheless, more than twenty years after the enactment of this law, and mainly due to the opposition of strong IEC unions, the only competition achieved has been in the generation sector with the gradual rise of the IPPs.

In order to incentivise the entrance of IPPs into the electricity market, the ES Law requires IEC in its capacity as the System Manager to purchase electricity from cogeneration, conventional, and renewable licensed IPPs (with the level of purchase commitment varying among the different technologies). This critical requirement serves as the financial and practical backbone for overhauling the structure of the electricity market by facilitating and enabling the entrance of IPPs into the market. IEC in its capacity as Transmission System licence holder is also required to provide electricity transmission services and back-up electricity supply to customers of a licensed IPP (when such electricity is sold to private customers and not to the ESP), in exchange for a tariff. In addition, related sector regulation includes provisions designed to provide security and comfort to financing entities of IPP projects in light of regional security concerns. These provisions, detailed in the Book of Standards (see Section A.3 herein) deal with allocation of risk and responsibility between the IPP and the IEC in case of *force majeure*, especially with respect to events of war and terror attacks and additional circumstances during which an IPP is prevented from operating.

Reform efforts

Numerous government ministries have been involved in the IEC reform efforts over the years, including the Antitrust Authority, which in January 1999 declared the IEC a monopoly. The most recent attempted reform of the electricity sector was the establishment of the Yogev Committee by the Ministers of Energy and Finance in 2013. The Committee was tasked with examining the following topics:

- optimal structure of the electricity sector and IEC, keeping in mind the globally accepted models prevailing to date, and emphasising the need for achieving competition in the relevant sectors;
- financial strength of IEC to date, aiming to bring the company to an appropriate financial position as part of the reform;
- reorganisation plan for IEC; and
- proposal of a comprehensive reform of the electricity sector and IEC.

The Committee published preliminary conclusions in 2014, finding: "the electricity market is controlled by an inefficient monopoly, IEC, which suffers from a severe financial position, and a union that fights competition out of a built-in conflict between the interests of the company and the interests of the State in ensuring competition in the electricity market."[4] While it introduced a proposal to restructure the electricity market by 2025, the Committee's report noted the dangers posed to the regular power supply due to, *inter alia*, the difficulty faced by IPPs in gaining a market foothold. The Yogev Committee's report has widely been considered a failed reform as it was unable to initiate many of its proposals. Nonetheless, the preliminary conclusions highlighted the importance of persisting in reform efforts and the need for increased production by IPPs. In late 2015, it was announced that discussions were being resumed on reform of the electricity sector and IEC, and throughout 2016 several discussions took place, resulting in a decision to appoint dedicated teams to implement structural change.

EU Directives

Although not a member of the European Union, Israel is involved in certain activities of the EU electricity market and its regulators. For example, Israel's EA has adopted several European Directives relating to consumer protection (the Third Energy Package), resulting in collaboration with Austria's regulator, E-CONTROL. The EA has also consulted with Britain's OFGEM and the Council of European Energy Regulators – CEER. Finally, the EA is a member of the Association of Mediterranean Energy Regulators, supported by the organisation's members, the European Commission and CEER.[5]

A.2 Third party access regime

The IEC is responsible for nearly 100% of all transmission and distribution networks controlling the high voltage lines, switching stations, substations and the mid- and low-voltage lines. The ES Law places, *inter alia*, the following obligations on an ESP regarding infrastructure to guarantee third party access:

- to provide service to the public in a non-discriminatory, reliable and efficient manner; and
- to purchase electricity from IPPs as well as provide them with infrastructure and backup services.

The ES Law sets forth the requirements to receive transmission and distribution licences. Nonetheless, due to Israel's limited market, land area, and existing infrastructure in the electricity market, it appears that the IEC, as a natural monopoly, will retain control of transmission functions and for the majority of the distribution networks.

A.3 Market design

The ES Law and its accompanying regulations establish the primary regulatory framework for Israel's electricity sector.[6] Following the enactment of the ES Law, the MOE and the EA were firmly established as the primary regulators responsible for licensing as well as the determination, monitoring, and updating of the electricity tariff. The ES Law sets forth the tariff calculation method (see section A.4). It further requires the EA to set operation criteria for ESPs, focusing on the standard, nature, and quality of the services provided, and to supervise an ESP's performance and compliance with the criteria. The criteria are detailed in the EA's Book of Standards, which is intended, *inter alia*, to address the interaction between the IEC and its customers (including IPPs), in the IEC's role as an ESP.[7] The Book of Standards is updated on a regular basis (usually quarterly).

