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## Articles

# Local binational cooperation: The Tijuana River international watershed

## Cooperación local binacional: La cuenca internacional del Río Tijuana

José Luis Castro Ruiz <sup>a\*</sup>  <https://orcid.org/0000-0002-1601-2175>  
 Stephen P. Mumme <sup>b</sup>  <https://orcid.org/0000-0002-4373-8430>  
 Kimberly Collins <sup>c</sup>  <https://orcid.org/0000-0003-0770-0416>

<sup>a</sup> El Colegio de La Frontera Norte, Departamento de Estudios Urbanos y del Medio Ambiente, Monterrey, Nuevo León, Mexico, e-mail: jlcastro@colef.mx

<sup>b</sup> Colorado State University, Department of Political Science, United States of America, e-mail: smumme@colostate.edu

<sup>c</sup> California State University, San Bernardino, United States of America, e-mail: kimberly@csusb.edu

### Abstract:

The experience behind local environmental bi-national collaborative initiatives in the Tijuana river watershed is examined, and the governmental participation from Mexico and the U.S. in those spheres. The analysis encompasses four main topics: the characteristics and environmental problems of the watershed; the local bi-national initiatives undertaken on the last decades; the governmental involvement in that experience, in the context of the structural differences between the two countries, and some reflections from the perspective of the global debate on the importance of local levels in trans-boundary watersheds. The results illustrate the potential that local initiatives as those studied, presents to complement the search for cooperative solutions to the common bi-national water problems. It is concluded that Minute 320 from CILA-IBWC represents a unique opportunity for the Mexican governmental instances to implement operative mechanisms to facilitate the interaction with their social and governmental counterparts at the sub-national levels.

**Keywords:** Tijuana River Watershed, Tijuana-San Diego region, 1944 Water Treaty, binational cooperation, national water policy.

### Resumen:

Se examina la experiencia de iniciativas de colaboración ambiental a nivel local binacional en la Cuenca del Río Tijuana, y la participación gubernamental de México y Estados Unidos en esos ámbitos. El análisis comprende cuatro puntos

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\*Corresponding author: Jose Luis Castro Ruiz, e-mail: jlcastro@colef.mx



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principales: las características y problemáticas ambientales de la cuenca; las iniciativas locales binacionales en las últimas décadas; la participación gubernamental en dicha experiencia, en el contexto de las diferencias estructurales entre ambos países, así como algunas reflexiones en el marco del debate global de la importancia de los niveles locales en cuencas transfronterizas. Se ilustra el potencial que iniciativas locales como las estudiadas ofrecen para complementar la búsqueda de soluciones cooperativas a los problemas hídricos comunes entre ambos países. Se concluye que el Acta 320 de la CILA-IBWC constituye una oportunidad única para las instancias gubernamentales mexicanas para instrumentar mecanismos operativos que faciliten la interacción con sus contrapartes sociales y gubernamentales a los niveles sub-nacionales.

Palabras clave: Cuenca del Río Tijuana, región Tijuana-San Diego, Tratado de Aguas de 1944, cooperación binacional, política hídrica nacional.

## Introduction

The Tijuana River, located in the Tijuana-San Diego border region, unlike other superficial systems referred to in the 1944 Treaty on the Distribution of International Waters between the United Mexican States and the United States of America, has the distinction of being the only treaty named stream whose waters remain unallocated. This is so despite the existence of the article that expressly establishes authoritative guidelines for bilateral management of its waters (Tratado sobre distribución de aguas internacionales, 1944, art. 16).<sup>1</sup> As such, it is better known for its chronic pollution problems due to untreated residual waters than for its natural resources. In recent decades, its watershed has been characterized by different binational local initiatives, exclusive to the border context, which have emerged for the purpose of finding solutions to its growing urban and environmental problems, efforts which gained importance after the year 2000 (Brown, Castro, Lowery & Wright, 2003). The culmination of this growing public concern and watershed conservation work is seen in the signing of Minute 320 by the Comisión Internacional de Límites y Aguas (CILA, for its acronym in Spanish) and its North American counterpart, the International Boundary and Water Commission (IBWC), a framework agreement that ensures greater focus on a wide range of problems associated with the degree of urbanization of the watershed. Minute 320 is a historic change in the longstanding pattern of binational neglect of the Tijuana River watershed (CILA, 2015).

An important feature of the binational Tijuana River watershed conservation activities has been subnational government participation, predominately centered on the U.S. side of the boundary. Where water resources are concerned, the role of the Mexican agencies has been limited to the operational work of the CILA, because the

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<sup>1</sup> Article 16 of the Treaty on the Distribution of International Waters between the United Mexican States and the United States of America, also known as Water Treaty, was written as a framework agreement covering a range of issues affecting the Tijuana River Watershed, which stipulates the responsibilities of the CILA and its American counterpart IBWC to both governments in relation to: 1) equitable distribution of the waters of the Tijuana River; 2) flood storage and control and development of different water uses; 3) plans for the construction of proposed works and the division of their costs between both countries; and 4) recommendations on the role of the Commission and its national branches in the operation and maintenance of the constructed works.

