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EXPANDING ISRAEL'S WATER SUPPLY: A STRATEGIC APPROACH

The crisis in Israel's water supply imperils the nation's most essential goals, the growth of its population and the expansion of its industry. In many areas demand for water already outstrips the capacity of natural water sources to replenish themselves: In dry years, demand from urban consumers alone roughly equals the available supply of the present natural system. Yet the government continues to subsidize water, encouraging the consumption of existing supplies while discouraging investment in new resources. Rational management of the water system requires a strategic approach which will lead to an overall increase in available water. The government should take the water-pricing mechanism out of the hands of the farm lobby, price water at or above the real costs of production, and open the construction and operation of water-production facilities to competitive private firms. Farmers can be offered a revised system of financial incentives which encourages efficiency rather than waste.

I. INTRODUCTION: THE DIMENSIONS OF THE CRISIS

Although good rainfalls in the previous two winters have given temporary respite, the gravity of the water problem in Israel remains unchanged. It is a predicament the severity of which has begun to exceed the limits of an *economic* problem, and is assuming the dimensions of a *strategic* one—a problem which threatens the very physical survival of the country.

For the purposes of the present analysis, the distinction between an economic and a strategic approach to a problem is that in the former case resources are considered to be given and finite, and the principal focus is on ways to allocate them optimally;

whereas in the latter case, the point of departure is not available resources but desired objectives, and the principal focus is on marshaling and activating the resources required for the attainment of these objectives.

In the context of the nation's water problem, it can be said with a large degree of accuracy that the proponents of the economic approach tend to stress the demand for water and the need to reduce it, whereas the proponents of the strategic approach tend to stress the supply of water and the need to increase it.

It would be a grave error to believe that Israel has sufficient water and that a suitable pricing system would bring about a rational allocation thereof, satisfying all appropriate needs. Underlying this claim is the assumption that if the water supply to agriculture were to be reduced, there would be enough water available to satisfy the non-agricultural demand—the demand for water for domestic, municipal,¹ and industrial use.

This assumption is, however, entirely invalid. At present the national water system in Israel comprises three major sources which supply virtually all the non-agricultural consumption: The Sea of Galilee (Kinneret), the Coastal Aquifer, and the Mountain (Yarkon-Taninim) Aquifer. **During periods of poor annual rainfall, the permissible quantities that can be pumped from these sources without breaching the hydrological danger levels, thereby risking permanent damage to them, approximate the overall non-agricultural consumption.**

Before the winter of 1991-1992, for example, government hydrologists estimated it to be possible to supply a total quantity of 600-650 million cubic meters (m³)—150-200 million from the Sea of Galilee, 150 million from the Mountain Aquifer, and 300 million from the Coastal Aquifer²—an amount which is roughly equivalent to, indeed slightly less than, the non-agricultural demand of the nation. Consequently, the entire permissible output of the present national water system is required for non-agricultural uses, even without taking into consideration the increase in future consumption due to population growth and higher standards of living. **The necessary implication of this is that any provision for agricultural uses must inevitably entail over-exploitation of the these sources.**

Non-agricultural demand for water is relatively inelastic—that is, it is unlikely to fluctuate much with changes in price—and this is especially so in the short-medium term. It is therefore difficult to see any feasible way to reconcile balanced management of these resources over time³ with an increase in supply to the non-agricultural sector at the expense of the agricultural sector. *Any* allocation to agriculture from these sources necessarily implies excessive, and hence unsustainable, exploitation of the resources.

