

# **River basin councils as action arenas: Analyzing rules and norms in the Lerma-Chapala river basin council using the IAD framework**

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## **Abstract**

This paper uses Elinor Ostrom and collaborator's Institutional Analysis and Development (IAD) framework and applies its insights to an underresearched area: sanitation policy. To explain how policy decisions within river basins are made I conduct an institutional ethnographic study of rules, norms and interactions within the river basin council, exploring the emergence of formal and informal governance rules. I use the Lerma-Chapala river basin council in Mexico as a case study to explain how norms, rules and interactions shape wastewater governance. The paper illuminates the complexities inherent to the politics of wastewater management in diverse urban habitats and provides fertile ground and a foundation for future research on the limitations of the river basin council model for water and wastewater governance<sup>1</sup>.

## **Keywords:**

Wastewater, governance, polycentric governance, networked governance, comparative public policy, sanitation, Mexico, river basin councils, Lerma-Chapala

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## **1. Introduction**

Water governance research has been using the literature on institutions and self-organization for resource conservation for a few decades now. Elinor Ostrom's influential study "Governing the Commons" (Ostrom, 1990) summarized her experiences studying self-organizing communities where water was a scarce resource. Ostrom's research disproved previously held beliefs that self-interested individuals would be unable to find ways to properly and equitably manage water access, distribution and consumption. While Ostrom's contributions to resource governance scholarship were many, one of the most popular has become the Institutional Analysis and Development framework (IAD), first proposed by Ostrom and Kiser in 1982. This paper uses Elinor Ostrom and collaborator's IAD framework and applies its insights to an under-researched area: wastewater and sanitation policy<sup>2</sup>. To explain how policy decisions within river basins are made I conduct an institutional ethnographic study of rules, norms and interactions within the river basin council, exploring the emergence of formal and informal governance rules. I use the Lerma-Chapala river basin council in Mexico as a case study to explain how norms, rules and interactions shape wastewater governance.

Mexican water policy is inherently complex as there are a number of issues of overlapping jurisdictional responsibilities and a hierarchical, top-down approach to policy-making that is masked as a bottom-up, basin-wide model of water governance. However, managing freshwater or groundwater requires a completely different set of approaches and techniques to those required to understand and study wastewater and sanitation. In the case of water governance, the issue at hand is access to scarce resources, whereas in wastewater governance, the issue is using scarce resources as a sink or dump<sup>3</sup>.

The paper illuminates the complexities inherent to the politics of wastewater management in diverse urban habitats and provides fertile ground and a foundation for future research on the limitations of the river basin council model for water and wastewater governance. To achieve this goal, I contrast the formal and informal rules and norms that govern water management within the Lerma-Chapala river basin council with those governing wastewater. I use Ostrom's typology of rules and her IAD framework to conduct an analysis of a river basin council as an action arena. In the paper I shed light on how rules are formed inside the river basin council and contrast the level of relevance that wastewater is given with that of freshwater and groundwater.

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<sup>2</sup> Sanitation as a research topic from a social science perspective has seen an incredible boost in recent years. However, from a policy sciences' approach, it has only been in the last decade that we have seen interest, particularly from neoinstitutional theorists.

<sup>3</sup> One could also argue that sanitation access is an issue, but here I focus on the generation of contaminated effluent rather than access to toilets or latrines.

The paper is organized as follows: after this brief introduction, I discuss Mexican wastewater policy and situate it in the context of the literature on integrated water resource management. Given the Mexican government's interest on implementing IWRM and river basin councils as the "right" model of water governance, it is important to question whether this model is applicable everywhere. Throughout the paper I explore whether this emphasis actually hinders the possibility of building a more robust wastewater governance model. The third section describes the concept of negative commons and the theoretical relevance of studying wastewater through a commons theory lens. This discussion is relevant given that most of the case studies that focus on water as a commons explore it from a viewpoint of access, not of waste. In the fourth section, I provide an overview of Ostrom's IAD framework and explain how her typology of rules can be applied in the water context. I also explain how river basin councils can be seen as action arenas within the IAD framework. In the fifth section, I provide a brief history of the Lerma-Chapala river basin council. In the sixth section, I discuss the methods used to study and understand the river basin council and apply IAD and the typology of rules to Mexican wastewater governance. Finally, in the seventh and last section, I conclude by highlighting the policy implications of using river basin councils as action arenas and whether we can gain insights that can provide us with a more robust framework to govern wastewater than focusing merely on river basin councils and attempting to create a basin-wide sanitation policy. I also argue that these insights are generalizable beyond Mexican wastewater policy.

