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Christopher P. Brown

Stephen Mumme

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Applied and Theoretical Aspects of Binational Watershed Councils (*Consejos de Cuencas*) in the U.S.-Mexico Borderlands***

ABSTRACT

Binational watershed councils or consejos de cuencas can provide considerable insight into water resource management challenges associated with the increasing levels of industrialization and urbanization that the U.S.-Mexico border has experienced during the last 30 years. This development along the border has occurred within binational conurbations known as "twin cities"¹ that are located either within or immediately adjacent to binational watersheds. Border scholars and a limited number of policy analysts working within government have advanced bio-regional and watershed approaches to water quality issues as a framework to explore the manner by which water resources are used and degraded through urbanization and industrialization. Watershed councils or consejos de cuencas are a type of institutional framework for addressing these issues; specifically, consejos are a tool developed in Mexico through la Ley de Aguas Nacionales (LAN, or Mexico's Law of National Waters) for exploring a wide range of water resource issues.² These councils, or consejos, are presently domestic Mexican institutions, with no transboundary or international experience. In this article, we introduce our region of investigation and review some initial research into consejos in two

* Christopher Brown, Ph.D. 1998, San Diego State University, is an Assistant Professor of Geography and Planning at New Mexico State University and was completing a Ford Foundation/Udall Center Fellowship in Environmental Conflict Resolution on the U.S.-Mexico border while working on this research.

** Stephen P. Mumme, Ph.D. 1982, University of Arizona, is Professor of Political Science at Colorado State University, Fort Collins, Colorado.

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1. "Twin cities" are inter-related urban areas that are spatially contiguous to each other on both sides of the international border. "Boundary cities have become so functionally intertwined that their futures are inextricably bound, whether the two national governments are able or unable to devise formal procedures for addressing border related problems." Roberto Ham-Chande & John R. Weeks, *A Demographic Perspective of the U.S.-Mexico Border*, in *DEMOGRAPHIC DYNAMICS OF THE U.S.-MEXICO BORDER*. 1, 9 (John R. Weeks & Roberto Ham-Chande eds., 1992).

2. See "La Ley de Aguas Nacionales," Titulo Segundo, Capitulo IV, Artículo 13, D.O., 1 de diciembre de 1992, reprinted in *COMISION NACIONAL DEL AGUA, LEY DE AGUAS NACIONALES Y SU REGLAMENTO* 15 (3rd ed., 1997).

binational watersheds. We then explore the value of two theoretical policy frameworks advanced by policy researchers³ for understanding the policy dilemmas and the potential for adopting consejos de cuencas as binational water resource management frameworks. We integrate useful insights from our experience exploring consejos de cuencas in the Tijuana River and the Rio Grande/Río Bravo basins to explore how specific policy options can be advanced within a watershed framework.

I. INTRODUCTION TO THE REGION OF INVESTIGATION

The U.S.-Mexico Border Region

Over the last 100 years, the U.S.-Mexico border region has grown from an isolated region established by treaty law as a barrier between two nations engaged in historical conflict to an economically active region experiencing major industrialization and urbanization. Over this period of time, forces and events on both sides of the U.S.-Mexico border have fostered human activities with significant impacts on environmental quality in this region. The entire border region has undergone dramatic economic development in the post World War II era.⁴ This has been a result of major structural changes that occurred in the region's economy due to large-scale federal investment by the United States in the military industrial sector that supported efforts in the Second World War.⁵ Large scale investments in high technology sectors of the economy, a shift from primary extractive activities towards manufacturing, increases in modern agricultural complexes, and the development of large scale water projects all

3. See generally DANIEL A. MAZMANIAN & PAUL A. SABATIER, *IMPLEMENTATION AND PUBLIC POLICY* (University Press of America 1989) (1983); Marvin Waterstone, *A Conceptual Framework for the Institutional Analysis of Transboundary Water Resources Management: Theoretical Perspectives*, in *TRANSBOUNDARY WATER RESOURCES MANAGEMENT: INSTITUTIONAL AND ENGINEERING PERSPECTIVES* 9 (Jacques Ganoulis et al. eds., 1994) [hereinafter *Conceptual Framework*]; Marvin Waterstone, *Transboundary Water Resources Management in the Upper Rio Grande Basin*, in *TRANSBOUNDARY WATER RESOURCES MANAGEMENT: INSTITUTIONAL AND ENGINEERING PERSPECTIVES* 85 (Jacques Ganoulis et al. eds., 1994).

4. See generally C. Daniel Dillman, *Urban Growth Along Mexico's Northern Border and the Mexican National Border Program*, 4 J. DEVELOPING AREAS 487 (1970) [hereinafter *Urban Growth*]; C. Daniel Dillman, *Recent Developments in Mexico's National Border Program*, 22 PROF. GEOGRAPHER 243 (1970) [hereinafter *Recent Developments*]; C.D. Dillman, *Maquiladoras in Mexico's Northern Border Communities and the Border Industrialization Program*, 67 TIJDSCHRIFT VOOR ECONOMISCHE EN SOCIALE GEOGRAFIE 138 (1976) [hereinafter *Maquiladoras*]; Vera Koči-Pavlačković, *The United States-Mexico Borderland: "Where North Meets South" or "Marriage of Convenience"*, 56 GEOGRAFSKI GLASNIK 1 (1994).

5. See Norris Hundley et al., *Transformation and Integration: The Borderlands, 1940-1990s*, at 1-10 (1993) (unpublished book chapter, on file with author).

contributed to this regional economic development, both during the war and well into the post war period.⁶

In addition to defense activities, other sectors of the region's economy experienced similar rapid growth. In 1942, the *bracero* (or guest worker) program was developed and implemented by the U.S. and Mexican federal governments to fill the wartime shortage of agricultural labor in the United States by allowing large numbers of Mexican nationals to migrate to the United States to engage in seasonal agricultural employment.⁷ In addition to filling this U.S. labor shortage, the *bracero* program also provided employment for Mexican nationals, acted as a safety valve for un- and under-employment in Mexico, and was also a general attraction for migrants. This migration stimulated economic growth all along the border, with much of this growth occurring in U.S.-Mexico border twin cities.⁸

With the end of the *bracero* program in the 1960s, the federal government of Mexico implemented the Border Industrialization Program (BIP) and *El Programa Nacional Fronterizo* (PRONAF, or the National Border Program), which made major investments in the infrastructure of the northern border states of Mexico.⁹ The goals of these programs were to increase employment in the north, to offset the termination of employment in the *bracero* program in the United States, and to increase general levels of border economic development.¹⁰ In addition to this direct investment, these programs also allowed for the development of *maquiladora* plants¹¹ (twin or *maquila* plants), assembly plants owned by foreign investors that employed Mexican labor to perform the assembly of finished goods.¹² The BIP was very successful in attracting *maquiladoras* to the border region, and many

6. See *id.*

7. See LAWRENCE HERZOG, *WHERE NORTH MEETS SOUTH: CITIES, SPACE, AND POLITICS ALONG THE U.S.-MEXICO BORDER* 99 (1990); Peter R. Hoffman, *The Internal Structure of Mexican Border Cities* 19-20, 108, 118 (1983) (unpublished Ph.D. dissertation, University of California (Los Angeles)) (on file with UMI, Dissertation Abstracts and UCLA).

8. See HERZOG, *supra* note 7, at 99.

9. See *Recent Developments*, *supra* note 4, at 243-47; *Urban Growth*, *supra* note 4, at 487-88. See generally Hoffman, *supra* note 7.

10. See *Recent Developments*, *supra* note 4, at 243-47; *Urban Growth*, *supra* note 4, at 487-88. See generally Hoffman, *supra* note 7.

11. *Maquiladoras*, or in-bond plants, are foreign owned assembly plants that initially utilized lower priced Mexican labor to assemble goods from imported components, see HERZOG, *supra* note 7, at 53-55, yet NAFTA and Mexican governmental policies have loosened restrictions on *maquilas* with attendant changes on their structure and location, see Koči-Pavlačević, *supra* note 4, at 8-13. In-bond refers to the lack of access to Mexico's domestic markets for the components involved. See *Maquiladoras*, *supra* note 4 at 139-40; Hundley et al., *supra* note 5, at 19-22. *Maquiladora* is a name reflecting the Spanish word *maquila*, the portion of flour retained by the miller as payment for grinding a client's grain. See HERZOG, *supra* note 7, at 164.

12. See Hundley et al., *supra* note 5, at 19-22.

border twin cities have seen dramatic increases in industrial growth as a result. Specifically, Tijuana experienced a 1000 percent increase in *maquila*-related employment alone from 1970 to 1988.¹³ Future growth in total manufacturing employment as a function of Mexican gross domestic product (GDP) continues to increase, and major increases in this sector of the economy contribute to regional population growth. Employment in this sector of the economy in Tijuana was projected to approximately 100,000 employees by the year 2000, and this employment will range between approximately 500,000 and 720,000 by 2025.¹⁴ These data indicate that trends of industrialization will continue in the future.

As a result of the economic development and industrialization described above, the U.S.-Mexico border has experienced dramatic population growth in recent decades, and much of this growth has occurred in twin cities. The literature varies in estimates of the prominence of population levels of these cities; populations are estimated to range from 72 percent¹⁵ to approximately 90 percent of total border population residing in these twin cities.¹⁶ With a vast majority of border population existing in these cities, most (but by no means all) water demand and resulting pollution problems occur in or near these urban centers. Of interest to researchers examining water resource use and allocation and related equity concerns along the border, the majority of border twins occur either in or immediately adjacent to binational watersheds that lie along the border. The prevalence of these basins along the border was the motivation for a re-definition by Woodard and Duvall, researchers with the U.S. Department of the Interior, of the border region as a "hydro-region" based solely on these binational basins.¹⁷ Two binational basins that lie within this "hydro-region" provide an opportunity to explore the concept of *consejos* from both an applied and a theoretical perspective.

13. See HERZOG, *supra* note 7, at 109-10.

14. See Peter Griffin, *Manufacturing Employment Forecast for Tijuana: 1996-2025*, at 10 tbl.5 (July 5, 1996) (unpublished manuscript in support of the SDSU/SCERP urban modeling project in Tijuana, on file with author).

15. See U.S. ENVTL. PROTECTION AGENCY & SECRETARÍA DE DESARROLLO URBANO Y ECOLOGÍA, *INTEGRATED ENVIRONMENTAL PLAN FOR THE MEXICAN-U.S. BORDER AREA: FIRST STAGE, 1992-1994*, at II-6 (1991).

