

REM



*Harnessing Energy to
the Environment*

Impact assessment for REM

Assessment of REM future contribution on reducing incidents of oil leakages resulting from oil imports to Israel



Introduction

Purpose of the work:

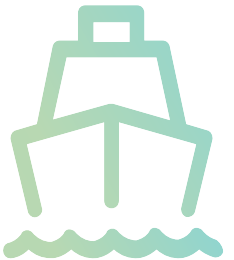
The purpose of this work is to assess the **future potential** impact of the REM business activity on reducing incidents of oil leakages resulting from oil import to Israel. These events are due to maritime transportation of oil to Israel, as well as due to land transportation of oil imported to Israel through dedicated infrastructure. These events have enormous and long-term environmental consequences, and the costs of rehabilitating the environmental damage are enormous. This assessment is forward-looking, and relates to the expected impact from 2025 to 2050. The assessment is based on **various assumptions** (data and forecasts), which originate from accessible information sources and the partnership itself.

We thank Deloitte for its assistance in preparing this analysis.



The process of examining this index includes four steps:

1. Conducting research on topics relevant to the index, such as the volume of oil imported to Israel, the various ways of transporting oil, and the various probabilities of leakages in import processes.
2. Building an economic model for assessing the expected potential impact.
3. Collection and analysis of relevant data from certified sources and optimization of the model according to the findings.
4. Analysis of REM impact on the volume of oil leakages resulting from the oil import to Israel, both at the level of the incident and at the level of the amount of oil leaked.



Impact Assessment

Number and Extent of Leakage Events

Given the underlying assumptions and data found, we assess REM future impact on reducing oil leakages incident resulting from oil importation to Israel, as follows:

Given the cumulative production of 5,489,000 tonnes of an alternative oil by REM in the years 2025 to 2050, **REM may reduce the frequency of incidents in which a significant amount of oil leaked as a result of oil importation to Israel by 2.7% - 4.3%.**

In other words, during this period, REM activity is expected to save 0.4 to 0.6 oil leakages incidents and therefore is expected to save leakages to the tune of 438 to 698 thousand tons.



The impact assessment was performed according to two possible scenarios regarding the volume of oil consumption in Israel during this period:

- A. Oil consumption decreases due to technological changes only.
- B. Transformation to a low-carbon economy, and oil consumption as required in order to meet the global warming target of up to 2°C.



Impact Assessment

Number and Extent of Leakage Events



438K-698K ton

In the years 2025 to 2050, REM is expected to prevent an average of **438 to 698 thousand tons of oil** leakages resulting from oil importation to Israel



0.395-0.607

In the years 2025 to 2050, REM is expected to save **0.395 - 0.607 oil leakages incidents** out of the total expected oil leak incidents in Israel on average in these years.



2.7-4.3%

In the years 2025 to 2050, REM is expected to reduce by **2.7% - 4.3% the frequency of events** in which a significant amount of oil is leaked as a result of oil importation to Israel

For illustration purposes only we refer to two significant incidents that occurred in the last decade.

A. The disaster of the oil leak in the Evrona Reserve on December 4, 2014, in which approximately 5 million liters of crude oil leaked from Katzza pipes to the Arava Evrona Nature Reserve and severely damaged the flora and fauna of the place. The oil spillage reached a distance of up to 7 kilometers from the leak site and affected an area of an estimated size of about one thousand dunams.

The damage to the reserve is estimated at NIS 216 million and the rehabilitation cost was NIS 65 million.

B. The disaster of the oil leak at the Israeli coast on 17.2.2021 in which large amounts of tar damaged 160 km of the coastal strip of the State of Israel as a result of an estimated spill of hundreds of tons of crude oil that suddenly appeared in Israel's economic waters. It is estimated that the source of the spill was from a Libyan tanker that made its way from the Persian Gulf. As a result of the spill, tens of kilometers of beach were damaged and irreversible damage was made to marine and terrestrial plants and animals in the area.

The State of Israel has allocated NIS 45 million to deal with the disaster and to rehabilitate the damaged beaches.

Our Basic Assumptions

During the calculation of the impact assessment model and data analysis, a number of basic assumptions were taken into account that formed a computational basis for the final results. The correctness of the assessment depends on the validity of these assumptions.

- The crude oil produced by REM will be a substitute for imported oil
- An oil leak event in this model is any leakage event caused as part of oil imports into Israel (even if the leak did not occur in Israel), including as part of its transportation on land of the imported oil
- REM annual oil production will remain constant
- Israel's oil consumption will decrease in the future at the same rate as the expected decline in oil consumption in the European Union
- There will be no significant change in the volume of use of land-based infrastructure dedicated to transporting imported oil comparing to the last decade, and the probability of leaks in these infrastructures will remain the same until 2050 to the average probability in the last decade
- The probability of a spill in an oil tanker arriving in Israel is the same as the world average and will remain constant until 2050.
- The amount of oil spilled in the event of an oil tanker leak will be equal to the average of the last decade (not including exceptional incident)
- When a truck carrying oil meets an accident leading to an oil spill, all the oil it contains spills

For the purpose of conducting this assessment, data were collected from a variety of accessible sources, including reports from the International Tanker Owners Pollution Federation ([ITOPF](#)) and forecasts from the International Petroleum Corporation British Petroleum ([BP plc](#)).