## **2. A brief introduction to Mexican water and wastewater policy**

While Mexican water policy has been praised by international organizations like the Organisation for Cooperation and Economic Development (OECD) for its forward-thinking approach to governing water through river basins as the governance unit and river basin councils and organisations as institutional arrangements, there are serious shortcomings inherent to this approach. First, legal and jurisdictional boundaries of states do not coincide with those of the river basins that encompass territory from more than one state. Second, robust intergovernmental coordination in the Mexican water governance framework is still very much lacking to this day. And third, there is an inherent divide in how Mexico governs water resources. Despite the fact that profound changes in the Mexican National Waters Law (*Ley de Aguas Nacionales*) occurred in 2004, wastewater policy as such is still not solidly implemented. A decade later, wastewater is still very much an afterthought for Mexican water policy-makers, despite the fact that the current head of the National Water Commission (*Comision Nacional del Agua, CONAGUA*) is the former head of ANEAS (the National Association for Water and Sanitation Enterprises, *Asociacion Nacional de Empresas de Agua y Saneamiento*), David Korenfeld.

and situate it in the context of the literature on integrated water resource management. Given the Mexican government's interest on implementing IWRM and river basin councils as the "right" model of water governance, it is important to question whether this model is applicable everywhere.

The integrated water resource management (IWRM) literature privileges the watershed

(river basin) as the appropriate unit of analysis. The paradigm is predicated on the assumption that all stakeholders within a river basin will be able and willing to cooperate in appropriate adequate water management across political and geographical boundaries. One of the most popular models of collaborative governance (Gerlak & Heikkila, 2006), the river basin/watershed council has become the standard of governance in a number of advanced/industrialized countries, and has been relentlessly promoted by international organizations such as the OECD<sup>4</sup>.

One of the most compelling arguments for river basin councils as the “right” model for water governance and for river basins as the “appropriate” scale of governance, is the underlying understanding that involving water users in resource management is not only a smart strategy but also the right strategy in the context of a democracy.

From a geographical scale (and bio-physical) standpoint, the watershed is the right scale of analysis. A basin/watershed is the unit of analysis that encompasses all the elements (bio-physical, communities, government). From the political boundaries’ perspective, the watershed council crosses political borders. Therefore, using watersheds as units of analysis presents substantial implementation challenges to policy-makers. From a governance perspective, the watershed council offers an interesting yet complex model of shared authority. In this multi-stakeholder, round-table process, the final authority for water allocation does not reside within the watershed council but within the government. Thus, the degree to which the Mexican government shares responsibilities (and authority) is substantially limited.

The use of watershed councils as institutional innovations and ‘proper’ models for water governance has been both praised (Curtis, Shindler, & Wright, 2002; M. T. Imperial, 2005) and criticized (Smith & Gilden, 2002; Smith Korfmacher, 2001)

One of the biggest challenges facing Mexican wastewater policy is the apparent chasm between Mexico’s environmental and wastewater policies (Pacheco-Vega, 2007). This chasm is caused primarily by differences between target actors, lack of institutional coordination between environmental and water-focused agencies, and an increasing jurisdictional overlap. These roundtables, the river basin councils (*Consejos de Cuenca* in Spanish), have been in operation in Mexico since the late 1980s. One of the oldest and most established (and most studied) river basin councils is the *Consejo de Cuenca Lerma-Chapala* (CCLCh). The Lerma-Chapala river basin, established in 1993, has been tasked with allocating the scarce liquid across the five states where the watershed (river basin) has territory. Yet, water allocation and wastewater management are treated as completely different policy realms. My research shows that river basin councils as we know them are ill-prepared to deal with the complexities of wastewater governance, more so because of the multilayered nature of the policy decisions that affect sanitation. Without a coherent, robust framework of cross-jurisdictional interaction, sanitation and wastewater have been and will probably continue to be the ugly duckling of water management.

