

Factors that Contribute to Successful Diplomatic Outcomes: Case Study of the Colorado River Basin Cross-boundary Institution

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Abstract

This case study provides insights regarding factors that contribute to successful cross-boundary diplomatic outcomes in the Colorado River Basin. The highlighted factors are based on the author's study of and participation in water policy and management within the Colorado River Basin, along with observations of other areas. The Colorado River, which provides water to seven states in the western United States, two states in Mexico, and several Native Nations, has experienced stressed hydrologic conditions since the turn of the century. These conditions have often required difficult negotiations on matters related to sharing the burden of reduced Colorado River water deliveries. Established by treaty, the International Boundary and Water Commission has demonstrated its ability to negotiate binding agreements to share shortages and address environmental concerns. Though the case study concentrates on the structure and processes of the International Boundary and Water Commission regarding Colorado River Basin transboundary diplomacy, the enumerated contributing factors to successful diplomatic outcomes have broad applicability in terms of community scale and conditions.

Introduction

The Colorado River system provides water, hydropower, and recreational services to millions of people. Shared by seven states in the western United States (US), two states in Mexico, and most of the 30 Native Nations within the watershed, it is estimated that 40 million people rely on the 2,330 kilometer river. (**Figure 1** – Map of the Colorado River watershed in the context of the US-MX border) Behind Hoover Dam, considered one of the seven industrial wonders of the world, lies Lake Mead, which, when full, is the largest surface storage reservoir in the US. Upstream and behind Glen Canyon Dam, Lake Powell serves as a second large reservoir, and there exist additional smaller storage reservoirs. Not only is water delivered to users within its 637,000 square kilometers drainage area, but water is conveyed to users outside the watershed boundaries, including urban water users in large metropolitan areas, such as Los Angeles and Denver. In Mexico, Colorado River water is transported west to meet agricultural irrigation needs in the Mexicali Valley.

In 1944, the Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Treaty) became effective, establishing the guiding principles for cooperation on these three transboundary rivers. It expanded authorities of the former International Boundary Commission to include surface water and wastewater responsibilities and renamed the commission the International Boundary and Water Commission (IBWC). Since that time, the IBWC has jointly

addressed binational matters per the 1944 Treaty, as interpreted through jointly developed and signed Minutes, which specify actions required to implement the treaty's provisions.

Since the turn of the century, precipitation and temperature patterns have, in most years, produced below-average annual Colorado River flows, sometimes well-below average flows when compared to the prior 30 years (Salahbadi et al., 2022, Wheeler et al., 2022). Lower flows resulting from this Millennium Drought, fixed water allocations based on generous assumptions of river flows, and increased water demands of this growing region of North America result in an imbalance of water demand and supply.

Due to very low flows occurring in the early 2000s, the US states and US federal government recognized the urgent need to adopt shortage sharing guidelines, something that heretofore had not existed. In 2007, the US government formally adopted its first regulations regarding sharing Colorado River shortages via the "Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead" (2007 Interim Guidelines). This imbalance was further evaluated via the 2012 US Bureau of Reclamation Colorado River Basin Water Supply and Demand Study (2012 Study), which also looked to possible means of addressing the growing imbalance but was not intended to lead to a specific action.

Though significant undertakings, the multi-year processes of negotiation and analysis leading to development of the 2007 Interim Guidelines and the 2012 Study had recognized shortcomings. The 2007 Interim Guidelines only pertained to sharing of shortage among the US water users. How/if to address cutbacks to the 1944 Treaty's 1,850 million cubic meter US delivery obligation to Mexico would require a binational process. Likewise, preparation of the 2012 Study was a US-only study. Moreover, the 2012 Study was met with resounding criticism from Native Nations in the basin. Despite their holding rights to 20 to 25 percent of Colorado River water, Native Nations, which are sovereign nations located within the US, were not formally consulted, or explicitly included. Recognizing this major shortcoming, a companion study, the Colorado River Basin Ten Tribes Partnership Tribal Water Study, was undertaken and released in 2018 by the US Bureau of Reclamation and the Ten Tribes Partnership.

