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Delek Drilling – Limited Partnership
(the "Partnership")

July 27, 2020

Israel Securities Authority
22 Kanfei Nesharim St.
Jerusalem 95464

Tel Aviv Stock Exchange Ltd.
2 Ahuzat Bayit St.
Tel Aviv 65543

Dear Sir/Madam,

Re: **Possible issue of bonds to eligible institutional investors, secured by the Leviathan Project**

Further to Section 7.21.1(c) of the Partnership's 2019 Periodic Report, released on March 30, 2020 (Ref. no. 2020-01-032010) and Section 13A of the Q1/2020 Report released on June 28, 2020 (Ref. no. 2020-01-0587662) regarding the examination of possibilities for the refinancing of loans provided to the Partnership, *inter alia*, for the purpose of financing of the Leviathan project (the "**Existing Loans**"), the Partnership respectfully reports as follows:

1. The Partnership is currently in the process of refinancing the Existing Loans and has launched an offering of bonds to foreign and Israeli eligible institutional investors (the "**Investors**") in an aggregate principal amount of approx. U.S. $2.25 billion (the "**Bonds**" and the "**Issue**" or the "**Financing Plan**", as the case may be). The Partnership has appointed foreign banks JPMorgan and HSBC Bank plc to lead the Issue. According to the current timetable, the Issue may be completed over the coming weeks (if and insofar as it is closed).

   The Bonds are due to be listed for trading on the TACT-Institutional system on the Tel Aviv Stock Exchange Ltd.

   The Partnership is acting to obtain a rating for the Bonds in the "BB" rating group on the international rating scale.

2. For the purpose of the Financing Plan, the Partnership set up an SPC, Leviathan Bond Ltd. (the "**Issuer**"). According to the Financing Plan, the Issuer will issue the Bonds to the Investors, and provide the Issue proceeds as a loan to the Partnership on terms and conditions identical to those of the Bonds (back-to-back). To secure the Bonds and the loan to be provided to the

Partnership, the Partnership will pledge the working interests in the Leviathan project, including the working interests in the Leviathan leases (45.34%), its revenues from contracts for the sale of gas from the Leviathan project, the joint operating agreement, its share in the project's assets (including the platform, wells, facilities, the production system and other equipment), bank accounts, certain insurance policies and various licenses. According to the financing conditions, the Partnership's obligations are limited to the pledged assets, without any guarantee or further collateral.

3. According to the Financing Plan, the Bonds are expected to be issued for an aggregate principal amount of up to U.S. $2.25 billion, divided into four series maturing in 2023, 2025, 2027 and 2030.

4. It is emphasized that the total size of the Issue, the number of series, the maturities, the size of each of the Bond series, as well as the interest rates and additional terms and conditions pertaining to the Issue have not yet been determined and are contingent, *inter alia*, on market conditions and additional factors beyond the Partnership's control.

   The completion of the Issue of the Bonds is conditioned, *inter alia*, on market conditions, receipt of regulatory approvals and the fulfillment of various conditions precedent, including receipt of the Petroleum Commissioner's approval for registration of the pledges on the petroleum assets, as well as a tax ruling.

5. The offering of the Bonds to Investors will be made in transactions exempt from the registration requirements of the U.S. Securities Act of 1933, as amended (Rule 144A and Regulation S), and according to the standard issuance format and documents in issues of this type. Annex A hereto includes market review reports, financial information about the Leviathan project and additional information included in the offering documents.

6. It is further noted that concurrently with the preparation of the Issue, the Partnership is in discussions to extend the maturities of the Existing Loans, in which context the Partnership has reached an in-principle agreement on the matter with the arrangers of the Existing Loans, subject, *inter alia*, to the achievement of additional agreements on the final terms and conditions, agreements with the other lenders in the Existing Loans, and the signing of full binding agreements.

The information included in this report is not an offer to buy or sell the Bonds or any other securities of the Partnership and/or of the Issuer or of any other corporation, and it does not constitute any recommendation or opinion.

The Bonds will be offered only pursuant to Regulation S under the U.S. Securities Act of 1933, as amended (the "Securities Act"), subject to prevailing market and other conditions. There is no assurance that the Issue will be completed or, if completed, as to the terms on which it is completed. The Bonds to be offered have not been and will not be registered under the Securities Act or the securities laws of any other jurisdiction and may not be offered or sold, directly or indirectly, in the United States or to or for the account or benefit of

U.S. persons, as such term is defined in Regulation S of the Securities Act, absent registration or unless pursuant to an applicable exemption from the registration requirements of the Securities Act and any other applicable securities laws. This report does not constitute an offer to sell or the solicitation of an offer to buy the Bonds, nor shall it constitute an offer, solicitation or sale in any jurisdiction in which such offer, solicitation or sale would be unlawful.

The Bonds to be offered have not been and will not be registered under the Securities Act or the securities laws of any other jurisdiction and may not be offered or sold, directly or indirectly, in the United States or to or for the account or benefit of U.S. persons, as such term is defined in Regulation S of the Securities Act, absent registration or unless pursuant to an applicable exemption from the registration requirements of the Securities Act and any other applicable securities laws. This report does not constitute an offer to sell or the solicitation of an offer to buy the Bonds, nor shall it constitute an offer, solicitation or sale in any jurisdiction in which such offer, solicitation or sale would be unlawful.

This report does not constitute and shall not, in any circumstances, constitute a public offering nor an invitation to the public in connection with any offer within the meaning of the Directive 2003/71/EC (the "Prospectus Directive"), as implemented in Member States of the European Economic Area (the "EEA"), and, once fully effective, under Regulation (EU) 2017/1129 (the "Prospectus Regulation"). The offer and sale of the Bonds will be made pursuant to an exemption under the Prospectus Directive and, once fully effective, under the Prospectus Regulation, from the requirement to produce a prospectus for offers of securities.

This report does not constitute an offer of securities to the public in the United Kingdom and is directed solely at persons who (i) are outside the United Kingdom, (ii) are investment professionals, as such term is defined in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "Financial Promotion Order"), (iii) are persons falling within Article 49(2)(a) to (d) of the Financial Promotion Order, or (iv) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000) in connection with the issue or sale of any Bonds may otherwise lawfully be communicated or caused to be communicated (all such persons together being referred to as "relevant persons"). This communication must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this communication relates is available only to relevant persons and will be engaged in only with relevant persons. Any person who is not a relevant person should not act or rely on this communication or any of its contents.

Caution regarding forward-looking information: The information specified above, regarding the potential Issue of the Bonds, including in reference to the size and structure of the Issue, the rating of the Bonds, the listing of the Bonds for trading on the TACT-Institutional system and the other terms and conditions and details pertaining to the Issue as specified above, constitute forward-looking information within the meaning thereof in the Securities Law, 5728-1968, the materialization of which is entirely uncertain, or which may materialize in a

materially different manner to the aforesaid, due to various factors including the conditions in the financial markets on the financing date, including in view of the prolongation and impact of the COVID-19 crisis, and the acceptance of the Bond offering, or due to the non-fulfillment of the conditions precedent or other reasons. The information included in the market review reports attached as Annex A, which includes forecasts, estimates, assessments and other information pertaining to future matters and/or events, the materialization of which is uncertain and beyond the Partnership's control, is also forward-looking information. Such information may not materialize, in whole or in part, or may materialize in a materially different manner than initially foreseen.

Sincerely,

Delek Drilling Management (1993) Ltd.
General Partner of Delek Drilling - Limited Partnership

By Yossi Abu, CEO
and Yossi Gvura, Deputy CEO

Annex A

Set forth below are details included in the Issue documents of the Bonds.

1. **Financial information of the Leviathan project which is derived from non-reviewed financial information and the management's discussions**

   Below is financial information of the Leviathan project included in the preliminary offering memorandum of the Issuer, Leviathan Bond Ltd. (the "**Issuer**"), which is derived from non-reviewed financial information regarding the interests of the Partnership (the "**Sponsor**") in the Leviathan project.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL INFORMATION AND RESULTS OF OPERATIONS

The following is management's discussion and analysis of certain significant factors which have affected the results of operations of the Sponsor attributable to the Leviathan Interest during the periods indicated below. Set forth below are certain financial and operating information that have been prepared by the Sponsor based on its financial statements to reflect the results derived from the Leviathan Interest.

The following discussion contains forward-looking statements that involve risks and uncertainties. The actual results of the Sponsor attributable to the Leviathan Interest may differ materially from those discussed in the forward-looking statements as a result of various factors. The results in the future could differ significantly from the historical results.

The Issuer makes reference herein to certain non-IFRS financial information.

Overview

As described in the offering memorandum, the Issuer will be issuing and selling the Notes and subsequently making loans to the Sponsor in amounts equal to the aggregate principal amount of each series of Notes (each referred to herein as a Sponsor Loan and collectively, the Sponsor Loans). Notwithstanding the principal amount of the Sponsor Loans, the aggregate amounts advanced by the Issuer to the Sponsor on the Closing Date (as defined herein) shall be net of (x) the Debt Payment Fund Required Balance and (y) any initial purchaser discounts and offering expenses.

The Issuer's only cash flows will come from payments made by the Sponsor on the Sponsor Notes, the Issuer's sole asset, and accordingly, the Issuer's ability to make payments on the Notes is entirely dependent on the Sponsor making payment on the Sponsor Notes and the Sponsor is only required to use funds from the Pledged Leviathan Interest to make payments on the Sponsor Notes.

As security for the repayment of the Notes, the Sponsor will pledge all of its rights, title and interest in the Sponsor Collateral, which includes, *inter alia,* its equity interest in the Issuer, as well as its rights, title and interest in the Sponsor Accounts, the Offtake Agreements, the Leviathan Leases, the Leviathan JOA, the Joint Property, specified insurance policies (other than liability insurance) covering the property of the Leviathan Project, the Platform Operating Permit and the Export Permits.

All revenues received from the Offtake Agreements will be allocated in accordance with the cash waterfall as described in the in the offering memorandum.

Operations to Date

Set forth below is certain summary financial information relating to the Leviathan Interest, which is derived from the unaudited financial information of the Sponsor for the quarterly periods ended March 31, 2020 and June 30, 2020, and the audited financial information of the Sponsor for the year ended December 31, 2019 (the "**Sponsor Financial Information**") that reflects (a) the effective share of the Sponsor's revenues from the Leviathan Interest, (b) the royalties expenses to the State of Israel incurred by the Sponsor in connection with the Leviathan Interest, (c) the Sponsor's share of the cost of producing gas sold charged by the Operator pursuant to the Leviathan JOA, (d) the Sponsor's share of other direct expenses incurred by the Sponsor in connection with the Leviathan Interest and (e) insurance expenses and contractual royalties expenses, each presented for the aforementioned periods. The financial information relating to the Leviathan Interest included herein is based on the Sponsor's 45.34% beneficial interest in Leviathan.

Results of Operations

The table below sets forth the results of operations derived from the Sponsor Financial Information attributed to the Leviathan Interest for the periods indicated:

	Three months ended[1]		Year ended[2]
	March 31, 2020	June 30, 2020	December 31, 2019[3]
	(Dollars in thousands)		
Revenues from gas and condensate sales[4]	141,906	113,956	-
Royalties	21,298	16,794	-
Revenues, net	**120,608**	**97,162**	**-**
Costs and expenses:[4]			
Cost of production of natural gas and condensate	15,105	15,296	-
Other direct expenses	116	94	1,132
General and administrative expenses	2,875	2,824	10,217
Total costs and expenses (excluding depletion expense)	**18,096**	**18,214**	**11,349**
Operating profit (loss) (excluding depletion expense)	**102,512**	**78,948**	**(11,349)**
Finance cost	802	81	985
Finance income	(148)	(21)	(269)
Finance cost, net	654	60	716
Profit (loss) (excluding depletion expense)	**101,858**	**78,888**	**(12,065)**

(1) Derived from unaudited information of the Sponsor.

(2) Derived from audited information of the Sponsor.

(3) Production from Leviathan commenced on December 31, 2019. All revenues and expenses incurred prior to January 1, 2020 were capitalized as part of the development of Leviathan.

(4) Revenues from gas and condensate sales, as well as costs and expenses, both reflect the effective share of the Sponsor's costs and expenses in respect of the Leviathan Interest.

Non-IFRS Financial Measures/Alternative Performance Measures

In the offering memorandum, the Issuer presents certain financial measures that are not recognized by IFRS or any other internationally recognized generally accepted accounting principles. Such financial measures, included in the offering memorandum, are EBITDA and Free Cash Flow.

	Three months ended		Year ended[1]
	March 31, 2020	June 30, 2020	December 31, 2019
	(Dollars in thousands)		
EBITDA[2]	102,512	78,948	(11,349)
Free Cash Flow[3]	(23,195)	65,034	(684,591)

(1) Production from Leviathan commenced on December 31, 2019. All revenues and expenses incurred prior to January 1, 2020 were capitalized as part of the development of Leviathan.

(2) EBITDA is calculated as revenue less royalties less costs and expenses, as shown in the income statement above.

(3) Free Cash Flow is calculated as cash flows from operating activities less gross investments, less Sponsor tax advances.

	Three months ended		Year ended
	March 31, 2020	June 30, 2020	December 31, 2019
	(Dollars in thousands)		
Net cash from/(used in) operating activities	29,709	112,008	(10,848)
Net cash used in investment activities	(52,904)	(44,377)	(673,743)
Sponsor tax advances	-	(2,597)	-
Free Cash Flow	(23,195)	65,034	(684,591)

Description of Key Income Statement Items

The following section presents key income statement line items derived from the Sponsor Financial Information attributed to the Leviathan Interest.

Revenues from gas and condensate sales. Income from the sale of gas and condensate that is recognized upon the transfer of the gas and/or condensate to the customer. The Sponsor's income includes the effective share (45.34%) of the Sponsor's revenues from the Leviathan Interest.

Royalties. Consists of royalties' costs due to the Israeli government, third parties and related parties and are paid in relation to gas sold. The Sponsor used an effective rate of 10.9%[1] to calculate the expected royalties due to the Israeli government and an effective rate of 3.9%[2] to calculate the expected contractual royalties for the revenues from the gas produced in the three months ended March 31, 2020 and the three months ended June 30, 2020.

Cost of production of natural gas and condensate. Cost of production of natural gas and condensate primarily consists of the effective share (45.34%) of the Sponsor's costs and expenses in respect of the Leviathan Interest, such as platform and well maintenance, employees' salaries, professional services, gas transportation, rental equipment, plus Sponsor-level insurance expenses that are related to the Leviathan Interest.

Other direct expenses. Other direct expenses primarily consist of the Sponsor's effective share (45.34%) of the Sponsor's expenses in respect of the Leviathan Interest such as geological consultation, seismic data processing and other direct costs and expenses.

General and administrative expenses. Includes the Sponsor's effective share (45.34%) of general and administrative expenses such as salaries, professional consultants and office maintenance costs of the Operator.

Finance cost. Finance cost primarily consists of the Sponsor's effective share (45.34%) of the change in value of Leviathan Project asset retirement obligations that are attributed to the passage of time from the initial liability recognition and costs related to bank guarantees of the Sponsor to the Israeli government as part of the conditions of the Leviathan Leases.

Finance income. Finance income primarily consists of the Sponsor's effective share (45.34%) of the interest received by the Operator in the Leviathan Project joint bank account.

Results of Operations for the Three Months Ended March 31, 2020, the three months ended June 30, 2020 and the Year Ended December 31, 2019

Revenues

Revenues from gas and condensate sales decreased from $141.9 million for the three months ended March 31, 2020 to $114 million for the three months ended June 30, 2020, a decrease of approximately 19.7%. The decrease was principally due to lower quantity of gas sold to NEPCO and Dolphinus principally due to the effect of COVID-19, which was partially offset by higher quantities of gas sold to the IEC and other Israeli customers.

On a 100% basis, sales of the total quantity of natural gas for the three months ended June 30, 2020 amounted to approximately 1.44 BCM compared to approximately 1.64 BCM for the three months ended March 31, 2020, a decrease of approximately 12.2%.

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[1] The effective rate of the State's royalties in the Leviathan project, as calculated by the Partnership for purposes of its financial statements. For further details regarding the method of calculation of the State's royalties in the Leviathan project, see Section 7.26.9 of the Periodic Report.

[2] The effective rate of the overriding royalties derived from the effective rate of the State's royalties as stated in Footnote 1 above.

There were no revenues from gas and condensate sales in the year ended December 31, 2019, as the Leviathan Field began producing on December 31, 2019 and revenue from sales recognition began in January 2020.

Royalties

Total royalties decreased from $21.3 million for the three months ended March 31, 2020 to $16.8 million for the three months ended June 30, 2020, a decrease of approximately 21.1%. The decrease was principally due to the decrease in revenues.

Royalties are paid in relation to gas sold. As sales recognition began in January 2020, no royalties were recognized in profit or loss for the year ended December 31, 2019.

Cost of production of natural gas and condensate

Cost of production of natural gas and condensate remained substantially unchanged from $15.1 million for the three months ended March 31, 2020 to $15.2 million for the three months ended June 30, 2020.

There was no cost of production of natural gas and condensate in the year ended December 31, 2019, as the Leviathan Field began producing on December 31, 2019 and sales recognition began in January 2020.

General and administrative expenses

General and administrative expenses remained substantially unchanged from $2.9 million for the three months ended March 31, 2020 to $2.8 million for the three months ended June 30, 2020.

General and administrative expenses for the year ended December 31, 2019 amounted to $10.2 million. On an annualized basis, general and administrative expenses for the six months ended June 30, 2020 were higher in comparison to the year ended December 31, 2019 due to increased management by the Operator for the Leviathan Field since the commencement of operations in 2020.

Finance cost

Finance cost decreased from $0.8 million for the three months ended March 31, 2020 to $0.1 million for the three months ended June 30, 2020, a decrease of approximately 89.8%. The decrease was principally due to a decrease in the interest rate used to evaluate the long term asset retirement obligation of the Leviathan Interest.

Finance cost for the year ended December 31, 2019 amounted to $1 million, principally related to the reevaluation of the asset retirement obligation present value due to the passing of time.

Net profit and total comprehensive income

As a result of the foregoing, net profit and total comprehensive income decreased from $101.9 million for the three months ended March 31, 2020 to $78.9 million for the three months ended June 30, 2020, a decrease of approximately 22.6%. The decrease was principally due to the decrease in revenue net of royalties as described.

Liquidity

The Leviathan Development Plan includes two phases (Phases 1A and 1B). The overall investment by the Leviathan Partners in the development of Phase 1A has been approximately $3.6 billion, of which the Sponsor's share was approximately $1.59 billion. The Leviathan Field began producing on December 31, 2019. As of the date of the offering memorandum, a final investment decision ("**FID**") for the development of Phase 1B is not yet approved.

The Issuer's only source of funds to make payments on the Notes are amounts received from the Sponsor under the Sponsor Notes. The Sponsor is only required to use funds received from the Leviathan Interest to make payments on the Sponsor Notes. In the future, cash flow from the Leviathan Interest may not be sufficient to make payments on the Sponsor Notes and, in turn, permit the Issuer to pay the principal, interest and all other amounts due on the Notes. There is no obligation on the Sponsor to use funds other than cash flow from the Leviathan Interest to make payments on the Sponsor Notes.

Cash Flows

The table below sets forth selected cash flow information derived from the Sponsor Financial Information attributed to the Leviathan Interest for the periods indicated:

Three months ended[1]		Year ended[2]
March 31, 2020	June 30, 2020	December 31, 2019
(Dollars in thousands)		

	Three months ended[1]		Year ended[2]
	March 31, 2020	June 30, 2020	December 31, 2019
	(Dollars in thousands)		
Cash flows – operating activities:			
Net profit (loss)	**101,858**	**78,888**	**(12,065)**
Adjustments required for presentation of the cash flows for operating activities:			
Decrease (increase) in long-term asset retirement obligation	669	(54)	935
Changes in assets and liabilities items:			
Decrease (increase) in trade receivables	(83,072)	28,168	-
Increase in other receivables	(318)	(3,563)	-
Decrease due to the Joint Venture Operator balance	-	9,857	-
Increase (decrease) in trade and other payables	10,572	(1,288)	282
Net cash from/(used in) operating activities	29,709	112,008	(10,848)
Cash flows – investment activities:			
Investments in petroleum and gas assets	(79,820)	(29,883)	(593,506)
Investment in other long-term assets	(1,631)	(14,494)	(103,058)
Decrease due to the Joint Venture Operator balance	28,547	-	22,821
Net cash used in investment activities	(52,904)	(44,377)	(673,743)
Cash flows – financing activities:			
Sponsor tax advances	-	(2,597)	-
Sponsor investment (withdrawal), net	23,195	(65,034)	684,591
Net cash from/(used in) financing activities	23,195	(67,631)	684,591

(1) Derived from unaudited information of the Sponsor.

(2) Derived from audited information of the Sponsor.

Net cash from/(used in) operating activities

Net cash from operating activities was $29.7 million for the three months ended March 31, 2020, compared with $112 million for the three months ended June 30, 2020. The approximately 277% increase was principally due to a decrease in trade receivable stemming mainly from export payment terms.

Net cash used in operating activities was $10.8 million for the year ended December 31, 2019, which principally relate to the net loss.

Net cash used in investment activities

Net cash used in investment activities was $52.9 million for the three months ended March 31, 2020, compared with $44.4 million for the three months ended June 30, 2020. The approximately 16.1% decrease was principally due to the finalization of the remaining payment with respect to the development of Phase 1A.

Net cash used in investment activities was $673.7 million for the year ended December 31, 2019, which principally related to the investment made with respect to the development of Phase 1A.

Net cash from/(used in) financing activities

Net cash from financing activities was $23.2 million for the three months ended March 31, 2020, compared with net cash used in financing activities of $67.6 million for the three months ended June 30, 2020. The change was mainly due to the increase of cash from operating activity that, in turn, allowed a Sponsor withdrawal that was slightly offset by the commencement of tax advance payments in respect of the Leviathan Interest (the tax advance calculation took into account the finance expenses of the Sponsor with connection to the current financing of Leviathan Project).

Net cash from financing activities was $684.6 million for the year ended December 31, 2019, which principally related to the sponsor investment in order to finance the development of Phase 1A of Leviathan.

2. **Section 7.23.6(b) and (d) of the Periodic Report – material legal or administrative proceedings in connection with the environment**

Further to Section 16 of the Update to Chapter A (Description of the Partnership's Business) in the Q1/2020 report, as released on June 28, 2020 (Ref. no. 2020-01-058762) (the "**Q1 Report**"), it is noted that on July 1, 2020, the operator in the Leviathan project received a notice from the Ministry of Environmental Protection of the intention to impose a financial penalty, due to alleged violations of the emission permit that was granted to the Leviathan platform, in relation to the activation of flares on the production platform. It is noted that the sum of the penalty is not material and that the operator intends to submit its arguments with respect to the said penalty to the Ministry of Environmental Protection.

3. **Section 7.27.6 of the Periodic Report – legal proceedings**

Further to Section 20(d) of the Q1 Report regarding a class action and a motion for certification thereof, which was filed with the Tel Aviv District Court by a consumer of the Israel Electric Corp. Ltd. (in this section: the "**Certification Motion**" and the "**IEC**", respectively) against the Partnership and Noble Energy Mediterranean Ltd. and against the other holders of the Tamar project and the Leviathan project (as parties against which no remedy is sought), in connection with the competitive process for the supply of natural gas conducted by the IEC and in connection with a possible amendment to the agreement for the supply of gas from the Tamar project to the IEC, as agreed by the other holders of the Tamar project, with no involvement on the part of the Partnership and Noble (for details see Section 7.12.4(a)4.t of the Periodic Report), it is noted that the Partnership is required to file its response to the Certification Motion by October 1, 2020.

4. **Sections 7.2.5 and 7.17.1(a) of the Periodic Report – Phase 1A of the development plan for the Leviathan project**

With respect to the gradual ramp-up of the production capacity from the Leviathan project, it is noted that as of the date of this report, the daily production capacity is approx. 900 MMCF, and that in the operator's estimation, the running-in and operation of the turbo expander systems will be completed in August 2020, at which time the daily production capacity will increase to approx. 1,200 MMCF.

5. **Sections 7.12.3 and 7.12.5(b) of the Periodic Report – engagements for the export of natural gas from the Leviathan project and key customers**

The Partnership's revenues from the sale of gas from the Leviathan project to Jordan's National Electric Power Company (NEPCO) and to Dolphinus Holding Limited in the first half of 2020 constituted approx. 45% of the Partnership's total revenues from the sale of natural gas from the Leviathan project.

6. **Value of the discounted cash flow from the Leviathan project**

On July 9, 2020, the Partnership released a report on updated discounted cash flow figures, contingent resources and reserves in the Leviathan leases (Ref. no.: 2020-01-065878) in accordance with a report which the Partnership received from Netherland, Sewell & Associates, Inc. (the "**Reserves Report**" and "**NSAI**", respectively), which includes, *inter alia*, discounted cash flow figures attributed to the Partnership's share in the Leviathan project, whereby the value of the discounted cash flow of the proved and probable (2P) reserves at a cap rate of 10%, as of June 30, 2020, is approx. U.S. $3,965 million, based on the assumptions specified in the Reserves Report, including assumptions regarding a Brent barrel price of approx. $37 in 2020, approx. $47 per barrel in 2021, approx. $71 per barrel in 2025, which rises to a fixed price of approx. $88 per barrel from 2029 forth. It is noted that NSAI's said report was attached to the preliminary offering memorandum of the Bonds. Also attached thereto was a sensitivity scenario based on the same assumptions that underlie the discounted cash flow, as included in the Reserves Report, with the exception of various assumptions regarding the Brent barrel price whereby an assumption was made of a Brent barrel price of $43.5 in 2020, $45.2 per barrel in 2021 and $50 per barrel from 2022 forth. In accordance with this sensitivity scenario, the value of the discounted cash flow of the proved and probable (2P) reserves at a cap rate of 10%, as of June 30, 2020, is approx. U.S. $3,729 million.

7. Attached hereto as Addendum 1 is the domestic market review report prepared by BDO Ziv Haft Consulting & Management Ltd. and a letter of consent to its inclusion.

8. Attached hereto as Addendum 2 is a market review report for Egypt and Jordan prepared by Wood Mackenzie Ltd.

Addendum 1 - The domestic market review report prepared by BDO Ziv Haft Consulting & Management Ltd. and a letter of consent to its inclusion

27 July, 2020

Delek Drilling
19 Aba Even Boulevard
Herzelia 4672537
Israel

Ladies and Gentlemen:

BDO Ziv Haft Consulting and Management Ltd. hereby grants permission to use our market report in an immediate report to be filed with the Israel Securities Authority (ISA) and the Tel Aviv Stock Exchange (TASE).

Sincerely,

Israel Natural Gas Demand Forecast 2020-2040

July 26, 2020

BDO

Preface

The State of Israel is marking the 16th year since the beginning of domestic natural gas production. In the ensuing years, Israel's energy sector has taken merely the first steps in the adaptation to the new era of energy self-sufficiency. Israel's oil-based power units were converted from oil to natural gas, and 125 of the largest industrial plants were connected to the natural gas grid. In addition, first steps have been taken in reducing coal use. However, during this entire period Israel has faced supply-side constraints that prevented broader natural gas utilization.

The commercial operations at the Leviathan project in December 2019, along with the expected operation of Karish at 2021/2022, remove supply-side constraints, increase energy security, and thus enable the economy to realize the full potential demand for natural gas.

The Israeli economy is facing significant energy transformation in the next decade. The development of the Tamar, Leviathan, and Karish natural gas fields, along with cost reduction of PV technologies, allow Israel a full transition to local energy resources: natural gas and solar energy. These natural resources enable the state of Israel to reach energy independence and decrease GHG emissions, all while reducing electricity costs and increasing government revenues.

By the end of 2025, Israel is committed to completely phase-out coal generation. At that year, full energy independence for electricity generation will be reached, with a fuel mix based on 83% natural gas and 17% renewables. Natural gas will remain Israel's primary source of energy. The share of renewables, which rely almost exclusively on solar energy, is forecast to increase to 25% by 2030, and 30% by 2040.

In the case of the Israeli energy sector, natural gas-based generation and solar energy are complementary generation technologies, rather than substitutes. PV generation will be maximized during sun-hours (20% of hours corresponding to about 25% of demand) and complemented by efficient natural gas-based generation at the remaining time.

Natural Gas and renewable generation are jointly required to support Israel's transition to energy independence and to realistically achieve Israel's goals of GHG emission reduction while maintaining electricity reliability and cost-effectiveness.

Our assessment shows that the demand for natural gas and electricity in Israel is still far from the saturation point. Israel electricity demand growth rate averaged 3.4% in the last five years, as a result of 2% annual population growth, an increase in the standard of living, and the effect of climate change on seasonal demand. In the next two decades, the high growth of core electricity demand is expected to persist, and total electricity demand will be further accelerated due to the electrification of the Israeli railway, the construction of two large desalination plants and the gradual penetration of electric vehicles.

According to BDO's forecast, the demand for natural gas in Israel is expected to almost double in the next decade and reach 20.9 BCM in 2030, with an average growth rate of 6%. The main growth drivers are the continued structural change of the energy sector, further reduction in coal-based power generation, and a continued 3.6% annual growth rate in demand for electricity throughout 2040.

BDO's electricity and natural gas demand forecast is based on an econometric model using the bottom-up approach. The forecast is based on a proprietary model developed by BDO based on the Long-Range Energy Planning (LEAP) system—a leading international economic model used for simulation in the energy sector.

The undersigned has 25 years of experience in conducting forecasts and assessing trends in the Israeli energy sector and is a member of BDO's global forum of energy experts. This professional experience includes demand forecast and market analysis for Israel Electric Corp., Yam Tethys, Tamar and Leviathan partners, independent power producers, cogeneration and industrial producers, natural gas distribution companies and government authorities.

Chen Herzog
Chief Economist, Partner
BDO Consulting

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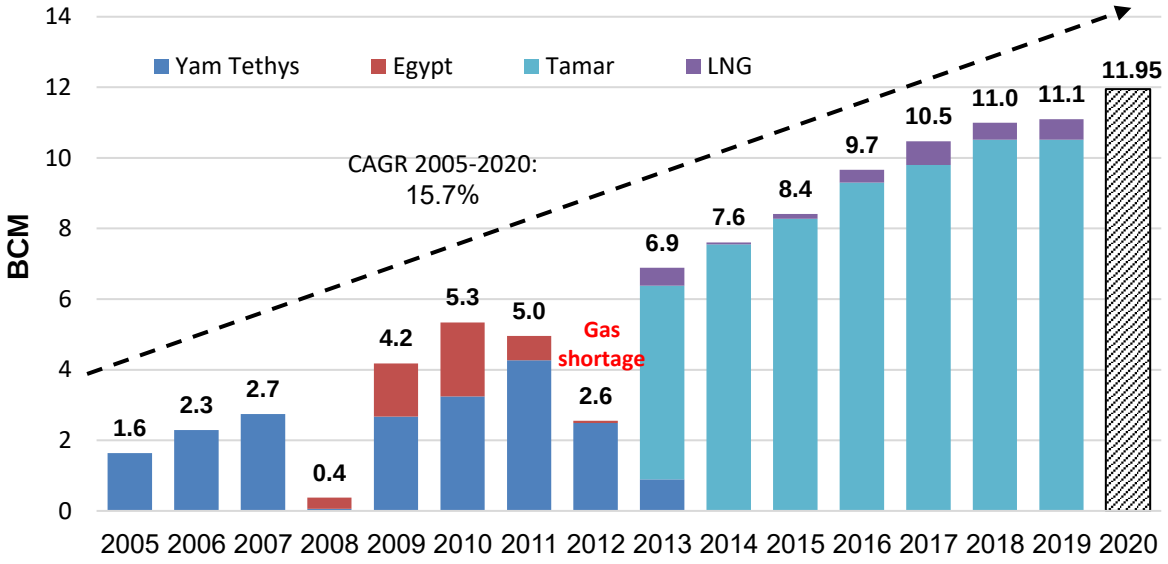
1. Executive summary

1.1. Introduction

This year marks Israel's 16th year of local natural gas production, and the first one in which Israel has two substantial local natural gas sources.

Israel's energy sector is facing significant changes; from the supply side, the Israeli economy is advancing from a sole natural gas supplier (Tamar) between 2013 to 2019, to two suppliers starting from the end of 2019 (Tamar and Leviathan), with the expected entrance of a third producing natural gas field (Karish) by the end of 2021. Energy security is maintained with an additional floating LNG terminal off of Hadera, serving mainly for backup purposes.

Figure 1- Israel Natural Gas Consumption by Gas Supplier, 2005-2020



Source: Natural Gas Authority and BDO analysis

From the demand side, natural gas demand increase is driven by the enduring growth of electricity demand, as well as by a transition of fuel mix, from coal and oil to natural gas and renewables.

Israel electricity demand growth rate averaged 3.4% in the last five years, as a result of 2% annual population growth, an increase in the standard of living (GDP/capita growth), and the effect of climate change on seasonal demand. In the next two decades, the high growth of core electricity demand is expected to persist, and total electricity demand will be further

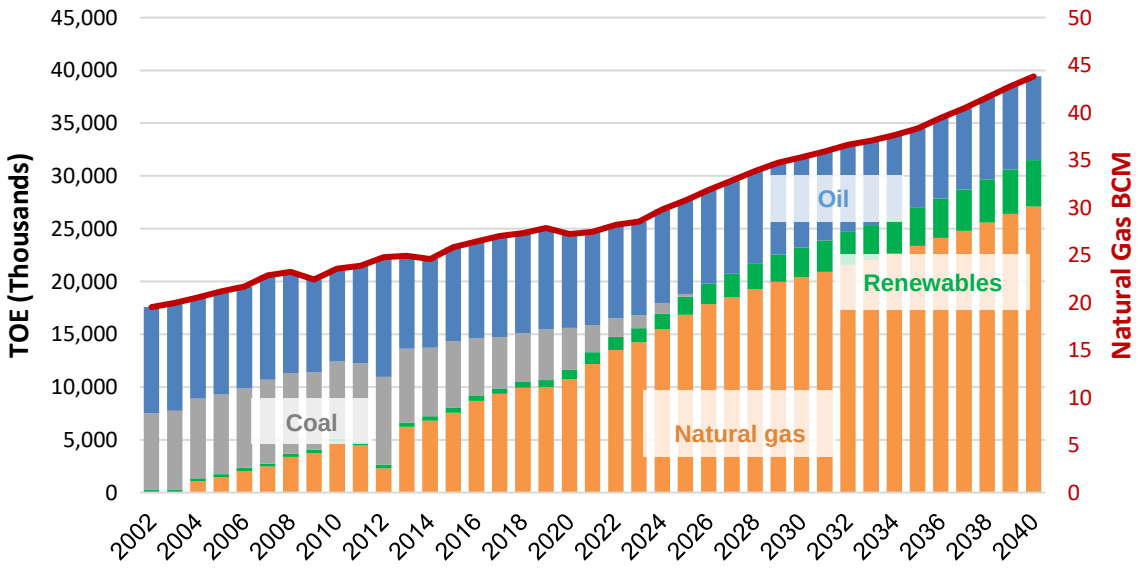
accelerated due to the electrification of the Israeli railway, the construction of two large desalination plants and the gradual penetration of electric vehicles. Electricity demand growth rate is forecast to increase by an average of 3.6% per year by 2040.

Israel's fuel-mix transition is made possible due to the development of the Tamar, Leviathan and Karish natural gas fields along with the cost reduction of PV panel technologies. These developments together allow Israel to shift its energy sector to one that is based solely on local energy resources: natural gas and solar energy. This energy transformation enables Israel to reach energy independence and reduce GHG emissions, all while reducing electricity costs and increasing government revenues.

The ministry of energy has committed to completely phase-out coal-based electricity generation by the end of 2025. According to the policy decision, coal phase-out will be accompanied by conversion to natural gas of 3,400MW of coal generation capacity, along with shut-down and replacement by new natural gas-based generation capacity of the remaining 1,440MW coal units (Rabin 1-4).

In 2020, Israel's electricity generation fuel mix will consist of 67% natural gas, 25% coal and 8% renewables. By the end of 2025, full energy independence for electricity generation will be reached, with a fuel mix of 83% natural gas and 17% renewables. We expect the renewable share to increase to 30% by 2040 (see section 1.4 below).