National Water Law does not apply to transboundary watersheds. The objective of this study is to examine this experience and its potential benefits as an important means of cross-border coordination that complements the traditional means by which both countries address and search for solutions to their common water problems. The work is divided as follows: first, the situation of the Tijuana River in the framework of the Water Treaty of 1944 is described in detail, followed by an overview of its watershed and the problems it currently faces. Subsequently, some of the most important local binational watershed initiatives since the 1990s are addressed, as clear evidence of the growing regional interest in advancing integrated and cooperative management solutions for this river. These include projects and actions in the framework of the bilateral agreements that emerged after the Water Treaty of 1944, which placed strong emphasis on developing local capacities. Next, the role of the government participation in this local experience is addressed in the context of the structural differences between the two countries, both institutional and water policy related, the balance of which is unfavorable for Mexico. The last section reflects on the Tijuana River Watershed (TRW) experience in the context of global debate on the importance that local level governance has acquired in cross-border watersheds, as well as the potential benefits that follow from an enhanced framework for local capacity and engagement in binational watershed cooperation between the two countries. Among the most salient points worth mentioning are the implications for Mexico of the signing of Minute 320 of the CILA, which advances cooperative and sustainable management approaches to sharing water resources on the northern border, approaches that complement the functions of traditional agencies.

## The Tijuana River in the Context of the Water Treaty of 1944

The binational challenge of managing the Tijuana River must be situated within the framework of the Water Treaty of 1944, as well as other bilateral agreements that preceded it in the diplomacy and practice centered on managing shared streams along the Mexico-U.S. border. Since the establishment of the common border under the Treaty of Guadalupe Hidalgo and the Gadsden Purchase<sup>2</sup>, both countries have taken it upon themselves to elaborate a series of treaties and subsidiary agreements, which today constitute one of the most institutionalized cross-border water management regimes in the world. It is a framework that has often been described as the vital sovereign structure that underpins the friendly relations between the two countries (McBride, 1981; Friedkin, 1965).

This institutional structure, particularly since the signing of the Water Treaty of 1944, has adapted to a wide range of bilateral water-related problems along the international border, extending its regimen to the management of water courses not referred to in the treaty, as well as to the water quality problems in cross-border rivers and streams. At present, however, the binational management of many of these problems suffers from the absence of a binationally integrated operational approach, and the lack of expressed authority within the treaty adds to the difficulty of advancing

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<sup>2</sup> The Gadsden Purchase in 1853 culminated in the sale of the territory of La Mesilla from Mexico to the United States, defining the current border between the two countries.

the search for solutions; whether it be the problem of groundwater or of currents not referred to in the treaty, such as the Santa Cruz and San Pedro rivers on the border between Sonora and Arizona. The Tijuana River is an exception to this situation, since, as has already been mentioned, its waters remain undistributed despite the existence of specific binational agreements embodied in Article 16 of the Water Treaty of 1944; agreements that were undoubtedly based on a knowledge of its existing demand and supply conditions, as well as expected future growth (Samaniego, 2006, p. 358)<sup>3</sup>.

## Description of the Watershed

The Tijuana River is formed by different streams originating in Mexico and the United States, mainly the Las Palmas River in Mexico and Cottonwood Creek in the U.S. side of the watershed. Both tributaries converge within the urban area of the city of Tijuana, 16 km east of the Pacific Ocean, and drain into the sea close to an ecological reserve north of the border. The watershed covers a surface of 4 430 km<sup>2</sup>, two thirds of which are in Mexican territory (Figure 1).

