PACÍFICO SUR · BCS

Connecting the Pieces

A plan for our water, our energy, and our future

Para Todos · paratodosbcs.mx

Three articles. Three solutions. One question that keeps coming back.

We started this series by visiting a desalination plant and learning that the technology works, that it's already cheaper than truck water, and that responsible brine management is possible when done right. We followed that by exploring managed aquifer recharge, a proven approach to actually putting water back into the ground, with systems operating in Orange County, Israel, and Los Angeles for decades. And most recently, we showed that solar energy isn't just an environmental choice in BCS. It's the economic key that makes all of this affordable.

Each piece works on its own. But they were always meant to work together.

This final article is where we connect them. Not as ideas, but as a plan. With costs, with phases, with timelines, and with an honest look at the one question that determines whether any of it actually happens: who has the authority and the resources to make it real?

The complete picture

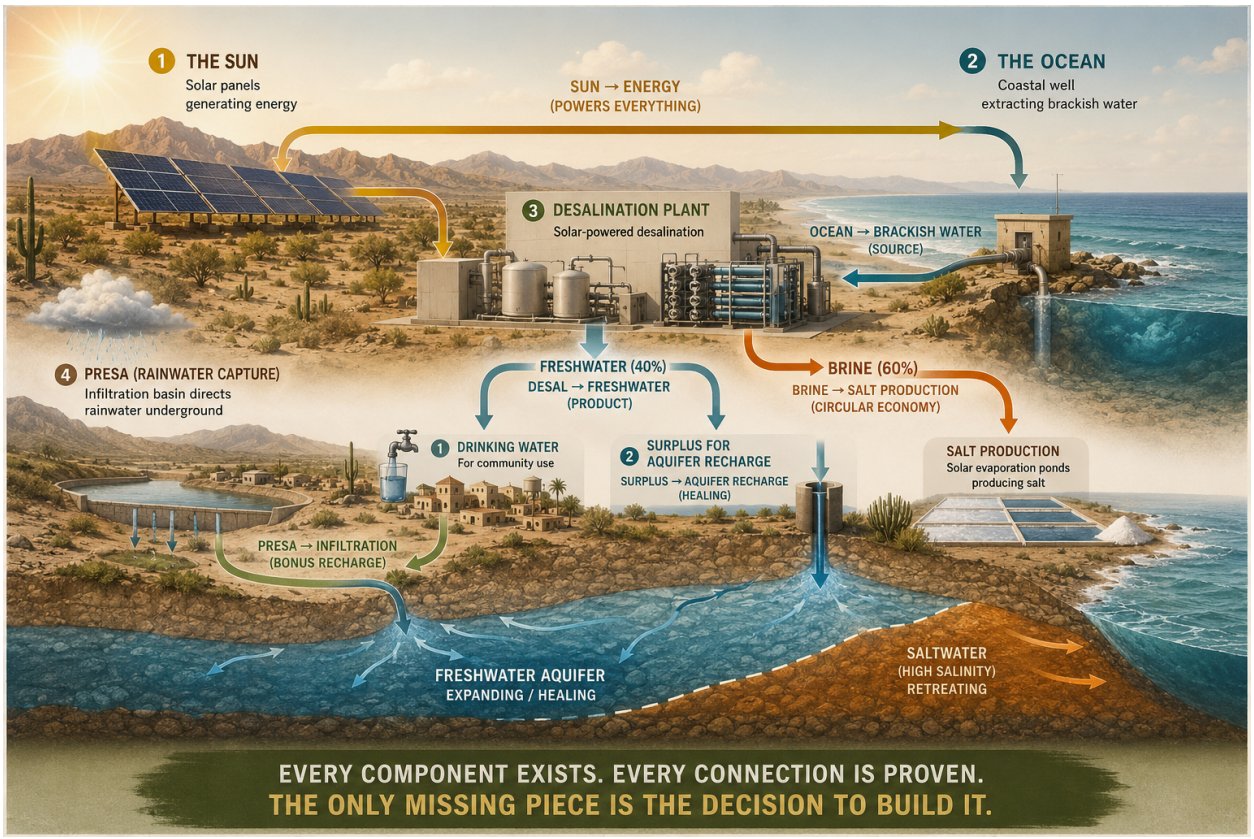
Here's what a sustainable water and energy system for our region looks like when you put all three articles together:

The ocean provides water. Coastal wells extract brackish water from the saline zone. Reverse osmosis desalination produces drinking water at roughly 35 pesos per cubic meter with solar power. That's 75% cheaper than a water truck.

