

Country Assessment Report

Country/Region Name- Israel:

Israel is situated in Western Asia; bordered by Lebanon, Syria, Jordan as well as the Palestinian territories of West Bank and the Gaza strip. It has a population of 8.9 million and GDP over \$370 billion, with a growth rate of 3.5%.

Economic structure and activity:

Israel has a free market economy, which is well diversified and technologically advanced. The service sector accounts for 77.9% of the nation's GDP and is dominated by telecommunications, finance, accountancy and high-tech services. Despite the ongoing Israeli- Palestinian conflict, tourism remains a huge sector for Israel's economy, employing the majority of the nation's workforce. Industry contributes 19.4% to the nation's GDP, specialising in chemical products, pharmaceuticals, electronics, software and biotechnologies. Agriculture accounts for just 1.1% of the nation's GDP, but the industry is well developed through advanced Agri-Tech which has allowed it to green the desert to become largely self-sufficient. Its main produce includes fruits, vegetables, wine and cattle farming.

(Santander 2020)

Top private companies with RE commitments:

Generation and demand: (e.g. type, MW, TWh)

While coal has long been Israel's primary source of electricity, its use is declining as the country's natural gas sector continues its rapid growth and natural gas-fired generating capacity supplants coal-fired generating capacity. As of 2015, according to the Electricity Authority (EA), the fuel mix of Israel included: 52.29% Natural Gas, 45.09% Coal, 2.15% PV, 0.03% Diesel, 0.32% Biogas and Biomass, 0.03 wind and 0.08% Hydro.

Installed capacity MW by fuel type, 2015 (Electricity Authority):

- Coal- 4,480
- Natural Gas 10,930.
- Other thermal 1,122
- Renewable energy (mostly PV) 775.7

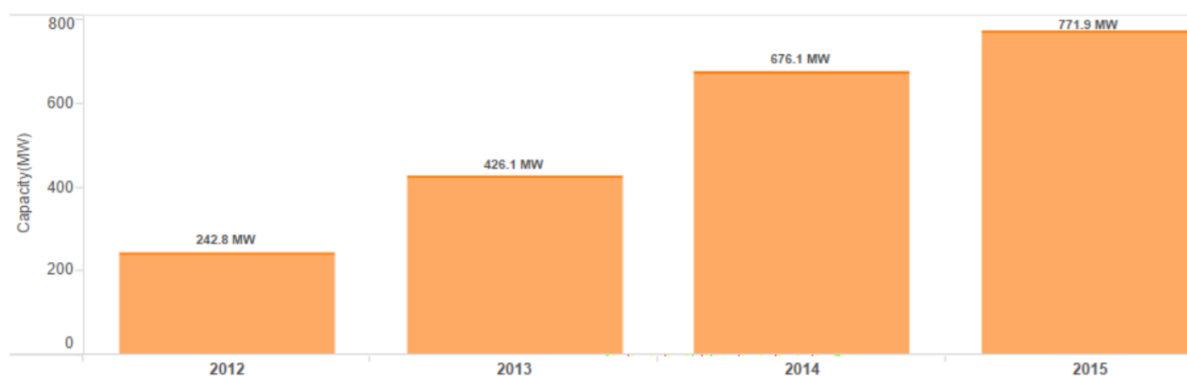


Figure 1. Solar PV installed capacity between 2012 and 2015 (IRENA 2015).

In 2015, the Israeli government passed a resolution to set a national per capita GHG emissions reduction target of 8.8 tCO₂e (tonnes of carbon dioxide equivalent) by 2025 and 7.7 tCO₂e by 2030. This included sector specific targets:

- **Energy Efficiency:** 17% reduction in electricity consumption relative to BAU (business as usual) scenario in 2030, which will result to electricity consumption of 80 TWh.
- **Renewable Energy:** 17% of the electricity generated in 2030 will be from renewable sources.