A.4 Tariff regulation

The EA is responsible under the ES Law for establishing a variety of electricity tariffs, distinct for each market segment. Tariffs for the public are calculated taking into account the IEC production costs which the EA elects to recognise, including a fair ROR on capital/equity. The EA further establishes the tariffs the IEC is required to pay for electricity it purchases from IPPs. In setting tariffs, the EA is guided by the overarching principle of minimising costs to consumers, while maintaining the appropriate economic balance and certainty, so as to encourage further development of the sector by entrepreneurs. The EA reviews the components comprising the recognised costs in the tariffs annually and elects whether to publish revised tariffs accordingly. Such tariffs include generation component tariffs and grid tariffs (which take into account recognised costs and assets in transmission, distribution and supply).

Until the entry of IPPs into the Israeli electricity market in 2013, the IEC, in its role as System Manager, assumed the management services costs, passing them on to IEC customers. With the entry of IPPs into the sector, the EA realised the need to define and appraise these costs and relay them to other electricity consumers, not just IEC customers, as the latter would otherwise essentially be providing a subsidy to IPP customers. In August 2015, the EA published its decision introducing the final system management services tariff and announcing the elements which would compose the system management services cost:

- system balancing;
- back-up services;
- ancillary arrangements in the electricity sector; and
- administrative costs.

The EA also indicated that IPPs would be charged retroactively as of June 2013, the date of issuance of a temporary system management tariff, matching the timing of the initial significant entry of IPPs into the Israeli electricity market.

A.5 Market entry

The ES Law details the requirements for new market participants to enter the electricity sector as follows:

- Possession of an electricity production licence granted by the EA (licences of over 100MW need an additional approval from the Minister of Energy).
- Possession of/rights to land for the construction of the production facilities:
  - Planning permits may be required for facilities over 50MW.
- Ability to connect to the electricity grid and the natural gas network (if applicable). The applicant must prepare a connection feasibility survey and may be required to prove the company's and its officers' technical ability and experience in this regard.
- Financial capacity: An applicant may be requested to provide financial reports and information regarding funding. Applicants are required to have a minimum of 20% equity to fund the construction of electricity production facilities, to be injected upon financial closing.[8]

In evaluating an application, the EA considers, among other things: the public good, the contribution of the potential licence to the level of services offered to the public, and if competition is boosted. If approved, the applicant is required to deposit a guarantee and financial commitment letters promising to inject the requisite equity upon financial closing.

One of the main reasons for the delay in IPPs penetrating the market was the lack of available natural gas. This barrier disappeared once the Tamar reservoir came online in 2013.

A.6 Public service obligations and smart metering

PSOs

Public service obligations in the Israeli electricity sector consist of discounts offered to certain populations, in accordance with amendments to the ES Law and regulations instituted by the Minister of Energy. The following populations, *inter alia*, are entitled to certain discounts in electricity, provided they fulfil certain requirements of the National Insurance Institute: pensioners; Holocaust survivors; persons with disabilities; single parents with three or more children; disabled veterans; and terror victims.

PSOs also exist for the RES market in the form of certain charges imposed on self-consumers owning a RES system for grid "balancing costs" and "grid integration costs", with these deducted from the credit to the consumer's account arising from independently generated electricity surplus.[9]

Smart metering

To date, smart metering has not been adopted as a compulsory practice. In January 2013, the EA issued a decision authorising the IEC to conduct a limited pilot study to determine the feasibility of distributing smart meters nationally and outlined several conditions which the IEC needs to fulfil in order to obtain the EA's approval for a national smart metering scheme. The IEC pilot ended in 2014 and was conducted in a limited number of sample localities where approximately 4,400 smart meters were installed. In 2016, reports indicated that the IEC is planning to invest €24 million (estimated) for the installation of approximately 200,000 additional smart meters over the next 4-5 years in four main cities in order to determine the feasibility of installing such meters for all of IEC's 2.7 million customers nationally.

A.7 Cross-border interconnectors

To date, Israel has no electricity interconnectors with neighbouring countries and is therefore an electricity island.