II. THE LONG RUN LOOKS WORSE

In the long run, the picture is even bleaker. Israel is a country devoid of natural riches. The only resources at its disposal are human resources. Consequently, the nation's future development, indeed its very survival, is dependent on the quality and ability of its people. **One of Israel's most vital strategic aims must therefore be to generate a quality of life which can compete with that of other countries which may be attractive to talented Israelis with high earning capacity. Water is an important component in generating the necessary quality of life required by this segment of the population.**

Present per capita urban consumption of water in Israel, while high for the Middle East, is in no way extravagant for an industrialized country. If one compares the figures for water consumption in Israel with those for California, where roughly the same weather conditions prevail, some disturbing conclusions emerge. While the average urban consumption in Israel is roughly 75-100 m³ per capita per annum, in California the average *household* consumption alone is between 150-200 m³ per capita per annum. **If total urban consumption in Israel were to reach the level representative of Western living standards, and the local population were to reach 7 or 8 million, the entire natural supply would be required to satisfy urban needs alone.**⁴

It is therefore dangerously incorrect to conclude that water presently used for agricultural irrigation can be considered an alternative that can be reallocated for non-agricultural use. Unless the sources are to be over-exploited—and therefore depleted—all the available supply will be required for non-agricultural purposes.⁵

III. INCREASING THE WATER SUPPLY

Not only does the current situation appear to spell doom for Israeli agriculture—which eventually will be forced to give up its water supply to ever-increasing urban demand. It also poses a serious challenge to the prevailing conventional wisdom, which holds that higher prices will reduce the consumption of a scarce resource to levels commensurate with supply. This assumes that the demand curve (which depicts the quantities that the market will demand at different price levels) is relatively elastic (see Figure 1).

It is clear, however, that under conditions of inherent long-term and short-term inelasticity such as those which pertain to the case of national water consumption (with a very steep demand curve, as in Figure 2), the role of price as a demand-regulating device

is seriously diminished since price increases will have little effect in reducing demand. **When it comes to water, higher prices for urban household and industrial consumers will have very little impact on how much they consume.** This does not, however, mean that there is no compelling need to raise the price of water in Israel to levels which reflect the real cost of production. Indeed, just the opposite is true, but for a reason totally antithetical to that of reduction of demand.

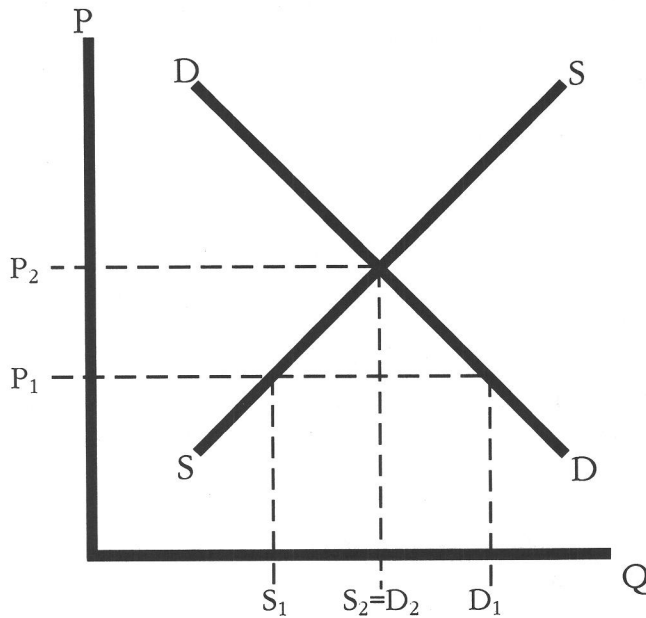


Figure 1. At the price P_1 , demand D_1 outstrips supply S_1 . However if price rises to P_2 then demand and supply will reach equilibrium, $S_2 = D_2$.