To achieve the energy efficiency target, the government allocated the following:

- 500 million NIS (Israeli new shekel) will be allocated for government guarantees for the years 2016-2025, for investment loans in the areas of energy efficiency and GHG emissions reduction.
- NIS 370 million will be allocated for grants to energy efficiency projects. An emphasis will be put on local authorities with low socio-economic rankings and small and medium-size businesses. These grants will be awarded based on the extent of grants requested.

Electrical Interconnection and import/export:

Israel is considered to be an Energy Island, there are no current interconnections to other national electricity grids. Despite several neighbouring countries, political tensions prevent Israel from engaging in power trade. Israel does therefore not engage in electricity imports or exports, though it does supply Palestinian territories who do not maintain a full scale independent electric grid.

The EuroAsia Interconnector is intended to link the power grids of Cyprus, Greece and Israel through the world's largest submarine power HDVC cable. This would significantly enhance Israel's power security, enabling 2,000 MW worth of transmission in either direction.

Market Structure:

The vast majority of Israel's installed capacity (85%) is owned by the Israeli Electric Corporation (IEC). The sector is currently under extensive reform, which will liberalise more of the generation subsector. Currently, the Israeli electricity market is under extensive reform for privatization of the generation component. The EA have estimated that over the next 5 years, around 40% of generation will become privatised. Transmission, distribution and systems operations are all managed by the IEC and is intended to remain that way for the foreseeable future. At this stage, the majority of Israel's renewable energy facilities are selling the electricity they generate to the IEC, and not to private electricity consumers, via a feed-in tariff system, which refers only to the electricity generated by RE facilities and not to their environmental attributes.

Responsible Government Department: (include key contacts)

Ministry of National Infrastructure, Energy and Water Resources is responsible for the supply and management of Israel's energy and natural resources: electricity, fuels, natural gas, energy conservation, water, sewerage, oil & gas exploration, minerals and ores excavation. The ministry regulates these fields and acts to ensure an adequate supply during peacetime and in emergency, under changing energy and infrastructure needs, today and in the future, while balancing between suppliers and consumers under economic, environmental and social constraints. Under the Ministry of National Infrastructure, Energy and Water Resources, the Electricity Authority operates as the regulator in the field of electricity:

Electricity Authority (EA) oversees both the government-owned IEC, as well as private actors by: a. Setting electricity tariffs and the means to update them, regulating payments in the

field of the electricity market. b. Issuing licenses for activities in the electricity market, subject to the National Infrastructure, Energy and Water Resources Minister's approval.

The Ministry of Environmental Protection is responsible for GHG Emissions reductions, including emissions from the electricity sector, as well as providing and enforcing air permits to power plants.

Existing/Planned Energy Legislation: (is there a CPO)

Electricity Market Law – passed in 1996 to regulate the activity in the electricity market, the role of the EA, structural changes in the electricity market and the future structure of the IEC. In 2015, the government passed a resolution to set a national per capita GHG emissions reduction target of 7.7 tCO₂e by 2030. The implementation period for this decision is 2016-2030. This included targets specifically for the electricity sector which will be subjected to legislation developed to support these objectives:

- Energy Efficiency- 17% reduction in electricity consumption relative to BAU (business as usual) scenario in 2030.
- Renewable Energy: 17% of the electricity generated in 2030 will be from renewable sources.
- Change in Merit order- giving priority for electricity generation by natural gas over coal.
- Reducing the usage of coal for electricity generation by 15% annually- compared to the use of coal in 2015.
- The closure of four old coal units with a capacity of 1400 MW by 2020 and replacing them with natural gas combined cycle units

Israel's master plan for the electricity sector is currently under development.

Environmental Legislation for RE:

Although there is no environmental legislation in place, in 2009 the Israeli government stated in its decision number 4450 a national goal of 10% electricity generation from renewables by 2020. In 2015 Country Authorisation version 0.1 Page 4/6 the Israeli government decided in decision number 524 on a national goal of 13% electricity generation from renewable sources by the end of 2025, and 17% by the end of 2030.