In 2012, Israel, Greece and Cyprus signed a trilateral MOU regarding the construction of a cable project linking Israel's electric grid with the EU.[10] Known as the "EuroAsia InterConnector" (an EU 'Project of Common Interest'), the link is planned to consist of submarine DC cables and HVDC onshore stations in the respective countries and to possess a 2,000MW capacity. It is expected to span over 1,500km, and will contribute to securing the energy supply of all three countries and the EU. Technical and environmental studies were completed in 2016, and commissioning is estimated as follows for the different branches of the project: Cyprus-Israel: 2019, Crete-Athens: 2020, Cyprus-Crete: 2022.[11]

B. Oil & Gas

B.1 Industry structure

Oil

Although small oil reservoirs do exist in Israel, domestic production fulfils a negligible portion of demand. The majority of crude oil is imported, and in 2015 Israel consumed 11 million tons of oil, 6.8% more than in 2014.

By comparison, due to significant discoveries of natural gas offshore Israel, with consumption beginning in 2004, natural gas production and demand is rising dramatically. In 2015 alone, Israel demonstrated its highest demand for gas to date, consuming 8.4bcm, 11% more than the prior year[12]. Overall demand for natural gas, for electricity generation, industrial purposes and private consumption, is projected to rise by 400% between 2009 and 2030[13].

Legal framework

Key market players in the petroleum sector

The MOE is the governmental regulator of all natural resources and energy in Israel, overseeing their use and management including, *inter alia*, that of oil and gas.

The Natural Resources Administration ("NRA") in the MOE regulates the exploitation of natural resources in Israel and includes two professional units: the Petroleum Unit overseeing upstream petroleum (headed by the Petroleum Commissioner ("PC"), appointed by the Minister of Energy) and the Mines and Quarries Unit that manages minerals. The PC is responsible for issuing petroleum rights and overseeing the exploration and production activities granted by these rights.

The Natural Gas Authority ("NGA") of the MOE, is responsible for overseeing the downstream natural gas industry, by issuing licences in the transmission, distribution and storage sectors, supervising licence holders and setting tariff and service provision standards, for each downstream sector.

Israel's transmission system is operated by Israel Natural Gas Lines Ltd. ("INGL"), a state-owned enterprise, while the distribution system is divided into 6 regions, each operated by a private company under a licence issued following a tender process by the MOE (See Section B.2).

To date, the total amount of recoverable gas reserves found offshore Israel is estimated at 900BCM. These discoveries place Israel in the fortunate position of being capable of providing for a substantial portion of its energy consumption domestically without dependence on external sources. The majority of these discoveries to date are held by Noble and Delek. IEC, as Israel's main electricity provider, remains an anchor buyer for natural gas domestically, and is a significant market player. Nonetheless, natural gas operated IPPs are increasing their market share in electricity generation (see "Recent Developments").

Key legislative, regulatory and contractual features in the petroleum sector

The Petroleum Law (1952) ("Petroleum Law") and its related regulations and guidelines establishes the legal framework governing the upstream exploration and production of oil and gas, while the Natural Gas Sector Law (2002) ("NG Law") regulates the downstream Natural Gas sector. While the Petroleum Law applies to both oil and natural gas ("petroleum" is broadly defined in the Petroleum Law), the NG Law applies only to natural gas.

The Petroleum Law covers exploration, production and exploitation in the onshore and offshore areas of Israel, including its continental shelf. No person is allowed to explore for or produce petroleum without holding a permit, licence or lease, as applicable, under the Petroleum Law (see Section B.5). The Petroleum Law allows for two types of mechanisms to grant petroleum rights: through licences or a competitive bidding process. Until late 2016, exploration rights were granted solely through the licensing procedure and no bidding processes were held. In November 2016, the MOE published its decision to conduct successive rounds for new exploration areas in Israel's EEZ[14] see "Recent Developments"). This bidding round ended a freeze on granting new offshore exploration licences, issued by the Minister of Energy in 2012. As a result of the freeze, during the interim four years the only way to purchase offshore petroleum rights was to farm into existing licences via transfer of rights.

The NG Law governs midstream and downstream activities, and sets out a licensing regime for natural gas infrastructure, including distribution, transmission, storage and LNG facilities. In addition to the NG Law, and following the major gas discoveries, the government introduced new legislation, regulations and guidelines to address the increase in consumption of natural gas in Israel, focusing on such issues as installation safety and building laws.