16. See Weeks & Ham-Chande, *supra* note 1, at 8-9.

17. Woodward and Durall offer a framework within which the geographical realities of contiguous and spatially linked watersheds in the border region are integrated within a geographic information system to actually delineate a newly defined border region. This perspective provides a novel and very useful starting point for bio-regional and hydro-regional approaches to water resource management in the border region. See Dennis Woodward & Roger Durall, U.S. Dep't of the Interior, *United States-Mexico Border Area, as Delineated by a Shared Water Resources Perspective* (last modified Dec. 10, 1996) <http://www.doi.gov/fcc/english/water_fs-1.html>.

The Case of the Tijuana River Watershed

Although the Woodard and Durall hydro-regionalization provides an excellent macro view of the border and its hydrology, examining specific basins is instructive in looking more closely at regional equity issues. The Tijuana River Watershed (TRW) is a binational watershed located in the San Diego-Tijuana section of the border; approximately one-third of the basin lies in the United States and the balance of the basin lies within the Republic of Mexico.¹⁸ The catchment of the river has an areal extent of 1,735 square miles, within which portions of the city and county of San Diego in the United States and the *municipios* of Tijuana and Tecate in Mexico exist.¹⁹ Several tributaries of the Tijuana River lie within the watershed—Cottonwood Creek, Tecate Creek, and Campo Creek in the United States, and the Río de las Palmas and Río Alamar in Mexico.²⁰ Figure one, adapted from Pryde and International Boundary and Water Commission (IBWC),²¹ details the main hydrological features described below.

The Tijuana River basin and the urban areas contained herein enjoy a mid-latitude desert climate; annual ranges of precipitation are 10–15 inches per year.²² More important to water management issues than these mean levels of precipitation is the distribution of rainfall over time. Approximately 55 percent of annual rainfall occurs from December to February, and only two percent occurs in the summer months; heavy winter surface water runoff is the result.²³ Much of the 42,000 acre feet of runoff that the basin experiences occurs as winter flood flows,²⁴ driving a range of flood control measures, including four major dams and reservoirs that

18. See Philip R. Pryde, *A Geography of Water Supply and Management in the San Diego-Tijuana Border Zone*, in *PLANNING THE INTERNATIONAL BORDER METROPOLIS* 45, 45 (Lawrence A. Herzog ed., Ctr. for U.S.-Mexican Studies Monograph Series 19, 1986).

19. See *id.* at 45-47.

20. See *id.* at 45.

21. The IBWC is a joint U.S.-Mexican federal agency with formal responsibility to deal with boundary and water resource issues along the U.S.-Mexico border. Sections exist within the U.S. Department of State and the Mexican Foreign Ministry, these being the IBWC in the United States and La Comisión Internacional de Límites y Agua (CILA) in Mexico. See *INTERNATIONAL BOUNDARY AND WATER COMMISSION, JOINT PROJECTS: UNITED STATES AND MEXICO THROUGH THE IBWC* 3-7 (1981).

22. See ARTHUR N. STRAHLER & ALAN H. STRAHLER, *ELEMENTS OF PHYSICAL GEOGRAPHY* 136-37, 146-47 (3rd ed., 1984).

23. See Hoffman, *supra* note 7, at 88-94.

24. See NORRIS HUNDLEY, JR., *DIVIDING THE WATERS: A CENTURY OF CONTROVERSY BETWEEN THE UNITED STATES AND MEXICO* 14-16 (1966).

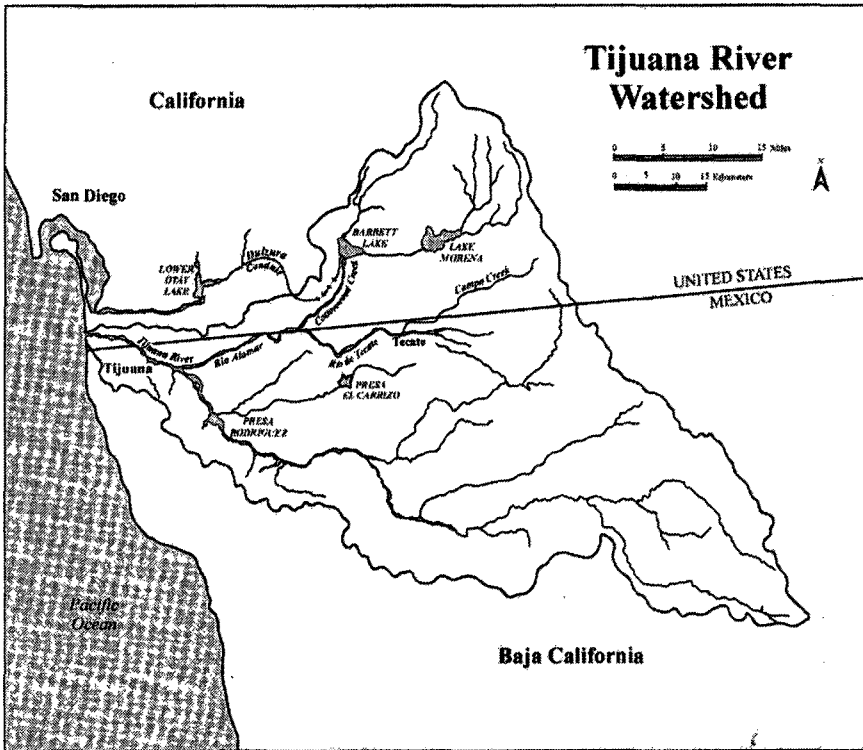


Figure 1. Hydrography of the Tijuana River Watershed (after IBWC 1983 and Pryde 1986).

also provide local water supply for Tijuana and San Diego.²⁵ These upstream flood control and water supply efforts interact to complicate water quality issues that occur in the downstream reaches.

The Tijuana River Estuary, a wetland dominated coastal plain estuary through which the river discharges to the Pacific Ocean, provides special natural resource value and management challenges. Freshwater drainage in the river mixes with the normal tidal flows and pulses of the Pacific Ocean to provide a home for a rich diversity of floral and faunal life.²⁶ In 1982, approximately 2,500 acres of the estuary were given permanent protection status to preserve the estuarine ecosystem, forming the Tijuana River National Estuarine Research Reserve (TRNERR).²⁷ The

25. See *id.*; Pryde, *supra* note 18, at 45-47.

26. See JOY B. ZEDLER ET AL., U.S. FISH & WILDLIFE SERV., *THE ECOLOGY OF TIJUANA ESTUARY: A NATIONAL ESTUARINE RESEARCH RESERVE* 1-7 (1992).

27. See *id.*

establishment of the TRNERR as a preservation mechanism also generated significant water quality management challenges due to large urban areas existing just upstream from the reserve.

As human activities interact with regional water resources, the Tijuana River Watershed and other border basins face a range of water quality issues reflecting regional development. Spatial and temporal patterns of precipitation generate the interrelated needs of providing raw and finished water supply in an arid region, while also generating flood control needs that are caused by heavy seasonal rainfall.²⁸ Articles appearing in the public media, scholarly research publications, and government publications have documented a wide range of water resource management issues within the basin that are assuming increasing importance as regional economic development continues to occur.²⁹

Perhaps one of the longest-term water resource challenges that has defied resolution in the San Diego-Tijuana region is the need for a comprehensive plan for the management, treatment, and disposal of municipal wastewater occurring within the lower reaches of the Tijuana River. Over the last 50 years, a period of rapid development in the region, infrastructure within Mexico has not been able to keep pace with the generation of wastewater flows from Tijuana; in-stream releases of raw and partially treated sewage have persistently occurred in the river upstream from the international border. To complicate this situation, renegade flows have crossed the border through coastal *arroyos* (small scale drainages in which surface runoff flows),³⁰ causing a wide range of human and environmental health concerns in both the Mexican and U.S. portions of the lower basin.³¹

Some of the specific issues facing the lower reaches of the basin include risks to the local horse industry due to persistent sewage flows, attendant negative impacts on local environmental and human health, and conflicts among the preservation and flood control advocates in the estuary

28. See generally Pryde, *supra* note 18.

29. See Sunny M. Angell, *Peace Between the Borders: The San Diego-Tijuana Border Sewage Problem 1-3* (1992) (unpublished Master's thesis, San Diego State University) (on file with San Diego State University); Thomas Healy Kelly, *Sewage Diplomacy: The Political Geography of Cross-Border Sewage Flows at San Diego-Tijuana* 5, 8-9 (1994) (unpublished Ph.D. dissertation, Fletcher School of Law and Diplomacy, Tufts University) (on file with UMI, Dissertation Abstracts and Tufts University); McNeil-Lehrer *Newshour: Anencephaly Occurrences and Border Industrialization* (PBS television broadcast, Nov. 19, 1992).

30. See HERZOG, *supra* note 7, at 197-200.

31. See generally Elizabeth L. Meyer, California Reg'l Water Quality Control Bd., Staff Report: History of Sewerage Facilities Serving the City of Tijuana, Baja California, Mexico (Sept. 16, 1983) (unpublished manuscript, on file with author).

region.³² The "accident of topography" in the region sees cross-boundary sewage flows moving from the highly urbanized and higher elevation city of Tijuana towards the less developed and lower elevation regions of the watershed in the United States; as a result, numerous negative spatial externalities plague the lowest reaches of the basin.

The Rio Grande/Río Bravo River Basin

Another binational watershed of major importance to urbanized areas of the border is the Rio Grande/Río Bravo river basin; within this basin, the Rio Grande/Río Bravo flows approximately 3,000 kilometers from its headwaters in Colorado to the Gulf of Mexico, collecting surface water runoff from portions of eight states, three in the United States and five in Mexico.³³ Figure two depicts the region's hydrology described below. Of major political importance to both the United States and Mexico, the river also forms the international border for a distance of 2,053 kilometers.³⁴ Approximately half of the total drainage area of 862,000 square kilometers consists of closed-basin areas that contribute little to no water to the river's flow.³⁵ However, numerous tributary streams and rivers provide surface water runoff to the river's flow in its international reach; the Conchos River, the Pecos River, the Río San Diego, the Río San Rodrigo, the Río Salado, and the Río San Juan are the most important of these. From an international water balance perspective, Mexico contributes slightly over two million acre-feet and the United States provides approximately 1.8 million acre-feet to the average annual flow of the river.³⁶ Three major international dams, the Amistad, Falcón, and Anzalduas dams, capture surface water flows and provide both flood control and water supply for this portion of the border.

