

Public

Environmental and Social Data Sheet

Overview

Project Name: Sorek II Desalination Plant
Project Number: 2018-0645
Country: Israel
Project Description: Design, construction and operation of a reverse osmosis sea-water desalination facility, with production capabilities of 200 million m³ per annum, located in Sorek, Israel

EIA required: yes

Project included in Carbon Footprint Exercise¹: yes

Environmental and Social Assessment

Description of the project

The project concerns the construction of a seawater reverse osmosis (SWRO) desalination plant with a production capacity of 200 million m³/year in Sorek, Israel through a Build - Operate & Transfer (BOT) contract. It is expected to become operational by mid-2023.

The Project will support a high priority water supply infrastructure in one of the world's most water-stressed countries and will allow Israel to meet the growing domestic demand and to increase the volume of water transfers to Jordan and Palestinian territories. It will also contribute to mitigating the impact of climate change induced decrease in the availability of fresh water resources. The Project is also aligned with the Bank's water sector lending orientation e.g. climate change adaptation and development of new water resources.

The plant is part of Israel's long-term water strategy, which aims to satisfy water demand from the increasing population and reverse the depletion of the natural aquifers. Israel already recycles 93% of its collected wastewater, water losses are at 10% on average and they are expected to be reduced further to 3% in the coming years. Therefore, in terms of water supply, Israel appears to have no other alternative but to use non-conventional water resources like desalinated water.

The Promoter of the project is the Ministry of National Infrastructure, Energy and Water Resources, on behalf of the Government of Israel. The Promoter's capacity in terms of managing environmental and social aspects of the desalination projects is good given its

¹ Only projects that meet the scope of the Carbon Footprint Exercise, as defined in the EIB Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: 20,000 tonnes CO₂e/year absolute (gross) or 20,000 tonnes CO₂e/year relative (net) – both increases and savings.



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experience, in the last 10 years, in managing a number of operations (Sorek I, Hadera, Ashdod)

The plant will be situated at the "Sorek Plot B" site, reserved by National Infrastructure Scheme no. 36. The site is located about 2 km east from the seashore, about 15 km south of Tel-Aviv. The site was previously used as a set-up area for the construction of the existing Sorek I desalination plant, which was commissioned in 2013. Adjacent to the northern boundary of the site lies the existing 150 million m³/year capacity Sorek I Desalination Plant.

Environmental Assessment

Environmental Impact Assessment

The Israeli EIA system is materially consistent with the EIA Directive (2014/52/EU amending the EIA Directive 2011/92/EU) in terms of the methodology and scope of the studies. EIA documents in Israel are prepared under the Planning and Building Law (1982, revised 2003).

In the year 2000, the National Council for Planning and Building prepared a Partial National Master Plan for possible seawater desalination plant sites (NMP 34/B/2), as part of an Integrated National Master Plan for Israel's water sector. Although Israeli law does not stipulate the need for a strategic environmental assessment (SEA), cumulative aspects have nevertheless been considered and integrated into the National Master Plans (NMP). NMP 34/B/2 designates seven sites for desalination plants on the Mediterranean Coast, including the Sorek site. After a government decision in 2008 to increase desalination capacity to 750 MCM/year by 2020, the Sorek project with an ultimate capacity of 300 MCM/yr (150 MCM/yr for Sorek I plant and the then 150 MCM/yr for Sorek II plant) was declared an Infrastructure Project of National Importance. The statutory process was conducted by the Committee for National Infrastructures (CNI).

Subsequently the Project was included in National Infrastructure Plan no.36 "SOREK Sea-Water Desalination Plant".

The CNI stipulated that a full EIA would be required for the Sorek project (i.e. the combined site for Sorek I and II plants) and appointed the Marine and Coastal Division of the Ministry of Environmental Protection (MoE) as an advisor to the EIA process. The MoE released an Environmental Policy Paper for Desalination Projects and their Outfalls in 2008, which is part of the BOT tender documentation.

A comprehensive "Environmental-Health Document" was prepared in Hebrew and an executive summary in English according to the Planning and Building Law (1965, revised in 2003), and according to the specific guidelines issued by the Ministry of Environmental Protection and the CNI. The Document has the equivalent status of a full EIA report. The draft EIA report was submitted in June 2009 and distributed together with the Tender Documents.

The National Infrastructure Plan no.36 "SOREK Sea-Water Desalination Plant" and the associated EIA report was approved by the CNI on 29 July 2010.