A notable pending piece of legislation is the Marine Areas Bill (2014). This proposed legislation will determine the scope of application of Israel's laws in marine areas beyond Israel's territorial waters – including in Israel's Exclusive Economic Zone (EEZ) – where all Israel's natural gas discoveries, to date, are located.

Pursuant to these objectives, the proposed law seeks primarily to:

- define and delimit the Marine Areas (in accordance with the principles of international law and UNCLOS[15]) where the State has authorities and rights; and
- establish the rights and authorities of the State in the various Marine Areas (territorial waters; internal waters; contiguous zone; and the EEZ), *inter alia*, by detailing the specific laws that are applicable in each of these areas.

EU gas directives

While as a non-member of the EU Israel is not obligated to comply with the Directives, it is influenced by their content in constructing and operating gas infrastructure and in formulating its domestic regulation. For example, the distribution network is being built to comply with the European Standard EN-12007 (see Section B.2). In addition, in November 2016, a study visit was held in Italy between officials from Israel's NGA and their Italian peers to jointly examine the standards applied in Italy in supplying natural gas to households, based on the Third Gas Directive and Regulation No 994/2010.

The upward trend in the supply and consumption of natural gas has continued in 2015 and is anticipated to grow in the coming years. There has been an increase of 14.5% in the consumption of natural gas by the electricity generation sector, from 5.8bcm in 2014 to 6.6bcm. The supply of natural gas for electricity production includes the supply to the IEC, to IPPs and to industrial plants who produce electricity. Natural gas consumption in the industrial sector, on the other hand, remained steady per 2014 rates. While significant industrial and manufacturing demand for natural gas exists, regulatory and other delays are preventing the expansion of the distribution network from keeping pace with the rapidly rising demand.

Significant industry issues

As mentioned above, following the discoveries of natural gas off Israel's shores, a duopoly emerged in the market, dominated by Noble and Delek. In response, the government approved the NGF, aiming to introduce competition into the upstream market (see "Recent Developments").

B.2 Third party access regime to gas transportation networks

Natural gas is transported at high-pressure (above 16 Bar) through a state-owned transmission system constructed and operated by INGL, a state-owned enterprise. The transmission system spans over 500km, transporting gas to high pressure shippers, such as the IEC and IPPs. This system connects with the distribution network at facilities used to reduce gas pressure, and from there, deliver natural gas locally to industrial low-pressure consumers. The distribution network is constantly being expanded and is intended to reach all natural gas consumers. Transmission and distribution tariffs, licences and rules are issued by the NGA.

It should be noted that, despite the considerable efforts and progressive legislation enacted, the connection of the distribution network to low-pressure industrial gas consumers is still incomplete and suffers from significant delays. Out of hundreds of potential consumers of gas (500 of them industrial customers), as of late 2016 only 26 have been connected to the

network, comprising barely 8% of the expected yearly consumption, and only about a third of the total planned gas pipeline has been set.

Israel is divided into six regions for purposes of natural gas distribution, each of which is constructed and operated by a single distribution licensee granted through a public tender. Licensees have exclusivity for the construction, operation and maintenance of the distribution network for a period of 20-25 years. The six licence areas and licensees are:

- South: Natural Gas South Ltd.;
- Negev: Negev Natural Gas Ltd.;
- Central: SuperNG;
- Haifa and Galilee: Merimon Natural Gas North Ltd.;
- Hadera and the Valley: SuperNG Hadera and the Valleys Natural Gas Distribution Company Ltd.; and
- Jerusalem: Rotem Natural Gas Ltd.[16]

Title transfer between sellers and buyers of natural gas takes place at the delivery point ie, entry into the transmission system. Title is then transferred again at the metered exit point from the distribution network.

Since licensees under the NG Law have exclusivity, nation-wide or regionally, and since consumers are obligated to purchase infrastructure services through these licensees, the NGA provides protections for consumers by establishing and supervising infrastructure rates (transmission and distribution), requiring licensees to provide their services to all existing and potential consumers without discrimination and enforcing safety standards in the gas market.

Under the NG Law, agreements for the use of the transmission and distribution networks are subject to approval by the NGA, and are required to be published on the NGA and licence holder websites.