Similar to the Tijuana River, the Rio Grande/Río Bravo River lies within a highly arid region, and agriculture and general urban uses place a high demand on surface water in the river. Agriculture utilizes approximately 80 percent of the supply; seven pairs of twin cities and numerous smaller communities along the border depend on the river and

32. See HERZOG, *supra* note 7, at 199; U.S. ENVTL. PROTECTION AGENCY, DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE INTERNATIONAL BOUNDARY AND WATER COMMISSION INTERNATIONAL WASTEWATER TREATMENT PLANT, INTERIM OPERATION, at xi-xii (1996); Telephone Interview with Art Letter, General Manager of the Tia Juana Valley County Water District (Oct. 17, 2000).

33. See Rio Grande / Río Bravo Basin Coalition, *Basin Facts* (visited Aug. 24, 2000) <<http://www.rioweb.org/BasinFacts.html>>.

34. See *id.*

35. See DAVID J. EATON & DAVID HURLBUT, CHALLENGES IN THE BINATIONAL MANAGEMENT OF WATER RESOURCES IN THE RIO GRANDE/RIO BRAVO 2-4 (Lyndon B. Johnson Sch. of Pub. Affairs, U.S.-Mexican Policy Report No. 2, 1992).

36. See *id.* at 3.



Figure 2. Hydrology of the Rio Grande/Rio Bravo Basin

its tributaries for at least a portion of their water supply. Of serious note for water quality issues, many of these sister cities discharge wastewater directly into the river, posing considerable human health risks to downstream users who withdraw their own water supplies from the river. Several nationally protected natural areas, wetlands, and parks exist along the river and are critical to the maintenance of many unprotected ecosystems.

A complex set of water resource management challenges face the basin. Basic water allocation of the river is under the jurisdiction of the International Boundary and Water Commission (IBWC), and the 1906 and 1944 Water Treaties between Mexico and the United States govern the details of this allocation. U.S. federal agencies also involved in regional water resource management include the Bureau of Reclamation, Army Corps of Engineers, United States Environmental Protection Agency (USEPA), the Department of the Interior and its related agencies, the Department of Agriculture, and the Department of Health and Human Services. Within Mexico, *la Secretaría de Medio Ambiente, Recursos Naturales y Pesca* (SEMARNAP, the Mexican Secretary of Environment, Natural Resources, and Fisheries) and its subsidiary, *la Comisión Nacional del Agua* (CNA, the Mexican National Water Commission) are the major agencies involved in management of national waters. At the state and regional levels, various agencies of the seven basin states in Mexico and the United States and dozens of municipal governments exert variable influence within their jurisdictions. Numerous irrigation districts and an increasing number of non-governmental stakeholders are expressing both region wide and local concerns in river management. Considerable inter-governmental and intra-governmental challenges exist within a growing public awareness of regional water resource management issues. Meeting such challenges requires mechanisms that can facilitate public consensus and support for basin-wide water management initiatives.

II. CONSEJOS DE CUENCAS—A TOOL FOR REGIONAL WATER RESOURCE MANAGEMENT

General Concept of *Consejos Binacionales*

A binational watershed council or *consejo binacional de cuenca*, is one mechanism by which regional water resource policy and related equity concerns can be explored in binational border basins. Past experience in the United States has seen successful use of the watershed perspective to

explore numerous water resource management issues;³⁷ the approach has also been used by the USEPA for domestic and binational work. This experience demonstrates significant potential for these types of regional approaches to advance discussion of water resource issues among a wide range of stakeholders and to advance a shared understanding of different perspectives towards resolving or at least understanding conflicts that confront the various users of these shared resources. The authors suggest using watershed councils and *consejos* as tools for exploring water resource issues within related binational basins along the U.S.-Mexico border.

The 1997 Border XXI Implementation Plans specifically called for integrated watershed planning and management in border watersheds.³⁸ Previous to these USEPA efforts, *la Ley de Aguas Nacionales* (LAN, Mexico's National Water Law) specifically called for the development of *consejos de cuencas* or watershed councils to serve the many users of hydrologic resources, to establish hydrologic infrastructure, and to preserve water resources in the targeted region.³⁹ Mexico's LAN only addresses *domestic basin councils in Mexico*; however, our research suggests that *consejos* may have binational utility.

Specific Opportunities for Watershed Approaches in the Tijuana Basin

Relatively recent developments in the Tijuana-San Diego area have opened up opportunities for regional and binational cooperation on a wide range of cross-border water resource issues, and these developments have demonstrated how a *consejo binacional* might function. The San Diego Association of Governments (SANDAG) is a regional organization composed of 18 county and city governmental units that does regional

37. See EDWARD J. CLEARY, *RESOURCES FOR THE FUTURE, THE ORSANCO STORY*, at v-xvi, 3-4 (1967); see also COMMITTEE ON WATER, NATIONAL ACADEMY OF SCIENCES, PUB. NO. 1689, *WATER AND CHOICE IN THE COLORADO RIVER BASIN*, at preface & 1-11 (1968).

38. The Border XXI Framework Document is the official blueprint developed by the U.S. and Mexican federal governments for environmental protection and sustainable development along the U.S.-Mexico Border. The USEPA and SEMARNAP offered this plan in 1996 to improve on some of the shortcomings of the La Paz Agreement and the Integrated Border Environmental Plan, the previous binational mechanism advanced to build upon the La Paz Agreement. See U.S. ENVTL. PROTECTION AGENCY, EPA 160-R-96-003, U.S.-MEXICO BORDER XXI PROGRAM FRAMEWORK DOCUMENT, at I.1 - I.5 (1996); U.S. ENVTL. PROTECTION AGENCY, EPA 160-R-98-001, U.S.-MEXICO BORDER XXI PROGRAM 1997-1998 IMPLEMENTATION PLANS AND 1996 ACCOMPLISHMENT REPORT, at iii-iv (1997).

39. See "La Ley de Aguas Nacionales," Título Segundo, Capítulo IV, Artículo 13, D.O., 1 de diciembre de 1992, reprinted in COMISION NACIONAL DEL AGUA, *LEY DE AGUAS NACIONALES Y SU REGLAMENTO* 15 (3rd ed., 1997).

planning, research, and data sharing in the San Diego area.⁴⁰ The Committee on Binational Regional Opportunities (COBRO) is a SANDAG internal advisory committee that explores SANDAG's role in binational U.S.-Mexico planning activities.⁴¹ Of importance to truly effective binational planning is the wide representation that COBRO enjoys on behalf of regional elected officials, business and academic leaders, and the Consuls General of the United States and Mexico.⁴² Related to COBRO is the Border Liaison Mechanism (BLM), a formal binational vehicle for this cooperation convened by the Consuls General of the United States and Mexico.⁴³ Activities that have occurred in the last several years within SANDAG, COBRO, and regional agencies with interest in binational water issues led to the development of a Border Water Council.⁴⁴

A one-day workshop on Binational Water Challenges and Opportunities was convened by SANDAG and the Consul General of Mexico in San Diego on July 17, 1997, which many binational shareholders in regional water resource issues attended. COBRO's effectiveness at coordinating binational issues as well as a shared need of interested parties to cooperate across the border on regional water concerns drove the development of a Border Water Council (BWC). The BWC, in conjunction with the BLM, allows regional discussions on water issues; the authority to implement policy options to arise from these discussions is then granted through the Consuls General and the local IBWC and CILA staff.⁴⁵ As initially proposed, the San Diego County Water Authority and *la Comision Estatal de Servicios Publicos de Tijuana* (CESPTijuana, the state level water commission)⁴⁶ are the respective co-chairs in the United States and Mexico.

40. See San Diego Association of Governments, *About SANDAG* (last modified Aug. 23, 2000) <http://www.sandag.cog.ca.us/whats_new/about_sandag.html>.

41. See San Diego Ass'n of Governments, *Committee on Binational Regional Opportunities (COBRO)* (visited Aug. 24, 2000) <<http://www.sandag.cog.ca.us/projects/binational/cobro.html>>.

42. See *id.*

43. See Consul General of Mexico, *Border Liaison Mechanism* (Sept. 26, 1997) (unpublished document, on file with author).

44. See SAN DIEGO ASS'N OF GOVERNMENTS, *AGENDA REPORT # 97-11-11, RECOMMENDATIONS BY THE COMMITTEE ON BINATIONAL REGIONAL OPPORTUNITIES (COBRO) FOR A REGIONAL WATER COUNCIL FOR SAN DIEGO AND TIJUANA* (1997).

45. Interview with Roberto Espinosa, Representante de la Comision Internacional de Limites y Aguas, in Punta Bandera, B.C., Mex. (Mar. 12, 1998).

46. In 1979, *la Ley de las Comisiones Estales de Servicios Publicos del Estado de Baja California* established certain state agencies for the provision of potable water and sanitation and the construction and operation of hydrologic infrastructure for Tijuana and Rosarito. See COMISION ESTATAL DE SERVICIOS PUBLICOS DE TIJUANA, *PLAN DESARROLLO INSTITUCIONAL 1996-2001*, at 1-3 (1998). Through a process of decentralization, these agencies have developed in Tecate and the other *municipios* in Baja Norte. These locally operating state water utility commissions are assuming increasing levels of responsibility for infrastructure provision and maintenance.

Since its inception in early 1998, the Border Water Council has moved towards implementation of the following recommendations of the 1997 workshop:⁴⁷ (a) providing a mechanism for regular contact among members and stakeholders that includes active public participation, (b) discussing the provision of new water supplies, (c) facilitating the cross-border exchange of raw and reclaimed water, (d) working on projects that can facilitate this exchange, and (e) utilizing a watershed approach to advance the above efforts.

Given the range of its functions and regional support, the BLM/BWC is functioning as a *de facto* binational *consejo* and is dealing with local water resource issues through a binational and regional discourse.⁴⁸ Specific to this region, equitable distribution of raw and finished water and the adequate provision of potable water and sanitation are the types of issues that this mechanism may examine.