The sun provides energy. Solar panels power the desalination, the pumping, the injection, and the monitoring. At BCS electricity rates, the solar installation pays for itself in 3 to 5 years. After that, the energy is essentially free for 20+ years.

Managed recharge heals the aquifer. Surplus freshwater from desalination gets injected inland, pushing the saltwater boundary back toward the coast. The presa's captured rainwater gets directed underground instead of evaporating. The aquifer begins to recover instead of continuing to decline.

Treated wastewater stops being wasted. Properties and communities treat their water and reuse it for irrigation, construction, and landscaping instead of using drinking water for everything.



None of these technologies are experimental. Every single component is operating somewhere in the world right now. What doesn't exist yet is the decision to connect them here.

An idea from our community: turning waste into value

During this series, Arq Mattera, a member of our community who specializes in sustainable architecture and circular economy, raised a question that stuck with us. Instead of disposing of the brine from desalination, why not turn it into a product?

The concept is called brine valorization, and it's a real and growing field. Desalination brine contains dissolved minerals including sodium chloride, magnesium, potassium, and even trace amounts of lithium, one of the most valuable minerals in the world right now because of battery demand. The global brine minerals market is projected to reach $2.3 billion by 2033.

Here's what we found when we dug deeper:

Simple salt production is proven and practical for BCS. Guerrero Negro, right here in our state, operates the largest solar salt facility in the world. The process is straightforward: spread the brine in shallow ponds, let the BCS sun evaporate the water, harvest the salt. Our climate is literally ideal for this. At the hotel's scale, this would produce roughly 1,500 to 1,750 tons of industrial salt per year.

Higher-value mineral extraction is emerging but not yet proven at scale. Technologies for extracting lithium, magnesium, and other minerals from brine exist and are being developed rapidly. California launched a commercial lithium recovery plant from geothermal brines in 2025. MIT and other research institutions are publishing new extraction methods regularly. But we need to be honest: the world's most ambitious brine mining project, a $1.5 billion facility planned for NEOM in Saudi Arabia, was cancelled in 2024 because the economics didn't work at that scale. The U.S. Government Accountability Office said in 2025 that "scalability and economic viability have not been demonstrated yet."

What this means for us: At our scale, simple solar evaporation for salt production is the realistic first step. The revenue from industrial salt alone won't transform the

economics, maybe $75,000 to $175,000 USD per year at hotel scale. But the real value isn’t the salt revenue. It’s eliminating the brine disposal question entirely. No brine going underground, no brine going to the ocean. Just a useful product made with free sunlight. And as extraction technology matures over the coming years, the same brine could yield increasingly valuable minerals.

This is the kind of thinking we need more of. Solutions that turn problems into opportunities. And it came from someone in this community, not from a consultant or an outside expert.

The monitoring problem we can’t ignore

Throughout this series, people have rightly pointed out that none of these solutions matter if uncontrolled extraction keeps draining the aquifer faster than we can refill it.

Water trucks operating daily with limited oversight. Agricultural operations drawing significant volumes. The question of who extracts how much, whether they’re within their concession limits, and whether illegal extraction is happening, that monitoring is inadequate. CONAGUA holds the regulatory authority, but enforcement on the ground has not matched the scale of the problem.