### **3. Negative commons: Applying commons governance**

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<sup>4</sup> See, for example, the recent report on Mexican water reform published by the OECD.

## **theories to wastewater policy**

Recent advances in commons scholarship have begun to place more importance on the role of negative commons: that is, those commons that have a negative value or that are devalued by virtue of becoming containers for resource waste. Seen through these lenses, wastewater is a negative commons (not to be confused with an anti-commons).

### **4. Ostrom's contributions to water governance: The Institutional Analysis and Development Framework (IAD) and the typology of rules**

Analyzing contextual factors in policy analysis is a necessary step to evaluate all possible causal mechanisms and potential explanations for policy change. The Institutional Analysis and Development (IAD) framework offers a multidisciplinary, multi-causal model to understand how contextual factors such as the physical characteristics of a specific community or set of communities can have an impact on how resources are governed through a specific series of rules and norm-setting process. IAD has gained popularity in the policy analysis field because its simple propositions encompass a wide range of potential explanatory factors for shifts in resource governance. Recent applications include fisheries (M. Imperial & Yandle, 2005), development cooperation (Ostrom, Gibson, Shivakumar, & Andersson, 2001).

overview of Ostrom's IAD framework and explain how her typology of rules can be applied in the water context.

### **5. The case study: The Lerma-Chapala river basin council**

In the fourth section, I provide a brief history of the Lerma-Chapala river basin council.

River basin commissions were created in 1946 when the Secretariat for Agriculture and Hydraulic Resources was created (Castelan-Crespo 2000, Wester, Melville and Ramos Osorio 2001). These commissions were modeled after the Tennessee Valley Authority's basin model. While successful during the 1950s and 1960s, these River Basin Commissions (*Comisiones de Cuenca*) slowly declined until they disappeared at the end of the 1980s. Slowly, institutional capacity on water resource management in Mexico declined until the 1980s. However, in the early 1990s, the model of a river basin council started to emerge, with the Lerma-Chapala river basin council established on April 13, 1989 through an agreement between all five governors of the states of Guanajuato, Queretaro, Michoacan, State of Mexico and Jalisco.

To date, there are 26 river basin councils in Mexico. Hydraulic Administrative Region VIII (Lerma-Santiago-Pacifico) has 3 councils: (15 Lerma-Chapala, 16 Rio Santiago and 17 Costa Pacifico Centro). These river basin councils are predicated as institutional reforms that

enable sustainable water management. However, their inner workings have had very little if any study (Pacheco-Vega and Basurto 2008, Pacheco-Vega 2008, 2011)

## **6. Examining the formal and informal rules in the Lerma-Chapala river basin council. River basin councils as action arenas**

In this section, I discuss the methods used to study and understand the river basin council and apply IAD and the typology of rules to Mexican wastewater governance.

Undertaking a project to explore the governance of wastewater and sanitation in Mexico required application of a variety of research methods. Each one of the components of this project used different, mixed methodologies (both quantitative and qualitative).

The empirical core of this research is based on a 30 month, in-depth institutional ethnographic analysis of the Lerma-Chapala river basin council. I spent more than 2 years attending every meeting of the Lerma-Chapala River Basin Council (Consejo de Cuenca Lerma-Chapala, CCLCh). I also attended the Working Group meetings of the CCLCh during that period. I visited over 30 wastewater treatment plants and collected data on wastewater volumetric flows, treatment efficiencies and processes used. I engaged in participant observation throughout the Lerma-Chapala river basin council meetings, and observed how stakeholders within the river basin council meetings interacted with each other, which issues they raised and the extent to which wastewater permeated the discussions. I recorded my observations and followed up my participant observations with in-person, in-depth semi-structured interviews. These conversations with stakeholders ranged from 30 minutes to 2 hours each.