Given the intractability of regional water resource issues and the friction that has often impacted cross-border relations, the cross-border cooperation that the BLM/BWC has facilitated has occurred relatively quickly and is particularly noteworthy. Although this effort has only been active for a short period of time, considerable promise exists for a regional approach to water resource management issues in the San Diego-Tijuana region that may be applicable to other binational basins along the border. Relative to the discussion of *consejos* in this article, to what degree does this local BLM/BWC initiative approximate that of a *consejo*? In a field interview conducted in support of this research, Roberto Espinosa, the regional representative of the CILA commented, "We already have *un consejo* of sorts in the COBRO/BLM effort."⁴⁹

Opportunities for *Consejos* in the Rio Grande/Río Bravo Basin

Contrary to the experience in the Tijuana Basin outlined above, Mexico has already applied the *consejo de cuenca* concept in the Rio Grande/Río Bravo river basin solely on a domestic level, whereas activities with a transboundary sphere of influence are informal. In 1994, the Río Bravo Basin Council was developed by the Mexican government to manage water allocation policies and wastewater treatment programs for the four

47. Email Letter from Nan Valerio, San Diego Association of Governments, to Christopher Brown (June 22, 1998) (on file with author); Telephone Interview with Dana Frieauff, Senior Water Resources Specialist, San Diego County Water Authority (Dec. 7, 1999); SAN DIEGO ASS'N OF GOVERNMENTS, *supra* note 44; SAN DIEGO ASS'N OF GOVERNMENTS & CONSULADO GENERAL DE MEXICO, DOC. NO. 97-9-9, BINATIONAL WATER CHALLENGES AND OPPORTUNITIES: RECOMMENDATIONS (1997).

48. Interview with Roberto Espinosa, *supra* note 45.

49. See *id.*

Mexican states sharing the river.⁵⁰ As mandated in the original call for *consejos* in the *Ley de Agua Nacionales*, the Río Bravo Basin Council functions with the guidance and support of the *Comisión Nacional de Aguas* (CNA);⁵¹ efforts undertaken by the council have aided in coordination of regional compliance approaches with binational agreements on water use and water quality management on the river.⁵²

Several related, less formal efforts of a binational nature have been advanced towards transboundary coordination and sustainable development on the river. The Rio Grande Alliance (RGA) was formed in 1994 and is sponsored unofficially by the USEPA, the Texas Natural Resources Conservation Commission (TNRCC), and Mexico's SEMARNAP.⁵³ The Alliance is a loosely coupled binational group of stakeholders (particularly governments) that work throughout the Rio Grande/Río Bravo watershed; this region includes the states of Texas, New Mexico, and Colorado in the United States and those of Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas in Mexico. As constructed, the Alliance is not formally affiliated with the Mexican government's Río Bravo Basin Council nor has it aimed at the development of a formal binational *consejo*. Rather, the RGA functions primarily as an information clearinghouse with multi-level government agencies and also claims to unite over 30 non-governmental entities; the Alliance remains heavily over-represented by U.S. government agencies and groups.⁵⁴ The principal activities that it carries out in this role are priority setting, data and information sharing, coordinating common initiatives, and supporting a process for citizen participation in developing regional water policies.⁵⁵ With respect to funding, the Rio Grande Alliance currently operates as an unfunded program within the Border XXI Implementation Framework, as it has received no federal funding from the United States since 1995.⁵⁶ In 1998, the Alliance reverted to USEPA management, as the TNRCC largely pulled out as the host institution; the Alliance project is presently under USEPA internal review.⁵⁷

50. See SECTOR LEADERSHIP GROUP, THE WORLD BANK, REP. NO. 15435-ME, STAFF APPRAISAL REPORT, MEXICO WATER RESOURCE MANAGEMENT PROJECT: ANNEX F 2-3 (1996).

51. See *id.* at 4.

52. See *id.* at 2.

53. See U.S. ENVTL. PROTECTION AGENCY, EPA 160-B-99-003, COMPENDIUM OF EPA U.S.-MEXICO BORDER ACTIVITIES 244 (1999) [hereinafter *Compendium*]; U.S. ENVTL. PROTECTION AGENCY, EPA 160-R-98-003, U.S.-MEXICO BORDER XXI PROGRAM 1998 IMPLEMENTATION PLANS 169 (1998) [hereinafter *BORDER XXI*].

54. See *BORDER XXI*, *supra* note 53, at 169.

55. See *id.*

56. See, e.g., *id.* (indicating no funding in 1998).

57. Telephone interview with Steve Niemeyer, Border Program Director, Texas Natural Resources Conservation Commission (May 4, 1999).

Another initiative that operates independently of the Alliance is the Rio Grande/Río Bravo Basin Coalition, a network composed wholly of non-governmental organizations (NGOs) interested in the Rio Grande/Río Bravo river basin.⁵⁸ The RGRBBC also formed in 1994 as an outgrowth of the NAFTA initiative. Funded by the Ford Foundation, the RGRBBC is a binational organization with U.S. and Mexican co-directors operating out of offices in El Paso, Texas, and Ciudad Juárez, Chihuahua.⁵⁹ Similar to the Alliance, the RGRBBC serves as a clearinghouse and networking center, but it is also an advocacy organization for a variety of citizen initiatives related to the sustainable development and management of the river basin. At present, RGRBBC lists 36 U.S. NGOs and 19 Mexican NGOs as participating members.⁶⁰

In the five years since its inception, the RGRBBC has advanced a number of programs, including organization of an annual *Día del Río* (River Day), an annual event designed to promote educational awareness and consciousness-raising issues related to sustainable development in the basin. Other activities include the development of a computer networking system among partner groups, the development of a content rich webpage,⁶¹ the production of a regular newsletter—*La Corriente*—which is distributed to some 2,500 subscribers in both sides of the basin, and the establishment of a Mexican office.⁶² The RGRBBC has also gained recognition of the Rio Grande as an American Heritage River, and numerous small grants have been made to participating Mexican NGOs to promote education efforts among the public in the areas of local water conservation and water quality issues.⁶³ The long-term vision of the RGRBBC is that of a more sustainable future for the basin in which the development of a basin-wide management institution and improvements to existing institutions are advanced that increase public access to and participation in river basin management.⁶⁴ Within this vision, the Coalition

58. See generally Rio Grande/Río Bravo Basin Coalition, *Homepage*, (visited Oct. 4, 2000) <<http://www.rioweb.org>>.

59. See Rio Grande/Río Bravo Basin Coalition, *Board & Staff*, (visited Oct. 4, 2000) <<http://www.rioweb.org/BoardStaff.html>>.

60. See Rio Grande/Río Bravo Basin Coalition, *Partners*, (visited Oct. 4, 2000) <<http://www.rioweb.org/Partners.html>>.

61. See generally Rio Grande/Río Bravo Basin Coalition, *Homepage*, (visited Oct. 4, 2000) <<http://www.rioweb.org>>.

62. See Rio Grande/Río Bravo Basin Coalition, *Publications*, (visited Oct. 4, 2000) <<http://www.rioweb.org/Publications.html>>; Rio Grande/Río Bravo Basin Coalition, *Programs*, (visited Oct. 4, 2000) <<http://www.rioweb.org/Programs.html>>.

63. See Rio Grande/Río Bravo Basin Coalition, *Homepage*, (visited Oct. 4, 2000) <<http://www.rioweb.org>>.

64. See Rio Grande/Río Bravo Basin Coalition, *Mission Statement*, (visited Oct. 4, 2000) <<http://www.rioweb.org/Mission.html>>.

would also develop educational programs on sustainability for the region and link basin stakeholders with the best scientific information to improve prospects for sustainable development of the basin's water resources.⁶⁵

Concerning the larger issues of binational water allocation, both of these less formal binational initiatives have largely focused on water quality and environmental concerns, specifically avoiding the allocative issues that the 1906 and 1944 Water Treaties have addressed. Neither the RGA nor RGRBBC has sought to establish an official binational *consejo de cuenca*, and this type of a more formal and governmentally sanctioned effort does not appear to be contemplated.⁶⁶ As established clearly within the 1944 Water Treaty, any formal binational mechanism by which the use of water would be directly regulated or re-allocated clearly must involve the IBWC/CILA as the lead agency.⁶⁷ Nonetheless, several members of NGOs and informed scholars of border water issues are interested in reexamining the 1944 Water Treaty in order to open the policy process to greater public participation or to actually modify the IBWC to pursue a basin-wide approach for promoting a sustainable use of the river's water resources. Based on past experiences with the IBWC, some members of the RGRBBC are in fact reluctant to work with IBWC in a more formalized approach to river basin management. Accordingly, the historic role and institutional practice of the IBWC on the border places the agency in a position that is highly controversial.⁶⁸

Linkages with Existing Agencies Involved in Binational Management

This discussion of the role of the IBWC/CILA in binational water resource management calls into question how the IBWC/CILA and the COBRO/BLM structure emerging from SANDAG's work would interact within the sphere of influence of the foreign ministries in the United States and Mexico. The 1944 Water Treaty clearly establishes the IBWC/CILA as the primary lead agency on binational water issues.⁶⁹ Concurrent with work the IBWC/CILA are currently pursuing, the dialogue and work that the Border Water Council has facilitated in the San Diego-Tijuana region have

65. See generally Rio Grande/Río Bravo Basin Coalition, *Homepage*, (visited Oct. 4, 2000) <<http://www.rioweb.org>>.

66. Email correspondence from Bess Metcalf, U.S. Co-Director, Rio Grande/Río Bravo Basin Coalition to Steve Mumme (May 5, 1999) (on file with author).

67. Treaty Between the United States of America and Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944, U.S.-Mex., 59 Stat. 1219, 1223 [hereinafter 1944 Water Treaty].

68. See generally Rio Grande/Río Bravo Basin Coalition, *Homepage*, (visited Oct. 21, 2000) <<http://www.utep.edu/rioweb/ubeng.html>>.

69. See 1944 Water Treaty, *supra* note 67.

occurred only with the support and leadership of the Counsel General of Mexico to the United States, Luis Herrera Lasso, whose office is within *la Secretariat de Relaciones Exteriores* (Mexico's Secretary of Foreign Relations), Mexico's counterpart to the U.S. Department of State. It is clear that both CILA/IBWC and the Consuls General have important and complementary roles to play in any effort at binational regionalization on water resource issues.⁷⁰ However, the manner by which this interaction occurs will vary across border regions and is a question ripe for examination in future research. Furthermore, for this type of a "seed effort" to evolve into a watershed council that is spatially coincident with a binational watershed, other agencies must be involved in the discourse.

La Comision Nacional del Agua (CNA) is the technical and administrative lead in all matters relating to national water resource management in Mexico.⁷¹ Through extensive discussions with many officials at all levels of government in Mexico, this role of CNA has been reinforced as the lead agency in the development of any *consejo*, council, or working group with the functional reach of a CNA-sanctioned organization.⁷² Although informal working groups exist in Tijuana that focus on water related issues, these efforts must have the formal leadership of CNA and some form of management on the part of CILA/IBWC and the Consuls General if they are to assume the broader role of a *consejo* as advanced in *la Ley de Aguas Nacionales*.⁷³ This type of management and coordination is not without its complications, but it is worth noting that this idea was received with both interest and modest surprise by officials within CNA and amounted to an interesting idea that they hadn't really considered yet.⁷⁴

Complications Concerning the Implementation of *Consejos Binacionales*

As detailed in previous sections of this article, possibilities exist through which the functional reach of *consejos de cuencas* possible under the LAN could be enhanced. The potential for regional approaches in the

70. Interview with Roberto Espinosa, *supra* note 45.

71. See "La Ley de Aguas Nacionales," Titulo Tercero, Capitulo III -IV, D.O., 1 de diciembre de 1992, reprinted in COMISION NACIONAL DEL AGUA, LEY DE AGUAS NACIONALES Y SU REGLAMENTO 83-86 (3rd ed., 1997).

