

The Israel Energy Sector – Vision for 2028

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Edited by Prof. Gershon Grossman and Tal Goldrath

Abstract

The "Israel 2028" program presents a national vision and strategic goal for Israel to be among the 10-15 leading countries in terms of GDP per capita, with all sectors of the population being included in production and welfare. The program was initiated and financed by the U.S.–Israel Science and Technology Commission; it was directed by a public committee and a major part of it was developed at the Samuel Neaman Institute. The strategic plan was adopted by the Prime Minister and was presented in 2008 before the entire government, which approved the program.

An important aspect of this program is the vision of the future of the energy sector of Israel. In recent years, significant events have occurred in this field, most notably the discovery of large quantities of natural gas off the coast of Israel. Finding natural gas frees Israel, at least partially, from its dependence on imported energy sources. It influences not only the electric power generation sector, which will be the first to enjoy its advantages, but also the industrial sector, and later on the transportation sector as well. In addition, there is a significant potential for establishing a chemical industry based on natural gas.

With the development of the gas infrastructure, connecting the existing gas fields to the energy consumers and continuing the search for new sources, a discussion arose on the expected and the desired mix of energy sources to be used in the state of Israel in the coming years. The Tzemakh Committee for Future Gas Economy is debating issues related to the export of gas versus conserving it to form a secure supply and using a high percentage of gas to generate electricity.

Another energy source attracting increasing attention is renewable energies, which are expected to constitute a significant part of the future mix. Israel has a considerable potential for generating electricity and heat using solar energy. Government decisions and incentives given in this area have already caused an increase in the use of solar energy, though so far it is lagging behind the government's targets.

Another important aspect of Vision 2028 is the environment. A consensus exists, and even public pressure, regarding the need to reduce polluting emissions associated with energy generation, primarily for the sake of public health in Israel, and also to meet the country's international obligations.

The major axis around which the discussion about the energy vision for 2028 revolved was the mix of energy sources to be used in future years. The recommended mix for electricity generation, as agreed upon by most participants, is 50% natural gas, 30% renewable energy, and the remaining 20% - coal, oil shale, and possibly nuclear energy. However, the correct method for reaching conclusions regarding the optimal mix involves analytical modeling and its application to different scenarios of assumptions and parameters, and these issues should be the focus of discussion among the experts.

Natural gas, which is the primary source, has many advantages but its use involves problems and risks that require preparation. Much of the debate has centered on converting gas to electricity at a high percentage and exporting gas versus saving it to form a secured supply. Do economic considerations outweigh the security consideration, and what is the price of the security? Another issue is Israeli industry, that is, increasing the gas supply to existing industry and even the establishment of a new, gas-based chemical industry.

Renewable energies are advantageous environmentally and in terms of security of supply, but they have considerable disadvantages in terms of cost of production, their land-intensive characteristic, availability of production, and grid connection problems.

Improving energy efficiency is a field which has significant potential, and deserves proper attention and effort.

Recommendations

1. Along with the construction of the infrastructure for the natural gas supply, investments have to be made in security: establishing a redundant transmission system at the gas inputs and pipelines, and allowing fuel duality in all gas-driven power plants, so it would be possible, if necessary, to change over immediately to using an alternative fuel. Beyond that, the natural tendency to increase the proportion of gas in the resources used for generating electricity beyond 50% should be resisted.
2. Investment in renewable energy should be scheduled as quickly as possible. To be able to play a significant role in the electricity sector of the State of Israel, renewable energy should be incorporated at a faster rate than the growth rate and the increase in consumption, considering the limited potential and final utilization of appropriate land space.
3. Natural gas can provide a basis for an advanced chemical industry, and the Ministry of Energy is acting, together with the Industry, Trade, and Employment Ministry, to promote the issue. To do so, it is necessary to ensure the certainty of a long-term gas supply; otherwise there is no chance for investment in this industry. This should be taken into account when considering the export of gas.

4. Beyond the security risk, the impact of gas drilling on the marine ecosystem has to be studied and all necessary measures should be taken to minimize damage. In addition, knowledge and skills should be gained about how to manage failures in order to prevent an ecological disaster that would have broad implications, both political and economic.
5. It is necessary to formulate a national plan for the mix of energy sources, with operational objectives defined by industries, budgets, and schedules. The program's activities should include research and development to develop technologies and their application in industry and transportation.