I also conducted over 65 semi-structured and non-structured interviews with government officials at all 3 levels across all 5 states, Lake Chapala activists, academics and representatives of local communities. Quantitative data on wastewater performance metrics (volume treated, number of wastewater treatment facilities, treatment efficiency, operation levels) were collected from a variety of official sources (National Commission of Water and state-level water commissions).

Changes to the National Water Laws in 2004 that created river basin organisms (*organismos de cuenca*), effectively undermined river basin council effectiveness by challenging its administrative authority and creating a more complex network of stakeholder-government interactions. Instead of stabilizing river basin councils as robust institutional reforms, the creation of river basin organisms rendered the river basin council somewhat redundant and created a more complex web of relationships. This eroded governance network effectively reduced power and authority of individual stakeholders and government units across all river

basins.

Formal rules of the Lerma-Chapala river basin councils are based on the National Water Law of 1992. Shortly thereafter, the National Water Commission published the Rules of Organization and Functioning for Basin Councils in Mexico (C.N.A., 2000). These rules were partially modified in 2004 when reforms to the National Water Law became effective. However, these are solely formal rules. Because of the multiplicity of interactions between water resource representatives, conflicting interests and divergence in policy priorities, repeated interactions amongst river basin council members slowly shape the emergence of new, informal rules. These informal rules may or may not have more weight in how the river basin council operates, what issues it tackles and which priorities does it set.

In the Lerma-Chapala case, continuous challenges to river basin authority by both the central authority (the National Water Commission) and state-level agencies, coupled with the lack of representation of all affected municipalities in the river basin council (despite the fact that provision of public services is instituted in article 105 of the constitution) effectively erodes the basin council ability to create relevant policy suggestions and generates increased complexity in interactions amongst river basin council participants. In my interviews, the issue of how weak Mexican federalism is implemented in water management was a recurrent theme.

I find that while in theory river basin should lead to a polycentric structure of water governance, effectively the network nodes are weakened and institutional coordination is eroded. I used neo institutional theory to tease out the structure of formal and informal rules and determine the priority level of formality in the rule-setting structure of governance within the river basin council. Effectiveness of river basin councils to design and implement sound wastewater policy is eroded by the reluctance of government officials to coordinate with stakeholders in the wastewater sector. This is a major challenge for neoinstitutional theorists: once rules and norms are weakened or broken and institutional stability eroded, how can we rebuild trust amongst actors and re-create institutional stability? I argue that for networked approaches to water governance to work, there must be a clear understanding of the inner workings, establishment, emergence, erosion and decline of formal and informal rules of the river basin. A clear map of the jurisdictional authority network would strengthen wastewater policy design and effectively create a polycentric system of networked governance.

A second major finding emanates from the Mexican federal water authority (the National Water Commission)'s insistence in implementing integrated water resources management (IWRM). This multilevel resource governance paradigm calls for all water resource stakeholders' participation in multistakeholder roundtables that have been empowered to a certain extent to make public policy decisions in regards to water allocation within a river basin. From a theoretical standpoint, river basin councils are considered powerful institutional innovations that empower traditionally disenfranchised actors. From a practical standpoint, though, river basin councils are not as easy to assemble nor is their governance structures' robust enough to withstand internal conflicts, overlapping jurisdictional responsibilities and weak enforcement. A continuous conflict of river basin actors within the river basin council over water allocation supersedes any calls for increased investment in sanitation infrastructure. River basin

stakeholders concern themselves with having enough water for specific states they represent rather than think holistically about the water cycle and how increased investment in wastewater treatment can effectively increase overall water sustainability.