Figure 2- Israel Energy Consumption by Fuel



Source: BDO forecasts, Historical data: BDO analysis based on the CBS and Fuel Department's data

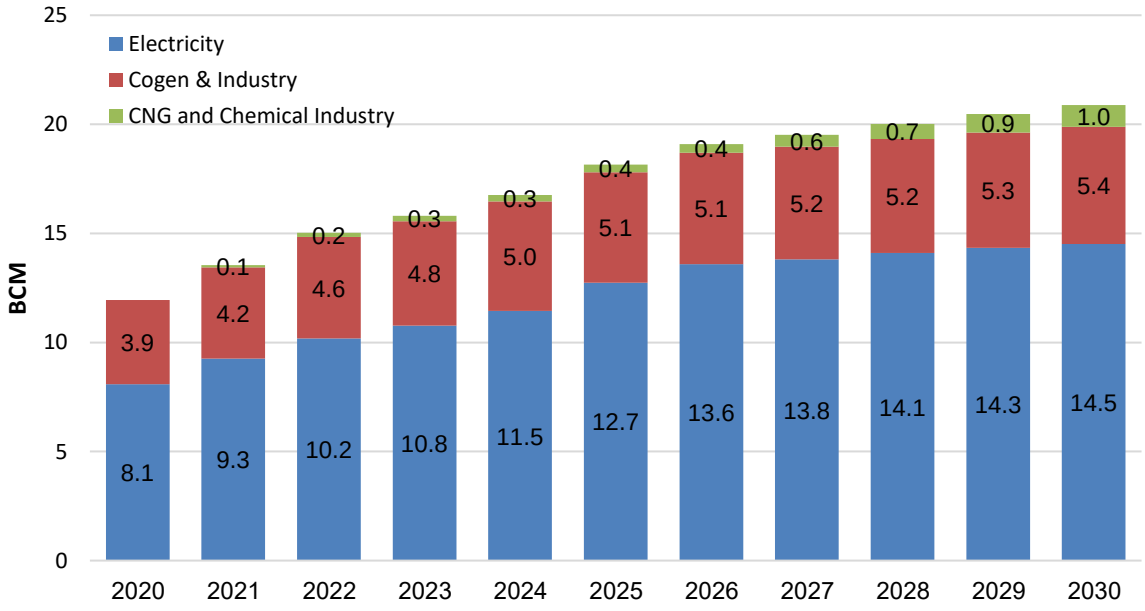
1.2. Natural gas Demand Forecast Summary

In the past decade, natural gas demand in Israel increased at an average annual rate of 17% per year, reaching 11.1 BCM in 2019. We forecast domestic natural gas demand to increase by an average annual rate of 6% over the next decade, reaching 15 BCM by 2022 and 18.1 BCM by 2025. It should be noted that our natural gas demand forecast is based on potential demand, and does not account for supply side limitations. However, following Leviathan's entry in 2020 and Karish's expected entry in 2021/22, there should be an adequate supply for the entire domestic demand in the coming years. For backup purposes, any local natural gas supply shortages will continue to be supplemented by imported LNG or substituted by diesel.

Natural gas demand in Israel is primarily driven by electricity demand. The electricity demand in Israel is highly sensitive to weather conditions. Hence, it is important to note that our forecast is conducted based on expected weather conditions. In any year, weather conditions may differ from projections, yielding possible variations in natural gas demand (in both directions).

Figure 3- Natural Gas Demand Forecast 2020-2030

In BCM



Source: BDO Forecast

In addition, natural gas demand growth is driven by the government's decision to minimize coal use and to shut down 1,440MW of coal units by June 2022, with the commitment to gradually phase-out coal by the end of 2025. An additional growth driver is the increased usage of natural gas and electricity for industrial and transportation purposes.

Table 1- Demand Forecast Summary

Demand by type of Natural Gas Consumer, in BCM

The data of 2016-2019 are actual historical figures

	Electricity	Cogen & Industry	CNG and Chemical Industry*	Total Demand	Out of which, Coal reduction	Out of which, Palest.
2016	7.1	2.6		9.7	1.2	
2017	**7.8**	**2.6**		**10.4**	**1.6**	
2018	8.1	3.0		11.0	1.9	
2019	7.3	3.8		11.1	1.9	
2020	**8.1**	**3.9**		**12.0**	**2.5**	
2021	9.3	4.2	0.1	13.5	3.4	
2022	10.2	4.6	0.2	15.0	4.9	
2023	10.8	4.8	0.3	15.8	5.4	0.3
2024	11.5	5.0	0.3	16.8	5.6	0.8
2025	**12.7**	**5.1**	**0.4**	**18.1**	**6.4**	**1.6**
2026	13.6	5.1	0.4	19.1	6.7	1.9
2027	13.8	5.2	0.6	19.5	6.7	2.1
2028	14.1	5.2	0.7	20.0	6.7	2.2
2029	14.3	5.3	0.9	20.5	6.7	2.3
2030	14.5	5.4	1.0	20.9	6.7	2.5
2031	14.8	5.4	1.1	21.3	6.7	2.6
2032	15.3	5.5	1.1	21.9	6.7	2.8
2033	**15.5**	**5.6**	**1.2**	**22.2**	**6.7**	**2.9**
2034	15.9	5.6	1.2	22.7	6.7	3.1
2035	16.4	5.7	1.3	23.3	6.7	3.2
2036	16.9	5.8	1.3	24.0	6.7	3.4
2037	17.3	5.9	1.4	24.5	6.7	3.5
2038	17.8	5.9	1.4	25.1	6.7	3.7
2039	18.3	6.0	1.5	25.8	6.7	3.9
2040	18.7	6.1	1.5	26.3	6.7	4.1

*including Palestinian Authority

Source: BDO Forecast

To further realize our natural gas demand forecast factors, the below chart presents the main growth drivers. Total natural gas demand is forecast to increase by 6.1 BCM by 2025. The conversion of coal generated power plants to natural gas contributes 3.9 BCM, while the COVID-19 crisis decreases the demand by 0.5 BCM by 2025.

Table 2 – Natural gas Demand Growth Drivers

2025 vs. 2020, growth factors in BCM

2020 natural gas demand		**11.95 BCM**
Increase of electricity demand	• Primarily affected by the population's growth, increase of disposable income and rising living standards, as well as the increase of electricity uses and energy-intensive systems	1.8
COVID-19 pandemic	• The effect of the decrease in GDP per capita	-0.5
Coal phase out: in accordance with the Ministry of Energy policy	• Closure of Rabin's 1-4 coal units in Hadera • Conversion of Ashkelon's coal units to natural gas • Conversion of Hadera's additional coal units to natural gas	3.9
Distribution grid development	• Completing the connection of industrial plants to the natural gas' distribution and supply grid • Connecting the farming sector and small household consumers to the supply grid	0.6
Railways electrification and electric vehicles	• Concluding the project of converting heavy railway service from diesel to electricity • Growing penetration of growth at electric vehicles, which Israel is a preferred country for its adoption	0.4
Increase of water desalination	• Sorek B desalination plant operation in 2023, bearing a minimum of 0.2 BCM per annum	0.2
Demand forecast in 2025 (13% renewables in 2025)		18.4 BCM
Impact of renewable target increase to 17% in 2025		-0.3
2025 natural gas demand forecast		**18.1 BCM**

The spread of the COVID-19 pandemic in Israel affected the demand for electricity and natural gas in two main aspects; the short-term effect due to lockdown and reduced economic activity, and the medium-term effect due to lower economic growth, reduced income levels and unemployment. Our analysis has been updated to incorporate the effect of the COVID-19 pandemic on electricity demand, based on current macro-economic estimates. Our forecast is based on the assumption that a complete lockdown of the Israeli economy will not re-occur and assumes containment of the epidemic by the beginning of 2021. Sensitivity analysis indicates that 6-month delay in the suppression of the epidemic may result in an additional 0.5BCM to 0.7BCM reduction in natural gas demand in 2021, gradually converging to pre-crisis level by 2027.

1.3. Coal Reduction Policy

Israel's currently installed electricity generation capacity includes 4,840MW of coal units, 12,900MW of natural gas-fired units and about 4,200MW of renewable energy. In 2019, natural gas-fired units constituted 63% of the Israeli generation capacity (72% accounting for the renewable units' reduced availability) and generated 65% of Israel's electricity production.

Israel's coal units were planned and built in the 1980s and 1990s, long before the discovery of Israel's natural gas fields. At that time, coal usage for baseload production provided an economically viable alternative to fuel oil.

The availability of domestic natural gas, along with current environmental policy and regulation, calls for a shift in Israel's electricity energy fuel mix. From the point of view of the national economy, natural gas is the cheaper and more reliable alternative. Natural gas generates less pollution (SOX and NOX) and GHG emissions in the generation process, thus allowing Israel to fulfill its international commitments under the COP21 framework.

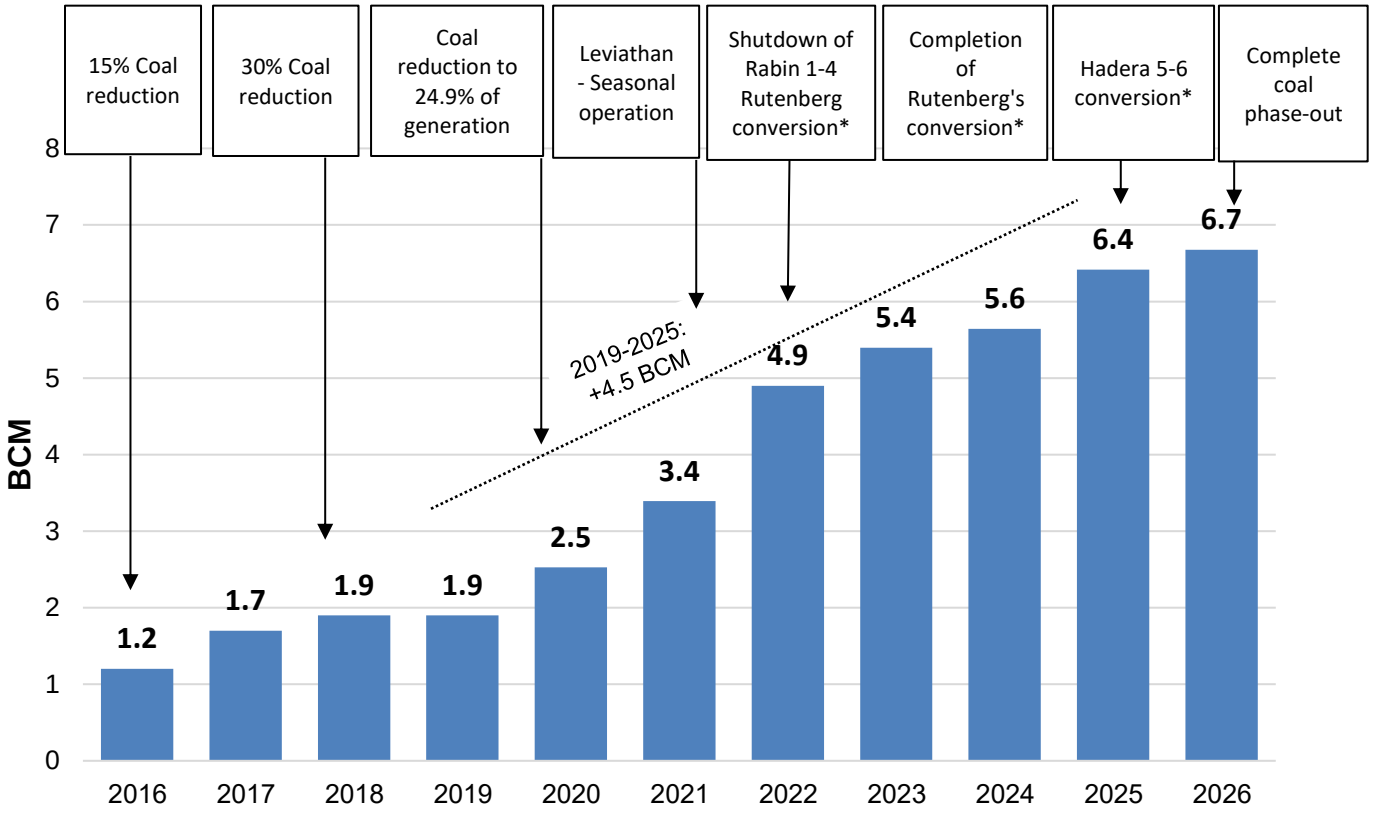
Hence, from an economic and environmental point of view, the optimal operational regime for Israel's electricity sector is to shut down coal-fired power production and shift to domestic and more environmentally friendly natural gas. Furthermore, natural gas consumption is a fundamental source of government income as a result of natural resources related taxes and royalties. We believe that the lack of adequate natural gas supply was the main constraining factor that prevented further coal reduction over the last years.

Continued coal reduction is expected to be achieved through 2 main measures:

1) **Coal capacity reduction** – Israel has committed to completely phase-out coal by 2025. This target will require the conversion of the power plant in Ashkelon from coal to natural gas by 2024, and the conversion of two coal-fired electricity production 5-6 units at Hadera's Orot Rabin plant to natural gas by the end of 2025. The Rabin's 1-4 coal units in Hadera will be shut down by 2022. The conversion of the power plants will be carried out gradually, in order to ensure reliable electricity supply as it keeps the coal-based units activated but on a natural gas basis.
2) **Seasonal Coal Shutdown** – Increased natural gas availability and reliability will enable the system operator to selectively shut down coal units on a seasonal basis. A seasonal shutdown is consistent with the Ministry of Energy policy to minimize the usage of coal to power subject to natural gas availability and reliability constraints, and with cost minimization economics (merit order of dispatch), due to the lower marginal cost of coal compared to natural gas. Our analysis of system dispatch indicates that a

50% coal reduction due to seasonal operation is possible already in 2021 without any further investments.

Figure 4 – Israel Coal Phase-Out Impact on Natural Gas Demand



Source: BDO forecast.
* Conversion of existing coal units to dual-fuel gas and coal. Natural gas will be used as the primary fuel with the ability to switch back to coal for backup purposes.

Israel's Ministry of Energy is adopting coal phase-out policy, which is being periodically updated with the enforcement of more stringent coal usage restriction, as natural gas supply security increases:

- August 2016 – a decision was made to shut down four coal-operated production units of the IEC (Units 1-4 in the coal-fired power plant at the “Orot Rabin”) by June 2022.
- November 2017 – a requirement for minimum operation of coal-fired production units was set. According to this decision, at all times, preference shall be given to the production of electricity using natural gas over coal, while keeping on flexibility and reliability of supply to the market.
- July 2018 - the Israeli government approved the electricity market reform. According to the reform, IEC will shut down Orot Rabin coal units by June 2022, and build and operate two new natural gas-fired combined cycle turbines in ‘Orot Rabin’ site.
- December 2018 - Israel joined the PPCA (powering pas coal alliance) and committed to completely phase out coal by 2030.

- November 2019 – a decision to completely phase out coal by then end of 2025, with conversion of the 3,400MW of coal units to natural gas.
- June 2020 – a decision for a further 20% reduction of coal usage compared to 2019. Coal usage in 2020 will not exceed 24.9% (compared with 30% in 2019). Consequently, coal-based generation will be reduced to 18 billion kWh in 2020, compared to 30 billion kWh in 2015.

1.4. Renewable Energy

In 2020, Israel's electricity generation fuel mix is expected to be based on 67% natural gas, 25% coal and 8% renewables. By the end of 2025, we forecast full energy independence for electricity generation will be reached, with a fuel mix based on 83% natural gas and 17% renewables. We expect the renewable share to increase to 30% by 2040.

Israel's renewable energy targets are based almost exclusively on solar energy, as Israel has no potential for hydro-electric generation, and most of wind-based power generation potential has been allocated.

Israel's climate provides relative advantage for solar generation, as effective sunlight hour availability reaches about 20%, among the highest in OECD countries. With the decline of PV panel costs, direct PV generation costs are on par with the marginal cost of natural gas-based generation, and thus have reached grid parity in terms of direct generation cost (although it should be noted that the integration of solar energy is associated with additional significant integration costs).

Solar energy provides significant economic and environmental benefits to the Israeli energy sector. However, the variable nature of solar energy, and its effective unavailability during 80% of the year, bring along significant technical and economic challenges.

In the case of the Israeli energy sector, natural gas-based generation and solar energy are complementary generation technologies, rather than substitutes. PV generation will be maximized during sun-hours (20% of hours corresponding to about 25% of demand), and complemented by efficient natural gas-based generation at the remaining time.

The advancement in storage technologies provides significant support for the integration of PV in Israel's energy sector. The variability nature of PV generation, and the "Duck Curve" phenomenon, along with the fact that Israel is effectively an electricity Island, requires the integration of battery storage to provide grid balancing and stabilization. However, in the

coming years, battery storage does not constitute a substitute to natural gas-based generation in terms of Israel's electricity peak generation requirement, but rather as a supplemental measure.

Electricity capacity planning is based on the peak-hour system bottleneck, which now occurs in Israel at peak winter night-time, as there is no solar availability during this time. Peak winter demand typically occurs at a period of thunderstorms and cloudy weather, when solar availability is very low on daytime as well. Therefore, PV energy does not contribute to the effective peak hour generation capacity.

Battery storage, with limited daily availability period of 4-6 hours, is important for grid stabilization, but cannot substitute natural gas-based generation capacity in terms of power system reliability and resiliency. Israel's electricity regulation requires all generation units to provide, in addition to a connection to the natural gas pipeline, additional storage capacity of a secondary fuel (diesel) for 100 hours of continuous operation. Hence, battery storage with 4 hours of continuous operation is not an effective substitute in terms of the reliability requirements for generation and backup capacity.

It should also be noted that PV generation is highly correlative with electricity demand. High availability of solar energy is correlated with hot weather, which contributes to high electricity demand. Our analysis indicates that even at 30% PV based generation, PV over-generation beyond demand (energy curtailment) is minimal. Hence, in the case of Israel, battery storage will be used in the coming years mainly as a means to shift natural gas-based electricity generated at night time to daytime peak hours, and not for storage of renewable energy.

Our conclusion is that in the case of the Israeli energy sector, renewable and storage technologies are complementary to natural gas-based generation. Natural gas and renewable generation will co-exist and are jointly required to support Israel's transition to energy independence and to effectively achieve Israel's goal of GHG emission reduction, electricity reliability, and cost-effectiveness.

The current official target for the renewable share of generation in 2030 stands at 17%. The ministry of energy is currently conducting a public consultation process toward the amendment of the goal to a 30% renewable target. Israel's track record indicates the unsuccessful efforts to meet renewable goals, with the 2020 actual renewable generation was about 20% below target (8% vs. 10% target).

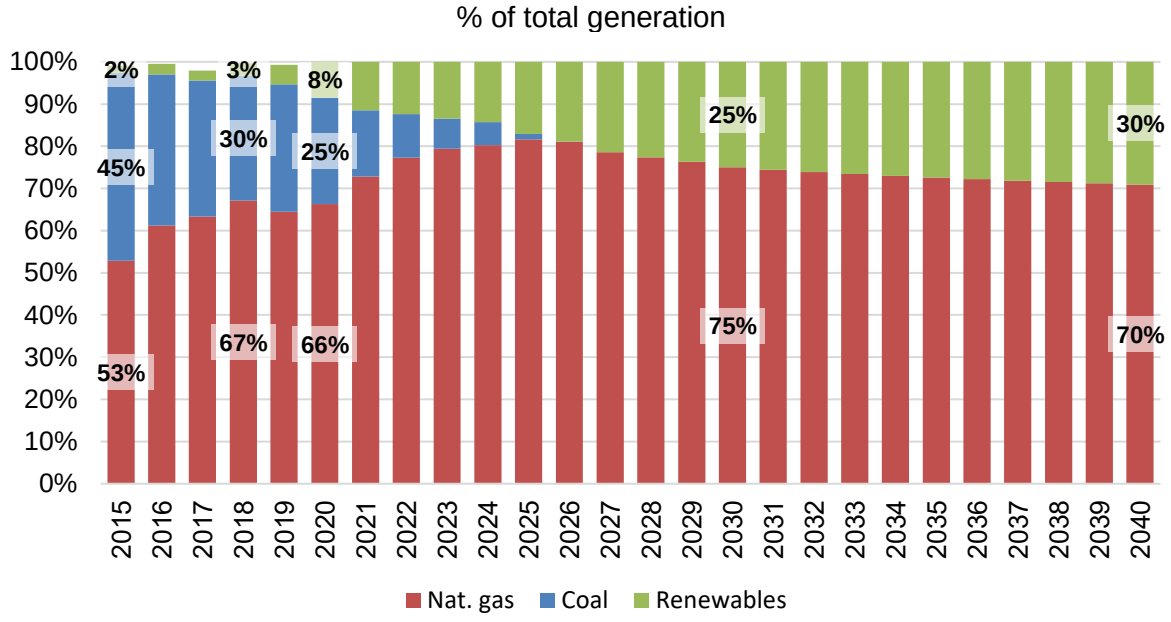
We expect that the government will adopt a 30% renewable target for 2030, although we estimate that the target cannot be practically reached within this timeframe, and is mostly a declarative goal. Official consultation position papers submitted by the public utility authority

and Israel's electric Corp long-term planning division, highlight the unlikelihood of reaching a 30% renewable target by 2030, which is based on 27% solar generation, based on the following arguments:

- There is no international precedent in reaching solar power generation in excess of 15% of total power demand, in particular not for an electricity-island such as Israel.
- The variable and intermittent characteristic of PV based generation, poses great technical challenges as is illustrated by IEC position paper:
- Battery storage technology is still in its infancy and there is little to no experience in the world in operating an electrical system that has an extensive amount of batteries. In addition, there is a great deal of uncertainty as to the cost of such technology, its life cycle, and its technical capabilities.
- In addition, from a statuary and planning point of view, lack of potential areas for panels risks the ability to reach these targets, as arises from the Electricity Authority[1] (EA) position document.

Consequently, we assume that the 30% renewable target will be reached by 2040, while in 2030 renewable share will reach 25%, equivalent to 83% fulfillment of the government goal.

Figure 5 - Electricity Generation Forecast by Fuel



Source: IEC and BDO analysis

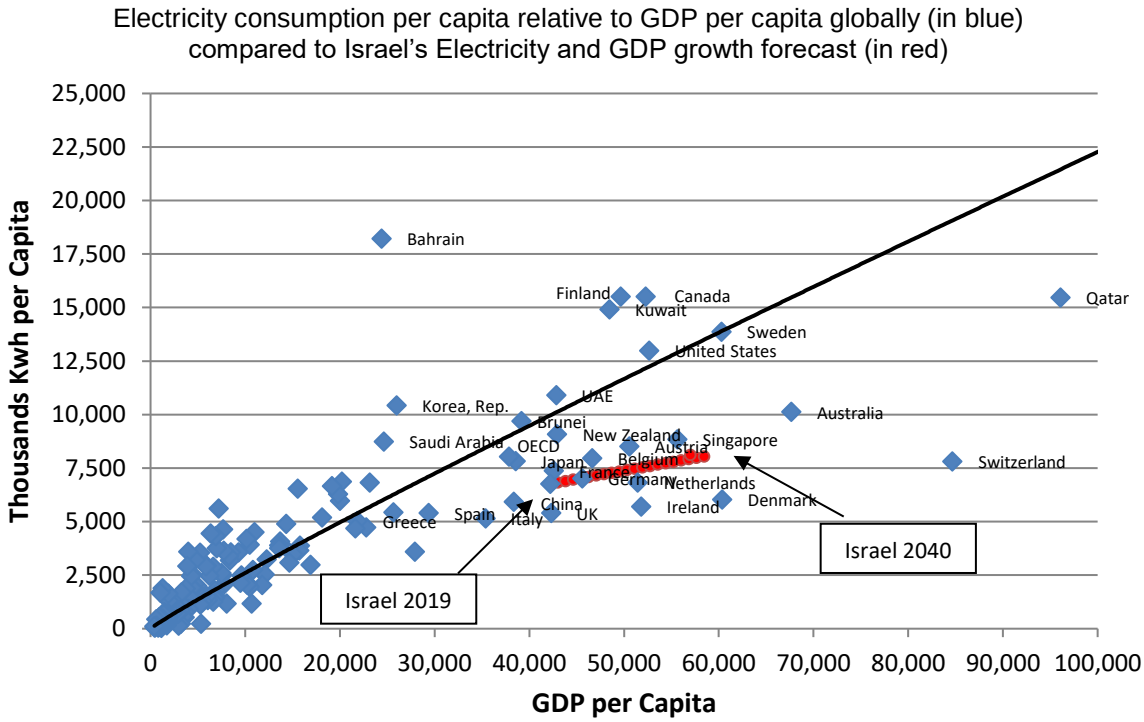
[1] Previously known as PUA

1.5. Electricity Demand Forecast Summary

Electricity demand in Israel is experiencing high growth rates, as the electricity consumption level is still not on par with comparable high-income regions with similar weather conditions. In the past twenty years, electricity consumption in Israel rose by an average annual rate of almost 4%. This represents an average annual increase in per capita electricity consumption of 2%.

Israel's relatively low level of electricity consumption is a result of a standard of living that is 25% lower than other comparable developed countries. In line with this, we expect that in the coming years as the standard of living rises, it will be accompanied by an increase in the consumption of electricity and a reduction in the gap between Israel and other developed warm weather regions with high-income levels. However, the COVID-19 crisis decelerates the level of electricity consumption, converging back to our pre-COVID19 estimates only in 2027.

Figure 6 - Income Effect on Electricity Demand - International Comparison



Source: World Bank data, OECD, CBS and BDO analysis

In many economic analyses, OECD countries are used as a benchmark to evaluate the long-term potential of the Israeli economy. In the case of electricity consumption, the unique climatic and economic conditions in Israel as opposed to other OECD countries lead to an over-

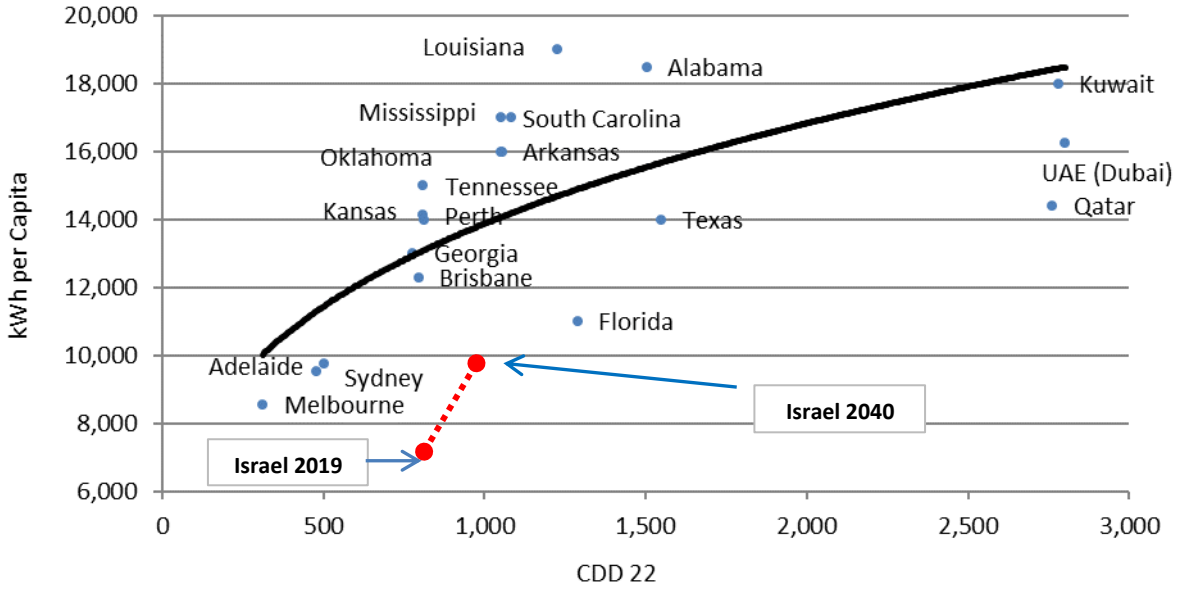
simplified comparison of electricity consumption between Israel and the other member states and is therefore not relevant.

Israel is the warmest country in the OECD. The heat index in Israel, in terms of cooling degree-days (CDD beyond 22 degrees centigrade[2]), is more than four times higher than the OECD average.

Hence, the potential level of electricity consumption in Israel cannot be based on a direct comparison with OECD countries, and should rather be based on comparison with other warm regions.

A comparative study of per capita electricity consumption, which takes into account the climatic conditions in warm regions and countries, shows that per capita consumption in Israel is 50% lower than the trend line of countries with a warm climate.

Figure 7 - Electricity Consumption relative to Heat Index International Comparison, kWh per capita vs. heat index (CDD22)



Source: World Bank data, CBS and BDO analysis

The high growth rate in Israel's electricity demand is a result of a combination of multiple long-term characteristics of the Israeli economy: high population growth rate, relatively fast economic growth, and hot weather conditions. As Israel's economy continues to grow, both penetration rate and usage intensity of household electric appliances will continue to increase, contributing to increased electricity demand. BDO's forecast for electricity demand is based on a long-term bottom-up disaggregated demand model. The model is integrated with the

[2] "*Cooling degree days* 22", or "*CDD* 22", are a measure of how much (in degrees), and for how long (in days), outside air temperature was *higher* than 22 degrees centigrade.

Macro Analytics macroeconomic model of the Israeli economy and is based on a predicted growth rate of the Israeli GDP of about 3% year in the next decade, based on the OECD's long term growth forecast for Israel.

The demand for electricity in the economic sectors is dependent on several economic variables. These include income growth, penetration of electrical appliances, the price of electricity, demographic variables (i.e. population composition, growth rate, household size etc.) climate conditions, and efficiency and energy intensity in the various sectors.

The major factors likely to impact growth are an increase in disposable income, an increase in real wage, growth in the use of electrical appliances (primarily air conditioners for heating and cooling), and the increased penetration and usage of home appliances. The effect of energy-efficient lighting and appliances as well as the energy intensity of the industry are also factors that have been taken into account. Furthermore, the effect of the COVID-19 pandemic on the GDP was included in our electricity demand forecast.

We predict Israel's demand for electricity will grow at an average rate of 3.5% per annum in the next two decades, reaching 121 TWh by 2040 , from 59 TWh in 2020. This growth rate represents about a 1.7% annual increase in electricity consumption per capita. With the addition of the Palestinian market, total demand is expected to reach 140.5 TWh in 2040.

Table 3 - Electricity Demand Forecast Summary

In TWh per year*

	2019	2025	2030	2035	2040	CAGR 2019-2040
Residential	20.1	23.8	27.7	31.7	35.9	2.8%
Commercial & Public	18.3	21.9	25.6	29.5	33.6	2.9%
Industry	15.9	18.1	20.3	22.5	24.8	2.1%
Agriculture	1.8	2.0	2.1	2.2	2.4	1.3%
Core Demand	**56.0**	**65.7**	**75.8**	**85.9**	**96.7**	**2.6%**
Water & Desalination	4.4	5.5	7.3	8.0	8.8	3.4%
Rail & electric vehicles	0.1	1.7	5.7	10.8	15.6	27.2%
Israel Total	**60.5**	**73.0**	**88.7**	**104.8**	**121.1**	**3.4%**
Palestinian Authority	6.3	8.5	11.7	15.2	19.4	5.5%
Total Israel & Palestinian Authority	**66.8**	**81.5**	**100.4**	**119.9**	**140.5**	**3.6%**

*Demand excludes losses
Source: BDO forecast

1.6. Israel Natural Gas Supply

Israel's natural gas reserves are estimated at 1,060 BCM, 88 times the projected domestic demand in 2020. This level of reserves will be sufficient to supply all domestic consumption as well as export purposes in line with the Israeli government's policy.

Table 4 - Israel Natural Gas Resources Estimate

	Resources (BCM)	Remaining Reserves	Discovered	First Gas	Water Depth (meter)	Category	Operator
Tamar+T-SW	366	302	2009	2013	1,700	2P	Noble
Leviathan	649	646	2010	2019	1,700	2P+2C	Noble
Karish, Tanin + Karish North	99	99	2012-2013 ,2019	2021, 2022	1,750	2P+2C	Energean
Noa+ Mari B	25	0	1999-2000	2004	250-800	2P	Noble
Dalit	8	8	2009	-	1,400	2C	Noble
Shimshon	5	5	2012	-	1,110	2C	AGR/ Isramco
Total	**1,152**	**1,060**					

Source: Israel Ministry of Energy, NSAI, Energean and BDO Analysis

To date six natural gas fields have been discovered in Israeli offshore waters. A seventh (Ishai/Aphrodite) straddles the maritime border with Cyprus and data regarding its size is still being assessed. In November 2019, a PSC with the Government of Cyprus was signed and an exploitation license was issued, which includes a development plan that would increase the delivery of natural gas to regional customers.

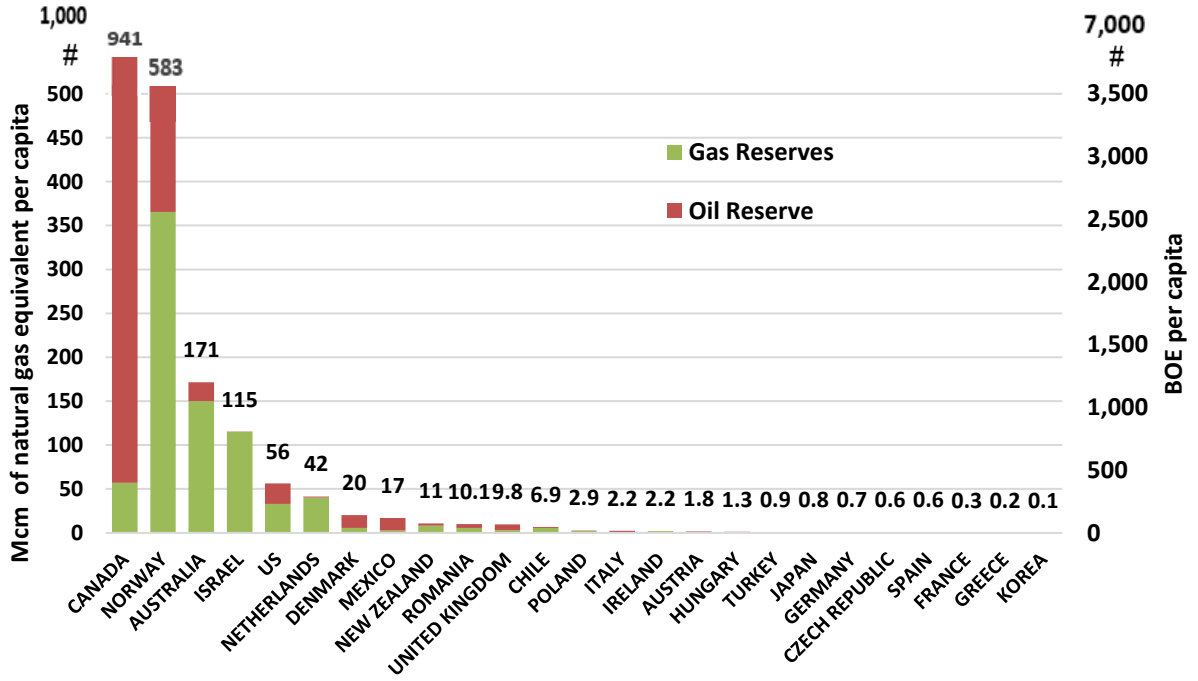
The regional supply also includes Gaza-Marine with estimated reserves of 32 BCM. The field was discovered by Israel and transferred to the Palestinian Authority. Gaza-Marine is owned by the Palestinian Investment Fund (PIF) and the Consolidated Contractors Limited (CCC). However, the field's location, off the Mediterranean coast of the Hamas controlled Gaza Strip, makes its probable development in the near-term unlikely. In the long-term, we expect that, pending appropriate political conditions, the reservoir will be developed and will serve as a source of supply to the Palestinian market to complement future natural gas imports from Israel.

The natural gas fields in Israel are highly significant relative to the size of the Israeli economy and are expected to lead to a comparative advantage. Currently, Israel ranks fourth in the OECD in per capita oil and natural gas reserves. The significant quantities of natural gas

discovered in the Tamar and Leviathan fields, and the potential for future natural gas and oil finds, guarantee that domestic electricity production, industry, transport and other economic sectors will have sufficient natural gas supply for many years to come. It is important to note that the use of local and relatively environmentally friendly domestic natural gas represents a significant advantage for further development of local energy-intensive industries.