72. Interview with Jose J. Aguilar Valenzuela, Jefe del Departamento de Supervision, Secretaria de Asentamientos Humanos y Obras Publicas (SAHOPE), in Mexicali, B.C., Mex. (May 11, 1998); Interview with Rosa Velia Lopez Ibarra, Jefe de Departamento de Planeacion del Desarrollo Urbano y Ecologia, Ayuntamiento de Tijuana, in Tijuana, B.C., Mex. (May 12, 1998); Interview with Jose Luis Vasquez Moraila, Jefe de Proyectos de Apoyo a Organismos Operadores, la Comision Nacional del Agua, in Mexicali, B.C., Mex. (May 11, 1998).

73. Interview with Rosa Velia Lopez Ibarra, *supra* note 72.

74. Interview with Jose Luis Vasquez Moraila, *supra* note 72.

United States to reach across-border is also evident, but both active and passive impediments to this policy vehicle exist. Perhaps the largest and most resistant barriers to change are the socio-cultural and political impediments that exist within the centralized structure of both CILA and CNA.

The IBWC and CILA are the most prominent agencies in cross border water resource management,⁷⁵ but historically they have been very unwilling to delegate authority and resources to the regional and local levels.⁷⁶ Of similar importance to the issue of binational *consejos* is CNA's mandate as lead agency on *consejos* and other regional watershed management efforts.⁷⁷ Through field investigations supporting the work discussed in the article, we have found a willingness and interest to discuss binational basin councils among some CNA officials in the border region.⁷⁸ However, what is less certain is whether efforts supportive of this enhancement of domestic basins would be forthcoming from CNA's central administration.⁷⁹ One need only look at a national map of Mexico and notice the border's considerable distance from Mexico City to appreciate how central government agencies might react to such ideas.

Our research to date indicates that perhaps the best means to bring CILA and CNA into the dialogue concerning a watershed council along the border is to build on successful local initiatives that advance regional cooperation on water resources. Well recognized along the border as the most successful and largest scale effort in this vein is the COBRO/BLM initiative that has resulted in the Border Water Council in the San Diego-Tijuana region. One point of concern with the BWC is the issue of its openness to public participation. As the work of the Council has to date focused on narrowly constrained water supply issues, leadership of the meetings greatly limited public participation; regional watershed researchers have criticized this means of operating as a barrier to advancing an open regional discourse on binational water resource issues.⁸⁰

75. See, e.g., 1944 Water Treaty, *supra* note 67, at 1222 (discussing the International Boundary Commission).

76. Interview with Oscar Romo, Director of the Ecoparque/SIDETRAN project being conducted by COLEF in Tijuana, in Tijuana, B.C., Mex. (Mar. 10, 1998).

77. See "La Ley de Aguas Nacionales," Título Tercero, Capítulo III-IV, D.O., 1 de diciembre de 1992, reprinted in COMISIÓN NACIONAL DEL AGUA, LEY DE AGUAS NACIONALES Y SU REGLAMENTO 83-86 (3rd ed., 1998).

78. Interview with Jose Luis Vasquez Moraila, *supra* note 72.

79. Interview with Ruben Sepulveda Marques, Sub-director, Normatividad, Analisis, y Gestion Ambiental, Direccion General de Ecologia, y Gobierno del Estado de Baja California, in Tijuana, B.C., Mex. (May 8, 1998).

80. See, e.g., Suzanne Michel, Place, Power and Water Pollution in the Californias: A Geographical Analysis of Water Quality Politics in the Tijuana-San Diego Metropolitan Region (2000) (unpublished Ph.D. Dissertation, University of Colorado, Boulder) (on file with

Irrespective of these limitations and barriers, the Border Water Council and the related work of the Border Liaison Mechanism are valid models of increased cross-border cooperation on water resource issues. Through this work, both CILA and CNA have more actively participated in a regional discussion of important issues, demonstrating a change in the manner by which these agencies are willing to interact with regional authorities and the public.⁸¹

The geographic realities of the regionalization of Mexican hydrologic resources pose other limitations and complications to the prospects of binational watershed councils. Many of the shared watersheds that lie on the border are relatively small basins that lie at great distance from the seat of federal government in Mexico. This distance may be seen to parallel how much less important these border basins may be to CNA and the Mexican environmental ministry, SEMARNAP, relative to other water resource issues. However, against this backdrop of the spatial segregation of political power and the geographic realities of where border watersheds lie are some interesting developments in the Tijuana River Watershed. The increased local participation of CESPTijuana, *la Secretaría de Asentamientos Humanos y Obras Publicas* (SAHOPE, the state of Baja California Norte authority for public works), and the state of Baja Norte *Dirección General de Ecología* (DGE, the state of Baja Norte's General Office of Ecology) can act as catalysts for cross-border regionalization of water resource management that is slowly proceeding in a bottom-up manner. As noted earlier in this article, CNA's and CILA's regional offices have been receptive to, if not directly supportive of, these ideas, and these instances of local and regional institutional reform of centralized water resource management can aid efforts toward regional management of these resources.⁸²

The LAN's language discussing *consejos* may pose a greater complication to the regionalization of water resources. The language that calls for the development of *consejos* does identify *los usuarios* (the formal users) of water resources, but the official council structure does not include a formal voice for preserving environmental and water quality in the same manner that agriculture, industrial, and urban uses have a formal voice.⁸³ Similarly absent from the language of this law is mention of how the

University of Colorado, Boulder).

81. Interview with Oscar Romo, *supra* note 76; Interview with Roberto Espinosa, *supra* note 45.

82. Interview with Jose Luis Vasquez Moraila, *supra* note 72.

83. See generally "La Ley de Aguas Nacionales," Título Tercero, Capítulo III -IV, D.O., 1 de diciembre de 1992, reprinted in COMISIÓN NACIONAL DEL AGUA, LEY DE AGUAS NACIONALES Y SU REGLAMENTO (3rd ed., 1997).

distribution and allocation of water resources is to take place.⁸⁴ The law is quite clear on the overarching need to preserve the quality of water resources; what is not clear is the manner by which a broader set of environmental quality or equity concerns is operationalized through a formal voice for these somewhat implicit uses.⁸⁵

Another issue related to contemporary reforms of the political process in Mexico is to what degree downstream *municipios* will be willing to participate in the potential visionary processes involving *consejos*. Somewhat paradoxically, as the process of decentralization unfolds in Mexico and local agencies receive a larger share of political power and financial resources with which to manage a wide range of regional water issues, *municipios* will be hesitant to share their newly acquired independence and larger share of political power and resources with other voices within the basin that may have conflicting interests. This contemporary policy landscape thus poses a question that cannot be answered at the present time, namely which of the newly emerging policy instruments—decentralization or *consejos de cuencas*—may enjoy the greater success in large, downstream *municipios*.

The last set of barriers to a binational watershed council to be discussed are longstanding socio-cultural and political elements that lead to cross-border friction and impair a wide range of binational efforts. Sovereignty concerns on Mexico's part related to foreign participation in regional water resource management decisions on the border have negatively impacted a wide range of cross-border discussions. NGOs and environmentally motivated advocacy groups in the United States have resisted certain policy efforts involved in the International Wastewater Treatment Plant recently built in the San Diego region to treat Mexican wastewater. Many valid concerns were raised by these groups that have been instrumental in opening up the regional wastewater management debate. However, many of these concerns have also generated considerable levels of animosity and ethnic friction, generating a valid and understandable concern on behalf of Mexicans involved in this dialogue that parties in the United States simply "blame the Mexicans" for regional water resource management challenges that are extremely complicated regional issues.⁸⁶ Despite these differences, ongoing educational and public outreach efforts with these groups have aided in reducing this friction and lessening the barriers to binational water resource cooperation.⁸⁷

84. See generally *id.*

85. Interview with Oscar Romo, *supra* note 76.

86. *Id.*

87. Interview with Paul Ganster, Director, Institute for the Regional Studies of the Californias, San Diego State University, in San Diego, Cal. (Mar. 13, 1998); Kaare Kjos, Independent environmental consultant with expertise in the Tijuana River Watershed, in San

Friction also exists within the domestic political landscape of Mexico. Conflict that has existed between the PRI or *Partido Institucional del Revolución* and the opposition party, the PAN or *Partido de Acción Nacional*, poses a range of barriers to watershed councils. An example of this is the situation within Baja California Norte, which has been a PAN state for the last three regimes. Against this long standing control of regional politics by PAN leaders is the reality that many of the higher level officials in agencies that administer federal hydrologic resources are members of the PRI.⁸⁸ Accordingly, the potential exists for cross-party friction to impede locally driven efforts at regionalizing these resources.⁸⁹ However, the current political situation at the national level provides a potential vehicle by which this barrier may be lessened, namely the participation of Julia Carabias Lillo as a member of the Border Environment Cooperation Commission (BECC)⁹⁰ Board of Directors.⁹¹ Carabias Lillo is the current director of SEMARNAP and is a highly respected environmental researcher who was formerly the director of *el Instituto Nacional de Ecología*, the National Institute of Ecology in Mexico. Within her role as the director of SEMARNAP and as an influential member of the BECC Board of Directors, she has openly declared that she is not affiliated with any political party in Mexico.⁹² Through her non-partisan stance and high profile participation in the environmental policy discourse in Mexico, Carabias Lillo brings the potential for a non-partisan contribution to both regional and federal discussions concerning water resource policy. Such a contribution may be able to ease cross-party tensions that exist between the "old guard" agencies and the more progressive regional efforts such as those affiliated with the successful PAN regime in Baja Norte.

Diego, Cal. (Mar. 10, 1998).

88. Interview with Dr. Jose Luis Castro, Director del Departamento del Medio Ambiente y Estudios Urbanos, El Colegio de la Frontera Norte, in San Antonio, B.C., Mex. (Mar. 9, 1998).

89. *Id.*

90. The BECC is a binational institution created through the side accords that facilitated passage and ratification of NAFTA within the United States. The BECC was established as a clearinghouse for projects seeking funding by the North American Development Bank (NADBank) and is formally responsible for certifying NADBank projects and providing technical support for developing and implementing border infrastructure projects. See H.R. Doc. No. 103-160, at 102-05, 116-17.