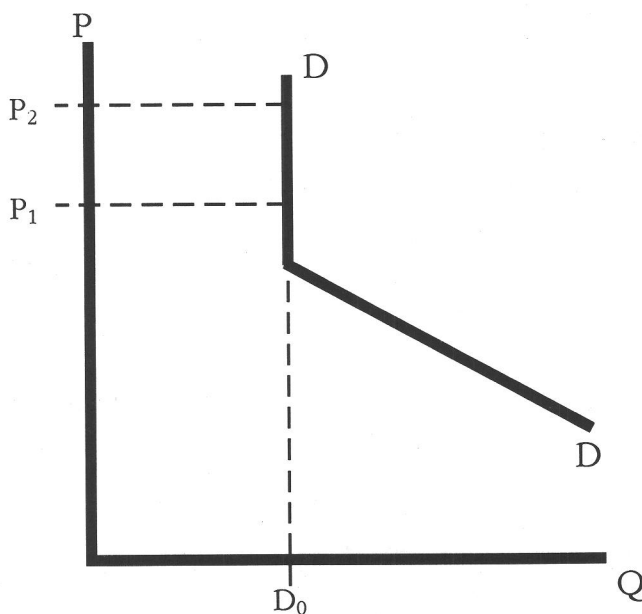


Figure 2. D_0 represents the inelastic non-agricultural demand. Raising prices from P_1 to P_2 will have no effect on the quantity demanded.

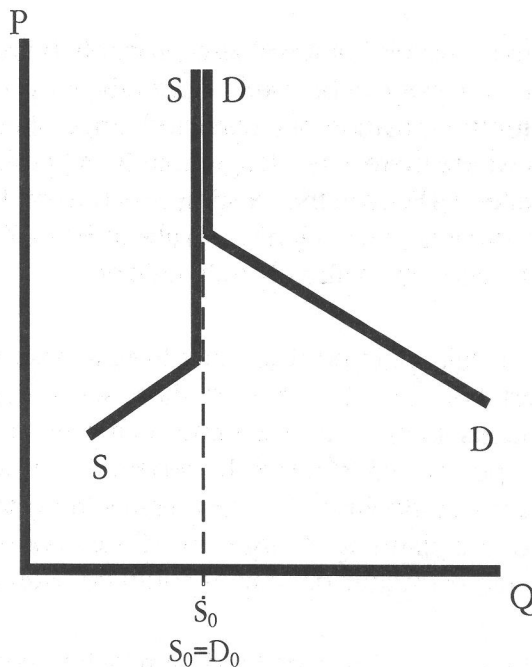


Figure 3. S_0 represents the total water supply (in the national system in the short run, and in the entire country in the long run). This is roughly equal to D_0 the inelastic non-agricultural demand in the short run and long run respectively. Since the supply cannot be extended beyond S_0 under existing conditions, the supply curve will be vertical (i.e., inelastic) at the point where $S_0 = D_0$ (approx.). This is the range in which the Israeli water system is operating, and one in which price rises would be ineffective in restricting demand, as seen in Fig 2.

Due to the fact that the supply of available water is limited to roughly the level of the inelastic quantities demanded by the non-agricultural sector, the supply curve (which depicts the quantities that producers are willing to supply at different prices) will also be inelastic. Thus the Israeli water system is operating under conditions of highly inelastic demand *and* supply, both in the short and long run (see Figure 3).

This inelasticity of supply determines the intrinsic structure of Israel's water problem, and creates the dilemma which faces the country in this regard. **On the one hand, Israel is a country located on the fringe of a desert and is dependent entirely on the weather for its water supplies. On the other hand, if western living standards are to be maintained, the inherent long-term demand will, as a matter of certainty, outstrip long-term natural supplies. The only solution to this dilemma is to generate additional, artificial sources of water that are not dependent on the weather.**

An increase in the water supply means making use of one or more of three available options:

- ◆ **Purification and recycling of sewage and waste water.** This method can extend the utilization of the existing supplies, but is subject to severe limitations: (1) The water produced will always be a percentage of the existing supply. Today extensive use is already being made of this method. Thus, although there is still ample potential for development in this field, recycling existing supplies will always involve limited quantities derived mainly from non-agricultural consumption. (2) Not only will the total amount of recycled water be limited to a fraction

(currently about 60%) of the primary water, but it will also probably be restricted as to *what* it can be used for, and *where* it can be used. Currently, recycled water can be used only in agriculture for the irrigation of a restricted range of crops, such as fibers, and only in areas where there is no danger that it will pollute underlying sources of ground water. (3) Given the existing structure of the Israeli water system, the potential for recycling water is limited to about 300-400 million m³, of which approximately 200 million m³ is already fully utilized.