Figure 8 - Energy Reserves per Capita in OECD

BBOE/Mcm, OECD* countries



*Rest of OECD countries has no proven gas reserves
Source: BP Statistical Review of World Energy, CIA Factbook, NSAI and BDO Analysis

The increase in developed natural gas reserves in Israel allows also tap to additional demand from Israel's neighboring countries. This is turn positions Israel as a regional natural gas exporter, which matches regional aspirations – such as Egypt's - to become a natural gas export hub. In addition to the small-scale natural gas exports to Jordan industrial sector from the Tamar field that began in 2017, in 2020 Israel exports natural gas to Jordan and Egypt on a significant scale.

The Israeli Ministry of Energy held in 2017 its first international tender for 24 offshore blocks for exploration. This is part of the ministry's efforts to promote further natural gas development. Holding a licensing tender through a bidding process is a new approach for Israel. Two bids

were received as part of the tender for offshore exploration licenses. One was from Energean and the other from a consortium of five Indian companies.

5 international and Israeli companies have submitted proposals to explore for oil and natural gas in 12 new blocks in Israel's Exclusive Economic Zone, out of 19 blocks tendered. The first group is composed of the British companies Cairn and Pharos Energy[3] and the Israeli Limited Partnership Ratio. The second group is composed of Energean and Israel Opportunity.

The realization of this potential for additional natural gas discoveries is important for Israel for both economic and strategic reasons. However, there must be a viable market for the natural gas if exploration is to continue at an acceptable pace.

We believe that it is unlikely that additional large natural gas fields, if discovered, will be developed before 2025-2030 when local demand begins to exceed supply. It should be noted that financing natural gas projects in Israel is at present based on a project finance model, which inherently balances the growth in domestic and regional natural gas demand with the development of natural gas fields. Effectively, this implies that the development and financing of further natural gas fields are likely to be correlated with demand in relevant markets.

[3] Previously known as Soco International

2. COVID-19 Crisis Effect on Energy Demand

2.1. COVID-19 crisis impact on electricity demand

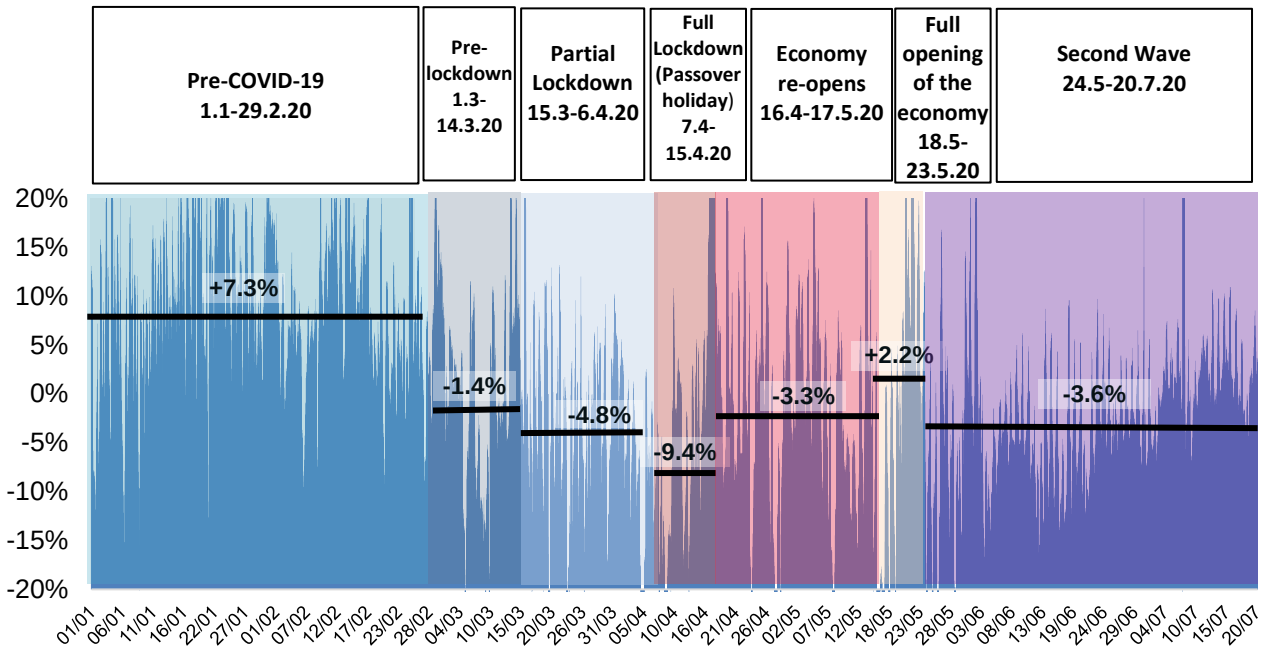
The spread of the COVID-19 pandemic in Israel, which was followed by a complete lockdown during the Israeli holiday high season in April, has resulted in an immense effect on the Israeli economy, as seen worldwide. Such an effect is reflected in the actual and projected electricity demand of corporations and individuals alike.

The COVID-19 impact on electricity demand was examined on two levels. First, the immediate term, which reflects the instant implications of the quarantine and the abrupt decline in business activity. The immediate measures that were taken as a response to the spread of the pandemic, led to a decline in electricity demand that peaked at 9.4% (Temperature adjusted) decrease compared to the previous year.

Second, in the medium term, the effect of income elasticity on electricity consumption was examined, including the impact of the slowdown in business activity, the rising unemployment rates, and the aggregated damage to the tourism industry. According to the latest forecasts, the Israeli economy is expected to recover in 2021. It should be noted that a return of the COVID-19 or alternatively continued spread can affect beyond the attached forecasts.

Figure 9 - The change in electricity demand during the lockdown period compared to 2019

(Temperature adjusted)



Source: IEC, Date examined: 9.1.2019 – 29.7.2019, 1.1.2020-20.7.2020

At the beginning of 2020, during January-February, an increase of 7.3% (Temperature adjusted) in the demand for electricity compared to the respective months in 2019, was observed. Starting from March, when the first cases of COVID-19 were identified in Israel, a steady decline in electricity demand took place alongside the continuous development of government sanctions. In the first half of April, during the Passover holiday, a total lockdown was set in place during which a decrease of 9.4% in electricity demand was observed.

With the re-opening of the economy and the gradual lifting of sanctions, the demand for electricity has started to recover however still lagging lingering behind the reference year. As Israel proceeds to the "second wave" period and sanctions are reintroduced, the recovery of business activity is hindered, reflected in a 3.6% decrease in electricity demand. The projected total reduction in electricity consumption in 2020 is estimated at approximately 3% compared to 2019 and is based on current assumption of containment of the pandemic in the coming months.

Table 5 - Israel Electricity Forecast (2020 in Bil. Kwh)

TWh	2019	2020	% Change
January – February (Pre-lockdown)	11.9	12.6	6.3%
March – June (Actual)	22.7	21.3	-6.6%
July – December (Forecast)	37.9	36.5	-3.6%
Total Production	**72.5**	**70.4**	**-2.8%**
Total Consumption (production minus losses)	**66.8**	**64.9**	**-2.8%**

Source: Electricity Authority data and BDO forecast.

2.2. Electricity demand forecast post COVID-19

The following projections are made in uncertain times, when the span and scope of the COVID-19 effect remain unclear. The GDP forecast was based on the projections of the Israeli Ministry of Finance and the Bank of Israel that assume containment of the pandemic in 2020, and recovery of the economy starting from 2021. The electricity demand projections and the associated demand for natural gas are forecasted based on these assumptions.

The Israeli economy was projected to continue its constant growth in 2020 with a projected GDP growth of 3%. With the COVID-19 spread and the restrictions that followed, the economy has experienced a major halt, with rising unemployment rates and reduced consumer spending as a result. Latest forecasts for the setback of the Israeli economy range from -6% estimated by the Bank of Israel, to -6.5% estimated by the Ministry of Finance, with an average projection of -6.3% reduction in GDP in 2020. Moreover, Bank of Israel estimate an average annual growth rate (in the primary working-age group) of 6% in 2020 and inflation of -0.8%.

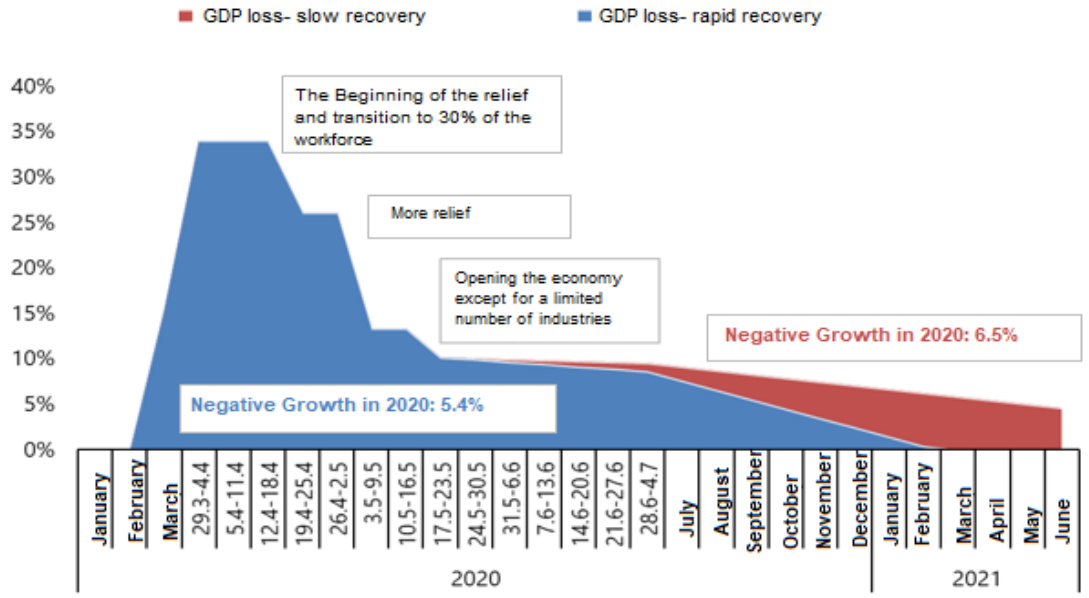
The Ministry of Finance predicts that the recovery will begin in the second half of 2020 and can also reflect a relatively rapid recovery or a slower recovery (see the chart below). t Our electricity demand forecast is based on the assumption that the Israeli economy is expected to recover in 2021 with an average projected growth rate of 5.8%.

Table 6 - Israel GDP Growth forecast

	2020	2021
Bank of Israel 6.7.20	-6%	7.5%
OECD June 2020	-8.3% to -6.2%	2.6% to 5.7%
Ministry of Finance 27.4.20	-5.4% to -6.5%	9%
IMF 14.4.20	-6.3%	5.0%
Fitch 23.4.20	-5.6%	5.0%
Average	**-6.3%**	**5.8%**

Source: Bank of Israel, OECD, Ministry of Finance, IMF, Fitch.

Figure 10 - COVID-19 impact on GDP Growth - Israel Ministry of Finance Forecast



Source: Ministry of Finance, April 2020.

Electricity demand is highly correlated with GDP, as economic growth indicates an enhanced business activity, which translates into increased electricity consumption. As GDP in expected decrease by 6.3% in 2020, electricity demand is expected to follow with a 3% decrease in consumption. With an expected economic recovery and renewed growth starting from 2021, electricity consumption is estimated to increase accordingly in rates of 4.7% and 5.2% in 2021 and 2022, respectively, partly compensating for the 2020 decline in consumption, on par with overall GDP growth.

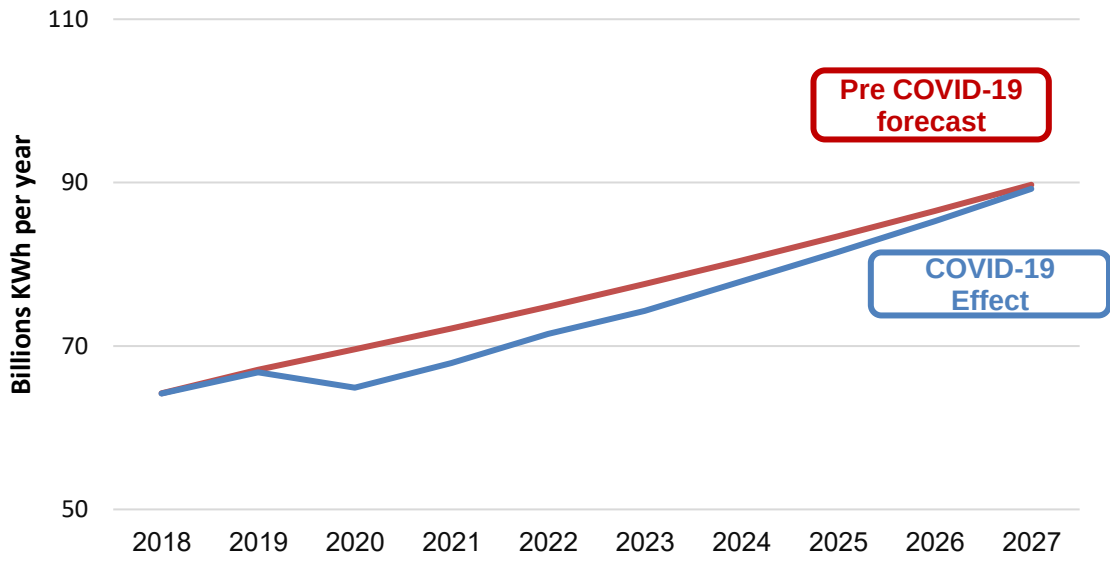
Table 7 - Israel Electricity Demand Forecast 2020-2023

	2020	2021	2022	2023
Electricity Demand	**64.9**	**67.9**	**71.5**	**74.3**
% Change in total electricity consumption	*-3.0%*	*4.7%*	*5.2%*	*3.9%*
% Change in core electricity demand (without desalination, electric transport & Palestinians)	*-3.1%*	*4.4%*	*4.9%*	*3.4%*

Source: BDO analysis.

In the mid-long term, the effect of the COVID-19 is expected to gradually dissolve starting from 2021 up until 2027, which marks the year when COVID-19-adjusted electricity demand forecast is expected to reach the pre-COVID-19 projected level.

Figure 11 - Israel Electricity Demand Forecast



Source: IEC and BDO analysis.

The natural gas consumption in Israel is intertwined with the demand for electricity, as its being one of the main energy sources for its production in the country. Therefore, the COVID-19 effect on electricity demand is reflected in projections for natural gas consumption. Adjusted forecast assumes a reduction of 1 BCM in 2020 compared to previous forecasts. Similarly, to the updated electricity consumption forecast, the effect of the COVID-19 is expected to gradually dissolve until 2027, when the COVID-19 adjusted projection for natural gas consumption collides with pre-COVID-19 estimations. The above forecast is based on the macro-economic assumptions above, assuming that complete lockdown of the Israeli economy will not re-occur and containment of the epidemic by early 2021. Our sensitivity analysis indicates that 6-month delay in the suppression of the epidemic may result in an additional 0.5BCM to 0.7BCM decrease in natural gas demand in 2021.

3. Electricity Demand Forecast

3.1. Methodology

The report is based on BDO's model of the Israeli energy sector which includes a dynamic economic forecast and simulation of the Israel electricity and natural gas markets. The demand forecast is based on a proprietary multi-factor model (IPP's), including an electricity demand model, a supply model, and an economic dispatch model based on a forecasted load duration curve, and is based on public information. In addition to Delek Drilling and Ratio Oil Exploration BDO's energy sector consulting clients, who receive services based on BDO's energy sector forecasting model, BDO also provided services to government authorities, electricity producers, co-generation projects, natural gas distribution companies and industrial clients.

The report and forecasts are based on our team's broad experience in analysis of market demand and trends in the Israeli economy and in the energy sector. BDO's team of energy experts is led by *Chen Herzog*, partner and chief economist at BDO Israel, and a member of BDO international's global energy expert forum. The team has extensive experience in energy sector forecasting services for the past 20 years, and has provided market review and forecast services to most large-scale financing transactions in the Israeli energy sector over the years. The analysis and conclusions contained in this report are based on various assumptions, which are subject to uncertainty. Future results or values could be different from the forecasts and analyses contained here. Therefore, nothing contained herein is or shall be relied upon as a promise or a representation, whether as to the past, the present or the future.

The demand model was developed by BDO's economic experts using the LEAP - Long-range Energy Alternatives Planning System platform. LEAP is being widely used worldwide by government agencies, consulting companies, energy utilities and academics.

The charts below illustrate our methodology. Our demand model[4] includes several main demand components:

1. Residential demand for electricity based on demand models for main appliances, factoring penetration rates, usage intensity and energy efficiency.
2. Demand by the government sectors, commerce and services, based on a macro-economic model of Israel.
3. Demand by the industry, based on the macro-economic model, factoring in the relative energy intensity of various industries.
4. Demand for desalination and water pumping, based on our macroeconomic analysis and demand for water forecasts.

[4] The forecasts are regarding the total demand and its distribution

5. Palestinian Authority demand, including demand in West Bank and Gaza.

The electricity demand model is based on a bottom-up approach, which includes the effect of energy efficiency improvement, along with the effect of increased penetration rates, usage of household appliances and energy intensity in the various sectors. The analysis has been updated to incorporate the effect of the COVID-19 pandemic on electricity demand, based on current estimates.

Figure 12 - BDO Electricity Demand Model Methodology

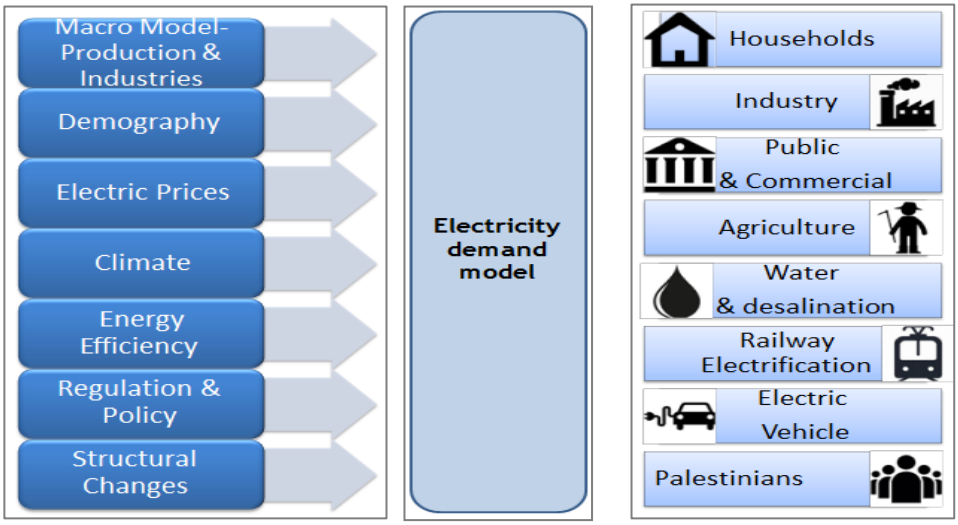
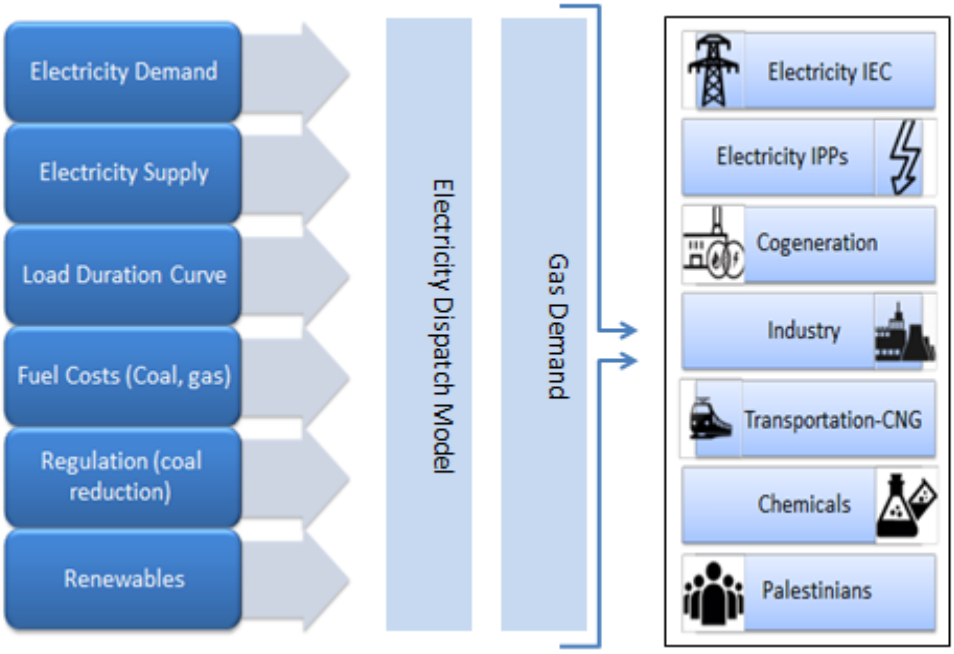


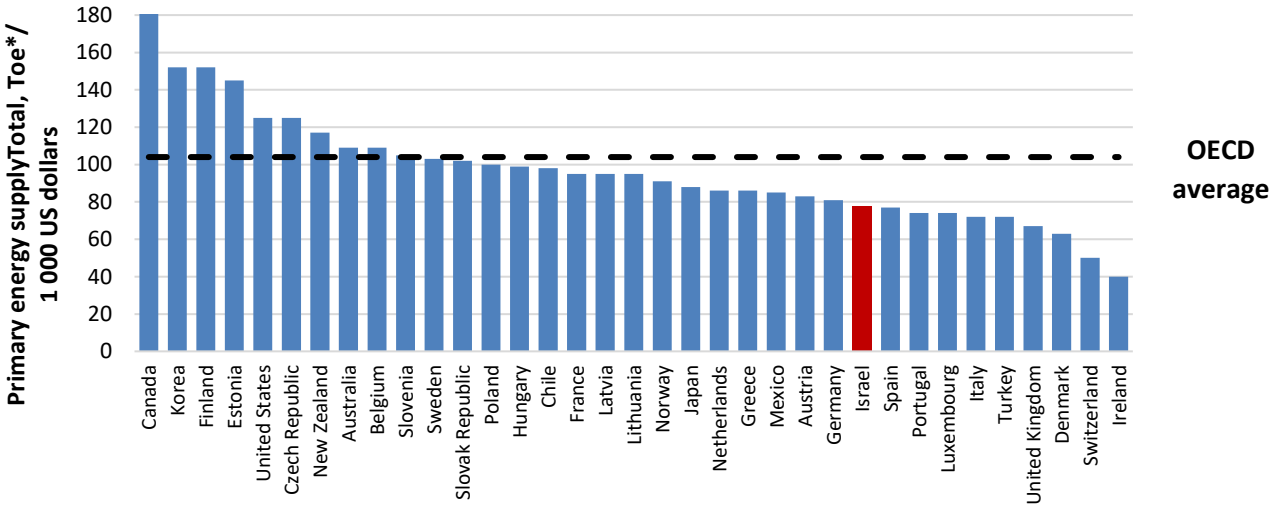
Figure 13 - BDO Natural Gas Demand Model Methodology



3.2. Overview

Electricity demand in Israel is experiencing high growth rates, as electricity demand level is still not on par with comparable high-income regions with similar weather conditions.

Figure 14 - Energy Intensity – international comparison



Source: OECD
*1 TOE = 1.1E-6 BCM

In the past twenty years, electricity demand in Israel rose by an average annual rate of 4%. This represents an average annual increase in electricity consumption per capita of 1.7%. By 2020 we predict a decline of 3% in the total electricity demand, as a result of the slowdown in business activity, the rising unemployment rates, and the aggregated damage to the tourism industry because of the COVID-19 crisis.

By 2040 we predict an average annual increase in total electricity demand of 3.6% per annum, which consists of an increase of 2.6% in the core demand (residential, commercial & public, industry and agriculture), an increase of 0.7% in rail and electric vehicles and an increase of 0.2% in the Palestinian authority.

Table 8 - Electricity Demand Forecast Summary

Contribution by Segment to Growth Rate

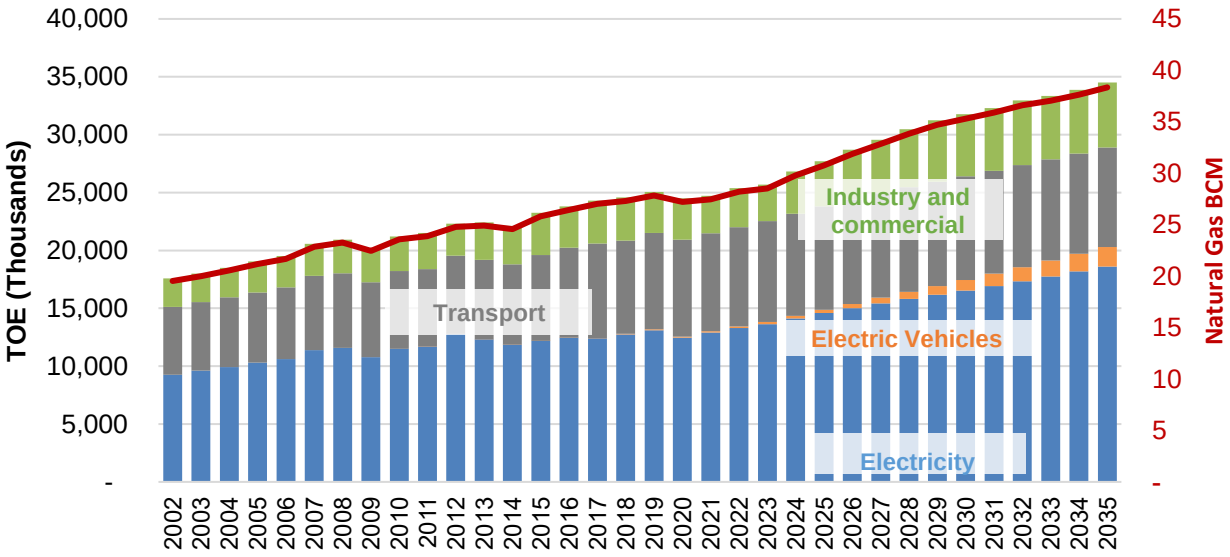
	CAGR 2019-2040
Core Israel Electricity Demand	**2.6%**
Water & Desalination	+0.1%
Rail & electric vehicles	+0.7%
Israel Total	**3.4%**
Palestinian Authority	+0.2%
Total Israel & Palestinian Authority	**3.6%**

Source: BDO analysis

Israel's relatively low level of electricity consumption is a result of a standard of living that is 25% lower than other comparable developed countries. Accordingly, it is expected that in the coming years, with the rising of the standard of living in Israel, an increase in the consumption of electricity will follow, resulting in a reduction in the gap between Israel and other developed, warm weather regions with similar income levels.

When constructing an electricity demand forecast, energy demand forecasts must be considered and weighted. As the forecast results indicate, the total demand for energy is expected to grow over time, while energy intensity relative to GDP decreases.

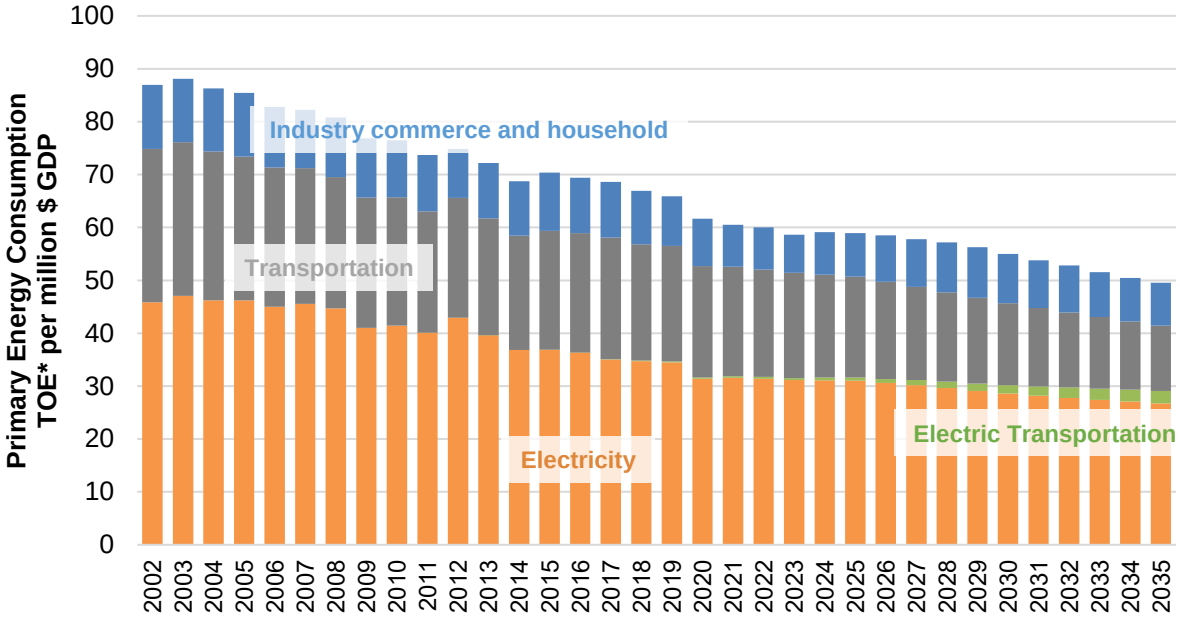
Figure 15 - Israel's Energy Demand Forecast



Source: CBS and BDO analysis, Fuel Administration and BDO forecasts

Figure 16 - Israel's Energy Intensity Forecast

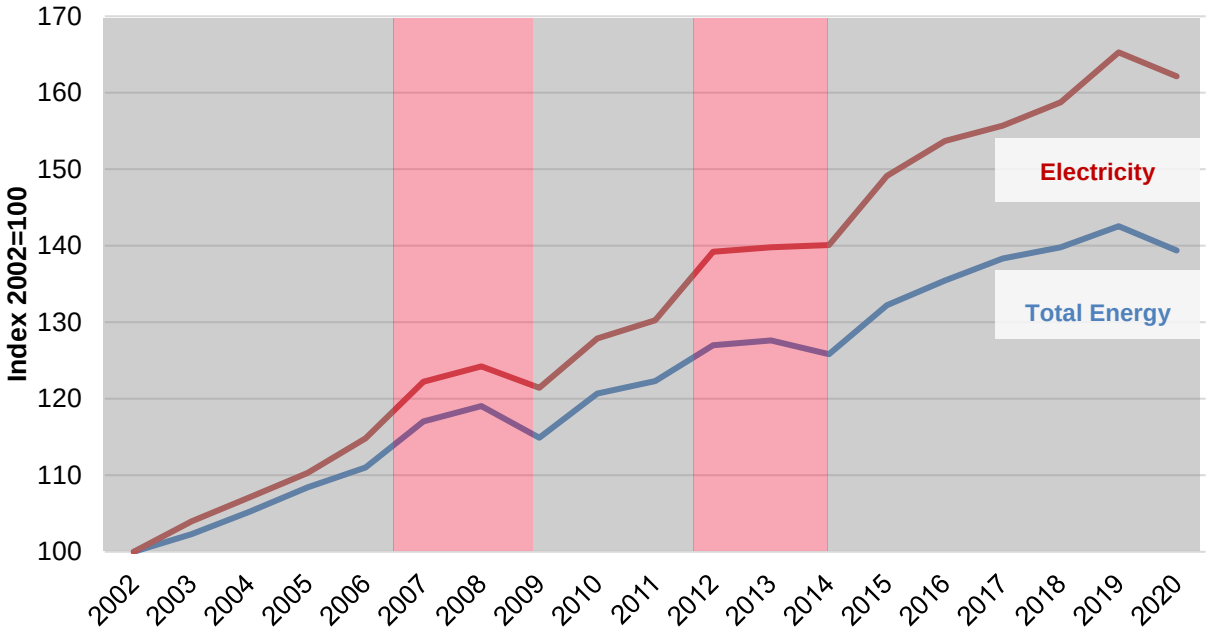
Demand for energy per million $ GDP



Source: BDO energy sector forecasts, Historical data: BDO analysis based on the CBS and Fuel Department's data
*1 TOE = 1.1E-6 BCM

In addition, the analysis' results indicate an advantage for electricity over other energy sources, in Israel in the last years. In 2019 the electricity consumption was 16% higher than the energy consumption.

Figure 17 - Energy and Electricity Consumption in Israel



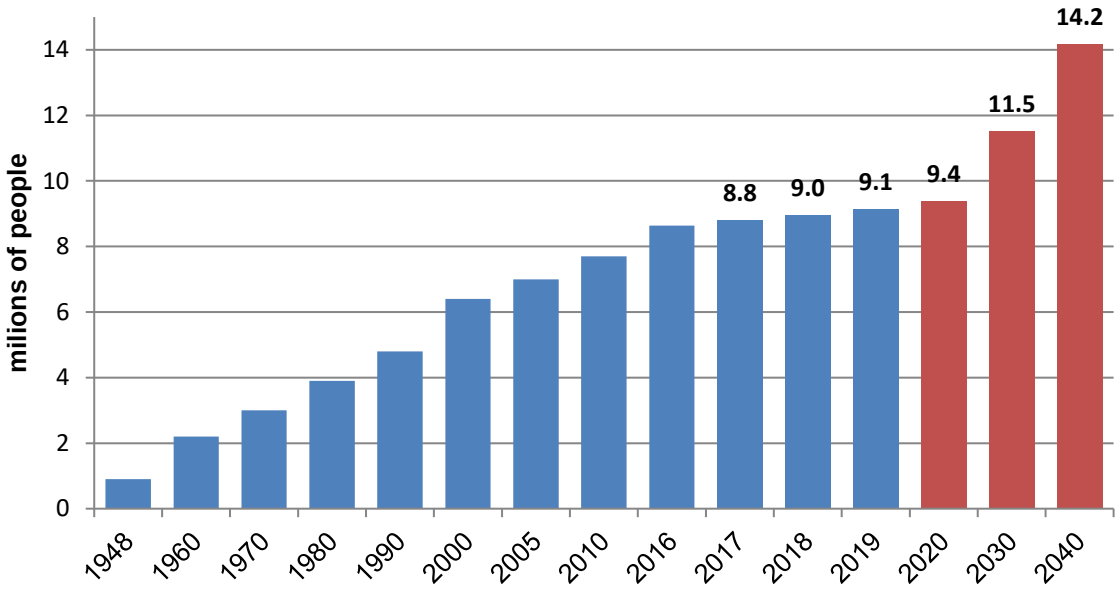
Source: BDO analysis of CBS, IEC and Electric Authority's data

3.3. Demographic Growth

Israel demographic growth averaged 1.9% per year in the last decade, with a 1.9% increase in 2019. The fast population growth is due to high fertility rates, especially in the ultra-Orthodox and Arab communities, along with increasing life expectancy.

BDO forecast is based on the latest demographic projection issued by the Israeli Central Bureau of Statistics (CBS) in September 2019. Forecasts predict a continued annual increase of 2.1% in Israel population a year. According to this forecast, Israel population is could reach 14.2 million by 2040.

Figure 18 - Israel Population Forecast



Source: CBS and BDO Analysis

It is important to note that for the purpose of electricity and natural gas demand forecasts, the relevant demographic growth for the next 20 years has already been pre-determined. Electricity demand is dependent mostly on the number of households and the number of participants in the labor force. Today's newborns (approximately 182K in 2019) will create their own households and join the labor force only in about 20 years. Therefore, the effect of slowdown in fertility rates in the next decade has only marginal impact on the electricity and natural gas demand over that period.

3.4. Residential Demand for Electricity

The residential demand for electricity accounts for about 30% of the total demand, and is still far from the saturation point. By comparison, the residential per capita demand in Israel is estimated at 2,206 kWh annually, compared to 5,264 kWh in US states with a warm climate. Even with the consideration of the average house/apartment size a 100% gap remains.