On 02 July 2018 the CNI Committee, in its Decision 10/2018 Item 2, approved the increase of the production capacity of the "Sorek Plant B" (Sorek II) from 150 to 200 million m³/year, as requested by the Israeli Water Authority. The CNI Committee assessed the environmental impacts of the increased production capacity, and concluded that no significant change would occur as a result of the increase of the output of the desalination plant. Therefore, the CNI

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declared that the EIA report prepared and approved on 29 July 2010 for the combined Sorek I and II sites was still valid and applicable.

Environmental Monitoring

Since the commencement of operations of Sorek I in 2013, a number of complementary studies to the EIA report were commissioned, including a marine modelling study for the discharge and a marine monitoring survey. It also included a marine monitoring programme for impact on seawater, sediments and biota. Several parameters have been monitored such as seawater quality (salinity, temperature, DO saturation, pH, turbidity, suspended particulate material, TOC, nutrients, Chlorophyll-a, oil and fat, metals), sediment characteristics, in-fauna characterization.

The Israeli Oceanographic and Limnological Research Institute (IOLR), on behalf of the Ministry of Environmental Protection, has been conducting this environmental monitoring.

The conclusion of the monitoring report was that the monitored parameters were generally within the range as defined by the prevailing environmental and health regulations, and also in line with the output of the original environmental models, with only few minor deviations for which corrective measures will be put in place.

Key environmental issues

The main environmental impacts identified in the EIA report concerned the seawater intake, use of treatment chemicals, concentrate (or brine) disposal and construction of main pipeline infrastructures (both in land and sea). The accompanying mitigation measures identified, are explained in more detail in the Environmental and Social Data Sheet prepared for the Sorek I project and associated Non-Technical Summary (NTS) of the EIA both published on EIB's website.

Emissions from the power generation

The annual power consumption of the plant is estimated to be in the order of 740 GWh. At the time of the assessment of impacts for Sorek II, no decision on the source of energy supply had been taken. Several options were being investigated. In 2017-2018, when the tender documents were prepared for the project, it was decided that the energy supply will come from a power plant primarily dedicated to the desalination plant. This plant, if constructed, will be located in the proximity of the project and planned to be operational in 2023-2024. The operator of the power plant is expected to be a concessionaire selected by the promoter, different from the future operator of the desalination plant.

In order to minimise the greenhouse gas impact of the project, the following measures will be taken:

- The energy use of the project is minimised by using best available technology, such as highest efficiencies in pumps and motors, variable frequency drives, energy efficient Reverse Osmosis (RO) membranes and isobaric energy recovery systems. Furthermore, the design and recovery of the RO stages will be optimized in order to reduce energy use.
- The power plant will use natural gas with a 50% less CO₂-emission factor compared to electricity from the national electricity grid, which is still for 60-70% generated by coal fired power stations. The recent discovery of additional natural gas reserves off

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the coast of Israel has and will continue to contribute to a partial switch from coal to natural gas in Israel's fuel mix. This is also in line with the Intended Nationally Determined Contribution, dated Sept 2015, Israel is committed to reduce GHG emission by 26% by 2030 from the 2005 level. This is mainly achieved through switching from coal to natural gas, as well as using renewable sources like solar and wind (17% by 2030). However, in terms of using other sources of energy, alternative to natural gas, Israel has some limitations, as it has no access to a number of widely used low-carbon options such as nuclear, hydro-electric or geothermal power. The country is an energy island, without the possibility of grid interconnectivity. There is limited surface area available for large-scale solar energy installations (for example, a Sorek II size desalination plant would require a solar power plant of 3km² in size to generate its power requirements).

Climate Risk Assessment

A number of climate sensitivities and additional geological hazard risks, such as extreme rainfall events (flooding), sea level rise, storm surge and storm tide, storms and high winds, sea currents and waves, tsunamis and earthquake have been identified. Analysis of the issued design specifications for the project demonstrate that the above risks will be taken into account in the project's final design.

EIB Carbon Footprint

The project's absolute emission is equivalent to 261,220 tCO_{2e}/year, assuming power supply from a natural gas fired power plant, which is likely to be built adjacent to the site. The baseline scenario has been estimated at 388,133 tCO_{2e}/year, assuming the same amounts of water could be produced using the built-in excess capacity of other existing Israeli desalination plants. This yields a relative emission of the project of -126,913 tCO_{2e}/year.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be pro-rated according to the EIB lending amount signed in that year, as a proportion of project cost.