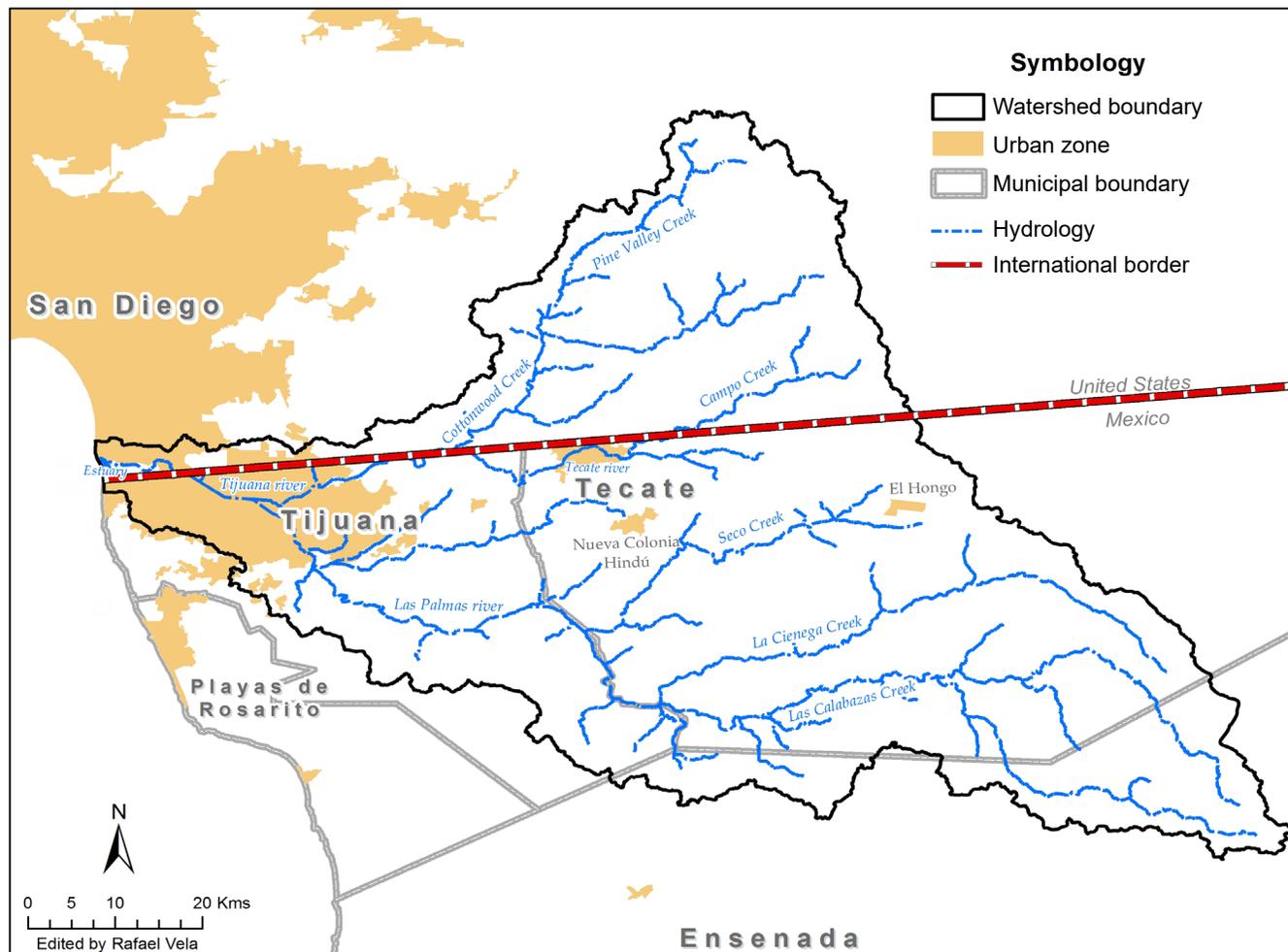
Due to the semiarid climatic conditions of this area, considered Mediterranean, most of the water currents are intermittent, with maximum flows between the months of November and April. The respective runoff is captured by the watershed dams in both countries and by the aquifers that supply water to local communities. However, the largest proportion of water consumed in the watershed (more than 80%) comes from the Colorado River through the Colorado River-Tijuana Aqueduct (ARCT, for its acronym in Spanish) in the case of Tijuana and Tecate, and through the Metropolitan Water District of Southern California (MWDSC) from the north, on the U.S. side. Underground sources contribute to a greater extent to the needs of the Mexican side. In the city of Tijuana, the proportion of underground sources is of 5%, whereas it is of almost 30% in Tecate.

In 2010, more than one and a half million people lived within the limits of the watershed, of which approximately 97% reside in the Mexican side. The urban centers of the watershed concentrate more than 90% of the population, lending a markedly urban character to its environmental problems. Watershed projections foresee the population doubling by 2030 (Institute for Regional Studies of the Californias [IRSC], 2005, pp. 17-18). On the Mexican side of the watershed, according to projections by the Consejo Nacional de Población (Conapo), the municipalities of Tijuana and Tecate will be part of a metropolitan area with a population of approximately 2.33 million for the same year, which represents an increase of 30.5% above the 2010 statistics (Conapo, 2013). Public demand for infrastructure and services will rise accordingly, as will adverse impacts on the quality of life, habitat fragmentation, and fauna and flora in the natural corridor that extends from Otay Mountain to southeast Tijuana (IRSC, 2005, pp. 17-18).

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<sup>3</sup> Notwithstanding the need to reach arrangements regarding the distributions of its waters being of less importance, attention to the Tijuana River has largely focused on flood control, which, despite the low annual runoff, is a recurring problem in the region.

Figure 1: The Tijuana River Watershed



Source: Elaborated by Rafael Vela.

### Watershed Problems

The Tijuana River Watershed faces multiple challenges, mainly as a result of the urban growth that has taken place within its limits. Among those related to water resources are its supply and distribution, water quality and sanitation, ecological protection needs, flooding and flow control, and sediment management. Most of these problems require binational treatment for optimal approach and management, with the consequent logistical and diplomatic problems (Mumme, Collins & Castro, 2014).