- ◆ **Importation of water.** The possibility of importing water from abroad has been raised numerous times in the past. However, not only are there serious engineering problems and heavy investments involved in executing such activities, but the political conditions in the states upon which Israel might depend for water—Turkey and the Balkan states—are questionable. This fact makes importation an option which is too unreliable for the planning of large-scale future consumption, even if the formidable logistical and economic difficulties could be overcome.

- ◆ **Desalination.** Desalination is the only available method by which to genuinely increase the existing supply of water utilizing known and proven technology. The technique is applicable to both sea water and inland brackish water, and can be implemented in such a way as to generate large quantities of water.

If importation is ruled out because of the political instability evident in the possible source countries, this leaves only two feasible methods of extending the supply of water beyond the amount available in nature: recycling and desalination. However, neither sewage recycling nor desalination can become serious sources of water for Israel without the construction of processing facilities on a vast scale. **Undertakings on such a scale require commensurate large-scale investment, and the necessary capital will only become available if a reasonable return on investment can be offered. The only source of return for such investment capital is the price of the product itself—the price charged for the water produced.**

In order to extend the supply curve beyond the range of inelasticity and into the range where the supply and demand curves intersect in the normal fashion (and where price acts again as demand regulating instrument), there is no choice but to raise prices (see Figure 4). **For only at these higher price levels, reflecting the actual production costs, will it be possible to raise the capital required to create the additional artificial sources of water.**

In contrast to the conventional wisdom, the reason that the price of water needs to be raised is not the need for the regulation (i.e., reduction) of demand, but the need for the regulation (i.e., increase) of supply.

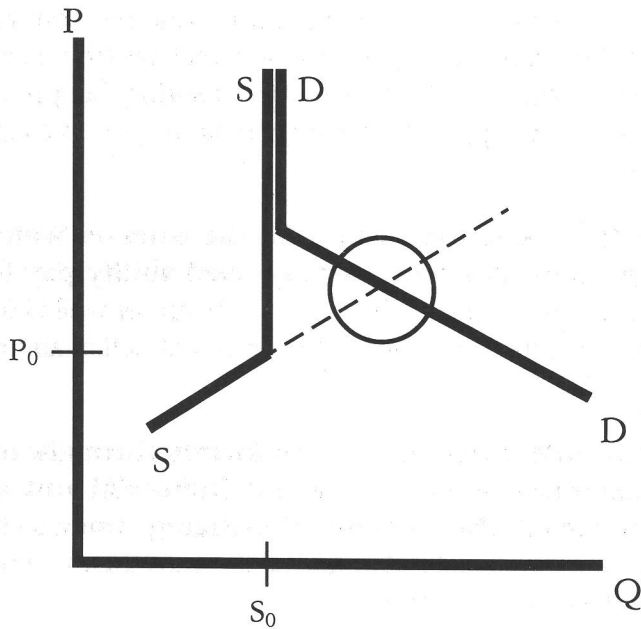


Figure 4. By increasing prices offered, the supply curve can be extended beyond S_0 by attracting investment in artificial water sources since these will facilitate a reasonable return on capital. This will allow the Israeli water system to operate in a range $Q > S_0 = D_0$ where normal supply and demand conditions exist as depicted in Fig 1.

IV. THE PRESENT PRICE MECHANISM: A RECIPE FOR WASTE

The existing legal framework regulating the overall operation of the Israeli water system is the 1959 Water Law. This legislation, which designates the Minister of Agriculture as the minister responsible for Israeli water system, was enacted under circumstances which in many respects are no longer relevant.

