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Understanding Binational Water Scarcity

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**Climate
Collaborative**
SAN DIEGO REGION



UNDERSTANDING BINATIONAL WATER SCARCITY

San Diego Regional Climate Collaborative

WATER SCARCITY

Water scarcity is the lack of fresh water in any one region of space. It is a relative concept that is constantly changing, depending on levels of demand for water.¹ Water scarcity has become a growing concern in many regions around the world, including the San Diego, CA and Tijuana, MX border region. Water is a valuable resource that sustains all life on earth, and the San Diego/Tijuana border region is no exception. With increasing population growth, urbanization, and changing climate patterns on both sides of the border, the demand for water resources has significantly outstripped its availability in this region. As a result, it has become essential to understand the extent and impacts of water scarcity, and to develop innovative and sustainable solutions that can mitigate its effects.

CONNECTIVITY IN THE REGION

San Diego and Tijuana are closely intertwined – not only do they share a physical border and geographic connections such as their shared coastline and the Tijuana River, but they also have economies that are interdependent and strong social ties that have developed over time. The close proximity and shared resources of these cities make it essential to consider both their unique needs and common goals when addressing water scarcity in the binational region.



The economic connectivities between the two regions are seen in many areas: labor, policies, etc. For example, NAFTA was signed by the USA, Mexico, and Canada in 1993 to create a free trade zone for most of the continent. San Diego's location on the border makes it a prime location for trade and for taking advantage of NAFTA.² Adding to this economic opportunity in the region are maquiladoras. Maquiladoras are factories/manufacturers that are in Mexico but are run by the U.S. or other foreign countries. These twin plants allow companies to capitalize on cheap labor in Mexico while reaping the benefits of doing business in the U.S. The nature of this kind of business is economically beneficial for both regions.³



In addition, San Diego and Tijuana have overlapping cultural similarities. People and culture spill over the border and flow back and forth daily. In fact, the San Ysidro Port of Entry had over 15 million crossings in the year 2022, making it the busiest U.S. Port of Entry. It had over 7 million more crossings than the second busiest port, El Paso.⁴ A lot of people live in Tijuana and commute to San Diego for work or school. Crossing the border with this regularity contributes to cultural diversity in both cities. Many San Diegan's visit Tijuana, Rosarito, and El Valle de Guadalupe for leisurely activities and to eat local food, further integrating the two cultures.⁵

CROSS-BORDER COLLABORATION

Overall, the connectivity between San Diego and Tijuana is a vital part of the economic, physical, and cultural fabric of the region. Although this connectivity has created a number of opportunities for cross-border collaboration, it has also presented several environmental concerns. San Diego and Tijuana share these environmental concerns, particularly when it comes to issues surrounding air pollution, water scarcity, waste management, and climate change. Given the physical location and coastal region that makes up San Diego and Tijuana, both cities are very vulnerable to the impact of climate change, including sea level rise and more frequent and severe droughts. In order to address these environmental concerns, San Diego and Tijuana have engaged in several collaborative efforts, such as air quality monitoring⁶ and water pollution mitigation projects.⁷ By working together, San Diego and Tijuana can make progress towards creating more resilient regions for all its residents.

Delving further into this subject matter, one of the most pressing issues faced by both San Diego and Tijuana is water scarcity, which is exacerbated by the increasing demand for water due to a growing population and climate change. The two cities rely on a very complex network of water sources, including the Colorado River and the Tijuana River.



GEOGRAPHIC CONNECTIONS AND CHALLENGES

San Diego and Baja California Norte share the Southern California Bight, which is an area with many environmental concerns. The Southern California Bight is a 692-kilometer stretch of curved coastline that runs from Point Conception in California all the way to Punta Colonet in Baja California. The region is known for having a climate similar to the Mediterranean, consisting of rainy winters and dry summers. This region has a thriving ecosystem that is home to many species of plants, fish, birds, and mammals. Along with the thriving ecosystem, there are many concerns for water and land pollution along the Southern California Bight. Coastal water pollutants enter the Bight via runoff, the discharge of treated wastewater, and shipping accidents such as oil spills. Most water pollution in the Bight originates from the land.

California overall has been struggling with ongoing drought conditions for several years now, and in March 2022, a state of emergency was declared over increased drought conditions. The San Diego County Water Authority has been driving towards decreasing San Diego's reliance on water from the Metropolitan Water District, which consists of part of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura Counties, but the region still remains heavily reliant on the Colorado River. This is an issue because these sources are hundreds of miles away. As a result, San Diego is continuing to work towards creative solutions to diversity the water supply through several initiatives and projects.⁸ These projects all play into previously mentioned connections between San Diego and Tijuana, given their close proximity to one another and that they rely on several of the same water sources.



