

## Field of dreams: Israel's natural gas



The Sedco Express drilling rig above the Tamar gas field in the Mediterranean © Lihee Avidan

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The black and yellow helicopter heads north from Tel Aviv, passing over empty beaches, a yacht harbour and a string of sprawling seafront residences that house some of Israel's wealthiest families. After a few minutes the pilot makes a sharp turn to the left and steers his ageing Bell 412 towards the open sea.

For more than half an hour, all there is to see is the blue waters of the Mediterranean. Then suddenly a hulking mass of brightly painted steel rises from the midday haze. Towering more than 100m above the water, this is the Sedco Express, a drilling rig that has been operating in this stretch of ocean for almost three years. As the helicopter touches down on the landing pad, we see a small blue and white Star of David flag fluttering in the wind. It is the only sign that the Sedco Express sits atop one of the greatest treasures that Israel has ever found. Far below, connected to the rig by a slender steel pipe that runs through 1,700m of ocean and another 4,500m of rock and sand, lies a vast reservoir of natural gas known as the Tamar field.

The men on board the Sedco Express are busy testing the field's multiple wells in preparation for the long-awaited day next April, when a US-Israeli consortium will start pumping the gas onshore. With reserves of almost 10 trillion cubic feet of natural gas, the Tamar field is a hugely valuable asset for the Israeli economy. Discovered in January 2009, it was the biggest gas find in the world that year, and by far the biggest ever made in Israeli waters. But the record held for barely two years. In December 2010, Tamar was dwarfed by the discovery of the Leviathan gasfield some 20 miles farther east – the largest deepwater gas reservoir found anywhere in the world over the past decade. The two fields, together with a string of smaller discoveries, will cover Israel's domestic demand for gas for at least the next 25 years, and still leave hundreds of billions of cubic feet for sale abroad. The government take from the gasfields alone is forecast to reach at least \$140bn over the next three decades – a staggering sum for a relatively small economy such as Israel's.

Experts are convinced that Tamar and Leviathan will not be the last big Israeli discoveries. They point to the US Geological Survey, which estimates that the subsea area that runs from Egypt all the way north to Turkey, also known as the Levantine Basin, contains more than 120 trillion cubic feet of natural gas. Israeli waters account for some 40 per cent of the total. Should these estimates be confirmed through discoveries in the years ahead, Israel's natural gas reserves would count among the 25 largest in the world, on a par with the proven reserves of Libya and ahead of those of India and The Netherlands. For decades a barren energy island, forced to import every drop of fuel, Israel today stands on the cusp of an economic revolution, fuelled by the vast riches that lie below its waters.

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It is a revolution that has gripped ministerial offices and corporate boardrooms alike. Since the discovery of Leviathan, the country has been in the midst of an intense and often controversial debate over how best to use the new resources at its disposal. All the classic dilemmas associated with hydrocarbon discoveries have resurfaced, though often with a surprising Israeli twist. Should the gas be exported or used at home? What share of the new wealth belongs to the government and what to the companies that made the discoveries in the first place? And how

far should Israel go towards turning itself into a “gassified” national economy, in which power stations, homes, industry and the transportation system alike all run on natural gas?

A final issue, and perhaps the most poignant of all the questions facing Israeli policy makers, is how the discoveries will affect the country’s standing in the region. Some worry that fields such as Leviathan will become a focal point for tensions, and perhaps even a target for Israel’s many enemies. Others hope that the gas will serve as a force for good, and help Israel build economic and political bridges to its neighbours, some of whom remain as energy-starved as Israel was until recently.



The Sedco rig sits on top of the Tamar field, which has almost 10 trillion cubic feet of natural gas

The recent discoveries are so large, and have come so swiftly, that some Israelis are having difficulty adjusting to the new reality. Even hardened energy executives speak of a “miracle” when discussing Israel’s natural gas story; others have resorted to the heavens to explain the new-found wealth. No less a figure than Benjamin Netanyahu, Israel’s prime minister, recently compared the discoveries to “manna from heaven” – the mystical food that sustained the Israelites during their 40 years in the desert.

Yet for all the talk of divine intervention, the discovery of Leviathan, Tamar and other fields would not have happened without the fierce determination of men like Gideon Tadmor. A cheerful, rotund 49-year-old, he is widely regarded as the pioneer of Israel’s natural gas industry.

Tadmor trained as a lawyer and dabbled in the property business before deciding more than two decades ago that it was time to turn his attention to oil and gas exploration. It was not the most promising line of business. Like all Israelis, Tadmor was only too familiar with the famous complaint made by Golda Meir, and repeated endlessly since then. “Let me tell you something that we Israelis have against Moses,” the then prime minister remarked at a banquet in 1973. “He took us 40 years through the desert in order to bring us to the one spot in the Middle East that has no oil.”

