

Oil shale potential and prospects in Israel – an update

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Geological Survey of Israel

The demand for energy in Israel is high and rising, especially for liquid fuels and electricity. Development of the recently discovered gas **resources offshore will enhance Israel's** security and boost its economy but will not do much for liquid fuel demand. Oil imports will continue to rise, which is not encouraging. Oil shale resources are still important.

Oil shale deposits underlie about 15% **of Israel's land surface. The geological reserves** (rocks with at least 7% total organic carbon) are estimated to exceed 370 billion tons. The average oil yield, as reflected from some of the studied deposits, is supposed to be ~20 G/T. Many of the deposits are close to the surface, and some could be developed with low-cost surface mining. In some of the studied oil shale deposits, the sequence is closely associated with economic phosphate beds, a geological phenomenon that may have significance in future applications. Mineralogy of the host rocks and the quality of the shale oil are quite similar to the oil shale studied in Jordan, which could be beneficial for both countries.

Israel's oil shale has been under development, in various ways, for many years. Recent achievements include the continuous production of oil-shale-fueled power plant at Mishor Rotem (northern Negev), exploration programs that could lead to production of shale oil by in-situ processing and additional research activities that focus on ex-situ processes.

Our cautious forecast for oil shale developments in Israel by 2020 is as follows:

- Significantly more raw oil shale will be removed, as overburden to phosphate beds (in particular, at Mishor Rotem). Mining costs will be even lower than today, and this combined with possible advances in the beneficiation of bituminous phosphates, may lead to one or more aboveground retorting projects, perhaps producing 10,000 to 25,000 barrels per day of crude shale oil. The production may be very beneficial to the existing 90,000 barrel per day refinery in Ashdod, some 80 miles away.
- If improved heating devices become available, in situ processing may also be employed, but more likely in relatively remote locations that can avoid the environmental controversy that has troubled the presently permitted site in Central Israel.