The challenges associated with the imbalance in water demand and supply are core to the work being done at many geographic and jurisdictional levels, especially between the US and Mexico through the IBWC. Though the case study will concentrate on how the structure and processes of the International Boundary and Water Commission contribute to successfully negotiated binational outcomes, which include national agencies, such as the U.S. Bureau of Reclamation and Mexico's National Water Commission (CONAGUA), state agencies, and other entities. The discussion of the contributing factors should make clear their relevance to other scales and cross-boundary settings.

IBWC's history of adaptive governance and processes

The International Boundary and Water Commission is set up as an international organization of co-equal parts. The US and Mexican sections of the IBWC are headed up by a federally appointed Commissioner with engineering experience. The sections operate as part of each respective federal government, coming together through diplomatically agreed upon processes to deliberate and act

as the IBWC. Each Commissioner is supported by a staff of engineers and others funded by the home country. Rather than being in each country's capital city, they are located in sister cities along the border, specifically, El Paso, Texas on the US side and Ciudad Juarez, Chihuahua on the Mexican side. This proximity contributes to ease of in-person meetings of the Commissioners and/or their staffs.

IBWC operates in the context of various asymmetries. There are asymmetries in the water governance regimes. Mexico's water governance is highly centralized, unlike US water governance, where many authorities are within the purview of state rather than federal authorities (Megdal and Scott, 2011). The two countries speak different languages, experience different socioeconomic conditions, and even employ different units of measurement. Over the years, especially given this century's extremely stressed Colorado River conditions, institutional innovation and water cooperation have increased. What has contributed to this increase?

One key instance involved a natural disaster – a crisis – providing an impetus to agreement on an innovative cooperation to store water in the United States on behalf of Mexico. On April 4, 2010, an earthquake in the region did substantial damage to Colorado River water delivery infrastructure within Mexico. Unlike in the US, there are no storage reservoirs on the Mexican side, and there was no formal mechanism for Mexico to store water within the large US reservoirs. The US obligation is to deliver water to Mexico based on scheduled requests from Mexico that sum up to the annual delivery requirement. Mechanisms for over-year storage of water in Lake Mead had only recently been established for US-based Colorado River water users through the 2007 Shortage Guidelines. Following the earthquake, Mexico cancelled its scheduled delivery requests because the water could have not been diverted and used as intended due to the inoperability of much of the Mexican-side delivery system. Instead, just over two months later, on June 17, 2010, the Commissioners signed Minute 317, “Conceptual Framework for U.S.-Mexico Discussions on Colorado River Cooperative Actions.” This framework Minute established a binational Consultative Council to consider legal, administrative, and policy matters associated with cooperative actions (Megdal, 2021, Minute 317). Through the Consultative Council, the Commission would “explore opportunities for binational cooperative projects that: minimize the impacts of potential Colorado River shortage conditions; generate additional volumes of water using new water sources by investing in infrastructure such as desalinization facilities; conserve water through investments in a variety of current and potential uses, including agriculture, among others; and envision the possibility of permitting Mexico to use U.S. infrastructure to store water.” (Minute 317) The natural disaster resulted in a change to treaty implementation that has served the two countries well. Later Minutes, most notably Minute 319 and Minute 323 have established parameters for storing water in Lake Mead on an ongoing basis and for quantifying shortage sharing during low-flow river conditions.

Another key innovation, which resulted from Commissioners' initiative, was the broadening of opportunities to participate in IBWC processes. The Commissioners established working groups that expanded the opportunity for representatives from government agencies, non-governmental organizations (NGOs), and universities to deliberate and provide input on matters under consideration. These more expansive consultative and information sharing processes enabled broad cooperation on environmental flows through Minute 319 and Minute 323 (Gerlak, 2015) and on binational study of desalination opportunities through Minute 323 (International Boundary

and Water Commission, 2020). The IBWC is extending this broader and more inclusive consultative approach to its Rio Grande activities.