B.3 LNG terminals and storage facilities

In order to enhance security of supply, in January 2013, a Floating Storage and Regasification Unit ("FSRU") was inaugurated for the import and storage of natural gas. The FSRU is capable of importing LNG in an annual amount of approximately 2.5BCM. The unit has an LNG storage capacity of 138,000 m^3.

Israel does not have any other gas storage or liquefaction facilities.

B.4 Tariff regulation

The NGA sets capacity and throughput transmission fees, connection fees, and balancing fees for use of the INGL transmission grid. The NGA similarly approves and supervises distribution tariffs in the distribution network. The licensees supply access to the distribution network and services to third parties based on standard uniform contracts, which are approved by the NGA.

Transportation charges include connection fees, capacity and throughput fees and balancing fees. Connection fees are a one-time payment, mainly covering the capital costs of the PRMS for a transmission consumer. The ongoing fees for transporting the gas in the transmission system are comprised of a capacity fee (approximately 90% of the total transportation fee) and a throughput fee.

Transmission rates are determined by the NGA ex-post, and are updated in accordance with the costs for the expansion of the transmission system; distribution rates, however, are established via tender, and are updated every 6 months according to the linkage formula stipulated in the licence.

B.5 Market entry

The construction and operation of the following natural gas infrastructures require a licence from the Minister of Energy under the NG Law:

- transmission network or any part thereof;
- storage installations;
- LNG installations; and
- distribution network or any part thereof.

Transmission Licences are primarily granted by tender; however, the NG Law permits the Ministers of Energy and Finance to grant a licence due to "urgent needs in the energy economy", or in the event of an unsuccessful tender process[17], in which case the Minister of Energy may grant a Transmission Licence to a state-owned enterprise[18], as was the case with INGL.

The distribution network is constructed and operated by distribution licensees who won a tender process. Under the Natural Gas Sector Regulations (Manners and Conditions for Provision of Distribution Licence) (2008), tender applicants for a distribution licence will have to provide information eg, financial capability, controlling shareholders, and professional knowledge and experience available to the company.

In contrast to the transmission network, the distribution network is operated by private companies.

B.6 Cross-border interconnectors

Israel currently does not have any active cross-border interconnectors. There is a natural gas transboundary pipeline from El-Arish in Egypt to the shores of Israel, however this pipeline has been inactive since 2012.

There are plans to facilitate a joint cross-border interconnector from Israel and Cyprus to Greece and Italy, known as the EastMed pipeline, an EU Project of Common Interest[19].

C. Energy trading

C.1 Electricity trading

In accordance with the government efforts to reform the electricity market and boost competition, there are certain statutory requirements imposed on the IEC and the IPPs entering the electricity sector. Certain IPPs sell all of their generation to the IEC, while others sell only their electricity surplus.[20] As such, electricity trading is encouraged by the regulatory framework and is implemented via bilateral purchase agreements by the market actors. In its role as system manager, the IEC is responsible for balancing activities and load management, including maintaining the spinning reserve.

C.2 Gas trading

There is no trading hub for natural gas. The sale of natural gas takes place by means of contracts between the gas suppliers and consumers which are not regulated as such. Such sales are subject to the antitrust laws, if applicable under the circumstances. No price control has been implemented; however, gas suppliers and gas marketing companies have reporting obligations regarding profits from sale of natural gas under the NG Law.

Gas marketing agreements (marketer-consumer) and gas trade agreements (supplier-marketer) are unregulated commercial contracts.

D. Climate change and sustainability

D.1 Climate change initiatives

Renewable Energy ("RE") currently constitutes approximately 2% of the energy produced in Israel, and it is estimated that by the end of the decade generation from RE will amount to at least 9% of the energy produced nationally, nearly achieving the target of 10% of RE production set by the government for 2020. A significant quantity, 800MW, of clean electricity is currently being generated in the electricity market by private actors, and the EA is continuing to promote the development of the RE industry.

Israel ratified the Paris Agreement on November 14, 2016, at the UN Conference on Climate Change (COP-22). Under the Paris Agreement, Israel shall undertake to achieve a 26% reduction in its 2005 greenhouse gas ("GHG") emissions by 2030, limiting residents to 7.7 tons of carbon dioxide per capita[21].

