

Symbolic implementation: Governance assessment of the water treatment plant policy in the Puebla's Alto Atoyac sub-basin, Mexico

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During the last decades of policy reforms, new instruments have been developed and substantial economic resources have been invested to improve water sanitation quality in Mexico. Despite these efforts, pollution levels have increased in different parts of the country and very few studies have addressed this crucial situation. This paper focuses on Puebla's Alto Atoyac sub-basin, whose main river the "Atoyac" is now considered the third most polluted in Mexico despite being a priority of the national government since the last decade. This paper assesses the governance context of the water treatment plants policy in order to find how supportive the context is towards the implementation process. The assessment is conducted using the Governance Assessment Tool (GAT). It includes descriptive-analytical and semi-normative elements. Using four qualities of governance, namely extent, coherence, flexibility and intensity the assessment allows deeper understanding of the governance context and how this impacts the policy implementation.

Data collection involved structured in-depth interviews with stakeholders from three governmental levels, the private sector and society. This inductive process is complemented with secondary data. The research concludes that the combination of the given qualities creates a governance context that restricts the implementation of the water treatment plant policy, favouring short-term outcomes.

Keywords: Water governance, Governance assessment, Symbolic implementation, Puebla's Atoyac basin

1. Introduction

Water governance assessments have become a popular topic in the last decades. They can identify implementation difficulties and thus recommend more pragmatic reforms. They help to uncover the relationship between policies, programs and regulations, and the eventual achievement of their stated goals (UNDP, 2013).

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Currently the Mexican government is paying particular attention to addressing the country's water issues. According to the Mexican government "Mexico is fully committed to managing water in an integrated manner [...] in conformity with IWRM [Integrated Water Resources Management] [...] and at the local level, the closest possible to the users, and with their full participation" (CONAGUA, 2012a, p. 5). In 2011, the government created a long-term strategic vision plan, in consultation with key stakeholders at all levels (OECD, 2013, p. 32). This plan is called the 2030 Water Agenda and is composed of four policy goals: 1) clean water bodies, 2) balanced supply and demand for water, 3) universal access to water services and 4) settlements that are safe from catastrophic floods.

In terms of the organisation of water management, Mexico officially uses the river basin or catchment approach and has set up 13 Hydrological-Administrative Regions to cover the entire country (CONAGUA, 2012a). In 2012, using a multi-level governance gaps analysis, the OECD (Organisation for Economic Co-operation and Development) conducted an important water governance evaluation in Mexico. The OECD observed that "policy implementation is uneven, river basin councils are not yet fully operational and the regulatory framework for drinking water and sanitation is fragmented" (OECD, 2013, p. 32).

Attempting to address and understand issues related to water and its governance can lead one in many directions, as the context is often quite complex. In this paper we focus on a particular sub-basin in Mexico called the Puebla's Alto Atoyac sub-basin and the water treatment plants policy in that area. Sanitation problems are among the main challenges for water policy in Mexico, however only few studies have been conducted (Pacheco-Vega, 2009). The sub-basin is one of Mexico's most polluted and populated basins. Despite being subject to much attention and economic resources from the federal government, water quality in this sub-basin has not improved. In order to provide an explanation from the contextual level, we address the following question:

How do the qualities of the governance restrict or support the implementation of the water treatment plant policy?

To answer this question, we will first assess the state of four qualities of governance and based on these results we will conclude how the governance context is restricting and/or supporting the policy implementation. Policy implementation is understood as "the whole of all activities that are connected to the employment of a preconceived set of policy measures" (Dinica & Bressers, 2003, p. 2 in De Boer, 2012, p. 1). The implementation phase includes in this paper are: the planning, construction, rehabilitation and operation of the water treatment plants.

The framework used is the Governance Assessment Tool (GAT). It has shown important strengths in the analysis of water projects implementation in The Netherlands, Canada (De Boer, 2012) and in North Western Europe (Bressers, 2015). The analysis is highly dependent on the opinions, experiences of the stakeholders and discussions with experts; the assessments have focused on cases where there is high stakeholder participation. For this reason one contribution of this paper is to apply the GAT to a case where there is less stakeholder participation and a lack of relevant legislation. The other contribution is to the literature of governance in the implementation phase, since "there is a lack of attention to implementation of agreements or regulations from a governance perspective" (Van

Rijswick, Edelenbos, Hellegers, Kok, & Kuks et al., 2014, p. 736). Despite implementation being a well studied policy field, different complex studies show how well designed governance systems that are considered well designed from a certain stand point may not automatically deliver the expected outcomes (Birkland, 2010; Durlak & DuPre, 2008; McLaughlin, 1987; O'toole, 2004; Pressman & Wildasvky, 1984).

