

XI. SUSTAINABLE GROUNDWATER MANAGEMENT: HAS REGULATION WORKED IN ISRAEL, THE MECCA OF WATER MANAGEMENT?

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The principles of sustainable management of aquifers are well known. Yet, in many places they are not adhered to. The question that needs to be asked, therefore, is why are these principles not followed? There can be two answers to this question: ignorance and politics. Ignorance can take two forms. It can either stem from a lack of knowledge, or from the inability to communicate the principles to decision makers. In the case of Israel none of these would apply, as the aquifers have been well studied, and the dangers often raised. Thus, the cause for over-exploitation, at least in the Israeli case, is the politics associated with it.

The Israeli case is of general interest, as Israel has been one of the first countries to fully utilize its water resources, it is heavily dependent on groundwater, but has a relatively high capacity to address its water issues. Actually, Israel is often held as a paragon of careful management, as it employs many of the instruments suggested in various forums, such as centralized control, conjunctive use, metering and control of pumpage. The issues raised in the Israeli case may thus be illustrative for a wider set of situations, or clarify issues that may arise in the future in less stressed regions.

Israel has a sophisticated water management system. It is controlled by a Water Commissioner who holds extensive power that would be the envy of most water managers elsewhere. Yet, all aquifers in Israel have been severely depleted, as a result of several years of over-pumping followed by droughts. Thus it is clear that extensive power for an administrator will not necessarily lead to the implementation of a sustainable pumpage regime.

Over-pumping will not be addressed unless it is realized that over-pumping has a political-economy rationale. As decision makers prefer an uncertain loss to a certain loss (even if the mean value of the uncertain loss is higher than the certain loss), they prefer to mine the aquifer over a reduction in existing allocations to farmers. To counter this tendency it is necessary to establish an institutional structure that will make any such mining more difficult.

One of the main problems in the institutional structure in Israel is the lack of checks and balances. Essentially, the power to determine 'red lines' and to alter them is concentrated in the hands of the water commissioner. While he needs to consult with the Water Board, established under the 1959 Water Law, he needs not accept their advice. Moreover, this board is composed largely of farming interests, as these were seen at the time to be the main interests affected by water policies. Thus, this board only re-enforces the tendency of decision makers to defray

any cut in allotments. For this reason the parliamentary inquiry commission suggested that it be re-structure to provide a better checks and balance system, and that representatives of green bodies be included in it. Yet, this will not change the basic situation whereby pumpage is under the sole jurisdiction of the water commissioner who can be easily forced by the responsible Minister to succumb to the pressures of the agricultural lobby, as has indeed happened time and time again.

The author suggests that a further step should be taken, whereby this board will be given a formal role as a policy setting body. Essentially, the determination of red lines and pumpage strategy will be determined by the board, while the water commissioner will be entrusted only with the day to day management of the water system. Thus, over-pumping will require the agreement of a wide set of interests.

The main issue that will need to be addressed is the composition of the revamped water board. In order to preclude rash decisions it is suggested that it include a substantial representation of 'green' bodies, in particular the Nature Reserves and National Parks Authority and environmental NGOs, of bodies whose concern is water quality, such as the Ministry of Environment and Ministry of Health, and independent water professionals, mainly from academia (who are thus not dependent on the water commissioner or infrastructure ministry for their livelihood). These should be augmented with different user groups (including farmers), the water commissioner, and the ministries of finance, tourism and national infrastructure. As 'green' bodies, the ministry of environment and water managers generally oppose over-pumping (for different reasons) it is likely that authorization of over-pumpage will face greater difficulties than at present.

In Israel a position of a commissioner for future generations has recently been created. The idea is to have someone who can voice the concerns of future generations in current discussions. As groundwater over-exploitation may have significant effects for future generations, this commissioner can also be added to the revamped water board, thereby adding an additional partner to the 'sustainable pumpage' coalition.

The over-exploitation of aquifers is often a logical outcome of political-economic processes. To counter-act these processes this paper suggests that a checks and balance system needs to be established. In essence, the purpose of such a system should be to provide a voice,

and vote, to the multiple interests dependent on the groundwater or involved in its management, including nature and the future generations.

In Israel all major aquifers have been over-exploited, despite the wide-ranging power of the water commissioner. The pressures on some of the aquifers (particularly the western Mountain aquifer) can be expected to worsen if peace accords are reached, as they are shared with the Palestinians. Thus new institutional

structures will be needed also to manage the transboundary aspects of the aquifers. These will need to be developed over time, and include stakeholders from both parties.

The specific institutional structures will reflect, thus, the specific political, social and economic circumstances of each case. Yet, the principle of creating a structure where a sustainable pumpage coalition can be formed and have a standing should be seen as a requisite for the sustainable management of aquifers.