Additionally, the MOEP is a member of the Climate Impact Research and Response Coordination for a Larger Europe (CIRCLE-2) and has been a task member of several working packages and participated in cooperative efforts such as InfoBase and Circle-Med[22].

D.2 Emission trading

At present, Israel does not have any emissions trading schemes in place. Nonetheless, in recent years, both through regulatory efforts and comprehensive national studies, Israel is examining the emission levels of GHGs and evaluating different emission reporting and reduction mechanisms. For example, in 2010 a voluntary national GHG registry was launched, encouraging organizations and companies to report their emissions. Since 2009, three studies have been published to analyse Israel's abatement potential[23]. Following its ratification of the Paris Agreement, Israel is studying proposals regarding how to reduce GHG emissions per capita by its stated 26% goal via the increased use of RE generation. According to the OECD, a potential emissions permit trading system, if considered for national implementation, should be designed so as to facilitate interaction with international emissions trading schemes, and to raise revenues.

D.3 Carbon capture and storage

To date, Israel has not taken any regulatory steps to promote carbon capture and storage, and the private sector appears to be in its technological infancy in this field. An Israeli start-up is currently developing technology for the capture of heat-trapping carbon dioxide emissions to be recycled into useable fuel[24].

D.4 Renewable energy

Israel's RE market framework was defined in recent years through several government decisions:

- Decision 4450 (01.2009), which set the objective of 10% electricity production from RE sources by 2020 (approximately 2760MW) and an interim target of 5% by 2014;
- Decision 3484 (07.2011), which ratified the 2009 Decision and added specific quotas for installations for each of the RE technologies (1430MW for PV installations, 830MW for wind installations and 210MW for biogas);
- Decision 2117 (01.2014), which amended Decision 3484 by diverting 340MW of the quotas set in Decision 3484 (regarding wind, thermo-solar and biogas installations) for installations in PV technology;
- Decision 542 (09.2015), which set the objective of 17% electricity production from RE sources by 2030 and an interim target of 13% by 2025; and
- Decision 1403 (04.2016), which outlined the steps to be taken to achieve the above production-related goals, together with additional objectives, such as reducing GHG emissions and increasing energy efficiency. To that end, the Decision grants tax incentives for facilities generating RE, promotes green building projects, examines reducing the use of coal and its replacement by natural gas and further promotes new Israeli technologies in the field of RE and energy efficiency.

The EA is the authority entrusted with the implementation of these decisions.

The ES Law sets out a licensing regime whereby IPPs can enter the market only by obtaining generation licences for RE power stations. According to the ES Law, an ESP must provide infrastructure services (and connect RE facilities to the grid) and purchase electricity from licensed RE IPPs. The obligation to purchase electricity from licensed RE IPPs is an essential mechanism for assisting these IPPs to enter the electricity market.

The economic mechanism used to encourage individuals and companies installing RE is the Feed-in-Tariff ("FiT"), accompanied by a series of quotas for installations of each technology type. The legislation and the regulation of the EA relates to four different sizes of installations: residential (up to 15KW) commercial (up to 50kW), medium-utility scale (up to 12MW) which are all usually connected to the distribution network, and large-utility scale (above 12MW) which are usually connected to the transmission network.

The main RE technologies operating in Israel's electricity sector are as follows[25]:

- solar (PV/Thermo-Solar): currently, more than 90% of the total RE production in Israel (out of approximately 800MW) is based on solar technologies. As of June 2016, there are five large PV facilities (each in a capacity of more than 12MW) which are connected to the transmission network (the biggest is a 55MW PV facility).

- wind: out of a quota of 730MW dedicated to facilities in wind technology, only around 28MW are currently connected to the grid and an additional 560MW received conditional licences and are in various stages of construction (the biggest is in a capacity of 169MW). To date, most of the licences are for onshore facilities which are situated in the Golan Heights. At present, there are no offshore wind generation activities in Israel.
- bio-gas: as of November 2016, there are approximately 25MW of facilities in biogas technology which are connected to the grid and have received permanent generation licences, and additional facilities in a total capacity of around 10MW are under various stages of construction.
- biomass (solid waste, landfills and wastewater): as of May 2016, one conditional generation licence has been issued to construct a biomass IPP in northern Israel, for a total output of 10MW.
- hydroelectric: a very negligible technology in Israel, as of May 2016, the EA has issued licences for a total output of 6,72MW, with no future plans to expand the use of this technology.