Over the years that claim became an article of faith for many Israelis. The country’s conspicuous lack of natural resources chimed with the broader national narrative of a state struggling and succeeding against the odds. It even served to heighten Israeli pride in the country’s economic and military achievements, which frequently outshone those of nearby countries rolling in oil wealth. But, for many decades, Meir’s complaint was also borne out on the ground, which stubbornly refused to yield all but the tiniest amount of hydrocarbons.



Gideon Tadmor, pioneer of Israel's natural gas industry, on the Sedco rig

The years of failure meant there was no competition when Tadmor started knocking on the doors of the Israeli government to request exploration licences. His company, Avner Oil & Gas, started drilling for oil onshore in 1991, before moving into the deep waters close to the Israeli coastline and eventually pushing on into even greater depths. “We had looked at the vast success and activity [of gas exploration] in Egypt,” he tells me, sitting in the conference room of his headquarters north of Tel Aviv. “We all felt that the geological trend would not stop at the political border – and should extend into Israeli waters.”

Drilling in deep waters, however, required not only deep pockets but also profound technical knowhow. Neither was at the disposal of the Israeli upstarts. Tadmor and his partners decided to bring in a strategic partner, launching a quest that turned out to be fraught with more obstacles than anything the company had experienced to date. “It was an endless process. We were willing to look everywhere. We knew that finding a strategic partner would be fundamental for success, because in Israel there was no expertise.”

Tadmor and his partners thought they had a compelling geological story: they were proposing to drill in an area that showed much the same characteristics as the nearby Egyptian waters where discoveries had been made. Yet they were turned down again and again, fuelling suspicions that the big oil groups in Europe and the US were unwilling to risk their vital relationship with Arab countries by investing in Israel: “There is no question about it. Anyone who knows anything about this industry knows that there is an overwhelming geopolitical consideration with top companies when they decide to enter or exit a country,” says Tadmor. “Even during the best times, when Israeli and Palestinian leaders signed the Oslo accords in 1993, it was very obvious that for many of the big players there were geopolitical considerations that clouded their approach towards Israel.”

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Geopolitical considerations, of course, have been at the heart of the oil and gas industry almost from the beginning. As the target of an Arab oil boycott, Israel itself was forced to learn the hard way that energy security and national security are closely entwined. Already scrambling to secure supplies, the country was dealt another rude shock in 1973, when Arab oil producers responded to Israel's victory in the Yom Kippur war by launching a sweeping oil embargo. It was a move that shaped the country's energy policy for years to come, instilling in Israeli leaders a desperate desire for energy independence.

“A big part of the policy community in Israel was hugely affected by the Arab oil boycott in the early 1970s,” says Brenda Shaffer, an expert on Israeli energy policy at the University of Haifa. “It made people here give an almost disproportionate importance to holding energy volumes.”

A quarter of a century later, Tadmor and his partners felt they were finally close to delivering those volumes. Without money and expertise from abroad, however, Israel's hydrocarbon potential would remain untapped for many years if not decades. And without a strategic partner or other signs of progress, Avner Oil risked losing its offshore exploration licences. It was time for desperate measures: “We sent a guy to Houston for three months with one mission. I told him: go to Houston, open the phone book and go through it company by company. Call every one of them, and bring us a partner.”

After three months, only two companies remained on that list. Neither seemed too keen, but Tadmor decided to take his lawyer and fly out to Houston all the same. “At the time the price of oil was \$15 per barrel. That meant no one was taking any aggressive decisions to enter new countries. The environment was very, very problematic,” he recalls. Indeed, the macroeconomic environment was not the only inauspicious sign. As his plane taxied towards

the runway at Tel Aviv airport, Tadmor spotted something unusual: “All of a sudden I see a black cat running down the aisle. It was a chaotic situation. The stewardesses were running after the cat with a blanket, trying to catch it. We eventually turned back, and the cat was handed over. But one passenger decided to leave the plane. She said: ‘With a black cat on the plane, nothing good can happen.’”

The plane returned to the runway and started accelerating for take-off. Then Tadmor had a second nasty surprise: “I hear a huge blast – one of the engines had exploded!” It was a near-miss: had the engine blown up in the air, the plane might well have crashed, putting a premature end to both Tadmor and Israel’s best hope of finding gas in the Mediterranean. “I told my lawyer: ‘I don’t know if anything good will come of this experience.’ But everything that came out from this trip was good.”



In fact the ill-omened trip to Houston produced a deal with a small Oklahoma-based exploration company called Samedan Oil Corporation. Samedan was too small to worry about its relationship with Arab oil ministries, but large enough to seek expansion abroad. It would later change its name to Noble Energy, and emerge alongside Avner and Delek, an Israeli conglomerate, as one of the three leading players in the Israeli natural gas boom (Delek later bought out Avner, but kept Tadmor on to run the combined group). To this day, the three groups control most of the big fields discovered in the Levantine basin, with Noble holding the largest individual stake in fields such as Leviathan, Tamar and Yam Tethys.