## *Water Supply, Quality, and Sanitation*

The historical water demand in the watershed has exercised continuous pressure on the available supply, leading the responsible authorities on each side of the border to search for alternate means to ensure the future supply. This has distorted the size of the Tijuana River as a binational resource. On the U.S. side of the watershed, the Barret and Morena dams have formed part of the local water supply system since their construction in the early 20<sup>th</sup> century. In the 1940s, growing urban demand led the San Diego County Water Authority (SDCWA) to import water from the Colorado River through the Metropolitan Water District (MWD), which satisfied between 85% and 90% of the needs. The rest of the water policy focuses on the potential for underground water storage in the Tijuana River estuary, north of the international line (City of San Diego, 2010). In Mexico, the city of Tijuana has faced the demand resulting from its explosive population growth, through the importation of water from the Colorado River. Any references to the Tijuana River in the State Water Program for Baja California 2008-2013 are limited to the pollution problems caused by the wastewaters in Tijuana and the projects to treat them (Comisión Estatal del Agua de Baja California [CEA], 2008).

Rapid urbanization and agricultural practices are the main sources of pollution that threaten the TRW. The border corridor has experienced tremendous growth with industrialization and human settlements. The development of the maquiladora industry since 1965 has impacted water quality, while human settlements without connection to the urban drainage network along steep canyons have contributed to erosion and the accumulation of both garbage and untreated wastewater in the lower streams. In fact, the uncontrolled drainage water runoff along the border has been a factor that has affected binational relations for decades (CILA, 1965).

In the U.S. side of the watershed, the California State Water Resources Control Board (CSWRCB) has classified the Tijuana River as a category one watershed that has deteriorated due to its many pollution problems (IRSC, 2005, p. 59). In the 1980s, both countries collaborated in the International Water Treatment Plant north of the border (CILA, 1985; 1990), and even though its capacity has been periodically expanded, it does not meet current needs (Saldaña, 2003).

## *Biodiversity and Ecosystems*

The TRW holds a notable abundance of vegetation and wildlife and represents a critical space for bird routes along the Pacific coast (Michel, 2001). The protected wetland area that is part of the Tijuana River National Estuarine Research Reserve (TRNERR) and its surroundings are among the few areas of this type with low disturbance along the coast of California. This is the result of conservation work that has extended for nearly half a century (TRNERR, 2010). Despite these efforts and a considerable investment to support them, the estuary remains vulnerable to erosion and sedimentation processes that are aggravated by the irregular settlements along the canyons on the Mexican side, and by the construction of border security infrastructure near the U.S. side.

Although the environmental situation of the estuary is the best-known problem of the Tijuana River, there are other problems that impact biodiversity and are the result of industrial and urban development in the watershed. There are a number of tributaries that feed the river, and provide a habitat for fauna and flora not present in the urban area. Among them, the Alamar River sub-watershed stands out, located near the international boundary, it is recognized as one of the few riparian systems to survive in the Tijuana region. Unfortunately, it is also highly vulnerable to new urban development. Additionally, the National Water Commission (Comisión Nacional del Agua (Conagua)) has recently launched a channeling plan for the lower part of the river, arguing a need for flood control and urban image improvement (“Comienzo Última Etapa”, 2015). This plan does not though consider the impacts on biological resources and the ecosystem services it provides (Trejo & Castro, 2013).

### *Rain, Floods and Sediments*

The Tijuana-San Diego region is located on the western slope of the coast of California, where precipitation levels, steep canyons and sandy soils combine to make both cities vulnerable to periodic flooding and sediment accumulation in the lower reaches of the streams. The first water infrastructure projects focused on controlling the Cottonwood and Las Palmas river currents. At present, the dam system within the watershed captures 78% of the runoff from the Tijuana River (Coastal, 2006). The risks of flooding downstream of the Barret and Moreno dams in Cottonwood Creek, and of Carrizo and Rodríguez dams in the Las Palmas River are a serious problem, with the real effects felt in the estuary at the end of the Tijuana River system.

### Binational Management Initiatives in the Tijuana River Watershed

Due to the challenges facing the TRW, there have been a number of important local and regional initiatives setting up binational cooperation. Work began in the 1990s with leadership from the academic sector on both sides of the border (Brown et al., 2003).<sup>4</sup> In 1993, a key framework developed by both federal governments called the Border Liaison Mechanisms (BLM) generated links with citizen groups at the local level (Brown & Mumme, 2000). An important characteristic of these mechanisms is the participation of the consulate generals of each country as organizers and facilitators of binational dialogue between governmental actors and civil society, regarding various watershed issues, including water quality, and sanitation and storm drainage.

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<sup>4</sup> In addition to the Tijuana River Watershed project, which sought to address specific environmental problems, San Diego State University and El Colegio de la Frontera Norte developed a geographic information system of the watershed to help promote its condition to local communities, and for the education and scientific research sectors.