The law lays down contradictory guidelines for the manner in which the price of water is to be determined. On the one hand, Clause 111 stipulates that the price of water should reflect the actual costs of production. On the other, Clause 112(a) stipulates that the price should take into consideration the ability of the "consumers" (for all intents and purposes, "agricultural consumers") to pay.

It is true that towards the end of 1990, the Shamir government adopted a resolution to raise the price of water to real levels, but no serious effort has ever been made to implement it. In actuality, the price of water has been determined largely by the dictates of lobbyists affiliated with the agricultural sector.

Although until 1993 it was the Minister of Agriculture who determined the price of water, his decision had to be approved by a Knesset sub-committee known as the "Water Committee," comprising members of the Knesset Finance and Economic Committees. Traditionally, it was parliamentarians representing agricultural interests (the "agriculture lobby") who dominated the Water Committee's proceedings, ensuring that price changes not to the liking of the farmers were not approved and hence did not receive legally binding status.

Over the years it has thus been the custom for the Knesset Water Committee to give greater weight to the consumer's purported ability pay than to the real cost of production. As a result, prices have always been set well below this level, with the state treasury covering the difference between actual outlay and revenue, in the form of subsidies.

Moreover, as a general rule, prices are set uniformly throughout the country for each of the consumer classes—municipal, industrial and agricultural—irrespective of differences in the real cost of bringing water to the different regions. Prices set for agricultural and industrial use have been identical, and significantly lower than those set for municipal use.

Recently, the Knesset has introduced certain changes in the legislation regulating the water-pricing mechanism. As of last year, the price of water is no longer determined solely by the Minister of Agriculture, but by agreement between him and the Minister of Finance.⁶ The Water Committee has been abolished, and its authority to reject or approve price changes has been transferred to the Finance Committee proper. Formally, these legislative changes should be a step in the right direction, militating toward a reduction in the power of the agricultural lobby, but to date, they have made little substantive difference.

The kind of distortion this method of setting water prices introduces is clear. As municipal and industrial demand are largely unaffected by the prices determined by the government, the major negative effects are to be seen in the agricultural sector, as well as in the operation of the water system as a whole. Among its deleterious effects, the present pricing mechanism:

- X Subsidizes water waste.** The present pricing system in effect subsidizes each unit of water used. The price of water to the agricultural sector is as little as 13 cents per cubic meter, and 30 cents for urban consumers, while the "cost" of

water⁷ is estimated at 35 cents per cubic meter. Thus the more water used by the farmer, the greater the subsidy. This constitutes a great economic disincentive for saving water—which works directly against the great technological strides Israel has made in the field of water conservation and utilization.

- X Distorts land use and produce selection.** Setting uniform price levels across the country distorts both the geographic distribution of agriculture and the composition of the agricultural produce grown. Not only does the pricing system induce agricultural activity in areas where the cost would otherwise be prohibitive (presumably at the expense of areas where water is cheap—in some cases cheaper than the average subsidized price—and plentiful), but it encourages the cultivation of water-intensive crops in these areas.⁸ Likewise, the system removes the incentive for farmers in dryer regions to develop methods of dry (non-irrigated) farming and experiment with crop-types that can be grown with little water or low-grade (brackish) water.
- X Inhibits expansion of the water supply.** The artificially low average price obviates any reasonable return on capital and thus prevents investment of private capital in the development of new and desperately needed additional sources of water, thereby inhibiting the expansion of an inherently insufficient overall supply.