Feed-in tariffs in solar energy

The EA introduced FiTs for facilities operating with solar technology, commencing in 2006 without any distinction between the various technologies[26]. In January 2011[27], the base tariff for each KW/h generated by PV facilities connected to the transmission network (in a size of up to 60MW) was set at NIS 1.11 (approximately €0.27) and for facilities connected to the distribution network at NIS 1.09 (approximately €0.26) in a formula linked to the US dollar, Euro, CPI and to a factor derived from the change in the average interest rate.

In September 2012, the EA decided to change the basis of tariff calculation for all solar PV FiTs, adding a linkage to the Bloomberg New Energy Finance (BNEF) module and inverter indices (the Solar Spot Price Index and Utility Index (SSPI). In doing so, the EA intended to avoid the creation of "Solar Bubbles" in which FiTs become quickly disconnected from actual costs and entrepreneurs retain unreasonable margins.

According to the EA's decision, the tariff for each separate project will be determined by applying the formula shortly before the financial closure of the project.

Due to the above linkage and the drop in prices of PV panels as of 2012, the EA introduced a series of decisions, reducing the base tariffs for PV facilities dramatically. In the EA's October 2015 Decision, the base tariff for PV facilities connected to the transmission network was reduced to NIS 0.319 (approximately €0.08) per kW/h[28], while in an August 2016 Decision,[29] the base tariff for PV facilities connected to the distribution network was reduced to NIS 0.2952 per (approximately €0.07) KW/h, in view of the sharp decline in the equipment costs.

In October 2016, the EA published for public hearing its proposed decision for principles for a competitive process to determine rates for the production of electricity by photovoltaic technology, for an additional quota of approximately 1,300MW. According to this proposal, the rights to develop new PV projects under the new quotas shall be granted in a process of Vickrey auction, in which the bidders shall propose the applicable tariffs they expect to be paid for each KW/h supplied to the electric grid, and the licences shall be granted to the lowest bidders (until each annual quota is completed). The rate to be paid to all winning proposals is the rate of the best proposal not selected ie, the first proposal on the list after the selected proposals[30].

According to the EA's proposal, during 2017-2018 a number of competitive processes shall be implemented as specified in the following table:

	JAN 2017	JUL 2017	JAN 2018	JUL 2018
Facilities connected to the distribution network (low and high voltage)	150-300 MW	150-300 MW	150-300 MW	150-300 MW

	APR 2017	APR 2018
Facilities connected to the transmission network (extra-high voltage)	100-250 MW	100-250 MW

In November 2016, the Finance Committee of the Israeli Parliament (Knesset) approved tax reductions to private households producing RE, thus, encouraging the private sector to generate electricity using PV and wind technologies. The bill offers private households generating electricity using RE technologies an income tax exemption up to NIS 24,000 (approximately €5,832). The bill is expected to progress through the legislative process during 2017.

Feed-in Tariffs ("FITs") in wind energy (for facilities above 50kW)

Following government Decision 3483 of July 2011, the EA introduced in October 2011 a course of action for constructing and establishing wind facilities for electricity generation. This decision established an accumulated quota of up to 800MW and also included a formula for the basic tariff, which was linked to the Consumer Price Index, the US Dollar and the Euro. The basic tariff for the first 440MW of wind facilities was set at NIS 0.53/kW (approximately €0.13) and for the balance (441-800MW) was set at NIS 0.49/kW (approximately €0.12).

In October 2014[31], a new government decision reduced the above wind energy generation quota of 800MW by 70MW, which were diverted to PV technology.

In February 2015, the EA updated its 2011 decision and added a substantial linkage of the FiTs to the Wind Turbine Price Index (WTPI – Class III) published by BNEF in addition to the previous linkage to the CPI, the US dollar and the Euro. In addition the

basic tariff for the first 300MW of wind facilities was set at NIS 0.53/kW (approximately €0.13) for wind facilities connected to the transmission network, and at NIS 0.5/kW (approximately €0.12) for facilities connected to the distribution network; the balance (300MW-730MW) was set at NIS 0.49/KW (approximately €0.12) and NIS 0.46/KW (approximately €0.11) respectively.

