

'Oil shale can bring energy security and independence'

By [SHARON UDASIN](#)

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Experts say drilling will be clean and won't leave a footprint; IEI's shale extraction process aims to produce 40 billion barrels of oil.

Shooting out of a pipe at the Zoharim oil shale drilling site southwest of Beit Shemesh on Wednesday morning was the first shale sample from the location – an 80-centimeter-long, 15-centimeter-diameter, grayish cylinder of sediment – that had just been shuttled 331 meters upward by a sweating, hard-hat-outfitted crew.

“It’s like a birth,” Dana Kadmiel, environmental engineer for Israel Energy Initiatives, told The Jerusalem Post from the sidelines.

Though not even yet in its official pilot phase, IEI’s shale extraction process aims to produce 40 billion barrels of oil in its currently licensed jurisdiction, which covers 16 percent of Israel’s oil shale stores, according to Kadmiel. To create oil from shale – which is dark sedimentary rock containing hydrocarbons – workers must drill as far as 400 meters down through an impermeable layer to reach the shale, Kadmiel explained.



Photo by: Sharon Udasin

Surrounding the production pipeline, the company must also drill a ring of heating wells, which gradually heat the rock to 300° C and thereby transform it into lightweight oil in situ.

In this pre-pilot phase, rather than using heaters, the company is removing pieces of shale for analysis in Ben-Gurion University laboratories.

“It’s a little bit lean, but the lower section is good,” Yoav Dror, a geologist for IEI, which is based in the capital, told the Post, as he wrapped up the sample.

“I’m pleased that something came out, but most of the time they recover 100% of the material,” he said, noting that 80 centimeters was only 50% of their aim.

The technology for drilling into Israel’s apparently ample shale stock only arrived here recently, through the

expertise of Brooklynite Dr. Harold Vinegar and his experience gained working for 32 years at Shell Oil, where he eventually became chief scientist.

“In 1980, I became involved in unconventional oil shale development in Colorado, and we did our first pilot – the Red Pinnacle pilot – in 1981, in a small place in the Piceance Basin, where the oil shale is very close to the surface,” he told the Post during an interview last week ahead of the Israeli Presidential Conference. “We did this mostly out of the back of a pickup truck.”

After years of pioneering the industry and creating over 200 patents of his own, Vinegar left Shell in 2008 to come to Israel – which after the US, Canada, China and Jordan probably has the fifth-largest oil shale deposits in the world, according to experts.

“[Shell] doesn’t want to deal with Israel – they deal with OPEC – and for them an investment here would be small,” said Kadmiel, noting that Shell has, however, started to do extractions in Jordan.

Vinegar joined with Dr. Yuval Bartov to build IEI, which is today owned by International Discount Telecommunications and chaired by American philanthropist Michael Steinhardt.

Back at the President’s Conference interview, Vinegar produced a slab of oil shale rock and a vial of reddish liquid.

“It looks like something you might drink, a wine, a rosé, perhaps,” he said. “It’s hard to believe that from a rock like this you can make an oil of such high quality.”

For Vinegar, not only is shale oil a much cleaner alternative to crude, it’s also a matter of “energy security.”

Israel imports 270,000 barrels of petroleum per day of oil and needs 50,000 of that for routine military operations – exactly what IEI aims to produce – according to the scientists.

“This will be a source of thousands of skilled jobs and an enormous GDP growth for the country,” Vinegar said.

To make a profit, IEI needs to produce 50,000 barrels per day of oil, which costs \$40 per barrel to produce, as long as oil prices remain above \$80 per barrel, Kadmiel said.

“Oil shale is such a dense resource that of the 238 square kilometers on our license, we are going to use less than half of 1% in total,” Vinegar explained.

Kadmiel added, “It’s enough for us, for Israel to be independent.”

As soon as IEI receives approval from the local district committee and the Water Authority, the company will start its 2.5-year pilot project near the Ha’ela junction, which will include a production well and six or seven surrounding heating wells, according to Kadmiel.

A “demonstration phase” will follow the pilot, and then the commercial phase can take place. Optimally, the heating wells would run on natural gas, but the pilot will use electricity from the national grid and require about

75,000 kilowatts per day, she explained.

Even in the smoothest of scenarios, however, Vinegar said that no oil is likely to start flowing until 2018-2020. And IEI is facing a plethora of environmental objectors, who say that natural resources will be destroyed and that increased production of fossil fuels is unnecessary.

Both Vinegar and Kadmiel stressed that the company is striving to leave as small a surface footprint as possible, with most work occurring underground and no gas escaping to the air. The aquifer runs 200 meters below the shale, with an impermeable rock layer in between, according to Kadmiel.

“From the moment you enter the ground, it will take about five to seven years to restore [the land] to its original state,” she said. “The land we’re using will become a field again.”

But Kadmiel acknowledged that the company must make stronger efforts to engage with environmentalists and the local community and “prove” that its methods are environmentally sound. “It’s our responsibility,” she said.

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