Another feature of the organizational structure of the water system operates not only to induce further distortion in the price structure, but in fact operates to hamper the very ability to accurately compute the real cost of water production. Nearly all the construction work in the water system relating to water producing plants (such as drilling sites, wells, pumping installations and some small desalination plants) and water carriage facilities (pipelines), are executed on a substantively non-competitive basis by the state controlled utility Mekorot, which also operates most of these installations. **Since the amortization of the installations is considered part of the cost⁹—which is subsidized by the government—and since normally no competing offers are considered,¹⁰ there is very little control over what the real costs of efficient water production should be, and commensurably little ability to calculate them.**

V. HOW TO END THE WATER SHORTAGE

In order to move towards a responsible, strategic management of Israel's water resources, the following steps must be implemented:

1 Take water-pricing away from the agriculture lobby

As a vital resource, water should not be subject to the control of a partisan group of consumers (the farmers) with vested interests (cheap, plentiful water)—nor to the control of their representatives (the Minister of Agriculture). With the exception of Simcha Erlich who held this post briefly in the late 1970's, the Minister of Agriculture himself has traditionally come from the farming sector, and has been perceived, almost without exception, as being charged with the preservation of the narrow sectarian interests of his "constituency."

An independent water authority should be established under the direct authority of the Prime Minister's Office, under which all water-related activities should be concentrated. This move is necessary both for symbolic and substantive reasons. Symbolically, such a move would underscore the overall national importance of water in Israel, and overturn the prevailing perception the agricultural sector has any sort of preferential standing in this respect. Transferring the decision-making authority away from the those affiliated with agricultural interests would facilitate a more objective and balanced approach to this crucial issue.

Such an authority should include three independent areas of activity under its jurisdiction: **(1)** planning of the future supply system and its maintenance as a viable ecosystem,¹¹ **(2)** supervision and inspection of ongoing supply system operations operated by private firms on a competitive basis, and **(3)** supervision and inspection of new installations, which should be tendered out to private firms on an open and competitive basis.

Since desalination, which is an energy-intensive process, will assume increasing importance, and since the water system itself is a crucial component in the country's basic infrastructure, there is certain logic to setting up the new Water Authority under the auspices of the Ministry of Energy and Infrastructure, as an alternative to the Prime Minister's Office.

2 Water prices must reflect real costs

The price of water to the consumer must reflect the real cost of production. This principle is essential, not in order to inhibit demand, but in order to induce the expansion of supply (chiefly through the establishment of artificial sources).

Such a policy of realistic pricing will not necessarily raise the price of water to agriculture in all cases, as farmers located in regions close to water sources may well receive water below the average price levied today. The price must also reflect the cost of maintaining the ecological viability of the source of supply.¹² This would place an upper limit on the cost of production equal to the cost of the cheapest feasible desalination option.

A new price-setting mechanism should be based on actual market forces rather than the current set-by-committee process. This can be done by requiring Mekorot to purchase the nation's water from a competitive market of producers without the assistance of government subsidies.

To make the prices reflect ecological maintenance costs, levies could be weighed against companies commensurate with the cost of maintaining the viability of the water sources upon which they rely.

3 Open up water contracting to private enterprise

Mekorot, the state-controlled utility, now carries out the great majority of the construction and operation of water system installations through subsidiary organizations. **The lack of competition inherent in this system has retarded innovation in construction and production techniques and virtually assured the continuation of current levels of inefficiency.**

Moreover, the absence of competition has eliminated any possibility of gauging the plausibility of the construction costs. Since no competing firms are allowed to make lower bids, there is no way of determining whether and to what degree the costs presented by Mekorot reflect those actually (or necessarily) incurred. **As a result, no accurate calculus can be made to the real cost of water, since the actual construction costs of the installations cannot be reliably ascertained.**

In order for the system to ensure the possibility of innovation in techniques, and for actual production costs to be subject to calculation, construction and operation of installations should be tendered out by Mekorot to competing engineering firms, and it should not under any circumstances be allowed to participate in the tenders itself.¹³ Participation by the state-controlled firm would prevent fair competition: Not only would it continue to have an unfair advantage vis-a-vis the tender terms, but any losses incurred by it would be eventually covered by the Finance Ministry, enabling it to drive off any rival offers and overshoot budget targets with impunity.