Table 9 - Residential Electricity Demand Forecast Summary

	2019	2025	2030	2040	CAGR 2019-2040
Population (millions)	9.1	10.2	11.5	14.2	2.1%
GDP per Capita (thousands of US$)	42.2	43.7	47.0	56.6	1.4%
Heat index (cooling degree days, 22C)	960	996	1,044	1,147	0.9%
Coldness index (cooling degree days, 18C)	548	534	503	445	-1.0%
Total Residential electricity demand (Billon kWh)	**20.1**	**23.8**	**27.7**	**35.9**	**2.8%**
Residential electricity demand per capita (Thousands kWh)	**2.2**	**2.3**	**2.4**	**2.5**	**0.7%**

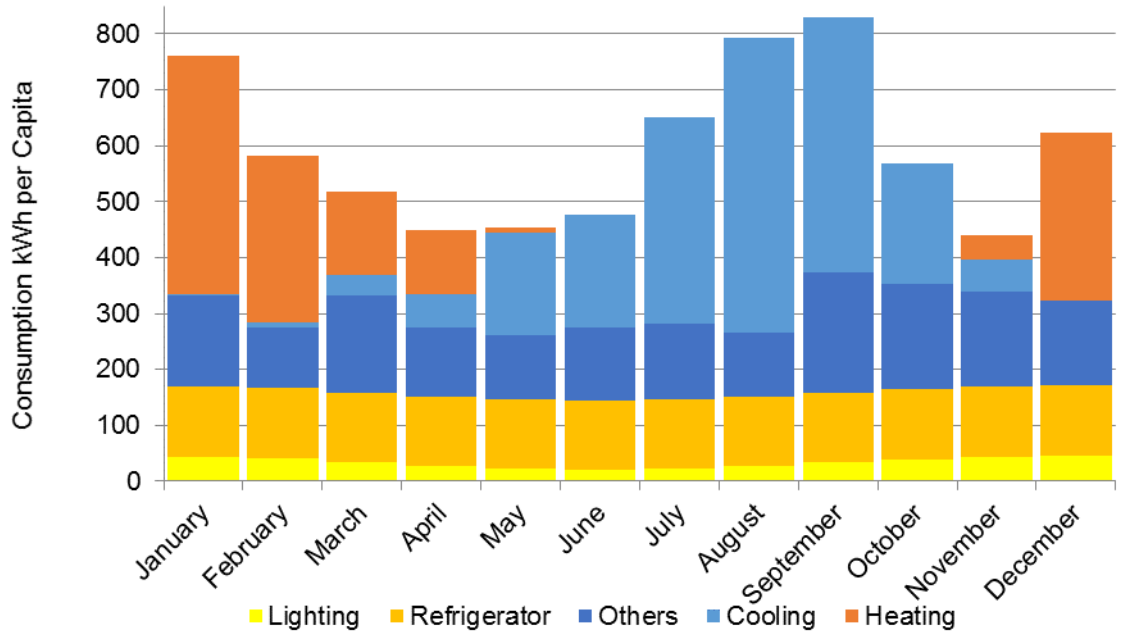
Source: BDO forecast

The results of our demand model predict a 2.8% annual increase in household demand during the years 2019-2040, representing a per capita annual growth rate of 0.7%. The rise in household demand in Israel stems not only from the rising penetration level of electric appliances but also from the greater intensity of usage.

The rise in the standard of living leads to a greater intensity of usage of household electric appliances over and above the level of penetration. This translates, for example, into the gradual use of air conditioners by ever-larger segments of the population in all rooms of their homes along with their use during day and night hours, as well as increased penetration and use of dishwashers and of clothes dryers. Our forecast assumes a continued improvement of energy efficiency in household electric appliances of 2% in average annually.

The trend of climate warming occurring in Israel (0.5 degrees centigrade every decade according to the World Bank and in line with past trends), will also lead to a growth in electricity consumption by households, over and above the growth in income levels.

Figure 19 - Estimate of Average Residential Demand for Electricity by Main Uses



Source: Electricity Authority data and BDO analysis. 2016 Data

The growth in electricity consumption in Israel stems from a combination of a continued growth in the penetration of household appliances along with the growth in the intensity of usage. The rise in the standard of living and of disposable income brings with it an increase in ownership of appliances and their use.

Based on these factors our model takes into account a number of assumptions:

1. Average annual energy efficiency rate of 2% in major appliances
2. An increase in the penetration rate of household electrical appliances
3. A rise in the usage rate of appliances, based on the influence of the increase in the standard of living and the price of electricity

3.5. Industrial Sector Electricity Demand

Industrial demand for electricity accounts for about 26% of total demand in Israel. Per capita demand for electricity currently stands at around 1,745 kWh compared to 2,900 kWh on a per capita basis in the U.S. We estimate a 2.1% annual increase in consumption of electricity by industry in Israel. This means that even in 2040 the per capita demand for electricity will still be 40% lower than in the U.S. today. This is largely due to the lower percentage of high-energy intensive industries in Israel versus the U.S.

The demand for electricity in industry supplied by power generated by IEC and IPPs, as well as in-house production and cogeneration within the industrial facilities. In recent years, with the growing penetration of natural gas, a process of electricity self-generation and combined heat-and-power (CHP) generation by large industrial plants has gotten off the ground. This trend has led to a significant reduction in the effective cost of electricity to industry as well as a contribution to the competitiveness of energy intensive industries in Israel.

The Israeli government is continuing in its efforts to connect small and medium sized factories to the natural gas transmission network. The plan is to include ways of increasing demand for natural gas in industry including the construction of cogeneration plants, which will be accomplished by lifting regulatory barriers. As part of the plan, the government has granted financial incentives to consumers and to distribution companies for speeding up the deploying of the transmission network. With the entry of Leviathan to the market in 2020 and the government plan to speed up the conversion to natural gas by industry, the number of factories using natural gas is expected to increase.

The level of productivity in traditional and low-tech industry in Israel is low by international comparisons, largely due to low capital intensity. Over time, we predict that Israeli industry will reduce the productivity gaps with Western countries by increasing capital intensity and investment in automation and robotics. An increase in capital intensity in industry translates into greater energy intensity. Therefore, this process will lead to a closing of the gaps with Western countries and an increase of productivity in the industry, which will also mean an increase in electricity use intensity of the industry sector.

It should be noted that the industrial natural gas demand was estimated using Israel's current Industry structure. There is additional potential for energy intensive industrial developments that have not been quantified as they are still in early stages.

3.6. Railway Electrification

Today almost all public transport in Israel runs on diesel (with the exception of a single light rail line in Jerusalem, and the electric railway from Jerusalem to Tel Aviv Ha'Hagana Station, which began operation in October 2018). That is in contrast to many other developed countries, where extensive networks of electric rail and metropolitan transit already exist.

In the coming years, the government and municipalities plan huge investments, which will substantially change Israel's public transport network. These changes include complete

shifting of the entire Israel Railways network from diesel to electricity, as well as expanding the Israel Railways network and the doubling of its passenger traffic.

By 2030, Israel Railways will transport 90 million passengers per year on electric lines, while the light rail transit will transport more than 195 million passengers per year. Demand for electricity for this railway traffic is forecast to reach over 1.2 billion kWh by 2030.

Israel Railways is about to go through a major overhaul in the next few years, including a conversion to electric engines and the building of new stations. In 2016, the transportation minister approved a landmark US$ 7.5 billion (NIS 28.3 billion), four-year budget for the project – the largest amount ever allocated to Israel Railways. A major part of this program includes converting the entire rail system to run on electricity. This will entail the need for new rail cars, tracks and infrastructure, for which a budget of US$ 3.2 billion (NIS 12 billion) has been allocated. The electrified trains are essential for Israel Railways' development plan in order to double the number of trains in daily operation and provide service to twice the number of passengers within the next decade. According to the plan, the number of trains running on a daily basis would increase from 450 to 860 and bring the system to its goal of transporting 90 million passengers per year.

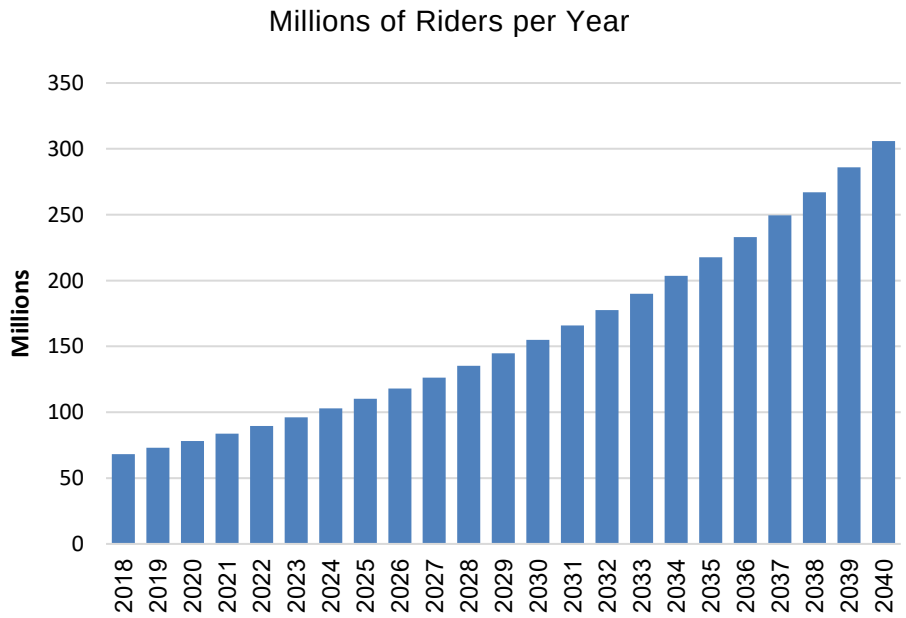
During 2019 and 2020, the electrification of the railway from Jerusalem to Ben Gurion Airport was extended to the Ha'Hagana station and the Savidor station in Tel Aviv. Moreover, as a result of the government incentives to accelerate construction projects during the COVID-19, the electrification project has advanced significantly, so that the high-speed line from Jerusalem will reach the Hertsiliya station as early as 2020, and over the next year 24 new carriages will be added to the train. In addition to the national railway system, electric light rail projects are in progress in Tel Aviv and Jerusalem.

The Tel Aviv Metropolitan Area Mass-Transit System's blueprint includes eight lines, of which one is under construction, two are under approval, one is in planning stages and the other four, the BRT lines, are expected to be replaced by the Tel Aviv Metro lines. The first four lines will cover 100 km around the Tel Aviv metropolitan area. The Red Line is planned to be completed by the end of 2021 and is expected to serve 70 million passengers annually. The Green Line and Purple Line planned for 2024, and will serve 65 million and 60 million passengers respectively per year.

In Jerusalem, the second light rail line, the Green Line, was approved by the municipality and is planned to be completed by 2024. The 20-kilometer-long Green Line is expected to serve 250,000 passengers per day which is approximately 65 million passenger per year, and will double the passenger light trail traffic compared to the current Red Line. A third line, the Blue Line, is also set to be approved and will be gradually operated between 2027-2028.

Israel Railways planned to complete the electrification process by 2025 by adding manpower and equipment and increasing the track time that will be allocated to the benefit of the electricity contractor. In addition, incentive payments of US$ 143 million (EUR 125 million) have been set if they meet the new deadlines set, as well as an additional optional incentive of up to US$ 21 million (EUR 18 million) to be paid as long as there is further advance in the schedules. At that point all trains will run on electricity. The forecasted demand for electricity by Israel Railways is based on the company's strategic plan which calls for a rapid increase in activity.

Figure 20 - Israel Railways passengers forecast



Source: Israel Railways Strategic Plan for 2040 and BDO analysis

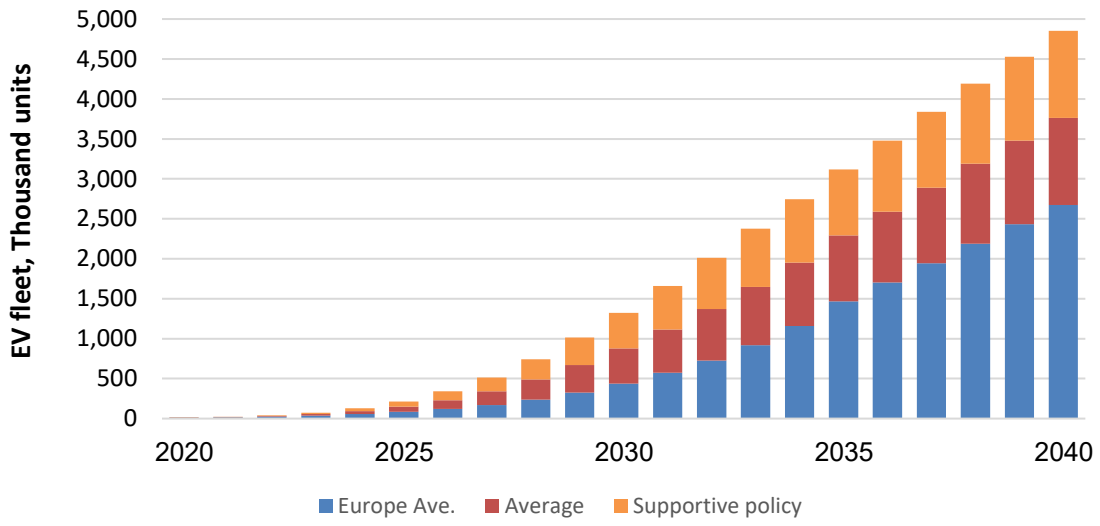
3.7. Electric Vehicles

The growth projection of the electricity demand for the purpose of electric vehicles in Israel was based on the vehicle mileage model in Israel, the expected penetration of electric and plug-in hybrid vehicles in the coming years, global trends in the vehicle market, the Israeli government policy to encourage oil replacement fuels, and the Ministry of Energy's plan to ban sales of new gasoline and diesel vehicles by 2030.

With a supportive policy in place, the projected penetration rate of electric vehicles is estimated at 5% of the total private vehicle fleet in Israel by 2025, expected to gain 29% market share by 2030. Based on the expected usage trends, we assumed that the average mileage of the electric vehicles that will enter the Israeli market in the first years will be 20% higher than the

average of all new private vehicles. This assumption presumes higher economic viability for switching to electric vehicles. Thus, it is estimated that in 2030, the electric vehicle fleet will reach 1.3 million units.

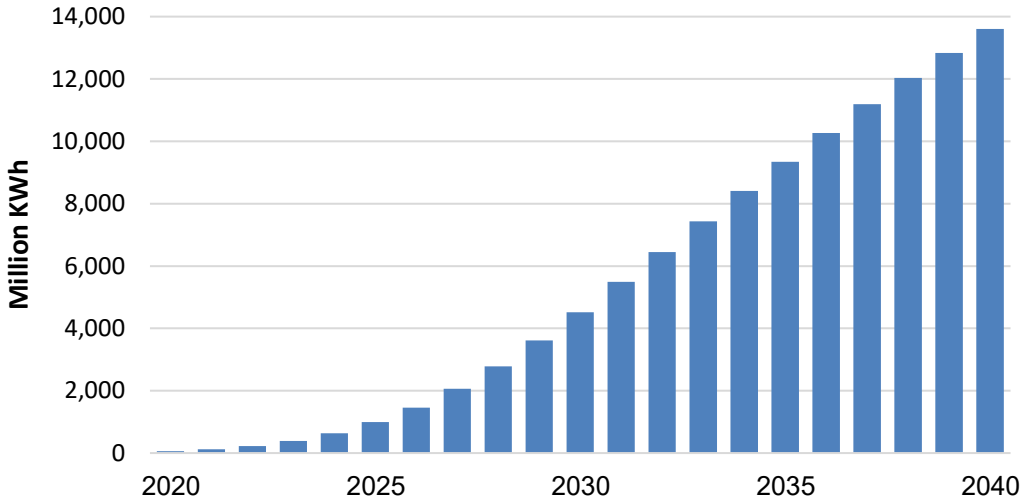
Figure 21 - Projection of EV Fleet 2020-2040



For the projection of the subsequent electricity consumption, the examined parameter was the projected mileage, as unlike the total number of vehicles, it is not likely to be affected by new models and the development of the autonomous vehicles.

The average expected consumption for electric vehicles (including air conditioning and charging losses) is estimated at 0.22 kWh per kilometer traveled. With the consideration of the mileage projection, the projected EV electricity consumption is estimated at 4.5 billion kWh in 2030.

Figure 22 - Projected EV electricity consumption



3.8. Electricity Demand in the Commercial and Public Sectors

Per capita electricity consumption in Israel's private and public services sectors amounts to 2,000 kWh, half the level in states in the U.S. with similar climatic conditions. We expect 2.6% annual growth in demand in these sectors, which represents per capita growth of 0.6%. The rise in the standard of living is likely to be accompanied by a rise in the weight of energy intensive services like the health sector, hotels and airports.

The demand for electricity in the commercial and services sector, as is the case in the household sector, is greatly influenced by climatic conditions and consumption levels remain far from the saturation point. Like industry, the service sector is characterized by a low level of capital intensity in comparison with other developed countries, which is expressed by lower productivity than in other sectors of the economy. With the rise in per capita GDP, we project an increase in capital intensity in these sectors accompanied by a similar rise in electricity use intensity.

Among the factors that are expected to lead to an increase in the rate of growth in electricity consumption in the public sector are the still relatively low usage of air conditioning in the educational system and public institutions, the extensive transfer of IDF (Israeli Defense Force) bases to the south of Israel and the implementation of the government's five-year program to promote economic development in the Arab and Bedouin sectors. Furthermore, the government plans to substantially reduce the share of waste that is landfilled, which will lead to an increase in the percentage of waste being recycled and thermally treated rather than landfilled. This would also lead to an increase in electricity use by the services sector.

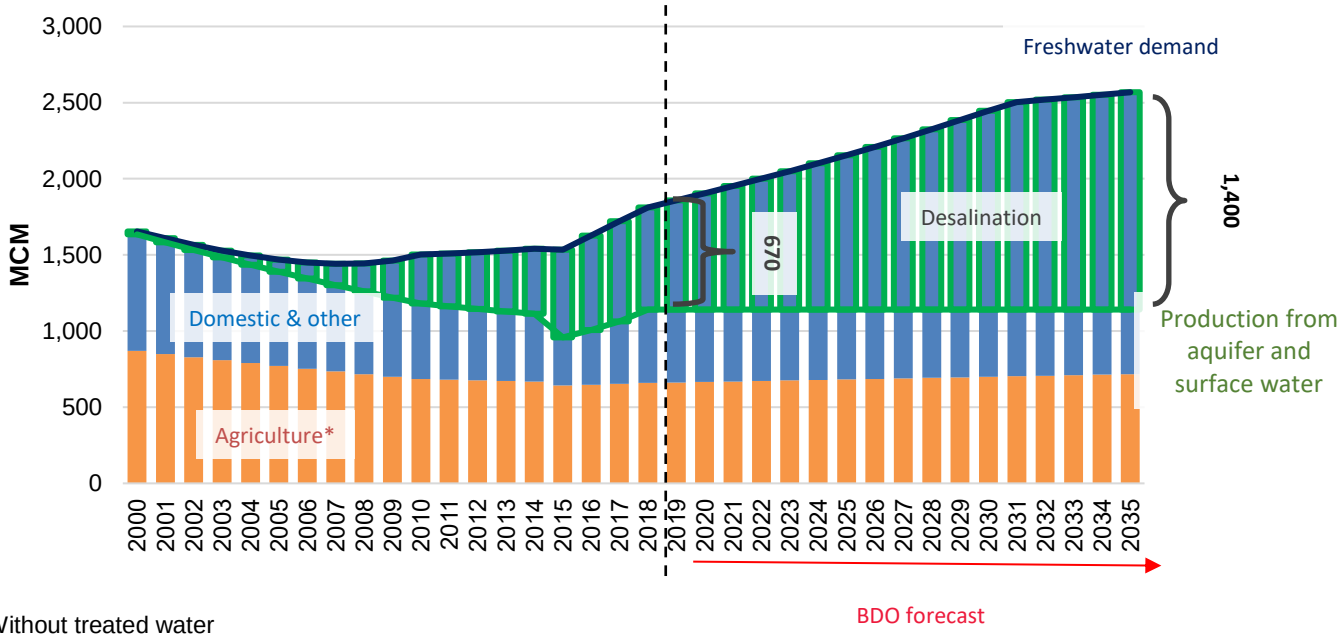
3.9. Electricity Use for Water Pumping and Desalination

Over time the sole source of supplying increased demand for water in Israel is through desalination of seawater, a process that is energy intensive. Electricity consumption for pumping water and desalination currently stands at 4.4 billion kWh annually. After five years of drought, the Ministry of Energy and the Water Authority announced on June 2018 on the immediate construction of 2 new desalination facilities in the up until 2024, one of them will be built in the Western Galilee and the other in Sorek.

In May 2020, the winning bid in the tender for the construction of a second desalination plant in Sorek was announced. The 2nd Sorek plant is expected to increase the desalination capacity of Israel by about 35% and to be the largest desalination facility of its kind in the world, with an output of over 200 million cubic meters per year. A private power plant with a capacity of about 100 MW is planned to be built near the plant. In addition to the new desalination plant in Sorek, a tender is currently underway for the construction of a desalination plant in the Western Galilee with a capacity of about 100 million cubic meters per year.

Today, desalination water production capacity in Israel is about 660 million cubic meters per year, of which 585 million cubic meters from five seawater desalination plants - Ashkelon, Palmachim, Hadera Sorek and Ashdod, and about 78 million cubic meters from additional water desalination plants. Together with the two new facilities in Sorek and the Galilee, the desalination facility system is expected to provide about 85% of domestic water consumption in Israel. According to governmental decision from June 2018, water desalinations capacity will grow to a minimum of 1,100 million cubic meter by 2030. The 2030 capacity goal will be increased to 1,200 million cubic meter if by 2023 natural water reservoir levels will not reach the minimal threshold.

Figure 23 - Demand for Desalination in Israel



* Without treated water

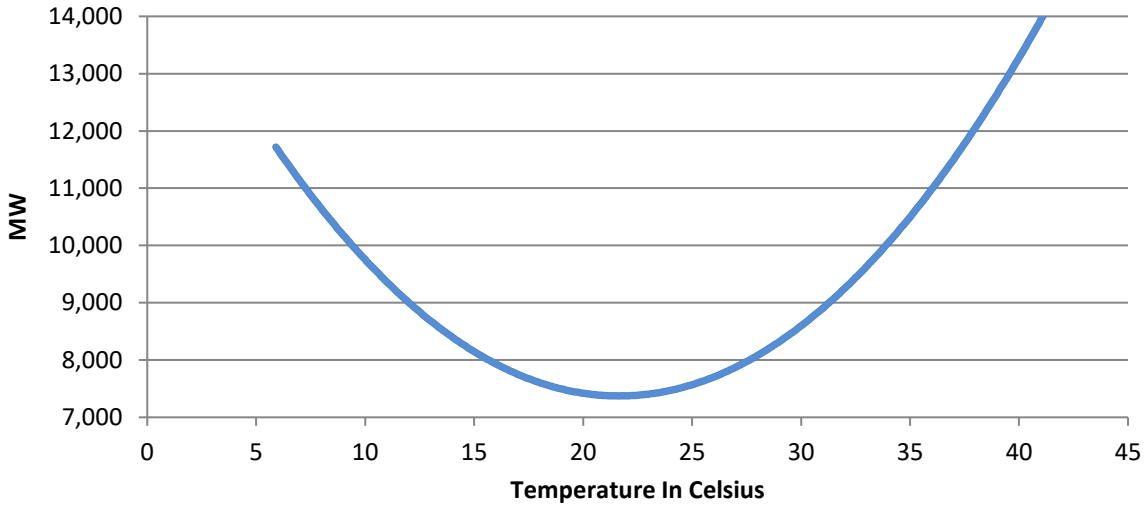
Source: BDO forecast, CBS, Water Authority

3.10.The Impact of Climate Change - Global Warming

A substantial portion of electricity consumption in Israel is related to the use of air conditioning in the summer and the use of heating and hot water in the winter. The changes in the weather (a hot summer or cold winter as opposed to an average one) can lead to up to a 10% deviation in demand for electricity in comparison to other years. Therefore, an analysis of the trends in demand require adjustments to be made for the climatic influences.

Figure 24 - The influence of temperature on electricity consumption in Israel

Electricity consumption at 3 p.m. In direct correlation to the temperature



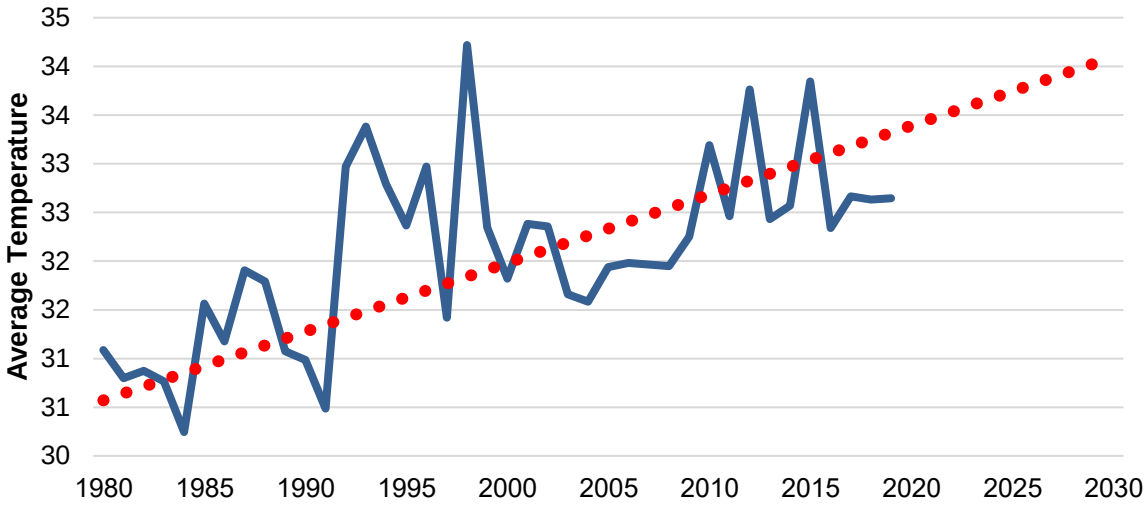
Source: Israel Meteorological Service, IEC, and BDO analysis

The graph above presents average electricity consumption in Israel at the peak time of the day (3 P.M.) in direct correlation to the temperature at that hour. The so-called comfort zone in Israel is considered 18-22 degrees Celsius. When temperatures rise above 22 degrees there is a sharp increase in electricity consumption, to the point where demand doubles at 40 degrees. When temperatures drop below 18 degrees there is a similar increase in consumption for heating purposes.

The experience of the past 30 years in Israel points to a clear warming trend, at an average rate of 0.5 degree Celsius every decade. According to the forecasts published by the World Bank, this trend is expected to continue and by 2030 the average summer temperature Israel will be 1.5 degrees higher than present. The forecast for electricity demand is based on normal average weather conditions, but as the data shows the average is gradually increasing, and therefore future changes in climatic conditions must be taken into account in long term planning.

Figure 25 - Average August Temperatures in Israel

Monthly average, in degrees centigrade



Source: World Bank Data, Israel Meteorological Service BDO analysis

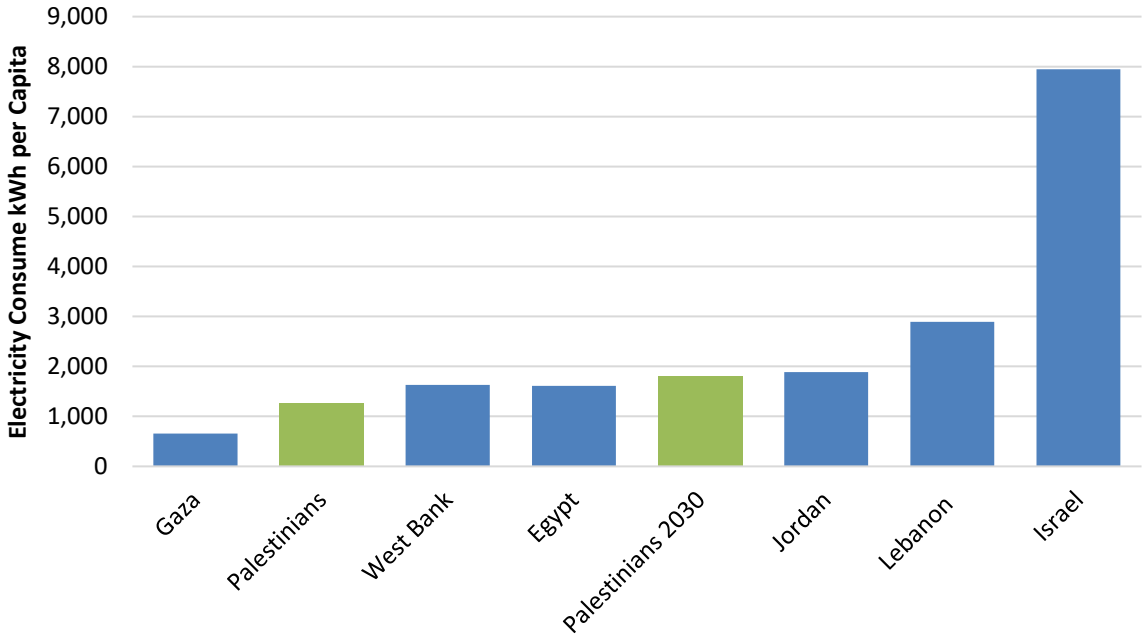
Most researchers believe that the cause of climate change is the impact from global warming and the development of warm air pockets in urban areas. Studies also show that the warming process is accompanied by an increased number of extreme weather (very hot or cold) days. This in effect means there is a greater chance for an extreme increase in electricity demand. This will require a suitable electricity production capacity to enable the sector to deal with extreme weather conditions that are likely to increase in the coming years. However, for our forecast we did not take into account the influence of extreme weather conditions, but only the predicted rise in average temperatures.

The expected rise of 0.5 degree every decade, will according to our analysis lead to an increase of 10 cooling days annually. This will lead to a 0.15% increase in electricity consumption annually over and above the base demand curve.

3.11. Palestinian Demand

The Palestinian Authority in the West Bank and Gaza currently rely on electricity generated in Israel, which provides them about 94% of their electricity demand. A much smaller portion is produced by a 200MW diesel turbine in Gaza that operates on a limited basis and produces 4% of the Palestinian demand and limited import from Egypt (1%) and Jordan (1%). Palestinian electricity demand at 2019, stood at 6.3 billion kWh which represents a per capita consumption of 1,270 kWh, lower than fifth of the per capita consumption in Israel. The low electricity intensity of the Palestinian economy is mainly a result of the economic conditions, along with supply side limitations in the Gaza Strip.

Figure 26 - Regional Electricity Demand per Capita

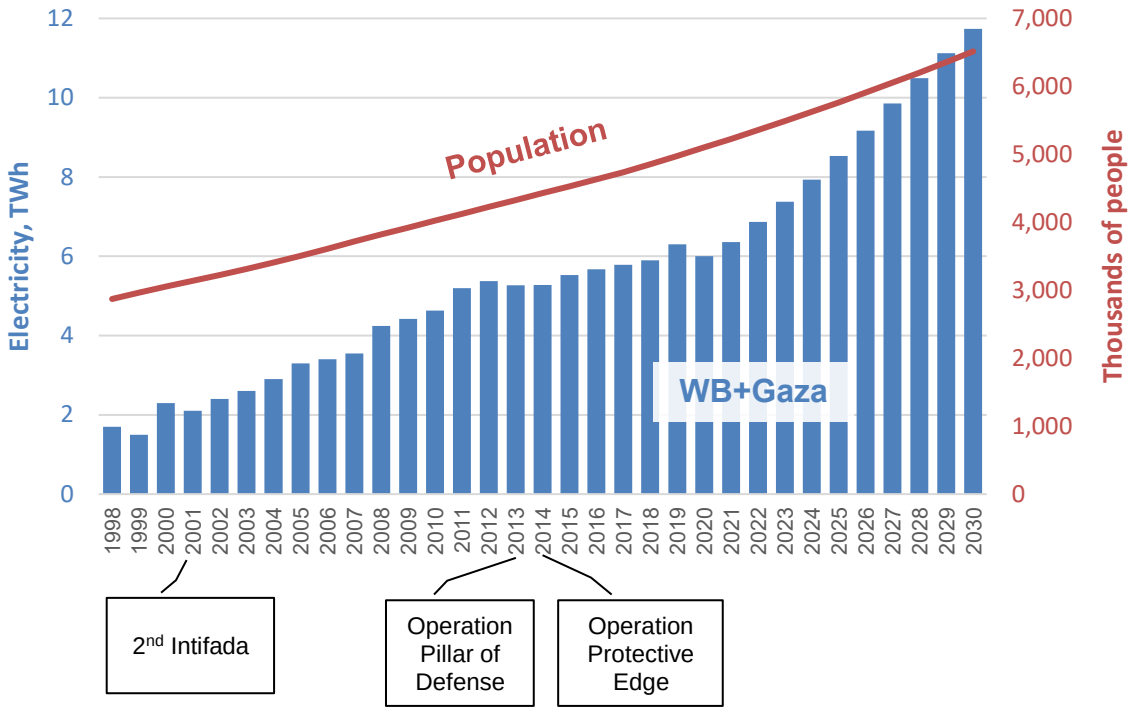


Source: State of Palestine, Index Mundi and BDO Analysis.

Israel and Palestinians data are correct for 2019. The rest of the data is correct for 2018 due to lack of data.

Palestinian demand depends on economic and population growth. In the short term, it is also affected by the intensity of the Palestinian-Israeli conflict. Under the assumption by which status quo will be maintained in Israeli-Palestinian relations, we predict Palestinian electricity demand to reach 11.7 billion kWh by 2030.

Figure 27 - Palestinian electricity consumption



Source: The U.S. Energy Information Administration, PCBS, BDO analysis

We estimate that Palestinian electricity demand annual growth rate in between 2015 – 2030 is over 4%. From the data analysis it is shown that periods of intensified conflict lead to a decrease of between 5%-10% over a one-year adjustment period. We believe that the current Palestinian electricity consumption level does not represent the demand for electricity, but rather the supply limitations.

Table 10 - Palestinian Electricity Demand Forecast Summary

In bil. kWh per year*

	2015	2020	2025	2030	CAGR 2015-2030
Population (mn)	4.5	5.1	5.8	6.5	2.5%
GDP(USD, billion)	11.2	13.6	17.0	22.1	4.6%
GDP/Capita (USD)	2,472	2,666	2,949	3,393	2.1%
Electricity Demand (MWh)	5.9	6.0	8.5	11.7	4.7%
Electricity/Capita (kWh)	1,308	1,176	1,470	1,805	2.2%

Source: BDO forecast

The international community, led by the *Quartet*, has declared increasing electricity availability in the Palestinian Authority territories as a major policy target.

In the West Bank, a first 450MW power plant in Jenin is in initial planning stages, with the support of the Palestinian Investment Fund. It is aiming to be connected to the INGL connection point in Affula which is located approximately 19 Km away from it. Its connection to the IEC HV grid is planned to be through the Jalamah (Jenin) substation which is located 800 m away from the power plant.

From the point of view of overall natural gas demand, Palestinian electricity production can be viewed as a “zero-sum-game”, as any increase in Palestinian self-generation will lead to a reduction in Palestinian electricity purchases from Israel. However, we believe that the potential of lower electricity costs through self-generation, along with increased supply reliability in Gaza, will stimulate growth in Palestinian electricity demand. We project that by 2030, Palestinian electricity demand levels will reach 1,805 kWh per capita, which is similarly to the current consumption levels in Jordan.

In the longer term, the Gaza Marine offshore field (32 BCM of reserves) may supply some of the Palestinian natural gas demand. However, we believe that the development of Gaza Marine is not feasible under the current geo-political conditions and is unlikely to take place so long as the Hamas continues to control the Gaza Strip. This is also evident from Shell’s decision in April 2018 to sell its stake in the Gaza Marine field.

In recent years, the Gaza Strip has been importing around 0.9 billion kWh of electricity annually from Israel, which represents 66% of the total consumption in the territory. The consumption of electricity in the Gaza Strip is under strict supply limitations and does not represent the true demand.

On the other hand, in June 2017, the Jalamah (Jenin) transmission station at the West Bank started to operate, and will enable to increase power supply of 60MV to the north of the Shomron area. Similar Additional stations are planned in Ramallah, Shchem and Tarkumia.

