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SUMMARY OF THE NATIONAL REPORT SUBMITTED BY
ISRAEL*

* The designations employed, the presentation of material and the views expressed in this paper are those of the submitting Government and do not necessarily reflect the practices and views of the Secretariat of the United Nations in any of these respects.

Like most countries without indigenous energy sources, Israel is faced with the challenge of adapting to the world energy transition. In Israel, almost all energy consumption is derived from petroleum, some 8 million tons per year, about 99 per cent of which is imported. From the geological point of view, there seems to be no reason why petroleum should not be found in Israel, since layers of rock and underground formations which point to the presence of petroleum are found here. Although large reserves of petroleum have not yet been found in Israel, that could well be because the search has not been wide enough, sufficient resources have not been devoted to it and sufficient research has not been conducted.

A massive effort has now been started to make up for those shortcomings because a national problem of the first priority is involved.

Clearly, efforts to increase Israel's self-sufficiency in the field of energy must begin by developing alternative energy sources, especially those available in Israel. The principal alternative sources of energy which are open to exploitation and development are coal, nuclear hydro-electric power, solar energy, oil shale, geothermal energy, wind and energy produced from waste and city garbage.

The national effort to develop alternative energy sources is based on the following principles:

The introduction of coal into the economy as a primary energy resource, as a replacement for liquid fuels. The principal option in the short term for reducing our dependence on liquid petroleum is to convert to coal, both for the production of electricity and for industrial production. Thus, this year the first power station for the production of electricity from coal will be activated in Hadera and, towards 1985, when all four coal-powered units will be in operation, about 40 per cent of the total production of electricity in Israel will come from coal.

The Ministry of Energy and Infrastructure is working towards large-scale conversion of part of the energy-intensive industrial capacity to coal, so that large industrial plants will be coal-fired. By 1985, coal will replace some 400 to 500 thousand tons of fuel-oil. The goal is that, by 1990, roughly 70 per cent of the total production of electricity in Israel will be from coal, which will account for some 30 to 40 per cent of the total energy production in Israel.

The Mediterranean-Dead Sea Canal. This project takes advantage of the topographical differences in levels of the Mediterranean and the Dead Sea for the production of hydroelectric power.

The development and application of solar energy. Israel is an important pioneer in research, development and exploitation of solar energy. It is the only country in the world in which 1 per cent of the total consumption of energy is based on the collection of the sun's rays through solar water-heaters. Several companies in Israel produce flat solar water-heaters, most of which are used for domestic purposes in about half a million apartments in Israel. In 1977, for example, the savings in electricity were equal to about 3 per cent of electricity production.

The Ministry of Energy proposes to encourage the use of solar hot-water heaters and to double the number of households using them. Publicly financed housing projects will be supplied with solar hot-water heaters. By the middle of the 1980s, some 60 per cent of all homes will use solar hot-water heaters, representing a saving in electricity equal to about 6 per cent of total production.

Probably the greatest potential for the use of solar energy is to be found in the installation of solar ponds, an example of which was inaugurated at the end of 1979 at Ein Bokek, on the shores of the Dead Sea. An installation containing a 1-square-kilometre pool and a turbine generator is capable of producing between 5 and 7 megawatts of electric power, thus saving about 30 tons of fuel per day.

In Israel, there are several deposits of oil shale, the principal ones being Mishor Rotem in the Northern Negev, to the east of Dimona, and in Nahal Zin and Har-Tuv. Estimated total oil shale reserves in these areas amount to about 2 billion tons, with an average concentration of organic matter above 15 per cent. This is roughly equal to 200 million tons of oil, from which 100 million tons of gasoline can be produced.

At present, the possibility of producing crude oil from shale at the rate of about 1 or 2 million tons per year is being examined. Such a programme demands the adoption and development of technologies which exist in pilot plants, but have not yet reached technical and commercial maturity.

The exploitation of geothermal energy. In Israel, a project will be started during 1981 involving the pumping of hot water in the Ashdod area. If that experiment proves successful, it could lead to additional plants, which will contribute to reducing oil dependency.

In Israel, an advanced installation for the production of gas from agricultural waste material has been developed, one of the finest examples of which can be found in Kfar Gil'adi. This installation will produce gas equal in value to about half a ton of fuel oil per day and, in the light of the success achieved, it is intended to install similar plants in every kibbutz and agricultural settlement which can produce gas by this means.

Assuming that some 80 bio-gas plants will be in operation during the late 1980s, each unit producing 3 billion kilo-calories of heat annually, the savings in raw energy for the country will be just under one half of 1 per cent.

The increased electrification of the Israel energy economy. Both the use of coal and a large part of the alternative means for producing energy are bound up with the production of electricity. Therefore, we must increase the electrification of Israel and make it more efficient, adapting the structure of energy consumption in the economy to our long-range goals. This can be done by converting household heating to electricity and by adapting furnaces and heaters, which are today fueled by oil in many factories, to electricity. Substantial structural changes are needed in the area of transportation through the construction of electrical mass transportation systems and the extended use of electric powered trains. Such steps are aimed at raising the level of electricity

use to around 50 per cent of the total energy consumption in the economy. At present, electricity represents only about 36 per cent of all energy.

The financial investments involved in those projects are vast, as are the risks, both in terms of technology and financial input. The goal must not be an absolute reduction in the consumption of electricity, but rather a moderation of the rate of growth, so that there will be no economic recession. In fact, the goal is to make a significant improvement in the productive use of energy in the entire economy by increasing energy-saving measures and preventing waste.

All efforts towards diversification and the development of alternative sources of energy notwithstanding, Israel will still be 30 per cent-40 per cent dependent on oil at the end of the century. Our primary goal is to achieve this target and go on to refine the means of reducing our oil dependency even further.