Social Assessment

The project will have short and long-term positive social impacts in terms of enhancing water security and provision of reliable, safe, and drought-proof supply of fresh water. The availability of desalinated water will help to restore the overused underground aquifers and to address the climate change induced reduction of the replenishment of freshwater resources. The latter qualifies the project under climate change adaptation.

Availability of desalinated water will also enable Israel to increase water transfers to Jordan and the Palestinian territories, positively impacting the population living in those areas. Indirectly, the project's output will increase the availability of reused water for the agricultural users, thus helping them to switch away from freshwater usage and easing the pressure on underground aquifers.

The domestic consumers are already supplied with desalinated water, so there will be no tariff impact.

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Labour standards: Israel is a member of the ILO since 1949 and signatory of all eight fundamental ILO conventions. These have been ratified and transposed into national legislation

Occupational Health and Safety: Israel has extensive occupational health and safety legislation in place, modelled on recognised international health and safety standards. Within the desalination industry, both in terms of construction and operational health and safety the Bank's monitoring experience at the Sorek I, Ashdod and Hadera plants has been positive, with extremely low levels of reported workplace accidents and near misses.

The compliance with both labour and occupational health standards during construction and operation are part of the tender documentation, and thus will be part of the contractual obligations of the concessionaire's and on a back-to-back basis of all first tier suppliers and contractors. Inspection and enforcement will be carried out by the WDA's supervision team, as well as the Labour Inspectorate of the Ministry of Labour, Social Affairs and Social Services.

Public Consultation and Stakeholder Engagement

The Israeli EIA process is integrated into the planning system, and as such governed under the Planning and Building Law. In Israel, a plan (in Sorek II case NIP no. 36) as prepared by the CNI cannot be presented to the public prior to its approval deposition. Consequently, there is no open public consultation during the process of preparation of the EIA report. However, at the time a project plan is approved, all of the documentation, including the EIA report, is available for review by the public. Any person or entity can submit comments/reservations with regard to the plan and the EIA report, which must be discussed in a public hearing and, if necessary, investigated by a special investigator as prescribed by the law. To the best of the Bank's knowledge no challenges have been made to date.

The assessment carried out during the preparation of the Partial National Master Plan for possible seawater desalination plant sites (NMP 34/B/2) complied with Israeli procedures and included public participation as well as consultations with NGOs. NGOs were also represented in the National Planning Committee (NPC) that made the final decision on the location of the SWRO plant.

Other Environmental and Social Aspects

Cultural heritage

According to a letter issued by the Israeli Antiquities Authority (IAA) dated 31 July 2018 (which is part of the issued tender documentation) a part of the land allocated to the project is located in the area of the lawfully designated antiquities sites. Under the Article 29 of the Israeli Antiquities Law – 1978, within the affected areas trial trenching will have to be conducted for the purpose of measuring the scope and type of antiquities on the land. The trial trenching will have to be conducted under close supervision of an IAA archaeologist. In addition to the above outlined requirements, the issued tender documentation also includes a detailed Chance Find procedure, to be followed during construction.

Conclusions and Recommendations

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At the time of conducting the technical due diligence for the Sorek I project in 2009-2010, the Bank reviewed the available EIA documents in detail with the support of an external specialised Environmental Consultant. The results and recommendations of the EIA, which covers both Sorek I and Sorek II plants, were acceptable to the Bank and followed best environmental and social practices. The results of the monitoring programme and the recommendations of the EIA report approved in July 2010 and re-validated in July 2018 by the competent authority are still considered to be acceptable to the Bank.

The project will have a positive social impact and will contribute to the country's adaptation to climate change conditions, in a water stressed area.

With the following conditions in place, the Project is acceptable for financing in environmental and social terms.

Disbursement conditions

N/A

Undertakings

- In case the power to the desalination plant will be provided by a natural gas fired power plant to be built on-site, adjacent to the desalination plant, the promoter shall prepare a full ESIA including a detailed cumulative impact assessment (with the desalination plant) compliant with national EIA requirements and approved by the relevant competent authority;
- The promoter shall ensure that the Project (including all works performed by the contractors) is carried out in accordance with the provisions contained in the ESIA documents, associated management and action plans;
- The promoter shall notify the Bank, within 2 days after its occurrence, of any significant environmental, occupational health and safety relevant event; and within 30 days provide to Bank with a summary report that includes a description of such significant event, and the measures that the promoter is taking or plans to take to address the event and prevent any future similar events; and
- The promoter shall comply with the applicable laws, ILO labour standards and international best practices and that relevant contracts financed under the Project include specific clauses on these undertakings.