Tendering out construction work and the operation of facilities for genuine competition is thus the most effective way to ensure advancement and progress. It is also the only way of attaining a reliable yardstick for the calculation of the true cost of water installations and hence of the true production cost of water. **By allowing prices to reflect the actual cost of production and opening the water market to private competition, Mekorot will provide incentives for the creation of a new water industry which will provide an answer to Israel's strategic water problem.**

VI. KEEPING THE FARMERS IN BUSINESS:

HOW IT CAN BE DONE

Since the agricultural sector is the largest consumer of water in the country, no realistic restructuring of the water system can be achieved without addressing the effect such restructuring will have on this sector.

Dismantling the grip that the agricultural lobby has on the water-pricing mechanism will be a task of immense difficulty. Agriculture has always been a focus of Zionist mythology, and "Zionist agriculture" has become a slogan which partisan supporters of the agricultural lobby evoke whenever their vested interests are threatened. Moreover, they can point to the fact that in most countries, even those with distinctly capitalist economies, agriculture is usually supported by government.¹⁴

Contending with this issue will require not only dispersing much of the myth regarding the centrality of agriculture to the modern-day Zionist enterprise,¹⁵ but also providing rational substitutes for some of the present support mechanisms for agriculture. This is essential for making the necessary economic restructuring politically feasible.

The present subsidies of agriculture, especially the subsidization of water, are almost absurdly self-defeating. By subsidizing consumption, the system creates circumstances in which the greater the consumption of a critically scarce resource, the greater

the benefit to the consumer. **It is possible to design alternate methods of financial support for agriculture which would efficiently promote the national and Zionist interests which Israeli agriculture is supposed to accomplish — in place of the needless waste which the present methods foster.**

Historically, Israeli agriculture has been seen as fulfilling two major national and Zionist goals:

1. Generating a degree of independence in Israel's capacity to provide fresh food for the Jewish population.
2. Preventing the control of large inter-urban tracts of land from being controlled by populations not necessarily sympathetic to the build-up of the Jewish state.

The first of these goals involves more intensive, irrigated agriculture, especially where fruits and vegetables are involved. The second involves more extensive methods of agricultural activity and may include dry (non-irrigated) farming, or semi-dry farming (requiring only auxiliary irrigation, often with low-grade water), forestry, and livestock ranching.

Each of these goals may be promoted by offering Israeli farmers a subsidy tailored to the specific goal:

- ◆ **Reward efficient water use.** In the case of food production, the price of water could be subsidized by means of rebates on the basis of quantity of crop produced per unit of water. Thus a farmer who used water more efficiently would receive a greater rebate than one who used it inefficiently. The system would have to be adjusted for regional conditions, but as the country is already divided into agriculturally generic regions by the Ministry of Agriculture, this would present only minor administrative difficulties. **Such a system would reward thrift rather than waste, by making water effectively cheaper for those who make good use of it.** Another salutary effect this system would generate is that it would militate against the conduct of "black," or unreported, agriculture. Since farmers would have to declare the full extent of their produce in order to receive government benefits, they would be less likely to succumb to the temptation to sell their produce "unofficially."
- ◆ **Reward cultivation of larger areas.** To prevent the abandoning of land by Jewish farmers, it may be necessary to introduce an additional system of incentives based on area cultivated rather than water consumed. This would be a far

more effective and direct inducement to farm larger areas than the present subsidization of water consumption, which is granted without regard to how much land is actually being farmed.

By offering Israeli farmers financial incentives to increase the amount of land under cultivation and the efficient use of that land, Israel can continue to support the farmer on the land without resorting to the needless waste of one of its most precious national resources.

VII. CONCLUSIONS

Israel can overcome its water shortage if it abandons the present system of subsidizing water, a system which encourages consumption and provides no real incentives for the development of new resources. A strategic approach to the water problem must recognize that Israel's population must continue to grow, and that only the development of new water resources can make this a real possibility.

The main difficulty remains the fact that the state water monopoly sells water at prices heavily influenced by the agricultural lobby, which views wasteful water subsidies as a kind of entitlement program. The government must immediately take the pricing mechanism out of the hands of the farmers, if necessary providing them with alternative subsidies which do not encourage water consumption.

