

Blue-Tech Frontier Roundtable: Desalination, Aquaculture and Coastal Resilience in the India-Israel Special Strategic Partnership

September 18, 2026 | 17:00 to 20:00 hrs | Trident, Chennai

Chair: Professor Khinvraj Jangid

The India-Israel Centre convened a closed door roundtable to discuss desalination, aquaculture and coastal resilience in the India-Israel Special Strategic Partnership in Chennai on the 18th of September, bringing together policymakers, think tankers, former bureaucrats, technologists, academics and industry practitioners.

Discussants:

1. **Dr. Khinvraj Jangid** - Chair, India Israel Centre
2. **Shri Aakash Guglani** - Non Resident Fellow, India Israel Centre
3. **Shri Ashok Natarajan** - Founder & Chief Executive Officer, Steady-Taps Consulting OPC Private Limited
4. **Shri Azhagu Pandia Raja** - Founder & Chief Executive Officer, Scrapify Ecotech
5. **Dr. Balaji Narasimhan** - Professor, Department of Civil Engineering, IIT Madras
6. **Dr. J. Guru Prasath** - Director, Indomer Coastal Hydraulics
7. **Shri Harmander Singh IAS (Retd.)** - Former ACS, Municipal Administration and Water Supply Department, Government of Tamil Nadu
8. **Shri Himansu Varghese** - Chief of Staff, Solinas Integrity Pvt. Ltd
9. **Air Marshal M Matheswaran (Retd.)** - Founder-President, The Peninsula Foundation
10. **Shri Nandhakumar E** - Chief Executive Officer, International Centre for Clean Water
11. **Dr. Ponnambalam Chandramohan** - Managing Director, Indomer Coastal Hydraulics
12. **Shri Sairakshit Raghupathy** - Research Officer, Deccan Centre For International Relations
13. **Dr. Santhana Krishnan** - Chief Executive Officer, SK Marine Technologies
14. **Dr. Venkatesan G** - Scientist - G, National Institute of Ocean Technology (NIOT)

I. Background

India and Israel are natural partners on water. India carries the world's largest population, a fast growing economy, and is urbanising rapidly, thus placing sustained pressure on its water resources. Israel has been a pioneer in building the world's most advanced water systems, having never had access to abundant natural water.

Around 54% of the country's land area faces high to extremely high water stress, meaning demand is close to or already exceeds available supply. This burden falls heavily on some of India's most industrialised states. Maharashtra, Tamil Nadu and Gujarat together account for roughly 30% of national GDP, yet all three face serious water constraints. Agriculture accounts for about 90% of India's water use, while households consume only a small share, and this imbalance leaves farmers with little incentive to adopt treated wastewater. Sewage treatment remains a persistent gap. Central Pollution Control Board data from 2021 shows that Indian cities generate about 72,000 million litres of sewage a day, yet treatment capacity covers only around 44% of this volume, and only about 28% is actually treated. Indian cities typically lose 40% to 50% or more of the water they supply through leaks, theft and unmetered connections. Chennai illustrates the limits of the current approach. The city already draws water from the Krishna river system in Andhra Pradesh to the north and from Veeranam lake, more than 200 km to the south, and has added large scale desalination on top of these sources. With demand projected to reach nearly 3,000 MLD by 2030-35, continuing to source water from ever greater distances is not a sustainable long term strategy.

Israel's response to a comparable challenge, at a smaller scale, has centred on technology and disciplined management. The country depends on desalination for most of its household water, with five plants supplying over 80% of domestic urban demand. According to the OECD, about 94% of Israel's wastewater is collected and treated, and 87% is reused, primarily for agriculture, with the World Bank estimating that this reused water accounts for roughly half of all irrigation water in the country. Israel has additionally developed the capability to recharge underground aquifers, injecting treated water deep underground for storage even under desert conditions. Its firms are recognised for digital tools that manage water networks, including sensors and software that detect leaks, monitor flows in real time, and build digital models of urban pipe networks to test changes before implementation. India's own updated water manual already incorporates practices drawn from Israeli experience. Israel has also developed lower cost, smaller scale solutions suited to Indian conditions, including compact, trailer mounted desalination units producing upto 1 MLD, and natural treatment systems that use plants and soil rather than expensive membranes.

The India-Israel cooperation across this domain has deep roots that precede formal diplomatic relations which were established in 1992. Between 1950 and 1992, Indian delegations travelled to Israel to study its irrigation systems and water cooperatives. One such delegation was the 27-member Sarvodaya team which spent six months in Israel from February to August 1960, and on its way back planted the "Bhoodan Grove" in Jerusalem Forest. The team studied the kibbutz and cooperative settlement model. Israel's approach to water as a matter of national security further explains the depth of expertise it has developed in this field, with the Sea of Galilee, its principal natural freshwater source, situated near the Golan Heights, an area central to its strategic position.