2. Water Governance –Theoretical and methodological approach

Governance is an important and commonly used concept in the water sector. However, there is not much consistency in its use or meaning. For this reason and the importance of the concept, many academics have tried in the last decades to categorise those understandings and meanings (Bressers & Kuks, 2003; Klijn, 2008; Rhodes, 1996; Van Kersbergen & Van Waarden, 2004). The broadness of the term is reflected in derivative concepts such as “water governance,” “good water governance” or “governance assessment.” For instance, the United Nations’ User’s Guide on Assessing Water Governance mentions 12 different approaches and methodologies for assessments. Peter Rogers established one of the first and most influential studies for water governance in Mexico. He developed principles of what water governance should be and a theoretical framework that has had an important impact on following studies. The set of governance principles he developed are: open, transparent, participative, accountable, effective, coherent, efficient, communicative, equitable, integrative, sustainable and ethical (Rogers, 2002). Some of these characteristics have become common elements for assessing Mexican water governance in different study cases. In Jalisco (Peniche & Guzmán, 2012), in the Atoyac-Zahuapan (Rodríguez, 2010) and in the Golfo Centro Hydrologic Region (Dominguez, 2011).

Water governance has been promoted by international organizations such as the OECD, Inter-American Development Bank or the World Bank. The OECD Governance Analytical Framework, is “[...] inspired by political practices, philosophical principles and objectives inherent to certain specific societies” (Hufty, 2009, p. 3) and the same can be said of the other organisations. Hufty also explains that governance is not a normative concept but a social fact. “It is not *a priori* either good or bad, but it has characteristics which can be analysed and interpreted” (Hufty, 2009, p. 8). Similar observations have been made from the academic perspective. For example Ostrom explains “[t]here is not a panacea where a single type of governance system applies to all environmental problems” (Ostrom, Janssen, & Anderies et al., 2007, p. 15176). In this sense, one of the main challenges from the academic perspective is to propose frameworks that consider contextual factors (Ansell & Gash, 2007; Bressers & Kuks, 2013; Ostrom et al., 2007; Pahl-Wostl, 2009; Thiel & Egerton, 2011; Van Rijswick et al., 2014).

The GAT is related to the UN’s fifth methodology type, which is referred to as an “Integrated Method to Assess the Governance of Water.” It is “[...] a tool [that] has a highly academic character” (UNDP, 2013, p. 68). Our approach is rooted in public policy and administration literature. Governance is seen as “beyond the government” and a context for decision-making and implementation. It is also “[...] an attempt to organize the multiplicity of aspects mentioned in those literatures into a concise framework” (Bressers & Kuks, 2013, p. 135). We

understand water governance as the context that guides and organizes the actions and interactions of actors involved in the management of water resources (Bressers & Kuks, 2013).

The GAT framework can be applied when there is a multi-level setting with interdependency among the actors. This means that different levels should act as semi-autonomous units and power must be diversified (Gage & Mandell, 1990). This interdependence must at least be classified as a “legislatively initiated coordination” (Gage & Mandell, 1990) even if it is not fully implemented. Changes in favour of this type of settings in national legislations have taken place worldwide, as a response to achieve a more integrated water management (De Boer, Vinke-de Kruijf, Özerol, & Bressers et al., 2013), this allows the GAT to analyse and compare a high number of cases worldwide.

The GAT is based on Contextual Interaction Theory (CIT) (Bressers & De Boer, 2011; Bressers & Kuks, 2004; De Boer, 2012). CIT divides the descriptive and semi-normative¹ qualities of the governance context and focuses on the context in which people work as being pivotal to the outcome of their interactions. The descriptive-analytical and semi-normative categories are separated in two sets: the five dimensions (multi-level, multi-actor, multi-faceted, multi-instrument and multi-resource based) and the four semi-normative qualities (coherence, extent, flexibility, and intensity) that are mainly employed to analyse the governance interactions (Bressers & Kuks, 2013).

Extent refers to the completeness of the regime in terms of relevant aspects, such as actors or instruments. Coherence relates to how the various elements of the regime strengthen rather than weaken each other. Flexibility refers to the existence of different roads according to the opportunities or threats that arise during the implementation. And finally, intensity is “the degree to which the regime elements urge changes in the *status quo* or in current developments” (De Boer & Bressers, 2011, p. 93). Table 1 shows the ‘matrix’ model and the elements analysed in each interaction. By analysing the five dimensions of governance according to the four qualities of the governance regime, one can attain a very pragmatic understanding of how different elements of governance interact and influence a particular implementation process. It draws attention to the governance conditions that influence the implementation of water resources management policies and projects under complex and dynamic conditions (Bressers & Kuks 2013).

Based on the qualities of the governance context, it is hypothesised that an ideal case for implementation of water policies would combine the appropriate characteristics of high extent, high coherence, high flexibility and high intensity. This would mean that

Higher levels of government provide clarifications to help actors understand the connection between general policy vision and integrated interests. Flexibility is given to innovative policy implementation processes designed to manage case specific contexts and higher levels of government provide the necessary tools and support (De Boer, 2012, p. 57).