The partners drilled their first well in 1999, in a field known as Noa. They found gas, but the quantity was too small to allow immediate commercial exploitation. A year later, in a nearby field known as Mari-B, they were successful, uncovering a field that contained about a trillion cubic feet of natural gas. Four years later, the gas started to flow to the mainland where it was used to generate electricity.

Tadmor and his partners had proved that Israeli waters did contain natural gas, and that these reserves could be exploited profitably. But the discoveries at Yam Tethys were a mere taste of things to come. In January 2009, a consortium that again included Noble, Delek and Avner, along with Isramco and Alon, two Israeli companies, found Tamar. The following year came Leviathan, the discovery that finally catapulted Israel into the big league. Speaking days before the drilling that confirmed the huge find, Yitzhak Tshuva, the Delek chairman and one of the wealthiest men in Israel, made a bold pronouncement: “This is geopolitical power that Israel needs now more than ever,” he said of the natural gasfields. “Israel will become a big international player, and it will have geopolitical power vis a vis many countries.”

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One of the men whose task is to marshal that power is Uzi Landau, the minister for energy. A slim, wiry man with a raspy voice and a hawkish political outlook, Landau is at pains to accentuate the potential political benefits not just for Israel but for the wider region. The minister says he is keen to export some of the country’s natural gas to Jordan and the Palestinian territories: “We believe this will not only be good business, but also highly important for coexistence. This will eventually help a peace agreement. Natural gas is also important for the political level. We wish to develop our relations with the region,” he says.



Uzi Landau, Israel’s energy minister hopes the gas discoveries will promote peace in the region

Landau points out that Israel is already busy deepening its political and economic relationship with Cyprus, which has itself found large gas deposits in waters adjacent to the Israeli discoveries. There is even talk of building a gas pipeline to Cyprus, and of connecting the Israeli power grid to the divided island through an undersea cable. But not everyone is convinced that Israel's natural gas riches will be a force for regional integration. The northern fields such as Tamar and Leviathan, for example, are not far from the disputed line that separates Israeli and Lebanese territorial waters. Hizbollah, the Lebanese Shia group that is one of Israel's most committed enemies, has already accused Israel of stealing Lebanese gas. Farther to the south, snaking its way through the Sinai Peninsula, is another example of the pitfalls created by regional gas diplomacy: the pipeline that carries Egyptian gas to Israel.

Initially hailed as a sign of friendship and co-operation, the pipeline has since emerged as an object of hate for many Egyptians, who resent the sale of cheap gas to Israel at a time when Egypt itself faces chronic energy supply problems. The pipeline has been blown up no fewer than 14 times during the past 18 months, and the supply deal has now in effect been cancelled.

"We tend to think that countries that hold a lot of oil and gas are very powerful. But if you look at it more carefully, you see that this is a double-edged sword. Countries that have large volumes of oil and gas tend to have a lot more problems. They tend to get involved in conflicts more often than other countries. There is a tendency towards war," says Shaffer, the energy analyst from Haifa University.

She points out that Cyprus is once again at loggerheads with Turkey over the recent gas discoveries, and that Israel, thanks to its new alliance, may yet find itself drawn into the escalation: "The gas finds have already defrosted the frozen Cypriot conflict. So Israel is now finding itself involved in a conflict that it has never been involved in before."

But fear of conflict is not the only worry associated with the gas. As delighted as they are over the recent finds, Israeli officials say they are only too aware of the "resource curse" that afflicts countries with abundant natural resources, whereby the discovery of great natural wealth is often followed by disappointing economic growth and an erosion of competitiveness.

"We have to be very careful not to think that with natural gas there is no more need to continue in the same direction of the past: to focus on education, focus on research and development and to do whatever we can to solidify the social fabric of our society," argues Landau. He points out that "the political leadership of our country is very sensitive to that problem", but warns that the country will have to be careful "not to fall into that pit".

For the time being, Israeli leaders can claim with some justification that their response to the new-found wealth has been measured and sensible. There has been a notable emphasis on sustainability, not least in the way the state intends to use the new resources. Though it will take years before the government will reap meaningful gas revenues, it has already set up a sovereign wealth fund to manage part of the new wealth. The fund, which follows the model set by Norway, is expected to swell to \$80bn by 2040, and is intended to provide a financial cushion for future crises. But some of the expected government take ("some" meaning about \$60bn over the next three decades) will flow straight into the state budget to fund education projects and bolster national security.

For a state that spent so many decades as an economic backwater, and that continues to rely on financial support from the US, this new largesse will take some getting used to. The same pleasing challenge faces Tadmor and the handful of other businessmen who believed in Israel's gas potential long before the first drills broke through to fields such as Leviathan.

"It has topped all my expectations," says Tadmor. "So what I need to do now is raise my expectations," he adds with a grin.

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