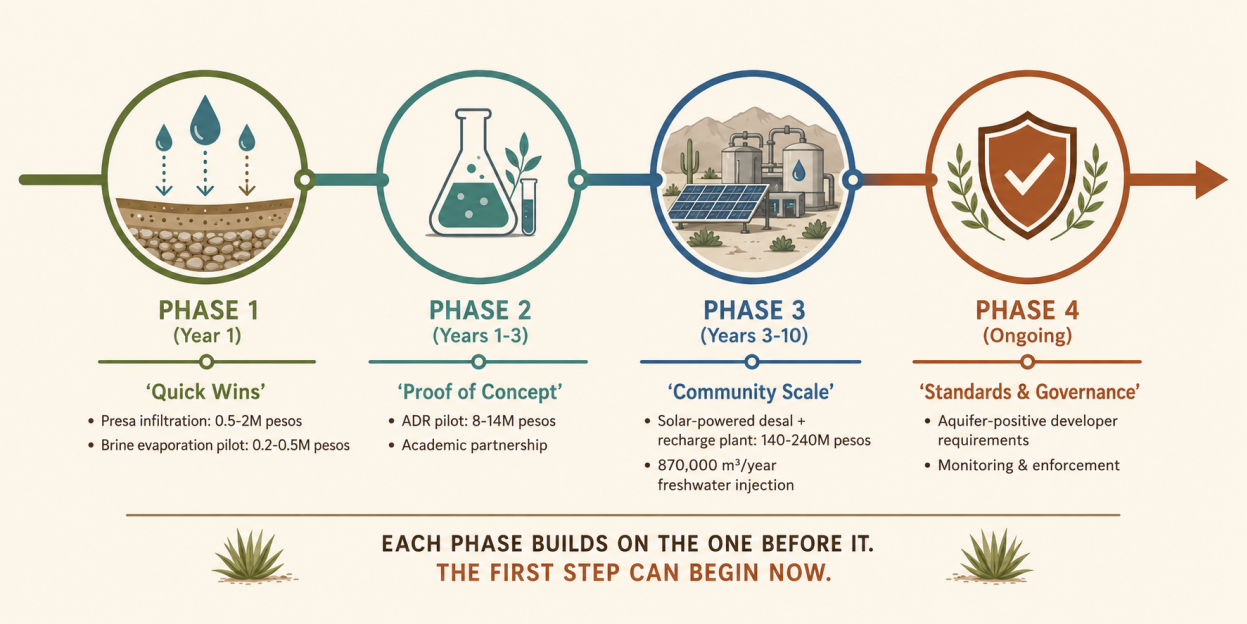
One community member did the math in our WhatsApp group. The 12,000 residents of Todos Santos, even at three times the normal consumption rate, use maybe 5% of the aquifer’s available water. Where’s the other 95% going? Who holds those concessions? Who’s monitoring compliance?

These aren’t rhetorical questions. They’re the other half of the equation. We can build the most sophisticated recharge system in the world, but if we’re pouring water into a bucket with a hole in the bottom, the math will never work.

We’re not going to solve this in one article. But we’ve committed to exploring it in a future piece: how other communities facing similar challenges have implemented effective water monitoring, what tools they used, and what options exist when federal oversight alone isn’t enough.

The plan, in phases

Here’s what a realistic path forward looks like. Not everything at once. Step by step, with each phase building on the one before it.



Phase 1: Quick wins (Year 1)

Presa infiltration. Redirect captured rainwater that’s currently evaporating into infiltration basins that recharge the aquifer. This is the simplest, cheapest, most immediately impactful action available.

> Cost: 500,000 to 2 million pesos
> Timeline: operational within months
> What it needs: hydrogeological study for site selection, earthwork for channels, basic monitoring
> Academic partner: CSU Todos Santos or UABCS/CITA

Solar evaporation pilot for brine. If a local desalination operation is willing to participate, establish a small solar evaporation basin to demonstrate brine-to-salt conversion. Minimal cost, high visibility, proves the circular economy concept locally.

> Cost: 200,000 to 500,000 pesos
> Timeline: operational within one dry season

Phase 2: Proof of concept (Years 1-3)

ADR pilot using existing infrastructure. Partner with a facility that already operates a desalination plant to test freshwater injection into the aquifer. The desalination plant we visited in our first article has unused extraction capacity and a functioning system. Any new resort development building a desal plant could serve the same role.

> Cost: 8 to 14 million pesos over two years
> What it includes: inland injection well, pipeline to injection site, monitoring wells, academic partnership for study design and data analysis, CONAGUA permitting under NOM-014
> What it proves: whether aquifer recharge works at this specific location, with this geology, at a measured cost per cubic meter

This is the critical step. Without pilot data, any larger investment is based on theory. With it, you have peer-reviewed proof that the concept works here.

Phase 3: Community-scale system (Years 3-10)

Dedicated solar-powered desalination and recharge plant. A facility whose primary purpose is producing freshwater to heal the aquifer and serve the community.

> Scale: approximately 6,000 cubic meters per day, producing 870,000 cubic meters of freshwater per year for injection

> Capital cost: 140 to 240 million pesos (including solar installation)
> Annual operating cost: 7 to 10 million pesos (with solar)
> Impact: closes roughly 30% of the aquifer deficit

Combined with conservation measures, treated wastewater reuse, presa infiltration, and developer contributions, this puts the aquifer within range of equilibrium.