In the 2020 open access journal article “Hydrodiplomacy and adaptive governance at the U.S.-Mexico border: 75 years of tradition and innovation in transboundary water management,” Wilder et al. analyze IBWC’s adaptive water governance and innovations across the border region, since the implementation of the 1944 Treaty. (**Figure 2** – Map of entire border region, showing the Colorado and Rio Grande/Rio Bravo Rivers.) Examining the history of IBWC successes, the authors present (on p. 191) these five indicators or contributing factors to adaptive capacity: (1) social learning and knowledge co-production, (2) sustained and iterative relationships, (3) flexibility and innovation, (4) state and non-state actor networks, and (5) robust and foundational institutions. In the context of the five indicators, the authors further connect (on p. 199) IBWC achievements to five events or turning points: (i) the significance of temporal and spatial context; (ii) the expansion of transboundary water-governance capacity; (iii) a movement toward inclusion of non-nation-state actors at different scales, and toward a more ecological focus; (iv) the linkage of governance-capacity changes across time and space, with each phase building on prior phases; and (v) diverse roles played by both science and diplomacy efforts in these cases.

Though the IBWC operates along the entire border and most of the border region can be described as semi-arid, areas of focus or concern are not necessarily the same across the different primary river systems. Spatial and temporal considerations differ. The Colorado River flows south from the U.S. into Mexico, whereas the Rio Grande/Rio Bravo itself is a long east-west border along the U.S. state of Texas. The timing and direction of river deliveries differ as well. The 1944 Treaty requires the U.S. to deliver Colorado River water to Mexico annually, while the cross-border delivery obligation for the Rio Grande/Rio Bravo system, which is from Mexico to the U.S., must be met over a five-year period. The processes of consultation and programmatic focus may differ as well. As noted in the prior section, the more inclusive approach and ecological focus noted have been more prevalent in the Colorado River system but are being extended to the Rio Grande/Rio Bravo system. For the third major shared river system, the Tijuana River, wastewater treatment and outflows have recently been a key concern. The IBWC therefore attends to different issues across the border and over time, and builds upon its experiences. As described by Wilder et al. (2020), science and diplomacy figure in regularly across the border, including in transboundary aquifer assessment efforts, where innovative strides have also been achieved (Pineda Pablos et al., 2020, Petersen-Perlman et al., 2021, Tapia-Villaseñor and Megdal, 2021).

Most if not all of the five indicators highlighted by Wilder et al. (2020) relate to process. Social learning and knowledge co-production relate to the process of acquiring and sharing data, information, and analyses. Sustained and iterative relations of course speak to the actual relationships between the Mexican and U.S. IBWC sections, along with how other individuals and entities are connected. Flexibility and innovation relate to the fundamental processes associated with arriving at policies as conditions change over time. Existence of state and non-state networks points to the involvement of the various agencies and organizations. The existence of robust and foundational institution(s), perhaps the most important determinant of the predictability, effectiveness, and durability of process, is listed as the fifth indicator. The next section further focuses on process by considering the factors that contribute to IBWC’s effectiveness in tackling binational water challenges – challenges that can often be described as wicked water problems.

Foundational factors for successful diplomacy

Wicked water problems can be defined as those that do not have single, easily identified and implemented solutions (Beutler, 2016, Megdal, 2020, Beutler, 2021). Ongoing efforts involving many entities and individuals are required to identify pathways to mitigating the impacts of wicked water problems, meaning process considerations loom large. There is no shortage of wicked water problems being tackled globally, with the Colorado River basin's imbalance in between water demand and supply being a prime example. This imbalance affects all the water-demanding sectors – municipal, agricultural, industrial, and environmental – and its binational implications make addressing the impacts more complicated. As discussed above, the IBWC has been able to develop actions to identify adaptive measures. This section details key factors that have contributed to the IBWC's success, factors that underscore foundational process and interpersonal factors.

Factor 1: A functioning mechanism for cooperation, including knowledge co-production

This factor has multiple layers to it. First and most obvious is that the institution for cooperation must function in the intended manner. It must be more than something “on paper”. The degree of functionality of an entity or institution may be hard to measure, but it is not hard to recognize when there is lack of functionality (Schwind, 2019). Without an entity that functions on an ongoing basis, there is no reliable opportunity to deliberate and negotiate. With its authorities established through the 1944 Treaty, the IBWC is an established and continuing institution with predictable operating protocols. Each section is housed in their federal diplomatic agencies and work regularly with other federal agencies. The two sections operate as co-equals. Agendas are co-developed, and activities, including studies, are conducted in both national languages, with highly qualified translators employed. There is expert professional and supporting staff with institutional memory. Another factor that contributes to the IBWC's functionality is the proximate location of the two sections' offices at the El Paso-Ciudad Juarez border region, thereby facilitating meetings of the staff and Commissioners.