91. See generally Border Environment Cooperation Commission, *Homepage*, (visited Oct. 21, 2000) <<http://www.cocf.org/englishbecc.html>>.

92. See *id.*

III. INTEGRATION OF LOS CONSEJOS WITH OTHER POLICY FRAMEWORKS

Given the impediments to *consejo* formation in these two important binational river basins, what policy lessons may be drawn upon to reduce these barriers and facilitate the formation of a *consejo*? Two public policy frameworks of a general nature exist that offer useful insights into how some of the policy suggestions identified in this article may be implemented within the institutional framework extant, specifically within the regions of inquiry on the U.S.-Mexico border. Mazmanian and Sabatier, two public policy researchers, offer a general framework for examining public policy formation and implementation that may be usefully applied to the realities of actually doing this work.⁹³ Waterstone, a geographer with interests in natural resource and environmental policy issues, in turn, suggests that institutions can be viewed as a series of hierarchical rules that bind the relevant participants and guide their respective actions.⁹⁴ Institutional reform in transboundary water resources management can then be viewed as changes to these rules. This framework directs analytical attention to institutional reform behavior within certain agencies and levels of government in the area of inquiry.

Mazmanian and Sabatier have examined a wide range of domestic public policy issues, including the federal regulatory envelope for clean air protection, dimensions of the educational debate including desegregation and compensatory education, and the policies advanced to protect California coastal resources.⁹⁵ In their research approach, they argue that the process of policy formation (developing the ideas that will lead to the desired change) and implementation (carrying out the ideas to effect the change) are separate yet related processes whose distinction blurs as these related processes unfold.⁹⁶ This clear delineation gives way to a circular path whereby policy formation leads to implementation, the results of which feed back to re-formation of incremental policies designed to achieve the desired goal.⁹⁷ This feedback loop proceeds subject to the limits and constraints found within a specific region of inquiry; these limits and constraints can be viewed as filters through which this iterative process of policy formation and implementation occurs.

Some examples of the limits and constraints specific to water resource policy issues within binational watersheds demonstrate this

93. See MAZMANIAN & SABATIER, *supra* note 3, at 7-9.

94. See *id.* at 9-14.

95. See generally MAZMANIAN & SABATIER, *supra* note 3.

96. See generally *id.*

97. See generally *id.*

concept of limits and filters. The historical and geographical nature of the U.S.-Mexico border is one of a contemporary boundary established among conflicting states that saw a major loss of territory on Mexico's behalf. The socio-cultural and socio-economic composition of this policy environment is one of a boundary between an extremely wealthy and developed state and a state still in development. The beliefs and behavior of the public on both sides of the border reflect these historical, socio-cultural, socio-economic, and geographic facets of the border region; attitudes range from an isolationist or nativist leaning to a more cooperative and collaborative attitude. Lastly, the formal constitutional structure that exists on both sides of the border has a significant impact on how the policy debate unfolds. The persistently centralized nature of Mexican politics is a much different context than the predominantly federalist model on which U.S. political structure is based.

If one examines how these filters impact the processes of policy formulation and implementation with reference to the problem of *consejo* formation in the Tijuana River Watershed, several key points of this process (pressure points, so to speak) become evident, as detailed in figure three. First, the U.S.-Mexico border region is one with relatively limited economic resources available on both sides of the border, and these relative limitations are also accompanied by marked asymmetries that in turn skew the level of technical capabilities that exist across the border. These limitations and asymmetries argue for policy options that embrace lower technology ideas that are appropriate for areas in development.⁹⁸

Second, the combined set of historical, socio-cultural, socio-economic, and geographic facets of the border region lead to policy debates that involve divergent stakeholders across a wide range of economic, political, and social variables. Levels of wealth and related political power, support of the role of the state in regional water resource policy, and the degree to which NGOs are active in policy debates varies widely across and along the border. In addition, the concerns of the sovereign governments involved though the foreign ministries of the United States and Mexico must exist within the same structure as the less centralized nature of the BECC and NGO contributions and more centralized federal agencies such as the U.S. EPA, its Mexican counterpart SEMARNAP, and the U.S. and Mexican sections of the IBWC. In order to deal with these highly divergent

98. Direct field experience of the authors over several years has verified that the U.S.-Mexico border is a region in development and often experiences limitations of financial resources and technical background needed to maintain higher technology water resource management options. Accordingly, lower technology options are often more appropriate for the border region.

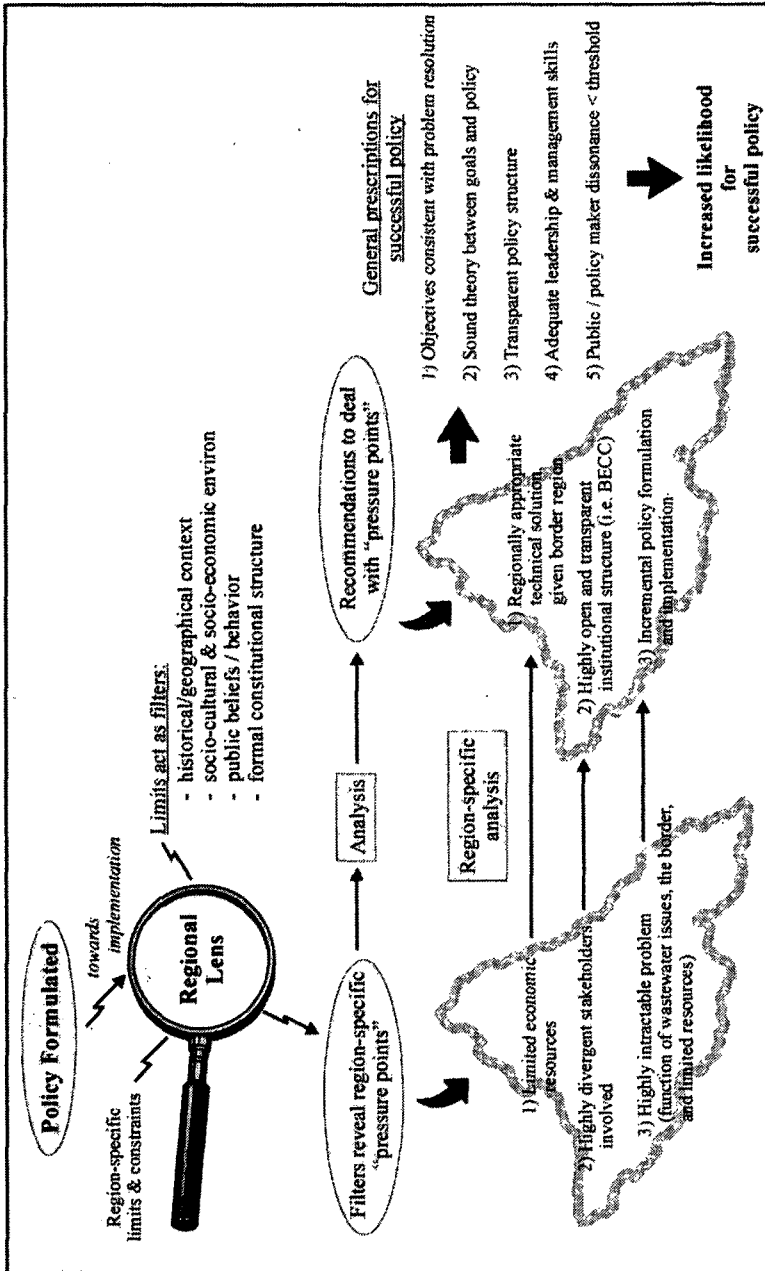


Figure 3. Pathways for policy formulation and implementation (Adapted from Mazmanian and Sabatier 1989).

participants in the policy debate, the structure of institutions involved should be as open as possible.⁹⁹

Lastly, the intractability of the challenges in this basin and other sister binational basins is quite high, owing to the diversity of the many groups involved, the role of the border, and the limited financial resources and technical capabilities available. In many cases, regional water resource conflicts along the border preceded the period of extensive border development introduced in the beginning of this article, and these issues have been exacerbated by post-NAFTA development. Accordingly, Mazmanian and Sabatier argue that steps toward policy formation and implementation must be developed and put in place incrementally to increase the likelihood of success.¹⁰⁰ In our work in both the Río Bravo/Rio Grande and Tijuana basins, we have also noticed that project specific activities that deal with particular problems can be coordinated in a stepwise regional manner that can approximate a watershed approach.¹⁰¹

Mazmanian and Sabatier also offer a series of more general recommendations to increase the likelihood of successful policy implementation.¹⁰² Enabling directives (or changes in institutional rules) by which policy is advanced must set out objectives that are consistent with resolution of related equity concerns. If the goal of a policy is to generate increased public participation in the policy formulation process, then the rules of engagement must provide increased opportunities for the public to truly participate in the debate. Policy directives must also be based on sound theory concerning the relationship between the goals being pursued and the actions prescribed by the policies formed. For example, if publicly accepted pricing strategies are to be employed to reduce use of a scarce resource without undue burden on the low-income sectors of society, then pricing mechanisms to do so must be born out by theory and case specific data. Policy directives must also create a structure for policy formation and implementation that is transparent enough to induce key players to behave in ways consistent with the goals being sought and that also allows

99. See generally Robert G. Varady et al., *The U.S.-Mexico Border Environment Cooperation Commission: Collected Perspectives on the First Two Years*. J. BORDERLAND STUD., Fall 1996, at 89. This need for openness has also been experienced by extensive direct field experience of the authors and is a widely recognized need in the border environmental policy arena.

100. See MAZMANIAN & SABATIER, *supra* note 3, at 20-41.

101. As introduced earlier in this article, the co-occurrence of twin cities and binational river basins provides a useful regional and geographic framework within which binational water resource policy may be examined. To the degree that the place-specific water resource challenges can be examined within a watershed context that is consistent with both domestic U.S. and Mexican water resource management approaches, such approaches can benefit from this concurrence with existing policy while also taking advantage of some of the insights our work can offer.

102. See MAZMANIAN & SABATIER, *supra* note 3, at 39-42.

participation by sympathetic agencies. Citizen task forces that are granted access to the policy debate involved and whose voice is genuinely heard by those seeking to affect the policy are one vehicle by which this transparent policy structure can be affected.