The main economic mechanism originally used to encourage individuals and companies installing RES was the Feed-in-Tariff (FiT), accompanied by a series of quotas for installations. The legislation and planning related to four different sizes of installations: residential (up to 15 KWp); commercial (up to 50 KWp), Medium-Utility Scale (up to 12 MWp) and Large-Utility Scale (above 12 MWp). Since the initial implementation of the FiT system in 2008, several regulatory decisions which included quotas and Feed-In-Tariffs by technology type were published by the EA. The promised feed-in tariffs started high with over 2 NIS/KWh, declining to about 0.5 NIS/KWh.

As energy facilities are selling the electricity they generate to the IEC, and not to private electricity consumers, through the FiT scheme, it allows Israel to progress forward to its target of 17% of the electricity generated by RE by 2030. It's important to note that the FiT scheme does not capture any of the environmental attributes of the electricity generated.

Currently there is a discussion in the Ministry of National Infrastructure, Energy and Water Resources regarding a tariff based tender system - entrepreneurs who will submit proposals for electricity generation with the lowest tariff per Kwh generated will win the tender, with assurance of acquisition for 20-25 years.

In December 2012, the EA Board of Directors approved a new Net Metering regulation for RES systems, which started implementation in 2013, with an established cap of 400 MW. According to the decision - self-consumers owning a RES system will be able to save their electricity retail tariff through self-consumption, but will be charged for grid "Balancing costs" estimated by 0.015 NIS/KWh (or 0.3 Eurocents per KWh). Generation surplus will be inserted into the grid and rewarded by "Credit" which will be reduced from the consumer's electricity bill at the end of the month.

Existing/Planned Certificate Systems: (purpose, extent)

I-REC is now active.

RE market potential:

Israel's most promising renewable resource is solar energy. Given its positioning along the solar sunbelt, Israel receives some of the highest rates of solar irradiation in the world, particularly in the Red Sea area where it averages 6.18 kWh/m² per day.

(Hamed and Bressler 2019)

Market risks and challenges:

Extent of Engagement with Government: (brief summary of any contact already made with the national government regarding certification in general and I-REC)

Expected response from Government:

Israel is investing major efforts in implementing renewable energy and achieving its RE goals for 2020, 2025 and 2030. Therefore, there are no foreseen objections to implementing the I-REC mechanism in Israel, as the mechanism can aid in promoting greater uptake of renewable energy as it allows the selling of the environmental attributes of renewable energy, thus making it more economically viable. As these attributes are sold strictly within the country, it therefore does not harm the achievement of national goals. It's important to clarify that no engagement with the government has been conducted so far. Conventional power stations are obligated to obtain an emissions permit and report to The Ministry of Environmental Protection a variety of environmental and operational parameters under the framework of the following regulations:

1. Clean Air Law - The purpose of the Law is to bring about an improvement of air quality and to prevent and reduce air pollution, inter alia by prescribing prohibitions and obligations according to the precautionary principle. In accordance with the law, stationary emission sources with high pollution potential must have emission permits, which include general emissions guidelines for the sector as well as specific guidelines for the particular emission source. Those conditions are based on implementation of Best Available Techniques (BAT).

2. Pollutant Release and Transfer Register (PRTR) - A Pollutant Release and Transfer Register (PRTR) is a database or inventory of pollutants released to air, water, and soil by factories, and/or transferred off-site for treatment or disposal. Although it is not obligatory for the renewable generation facilities owners, as the electricity sold to the government, the generation in each facility is being monitored. Furthermore, data regarding electricity and fuel consumption is reported regularly to the EA and to The Ministry of National Infrastructure, Energy and Water under the EA's regulations.

Current Environmental Reporting in Energy:

Grid Emission Factor- the grid emissions factor is calculated by a national average emission factor. The national average is based on IEC data for gross specific emission factor (without taking into account transmission loss). The IEC gross specific emission factor is calculated by the CO₂ emission per electricity unit transmitted to the grid. Currently, no Residual emission factor is being calculated in Israel, as there is no separation between electricity generated and its environmental attributes yet.

Any other Relevant Information:

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Preparation Date	09/10/2016