Within the framework of the Border Liaison Mechanism, a number of agencies at the three levels of government in each country comprise the Border Water Council (BWC). Representing the U.S. federal government are the corresponding sections of the International Boundary and Water Commission, and the Environmental Protection Agency (EPA), along with other agencies that participate sporadically. At the local level are the tribal governments, the San Diego City Water Authority, and the county and city governments of San Diego. On the part of Mexico, the federal agencies participating in the BWC include Conagua, CILA, and the Secretariat of Environment and Natural Resources (Semarnat), as well as the State Commission for Public Services of Tijuana (Comisión Estatal de Servicios Públicos de Tijuana [CESPT]). The work of the BWC is complemented by initiatives on the U.S. side of the watershed, such as the sediment management program in the Los Laureles Canyon (Heyn, Keane-Dengel, Lewis, Phillips & Virgilio, 2008). Furthermore, the San Diego Regional Water Quality Control Panel, the Coastal Commission and Coastal Conservancy are agencies that support both water quality and ecological restoration projects in the lower and TRW part of the estuary.

The most notable watershed management effort has been made through different programs and actions at the local level, many of them in the non-governmental area. In 2003, within the framework of a new California government authority to develop riparian management plans across the watershed, a group of researchers from San Diego State University and El Colegio de la Frontera Norte worked together on a project to create the Binational Advisory Council of the TRW (BWAC), which integrated academia, non-governmental organizations, representatives of indigenous groups, and the private sector. The purpose was to develop a binational document to guide the evaluation and planning efforts in the watershed. The report entitled *Una Visión Binacional para la Cuenca del Río Tijuana* (A Binational Vision for the Tijuana River Watershed) (IRSC, 2005) identified a broad spectrum of potential improvements for the watershed, and included measures such as the construction of wetlands, ecological parks, and conservation efforts<sup>5</sup>. The agenda established by the Council laid the foundation for the creation of a growing number of civil society organizations that have been tasked with addressing specific issues in the watershed (Mumme et al., 2014)<sup>6</sup>.

The projects are an important knowledge and resources base to address environmental problems in the TRW. The work and public interest that has generated from these activities, has developed in parallel to the region's development and binational interdependence, in search for solutions to the main challenge: to

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<sup>5</sup> Among the follow-up activities developed after the completion of the project in March 2005 were the formation of the Water Working Group as part of the Border 2012 Program, the sub-working group on Ecology, as well as the Water Technical Committee created under the Border Liaison Mechanism (BLM) under the Committee of Binational Regional Opportunities (COBRO), an organization located in the San Diego Association of Governments (SANDAG). The responsible parties and organizers of the project have developed new goals and agreements to continue, which were reflected in the Workshop on Binational Watershed Management of the Tijuana River, carried out in Tijuana, B.C., on May 14-16, 2013.

<sup>6</sup> Among these organizations stands out the work of binational groups such as the Binational Environmental Education Network, the Bioregional Environmental Education project, Ja Jan, Los Niños, as well as the Environmental Education Border Project, which have concentrated their attention on the pollution problems of the river and its ecological value.

transcend the multiple individual initiatives and cross-border connections towards a more integral planning scheme with sufficient governmental support on both sides of the border. In this sense, the recent signing of Minute 320 of the CILA-IBWC is very significant and historic, as it establishes a conceptual framework and actions to guide the binational cooperation work on the water problems of the TRW (CILA, 2015). This is an event that can be considered as the culmination of the intense analytical work and policy option proposals of the different interest groups and non-governmental actors on both sides of the watershed (Saxod, Castro, Silvan & Reyna, 2007)<sup>7</sup>.

### *Bilateral Agreements Following the 1944 Water Treaty*

In recent decades, the emergence of different binational agreements and programs addressing the environmental problems in the common border between the two countries has entailed a considerable expansion of the coverage and functions of the CILA-IBWC. This is seen in both addressing water problems more specifically, and seeking the integration of border communities in the planning and decision-making processes. In this context, the TRW has been subject to programs that have operated with local inputs since the 1990s (Spalding, 1999).

Since its adoption in 1983, the La Paz Agreement on binational environmental cooperation in the border area—named after the port city where presidents Miguel de la Madrid and Ronald Reagan signed it—has proven to be a fundamental policy framework for several environmental initiatives regarding the management of cross-border rivers. This accord requires a binational consultation process on environmental issues and creates a diplomatic mechanism to establish substantive and procedural commitments focused on region specific issues in the border area (Mumme & Collins, 2014). In 1985, Annex I associated with Minute 270 of CILA, strengthened binational cooperation on the problem of water quality of the Tijuana River at the international border (CILA, 1985). The La Paz Agreement also provided the policy basis for the binational environmental cooperation programs developed by both governments from 1991 to the current Border 2020 program. In the case of the TRW, this program supports the work of the Baja California-California Regional Working Group (EPA, 2010) and the Binational Working Group (Tijuana-San Diego) for the watershed; both being important to address issues related to ecological sustainability and public health.