A vital factor in this discussion of water scarcity issues in this region is the Tijuana River Watershed. The Tijuana River Watershed is a very large and binational drainage basin that lies along and across the California/Mexico border. Similarly, “the Tijuana River Estuary is the largest coastal wetland in Southern California and is primarily a shallow water habitat. The Tijuana River Estuary is one of the few salt marshes in Southern California, where over 90% of wetland habitat has been lost to development.”⁹ The estuary also contains miles of walking trails that lead to the Pacific Ocean. The Tijuana River Watershed discharges into the Tijuana River Estuary in the U.S. and many suspended solids have been measured in those waters which can cause health problems. Because of this and overpopulation issues on the Tijuana side of the watershed, usage of groundwater in the watershed has increasingly been considered. However, there are health concerns here as well, due to the sewage runoff and pesticides that contaminate groundwaters.¹⁰ In addition, illegal dumping of toxins by factories and various businesses in Mexico is difficult to regulate, which further worsens the condition of the water. There has been recent progress in this area, where the United States Environmental Protection Agency has been working on building infrastructure that would prevent transboundary flows from Tijuana that contain untreated wastewater and sediments into the U.S. These transboundary flows have been directly connected to beach closures in San Diego and issues concerning environmental health.⁷



Figure 1: Image of the Tijuana River Watershed ¹⁵

IMPACTS ON THE COMMUNITY

The effects of climate change are being felt everywhere, and San Diego and Tijuana are not exempt from this. Communities are being impacted by this water scarcity on both sides of the border. For example, schools in Tijuana are having to shut off their water and therefore cancel school days.¹¹ Canceling school days will cause students to fall behind on their tasks, will disrupt their daily routines, and could have emotional damage on students. Speaking more generally, water shut-offs affect a wide range of communities and can cause increased financial burdens, impact on agriculture and livelihoods, environmental degradation, and social tensions. All of these effects show the dire situation that communities are finding themselves in with little to no solution at their disposal. Although there is no simple solution to this issue, steps are being taken to mitigate these effects.

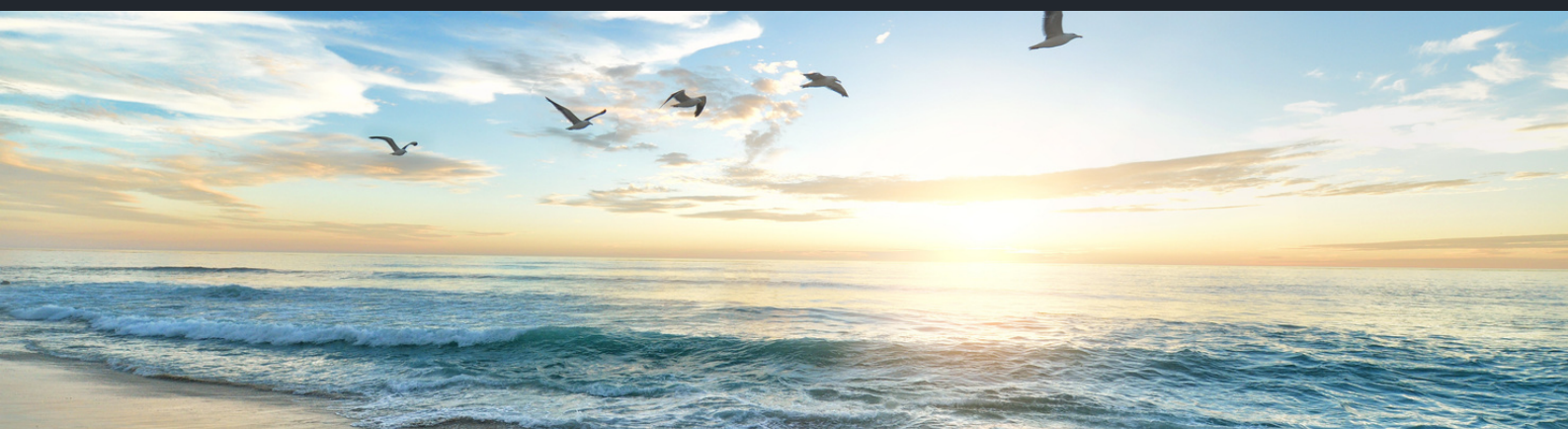
INTERSECTIONAL CLIMATE CONSIDERATIONS

Coastal resilience is the ability of a community to recover after extreme natural disasters, such as droughts and prolonged water scarcity, rather than just reacting to its effects. This is a very large issue all over the world, and especially in this region. In this context, coastal resilience solutions will be focusing on the reuse of sediment. Sediment is a matter or material that is broken down because of weathering and erosion and is moved by wind, water, ice, etc. Dredging is the process by which sediment and debris is removed from the bottom of bodies of water. In Southern California, dredge material is usually shipped to offshore material disposal sites and its potential for usage is completely lost. Sediment is a highly useful material that can be used for projects such as wetland and beach restoration, construction, etc. It also can allow for wetlands to keep up with sea level rise. SDSU Professor and researcher, Trent Biggs, states that the Tijuana River Estuary "has experienced high rates of sedimentation being delivered from the urbanized watersheds that drain into the estuary which has resulted in cross-border initiatives to identify and manage areas producing sediment."¹²

In most places, this practice is more of an aspiration than an actual practice. In the Tijuana River Valley, there are already projects that have been completed or are underway that are reevaluating the disposal of sediment, such as in-channel capture basins that are seen in the Tijuana River Valley Needs and Opportunities Assessment.¹³ There are many barriers to this effort to reuse sediment. Some include:

1. Technical difficulties
2. Psychosocial barriers
3. Financial constraints
4. Inter-organizational collaboration challenges

Solutions for these barriers include support for studies, modeling, pilot projects, education of the public about the benefits of sediment placement, relaxing the requirement for governments to use the lowest-cost option, more funding, providing facilitation and incentives for inter-organizational coordination and innovation, etc.¹⁴



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The San Diego Regional Climate Collaborative was established in 2011 as a network for public agencies to advance climate change solutions and is currently housed at The Nonprofit Institute at the University of San Diego.