In addition, in May 2018, after years of negotiations, Israel and the Palestinian Authority reached an agreement regarding US$ 254 million (915 million NIS) in debts owed to the IEC. As well, a UD$ 780 million (2.8 billion NIS) electricity purchase agreement between IEC and the Palestinian authority was signed to a period of 15 years. Under this agreement, PETL (Palestinian Electricity Transmission Ltd.) will annually purchase a concentrated amount of electricity from the IEC that will be distributed to Palestinian authority's end users.

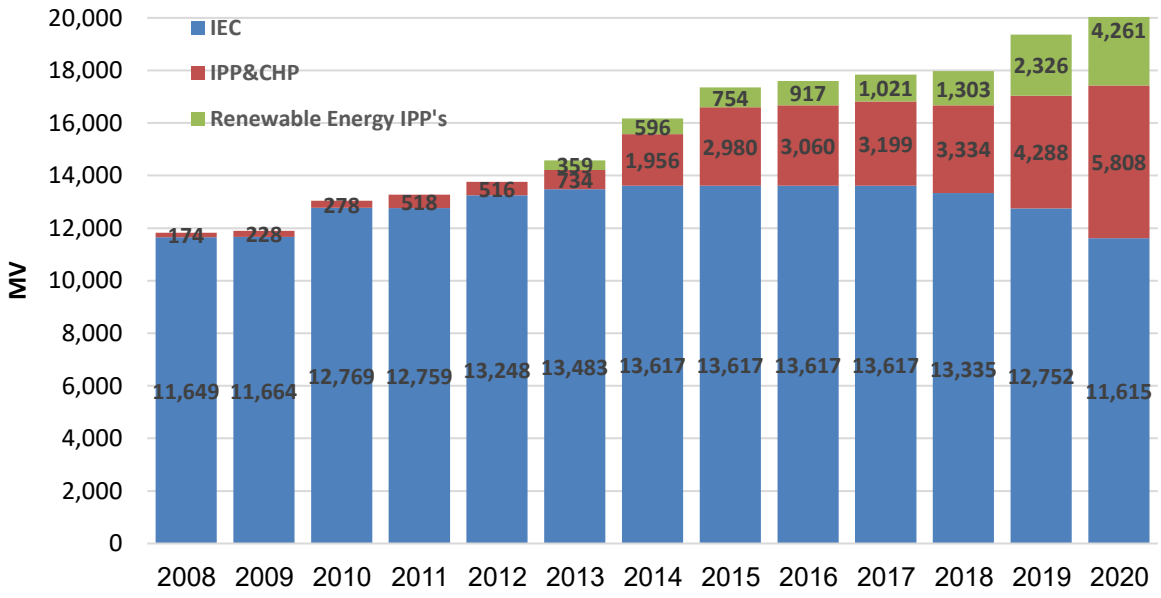
4. Electricity Supply Forecast

4.1. Background

The Israeli electricity market is totally isolated ("electricity island") and thus fully dependent on domestic production. Therefore, self-sufficiency is required at all times. Until 2013, the Israeli electricity generation market was dominated by the state-owned utility, the IEC.

In 2005 the market was opened up for competition with the introduction of new regulations by the Electricity Authority (EA). This opened the way for Independent Private Power producers (IPPs) to enter the electricity generation segment. The beginning of competition was facilitated to a large degree by the entry of natural gas into the domestic market, which enabled private power producers to produce electricity at a competitive price. In order to promote competition, the government policy is that in the future all additional generation capacity is to be built only by private producers.

Figure 28 - Israeli Electricity Generation Capacity (MW)



Source: IEC Investor Presentation, EA and BDO analysis

Israel's currently installed electricity generation capacity includes 4,840MW of coal units, 12,900MW of natural gas-fired units and about 4,200MW of renewable solar based energy. In 2019, natural gas-fired units constituted 63% of the Israeli generation capacity and generated 65% of Israel's electricity production. By the end of 2025, full energy independence for electricity generation will be reached, with a fuel mix based on 83% natural gas and 17% renewables. We expect renewable share to increase to 25% by 2030 reaching 30% by 2040 (see section 4.5 below).

Table 11 - Energy sector - Current status and forecast

	2010	2019	2020	2025	2030
Israel Natural gas demand (BCM)	**5.3**	**11.1**	**12.0**	**18.1**	**20.9**
Electricity production capacity (MW) (Conventional, ex. Renewables)	**12,800**	**17,040**	**17,740**	**20,820**	**24,360**
% Electricity generation from natural gas (kWh)	37%	65%	66%	82%	75%
% Electricity generation from renewables (kWh)	0%	5%	8%	17%	25%
% Electricity generation from coal (kWh)	63%	30%	25%	1%	0%

Source: BDO analysis

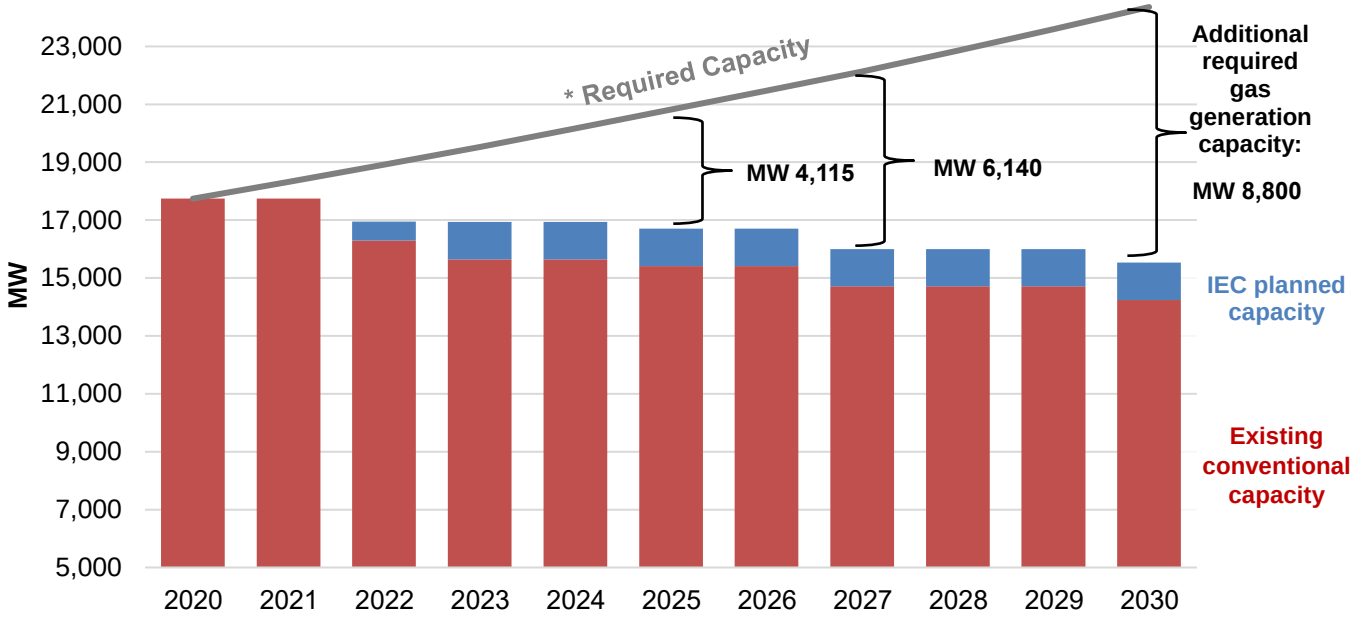
Prior to the discoveries of natural gas fields in Israel's offshore, electricity production was based on coal for baseload production, and fuel oil and diesel for intermediate and peak production.

In the past 16 years, natural gas has largely replaced fuel oil and diesel for the production of electricity in Israel and significantly contributed to the redaction of coal usage. All additional production capacity since 2004 except for renewable energy, has been with natural gas power plants due to the economic and environmental advantages of using domestic natural gas over imported coal.

From a strategic point of view, all of the natural gas run power plants (above 100 MWh) are dual-fuel units, and can be operated also on diesel or fuel oil. Therefore, the dependence on natural gas as the main fuel does not create a strategic risk for the supply of electricity to the economy, but rather economic and environmental risks. In the event of a shortage or a lack of natural gas supplies, production units will have to switch over to diesel and fuel oil, as was the case during the crisis of 2012.

Recent policies implemented by the government are aimed at reducing the dependence on fossil fuels in general and on coal imports in particular for electricity generation. This is largely the result of global effected environmental concerns and the low efficiency associated with these fuels and the economic advantages of utilizing local natural gas rather than imported coal. The Tamar and Leviathan offshore natural gas fields have the potential to provide sufficient natural gas for the production of all electricity beyond 2040. This would of course reduce the reliance on the import of fossil fuels and further enhance Israel's self-sufficiency.

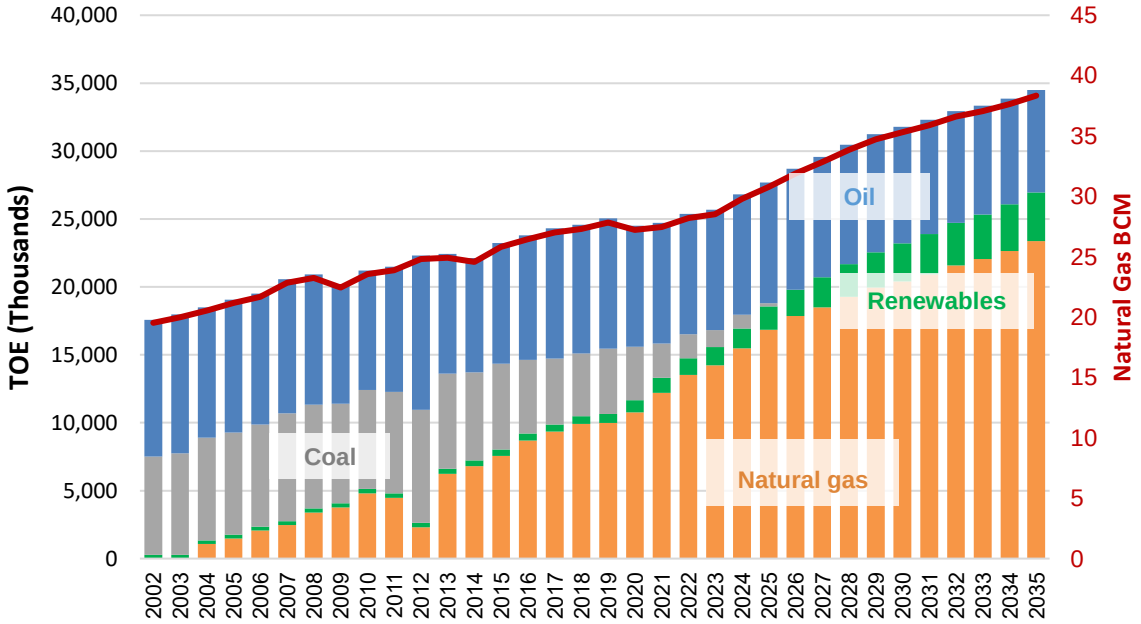
Figure 29 - Generation Capacity Forecast



* Excluding renewables

Source: BDO's energy demand forecast, IEC, EA

Figure 30 - Israel Energy Consumption by Fuel



Source: BDO energy sector's forecasts, Historical data: BDO analysis based on the CBS and Fuel Department's data

4.2. Electricity Generation Capacity Forecast

According to our forecast, by 2025 generation capacity is expected to reach 29,159 MW. This represents a 7,500 MW addition to current levels. The added capacity will be realized through 6,340 MW natural gas-based power units built by IPPs, 1,300 MW of Rabin H-Class, and 4,000 MW of renewable energy, along with shut-down of 4,140MW of coal units. It is important to note that renewable energy in Israel is primarily solar which has a low 20% utilization factor and additionally cannot contribute to reserves for peak production in the winter months that occur on nighttime, when PV has no availability. Thus, 5,200MW of solar energy is equivalent to about 1,000MW of natural gas-based units in terms of effective availability.

Over time we assume that the production level of IEC will remain stable and that all of the additional capacity, over and above the contribution of renewables, will come from natural gas fueled private power producers (either IPPs or cogeneration). This means that the share of natural gas in the electricity production will rise from 65% in 2019 to 82% in 2025 and reach 75% in 2030.

Table 12 - Forecast of Generation Capacity by Fuel

In MW*

	Coal	Natural gas	Renewables	Total Capacity	Natural gas % of total Capacity**	Natural gas % of Generation
2019	4,840	12,200	2,326	19,366	63%	65%
2020	4,840	12,883	4,261	21,684	59%	66%
2025	700	20,120	8,339	29,159	69%	82%
2030	0	24,360	17,271	41,631	59%	75%
2035	0	26,052	21,938	47,989	54%	73%
2040	0	30,699	*26,604	57,303	54%	70%

*Israel and Palestinian self-generation.
**Effective total capacity, with renewable capacity adjusted by a factor of 1:5 to reflect effective maximum availability.
Source: EA, IEC and BDO Analysis

For effective capacity calculation, we have adjusted renewable capacity to reflect the fact that in Israel it is based primarily on solar energy and has an inherent maximum availability factor of about 20%.

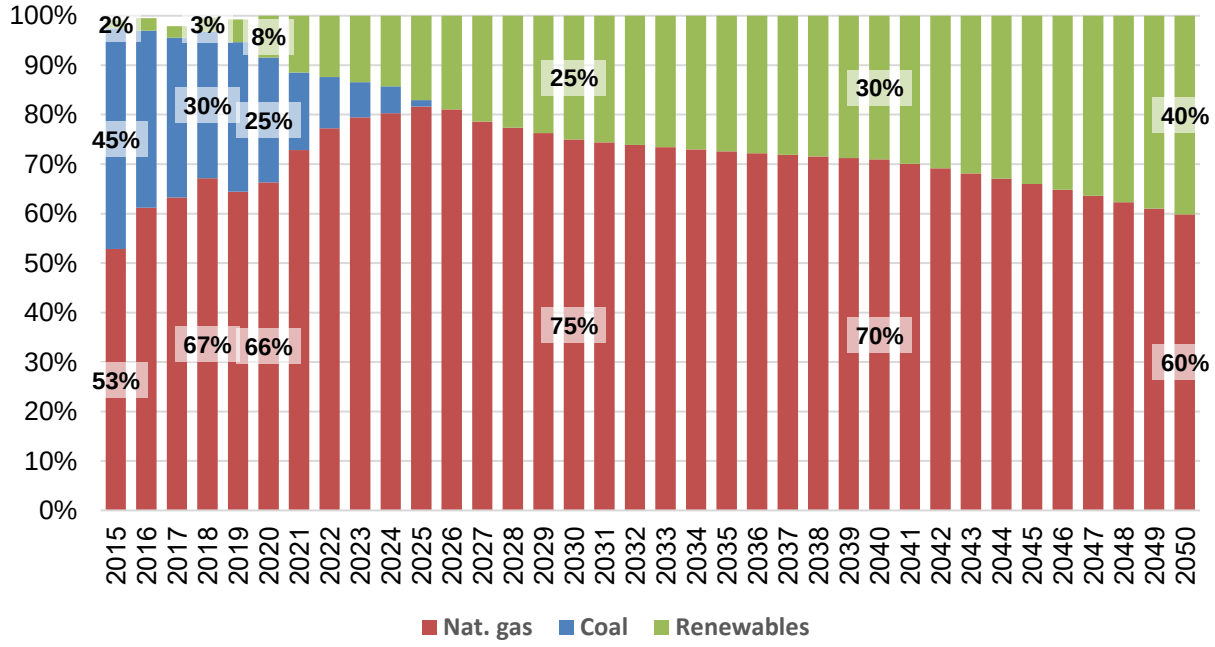
Recently the Ministry of energy released a hiring for public comments that call to raise the share of renewables in electricity to 30% by 2030. However, the 30% target is expected to be a declarative goal, as both the Electricity Authority and IEC's consultation positions indicate that reaching the target is impractical. Consequently, we assume that the share of renewables of the electricity generation will reach to 25% in 2030 and to 30% in 2040.

The fuel mix forecast is projected using our bottom-up national electricity dispatch model, based on economic merit order and technical constraints. This model simulates the system manager's dynamic dispatch regime. Accordingly, renewable units are dispatched based on availability factors, accounting for relative availability by time of day and month of solar generation. It was assumed that coal units will shift to seasonal operation from 2021, as Leviathan's production is streamlined the existing limit of 75% maximal hourly gas usage constraint is lifted. Monthly coal reduction will be in reverse proportion to peak demand, so that in peak months the coal units are highly dispatched, while in off-peak months they will be shut down. This operation regime has economic advantage as it allows coal reduction to take place without any decrease in the available capacity in peak months.

The growth in electricity production from natural gas will come from private producers including IPPs that will primarily produce electricity for end-users, and cogeneration plants that will produce electricity for their own use, or sell to the network or sell surplus electricity to end users.

Figure 31 - Electricity Generation Forecast by Fuel

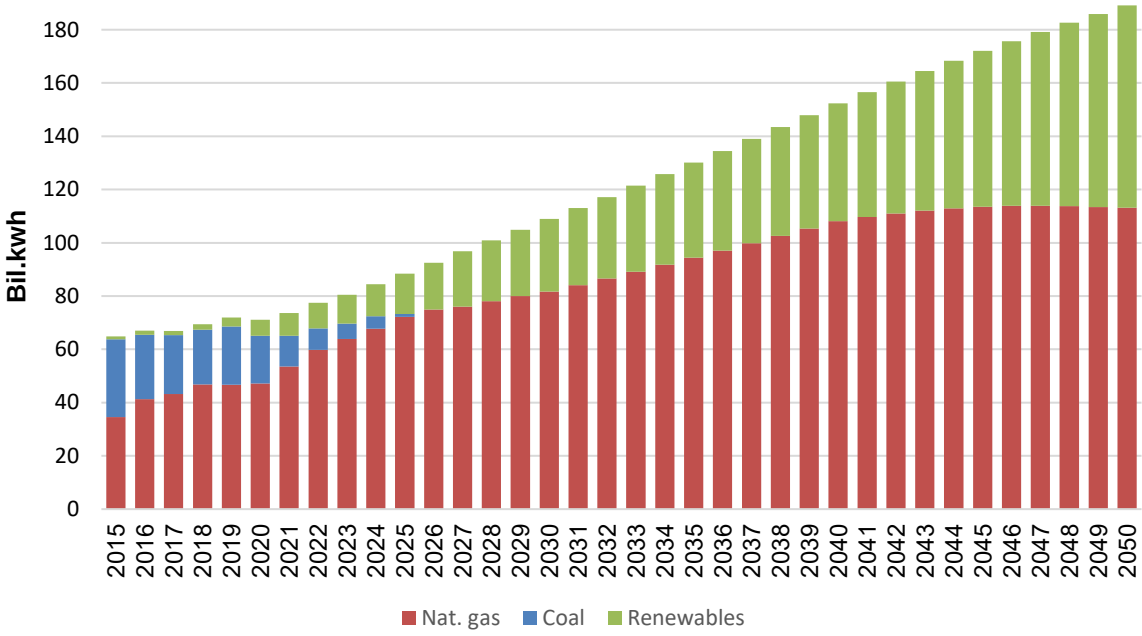
% of total generation



Source: BDO Analysis

Figure 32 - Electricity Generation Forecast by Fuel

Bil. kWh per Year



Source: BDO Analysis

4.3. Private Producers

The electricity market in Israel is comprised of the state-owned IEC, a government owned integrated monopoly, which supplies about 66% of demand and private power producers that currently supply the remaining 34% of demand for electricity.

The electricity market is regulated by the Electricity Authority (EA), which grants licenses to power producers and regulates IEC's prices.

There are currently 4 larges conventional IPP's operating in Israel, with a total of 2,376MW installed capacity of natural gas-based CCGTs: Dalia (910MW), Dorad (860MW), OPC (466MW) and IPM (451MW). The 3 larger IPPs have declared their intension to build additional power plants in Israel, pending regulatory approval. Moreover, there are about 15 operational cogeneration (CHP) plants, with a total installed capacity of 1,050MW that generate electricity primarily for self-consumption.

In addition, as part of the IEC reform process, the Alon Tavor site was transferred to private ownership on December 2019, with Ramat Hovav site expected to follow in December 2020.

Table 13 - Main Independent Power Producers, 2020

	Capacity (MW)	Startup Date	Operation Regime
Dalia	910	2015 Q3	50% Grid 50% Bilateral
Dorad	860	2014 Q2	Bilateral & Variable Availability
OPC	466	2013 Q3	Bilateral
IPM	451	2020 Q4	85% Grid 15% Bilateral
MRC Alon Tavor	583	Transferred from IEC, Jan. 2020	100% Grid (SMP Market)
Ramar Hovav (Shikun & Binui, Edeltech)	1,137	To be transferred from IEC, Jan. 2021	100% Grid (SMP Market)

Source: EA, BDO analysis

According to government policy and regulation, IEC will not be able to increase its generation capacity beyond the planned H-Class CCGT which is being built in Hadera to replace the Rabin1-4 coal units, which are set to retire on 2022. Hence, all incremental power supply will be built by private producers. By 2025 there will be two new IPP's – Etgal and Tzomet, and the new IPP's Capacity Planned by 2025 amount to 635 MW.

The previous structure of the electricity market in Israel was based on two options for private power producers: the sale of electricity through bilateral agreements to end users and the sale of electricity to system manager (currently still controlled by IEC). This structure is designed to ensure the financial stability of the private power producers and at the same time encourage a competitive market by combining the possibility of electricity sales by private power producers to the IEC and the potential of higher returns through the sale to end users.

The prices of bilateral deals are not subject to regulation. Nevertheless, the common practice is for bilateral agreements to be linked to the regulated IEC price, along with an agreed upon discount between the parties.

Therefore, all prices in the electricity sector are directly influenced by EA price regulation. In addition, private power producers have the option, in accordance with their licenses of operation, to allocate a certain percentage of their capacity to IEC, in line with the tariffs pre-determined in their licenses.

In general, the sale of electricity by private power producers to IEC is considered relatively low risk, since they receive a set rate for availability, which is designed to cover capital and fixed costs, as well as a variable payment that is designed to cover energy and variable costs. The rate structure for electricity sales to the IEC ensures a low level of risk for private power producers but the potential of profitability is limited. By contrast, bilateral sales to private end users have a potential for much higher return, though the private power producers are open to higher risk.

All private power plants in Israel are financed using project finance arrangements. Therefore, the construction of a private power plant is subject to the meeting of financial standards that fulfill the demands of the banks and financial institutions that finance the project. This creates an inherent system of checks and balances that serves to safeguard the financial strength of the private power plants.

The IEC is not permitted to offer customers discounts as the company is considered a monopoly in the production segment. Under existing market conditions, with private power producers representing only about 34% of capacity, real price competition in the bilateral segment of the market does not exist. This is largely the result of surplus demand.

Therefore, under existing conditions the risk of price erosion in bilateral deals involving private power producers and end users is relatively low. The major risk for IPPs, beyond operational ones, is the exposure to the regulated price of the IEC.

IPPs enter into long-term natural gas supply and purchase agreements to remove risks associated with fuel supply. The private producers purchase natural gas at a price that is linked to the IEC production tariff as determined by the regulator (EA). This in effect allows them to hedge their risk, which results from the exposure to the regulated tariffs. However, the linkage formula of private power producers to the EA rates includes a price floor. A drop below that floor does not trigger a further decline in natural gas prices.

According to current policy, future power plant will not be allowed to engage in bilateral sales agreements. All electricity generated by new IPPs will be sold to the system manager, based on a half-hourly SMP (system marginal price) bid system.

All power plants to be sold under the electricity sector reform (see chapter 4.4 below), as well as all future IPPs, will operate under the SMP market regime. Under this regime, the private producers receive availability payments, and is centrally dispatched by the system manager, based on its day-ahead market bids.

Currently, IEC is still a monopoly in electricity supply, hence all electricity purchased by the system manger is sold to IEC which supplies its customers. New IPPs face a market price risk corresponding to the potential profit margin they gain between their SMP market revenues and their actual natural gas costs. However, the regulation ensures that an IPP will be compensated in case they are dispatched with SMP prices below cost (on a daily basis). Hence IPP risk is limited to the degree of profit they gain beyond their energy costs.

Cogeneration plants are electricity production plants that use thermal heat and produce both steam as well as electricity. With the use of both power and heat, these types of plants enjoy a much higher energy efficiency level, produce less air pollution, lower the energy cost for the industry and conserve network resources. The large consumers of steam (the cogeneration producers) have an advantage through the combined production of steam and electricity. This however is a very specialized niche as there is no demand for steam heating purposes due to Israel's climatic conditions.

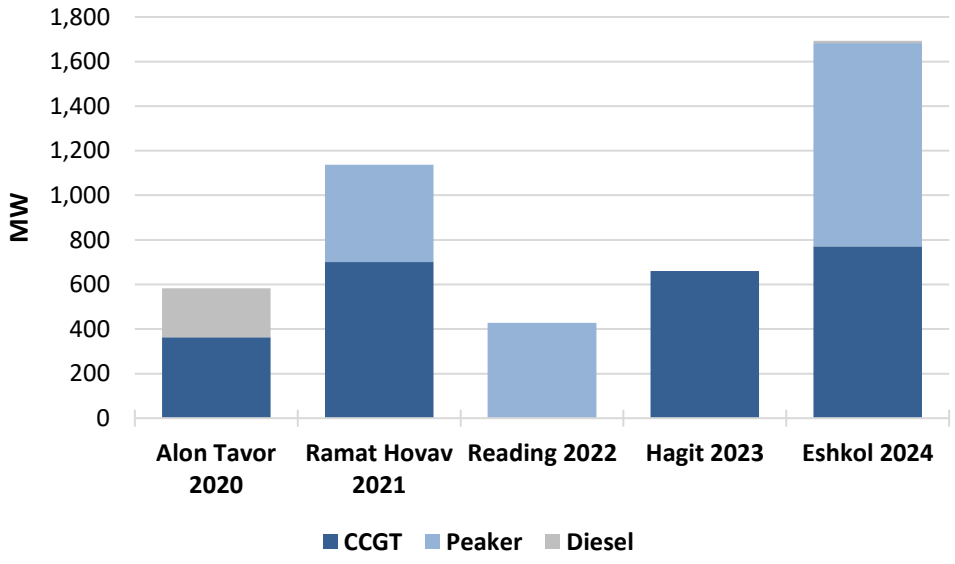
This means that the potential for this niche market depends solely on large producers in heavy industry. Growth potential at many cogeneration plants is limited (no new energy intensive manufacturing plants such as Israel Chemicals or Israeli refiner Oil Refineries Ltd. are on the horizon). Over time, the importance of heavy industry in the overall economy is expected to decline. We estimate that the growth in electricity production for internal use will be only half the rate of the expected increase in industry in general and will account for about 10% of electricity production in Israel in 2040.

4.4. Electricity Market Reform

In July 2018, the Israeli government approved the electricity market reform. According to the reform, five generation sites with total installed capacity of 4,500MW (mostly natural gas fired) are being privatized, with IEC's electricity generation market share reduced to 60%. The reform includes the following main principles:

1. **Privatization**: By 2023, five IEC generation sites with total installed capacity of 4,500MW (mostly natural gas fired) are being privatized.
2. **Transmission and Distribution**: IEC will retain the ownership of the transmission and distribution segments, while the system management will be transferred to a new state-owned company; supply segment will be incrementally opened to competition.
3. **Future Generation**: all future generation capacity will be built by private producers, expect for the replacement of Rabin 1-4 power plants.
4. **2 New IEC power plants**: IEC will build and operate two new natural gas-fired combined cycle turbines in 'Orot Rabin' site with a total capacity of 1,300 MW.
5. **IEC's market share**: IEC's electricity generation market share will be reduced to below 60%, from 71% in 2017.

Figure 33 - IEC Reform: Privatization Roadmap



Source: IEC, BDO analysis

According to EA's new policy, all the reform sites that will be sold, as well as any future private power generation licenses will be based on a new electricity wholesale market mechanism. Under the new regulation, electricity producers will no longer be able to enter new bilateral sales agreements. Generation units will be dispatched by the system manager, based on a day-ahead marginal price-based bid system.

We believe that this new regulation may gradually shift the market away from natural gas contracts linked to the EA tariff, to alternative natural gas pricing mechanisms which have not yet been commonly established in the Israeli market.

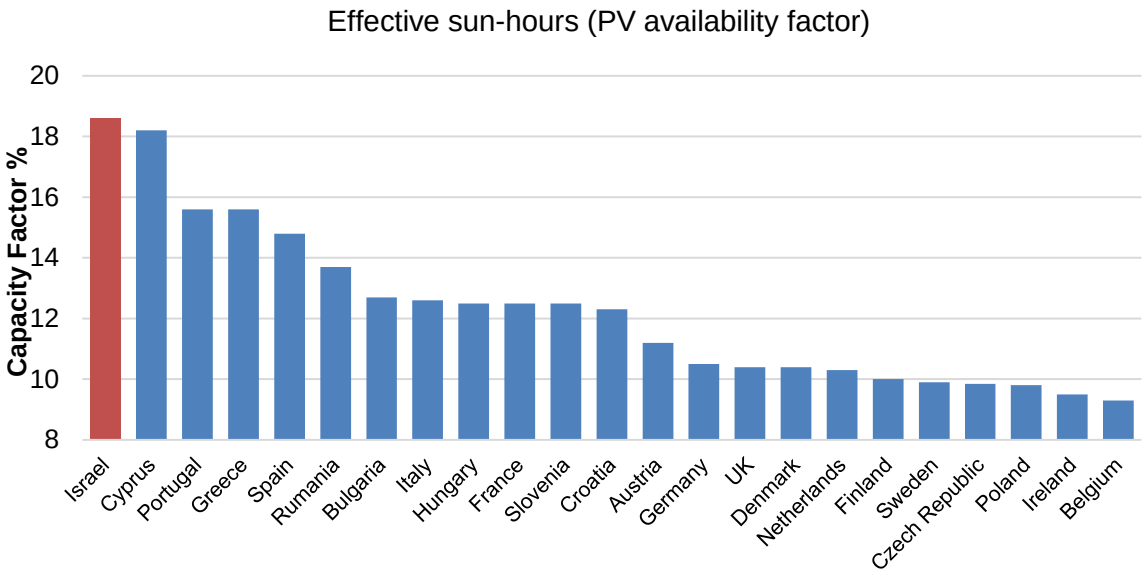
4.5. Renewable Energy

In 2020, Israel's electricity generation fuel mix is expected to be based on 67% natural gas, 25% coal and 8% renewables. By the end of 2025, we forecast full energy independence for electricity generation will be reached, with a fuel mix based on 83% natural gas and 17% renewables. We expect the renewable share to increase to 30% by 2040.

Israel's renewable energy targets are based almost exclusively on solar energy, as Israel has no potential for hydro-electric generation, and most of wind-based power generation potential has been allocated.

Israel's climate provides relative advantage for solar generation, as effective sunlight hour availability reaches about 20%, among the highest in OECD countries.

Figure 34 - Israel's relative advantage - Sunlight energy



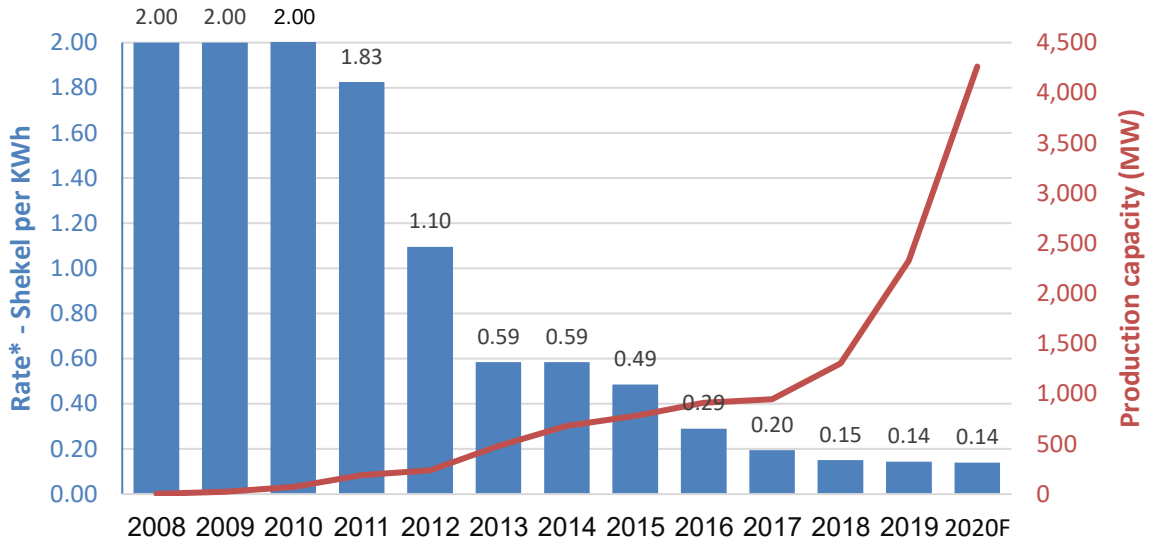
Source: BDO's analysis of the Global Solar Atlas' data

With the decline of PV panel costs, direct PV generation costs are on par with the marginal cost of natural gas-based generation, and thus have reached grid parity in terms of direct

generation cost (although it should be noted that the integration of solar energy is associated with additional significant integration costs).

The current cost of production of electricity using solar technologies is lower than it was in previous years, leading to an increase in local solar generation. In the latest Electricity Authority bids from the years 2019 and 2020, the renewable tariff position is at about US$ 4 cents (NIS 0.14) compere to US$ 55 cents (NIS 2) in the last decade.

Figure 35 - Renewable Energy Production and PV Tariff



* PV marginal auctions tariff

Source: BDO's analysis for the Electricity Authority's data and the IEC

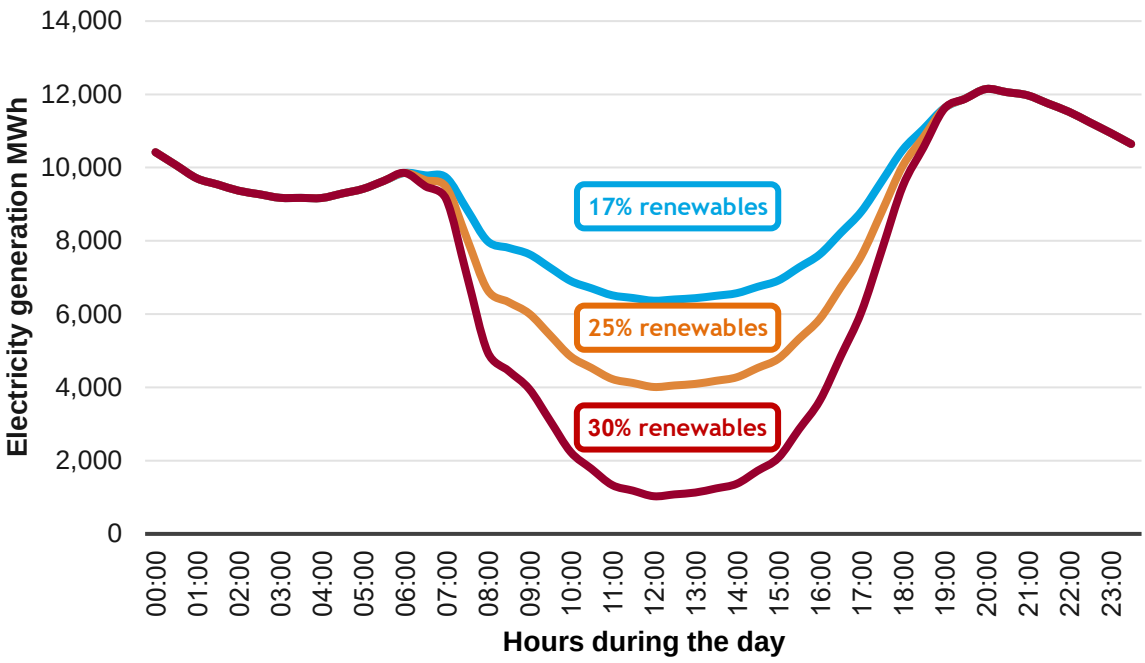
Solar energy provides significant economic and environmental benefits to the Israeli energy sector. However, the variable nature of solar energy, and its effective unavailability during 80% of the year, bring along significant technical and economic challenges.

In the case of the Israeli energy sector, natural gas-based generation and solar energy are complementary generation technologies, rather than substitutes. PV generation will be maximized during sun-hours (20% of hours corresponding to about 25% of demand), and complemented by efficient natural gas-based generation at the remaining time.