Leaders within this policy formation and implementation process must also have the management and political skill necessary to affect the desired goals. Although this general concept of "good leaders are needed for good leadership" may seem overly obvious, the overarching importance of truly effective leadership in crafting and implementing effective water resource policy on the border can not be too highly emphasized. The program of action involved must also be supported by constituency groups in such a manner that the priority of objectives stated in the policy is not undermined by conflicting views that exist within the larger socio-economic and socio-cultural context. Certainly, conflicts will exist between the many constituency groups involved and those trying to affect the policy. However, the key point that Mazmanian and Sabatier argue is that this dissonance between the public being served and those creating policy is not of such a degree that it undermines the support needed to implement the policies created.¹⁰³

If these guidelines are applied to regional policy efforts by which a binational watershed council may be effected in the Tijuana Basin, some lessons are apparent. Openness and transparency in the structure of policy making institutions that would contribute to and participate in such an effort will insure that policy makers are adhering to their charge of creating policy that is consistent with the goals desired. This is to a fair degree what the BECC has been able to achieve in the last several years through legitimate and considerable attempts at openness.¹⁰⁴ The constituency groups involved in watershed management issues must perceive that this openness exists and that leadership is competent to effect the policy being formulated. In addition to the desirability of having the best leadership available, effective means of communication should be instituted between these constituencies and the leadership involved. Open public meetings and discourse, the use of communication technologies ranging from Internet resources to community-based outreach activities, and the true willingness of leaders to listen and hear their constituencies are all needed. This communication not only supports the openness detailed above; it also contributes to a sense of ownership of the policy making process on behalf of the public. This communication can allow dissonant ideas to be expressed without this discord being so strong that it derails or undermines the policy effort being advanced.

103. See *id.* at 41-43.

104. See Varady et al., *supra* note 99, at 99-101.

Waterstone has examined water resource issues in a transboundary context, with a particular interest in how institutions function in the policy formulation and implementation process. Specifically, he offers a different view of both institutions and institutional reform from a theoretical framework and also applies this framework within the Upper Rio Grande Basin in a way that can be instructive when examining water resource management issues in other border basins such as the Tijuana River Watershed.¹⁰⁵ Waterstone expands upon the view that institutions are a series of rules that establish and maintain order and predictability in defined situations; these rules operate at the policy level, the implementation level, and the operational level. The policy level is the highest of the three levels and is the level at which enabling legislation and executive orders occur; the presidential office at the national level and state and national legislative bodies are examples. The implementation level is the level at which agencies set regulations and procedures by which specific public policy decisions are made; state water resource management agencies that set water quality standards are examples of importance to the current discussion. The operational level is the level at which staff carry out actions delegated from the previous two levels; agency staff who grant permits and put into action regulatory requirements to come out of the implementation level are notable examples.

Waterstone sees institutional reform or the crafting of new policy developing through a series of steps which can occur at any or all of the three hierarchical levels identified above, as indicated in figure four.¹⁰⁶ The steps in this process are

- (1) A given problem is identified as a gap between a desired outcome and the existing status.
- (2) A strategy is developed that may eliminate or narrow the gap through a revised outcome.
- (3) A policy demand is articulated to effect the general strategy identified.
- (4) Institutional analyses are performed to develop rule changes to create a desired outcome.
- (5) These rule changes are carried out, and the outcome is evaluated.
- (6) The outcome is compared to the desired result, at which point the process stops or the cycle begins anew.¹⁰⁷

105. See *Conceptual Framework*, *supra* note 3, at 9-14.

106. See *id.* at 14-16 fig.2.

107. See *id.*

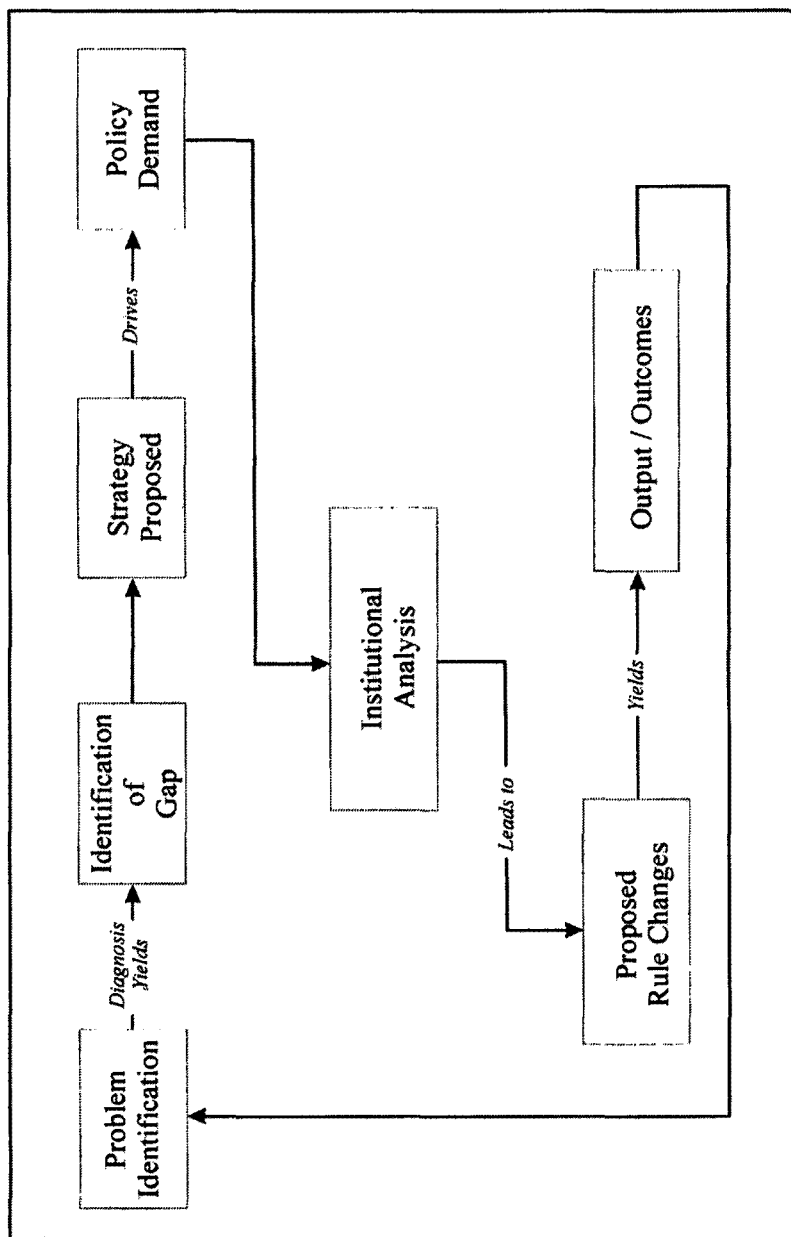


Figure 4. Waterstone's (1994a and 1994b) process model of institutional analysis and transformation.

This approach to questions of institutional reform for water resource management in binational watersheds is useful for understanding how these processes occur at the different levels of institutions. At what stage in the above referenced process should changes in the rules that define institutions be attempted? Most people in these basins agree on the nature of the gap. For example, inadequate means exist for proper collection and treatment of wastewater. However, not all parties may agree on the strategy that should be advanced (large centralized plants, small scale decentralized plants, or implementation of a regional watershed council) or the set of rule changes that should be used to implement these strategies (public or private sector options, centralized or decentralized agency efforts, or enhanced command and control measures). Within this framework of analysis, pressure points or targets of reform can be identified, and the specific sets of rules that operate can be examined.

Waterstone further sees specific types of rules that prescribe certain activities operating at each level of the institutional framework outlined previously.¹⁰⁸ Position rules determine what elements exist in each level and what their position is relative to other elements. Boundary rules are related prescriptions that regulate the range of function that a particular stakeholder may exercise. For example, position rules may determine who may attend meetings within which public policy issues are debated, and boundary rules would determine the general type of interaction in which specific stakeholders would be allowed to participate. Authority rules determine what specific actions can occur and could include which stakeholders can issue public statements describing the policy process.¹⁰⁹ Scope rules are closely related and prescribe the spatial and institutional ranges over which these actions can occur. Can agency staff involved in the policy process share information with members of the general public, or are they to interact freely only among themselves? Aggregation rules build on the above referenced codes of behavior and determine the manner by which actions combine to yield choice and intention; as such, they can be viewed as rules of strategy by which actions are advanced.¹¹⁰ Lastly, pay off rules determine the immediate outcomes of this set of interrelated rules by prescribing how costs and benefits are distributed to stakeholders.¹¹¹ Pay off rules are of particular importance within public policy debates concerning the manner by which water resources are used and who pays for the means by which resources are managed.

108. See *id.* at 11-14.

109. See *id.* at 12-16.

110. See *id.*

111. See *id.*

How is this framework instructive regarding the policy options that could lead to a watershed council within the Tijuana River or Río Bravo/Rio Grande Basins? The first thing this framework reveals is the level at which institutional reforms are most likely to be effective. A detailed examination of where each policy option identified may occur is clearly beyond the scope of this article, but an example is illustrative. Creation of a binational *consejo* would require considerable changes in position, boundary, scope and authority rules at the top-most policy level where these organizations would be created; these changes may be within the federal and state constitution or regulations established by CNA. As noted previously, *consejos* as introduced by CNA have a limited number of voices for users of water resources, and these voices do not extend to general conservation or in-stream uses, nor do they extend to a voice for the general public.¹¹² Position and boundary rules would therefore have to change to allow a greater number of voices to participate in the water resource policy debate, and authority and scope rules would require that these voices actually be heard with an opportunity to influence the policy formulation process.

Creation of a binational *consejo* also requires major changes of rules at the implementation and operational level. Agency staff would need to change the rules of authority and scope to allow new voices to genuinely participate in the policy discussion. Put differently, the operational and implementation level would need to "follow through" on rule changes made at higher levels to allow these changes to "mean something on the ground." Of equal if not greater importance, the aggregation rules that prescribe strategic behavior and allow decisions to be implemented toward effective action would also need to be changed. If a more open and transparent policy debate is the action to be effected, then resources would need to be marshaled to provide public notice of open meetings at which this debate would occur; staff time would need to be redirected to conduct these meetings; and leaders of involved agencies would need to legitimately share power among a greater range of stakeholders. This latter power sharing actually leads to the issue of who benefits from these reforms; in doing so, pay off rules would be modified to change the distribution of power and, through this, the distribution of the benefits of this power sharing.