This long standing relationship has gained renewed momentum over the course of the past decade. In January 2026, a high level Indian delegation led by the Union Minister of Fisheries visited Eilat and signed a Joint Ministerial Declaration of Intent on cooperation in fisheries and aquaculture. This was formalised the following month at the February 2026 Modi-Netanyahu summit in Jerusalem, through a Memorandum of Understanding on Cooperation in Fisheries and Aquaculture. The MoU establishes joint Centres of Excellence, cooperation on advanced Recirculating Aquaculture Systems, and a Joint Working Group to oversee implementation.

Tamil Nadu occupies a central position in translating this cooperation into practice. Chennai hosts one of India's largest wastewater reuse facilities, a 45 MLD plant at Koyambedu built with technology from the Israeli firm IDE Technologies, and the state is developing a new 60 MLD seawater desalination plant near Tuticorin, again with IDE Technologies. Tamil Nadu is the natural state to pilot the frameworks through which the broader partnership's commitments are implemented.

II. Partnership Model

Shri Ashok Natarajan observed that most Israeli water firms are small compared with Indian contractors, some of which are valued at USD 2 to 3 billion. He added that the budgets involved in India are also substantial. Tamil Nadu's water spending a few years ago stood at about ₹35,000 crore, and the national AMRUT programme is moving towards performance-based funding for cities, with AMRUT 2.0 carrying a total outlay of about ₹2.99 lakh crore and a central share of about ₹76,760 crore. Israeli start-ups will therefore need Indian partners to operate at this scale.

Existing partnerships demonstrate what long-term commitment can achieve. Netafim, the world's largest drip irrigation company, runs a large engineering operation from India. Jain Irrigation, a micro-irrigation manufacturer, first encountered Israeli drip technology in the mid-1980s and built formal ties with Israeli firms after 1992. It went

on to grow into a global player and in 2012 became sole owner of the Israeli firm NaanDanJain, before divesting its international business in 2022.

The table concurred that joint partnerships should work in both directions. India can draw on Israeli technology, while Israel can learn from India's experience of operating at a very large scale. Global water companies such as Suez and Veolia already rely on large engineering teams in India, underlining the strength of Indian technical talent.

Israel's MASHAV programme has trained a large number of Indian municipal engineers, but it was observed that lecture-based training has had limited impact on practice on the ground. The government spends about ₹25,000 to ₹30,000 per trainee, and 8,000 to 10,000 officials have been trained over the past year or two.

III. Aquaculture and Coastal Livelihoods

Israel first attempted to introduce advanced fish farming technology to India between 1990 and 1996. The effort did not succeed, as about 90% of Indian fish and shrimp farms are small family enterprises that could neither scale nor afford such capital-intensive systems. Despite this small-farm structure, India is one of the world's leading shrimp exporters. According to MPEDA, India exported seafood worth USD 8.46 billion in FY 2025-26, with frozen shrimp contributing USD 5,624.48 million. Participants viewed the sector's reliance on small farmers as a strength to build on rather than a weakness to correct.

As Dr Santhana Krishnan noted, this history points to a broader lesson for how the two countries should now approach cooperation in aquaculture. Recirculating Aquaculture Systems, the flagship technology usually associated with Israeli aquaculture cooperation, are highly capital intensive and in many cases might not suit Indian farms for the same reason the 1990s effort failed. If Indo-Israel cooperation is to succeed this time, Israeli organisations must familiarise themselves with the species actually farmed in India and the production systems Indian farmers already use, since standalone technologies developed for Israeli conditions may not transfer directly to the Indian context.

Several such areas were identified as better suited to India's small-farmer structure than RAS. These include protein supplements that can serve as an alternative to fish meal in shrimp feed manufacturing, disease diagnostics designed for farm-level identification of common pathogens, advanced bioremediation technologies such as the use of beneficial bacteria to treat shrimp pond water and sediment, image-capture technology for estimating shrimp biomass within ponds, and cost-effective phosphate and non-phosphate additives used in shrimp processing. More promising areas for cooperation also include small desalination units for shrimp hatcheries, with potential demand for several thousand units. Israeli start-ups are already developing tools in several of these areas and are keen to test them under Indian conditions.

IV. Indian Technological Innovations

Shri Harmander Singh IAS (Retd.) explained that repeated droughts have made Chennai one of the leading cities for desalination. The city currently operates two 100 MLD plants and a 150 MLD plant. A fourth plant of 400 MLD is under construction at Perur, with trial runs expected from September 2026 and completion by March 2027, which will take total capacity to 750 MLD. Upgraded equipment and improved intake and outfall pipelines have also raised the output of one existing plant from about 80 to 90-92 MLD. During a drought, even an additional 10 MLD provides significant relief.