The advancement in storage technologies provides significant support for the integration of PV in Israel's energy sector. The variability nature of PV generation, and the "Duck Curve" phenomenon, along with the fact that Israel is effectively an electricity Island, requires the integration of battery storage to provide grid balancing and stabilization. However, in the coming years, battery storage does not constitute a substitute to natural gas-based generation in terms of Israel's electricity peak generation requirement, but rather as a supplemental measure.

Figure 36 – The "Duck Cure" Challenge, 2030

Representative summer day



Source: BDO analysis

Electricity capacity planning is based on the peak-hour system bottleneck, which now occurs in Israel at peak winter night-time, as there is no solar availability during this time. Peak winter demand typically occurs at a period of thunderstorms and cloudy weather, when solar availability is very low on daytime as well. Therefore, PV energy does not contribute to the effective peak hour generation capacity.

Battery storage, with limited daily availability period of 4-6 hours, is important for grid stabilization, but cannot substitute natural gas-based generation capacity in terms of power system reliability and resiliency. Israel's electricity regulation requires all generation units to provide, in addition to a connection to the natural gas pipeline, additional storage capacity of a secondary fuel (diesel) for 100 hours of continuous operation. Hence, battery storage with 4 hours of continuous operation is not an effective substitute in terms of the reliability requirements for generation and backup capacity.

It should also be noted that PV generation is highly correlative with electricity demand. High availability of solar energy is correlated with hot weather, which contributes to high electricity demand. Our analysis indicates that even at 30% PV based generation, PV over-generation beyond demand (energy curtailment) is minimal. Hence, in the case of Israel, battery storage will be used in the coming years mainly as a means to shift natural gas-based electricity generated at night time to daytime peak hours, and not for storage of renewable energy.

Our conclusion is that in the case of the Israeli energy sector, renewable and storage technologies are complementary to natural gas-based generation. Natural gas and renewable generation will co-exist and are jointly required to support Israel's transition to energy independence and to effectively achieve Israel's goal of GHG emission reduction, electricity reliability, and cost-effectiveness.

The current official target for the renewable share of generation in 2030 stands at 17%. The ministry of energy is currently conducting a public consultation process toward the amendment of the goal to a 30% renewable target. Israel's track record indicates the unsuccessful efforts to meet renewable goals, with the 2020 actual renewable generation was about 20% below target (8% vs. 10% target).

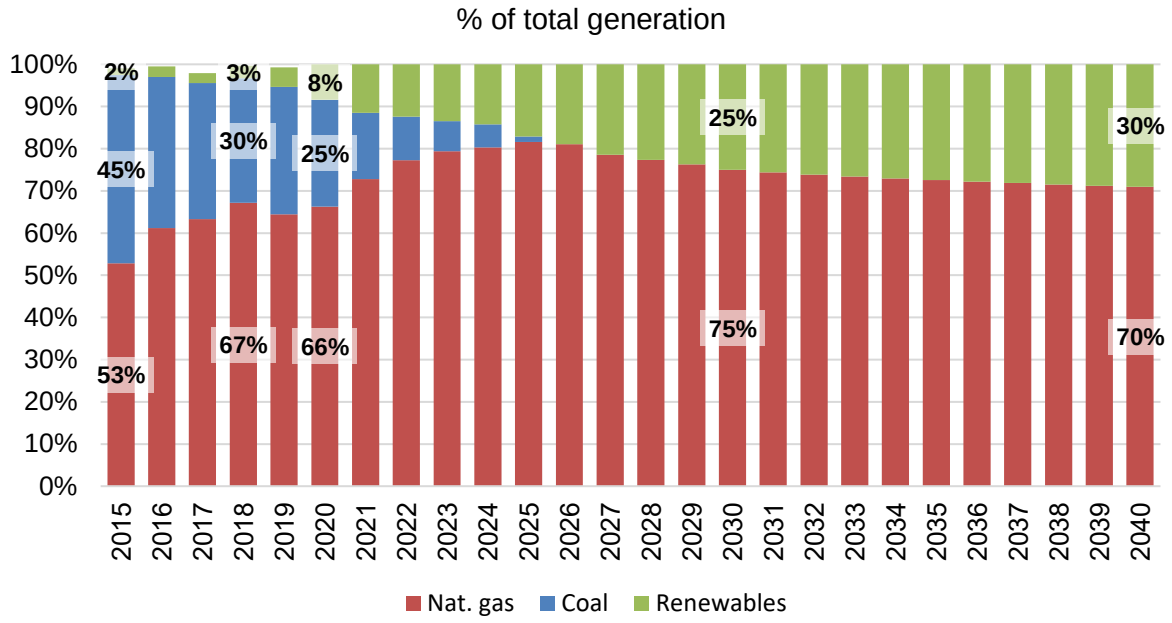
We expect that the government will adopt a 30% renewable target for 2030, although we estimate that the target cannot be practically reached within this timeframe, and is mostly a declarative goal. Official consultation position papers submitted by the public utility authority and Israel's electric Corp long-term planning division, highlight the unlikelihood of reaching a 30% renewable target by 2030, which is based on 27% solar generation, based on the following arguments:

- There is no international precedent in reaching solar power generation in excess of 15% of total power demand, in particular not for an electricity-island such as Israel.
- The variable and intermittent characteristic of PV based generation, poses great technical challenges as is illustrated by IEC position paper:
- 30% goal leads to technological change and the need to establish more flexible facilities, as well as storage facilities on a significant scale
- Battery storage technology is still in its infancy and there is little to no experience in the world in operating an electrical system that has an extensive amount of batteries. In addition, there is a great deal of uncertainty as to the cost of such technology, its life cycle, and its technical capabilities."
- In addition, from a statuary and planning point of view, lack of potential areas for panels risks the ability to reach these targets, as arises from the Electricity Authority[5] (EA) position document: "From the results of potential assessment we learn that Israel has sufficient land potential, enabling to meet the 30% renewables goal. **However, the volume of mapped potential is of relatively limited excessiveness**. In order to meet the goal, it must be utilized nearly in full, using these two types of land.**"**

[5] Previously known as PUA

Consequently, we assume that the 30% renewable target will be reached by 2040, while in 2030 renewable share will reach 25%, equivalent to 83% fulfillment of the government goal.

Figure 37 - Electricity Generation Forecast by Fuel



Source: IEC and BDO analysis

4.6. Coal Reduction

Israel's currently installed electricity generation capacity includes 4,840MW of coal units, 12,900MW of natural gas-fired units and about 4,200MW of renewable energy. In 2019, natural gas-fired units constituted 63% of the Israeli generation capacity (72% accounting for the renewable units' reduced availability) and generated 65% of Israel's electricity production.

Israel's coal units were planned and built in the 1980s and 1990s, long before the discovery of Israel's natural gas fields. At that time, coal usage for baseload production provided an economically viable alternative to fuel oil.

Table 14 - Israel's Coal Power Generation Units

Site	Stage	Turbines	MW	Vintage
Orot Rabin	A	4X360	1,440	1981-1984
	B	2X575	1,150	1995-1996
Rotenberg	A	2X575	1,150	1990-1991
	B	2X550	1,100	2000-2001
Total		**10**	**4,840**	

Source: IEC

The availability of domestic natural gas, along with current environmental policy and regulation, calls for a shift in Israel's electricity energy fuel mix. From the point of view of the national economy, natural gas is the cheaper and more reliable alternative. The cost of domestic natural gas to the national economy is lower than coal since 50%-60% of the local price for natural gas returns to the government in the form of taxes and levies. Moreover, Natural gas generates less pollution (SOX and NOX) and GHG emissions in the generation process, thus allowing Israel to fulfill its international commitments under the COP21 framework.

Hence, from an economic and environmental point of view, the optimal operational regime for Israel's electricity sector is to shut down coal-fired power production and shift to domestic and more environmentally friendly natural gas. Furthermore, natural gas consumption is a fundamental source of government income as a result of natural resources related taxes and royalties. We believe that the lack of adequate natural gas supply was the main constraining factor that prevented further coal reduction over the last years.

Israel's Ministry of Energy is adopting coal phase-out policy, which is being periodically updated with the enforcement of more stringent coal usage restriction, as natural gas supply security increases:

- August 2016 – a decision was made to shut down four coal-operated production units of the IEC (Units 1-4 in the coal-fired power plant at the "Orot Rabin") by June 2022.
- November 2017 – a requirement for minimum operation of coal-fired production units was set. According to this decision, at all times, preference shall be given to the production of electricity using natural gas over coal, while keeping on flexibility and reliability of supply to the market.
- July 2018 - the Israeli government approved the electricity market reform. According to the reform, IEC will shut down Orot Rabin coal units by June 2022, and build and operate two new natural gas-fired combined cycle turbines in 'Orot Rabin' site.

- December 2018 - Israel joined the PPCA (powering pas coal alliance) and committed to completely phase out coal by 2030.
- November 2019 – a decision to completely phase out coal by then end of 2025, with conversion of the 3,400MW of coal units to natural gas.
- June 2020 – a decision for a further 20% reduction of coal usage compared to 2019. Coal usage in 2020 will not exceed 24.9% (compared with 30% in 2019). Consequently, coal based generation will be reduced to 18 billion kWh in 2020, compared to 30 billion kWh in 2015.

The development of Leviathan, along with that of the Karish offshore natural gas field, will enable further reductions in coal use. In August 2016, the Ministry of Energy canceled the IEC's plan to invest the remaining US$ 600 million (out of US$ 1.2 Billion) in FGD technology for the Orot Rabin 1-4 coal-based plants, and decided that they will be shut-down upon natural gas availability after Leviathan's entry to the market and no later than June 2022. This decision was reinforced through a July 2018 government decision.The resulting increase in electricity generation by natural gas is equivalent to a 6.7 BCM increase in gas demand, 4.2 BCM beyond 2020 consumption levels, as detailed in the table below.

Table 15 - Coal Reduction Forecast Summary

*100%=30 Billion kWh. Year	Coal-based Generation (bil. kWh)	Coal reduction*%	Natural gas due to Coal reduction in BCM	Supporting Policy
2015	29.2	-		
2016	24.2	19%	1.2	15% coal reduction
2017	22.1	26%	1.7	19% coal reduction
2018	20.6	31%	1.9	30% coal reduction
2019	21.9	27%	1.7	
2020	**18.0**	**40%**	**2.5**	Coal reduction to 24.9% of generation
2021	13.0	57%	3.4	Seasonal coal operation (minimal coal dispatch + increased coal excise tax)
2022	8.0	73%	4.9	6/2022 Rabin A Shutdown + seasonal coal operation
2023	5.7	81%	5.4	Ashkelon 550MW conversion to natural gas + seasonal coal operation
2024	4.6	85%	5.6	
2025	**1.2**	**96%**	**6.4**	Hadera 5-6 conversion
2030	0.0	100%	6.7	Complete Coal Phase Out (PPCA commitment)

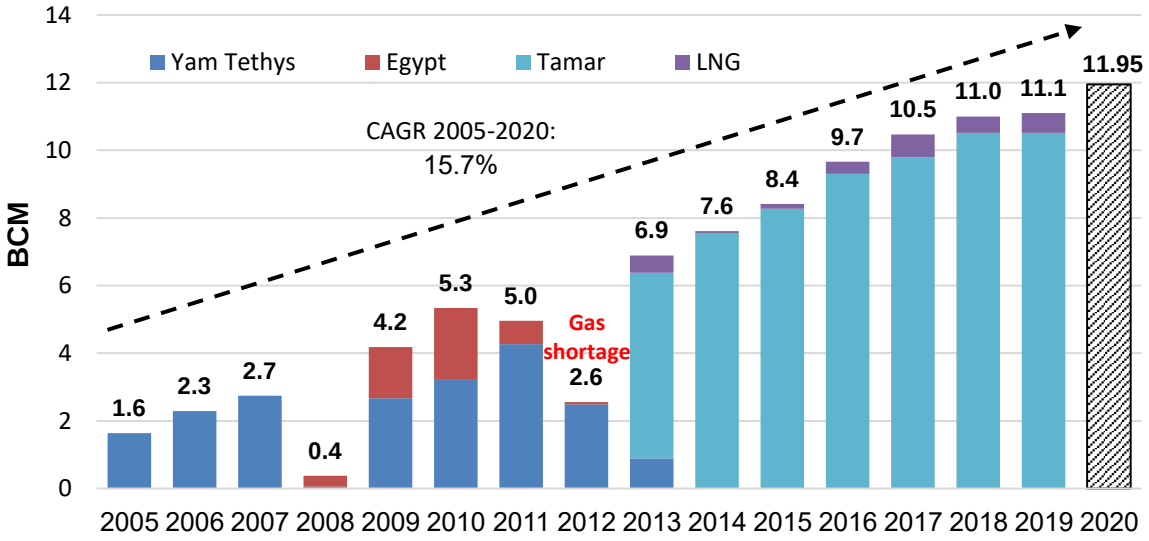
Source: BDO forecast

5. Natural gas Demand Forecast

5.1. Overview

Israeli natural gas demand totaled 11.1 BCM in 2019. Current natural gas consumption levels do not represent the potential for domestic natural gas demand. In recent years, supply constraints have held back the growth in demand. These constraints include both natural gas shortages as well as a lack of transmission and distribution infrastructure.

Figure 38 - Israel Natural Gas Consumption by Gas Supplier, 2005-2020



Source: Natural Gas Authority and BDO analysis

Regulatory uncertainty led to delays in the development of the Leviathan natural gas reservoir, and consequently delayed natural gas conversion projects by the Israeli industrial and electricity sectors.

The completion of the Leviathan project, with commercial production which began in January 2020, along with the expansion of Israel's natural gas distribution infrastructure will enable the economy to realize the full potential demand for natural gas.

The current level of natural gas consumption represents only the initial stage of Israel's shift from an energy importer to an energy exporting country. The Israeli economy has so far only completed the preliminary shift from oil to natural gas in the electricity sector and among large industrial customers.

The availability of large domestic reserves of environmentally friendly natural gas, along with the expected growth of the Israeli economy, will pave the way for further structural changes in the country's energy sector.

The Israeli government is committed to the COP21 environmental targets, and is well aware of the economic and strategic advantages of local natural gas production over imported fossil fuels. Consequently, the government is adopting an active policy that encourages a further shift to natural gas.

Recent policy decisions to encourage the shift to natural gas include:

- November 2019 commitment to phase out coal by the end of 2025
- July 2018 Government decision to reinforce the shutdown of 1,440MW of coal production units (30% of coal capacity) by June 1st, 2022.
- Government funding of $160 million for deployment of natural gas distribution system
- Government funding of $27 million for deployment of 37 CNG fueling stations
- Subsidizing of small and medium industrial customers to switch from oil to natural gas
- Government authorization of a $3.3 billion budget for Israel Railway full scale electrification of the rail network
- Tax incentives and subsidies for electric vehicles
- Fuel tax incentives aimed at encouraging the transport sector to switch to CNG

5.2. Natural gas Demand Forecast Summary

BDO's natural gas demand forecast for Israel based on a proprietary, multi-factor, econometric bottom-up model. It utilizes electricity demand and supply models along with an economic dispatch model based on a load-duration curve forecast. BDO's senior experts have been providing customers with the long-term electricity demand model for over 20 years.

Based on the assumptions in this report, we forecast that the demand for natural gas in Israel will increase from 11.1 BCM in 2019 to 18.1 BCM in 2025 and 20.9 BCM in 2030. Moreover, we predict that the natural gas demand from IPP's will be 8 BCM in 2030 compared to 3.2 BCM today, and the demand from transportation will reach 1 BCM by 2030.

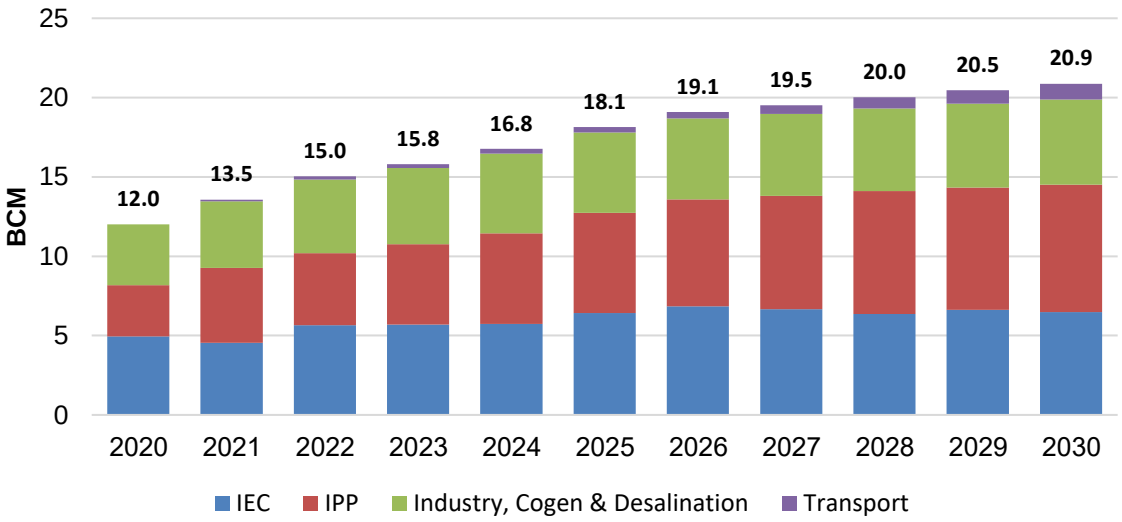
Table 16 – Natural Gas Demand Forecast Summary*

Demand by Natural Gas Consumer in BCM

	Electricity	Cogen & Industry	CNG and Chemical Industry*	Total Demand	Out of which, Coal reduction
2018	8.1	3.0		**11.0**	1.9
2019	7.3	3.8		**11.1**	1.9
2020	8.1	3.9		**12.0**	2.5
2022	10.2	4.6	0.2	**15.0**	4.9
2025	12.7	5.1	0.4	**18.1**	6.4
2030	14.5	5.4	1.0	**20.9**	6.7
2035	16.4	5.7	1.3	**23.3**	6.7
2040	18.7	6.1	1.5	**26.3**	6.7

*including Palestinian Authority

Figure 39 - Israel Natural Gas Demand Forecast



Source: BDO forecast

Our demand forecast does not take into account long-term supply side constraints or capacity limitations. In the case of short-term supply constraints, Israel may either import LNG, reduce exports, and/or use more oil-based products (as was the case in 2011-2012).

5.3. Natural gas Demand Growth by 2025

By 2025, we forecast natural gas demand to reach 18.1 BCM, mainly due to continued growth in demand for electricity (see electricity demand forecast chapter), complete coal phase-out, and increased usage of natural gas for transportation, industrial and chemical uses.

The main drivers for the increase in natural gas demand by 2025 are summarized in the table below distinguishing between growth and fuel conversion. Total natural gas demand is forecast to increase by 6.1 BCM by 2025. Conversion to natural gas contributes about 74% of this growth (4.5 BCM). Increased demand contributes the remaining 26% (1.6 BCM), representing increased demand mainly in the electricity sector, after accounting for the expected increased renewables-based generation in the electricity sector.

Table 17 – Natural Gas Demand Growth Drivers

2025 vs. 2020, growth factors is BCM

Total Demand 2020 (BCM)	**11.95**
Growth in population Economic growth	1.0
Desalination	0.2
Electric Vehicle & Rail	0.4
Coal to Natural gas	3.9
Oil to Natural gas	0.6
Total Growth (BCM)	**6.1**
Total Demand 2025	**18.1**

		Total Demand 2017 (BCM)		**10.4**
Electricity	New Demand	Growth in population	2.7	4.6
		Economic growth	0.5	
		Desalination	0.4	
		Electric Vehicle & Rail	0.4	
		Palestinian Authority	0.6	
	Conversion	**Coal to Gas**	3.1	3.1
Industry	Conversion	**Oil to Gas**	1.3	1.7
	New Demand	**Chemical Industry**	0.4	

Transportation & Residential	Conversion	**CNG**	0.5	0.5
		Total Growth (BCM)	9.9	9.9
		Total Demand 2025	20.3	**20.3**

5.4. Natural gas Demand Forecast Table

Table 18 - Demand Forecast Summary

Demand by type of Natural Gas Consumer, in BCM

	Electricity	Cogen & Industry	CNG and Chemical Industry*	Total Demand	Out of which, Coal reduction	Out of which, Palest.
2016	7.1	2.6		**9.7**	1.2	
2017	**7.8**	**2.6**		**10.4**	**1.6**	
2018	8.1	3.0		**11.0**	1.9	
2019	7.3	3.8		**11.1**	1.7	
2020	**8.1**	**3.9**		**12.0**	**2.5**	
2021	9.3	4.2	0.1	**13.5**	3.9	
2022	10.2	4.6	0.2	**15.0**	4.9	
2023	10.8	4.8	0.3	**15.8**	5.4	0.3
2024	11.5	5.0	0.3	**16.8**	5.6	0.8
2025	**12.7**	**5.1**	**0.4**	**18.1**	**6.4**	**1.6**
2026	13.6	5.1	0.4	**19.1**	6.7	1.9
2027	13.8	5.2	0.6	**19.5**	6.7	2.1
2028	14.1	5.2	0.7	**20.0**	6.7	2.2
2029	14.3	5.3	0.9	**20.5**	6.7	2.3
2030	14.5	5.4	1.0	**20.9**	6.7	2.5
2031	14.8	5.4	1.1	**21.3**	6.7	2.6
2032	15.3	5.5	1.1	**21.9**	6.7	2.8
2033	**15.5**	**5.6**	**1.2**	**22.2**	**6.7**	**2.9**
2034	15.9	5.6	1.2	**22.7**	6.7	3.1
2035	16.4	5.7	1.3	**23.3**	6.7	3.2
2036	16.9	5.8	1.3	**24.0**	6.7	3.4
2037	17.3	5.9	1.4	**24.5**	6.7	3.5
2038	17.8	5.9	1.4	**25.1**	6.7	3.7
2039	18.3	6.0	1.5	**25.8**	6.7	3.9
2040	18.7	6.1	1.5	**26.3**	6.7	4.1

*including Palestinian Authority

Source: BDO Forecast

5.5. Comparison to June 2017 Forecast

This report constitutes an update to BDO's Israel Natural Gas Demand forecast which was publicly published on June 2017 (Delek Drilling immediate report and Tamar Petroleum prospectus).

The main developments in Israel's energy sector in the last three years which are accounted for in this updated report include:

- **GDP Growth** - The OECD has revised its long-term GDP growth forecast for Israel from 3.5% per year to 3% per year. Accordingly, our long-term electricity demand growth rate forecast was proportionally adjusted.
- **Coal Reduction** - The current forecast is based on the recent policy decision to completely phase-out coal by the end of 2025. The 2017 report was conducted before the adoption of coal phase-out policy, and although it anticipated the overall trend to phase out coal, it was based on a moderate assumption of only 70% coal reduction.
- **Renewable Energy** – In the recent years, major technological and regulatory changes have resulted in increased PV generation and renewable targets in Israel and worldwide. We have revised upwards our renewable energy share forecast, reaching 25% renewables in 2030 versus about 10% in the July 2017 report (see chapter 4 above).
- **CNG & Chemical Natural gas Demand** – The failure of the government backed ammonia plant tender, more stringent regulatory constraints on Israeli chemical industry, as well as the reduction in global natural gas prices, have all considerably decreased the expected scope of natural gas based chemical industries in Israel. At the same time, progress in electric vehicle technology resulted in an expected shift from CNG based transportation to electric vehicles. Consequently, we have considerably reduced our forecasted natural gas demand for CNG and chemical industries.
- **Electric vehicles** – Technological, regulatory and economic developments in the past three years have increased the prospect of electric vehicle penetration to the Israeli market. The ministry of energy has enacted policy and targets promoting the shift to electric vehicles, including subsidy for charging stations, extended period of reduced import tax for EV's and a declarative goal of 1.4 million electric vehicles in Israel by 2030. Consequently, we have increased our long term forecast of EV penetration in Israel.
- **COVID-19 epidemic** – The COVID-19 epidemic has disrupted economic activity in 2020, significantly reducing electricity and natural gas demand in Israel. We expect

the lasting effect of the epidemic to continue for up to 7 years, resulting in lower GDP levels compared to the pre-epidemic estimate, and hence lower electricity demand (see chapter 2 above).

Table 19 - Comparison to Previous BDO Forecast

Electricity in TWh, Natural Gas in BCM

	BDO June 2017 Forecast*			Current Forecast		
	2019	**2025**	**2030**	**2019**	**2025**	**2030**
Electricity Demand	69.1	87.9	109.4	66.8	81.5	100.4
Gas Demand – electricity & industry	**11.3**	**18.6**	**22.3**	**11.1**	**17.7**	**19.9**
Gas Demand – CNG & chemical	0.2	1.9	2.7	0	0.4	1.0
Total Israel Gas Demand	**11.5**	**20.5**	**25.0**	**11.1**	**18.1**	**20.9**

*Delek Drilling immediate report 21/6/2017

6. Israel’s Natural gas Supply

6.1. Israel Natural Gas Reserves

In the past two decades, the state of Israel has gone through a transformation from a country without any independent energy sources to a producer of natural gas for its entire domestic natural gas consumption. The commercial production from the Leviathan natural gas reservoir which began at the beginning of 2020, and will continue to ramp up to full production during 2020, is the next stage of the energy revolution which will enable Israel to become a substantial exporter of natural gas in the Eastern Mediterranean region.

At present, Israel's natural gas reserves are estimated at 1,060 BCM, 88 times the projected domestic demand in 2020. This level of reserves will be sufficient to supply all domestic consumption as well as for exports in line with the Israeli government's policy.

Israel's proven reserves and contingent resources include the Tamar natural gas field, which began production in March 2013, the Leviathan natural gas field which began production beginning of 2020 and Karish-Tanin field, which is currently in a development stage. The Karish field is expected to begin production in late 2021. In January 2019, the Petroleum Commissioner of Israel approved the development plan for Tamar Southwest discovery, which would access additional natural gas resources through a new well.

Table 20 - Israel Natural Gas Resources Estimate

	Resources (BCM)	Remaining Reserves	Discovered	First Gas	Water Depth (meter)	Category	Operator
Tamar+T-SW	366	302	2009	2013	1,700	2P	Noble
Leviathan	649	646	2010	2019	1,700	2C+2P	Noble
Karish-Tanin + Karish North	99	99	2012-2013 ,2019	2021, 2022	1,750	2C+2P	Energean
Noa+ Mari B	25	0	1999-2000	2004	250-800	2P	Noble
Dalit	8	8	2009	-	1,400	2C	Noble
Shimshon	5	5	2012	-	1,110	2C	AGR/ Isramco
Total	**1,152**	**1,060**					

Source: Israel Ministry of Energy, NSAI, Energean and BDO Analysis

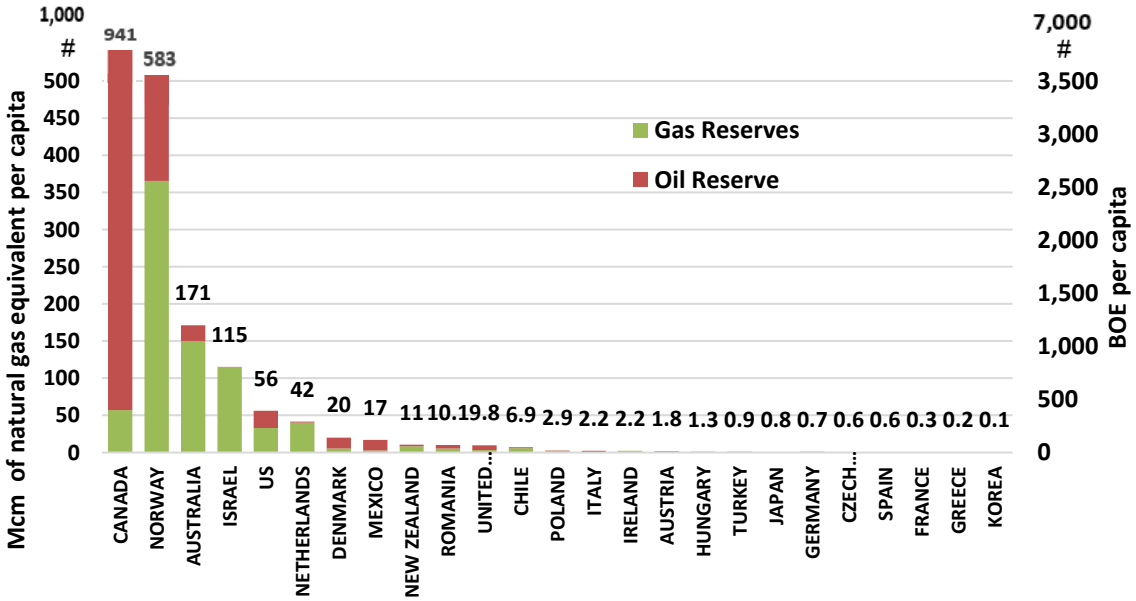
To date six natural gas fields have been discovered in Israeli offshore waters. A seventh (Ishai/Aphrodite) straddles the maritime border with Cyprus and data regarding its size is still being assessed. In November 2019, a PSC with the Government of Cyprus was signed and an exploitation license was issued, which includes a development plan that would increase the delivery of natural gas to regional customers.

The regional supply also includes Gaza-Marine with estimated reserves of 32 BCM. The field was discovered by Israel and transferred to the Palestinian Authority. Gaza-Marine is owned by the Palestinian Investment Fund (PIF) and the Consolidated Contractors Company (CCC). However, the field's location, off the Mediterranean coast of the Hamas controlled Gaza Strip, makes its probable development in the near-term unlikely. In the long-term, we expect that, pending appropriate political conditions, the reservoir will be developed and will serve as a source of supply to the Palestinian market to complement future natural gas imports from Israel.

The natural gas fields in Israel are very significant in relation to the size of the Israeli economy and are expected to lead to a comparative advantage. At present, Israel ranks fourth in the OECD in per capita oil and natural gas reserves. The significant quantities of natural gas discovered in the Tamar and Leviathan fields, and the potential for future natural gas and oil finds, guarantee that domestic electricity production, industry, transport and other economic sectors will have sufficient natural gas supply for many years to come. It is important to note that the use of local and relatively environmentally friendly domestic natural gas represents a significant advantage for further development of local energy-intensive industries.

Figure 40 - Energy Reserves per Capita in OECD

BBOE/Mcm, OECD* countries



*Rest of OECD countries has no proven natural gas reserves
Source: BP Statistical Review of World Energy, CIA Factbook, NSAI and BDO Analysis

An independent report by Beicip-Franlab estimated the potential for undiscovered reserves in the Mesozoic and Tertiary fields at around 2,000 BCM of natural gas and 6.6 billion barrels of oil.

The Israeli Ministry of Energy held in 2017 its first international tender for 24 offshore blocks for exploration. This is part of the ministry's efforts to promote further natural gas development. Holding a licensing tender through a bidding process is a new approach for Israel. Two bids were received as part of the tender for offshore exploration licenses. One was from Energean and the other from a consortium of five Indian companies.

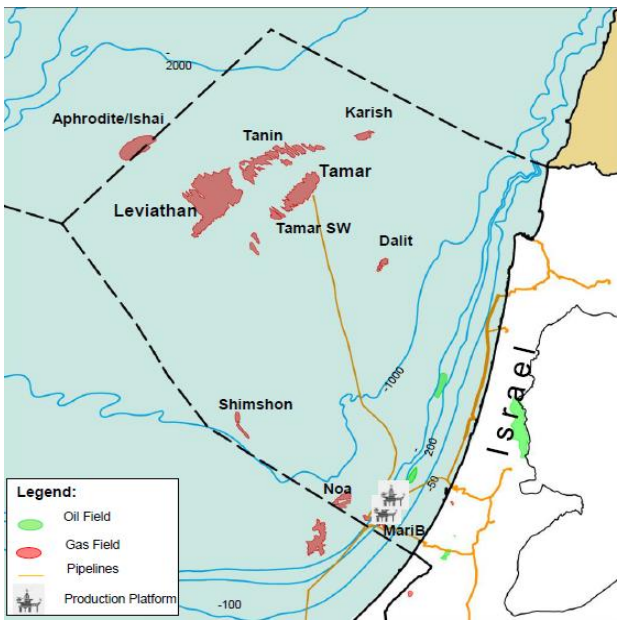
5 international and Israeli companies have submitted proposals to explore for oil and natural gas in 12 new blocks in Israel's Exclusive Economic Zone, out of 19 blocks tendered. The first group is composed of the British companies Cairn and Pharos Energy[6] and the Israeli Limited Partnership Ratio Oil. The second group is composed of Energean and Israel Opportunity.

Until 2012, there was no bidding process and the Energy and Water Resources Ministry basically awarded exploration licenses to applicants based on various criteria. The latest tenders are designed to reopen exploration in Israel's offshore waters after five years of little if any activity.

The realization of this potential for additional natural gas discoveries is important for Israel for both economic and strategic reasons. However, there must be a viable market for the natural gas if exploration is to continue at an acceptable pace.

We believe that it is unlikely that additional large natural gas fields, if discovered, will be developed before 2025-2030 when local demand begins to exceed supply.

Figure 41 - Map of Israel's Natural Gas Discoveries



Source: Ministry of Energ

[6] Previously known as Soco International

Disclaimer

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Addendum 2 - A market review report for Egypt and Jordan prepared by Wood Mackenzie Ltd.

Wood Mackenzie
A Verisk Business

July, 2020

Leviathan Export Markets

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Background and introduction

Delek Drilling Limited Partnership (“Delek”) is refinancing lending associated with its Leviathan investment. The Leviathan gas field came on stream in December 2019, supplying gas to the domestic Israeli market, Jordan and Egypt. Wood Mackenzie Limited (“Wood Mackenzie”) has been engaged to act as Independent Gas Market Consultant to potential lenders in connection with Leviathan and to prepare a Gas Market Report (“Report”) focused on Leviathan’s export markets. The Report was prepared using Wood Mackenzie's latest published data as of June 2020.

Executive Summary

The Leviathan gas field was discovered in deepwater offshore Israel in 2010. With 22.9 tcf (649[1] bcm) of recoverable lean sweet natural gas, it is a world scale reservoir. Operated by US independent Noble Energy[2] and partnered by the Israeli independent Delek Drilling (Delek), Leviathan came onstream in December 2019.

The first phase of production, Phase 1A, has a capacity of 12 bcmpa and routes gas through the Israel Natural Gas Lines (INGL) national transmission system for onward sale to market. Nearly 80% of Phase 1A production capacity is contracted to supply customers in Israel, Egypt and Jordan under long term agreements. Subsequent phases are planned to expand production to 16 bcmpa (DSMX) and to 21 bcmpa (Phase 1B). There is also an option to increase production to 24 bcmpa.

Expansion timing and phasing will depend on availability of market for the gas. Multiple gas market options are being explored for feasibility by the Leviathan partners, proximate and remote. The overall picture is positive for Leviathan as it operates in the east Mediterranean market, which is structurally short of gas supply. Consequently we expect Leviathan to focus on proximate markets, the domestic Israeli market and neighbouring markets, rather than supply more remote markets by pipe such as Turkey/Europe or develop floating LNG facilities.

Egypt is the largest market in the region. Domestic demand for gas was 62 bcm in 2019 and we forecast growth to plateau at 76-79 bcmpa from 2030. In addition there is existing liquefaction capacity for a further 19.6 bcm of feedgas for LNG exports. Leviathan supply to Egypt is contracted to ramp up to 4.7 bcmpa from 2023, however there is a surplus of gas in Egypt which will constrain delivery to contracted take-or-pay levels through this period. Thereafter we expect Egypt to be in gas deficit, facing steep decline of legacy resource and limited indigenous supply availability. This will present multiple new supply opportunities for Leviathan, including sales through the two existing LNG facilities (ELNG/SEGAS). We forecast new sales from Leviathan to Egypt, in addition to existing contracted volumes, of 4 bcm in 2026, increasing to 6 bcmpa from 2027.

Leviathan is already contracted to supply 3.1 bcmpa to Jordan over the long term with an option for a further 0.5 bcmpa. With a market of only 4-5 bcmpa to 2040, Jordan is likely to turn to supply from Egypt or LNG for some diversity, limiting the upside available to Leviathan. But from 2025 we estimate up to an additional 0.3 bcmpa through to 2030 will be supplied by Leviathan.

