

Can Desalination Quench Huatulco's Thirst?

By Randy Jackson

Check into a luxury resort in Huatulco, and you'll find cascading pools and long, powerful showers. Water feels abundant. Yet just down the road, a neighbourhood may be waiting days for a water truck to arrive. Between the blue Pacific and the green forested mountains, this idyllic destination hides a growing imbalance: Huatulco's potable water supply is no longer keeping pace with the demands of an expanding resort and its surrounding communities.

This struggle mirrors water issues found across Mexico. While long-term infrastructure investment remains essential, relying solely on public funding may no longer be realistic. To meet the growing needs of Huatulco, it's time to consider new approaches, ones that combine modern water technologies, public-private partnerships, and conservation. There is no silver bullet, but with the right vision, Huatulco could become a model for sustainable water management across Mexico and beyond.

Huatulco's Water Situation

Huatulco's water infrastructure was planned and built by Mexico's national tourism agency, FONATUR (*Fondo Nacional de Fomento al Turismo*), in the 1990s as part of the original development blueprint for the resort. The system draws from eight semi-deep wells in the Copalita River watershed, feeding into 16 storage tanks along a 12-kilometre distribution main line. While still operational, the system is showing its age. In 2022, CONAGUA (Comisión Nacional del Agua) classified the Copalita aquifer as having medium availability but noted that the downstream infrastructure was increasingly outdated. A year later, the Secretariat of Infrastructure, Communications and Transportation (SICT) confirmed the need for major upgrades.

Today, over 50% of Huatulco's potable water goes to the tourism and hotel sector. Per capita use is heavily skewed, with oceanside hotels and condominiums consuming a disproportionate share. Meanwhile, population growth has steadily increased overall demand, straining both supply and delivery. Much of this concentrated water use takes place within the tourism corridor, a relatively compact stretch of just four bays and eight kilometres of coastline. Inland neighbourhoods, in contrast, often face shortages and delays.

This imbalance, while problematic, may also represent an opportunity. Could the tourism sector pilot a localized, sustainable solution, one that draws from the very ocean it overlooks?



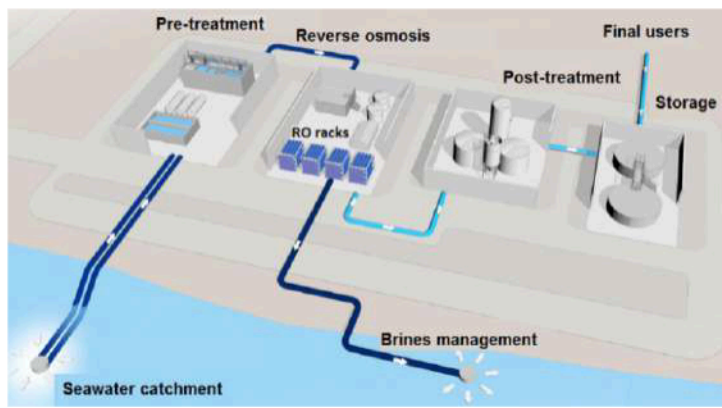
Modern Desalination Technology

In the 1967 film *The Graduate*, Dustin Hoffman's character, Benjamin Braddock, receives career advice in an iconic exchange. A friend of his father says, "I just want to say one word to you. Just one word: plastics." It was sound advice for the industrial boom of the 1960s. Today, if I had just one word to offer, it would be **desalination**.

As climate change alters rainfall patterns and droughts become more frequent, desalination is no longer an experimental method; it's a proven way to convert seawater into drinking water. Countries like Israel and Saudi Arabia now rely on it for the majority of their potable water. In Israel, up to 80% of the drinking supply comes from desalination. Mexico, too, is investing in the technology. Across the country, some 350 plants are currently processing around 750,000 cubic meters (198 million gallons) of water per day. For context, Huatulco's wells produce about 11,000 cubic meters daily, a small fraction by comparison.

There are two primary methods for removing salt from seawater. The older method is thermal desalination, where water is boiled, the steam is condensed, and you're left with fresh water. It's effective but expensive and energy intensive. The more common method today is reverse osmosis (RO), where seawater is forced through a semi-permeable membrane that filters out the salt. Thermal plants, such as the one built in Rosarito, Baja California, in the 1960s, have largely given way to RO systems due to their lower energy demands and reduced environmental impact. Today, nearly all new and planned desalination projects in Mexico and worldwide use RO technology.

Several small to mid-scale RO projects are now being implemented in coastal communities, some driven by necessity, others by innovation. A closer look at a few of these projects may offer valuable insights for Huatulco.



Some Innovative Public-Private Projects

The municipality of Los Cabos, Baja California, requires major new developments, especially luxury resorts, to install their own desalination plants. There are now between 25 and 30 such facilities in the region, many of which are privately or community-operated, often located within gated developments. One notable example is Pedregal, a high-end residential community perched above the blue Pacific in Cabo San Lucas. Its privately operated desalination plant supplies water to the development, but soon it will do more. Pedregal is set to become the first private desalination facility in Baja California Sur to sell potable water to the public system. Construction is expected to begin in 2024-25 on the infrastructure necessary to connect the existing plant to the municipal network, demonstrating how the public and private sectors can collaborate to address local water needs.

A very different kind of project is taking shape in the city of Fort Bragg on the northern coast of California. The city is piloting a small-scale desalination system powered entirely by ocean waves. The unit, developed by Oneka, a Canadian water technology firm, is tethered offshore and utilizes the motion of waves to generate pressure. That pressure drives seawater through reverse osmosis filters, producing fresh water that's piped back to shore. The pilot will begin with a single "iceberg-class" unit capable of producing about 50 cubic meters (13,000 gallons) per day. More units can be added to increase capacity as needed. Though modest in scale, the project demonstrates how renewable energy and desalination can be combined to meet local needs.

Thinking beyond the wells, such examples are worth considering for Huatulco, especially since the tourism zone is just eight kilometres long and accounts for a large share of overall water use while inland neighbourhoods face periodic shortages. With the town's freshwater supply already stretched and the distribution system in need of repair, Huatulco will need to look beyond conventional solutions. Could a small-scale desalination plant focused on the tourism corridor provide the necessary stability to ease shortfalls and support continued growth?

What If?

What if the leaders of Huatulco's resort development, the all-inclusive hotel operators, and officials from FIDELO (Oaxaca's state-level development commission), FONATUR and CONAGUA sat down together in the spirit of Mexico's new National Water Plan, which covers 2024-30? Could they envision a shared solution, such as a small-scale desalination plant serving the tourism zone, that would relieve pressure on the existing water system? Could that, in turn, free up more of the town's limited freshwater supply for inland neighbourhoods that suffer water shortages? Might it also allow public resources to focus on repairing leaks and upgrading infrastructure rather than drilling more wells?

It wouldn't solve everything. But it could be a first step, concrete, local, and scalable. And perhaps, if done thoughtfully and transparently, Huatulco could become not just a resort town managing a water crisis but a model for how public and private interests can come together to build a more sustainable and equitable future.

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