Brine solar evaporation at scale. As the community plant operates, its brine feeds commercial-scale solar evaporation ponds. Salt production becomes a secondary revenue stream. As mineral extraction technology matures, higher-value recovery becomes possible.

Phase 4: Developer standards (Ongoing)

Aquifer-positive development requirements. Every new development in the region must be independent of the municipal aquifer (desalination required) and contribute a

percentage of freshwater production to aquifer recharge. Tax incentives and reduced permitting costs make compliance economically attractive.

This doesn't require building anything new. It requires having the authority to set and enforce the standard.

What about inland developers?

Not every project in our region sits on the coast. Inland developments can't extract brackish water for desalination. But they can still be part of the solution.

Inland developers could be required to treat and reuse 100% of their wastewater instead of using septic tanks and irrigating with potable water. They could install on-site rainwater capture and infiltration systems that direct storm runoff underground instead of letting it evaporate or run off to the ocean. And they could contribute financially to the community recharge fund through development fees specifically earmarked for water infrastructure.

The principle is the same whether you're on the coast or inland: every new project should leave the aquifer better than it found it, or at minimum not make it worse. The methods differ by location. The standard doesn't.

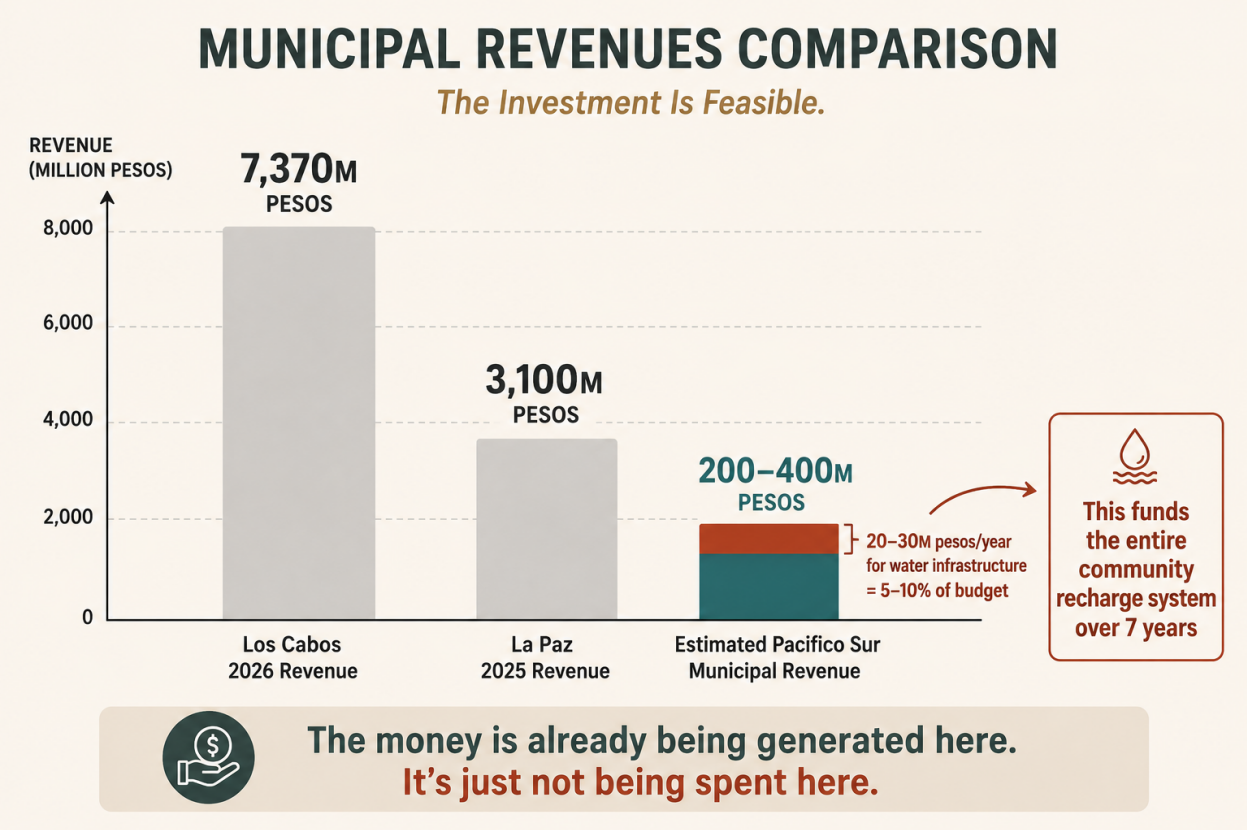
The cost question, one more time

We covered this in detail in Article 2, but it's worth repeating because it's the first thing people push back on.