By 2028 we expect Leviathan to be supplying 10.7 bcmpa to Egypt and 3.4 bcmpa to Jordan in addition to volumes to Israel. Over the life of this forecast, to 2040, we forecast Leviathan sales into Egypt will be 148 bcm, 88 bcm more than

[1] Initial recoverable place reserves, excludes gas produced and sold since coming onstream

[2] Post preparation of this report, on 20 July 2020, Chevron announced an agreement to acquire Noble Energy. The transaction has been unanimously approved by the Board of Directors of both companies and is expected to close in Q4 2020

that presently contracted; and into Jordan will be 70 bcm, 25 bcm more than that presently contracted. There is also upside potential for Leviathan to grow production capacity beyond 21 bcmpa post-2030.

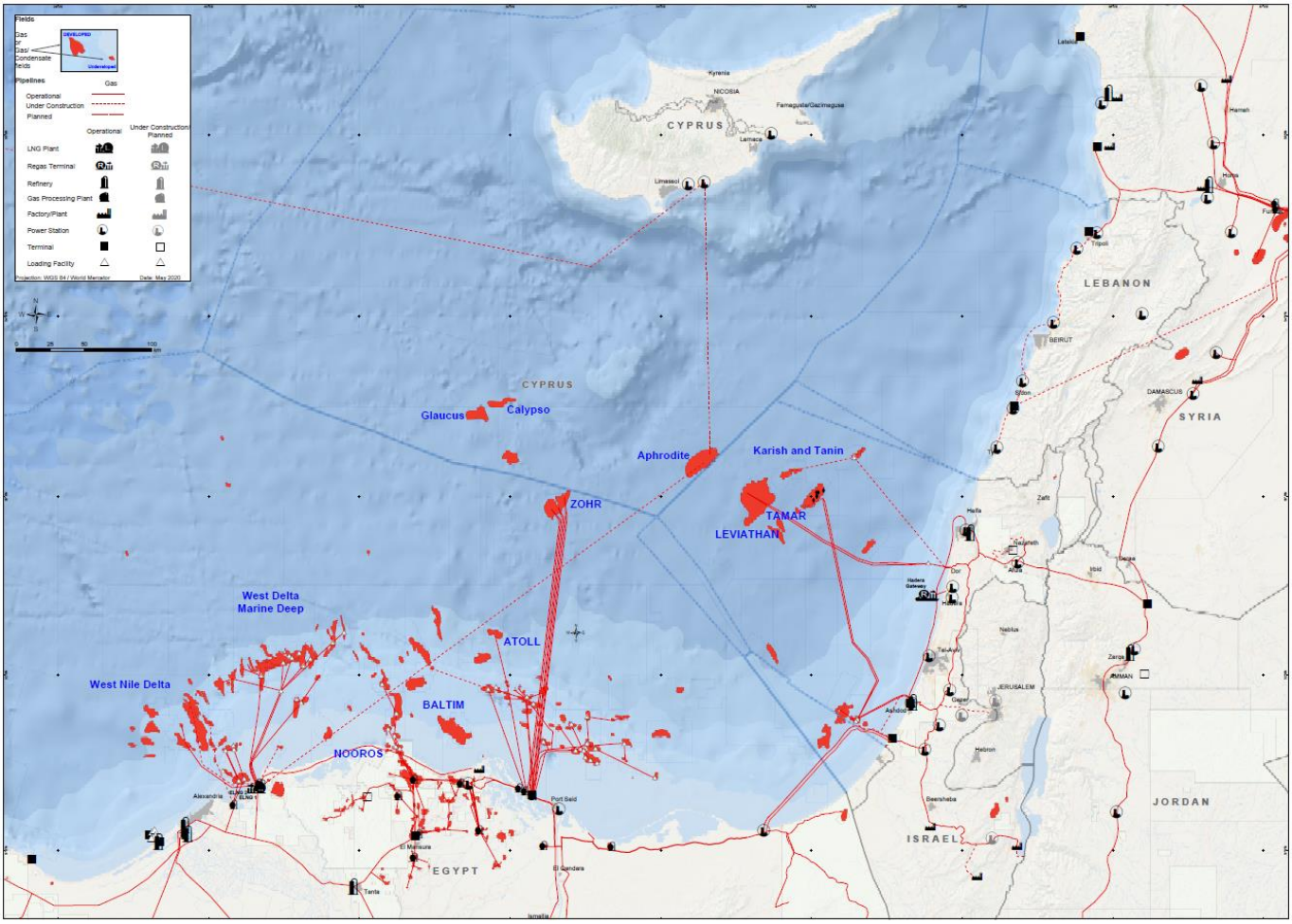
Leviathan gas is contracted to supply customers in Egypt and Jordan under pricing terms linked to Brent. Wood Mackenzie estimates contract floor prices of US$4.70/mcf for supply to Egypt and US$5.80/mcf to Jordan. These arrangements ensure resilience in an environment of low oil and global gas prices. With the scale of the resource ensuring breakeven costs better than rival projects, Leviathan should be well placed to ensure a margin for future supply to these markets, including sales into LNG capacity in Egypt.

East Mediterranean regional overview

Overview

The East Mediterranean has emerged as one of the world's most exciting gas plays over the last decade. First offshore discoveries, Yam Tethys (Noa and Mari-B), in 1999-2000 (0.9 tcf, 24 bcm), revealed a new gas province. Following the farm-in of Noble Energy into Delek's acreage, the Tamar (12.9 tcf, 366 bcm) discovery in 2009 heralded Israel's potential for deepwater gas. This was confirmed by the discovery of Leviathan (22.9 tcf, 649 bcm) in 2010. Israel has since added more offshore discoveries – Karish (1.5 tcf, 42 bcm), Karish North (1.2 tcf, 34 bcm), Tamar South West (1.0 tcf, 28 bcm) and Tanin (0.8 tcf, 23 bcm). Attention moved to Egypt and its Zohr discovery (21 tcf, 595 bcm) made in 2015 by Eni. Cyprus has since demonstrated that prolific gas plays extend into its maritime territory including Aphrodite (3.5 tcf, 99 bcm), Calypso (2.5 tcf, 71 bcm) and Glaucus (4.6 tcf, 130 bcm), with further high-impact exploration wells planned. Exploration in Lebanon and Turkey is ongoing, but has yet to prove successful.

Figure 1 East Mediterranean map



Source: Wood Mackenzie

Development of many of these discoveries has been fast tracked to meet the energy needs of regional markets. Egypt was already an established gas market with extensive infrastructure able to accept regional gas imports and is now a

circa 65 bcmpa gas market. Meanwhile Israel has been transformed by its gas discoveries into a gas-fuelled energy economy and major regional exporter, set to become a circa 30 bcm gas market over the next 20 years.

The expanding gas resource is now underpinning grand plans for securing access. As the largest regional gas market, Egypt sees itself as the East Mediterranean's gas hub. Leviathan gas started flowing from Israel to Egypt in January 2020. Other proposals for cross border pipelines include Cyprus-Egypt, joint infrastructure development of pipelines between Israel-Cyprus-Egypt, and in the past also Israel-Turkey. In addition, growing gas availability is re-enabling LNG (liquefied natural gas) exports from Egypt through existing liquefaction plants and proposals for new LNG projects, including Floating LNG offshore Israel. Also, an accord was signed by the leaders of Greece, Cyprus, and Israel to align the development of a 1,900 km pipeline from the region to Greece and Italy.

Existing infrastructure, notably gas pipelines and liquefaction facilities, growing gas demand and regional natural gas supply are driving regional developments. Some political tensions such as that between Cyprus and Turkey will likely continue to be disruptive to the region. Political alignment and economic rationale will be key for projects to materialise. The recently established East Mediterranean Gas Forum, with the participation of Egypt, Greece, Cyprus, Jordan, Israel, Italy and the Palestinian Authority, reflects efforts to develop regional cooperation and coordination. Large-scale, low-cost gas resource such as Leviathan will be well placed to play a role in any outcome.

Key players

The region includes a mix of players with a strong commitment to the region and a successful record of developing large-scale international gas projects. The Majors have recently strengthened their positions as key players in Egypt's upstream sector. Eni, BP and Shell operate the country's largest gas developments and half the country's production. They are the most active in exploration and acquired additional East Mediterranean blocks during recent licensing rounds. Eni, Total and Shell are also involved in the country's LNG export facilities. While they do not hold producing assets, ExxonMobil and Chevron also recently acquired exploration acreage offshore Egypt.

In Israel Delek and Noble[3] Energy, equity holders in Leviathan and Tamar, are the key players. Energean is emerging as a competitor, whose influence will grow when Karish comes onstream, expected in 2021. In Cyprus, Delek and Noble Energy are equity holders in Aphrodite, alongside Shell. Eni, Total and ExxonMobil operate the country's other offshore gas discoveries, still undeveloped, and are most active in exploration.

Across the region, governments and government-linked organisations continue to play a key role in tightly controlled markets. They set regulations, influence competition, and in some cases own the gas transportation operator (TSO). In Egypt, the government is practically the single buyer.

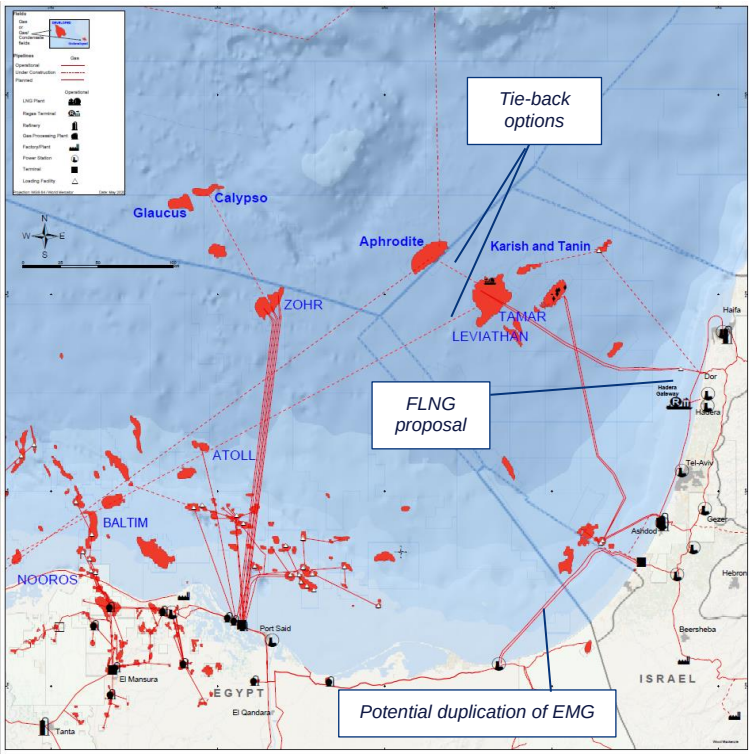
Leviathan in context

Leviathan was the world's largest deepwater gas discovery in 2010. Operated by Noble Energy, the offshore field is wholly located in Israeli waters and holds 649[4] bcm of 2P+2C reserves. Circa 145 bcm is contracted to customers in Israel, Jordan and Egypt, with sales commencing in December 2019. Contracted sales volumes equal about 80% of Phase 1A production capacity to 2034. There is a gas sales and purchase agreement (GSPA) with NEPCO, Jordan's national electricity company, for delivery to Jordan of 45 bcm of gas over 15 years at a plateau level of 3.1 bcmpa. Furthermore, a GSPA was signed with Dolphinus for delivery of gas to Egypt via the EMG pipeline of 60 bcm of gas over 15 years at a plateau level of 4.7 bcmpa. The Leviathan partners also hold contracts with multiple Israeli buyers for over 40 bcm of gas over 20 years at a plateau level of some 2 bcmpa through the long term.

[3] Post preparation of this report, on 20 July 2020, Chevron announced an agreement to acquire Noble Energy. The transaction has been unanimously approved by the Board of Directors of both companies and is expected to close in Q4 2020

[4] Initial recoverable reserves, excludes gas produced and sold since coming onstream

Figure 2 Leviathan and proposed/operating infrastructure



Source: Wood Mackenzie

Table 1 Leviathan current participation

Company	(%)
Delek Drilling	45.34
Noble Energy	39.66*
Ratio Oil Exploration	15.00
Total	100.00

* Operator

The Leviathan partners have announced a phased plan of development for Leviathan gas:

- **Phase 1A:** Development of 12 bcmpa of production capacity, which was completed in December 2019. Gas is routed through dual ~120 km pipelines from the manifold to an offshore platform located c.10 km from shore, to landfall and the entry point of the Israel Natural Gas Lines (INGL) national transmission system.

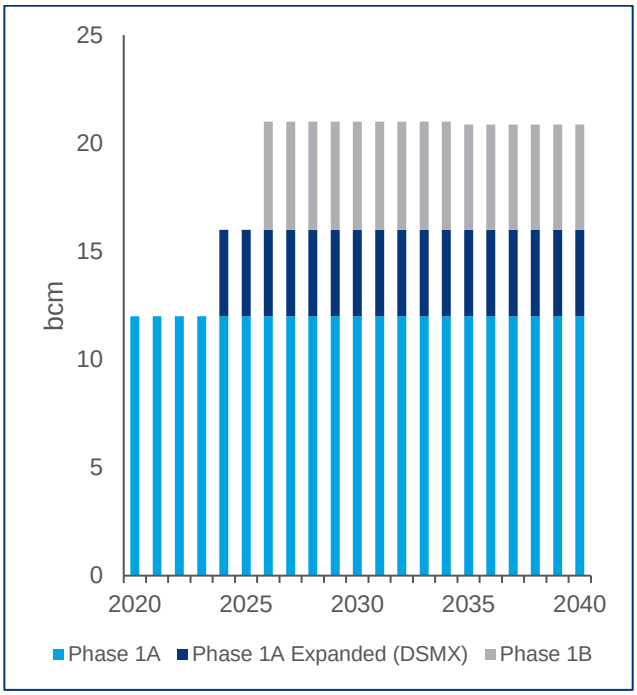
  The INGL network will have to be expanded to accommodate the ramp of Israeli gas to Egypt over the next few years. Noble Energy is understood to be negotiating with INGL on behalf of the Leviathan and Tamar partners, aiming to execute firm capacity gas transfer agreement for Egypt export volumes. Wood Mackenzie understands that it is intended for INGL to construct the required infrastructure, and the associated costs to be allocated between the exporters and INGL.

  A 50 km onshore pipeline routes gas for onward sale to Jordan (operated by INGL). Exports to Egypt are routed through the 90 km offshore East Mediterranean Gas (EMG) pipeline (EMED 39%, East Gas 10%, PTT 25%, EGPC 9%, MGPC 17%), partially owned by Delek and Noble through their holdings in EMED (Delek 25%, Noble 25%, East Gas 50%).

- **Phase 1A Expanded (DSMX):** An expansion of 4 bcmpa to 16 bcmpa of production capacity, including the addition of a third pipeline. The timing of this will depend on gas marketing efforts. We show a 2024 start-up in the chart below.

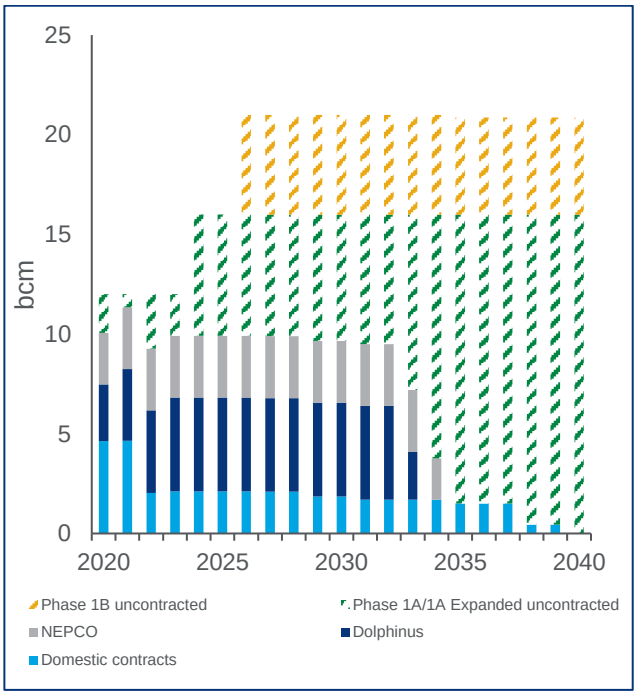
- **Phase 1B:** Development of an additional 5 bcm, to a total production capacity of 21 bcmpa, timing subject to gas marketing. We show a 2026 start-up in the chart below. There are also plans for a further increase to 24 bcmpa.

Figure 3 Leviathan production capacity by development phase



Source: Wood Mackenzie

Figure 4 Leviathan contracted* gas and uncontracted production capacity



**Wood Mackenzie estimates of contracted volumes*

There are multiple options for Leviathan to monetise the remaining uncontracted gas. These include:

- Domestic Israel market via the existing connection to the INGL gas network, with additional offshore pipeline installed – not addressed in this report;
- Jordan market using similar and additional infrastructure routings;
- Egypt using additional pipeline capacity in EMG. EMG pipeline capacity is exclusively reserved for EMED, which is partially owned by Delek and Noble. The current Gas Transportation Agreement allocates capacity for 5 bcmpa of gas to Leviathan and 2 bcmpa to Tamar from 2023 for gas already contracted. Wood Mackenzie understands the capacity of the pipeline could be expanded to 9 bcmpa with additional compression providing a further 2 bcmpa of capacity.
- Egypt using new pipelines direct from Israel, notably a new circa 360 km pipeline from Leviathan to the ELNG facility or to the SEGAS liquefaction facility at Damietta.
- Egypt using new pipelines in a joint midstream development with Cyprus. The Cypriot Aphrodite field, 35 km north west of Leviathan, is being promoted to route between 5.5-7.5 bcmpa of gas to Egypt's ELNG facility. The two fields could be developed and routed through a common 250 km dedicated pipeline to shore, before onshore transfer to ELNG. Noble and Delek are equity holders in both Aphrodite and Leviathan;
- Development of a FLNG facility offshore Israel to access global gas markets.
- Europe, underpinning the proposed 1,900 km and 10 bcmpa pipeline to Greece and Italy;
- A 550 km offshore pipeline to Turkey, directing East Med gas to the Turkish market and possibly also to the European market

With over 500 bcm of uncontracted Leviathan gas available, the optimal solution is likely to be a combination of these options.

Macroeconomic overview – Egypt, Jordan

Covid-19 will impact the Egyptian economy. Wood Mackenzie forecasts GDP will fall from the 5.7% growth enjoyed in 2019 but will remain positive at 2.4% in 2020, supported by the IMF's Rapid Financing Instrument (RFI) and a Stand-By Arrangement (SBA). Longer term, we anticipate Egypt's economy to return to the strong growth experienced in the past years, averaging 3.8% in the 2021-2040 period, supported by economic reforms, increased trade and domestic consumption, amplified by a population expected to grow by 40% and reaching 140 million in 2040.

The Jordan economy has been weak in recent years, hampered by regional conflicts and the hosting of Syrian refugees. However, in March 2020 Jordan agreed to a 4-year program with the IMF, ensuring access to US$ 1.3 billion to support the country's economic and financial reform program. This is expected to limit the impact of Covid-19 on growth in 2020, with GPD expected to contract by 0.8%, and support long term growth of 2.7% in the 2021-2040 period.

Figure 5 GDP growth

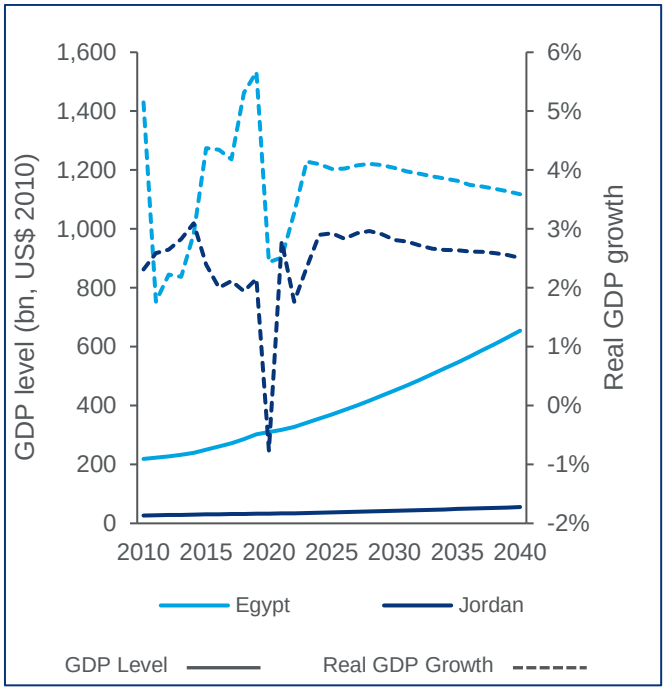
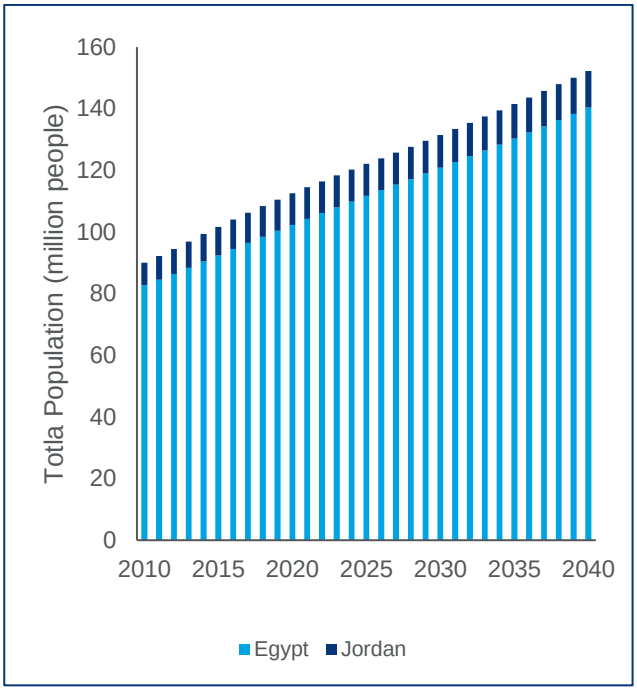


Figure 6 Population growth



Source: World Bank, UN World Population Prospects, Thomson Reuters Datastream, Wood Mackenzie

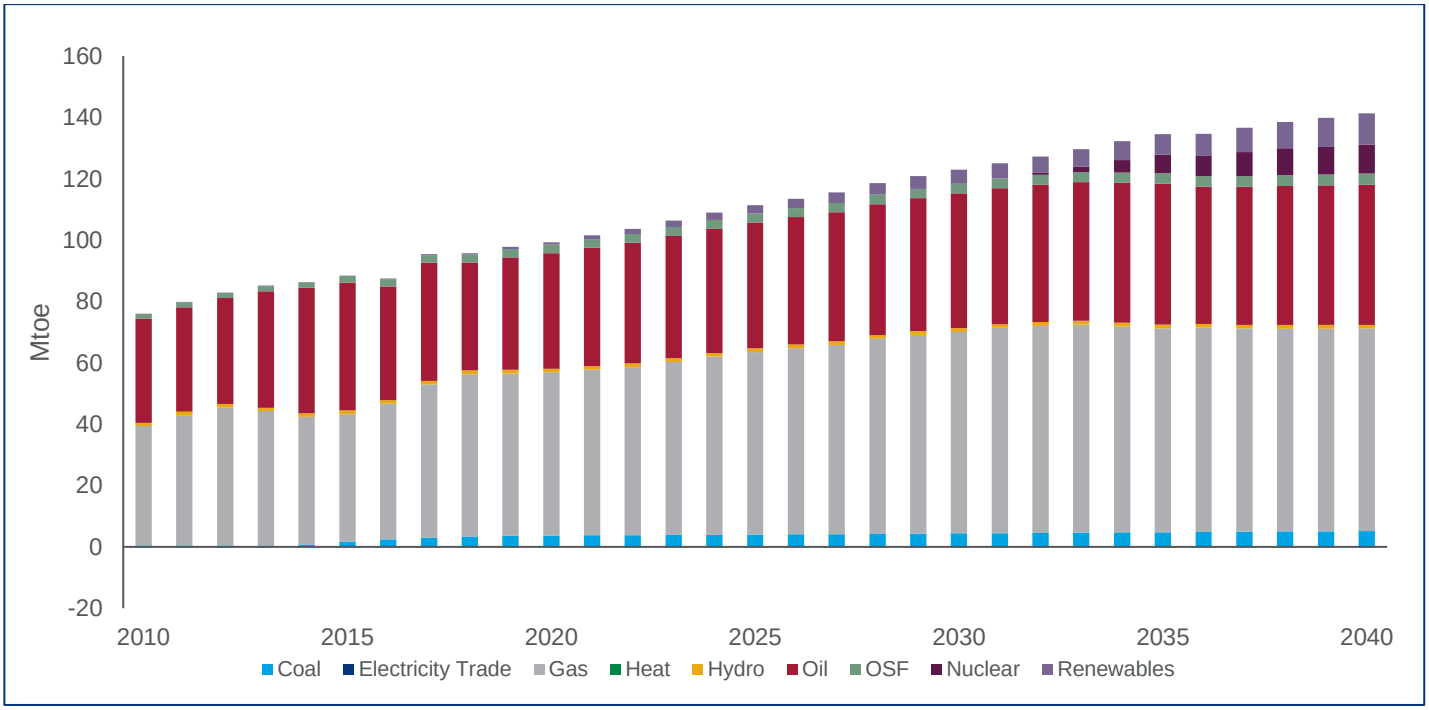
Egypt market overview

Energy policy and demand

The Egyptian government has ambitious plans to diversify its power mix. The plan includes renewable development, nuclear for the longer term, and interconnection systems with neighbouring countries. The Government has set a target of 20% renewable power generation by 2022 and 42% by 2035 and has recently signed an agreement with Russia to develop a 4.8 GW nuclear plant. Natural gas is the front runner in Egypt's latest plans to increase power production capabilities and diversify power generation with 14.4 GW of state of the art CCGT's (combined cycle gas turbines) online since 2017.

Egypt is also committed to deep cuts in energy subsidies as part of economic reforms linked to a three-year, $12 billion IMF loan program, which includes growing access to energy, including gas, to millions of households.

Figure 7 Egypt total primary energy demand by fuel



Source: Wood Mackenzie

Gas demand outlook

Egypt experienced strong recovery in gas demand (averaging 6% annual growth between 2015 to 2018) after years of local supply curtailments, supported by increased domestic supply availability.

However, gas demand growth slowed in 2019, coincident with the flattening of power demand, the result of four years of electricity subsidy removal, and we estimate it remained flat at 62 bcm. We forecast the combination of further electricity subsidy removal and slower post Covid-19 economic growth will impact gas demand growth in power until 2023, forecasting total domestic gas demand to remain at 62 bcm in 2020, increasing to 63 bcm in 2021.

Nevertheless, the prognosis for long term electricity demand growth is good, from 200 TWh in 2019 to 332 TWh in 2040, supported by increased GDP per capita (from US$3,012 in 2019 to US$4,663 in 2040) and a swelling population (from 100 million in 2019 to 140 million in 2040). Currently, gas-fired electricity accounts for 85% of total power demand, but this will reduce as Egypt diversifies its power mix. The first phase of the 1.8 GW Benban solar park in Aswan, one of the largest in the world, was opened last year, connecting six solar plants with a combined capacity of 390 MW to the grid. We forecast the share of renewables to grow from 4% of the power mix in 2019 to 36% by 2040, assuming more government incentives are implemented. We assume the first nuclear plant will start in 2032, six years behind government target, with nuclear contributing 10.8% of the power mix by 2040. Overall, we estimate gas's share of the power mix to reduce to 46% by 2040, decreasing from 37.7 bcm in 2019 to 34.2 bcm in 2040.

Industrial gas demand will also slow down through to 2022 because of the economic impact of Covid-19. However, additional industrial capacity associated with strong economic growth will result in industrial gas demand increasing from

19 bcm in 2019 to 34 bcm in 2040.

Gas demand in residential/commercial reached 2.8 bcm in 2019, an 11% increase compared to 2018 as the total number of residential consumers connected reached 10 million in June 2019 (around 40% of households). This figure will continue to grow as the government implements its national plan to provide widespread access to energy, reaching 6.1 bcm by 2040.

Overall, we anticipate total gas demand to grow at an average of 2% between 2020 and 2030, reaching 76 bcm in 2030, and a peak gas demand of 79 bcm in 2033, before plateauing as a consequence of increased nuclear and renewable penetration in the power sector.

This demand forecast is for domestic demand only. It doesn't include feed gas demand for Egypt's two liquefaction facilities, ELNG and SEGAS. In aggregate the two liquefaction plants can accommodate 19.6 bcmpa of feedgas for LNG exports.

Figure 8 Egypt electricity Output by fuel

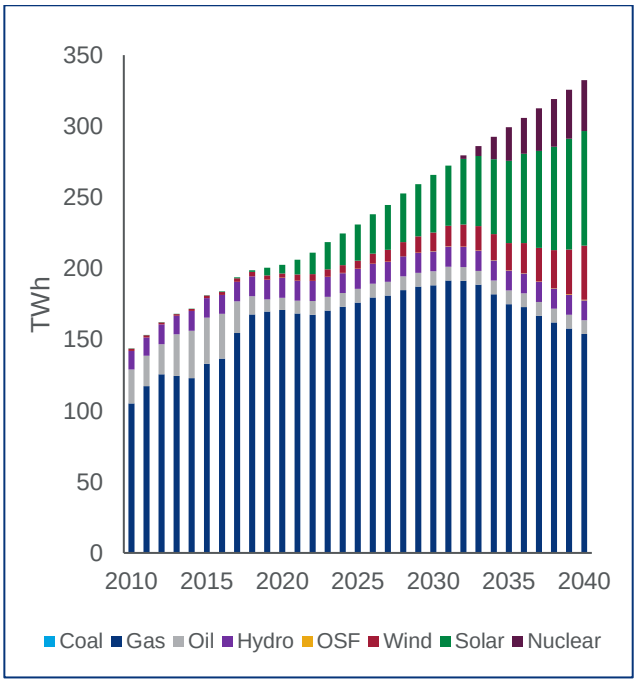
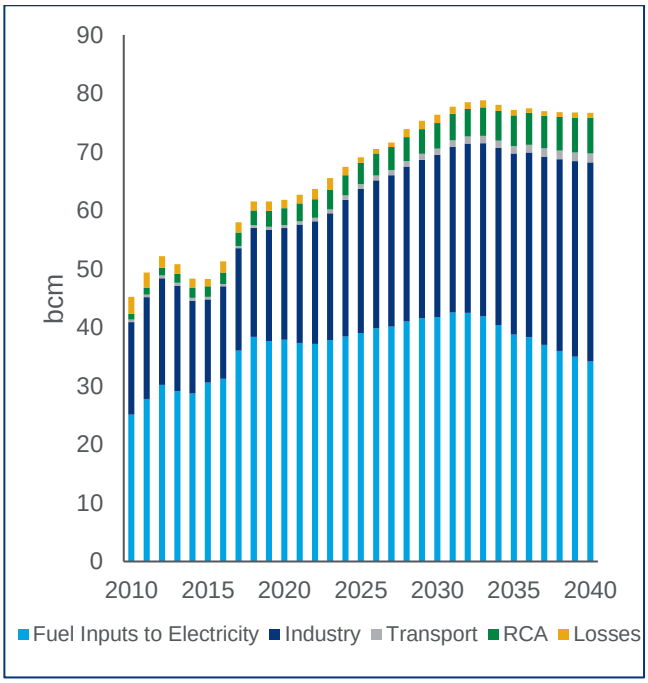


Figure 9 Egypt total gas demand by sector



Source: Wood Mackenzie

Committed and competing gas supply

After several years of indigenous gas decline and a growing reliance on imported LNG, Egypt's supply picture improved with the discovery of Zohr (Eni 50%, others 50%) in 2015. Zohr (21 tcf) came onstream in December 2017 and reached its plateau production capacity of 32 bcmpa in late 2019.

This has coincided with several other major Egyptian gas developments (West Nile Delta (5 tcf, 142 bcm), Nooros (2 tcf, 57 bcm), Atoll (1.5 tcf, 42 bcm)) coming onstream over the last few years. Egypt's indigenous gas supply is expected to grow further, with the Raven field (BP 83%, Wintershall DEA 17%) adding potentially 8 bcmpa at peak. Technical issues have delayed the start-up of Raven and we now assume it will be online in 2021.

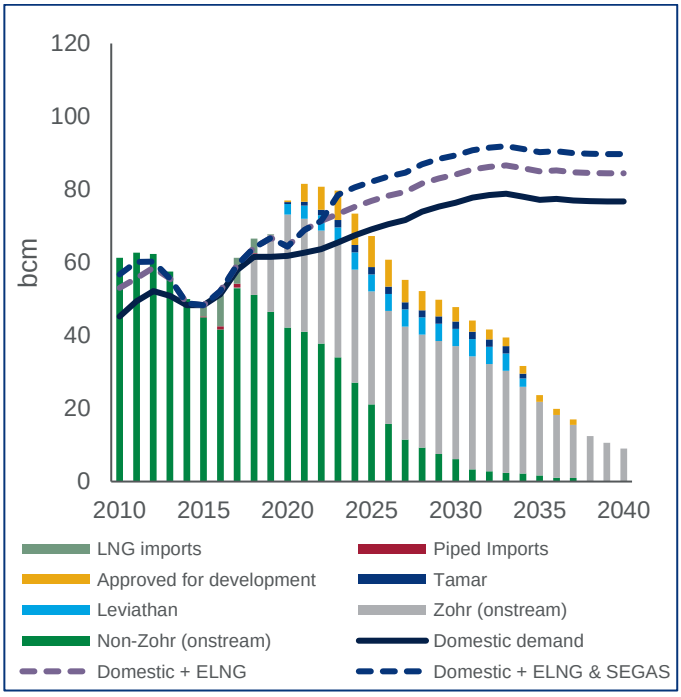
Egypt has also been strategically securing access to pipe gas imports, specifically Israeli gas through the EMG pipeline. The contracted combination of up to 4.7 bcmpa of Leviathan gas and 2 bcmpa of Tamar gas is contracted to plateau in 2023.

The improving supply balance situation has allowed Egypt to reduce LNG imports, to only 0.2 bcm in 2019 with zero expected in 2020. At the same time Egypt has resumed LNG exports through the ELNG facility. We estimate Egypt exported 3.2 Mt of LNG in 2019, requiring 5.2 bcm of feedgas. A corporate agreement to restart the mothballed SEGAS facility has been under discussion but has yet to be concluded. We assume an agreement is reached whereby SEGAS can be operational from 2023.

However, LNG output from Egypt will not ramp up until international LNG market prices recover. We assume ELNG will operate at reduced capacity in 2020 (23%), 2021 (53%), and 2022 (66%). Based on these assumptions, we forecast LNG exports to be 1.6 Mt in 2020, 3.8 Mt in 2021 and 4.8 Mt in 2022, requiring 2.6 bcm, 6.2 bcm and 7.8 bcm of feedgas respectively. From 2023 onwards, we assume that both ELNG and SEGAS LNG will be available to operate at an annualized 66% capacity representing 13 bcmpa of feed gas requirement, when gas is available. Based on this, we expect the Egypt gas surplus to persist through 2023, restricting the effective market for gas sales.