## **7. Conclusions: Can IAD be used to build an integrated wastewater policy in Mexico**

In this paper, I demonstrate that, beyond the theoretical and empirical innovations of applying the IAD framework to wastewater governance, we need to take a serious look at how wastewater policy is designed. In the paper, I analyzed the formal and informal rules of the Lerma-Chapala river basin council, finding that informal rules play a larger role in how wastewater is governed than formal rules, thus causing institutional instability.

This improved understanding can help public works agencies (at the municipal level) and water services agencies (at the state and federal levels) design better, more robust policy. This research also espouses a holistic, broader focus to managing wastewater, one that takes into consideration the institutional complexity of cross-jurisdictional policy networks in the wastewater and sewage sector. Moreover, I argue that applying an ecosystems health (or ecohealth) approach to water resource management that is grounded on a better understanding of how the policy network of wastewater governance works is far better than one that takes the “out-of-sight, out-of-mind” route.

There are important policy implications of using river basin councils as action arenas. Through an application of the IAD framework we can gain insights that can provide us with a more robust framework to govern wastewater than focusing merely on river basin councils and attempting to create a basin-wide sanitation policy. If as argued in the literature, river basin councils are the right arena of action for water management, then one could hypothesize that wastewater management decision-making should also occur within the river basin council. In this paper, I challenged and disproved this item of conventional wisdom. While my results may not change CONAGUA’s officials’ minds, they at least will provide important input to policy discussions that (hopefully) will redirect efforts away from a misguided and blind faith in the power of governing by river basin councils.

This empirical, on-the-ground, examination of the *Consejo de Cuenca Lerma-Chapala* enabled me to test the river basin council’s ability to withstand external and internal shocks. These shocks came in the form of challenges to policy proposals and internal conflict between polarized actors’ interests. Thus emerges a paradox: while in theory governing using river basin councils (and using the watershed as the main unit of analysis and functional structure) is supposed to be a quite effective institutional innovation, the empirics of implementing governance by watersheds in Mexico (and in particular, attempting to focus the river basin council on solving wastewater and sanitation governance issues) are much more complicated and not as easy to implement as the literature would want us to believe. My research challenges the integrated water resource management paradigm of governance by river basin councils, and calls

for a more robust institutional structure design (a true networked governance approach to wastewater management).

Previous work examining the institutional arrangements within the Lerma-Chapala basin (Pacheco-Vega 2004, 2005a,b 2007a, b, c; Pacheco-Vega and Vega 2008a, b; Pacheco-Vega and Basurto 2008, Pacheco-Vega 2011a, b, 2012) has offered the first in-depth examination of wastewater policy at all three policy levels in Mexico (federal, state and municipal), and the first to question the suitability of the watershed council as an appropriate model for integrated water resources management. I have challenged conventional (yet fragmented and narrow-minded) wisdom on water policy design that heavily relies on the river basin council by demonstrating that river basin councils do not have robust formal rules and norms that govern wastewater and sanitation. By delegating authority on public service delivery (in particular sanitation and sewage), federal-level agencies free themselves from water resource management policy challenges (thereby “passing the buck” as Harrison 1996 calls it). Yet as my work has proven (Pacheco-Vega 2007b, 2011a), without allocating matching financial resources to infrastructure needs at the municipal level, municipalities are unable to provide costly capital investments in improved sewerage and treatment.

Intergovernmental coordination is a necessary condition for river basin councils to work properly, not only in the sanitation and wastewater field, but overall in the water resource management sector. However, my research has found an absolute fragmentation of the jurisdictional responsibilities for sanitation. Sewerage provision is delegated by the Mexican Constitution (Article 105) to municipalities. Cities are responsible for providing these essential public services. Yet the seemingly insurmountable financial challenges of developing robust, expensive wastewater treatment infrastructure seem invisible to Mexican authorities (Pacheco-Vega 2007c, Pacheco-Vega 2011, 2012). This is a policy paradox (Stone 2007, 2010) of the highest calibre. How can we ensure provision of proper sanitation when federal-level agencies have the financial resources for capital investment in infrastructure, yet intergovernmental funds transfers are mismatched with each state’s own resource base and population needs? This is a question that merits further research.

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