Following the example of programs undertaken by agencies and institutions such as those mentioned above, in 1999, the U.S. section of CILA-IBWC held a series of citizen forums along the border to integrate the opinions and experiences of residents and stakeholders from the U.S. border communities. In the case of the Tijuana-San Diego region and the estuary of the Tijuana River, the problems related to flood control and wastewater flows and their effects on the area of the estuary on the U.S. side were addressed (CILA Sección Norteamericana, n.d.). An important

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<sup>7</sup> One of the central characteristics of Minute 320 is the formation of a Binational Base Group (BBG) to coordinate the formulation of recommendations regarding the TRW, which will also include representatives of non-governmental organizations of both countries, in addition to the different levels of government.

project that emerged from this initiative was the Tijuana River Valley Recovery Strategy, which had the objective of reducing discharge from the Tijuana River, and to clean it of sediments and residues (Tijuana River Valley Recovery Team, 2012). The model for these forums has recently been reproduced by the Mexican side of CILA, starting with the installation of the citizen forum in Tijuana in August 2014 (CILA Sección Mexicana, 2014).

In 1993, under the North American Free Trade Agreement, the Commission for Border Environment Cooperation Commission (BECC) and its sister agency, the North American Development Bank (NADBank) were created to facilitate the development and financing of environmental infrastructure projects along the border. The work of the BECC, through its association with governments and local communities, has shown the potential to increase and strengthen local capacity in the environmental and ecological restoration processes of the TRW, making it an important avenue to address the broad spectrum of problems in the watershed.

Among the projects supported by the BECC-NADBank are the construction and improvement of sanitation and wastewater treatment infrastructure in Tecate, Tijuana, and in the U.S. side of the Tijuana River estuary. One of the projects that stands out was the construction of a wastewater treatment plant in the estuary in 2002. The goals for Tijuana and Tecate have been to expand the existing systems (NADBank, 2013, p. 6). Another important project for the area of Tijuana was the development of a Master Plan for Potable Water and Sanitation, which included the municipality of Playas de Rosarito in 2003 and was financed by the EPA (CESPT, 2003).

### *The Role of the Government at Subnational Levels*

One element that has significantly conditioned governmental participation in the binational experience described herein are the structural differences that exist between the two countries, which not only determine different management schemes on each side of the border, but also the way in which the government levels involved relate to their cross-border counterparts. The political structure of the United States is based on a federal arrangement that originates in the Constitution, whereby the central and state governments share power, with overlapping jurisdictions. In the management of water in particular, the U.S. federalized systems is highly fragmented with strong local participation. In the case of Mexico, the Constitution gives the national government ownership over water, but the resources are regulated and managed by state governments. In operational terms, and despite constitutional modifications, such as the municipal reform of the 1980s, the political and administrative structure in the country is centralized, with the national government taking precedence over the states.

The above differences are clearly exemplified in the TRW. On the U.S. side, the Environmental Protection Agency (EPA) is the main federal agency responsible for water quality management under the Clean Water Act. EPA's Region 9 is located in San Francisco, with a border office in San Diego, and delegates authority to the California State Water Resources Control Board (CASWRCB), which is governed by the state-led Porter-Cologne Water Quality Act. The work of this agency is carried out through nine

offices located throughout the state, known as the California Regional Water Quality Control Boards (CARWQCB). As with the EPA, CARWQCB Region 9 is located in San Diego County and the U.S. side of the watershed. In addition, there are a number of other federal, state, and local regulations set to mitigate the adverse environmental impacts on the U.S. side of the watershed. These include impacts to air quality, land use and contamination, cultural resources, and socio-economic impacts (IRSC, 2005, p. 190)<sup>8</sup>.

In the case of Mexico, amendments to the National Water Law in 2004 granted Conagua as the lead authority in this matter. The management of water at the federal and regional levels occurs through hydrological-administrative regions, by means of watershed commissions (Decreto por el que se reforman, adicionan y derogan diversas disposiciones de la Ley de Aguas Nacionales, 2004).<sup>9</sup> The responsibilities of Conagua range from developing, updating, and implementing the National Water Plan, to administering specific programs at the regional and watershed levels. This includes the development of environmental and water infrastructure in coordination with the local and state governments. Water quality standards are proposed and applied by Conagua under the guidelines of the official Mexican standards, issued by Semarnat,<sup>10</sup> the lead environmental agency in Mexico.

Watershed management in the border is specific to this region as the responsibility is shared by two countries. Mexican federal water legislation lacks specific regulations for cross-border watercourses,<sup>11</sup> and for the functions or activities for watershed councils (Castro & Sánchez, 2005). Everything related to international watersheds falls within the purview of the Secretariat of Foreign Affairs, through CILA and under the terms of the 1944 Water Treaty. The state and local governments must conform to the mandates set forth in Article 117, Section I of the Mexican Constitution, which prevents opening formal international negotiations of any kind (González, 2005). In the case of the United States, as mentioned above, the federalized political-administrative model allows for the involvement of non-federal agencies in the planning and decision-making processes, which can reflect the interests of local and regional governments on issues that directly concern them. The autonomous

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<sup>8</sup> Some of these regulations provide mechanisms to protect natural resources and open spaces. Examples at the federal level include the National Environmental Policy Act (NEPA), the Habitat Conservation Plan (HCP), the National Historic Preservation Act (NHPA), and the Endangered Species Act (ESA). At the state level there are the California Environmental Quality Act (CEQA), the California Endangered Species Act, and the Natural Community Conservation Planning Act (NCCP); at the county level there are the County of San Diego Biological Mitigation Ordinance, and the County of San Diego Resource Protection Ordinance (RPO). Finally, at the local level there are the City of San Diego Environmentally Sensitive Lands, the Resource Protection Ordinance, and the Associate Guidelines.