Engaging in joint studies, with both sections involved in study review and modifications, is another layer of this factor. IBWC processes enable the co-production of information and analyses, as highlighted by Wilder et al. (2020), resulting in jointly accepted and released reports, which are produced in both English and Spanish. Developing common understanding has resulted from working through complex river modeling (Wheeler et al., 2018) to harmonizing existing groundwater information (Callegary et al., 2016). Actions are then based on common understanding of the need for and implications of the actions.

A third and important functionality layer relates to the mechanism for taking action, namely, the Commission's authority to interpret the 1944 Treaty through Minutes. Minutes that involve complicated, often long-term agreements are codified via signature of the Commissioners representing each Nation. Though complex and frequently long-term negotiations take place, official action is accomplished within IBWC; congressional action is not required.

Factor 2: Mutual respect contributing to trust

Though mutual respect and trust could be listed as two separate factors, they go hand-in-hand. The IBWC is led by the two appointed Commissioners, one for each country. As Wilder et al. (2020) note, the IBWC Commissioners have worked as colleagues. Their schedules are coordinated so that they regularly appear together at convenings on matters under deliberation. They engage in common fact-finding and inspection missions. (Sadly, in 2008 Commissioners Arturo Herrera (Mexico) and Carlos Marin (U.S.) perished while aerially inspecting flood damage (Piñeda et al., 2020).) They travel together to conferences and fact-finding trips outside their border region (Megdal, 2017, Megdal, 2023a). Mutual respect has been built into the IBWC as a binational organization. Trust is an outgrowth of mutual respect. While getting into matters of psychology and interpersonal relationships is beyond the scope of this case study and the author's expertise, the crucial role of trust is mentioned in the context of difficult negotiations and deliberations. Trust between individuals is something that is built over time. Mutual respect contributes to building trust. Like many of these suggested factors, it is hard to measure respect. Rather, its absence is more readily recognized. Trust, something that is earned, can be easily shattered. Once a trustful relationship is broken, it may be hard to mend.

Factor 3: Involvement of interested parties (stakeholders)

The importance of involvement of diverse interested parties in water deliberations and decision making is well recognized (Gerlak, 2015, Eden *et al.*, 2016, Mott Lacroix and Megdal, 2016, Megdal *et al.*, 2017). In the Colorado River Basin, the IBWC has increased engagement opportunities through formation of binational discussion tables, committees, and minute oversight groups, through which underlying scientific, engineering, hydrologic, and/or policy considerations are fully explored. These platforms include representatives of water agencies, suppliers, users, non-governmental organizations, and academic institutions from both sides of the border. The necessary time and resources for engagement are built into IBWC's decision making timelines. That the IBWC is looking to replicate these more inclusive deliberative processes in the Rio Grande/Rio Bravo region is evidence of their value.

Factor 4: Good communication

A key to successful outcomes is good communication throughout the diplomatic process. The processes of consultation, deliberation, and decision making must be shared so that the parties understand their opportunities to engage. When multiple languages are involved, as is the case along the border shared by Mexico and the U.S., all official materials are prepared in both languages. Meetings must include sequential or simultaneous translation by translators familiar with water terminology. Fully bilingual reports and technical studies must be prepared. A noteworthy example of a fully bilingual study is the "Binational Study of Water Desalination Opportunities in the Sea of Cortez" (IBWC, 2020), which examines the opportunity to engage in water augmentation in the Colorado River Basin through desalination. This study, which includes side-by-side, page-by-page presentation of the desalination study in English and Spanish, resulted from Minute 323. Another example connected is the "Binational Study of the Transboundary San Pedro Aquifer" (Callegary et al., 2016), a peer-reviewed report of the binational Transboundary Aquifer Assessment Program (Megdal, 2019a, Megdal, 2023b). This study of groundwater

associated with a portion of Colorado River tributary was published as a single, bound volume, with the text and all the many maps presented in both languages. In addition to transmission of materials, whether in writing or orally, communication skills also come into play on the receiving side as well. Good communication is a two-way street. Listening to understand the positions of others involved is essential to successful water diplomacy.