During the droughts of 2017 and 2019, when Chennai came close to running out of water, the city drew on every available source. It tested and treated water from abandoned quarries and four unused lakes using mobile treatment units. It brought in 10 million litres a day by train from Jolarpettai and, largely as a measure of public reassurance, some by ship. Wells were dug in neighbouring districts, and several lorries transported water into the city. New legislation was passed after residents of those districts protested and the matter reached the courts. Alongside these measures, the city distributed water-saving taps, used grey water for toilets and roadside landscaping, and enforced the rule, mandatory across Tamil Nadu since 2003, requiring every building to harvest rainwater.

The roundtable examined the example set by IIT Madras, whose campus operates a dual plumbing system that enables full reuse of its wastewater, with one network carrying drinking water and a separate network supplying treated water for gardens and toilets. Surplus treated water is directed into the campus lake, from where it is subsequently drawn, treated again, and blended with the city supply. Participants noted that this model has directly informed Chennai's own emerging plans for returning treated water to its lakes, and was cited as a practical, replicable template for decentralised reuse at the institutional level.

The research undertaken by the National Institute of Ocean Technology was also discussed at length. NIOT has developed a desalination method that draws on the temperature difference between warm surface seawater and cold deep seawater, with plants based on this method already producing one lakh litres a day to serve Kavaratti, Agatti and Minicoy in Lakshadweep. The institute has additionally operated a 1 MLD barge-mounted plant off Chennai, and a plant at the North Chennai thermal power station that makes use of waste heat that would otherwise be discharged into the sea. NIOT is now working towards plants capable of generating both water and power from the ocean simultaneously. Participants noted that scaling up this technology remains constrained by the pumps, membranes and vacuum systems involved, and it was in this area, of engineering the technology up to commercial scale, that international partners, including Israeli firms, were identified as being actively sought.

V. Decentralised and Alternative Water Sources

It was observed that India's desalination strategy has, to date, been narrowly focused, and that several under-exploited opportunities exist to expand its impact at lower cost. Participants noted that many coastal industries require only small desalination plants in the range of 0.5 to 5 MLD, yet few Indian manufacturers currently produce systems at this scale. It was suggested that Israeli firms could establish production of such units within Indian coastal cities, or partner directly with Indian engineers to build this capability domestically.

The discussion further noted that India's desalination efforts have concentrated almost entirely on seawater, which carries high salinity and correspondingly high treatment costs. Participants pointed out that the estuaries of the Mahanadi, Krishna, Cauvery and Tamiraparani rivers offer significantly less saline water for roughly nine months of the year, and that treating this water would require far less energy. The same investment currently yielding 100 MLD from seawater could, it was argued, produce considerably more from these estuarine sources.

On the question of Chennai specifically, the roundtable observed that the city receives approximately 1,400 mm of rainfall annually, which across the wider metropolitan area amounts to several multiples of household demand. Despite this, stormwater drains currently carry most of this rainfall directly out to sea, even as the city continues to invest heavily in converting seawater into freshwater through desalination. The group agreed that rainwater capture should accordingly be treated as a first order priority, ahead of further expansion of desalination capacity.

Participants also raised the condition of Chennai's river basin, which contains an estimated 4,000 lakes and ponds, a large number of which have become repositories for sewage as a result of centralised water and waste management. The roundtable concurred that treating and reusing water closer to the point of consumption, and storing treated water within local lakes, would reduce the city's dependence on distant water sources. The discussion pointed out that communities with a clear understanding of where their water originates are more likely to protect that resource, and that fencing off lakes tends to exclude legitimate users without effectively preventing dumping.

VI. Recommendations

The roundtable put forward the following policy, governance and capacity recommendations that could positively help enhance the India-Israel cooperation :

1. Devolve approval for small desalination plants to District Collectors, especially in water-stressed districts, while keeping central Coastal Regulation Zone oversight for larger projects. At present, even a plant producing a few million litres a day must clear the same central process as one a hundred times its size, which slows down urgent local needs.
2. Expand treated water use beyond industry to public supply. Chennai's Koyambedu plant produces water clean enough to reuse, but sells it only to factories. Singapore blends part of its recycled water into reservoirs after further treatment. A safer first step for India is releasing treated water into local lakes, where it can be naturally purified and treated again before reaching homes.
3. Direct more treated wastewater to agriculture and expand efficient irrigation. As Israel's experience shows, this can free up significant volumes of freshwater for cities.
4. Prioritise stormwater capture and aquifer recharge through stronger infrastructure. The CGWB's 2020 Master Plan already envisages 1.42 crore recharge structures nationally, capable of harnessing 185 BCM of monsoon rainfall; implementation now needs to catch up.
5. Prioritise brackish estuarine water over full seawater for desalination. The estuaries of the Mahanadi, Krishna, Cauvery and Tamiraparani offer significantly lower treatment costs.
6. Tackle non-revenue water with a complete digital pipe network map, smart meters, pressure sensors and acoustic leak detectors, integrated into one central system. This can be linked to the Command and Control Centres already set up under the Smart Cities Mission, making leak detection part of routine city management.