<sup>9</sup> Since the enactment of the National Water Law of 1992, federal institutional frameworks have promoted the strengthening of the watershed as a formal management entity for planning and managing the water resources in the Mexican territory. The watershed council is a central player in water policy, integrating the local and regional presence into decision-making on issues affecting the watershed. A part of their work of these councils is to obtain the support of watershed commissions and committees at the sub-watershed and micro-watershed levels. In the case of Baja California, there is only one watershed commission—the Colorado River Commission—which supports the work of the Baja California Watershed Council.

<sup>10</sup> Mexico's General Law of Ecological Equilibrium and Environmental Protection (LGEEPA, for its acronym in Spanish) is another piece of federal legislation that directs environmental protection.

<sup>11</sup> The only reference to the international cross-border in the current National Water Law (Ley de Aguas Nacionales, 2016, Article 9, Section IX) refers to the involvement of Conagua in federal affairs that have an impact on international agreements and treaties in cross-border watersheds.

capacity of subnational governments on the U.S. side of the border is reinforced by their relationship with the IBWC. This allows them to take an active, decision-making role in projects that benefit their communities (Mumme, 1984).

The above structural differences have defined the role of government in the development and effectiveness of the binational initiatives and programs in the TRW. Generally, Mexican local government agencies are restricted in their capacity, as opposed to state and local governments in the case of California, which have more direct and active participation. Their support has been reflected in projects such as the Sustainable Management of the Tijuana River Estuary Program (TRNERR, 2010), the Tijuana River Valley Recovery Strategy (Tijuana River Valley Recovery Team, 2012), and the sediment control in the Los Laureles Canyon in the urban area of Tijuana (Heyn et al., 2008). Similarly, the non-federal agencies of the U.S. side of the TRW have had a central role, leading the initiative in search for cooperative solutions with their counterparts of Baja California. Examples of the latter are COBRO and the Border Water Council (BWC), both dependent on the San Diego Association of Governments (SANDAG) (Brown et al., 2003). In the case of the initiatives such as the BWAC, the highly federalize character of the U.S. and California political system facilitated the implementation of the recommendations originating in the meetings, including the formation of the Water Working Group, as part of the Border 2012 Program, the sub-working group on Ecology, and the Technical Committee on Water created under the Border Liaison Mechanism (Castro & Ganster, 2012).

This work has influenced the actions of the CILA-IBWC on both sides of the border as well. The U.S. section has been characterized for having an active interaction with agencies and actors at the local and state levels to address the environmental issues of the watershed. This is exemplified by citizen forums promoted by the organization since 2002 in the San Diego area. The main objective has been to maintain a constant flow of information between the Commission and the general public, environmental groups, federal, state, and local governments, among others (CILA Sección Norteamericana, n.d.). Among the activities carried out by this forum is the follow-up to projects such as the South Bay International Wastewater Treatment Plant (SBIWTP), the Tijuana River Flood Control Project, and the Tijuana River Valley Restoration Group. In the case of Mexico, the functions of the CILA are strictly adhered to the federal mandate, which restricts operational flexibility, and limiting its agencies and actions as compared to its U.S. counterpart. It is very telling that it took more than 10 years to establish the citizen forums by the Mexican section of the CILA, following the structure and functions similar to the U.S. counterpart (CILA Sección Mexicana, 2014).<sup>12</sup>

In addition to the substantive problems mentioned above, there are other operational challenges, both administrative and managerial, that hinder binational government coordination and communication regarding water problems that require convergence and agreements on the part of the responsible authorities in both countries. Such is the case of the increase in the border security measures by the

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<sup>12</sup> The first citizen forums of the Mexican section of the CILA were established in 2014 in the cities of Tijuana and Nuevo Laredo.

U.S. federal government following the events of September 11, 2001. These security measures have created restrictions in terms of delays and programming difficulties to the binational monitoring and evaluation efforts. Among the most frequent case is the need for specific border crossing documentation to facilitate at a given moment an expeditious cross-border interaction.

## Some Reflections

As discussed throughout this paper, the TRW represents without a doubt a unique case in the binational water management landscape between Mexico and the United States. Despite the absence of a specific mandate to binationally distribute the waters of the Tijuana River system, its watershed has been the object of multiple local initiatives. These have mainly been the result of non-governmental actors concerns and work on environmental problems, particularly those related to water management. This has created a base of local knowledge and capacities that has been recognized and supported further development at the subnational levels in each country. In the case of California, this work eventually attracted federal and state governmental support with financing and follow-up on different projects. In contrast, the participation of the Mexican counterparts has always been conditioned by the structural characteristics of the current administrative political system in the country and, therefore, they do not have the capacity and autonomy to establish specific commitments.