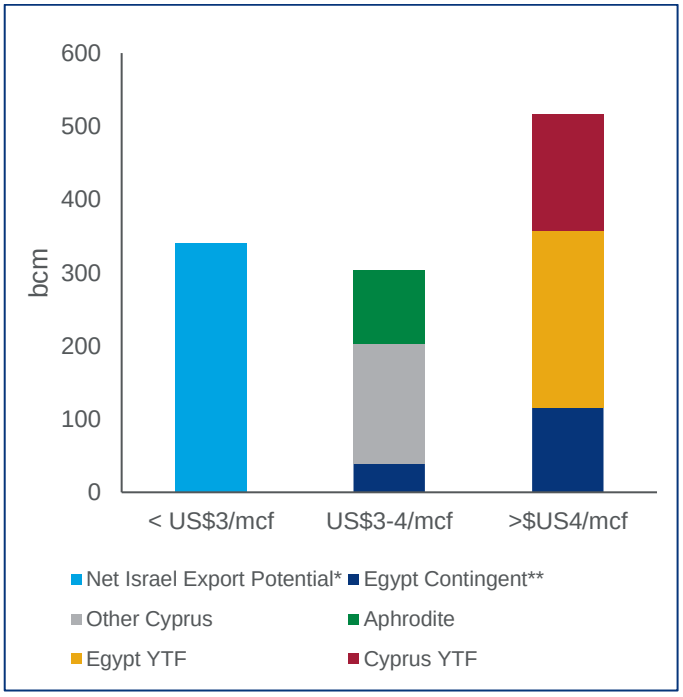
As a result, Zohr's output is being constrained and production from some other fields is being curtailed. Offtake flexibility in the Dolphinus contract from Israel can also be deployed to slow ramp up of imports from Leviathan and Tamar. Contract terms enable deferral of some volumes. Wood Mackenzie estimates take-or-pay levels at 50% of the Annual Contracted Quantity (ACQ) in a year in which the average Brent price is lower than US$50/bbl and 85% of ACQ in higher oil price environments. We forecast Brent prices to be less than US$50/bbl in 2020 and 2021. So, with Egypt's gas surplus expected to continue through 2023 we forecast Leviathan offtake to be 50%, 50%, 85%, 85% in each of the years from 2020 to 2023, then at full ACQ volumes thereafter until all contracted volumes are delivered.

Figure 10 Egypt committed gas supply/demand gap



Source: Wood Mackenzie

Figure 11 Breakeven cost and resource size of uncontracted competing options



Breakeven cost based on economics of incremental development capex, 10% IRR, January 2020
**Wood Mackenzie estimate of uncontracted Israeli gas that can be exported*
***Includes Justified for Development*

The likelihood is that Egypt will face another gas deficit in the medium term. From 2024 we forecast a sharp decline in legacy indigenous gas, and a widening gap between committed supply and demand thereafter. There is some existing Egyptian resource which could be developed to fill this gap, such as shallow water Egyptian gas fields, discovered mainly by Eni and BP. Volumes from these "contingent" fields (Tennin, Meret, Salmon) could supply up to 13 bcmpa. At market delivered breakeven costs in excess of US$4/mcf for some of this gas, commensurate gas pricing agreements will be required before gas producers can justify development. We assume this gas supplies the market by 2025, but anticipate the volumes will be insufficient to avoid a tightening market. Accordingly, we forecast insufficient supply to serve both the capacity of ELNG and SEGAS in the 2024/25 period. Further, there is a risk that delays to agreement on appropriate commercial terms on the contingent fields could postpone development, making the market tighter.

Filling the growing supply-demand gap in Egypt from 2025 will require multiple new gas sources, indigenous and imported. New gas reserve additions through exploration may be added in Egypt. While Egypt's post-Zohr exploration record has disappointed, the Majors have been lining up to acquire additional acreage in the East Mediterranean. The next wave of exploration will also focus on the frontier Red Sea and Herodotus Basins. There are large uncertainties on how much volumes these Basins will deliver, and on gas commerciality. We estimate 14.6 bcmpa of commercial yet to find gas being developed by 2030 and 22 bcmpa by 2040 finding its way into Egypt's supply mix, but this is uncertain.

This still leaves a supply gap (demand *less* committed *less* contingent *less* yet-to-find) of 8 bcm in 2025, 14 bcm in 2030 and 54 bcm in 2040. This will need to be met by additional imported sources. Egypt could maximise the capacity of the existing EMG pipeline, enabling an additional 2 bcmpa of gas from Leviathan in a 2025 timeframe. But, given its growing import requirements and its ambitions to become an energy hub, the development of major new import pipelines is likely to be favoured. Its key choice is whether to support a pipeline routing low cost gas direct from Leviathan, to support development of the more expensive Aphrodite (Shell 35%, Noble 35%, Delek 30%) field, capable of supplying 6.5 bcmpa for 15 years, or to support a combined Aphrodite/Leviathan concept which may result in some pipe cost savings. We believe there is enough market to support gas from Aphrodite and 6 bcm of new gas from Leviathan, with production ramping up from 2026.

Development of other large discoveries in Cyprus are less advanced and could depend on ongoing exploration campaigns. For now, the Calypso field (Eni 50%, Total 50%) could backfill Eni's nearby Zohr infrastructure upon depletion, likely in 2034, with 4.7 bcmpa. Glaucus (ExxonMobil 60%, QP 40%), capable of supplying 6 bcmpa, could supply Egypt from 2030, but a plan for LNG exports via Cyprus remains an option under consideration. New exploration success in Cyprus is also expected to grow the reserve options to Egypt – we estimate a further 20 bcm of supply by 2040, although still uncertain.

Figure 12 Egypt production potential by source

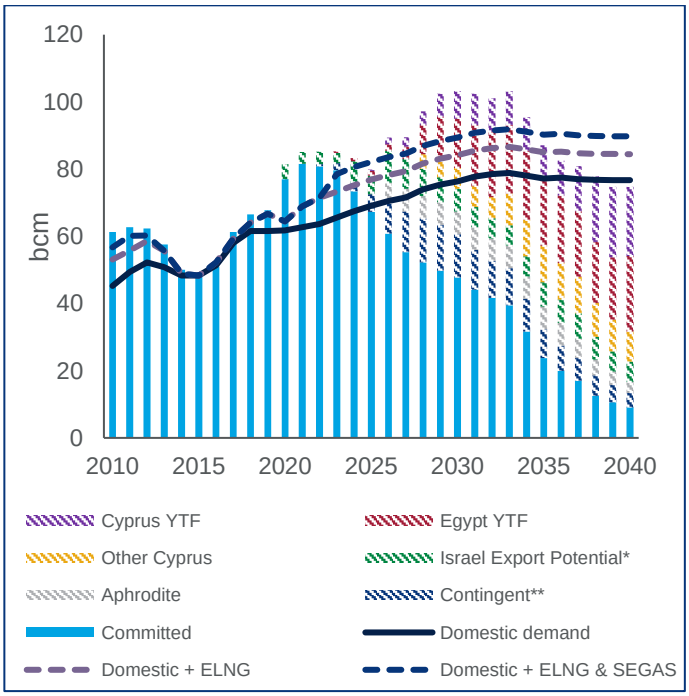
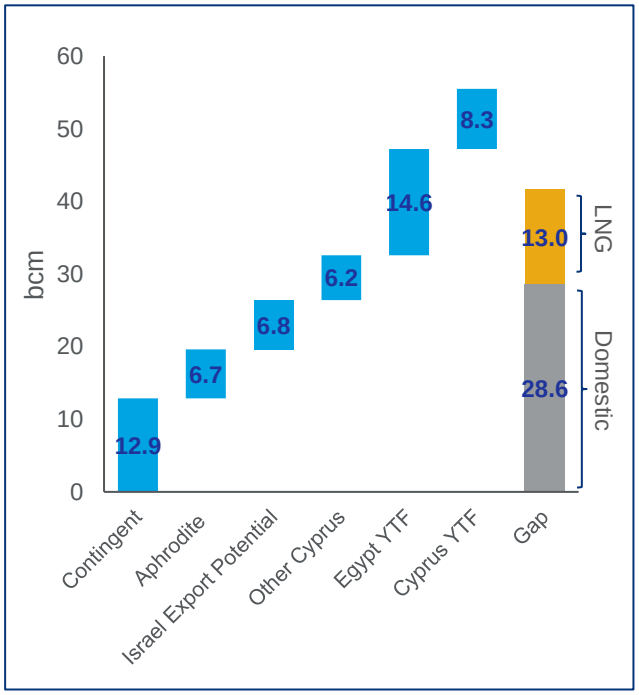


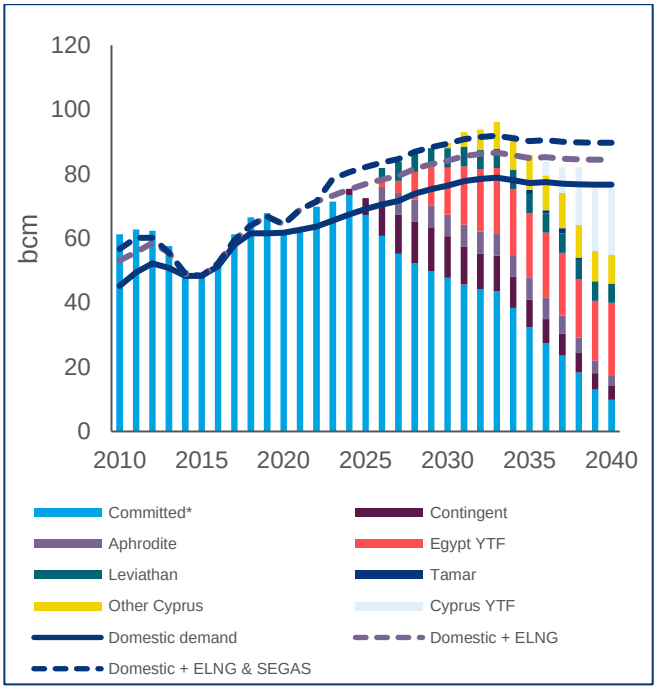
Figure 13 Egypt uncommitted demand gap and backfill options, 2030



Committed supply includes contracted gas from Israel, from Leviathan and Tamar,
**Excludes Israeli gas expected to supply Jordan and Israel*
***Includes Justified for Development*
Source: Wood Mackenzie

Implications for Leviathan

Figure 14 Egypt supply balance forecast



Committed supply includes contracted gas from Israel, from Leviathan and Tamar at our reduced offtake level
**Includes production curtailment from Zohr, Non-Zohr fields and Dolphinus gas due to excess supply between 2020 - 2023*
Source: Wood Mackenzie

We estimate Egypt's domestic gas production was 67.6 bcm in 2019. We anticipate a gas surplus causing gas production to reduce to 61 bcm in 2020, remaining flat at 61 bcm in 2021.

The near-term supply surplus in Egypt may also restrict Leviathan volumes into Dolphinus. We assume deliveries of 1.43 bcm in 2020 and 1.8 bcm in 2021 consistent with the low Brent 50% take-or-pay level. In 2022 and 2023 we assume 3.52 bcm and 4 bcm, consistent with the 85% take-or-pay level. Should there be an earlier tightening of the Egypt market, these volumes could increase to ACQ volumes of 4.14 bcm and 4.7 bcm. From 2024 we expect Dolphinus offtake at ACQ of 4.7 bcmpa with the contract duration extended to accommodate make-up volumes.

There is an opportunity for more Leviathan gas into Egypt through expanded EMG capacity in a 2025 timeframe. This could enable a further 2 bcm of Leviathan sales on top of Dolphinus offtake. However we see a bigger opportunity for Leviathan to supply some 6 bcmpa to underpin some of the LNG export capacity in Egypt. We forecast new sales from Leviathan of 4 bcm in 2026, increasing to 6 bcmpa from 2027. This could be with Aphrodite, or on its own.

Should Leviathan instead focus on the domestic Egyptian market, it will likely need to wait until post 2030 for sufficient market to materialise. Based on our yet-to-find forecast, this could be as late as 2034. Consequently LNG capacity access appears key to expediting further Leviathan sales into Egypt.

Gas price drivers and trends

The state owned EGAS acts as the country's gas aggregator. It owns and operates the gas transmission system through its subsidiary GASCO, including operating stakes in the country's two LNG plants, and previously administered LNG imports. Alongside EGPC, it participates in the negotiation of gas sale and purchase agreements with upstream suppliers. It aggregates offtake from these producers, managing volumes and selling gas to end users at prices fixed by the government. End user prices vary with residential consumers paying least and industrial consumers paying the highest prices, particularly steel, methanol and cement. Prices paid by industrial customers have been recently decreased because of greater supply availability. While this may stimulate downstream sales, EGAS has to carefully manage its margin - the difference between the price paid to producers and the price charged to users, recognising costs associated with its extensive transmission and distribution system.

Gas market liberalisation is part of broader EU and IMF sponsored economic reforms. In theory, upstream producers with contracts signed post-2013 are now able to sell their profit share gas to end users, and private companies are now able to import LNG and piped gas. However, where buyers and sellers are reliant on EGAS infrastructure for transport, agreement on appropriate tariffs is proving problematic. The additional taxes, some 50%, paid for direct sales risk make these uncompetitive compared to EGAS supply. Consequently producers have been slow to contract directly with customers. Instead upstream producers deliver gas to grid access points for onward transport and sale by EGAS.

The prices paid to upstream producers for gas are typically linked to oil, with floors and ceilings – see Figure 28. Prior to 2010 prices were low, between US$1.50 and US$2.73/mcf. Most onshore developments still receive a flat price of US$2.73/mcf. Onshore gas production presently contributes around 20% of Egypt's gas, but this is declining and will likely make up only 11% by 2025. Following gas shortages, prices paid to producers were improved to encourage undeveloped gas to market. In the West Nile Delta development gas sales agreement floors and ceilings were raised to between $3.09/mcf to $4.22/mcf in 2010, and clauses introduced in 2015 whereby the gas price can be varied should

there be a material variation in capex or reserves. Since then prices have increased further. Wood Mackenzie estimates floor prices have been raised to US$5/mcf in some cases, such as the high pressure/high temperature Atoll development. The floor and ceiling in the Zohr gas sales agreement is understood to be around US$4/mcf and US$6/mcf, with the realised gas price in 2019 at US$5.72/mcf. Wood Mackenzie assumes Leviathan gas supplied to Dolphinus in Egypt delivered into the EGAS system at El Arish is sold at a price with a floor of around US$4.70/mcf and is linked to Brent in arrangements similar to other domestic Egypt pricing deals.

With Egypt presently in a gas surplus, EGAS appears less willing to offer commercial incentives to indigenous suppliers to develop more gas for now, risking delays sanctioning new domestic projects. However with future gas developments offshore with correspondingly high costs, gas prices similar to recent deals with producers (Zohr, Atoll) will be required to encourage backfill of Egypt's declining production. Wood Mackenzie calculates Egypt's landed weighted average cost of gas (WACOG) in 2020 at approximately US$4.10/mcf consistent with a Brent average of US$40/bbl. With the share of gas coming from more expensive developments increasing in the coming years, the WACOG will rise, irrespective of the oil price.

Figure 15 Egypt upstream delivery prices

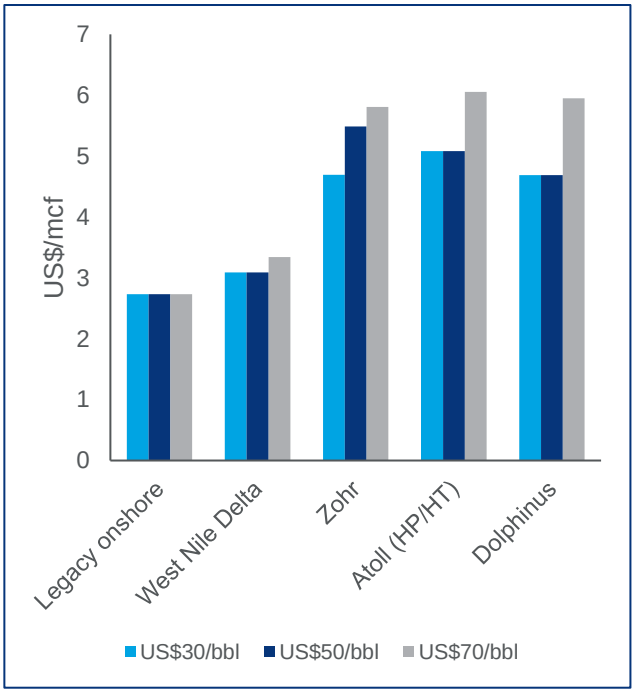
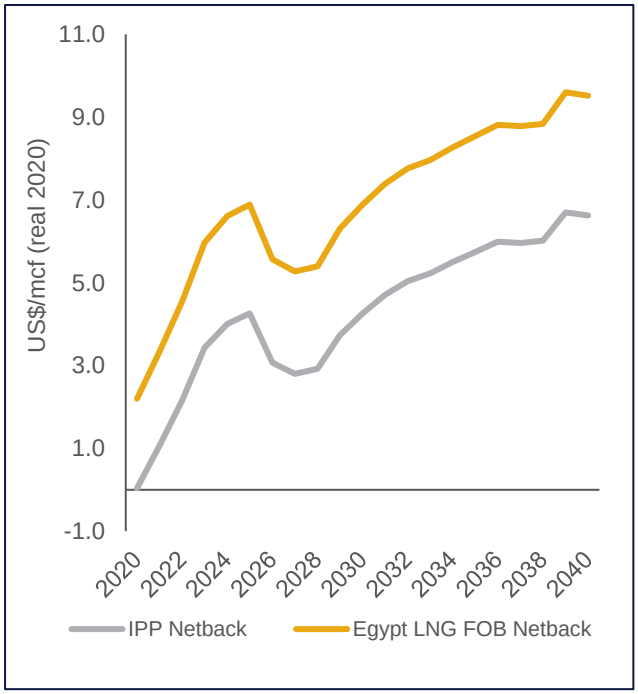


Figure 16 Egypt LNG FOB and IPP netback



Source: Wood Mackenzie and Global Gas Service H2 19

Recent events have highlighted risks associated with the economics of Egyptian LNG exports. In H1 2020 global gas prices have been depressed, with European prices regularly under US$2/mcf. At these price levels the netbacks available to Egyptian LNG exports do not cover feedgas costs at WACOG prices let alone provide a margin for the liquefaction facility. While some committed volumes have been purchased in H1 2020 by Total and Shell, there has been very few discretionary export cargoes from ELNG this year.

Wood Mackenzie expects LNG prices to recover and future Egyptian LNG FOB netbacks to average US$7.66/mcf (real, 2020) from 2026-2040 – see Figure 16. Into-LNG-Plant-Prices (IPP) of feedgas will need to be set at a level to accommodate the cost of a liquefaction tolling fee and losses in the liquefaction process. Adopting the Wood Mackenzie Egypt FOB netback forecast, assuming a US$1.20/mcf real tolling fee, 10% losses in the liquefaction process and a dedicated pipeline, implies gas dedicated to an Egyptian LNG facility needs to be priced into the plant lower than an average of US$5/mcf between 2026-40.

Wood Mackenzie estimates Egypt's future WACOG will likely rise to levels between US$4.90-5.40/mcf by 2030, corresponding to Brent prices in the range US$50-70/bbl. This is higher than the US$5/mcf required, demonstrating the dubious commerciality of Egypt LNG based on gas grid WACOG.

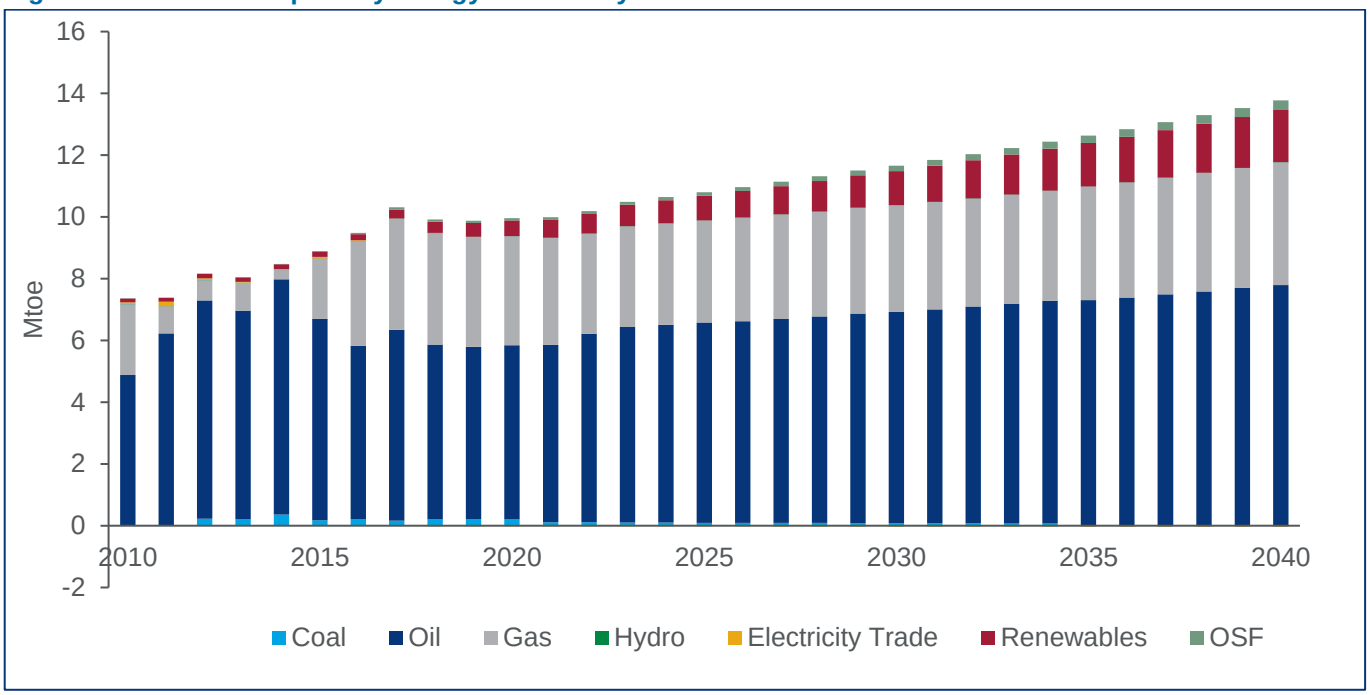
However with a Wood Mackenzie estimated delivered breakeven cost of <US$2.50/mcf into ELNG or SEGAS, Leviathan feedgas routed directly to an Egyptian LNG facility is much lower cost than the US$5/mcf IPP required to be commercial. Consequently there is scope to successfully structure a Leviathan supply agreement for LNG from Egypt with margin for upstream producers, EGAS and LNG offtakers.

Jordan market overview

Energy policy and demand

"Jordan 2025", the government's economic blueprint for Jordan, maps out a plan to boost its economy and achieve energy security. This includes diversifying the energy mix and supporting the Kingdom's drive to reduce its reliance on imports. Jordan currently imports around 95% of its energy requirements, which has widened its fiscal deficit and led to an increase in public debt. The plan has 2020 targets to diversify the electricity mix, including achieving 20% of renewables generation and 15% of oil generation, through its domestic shale oil developments.

Figure 17 Jordan total primary energy demand by fuel



Source: Wood Mackenzie

Gas demand outlook

Total gas demand in Jordan grew on average 20% between 2005 and 2009, before declining from 2010 to 2014 due to intermittent piped gas imports from Egypt. As a response, Jordan started importing LNG in 2015 which, combined with pipeline imports from Israel from 2017, has supported strong demand growth.

A number of factors, however, will limit the opportunity for future gas growth. Jordan's GDP is forecast to fall by 0.8% in 2020, impacting electricity demand. Renewables output is growing in Jordan, limiting the market for gas growth. The government has made significant progress since awarding its first renewable energy tender for 200 MW capacity in 2015, with renewable capacity reaching 1.4 GW in 2019 and renewable generation accounting for 13% of total electricity produced in the same year. Jordan's shale oil fuelled 554 MW plant is due online in 2021 and this is also set to restrict the growth of gas demand, although expected utilization and effective power production levels are uncertain.

Gas demand is presently flat around 4 bcmpa, set to reduce to 3.8 bcmpa in 2022 following the ramp up of the shale oil power plant. Failure to implement successfully could result in some upside to gas in power, of a further 0.5 bcmpa. Generally, in the longer term, gas demand growth in the power sector will remain limited. Electricity consumption will grow strongly, reaching 34.7 TWh in 2040, from 20.9 TWh in 2019, supported by growth in GDP, household wealth and population. However, renewable energy is expected to contribute 48% of the power mix by 2040, limiting gas generation to 40%.

Gas demand in the industrial sector is a key contributor of long-term growth in our forecast. The government is encouraging local industries to shift to gas by providing tax incentives to help reduce operational costs and increase their competitiveness in local and international markets. We anticipate an increase from 0.2 bcm in 2019 to 1.2 bcm in 2040.

Figure 18 Jordan electricity output by fuel

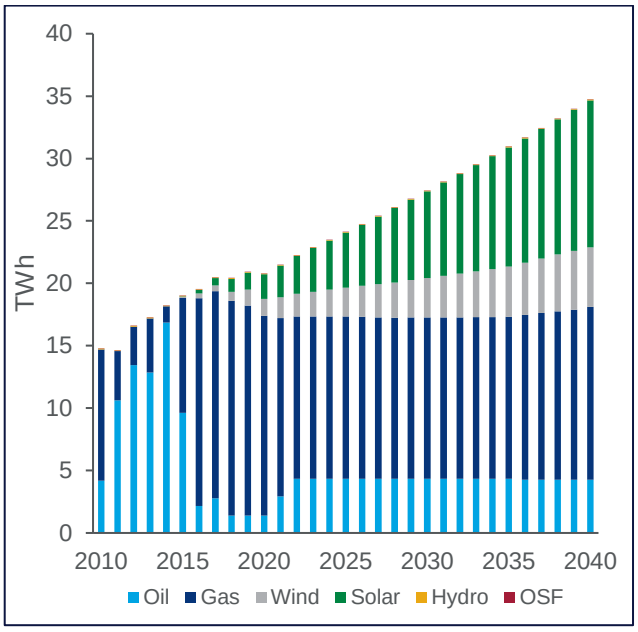
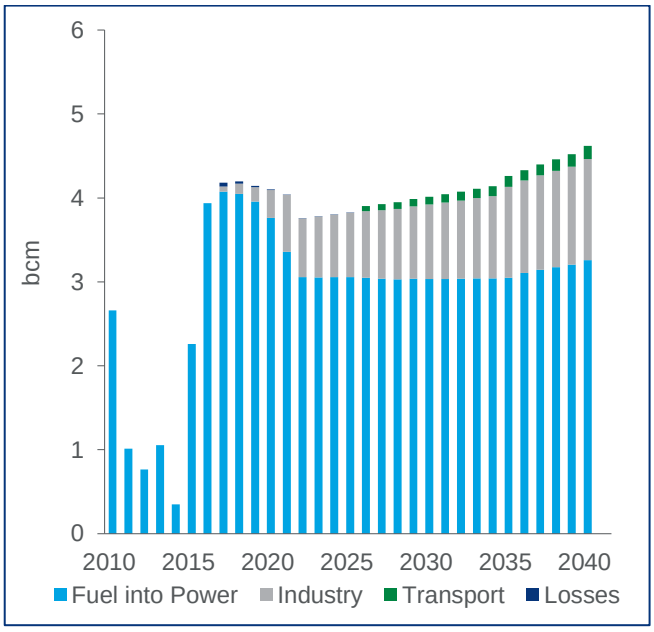


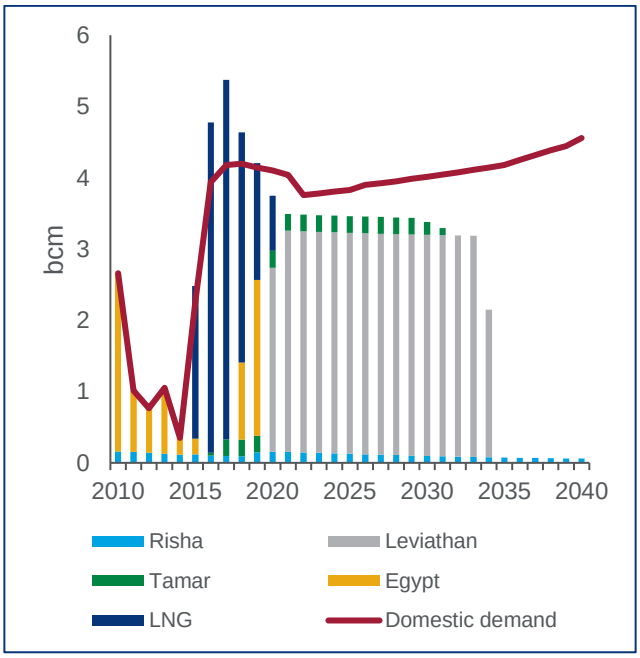
Figure 19 Jordan total gas demand by sector



Source: Wood Mackenzie, OSF – Other Solid Fuels

Committed and competing gas supply

Figure 20 Jordan contracted gas supply by source



Source: Wood Mackenzie

Domestic production from the Risha field in Jordan is negligible (0.1 bcm in 2019 and forecast at 0.2 bcm in 2020 and 2021), leaving the market dependent almost entirely on imports. There are three key sources that can satisfy Jordan's demand: pipe flows from Egypt, pipe flows from Israel, and LNG cargoes. Jordan had been reliant on imports from Egypt through the Arab Gas Pipeline (AGP), but following Egypt's gas shortages and the reduction in export availability Jordan started importing LNG from 2015, and some of the LNG imports were routed (exported) to Egypt. With the present surplus of gas in Egypt, Jordan has resumed pipe imports of Egyptian gas on a flexible basis. Wood Mackenzie estimates that, in 2019, Jordan imported 1.6 bcm of LNG, 2.2 bcm of gas from Egypt and 0.2 bcm of gas from Israel, from Tamar.

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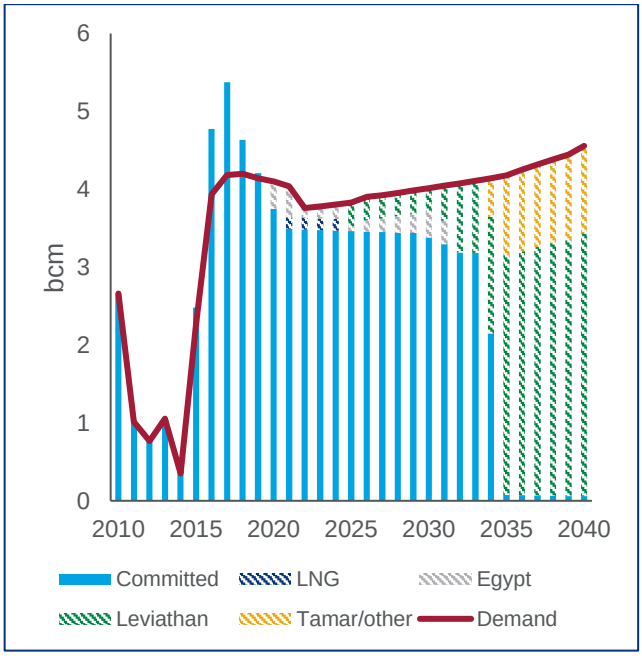
Jordan's import reliance is now switching to Israel. It has contracted small volumes from Tamar (less than 0.2 bcmpa) for the potash and bromine industry near the Dead Sea and 45 bcm from Leviathan to NEPCO, ramping up from 2020 to 3.1 bcmpa supplied from the north with an option to increase to 3.6 bcmpa. Jordan also has an option to retain its LNG FSRU located at Aqaba until 2025.

Implications for Leviathan

Figure 21 Jordan supply balance forecast



Source: Wood Mackenzie, Committed shown is all contracted and includes contracted volumes from Leviathan

We anticipate that Jordan will take all of its Leviathan annual contracted volumes through the contract period, 3.1 bcmpa at plateau. For security of supply we assume Jordan will exercise the option to retain its LNG FSRU until 2025. Through the period to 2025 we expect Jordan will import gas from LNG and Egypt to meets its gas needs on top of contracted gas from Israel. Wood Mackenzie estimates Jordan imports of LNG in 2020 and 21 at 0.8 bcm and 0.2 bcm respectively; and imports of Egypt gas at 0.4 bcm in 2020 and 2021.

From 2025 we expect Jordan to increase its imports of pipe gas from Israel, some via NEPCO through its Leviathan contract option. We estimate up to an additional 0.3 bcmpa through to 2030. But we also expect some imports of pipe gas from Egypt to be retained whenever practicable. We assume Jordan will recontract with Leviathan upon contract expiry and will retain another supplier in its gas supply mix, possibly Tamar.

Gas price drivers and trends

Jordan has historically been reliant on imported oil for power generation and has a history of paying for gas on an oil linked basis. This includes imported LNG priced at relatively high oil priced levels. Contracted gas from Israel, including Leviathan, has also been priced at an oil linked, Brent basis. These contracts include floor prices – in the case of Leviathan to NEPCO Wood Mackenzie estimates this at around US$5.80/mcf. Looking ahead, we expect competition for market between Leviathan, Tamar and Egypt to emerge and some discounting possible for incremental sales. But we anticipate present Leviathan contract pricing levels will hold up well in the long term for additional sales as the LNG import alternative looks more expensive.

Other potential markets

LNG

The Leviathan partnership has stated they are studying the option of an FLNG plant to access the global LNG market. In 2020 Leviathan partners announced they were in a process of a dual FEED competition between Golar and Exmar, for an FLNG facility with a liquefaction capacity ranging from 2.5 to 5.0 mmtpa, which requires between 3.5 to 7.0 bcmpa of feed gas. There are four FLNG plants operating in the global market as of June 2020. The construction time will depend on the solution pursued; Cameroon GoFLNG and now Tortue phase 1 have employed a tolling model where the vessel is operated by Golar LNG, with an average construction time of 3.5 years.

This option could give the Leviathan partners further self-determination for gas monetisation options, broadening the range of market access. A typical small-scale FLNG facility like that promoted by Golar LNG is around 2.5 mmtpa of LNG and would be supplied with around 3.5 bcm of feedgas. Feasibly, multiple such units could be considered. While the netbacks on such an option may be less favourable than proximate pipe options, the time to market could well be quicker.

Europe

There is an opportunity to access the European gas market via a proposed 10 bcmpa connection to the Poseidon pipeline project. This offshore pipeline concept would connect gas resources in the Levantine Basin (Israel and Cyprus) to import dependent markets in Europe via Greece, and Italy.

While this option would likely be welcomed in a market keen to secure competitive supply and reduce reliance on Russian supply, and is supported by several European parties, including governments, the Leviathan partners would appear to have left the promotion of this concept to others.

Conclusions for Leviathan

The overall picture is positive for Leviathan, as it operates in an east Mediterranean market structurally short of gas supply.

Leviathan supply to Egypt is contracted to ramp up to 4.7 bcmpa from 2023, however there is a surplus of gas in Egypt which will constrain delivery to contracted take-or-pay volumes through this period. Thereafter we expect Egypt to be in gas deficit, facing steep decline of legacy resource and limited indigenous supply availability. This will present multiple new supply opportunities for Leviathan, including sales through the two existing LNG facilities (ELNG/SEGAS). We forecast new sales from Leviathan to Egypt, in addition to existing contracted volumes, of 4 bcm in 2026, increasing to 6 bcmpa from 2027.

Leviathan is already contracted to supply 3.1 bcmpa to Jordan over the long term with an option for a further 0.5 bcmpa. With a market of only 4-5 bcmpa to 2040, Jordan is likely to turn to supply from Egypt or LNG for some diversity, limiting the upside available to Leviathan.

By 2028 we expect Leviathan to be supplying 10.7 bcmpa to Egypt and 3.4 bcmpa to Jordan in addition to volumes to Israel. Over the life of this forecast, to 2040, we forecast Leviathan sales into Egypt will be 148 bcm, 88 bcm more than that presently contracted; and into Jordan will be 70 bcm, 25 bcm more than that presently contracted. There is also scope in these markets post-2030 which present opportunities for Leviathan to grow production capacity beyond 21 bcmpa.

Leviathan gas is contracted to supply customers in Egypt and Jordan under pricing terms linked to Brent. Wood Mackenzie estimates contract floor prices of US$4.70/mcf for supply to Egypt and US$5.80/mcf to Jordan. These arrangements ensure resilience in an environment of low oil and global gas prices. With the scale of the resource ensuring breakeven costs better than rival projects, Leviathan should be well placed to ensure a margin for future supply to these markets, including sales into LNG capacity in Egypt.

With market opportunities and favourable netbacks available in proximate markets we expect Leviathan to deprioritise more remote options such as supplying Turkey/Europe by pipe or developing floating LNG facilities.

There are multiple risks to this forecast – political, market and development including infrastructure. It is anticipated that political risks can be managed given the mutual benefits to producing countries and buyers, domestic and importing countries. Markets present risks, but also present upside opportunities to our forecasts as demand could be higher. With the development of Tamar, Noble Energy and Delek have demonstrated they are partners capable of successfully managing both upstream developments and relationships with counterparties. Infrastructure risks, including the requirement to expand INGL's network capacity to ensure routing of Leviathan gas to a growing domestic and international customer base, will need to be managed.

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