The community-scale system costs 140 to 240 million pesos in total. That's not a lump sum. It's 20 to 30 million pesos per year over 7 years of construction.

For context:

Los Cabos budgeted 7.37 billion pesos in revenue for 2026. La Paz registered 3.1 billion in 2025.



A Pacifico Sur municipality, conservatively generating 200 to 400 million pesos per year from property taxes, hotel taxes, development fees, and federal revenue sharing, could direct 10 to 15 percent toward water infrastructure. That's 20 to 60 million pesos per year. More than enough.

Federal programs (PROAGUA, FAIS, PRODDER) can co-fund 30 to 50 percent of the capital cost. Mexico's National Water Plan committed 122.6 billion pesos to water infrastructure from 2025 to 2030. A new municipality could apply directly.

Today, all of that revenue, the property taxes, the hotel taxes, the development fees, leaves our region and goes to La Paz. The money is already being generated here. It's just not being spent here.

The one thing that makes all of this possible

Every phase of this plan, from the presa to the pilot to the community plant to the developer standards, requires something our region currently doesn't have: local governance with the authority and resources to act.

The presa needs someone to authorize the earthwork and fund the monitoring. The pilot needs an entity to coordinate the hotel, the university, and the permitting. The community plant needs an institution that can budget 20 to 30 million pesos per year over seven years. The developer standards need a government body with the power to set requirements and enforce them.

Right now, that authority sits in La Paz. Over 80 kilometers away. Managing a territory far too large to give our water crisis the attention it demands.

This series has been about technology and solutions. But the real bottleneck was never technology. The technology exists. The science is proven. The sun is here. The ocean is in front of us.

The bottleneck is governance. And that's something this community has the power to change.

What we're asking for

This series was about education. This section is about action. We've laid out the plan. Now we need the people who can make it move.

To Hotel San Cristobal and any resort with desalination infrastructure: You have the plant, the CONAGUA concessions, and the unused capacity. A recharge pilot would give your property something no marketing campaign can buy - a demonstrated, measurable contribution to the community's most urgent problem. We're asking for a conversation about what participation would look like.

To CSU Todos Santos and UABCS/CITA: You've already studied our aquifer. You have the models, the baseline data, and the scientific expertise. A recharge pilot needs an academic partner to design the monitoring, collect the data, and publish the results. We're asking whether your institutions would be interested in that partnership.

To developers planning projects in our region: The standards we've described aren't meant to block development. They're meant to make sure growth doesn't come at the cost of the water supply everyone depends on. Aquifer-positive development is good for the community and good for your project's long-term viability. We're asking you to build with the aquifer in mind from day one.

To our community: The water solutions, the energy infrastructure, the monitoring, the developer standards - all of it requires local governance with the authority to act.

That’s what the municipalization process provides. We’ve identified a team to conduct the initial studies - the surveys, the territorial delimitation, the legal framework - that the law requires before anything can move forward. We’re asking for your support in getting that process started.

To everyone reading this: Share it. Talk about it. Push back on the parts you disagree with. Ask the questions we haven’t answered yet. This plan doesn’t belong to Para Todos. It belongs to the community. And it only works if the community owns it.

Where we go from here

This series started with a visit to a desalination plant and a question: can this technology work for our community? Four articles later, the answer is clear. Not just desalination, but a complete system, powered by solar, capable of healing our aquifer, turning waste into resources, and securing our water supply for generations.

The pieces exist. They fit together. The costs are real but manageable. The international precedents are running and proven. And the first steps, the presa, the pilot, the community conversations, can begin now.

What we’ve learned through this process, and through the incredible responses from this community, is that the knowledge and the ideas are already here. An architect proposing circular economy solutions for brine. A farmer who understands the water flowing beneath our feet. Neighbors asking the hard questions about who controls the water and who should pay. A community that reads, responds, debates, and pushes for better answers.

That’s not a community waiting for someone else to solve its problems. That’s a community ready to solve them itself.

The technology is ready. The question is whether we are.

Final article in our series on sustainable solutions for the Pacifico Sur.

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