Through this framework, the institutional reforms that could advance any of the other options detailed in this article involved in *consejo* implementation in either of the basins of investigation can be broken down

112. See generally "La Ley de Aguas Nacionales," Título Tercero, Capítulo III-IV, D.O., 1 de diciembre de 1992, reprinted in COMISION NACIONAL DEL AGUA, LEY DE AGUAS NACIONALES Y SU REGLAMENTO (3rd ed., 1997).

in a similar manner. Power sharing on the part of large *municipios* in Mexico that are only now receiving greater political power and a larger share of resources by which to carry out water resource management can be examined with this multi-level manner across a wide range of rules. Similarly, ways of moving large monolithic water resource management agencies like the IBWC/CILA or CNA towards greater openness and transparency, and a more pro-active regional management style could be explored. By adopting an analysis that looks at institutional reform as rule changes at various levels, policy makers could focus their energies on the areas of the institutional framework that are most likely to yield the rule changes needed to close the gaps and generate the desired outcomes.

How can the suggestions from these two contrasting frameworks be reconciled and applied to the policy questions related to forming a binational *consejo*? Based on our interpretation of the binational context examined in this article, the Waterstone framework offers utility as a preliminary diagnostic device whereby the proper levels of institutional reform can be initially identified to advance a particular policy tool. The set of rules by which the institutional level identified functions can then be examined with an eye towards how these rules would need to be changed to advance the policy option being examined. Done from the highest policy level to the lowest implementation level, the linked set of rule changes needed could be completely outlined for further examination.

Once this diagnostic exercise has been completed, the suggestions for advancing successful policy implementation identified by Mazmanian and Sabatier could be explored. The circular feedback nature of policy formulation and implementation can be acknowledged, and the socio-cultural and historical context can then be explored. In fact, the socio-cultural and historical context must be examined and clearly understood to determine how the existing policy framework formed over time and how it may be altered. Through this exploration, answers to two important questions can be determined. What is the degree of difficulty that the problem being examined poses? Given the degree of difficulty that has been identified, what is the degree of openness that is required for successful policy?¹¹³ The guiding principles that deal with the enabling directives and rule changes can then be applied to the specific rule changes that the Waterstone analysis prescribed. The nature of the leadership that exists to advance this policy can then be examined along with the degree of public

113. An "easy fix" of regional water resource policy that generates limited new costs and has limited impacts on the public may be handled with limited public participation in the policy process. Alternately, a reallocation of water resources that changes to a greater degree the distribution of costs and benefits among the stakeholders involved will argue for a policy debate that is not only more transparent, but also more open to public participation in the decision making process.

support or possible discordance that is likely, given the nature of the rule changes.

Again, detailed examination of a wide range of policy options is well outside the scope of this article, but one option can be examined to explore this particular concept. For example, if the institutional or rule change that previous policy analysis prescribes is decentralization of power, several questions can be posed and answered within this framework to advance this policy. What is the level of support that can be expected from agency staff and the general public? How effective will leadership be in effecting these changes, given the response of the public and agencies? How can this leadership engender a greater sense of public support that may be required to effect this policy?¹¹⁴ Using these two policy frameworks together to look at the institutional structure involved in the water resource management debate in the Tijuana Basin is instructive in exploring the institutional (and rule) changes necessary to guide specific policy activities that would be required to effect these broader policy efforts. This is a useful first step in examining equity concerns involving downstream impacts of wastewater and contaminated surface water flows in the lower part of the basin.

The above discussion offers a range of possibilities by which the *consejo* framework may be advanced in cross-border water resource management, yet the question of how this policy tool may fare in the domestic U.S. climate can be posed; we offer some limited insights in this area. Given the difficulty that continued funding for cross-border initiatives has faced, funding needs for this type of work will be important issues. If existing governmental staff can "work this into" existing workloads and funding envelopes, innovative efforts may not face budgetary resistance. Yet, if these efforts either result in or are perceived to result in demands for new funds, the prospects may be much dimmer. Also the degree to which agencies and private citizens perceive these innovative policy approaches encroaching on existing political authority and sovereignty and private property rights will also have an impact on how these ideas are received. The simple designation of the Rio Grande/Río Bravo as a National Heritage River discussed earlier in the article aroused a wide range of opposition along the border, leading us to believe that any type of broader policy initiative that might be offered may generate similar types of reactions.

114. These are exactly the types of questions that the BECC public participation and outreach activities are designed to ask and answer, and valid answers to these questions are a major requirement in the BECC certification process. Accordingly, policy analyses that could aid in answering these questions within a *consejo* type of framework have a value well above simply answering academic questions, namely, such analyses can make a potential contribution to the BECC public participation and certification processes.

Another issue that consistently impacts cross-border work concerns the cultural fabric of the border region, and past experience of the authors has uncovered considerable amounts of cross-border friction related to a wide range of issues including immigration, drug interdiction, and cross border environmental quality. Too often people on both the U.S. and Mexican sides of the border see their neighbors across the line as sources of problems we all face, while perhaps not also seeing the shared natures of our challenges and opportunities. These sentiments are often translated by lobbying or constituent pressure to local and regional politicians, impacting their ability to make decisions and the manner by which policy is crafted. Although this friction is a legitimate potential barrier to the type of cooperation we have discussed in this article, it also can be seen as a very real indication that innovative approaches to resolving a wide range of issues are truly needed along the border. The positive experience that the Border Liaison Mechanism has enjoyed in the San Diego-Tijuana region is evidence of the potential that new approaches to old problems can offer. Our view is that this type of success offers a shared incentive for people on both sides of the border (and their political representatives and attendant agency staff) to explore a novel approach to shared water resource challenges like the *consejos* framework.

Related to this incentive is the potential for experience and perspectives at the regional level to inform policy debates at the federal level at which bi-national policy is crafted and where the legal authority to do so lies. The policy frameworks examined above provide a means of operationalizing the potential of *consejos* across a range of issues and levels of rule making and institutions. To the degree that these frameworks lend clarity concerning the use of *consejos* to both regional stakeholders and policy makers at the federal level, this type of analysis can also offer potential for enhancing communication and cooperation among regional and federal levels. Given this potential, we now close the discussion by looking at how this framework may be applied in regions outside our area of investigation.

IV. APPLICABILITY OF THIS WORK TO A WIDER REGIONAL CONTEXT

One of the more challenging facets of conducting this research has been the extremely dynamic nature of water resource issues along the border and the very rapid rate of change in this troubled hydro-politique and regional geography. As an illustrative point, early in preliminary research within the San Diego-Tijuana region, a high-ranking official in the San Diego County Water Authority (SDCWA) remarked that the likelihood of U.S. governmental agencies trying to "put a wall around our problems in Mexico" was much, much greater than that of the Authority Board

moving toward official collaboration with Mexican agencies. Less than five years later, certain agencies within the U.S. federal government are indeed trying to "fence away" our challenges with our neighbor to the south, as evidenced by the triple fence that is being constructed on the San Diego-Tijuana portion of the border.

Despite these attempts to reduce interaction across the border, the COBRO/BLM initiative in the San Diego-Tijuana region is evidence of a truly binational, official arrangement with positive support from the SDCWA Board and the foreign ministries of both the United States and Mexico. The elected board of officials that were hesitant to engage in this type of collaborative work only a few years ago are now engaged in an open dialogue with their counterparts in Mexico to develop collaborative and binational regional solutions to our shared water resource challenges. Such collaboration is an important first step to investigate equity issues across the border that involve the provision of water supplies and the more effective management of environmental quality across space and time.

This agency-to-agency collaboration and potential for advancing this type of regional approach is paralleled by a potential to expand on the work on which this article is based with colleagues in Mexico and the United States. In conducting this research, the authors have interacted with a large number of colleagues in the United States and Mexico that have expressed interest in the approach taken in this work, the results that have been reached, and the possibility of collaborating on enhancements of this work. In a review of preliminary drafts of documents summarizing this work, it has been suggested that translating manuscripts that summarize this work into Spanish would greatly facilitate the sharing of the results and approach of this work with a Mexican audience.¹¹⁵ In the future, the authors will explore the possibilities of translating summaries of this research through the Mexican Society of Civil Engineers to aid in sharing the results with a larger audience in Mexico and allowing related equity concerns to be discussed among this larger audience.

Similar sets of challenges concerning surface water resources and equity issues are evident in other binational basins along the border, and these challenges are ripe for exploration through the watershed and bioregional approach on which this article is based. In research initiated through a Ford Foundation/Udall Center Fellowship in Environmental

115. The Mexican Society of Civil Engineers is an institution in Mexico with strong links to the American Society of Civil Engineers that may be able to aid in this endeavor. The members of the MSCE membership have seen extensive training in the United States, are technically competent in areas explored in this work, and may have the bilingual skills needed to facilitate this translation. Interview with Hugo Loaiciga, Professor of Geography specializing in water resources and civil engineering, University of California (Santa Barbara), in San Diego, Cal. (Nov. 20, 1998).

Conflict Resolution on the U.S.-Mexico Border, investigations are being expanded in the Santa Cruz Basin, within which the twin city region of Ambos Nogales lies on the Arizona-Sonora border. In this work, some of the more promising policy options identified in this current research are being explored, with two objectives in mind.

First, applied questions concerning policy strategies that can effectively address cross-border water resource issues in the Ambos Nogales region are worthy of examination. Given the different physical configuration of that binational basin and the different patterns of land use and other human activities occurring there, what are the current water resource challenges? Using the watershed approach employed in this research, what gaps in water resource policy exist within the institutional framework in Ambos Nogales, and how can the insight gained from the Mazmanian and Sabatier and Waterstone approaches be applied to address these policy gaps? How can these frameworks provide insight into underlying water resource issues and also advance a more equitable distribution and utilization of water resources that is at the core of related equity concerns?

The second set of related research questions concerns an enhanced comparative analysis of the Santa Cruz and Tijuana River Basins. What similarities and differences in the policy landscapes of these two basins exist? How can the insights gained from the Tijuana Basin research be applied in the Ambos Nogales region to advance this policy research? The similarities uncovered can be the basis for a framework that can be ported to other binational basins. The manner by which the IBWC/CILA are mandated by the 1944 Water Treaty to take the lead on binational water policy is an example of this type of similarity.¹¹⁶ Site-specific differences that are uncovered can add insight into the policy framework employed in the Tijuana Basin. This framework may then better fit other basins along the border in which similar work could be undertaken. Due to the different hydro-geologies that exist across basins, these regions rely differentially on groundwater as a water resource; the resulting issues that emerge will accordingly differ and impact how a watershed framework may unfold in each region. Future research that builds on the results of the initial work conducted in the Tijuana River and Río Bravo/Rio Grande Basins will provide a broader comparative context for studying the framework's applicability to other basins along the border.

116. See 1944 Water Treaty, *supra* note at 67, at 1219-24.