Factors 5: Persistence and Patience

Persistence and patience are presented here together because, like mutual respect and trust, they are related. Addressing difficult water issues in a transboundary setting will require persistence. One cannot get discouraged by setbacks or obstacles along the way. And the processes take time, which requires patience. People of multiple cultures and backgrounds are involved; sometimes it may seem like one country or the other is always observing a holiday, meaning meetings are difficult to schedule. Though those involved with the study of the transboundary San Pedro aquifer mentioned above thought preparing a companion report for an adjacent binational aquifer system would go more quickly, for various reasons the preparation and peer review process have taken much longer than expected. Persistence and patience have been necessary to see the study progress through the process. Both are required for successful water diplomacy.

Factor 6: Eating with your partners

“Eating with your partners” was mentioned at a 2019 conference session in response to a question about what contributes to success in establishing productive working relationships in a binational setting. As noted by Megdal (2019b, 2), panelists “...agreed that having good functioning relationships is crucial. When working across national boundaries, it is critical to identify what is beneficial to both nations in order to identify win-win opportunities. It was also acknowledged that identifying such opportunities can be difficult and that relationships can have peaks and lows. Especially when working with neighbors with different cultures and languages, good communication, sincerity, and leadership will enable things to happen. Again, panelists came back to noting that eating together helps foster the friendships that then can facilitate the work required to forge formal agreements.” Unfortunately, the COVID-19 pandemic curtailed the ability to meet, greet, and eat with partners for a considerable period of time. Virtual meetings were the only option for quite some time, and diplomatic efforts did continue virtually. However, many agree that establishing new connections and professional relationships is more difficult in a virtual setting. Though virtual meetings continue to be held and do save on travel time and costs, they are not a substitute for getting to know your diplomatic partners through meals shared in a setting less formal than the official business meetings.

Factor 7: Leadership

Leadership is connected to all the above factors. It is foundational. As the Colorado River flows worsened since the turn of the decade, Commissioners, their staffs, representatives of the negotiating and cooperating parties have had to embrace new approaches to river management. They and the respective federal agencies have worked across changing presidential administrations and budget conditions. New partnerships were forged with nongovernmental organizations (NGOs). Academic partners and private sector consultants provided analyses.

Leadership is required for functioning mechanisms that work diplomatically to address wicked problems, whether manifested in binational, subnational, or local settings. Leaders are mutually respectful and will endeavor to ensure that trusting relationships are maintained. Leaders will respect the role of the external individuals and organizations that engage in the diplomatic process. Leaders will monitor communications for effectiveness, and they and/or their staffs will be available to explain. Leaders will diligently listen to others in order to hear their concerns and understand their positions. Leaders will understand the need for persistence and patience as they work through identifying pathways forward. Leaders will set the tone for all through how they interact with others, whether it be through informal settings such as meals, formal meetings, and/or written materials. Leaders will maintain focus. Leaders will be problem solvers. In summary, leadership is foundational to arriving at successful diplomatic outcomes.

Concluding remarks

Multiple states in the U.S. and Mexico and many sovereign Native Nations rely on the Colorado River to meet their water needs. What has always been a complex system in terms of water allocations has become more stressed since the turn of the century. Yet, under adverse hydrologic circumstances, the binational diplomacy efforts of the International Boundary and Water Commission have been productive. The burden of water deliveries cutbacks has been shared, joint efforts focused on the environment have proceeded, and forward-looking binational and bilingual technical studies have been undertaken. The 1944 Treaty provided IBWC with a structure for operating and the Minute development framework for interpreting the treaty. Providing the robust structure and framework has been instrumental in the success of IBWC's diplomatic processes.

However, structure and framework only go so far. How the people who make up a cross-boundary institution carry out their responsibilities will determine their success in adapting to changing circumstances. Fundamental to the success of the IBWC is the mutually respectful manner in which the Commissioners, their staffs, and their partners have co-produced knowledge, communicated and formulated strategies and actions. Others can learn from their leadership, mutual respect, and commitment to inclusive processes to address the many water challenges of the 21st century.

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Prepublication version. Excerpted from *Handbook of Water Diplomacy*, Shafiqul Islam, Kevin Smith, Martina Klimes, and Aaron Salzberg, eds., Routledge Press. In Press.

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