The experience of the TRW is relevant in the context of current trends regarding ways to visualize and address problems inherent to cross-border shared water resources. The urban growth in the watershed—primarily on the Mexican side—and the environmental problems it generates binationally is similar to situations in other regions in the world. The complexity of these regions are challenged by centralized water policy models limited to the national territory. This vision is currently changing. Among the factors behind this process, the changes in the international political and economic systems have been identified, along with their effects on traditional perceptions on sovereignty and cooperation (Blatter et al., 2001; Elhance, 2000). Additionally, the importance of international waterways, as spaces for studying the conditions and problems affecting forms of management, and the identification of conflict or cooperation scenarios has grown (Giordano, Giordano & Wolf, 2002; Haftendorn, 2000; Uitto & Duda, 2002; Wolf, 1998). One result of these changes has been greater participation of actors in the immediate environment of international watersheds, allowing for connections with the counterparts on the other side of the border.

In the case of the Mexico-U.S. border, the situation described here in the San Diego-Tijuana River Watershed, and the possibilities have been implicitly recognized in recent research on the conceptual viability of binational cooperation models at the watershed level (Brown, 2002; Brown & Mumme, 1999; 2000). Similarly, government agencies such as the Good Neighbor Environmental Board (GNEB), an advisory body of the U.S. Congress and Executive branch, have proposed the binational

management of water using the watershed approach under similar considerations (GNEB, 2000).

From the perspective of Mexican institutions, the experience derived from the TRW encourages reflection on the potential benefits of social and government actors at the subnational level as interpreters and facilitators of federal water policy. There is also a need to develop the mechanisms to strengthen them. In the case of the TRW, for example, the groups and actors that have participated in the binational initiatives on the Mexican side have included people with connections and/or knowledge of Conagua's activities and programs through their implementation of water policy at the local level (Castro & Ganster, 2012). This is a resource that is evidently undervalued. For instance, the Baja California Watershed Council has a CILA representative present at its meetings, but it is one of the invited participants without voice or vote, and the representative's participation has been uneven and only informative (Castro & Sánchez, 2005).

The recent signing of Minute 320 of the CILA-IBWC is undoubtedly a recognition of the work of the non-governmental groups and actors on both sides of the TRW, in favor of the creation of a binational entity to coordinate the shared management of the watershed (Saxod et al., 2007). However, its operational future poses challenges. One challenge is the willingness and commitment of Mexican governmental agencies to address specific problems regarding TRW water resources. Specifically how they will change the rigid and bureaucratic nature of water policy in the country—national and crossborder—to be more flexible, and their willingness to share information and resources to achieve specific projects that identify the Binational Base Group (BBG) as a priority. The future support of the U.S. counterparts, in terms of continuing or increasing the financial subsidies with which they have participated until now, will depend, to a large extent, on these two conditions. Another central point will have to do with the level of interaction and participation that non-governmental representatives will have within the BBG, since it will be essential for civil groups to be able to convey their concerns and proposals on issues regarding the TRW.

Minute 320 provides an interesting avenue for Mexican government agencies to enter into the search for administrative mechanisms to facilitate an open and dynamic interaction with civil society and government counterparts at the subnational level. As long as this does not exist, and the participation of Mexico in these local initiatives remains solely within the CILA, not only will a resource be lost at a national level, but so will the opportunity to advance models of cooperation and sustainable management of shared water sources on the northern border of Mexico.

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José Luis Castro Ruiz

Mexican. PhD in Urban and Regional Planning, University of Southern California, USA. Research professor of El Colegio de La Frontera Norte, Department of Urban Studies and Environment in Monterrey, Nuevo León. Lines of research: border urban development, urban and cross-border water management. Most recent publication: *Sustentabilidad ambiental y planeación estatal en la frontera norte de México: el caso de los recursos hídricos*, co-authored with María Eugenia González Ávila, El Colef and Cibnor (in press).

Stephen P. Mumme

American. PhD in Political Science, University of Arizona, United States. Professor of Political Science, Department of Political Science, Colorado State University. Lines of research: comparative environmental policy, environmental management at the Mexico-U.S. border, cross-border environmental management in North America. Most recent publication: (2017). Constructing Equity during the Salinity Crisis (1961-1973): Mexico, the United States and the Politics of Sharing on the Colorado River. *Journal of the Southwest*.

**Kimberly Collins**

American. PhD in Applied Social Sciences, El Colegio de la Frontera Norte, Mexico. Associate Professor of Public Administration, California State University, San Bernardino. Lines of research: local governance and planning, globalization and social networks; Leadership, democracy and community participation. Most recent publication: (2017). Globalization, Democracy, and Public Space: The case of the U.S.-Mexican Border Region. *Journal of Public Management and Social Policy*.