The government must enact a new pricing system which reflects the actual costs of water production, including the cost of maintaining the nation's water sources. By requiring Mekorot to open the water market to competition from private firms, it will be able to accurately gauge the actual cost of water to be used in determining its price, and at the same time provide incentives for the development of the new sources of water Israel will need if it is to continue to grow in population and industrial strength.

Dr. Martin Sherman
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NOTES

¹ The term "municipal consumer" refers to local authorities which purchase water from suppliers, mainly the state-controlled utility, Mekorot. The municipal authorities then sell the water to individual households, usually at a considerably higher price than that purchased.

² See "Water Potential Available for 1991," presented by the Israel Water Commissioner to the Minister of Agriculture, (February 14, 1991). See also the "Special Report on the Water System," issued by the State Comptroller (December, 1990), pp. 7-9, 22-23; see also pp. 30-31.

³ I.e., pumping rate equal to natural recharge due to precipitation.

⁴ Including sources not presently incorporated into the national system such as the minor aquifers in the Arava and the Jordan Valley.

⁵ Both in the short run, because of the composition and structure of the national system, and in the long run, because of increased population levels and higher living standards.

⁶ In the case of water prices within the jurisdiction of the municipal authorities, the required agreement is between the Agriculture Minister and the Interior Minister.

⁷ The "cost" of water is the price used to assess the feasibility of investment in water restoration plants. "Special Report on the Water System," issued by the State Comptroller (December, 1990), p. 37.

⁸ This policy may have been justified in the formative years of the state, when agricultural activity was the major (in many cases the only) means of achieving population distribution in outlying areas. Today, with modern means of transportation and communication, and especially considering the relatively small distances in the country, this objective can be attained more effectively and more economically by other methods.

⁹ And a significant portion of it, as the water construction industry is capital-intensive.

¹⁰ Even if competing offers were considered, since the engineering specifications are determined by Mekorot as the operator of the installations, there is little chance of any competitor actually winning any tender in which Mekorot itself also participated.

¹¹ This must include addressing both development of water sources and treatment of potential pollution sources, such as a sewage and industrial effluents, and their purification, disposal and/or recycling.

¹² Because water is in many respects a public good, and because preservation and the maintenance of surface and groundwater sources would entail costs well above direct production costs, both the costing and supervision of production cannot be appropriately left to the discretion of the private sector alone. The fact that the exploitation of natural sources would normally be far cheaper than desalination if ecological safeguards to prevent pollution and salination were not enforced means that if only direct production costs are to be included in weighing alternatives, these natural sources would be exhausted well before any alternative desalination option became economically feasible. The environment-wide damages this would cause (such as the salting of farmland) would be far beyond anything that subsequent desalination could correct. Immediate incorporation of the desalination into the present system is required to augment and preserve natural resources, and not to replace them once they have been irrevocably exhausted.

¹³ Another measure worth considering is the privatization of Mekorot, which could greatly enhance the company's efficiency and profitability. A more severe option, breaking up Mekorot into several competing

companies at different sources, would probably create a problem in which the government would have less capacity to react to sudden realities such as a drought in one source or surplus in another. At present, intensity of pumping can easily be varied on the basis of each source's current capacity.

¹⁴ This is a claim which is only partly relevant for Israel, where much of the agriculture (especially export-oriented sectors) engages in horticulture (fruit, vegetables and flowers), which is largely unsubsidized in Western countries. Most of the government supports in those countries are allocated to production of grains, fibres and dairy products.

¹⁵ Agriculture in Israel utilizes an inordinate proportion of national resources to produce a miniscule share of the GNP. Large tracts of land, up to 60-70% of the water and significant portions of the nation's capital, together with fiscal benefits relating to VAT and property tax, result in product which is roughly 3% of the GNP (Source: Central Bureau of Statistics).

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