In March 2015, the EA published a current calculation of the FiTs according to the linkage formula specified in its February decision, and stated that the current FiT for wind facilities connected to the transmission network is NIS 0.388 per kW (approximately €0.09) while the current FIT for wind facilities connected to the distribution network is NIS 0.364 per kW (approximately €0.09).

Israel has taken important steps in promoting RE generation and substantial integration of RE technologies in the electricity market. The feasibility of generating electricity from wind and PV energy technologies is relatively high compared to other RE technologies due to Israel's ample sunshine, however regulatory and planning procedures have occasionally posed obstacles or lead to delays. The MOE has been collaborating with the Ministry of Defence, the Nature and Parks Authority and the planning authorities to remove planning and implementation barriers in these sectors.

D.5 Biofuel

At present, biofuel technologies are in research and entrepreneurial stages in Israel, primarily in the fields of transportation and alternative fuels. However, government decisions on RE have noted the importance of promoting such new alternative fuels.

E. Nuclear energy

At present, Israel does not possess nuclear energy generation facilities. In the 1990s, the Geological Survey of Israel ("GSI") conducted a study in order to locate potential sites for nuclear power plants in Israel. The MOE has recently resumed efforts to study potential plant placements. To that end, as recently as 2014, the GSI began detailed mapping efforts. In addition, in early 2016 a Ministry of Finance planning committee presented a detailed national energy infrastructure plan to the National Planning and Building Council and recommended that nuclear plants contribute 5% of Israel's energy needs by 2030, increasing to 15% by 2050. Nonetheless, to date it appears that no concrete measures have been taken to advance the use of such technology.

F. Upstream

The Petroleum Law sets out the licensing regime for exploration and production of petroleum (see Section B.1 – Key Legislative, Regulatory and Contractual Features in the Petroleum Sector above) and provides for three types of rights, two relevant to the exploration stage and the third to production.

The first is the preliminary permit, which may be granted for a maximum of 18 months and has no maximum area limitation. The permit allows the prospector to conduct preliminary investigations, excluding test drilling, to ascertain the prospects for discovering petroleum in the permit area. The recipient of a preliminary permit is entitled to request a priority right on the permit area, which, if granted, provides the preliminary permit holder priority to receive a licence in the permit area in the event hydrocarbons are discovered.

The second type of right is the licence, granting an exclusive right for further exploration work and requiring the drilling of wells. The maximum term of a licence is seven years. A licence area offshore may not exceed 400 square kilometres. The initial licence term is 3 years, extendable to a maximum of 7 years (and an additional 2 years upon discovery of petroleum).

Upon discovery of petroleum, the licensee has a statutory right to receive the third type of right, a production lease, for a maximum area offshore of 250 square kilometres. An initial lease may be granted for 30 years, extendable to a maximum of 50 years. A lease grants the leaseholder the exclusive right to explore for and produce petroleum in the lease area and requires the leaseholder to produce petroleum in commercial quantities. A leaseholder is liable for paying the market value at the wellhead of royalties of 12.5% of the quantity of petroleum produced from the lease area, excluding the quantity of oil and gas used in lease operations.

In accordance with the Law for Promotion of Competition and Reduction of Concentration (2013), the PC must consult with the Antitrust Commissioner before granting preliminary permits, licences and leases under the Petroleum Law.

In order to be granted with a petroleum right, the Petroleum Regulations 2016 (published on November 15, 2016) stipulate that an applicant must (i) meet the requirements under the Petroleum Regulations, 1953; (ii) prove that it (or any member of the group it is a part of) may be approved as Operator; and (iii) present its compliance with the requirements regarding financial capacity.

The PC shall not authorize a corporation as an Operator if it fails to demonstrate Professional Experience of at least 5 years as an Operator within the ten years prior to the application, alongside other requirements specified in the Petroleum Regulations 2016.

With respect to financial capacity, the applicant company (or group) is required to have total assets in the amount of at least US$ 400 million and shareholders' equity in the amount of at least US$ 100 million. The applicant company may demonstrate its financial capacity through its Controlling shareholder. The Operator will be considered as having the requisite financial capacity if it has total assets in the amount of at least US$ 200 million and shareholders' equity in the amount of at least US$ 50 million. Additionally, the Operator is further required to demonstrate economic capability, as more fully described in the Petroleum Regulations 2016.

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