Israeli advanced water technologies - sharing TAHAL experience with India

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"The Next World War will be on Water" is a statement heard often.

The Situation in scarcity of Water has come to a Boiling point. The Prime Minister of India had announced the Year 2003 as Fresh Water Year and rightfully initiated measures to conserve Water at Prime Minister's Secretariat. Similar measurers were taken at President's House in New Delhi.

That is the seriousness of Water. No nation has yet gone to war over water. Serious clashes are often reported in various town/ villages in India & similar messages are received from US/Mexico border and in Angola. Water was a political agenda in recent State assembly Elections. In most places, the drinking water is supplied by the State Utilities or public sector and, is considered as a non-economic utility — to be supplied at a nominal cost or just free. Further, in a country like India, electoral politics further complicate the issue.

Who owns the Water from rivers, reservoirs or from Ground? Natural answer and as per colonial law, all waterways are owned by the State… Unless all of us participate in its Conservation and consider it to be our asset, stop any one from misusing it , we – the users are going to be in problem. Water touches human lives in many ways. Water for Food Security and Ecosystem has emerged as a major international concern. Agriculture is where the real world water crisis is taking place.

Israel has come out of that situation and now every drop of Water is accounted, may it be fresh water or effluent treated Water. In Israel the Water Supply Department head has the ready statistics of how much of each quality of Water is available or is being supplied.

Tahal has been working for over 50 years on Water and is actively following on various new developments in the treatment and desalination of effluents, brackish & other marginal Waters and is sharing the expertise Israel has developed in these fields. In Israel we have been examining the problems associated with the utilization of marginal waters & optimising currently available advanced technologies for utilizing various types of raw water.

In Israel, Water Engineers have been working on the common denominator of various programs is that they deal with waters containing high levels of dissolved matter. Utilization of these waters without appropriate removal of problematic components by desalination and other water purification techniques, would lead to severe hydrological, environmental, and in some cases, also health hazards. Israeli Water Engineers are continuously working on various new programmes to appreciate by noting that the quantities

of water involved and the budgets allocated for the projects vastly exceed those of the large seawater desalination project. The water capacities involved are of the order of 300 to 500 MCM a year, and the projected investments.

India needs to explore new large-scale programs designed to augment water resources by recovery and reuse of treated municipal wastewaters, rehabilitation of salinated and contaminated wells and desalination of brackish and marginal water sources and Isreal is ready to share its expertise.

Considering Indian Population of 1 Billion (1,027,000,000) having Annual renewable fresh water resources Internal 1,260 billion m3 with supplements from River flows from other countries 648 billion m3 making a total annual water resources (AWR) 1,908 billion m3, thus providing per capita 1,857 m3 .

In India the Annual Fresh Water Withdrawals Per capita is 588 m3 with maximum withdrawl of 92% for Agriculture.

Year	Population (in Million)	Per capita water availability - cubic metres
1951	361	5177
2003	1027	1857
2025	1394- Projected	1341
2050	1640- Projected	1140

India's resources to feed 16% of the world's population compared to world resources are just.

- Land resources - 2.5 %
- Fresh water resources - 4.0 %

The Problem thus is more acute.

A slogan was rightly heard in one of such programmes that "Thirst Rises Patience Evaporates" that is the start of the Boiling Point. Rain Water harvesting is not new to India track has been lost in between. In the meanwhile Cost effective technologies have been evolved. New Technologies in Agriculture (being the largest Consumer of Water) by Modernisation in Water management of larger schemes by increasing efficiency and payoff can reduce the consumption to a great extent.

Agriculture from Irrigation needs to respond to markets – especially for intensification and diversification by small farmers and not just "crop per drop" These are to be carefully planned for Successful implementation of poverty reduction with effective participation of small farmers.

The next issue in India is the Quality of water or water pollution Problems: According to statistics from the Central Pollution Board the Pollution from Household in 299 class I cities and 345 class II towns generate about 23,000 mld of wastewater of which only 6,000 mld is treated. In addition to 1,35,000 polluting industries generating about 13,000 mld of wastewater out of which nearly 6 0% generated from large & medium industries is treated.

It has been reported that non-point sources also contribute significant pollution loads mainly in rainy season (specially Pesticide Residue)

•Domestic sewage is most important pollution source in India which contribute pathogens, the main source of water borne diseases alongwith depletion of oxygen in water bodies.

•A large part of the domestic sewage is not even collected. This results in stagnation of sewage within city, a good breeding ground for mosquitoes and contaminate the groundwater, the only source of drinking water in many cities. I Most Common Pollution is from Faecal, Fluoride, Arsenic ,Nitrate, Iron, & salinity etc.

These problems have been adequately addressed by in Israel & we have been working on building data base on the soil type, land use and natural vegetation, cropping pattern, rainfall amount which is very little in Israel and distribution, crop water requirement. Tahal has been sharing the Holistic approach its Engineers have followed in integrating land, water and labour management Tahal can help bringing about the optimum balance between the demand and use of natural resources so that they remain sustainable over time. The Process involved will thus cover not only stabilizing (conserving) soil, water, vegetation but enhancing productivity of natural resources in ways that are ecologically sustainable. Israeli Technologies never allow the Water as gone after it is used once but water is used, it is recycled a number of times. Sometimes it can be reused within a day, a week; or may not be used again for years. Water is resilient and responds well to treatments. The Technologies to save water or not very expensive. Even if it comes with a price , these are just an initial investment s, which get recovered with utility gains within a short span. Harvesting the Fllods for Artificial recharge of the Ground Water and has been practised over years Cojuctive use of Surface water & Ground Water. Sewage treatment & recycling plant can be are now in use in various places. Soil Aquafier is another method to recharge the Ground Water. Waste water is used extensively and efficiently in Israel for Irrigated Agriculture.

Israel has sustained its needs for Drinking Water largely on Desalination Plants. Israel has seriously addressed the problem of Non revenue Water (like losses in Transmission discussed extensively in India) . Israel is ready to join hands with Indian Industry to reduce extensive evaporation losses in this tropical Country.

The Water as an Asset is reusable after its use may be for its use the same day or later. Let us Conserve Water before we fight for it.

In the past decade, TAHAL has carried out numerous consultancy assignments in many states in India, mainly for World bank financed projects. Work was focused on water resources development and consolidation, state water planing, water sector restructuring, water supply and environmental sanitation in urban and rural areas and agricultural development activities.

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