



Dean - report of the RAND Institute for the gas sector

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"Israel should give much higher priority to smart management of electricity demand". According to a research report RAND submitted to Israeli policy and decision makers. One of the authors of the report, Professor Claude Berrebi, was interviewed for Energianews.com detail: "Israel can increase by 2030, through smart strategic planning, the rate of natural gas to its mix of energy sources up to 50%"

For the full report using the link at the end of the interview

By **Alex Doron**

RAND Corporation study recommends to policy and decision makers in Israel, increasing by 2030 the natural gas share of the national energy mix, even up to 50%. More importantly the report prepared on this subject says Israel should give higher priority to smart strategic demand management, energy efficiency and to adding renewable energy systems in its future energy plans. If the necessary steps will not be taken, specify the corporation Specialists report submitted to ministers, Israel may reach a situation in which it can not satisfy its future energy requirements without suffering from one or more of the following risks: severe pollution, loss of precious land reserves, excessive costs due to changes in market energy prices or the loss of supply security that could go wrong for one reason or another.

The authors also suggest that Israel should invest primarily in NG combined cycle power plants; these use natural gas that they can receive from existing external gas pipelines as well as newly discovered gas reserves - without undue risk exposure.

One of the authors of the report, RAND economist **Claude Berrebi** Professor of economics at the RAND School of Public Policy in Santa Monica, California and at UCLA, stressed in an interview with Energianews.com that the study was guided by a steering committee that included the **offices of infrastructure, Environment, Finance, Prime Minister, National Security Council (NSC), Natural Gas Lines company, Gas Authority, Electricity Authority and Israel Electric.**

The study prepared - and the software developed for that purpose - is the first project that RAND performs for the benefit of Israel's policy makers. It was financed by the fund family JS Nazarian Los - Angeles, one of the largest donor to associations and educational and social purposes in Israel.

The other major recommendations of decision makers in Israel, included in the report:

- * Prepare, but still not start practice, the planning process towards the establishment of a liquid natural gas terminal.

- * To continue plans to establish a national pipeline distribution of high-pressure natural gas pipeline parallel to existing gas field in the Mediterranean.

- * Maintain a broad mix of fuels to finance costs of supply risks.

* Invest in solar power plants - thermal, despite high costs, or to use solar heating units early steam for power stations heated fossil fuels (fuels Fosilim).

* The government must monitor the retail prices of wholesale natural gas, and based on imported gas costs and development costs of maritime gas fields.

* Since the expensive natural gas storage, Israel defend itself against supply disruptions through proper amounts of stored fuel, to soften impact of possible supply disruptions.

* To plan the expansion of production capacity on Israel to adopt a process of two - stages of preliminary design that separates the decision to establish a power plant like the one operated on natural gas, coal or other energy.

Professor Bar - Rabbi, (Berrebi) Born in France he received his bachelor's degree at the Hebrew University and his doctorate at Princeton University and many prestigious. He shared a long line of studies in public policy, including the relationship between education, poverty and terrorism among the Palestinians and the labor market and education Bkatar. His articles were published writings - most leading journals in economics.

- What Hidstm this study? After all, the problem of energy mix and integration of natural gas is not new? Former Infrastructure Minister Benjamin Ben - Eliezer present Dr. Landau lot of talk about it?

Prof. Bar - Rabbi: "What is special here over the recommendations of this analytical tool development, ie, a computerized mathematical model algorithm for satisfying energy-related problems. This tool includes a database that enables decision makers to accept the results of the best strategies, especially the most resistance, in that where E - certainty and can not be estimated within 20 years from now an developments - are expected, as demand assumptions violated future prices, technologies, state of geo - political, unable to connect to the electric grid of a neighboring country and many others. Despite this, the model provides results reasonable, namely those for which decision-makers today, will not have to regret for - it. So better solution - but the optimal long-term durable.

- What exactly did you make in preparing the study?

"We ran hundreds of thousands of scenarios, with lots of parameters, the software tool allows to modify, very wide range of assumptions and data - and the result, the strategic solution.

- Give an example?

"For example, if recipients - will demand that decisions in the strategic considerations concerning the energy level of pollution is a crucial figure, the model will provide a solution to this issue is proposed to give a high weight. The same thing about costs, land reserves, risks and ensure delivery.

- What will be the report prepared?

"It will be submitted to ministers along with software that is purpose of the project. The software tool will modify the data in order to receive optimal strategy recommended above all the most stable set timeline"

- And when you talk about 50% natural gas mix, this lesson was not clear so far?

"I did not. When we started the project completed the technical part of his development as a database software was not yet known for the discovery of gas fields Tamar Dalit, in the sea. A month later - so these were good news, before there were only rumors. When it became certain that they began to talk about quantities, this figure is inserted to the database and also examined how it affects the strategies we suggested. The results have changed - but not the entire strategic direction. it turned out as - a software tool performs real-true analysis. The strategy we have proposed is most middle-changes ".

- When you specify the rate of 50% natural gas mix, is that ceiling?

"It OPTIMUM. To do so would be to build a parallel pipeline in Israel. Because if you get hurt existing plumbing, for any reason (human, technical failure) without parallel pipes will not ensure stability and maneuvering space of the conduction system. Ditto also for a situation where One damaged power stations or gas supply to be amputation. For this reason we recommend the extra reserves of fuel, although it is more expensive and environmentally damaging factor. But for safety is critical, an emergency situation is imperative. 50% that in extremis we tested running scenarios. It seems to us that a greater percentage mix, a strategic solution and will therefore not resistant to too much failures.

- Are the various data entered into the model were equal weight - a value, or

were high-value data received from the others?

"Everyone accepted value - worth about risks. But clearly, if decision makers have other preferences or those that can give expression to the model whose support for recipients - decisions. For instance, if government decides, determines that a security risk for him is 3 times the weight of any other, for example pollution .. even so, the result display model will be explained very best. The result will be shown that decision makers will know what price or what would benefit one side or the other lose, or what costs will be based on the decision to accept given that fed model. We Place them on the table all the **possibilities**".

- And how Rand intends to present the research decision-makers?

"We're in discussions with ministries and Electric Company so that they understand how to use the model as new questions arise on the agenda so he could run the model to provide them the results required to determine the strategy related to energy economy in Israel."

- What share of family philanthropists Nazarian project?

"They financed him. Family representative council - one of the managers RAND Institute units engaged in public policy and recommend decision makers throughout the world. Asked us to research on a topic useful term - a long, vital for future generations in Israel, without ideology or politics. Project based on facts. so chosen research topic in the energy and especially natural gas. By the way: the Ministry of Infrastructure is asking focus on him, on the grounds that the land is not enough knowledge about it".

- What was your research and other studies done here?

"Israel today tend to plan or act based on improvisations, to shut down fires, achieving an immediate solution. No one did a range of strategies 20 years ahead. Improvisations Israeli fitness certainly helped quite a few vital issues - but in the long run was based on decisions much improvisation, even a heavy price. For this reason the direction of the search solution to the problem has implications for strategic long - term as the supply of natural gas, cell study. but we discovered during the project research question is also correct: not how much natural gas should be included in the mix, but what matters this question much more demand management".

- Meaning?

"No matter how much gas, or coal or diesel fuel mix required will include the Israeli energy economy, but the need to conduct much more serious demand for electricity. Therefore it is necessary to build a strategy to be resistant to fluctuations and changes, but not put the country risks which she will pay pollution - other or build stations - not leaving enough power for the welfare of citizens or coastal risks have opened irregular supply failures and power failures which the state would pay unreasonable costs. Therefore, beyond what is required of the streamlining management of demand. We found about that Israel really is not good enough".

- How did you figure that?

"We compared Israel to California, because there are many similarities between them. The basic attitude was not to take steps to stop economic growth. It turned out that in California per capita growth rates since the 70's were like those of Israel. But where power was more or less constant, whereas Israel is the only cost. There's a big waste must change direction"

- When you say what that means demand management?

"Demand management means intelligent deployment of electricity demand throughout the day in a smart, treatment is the problem of load records. Should download the 'peak-load consumption to deploy in a more egalitarian on - the hours, months of the year. Can it produce the same amount of electricity and hurt economic growth. smart demand management will prevent the need to establish stations - the only person who force or power production activities only during peak demand at marginal extra. But for that you also need to convince consumers behave differently, more intelligent. but also requires electricity network smart".

- What exactly do smart network?

"It will enable the power price is reasonable. In domestic tariff at 9 am the same as in 14:00 as at -21:00. California is changing continuously. Consumers know it. They know that you need - more expensive at certain times them. intelligent network also routes the use according to price. We recommend it.

- What is the position of research in the context of renewable energies?

"Despite very cost - high stations - solar energy power, is necessary to include them on how much it can absorb solar power. It will bring an element of diversity that need a mix. But it also puts a higher confidence level of assurance of supply. Adding stations these will force the resistance strategy.

- Does not checked the problem of monopoly electric company in Israel?

- "It was not the focus of this research study would take a special, separate. Our research looked at the energy sector in central planning interface.'s True that failures due to monopoly. California has a lot of electricity producers, but apparently this model is not always good. Dissolution - other of IEC or too many economic factors that create problems. It is clear that Israel Electric Corporation is a vertical and horizontal monopoly. It controls all the way to create a door to the consumer, and the creature itself. when it comes to talking about natural gas distribution to five regional supply .'s a certain competition. so we suggest here that the government will oversee retail wholesale prices based on real costs. Without monitoring it - will be allowed a monopoly ".

- Why?

"Because if uncontrolled final price will be too low for such a monopoly, it will prevent other factors come here to drill and find additional reserves in the sea or promotion of drilling. If too high, then the monopoly will be the only manufacturer and affect the subject of competition. That will be productive Small power can not pay for gas. and monopoly can edit these and other agreements with large companies offer prices that competitors will be worth little.'s bargaining power becomes smaller competitors. Supervision is required to increase competition.

- How Htiilstm gas price?

"We ran the model scenarios cover the range of options for decision makers, both state that the IEC would remain in the structure of the day or be privatized, etc.. The gas price is taken into account the long term, but concluded that what affects the construction of a more stable strategy is not specific but relative price: How much natural gas from one source, compared to the price elsewhere. Or differences between the gas comes in liquid (LNG) versus gas pipeline. We currently do not know what will assess future gas price and not the construction cost of the facility Hgt"n (gas - naturally - a liquid). In this matter are only estimates and different. So just treatment are to system considerations is that matters, not price itself ".

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