The quality is assessed inductively based on the interviewees’ answers. To support this primary research, official international and national documents, and electronic newspapers are also reviewed. Each response is first assessed individually and then compared

¹ By semi-normative we imply that these qualities can be used to judge the governance against a normative scale from better to worse, however it is also possible (and preferred) to use them only to describe various important qualities that influence activities and relationships either in favour or not of a predefined goal.

Table 1
Water governance matrix

Governance Dimension	Qualities of the governance regime			
	Extent	Coherence	Flexibility	Intensity
Levels & Scales	What are the levels involve dealing with the issue? Are there any important gaps or missing levels?	Do these levels work together and do they trust each other? To what degree is the mutual dependence recognised?	Is it possible to move up and down levels (upscaling and downscaling) given the issue at stake?	Is there a strong impact from a certain level towards behavioural change behaviour?
Actors & Networks	Are all relevant stakeholders involved? Who are excluded?	What is the strength of interactions between stakeholders? In what way are these interactions institutionalised in stable structures? Do the stakeholders have experience in working together? Do they trust and respect each other?	Is it possible that new actors are included or even that lead shifts from one actor to another when there are pragmatic reasons for this? Do the actors share in social capital allowing them to support each other's task?	Is there a strong impact from an actor or actor coalition on towards behavioural change or management reform?
Problem Perspectives & Goal Ambitions	To what extent are the various problem perspectives taken into account?	To what extent do the various goals support each other, or Are they in competition or conflict?	Are there opportunities to re-assess goals?	How different are the goal ambitions from the status quo?
Strategies & Instruments	What types of instruments are included in the policy strategy and are implemented and which are excluded?	To what extent is the incentive system based on synergy? Are there any overlaps or conflicts of incentives created by the included policy instruments?	Are there opportunities to combine or make use of different types of instrument? Is there a choice?	What is the implied behavioural deviation from current practice and How strongly do the instruments require and enforce this?
Responsibilities & Resources	Are responsibilities clearly assigned and sufficiently facilitated with resources?	To what extent do the assigned responsibilities create competence struggles or cooperation within or across institutions?	To what extent is it possible to pool the assigned responsibilities and resources as long as accountability and transparency are not compromised? When the resources are combined, are there effective mechanisms for accountability?	Is the amount of allocated resources sufficient to implement the measures needed for the intended change?

Table 2
Actors interviewed per stakeholder category

Water Utility Directors	State level	Federal level	Industry Sector	Organisations of Civil Society
SOAPAP (Water System Operator for Drinking Water and Sewage of Puebla)	CEAS (Water and Sanitation State Commission)	CONAGUA Balsas Organization	CCE (Business Council Coordinator)	Los Atoyaqueros
SOSAPACH (Water System Operator for Drinking Water and Sewage of Cholula)	Ministry of Infrastructure	CONAGUA Delegation in Puebla		Water Activists
SOSAPAHUE (Water System Operator for Drinking Water and Sewage of Huejotzingo)	MIRA (Module of Information about the Atoyac River)	PROFEPA Environmental Attorney		
SOSAPATEX (Water System Operator for Drinking Water and Sewage of Texmelucan)	Ministry of Finance	SSAOT (Ministry of the Environment)		

with the rest of the actors in order to reach an assessment per cell. The result is then contrasted with the other four categories. When the quality is ranked as moderate or high in most of the categories, the quality will be graded as supportive. Otherwise it will be ranked as restrictive.

Twenty-three in-depth structured interviews with stakeholders were undertaken. The first round consisted of 18 interviews between July 2013 and June 2014 and the second in June 2015. The questions asked belong to the governance matrix. Interview lasted an average of one hour per actor. The results were considered reliable, because the majority of the stakeholders consistently reported in similar ways. The interviews included department heads and directors of the municipal, state and federal levels as well as civil society and the industrial sector. Table 2 shows the stakeholder distribution of the interviewees.

3. Background of the Alto Atoyac Sub-Basin

As mentioned previously, Mexico's basin management policy is divided into sub-basins and micro-basins (see Figure 1).

Mexico has 13 River Basin Organizations. The Puebla's Alto Atoyac sub-basin is located in the Balsas River Basin and is integrated by eight states. The population is nearly 11 million (2010) and it generates 6.5% of the national GDP (CONAGUA, 2012b, p. 16). The Balsas River Basin is formed by 12 sub-basins (CONAGUA, 2012b, p. 18) and Puebla is among the main polluters located within the basin (Becerril, 2011, p. 2).

In 2011 the federal government estimated that the residual water in the Balsas River Basin was 625 hm³, and 83% came from the municipalities. Only 37% of the residual water from the municipalities was treated, and 47% did not meet the national norm. Due to the Water Treatment Plants (WTP) design, only 14% had adequate treatment (CONAGUA, 2012b, pp. 6–7). Design issues include inadequate construction, inadequate technology, expensive operation and difficulty in finding replacement pieces.

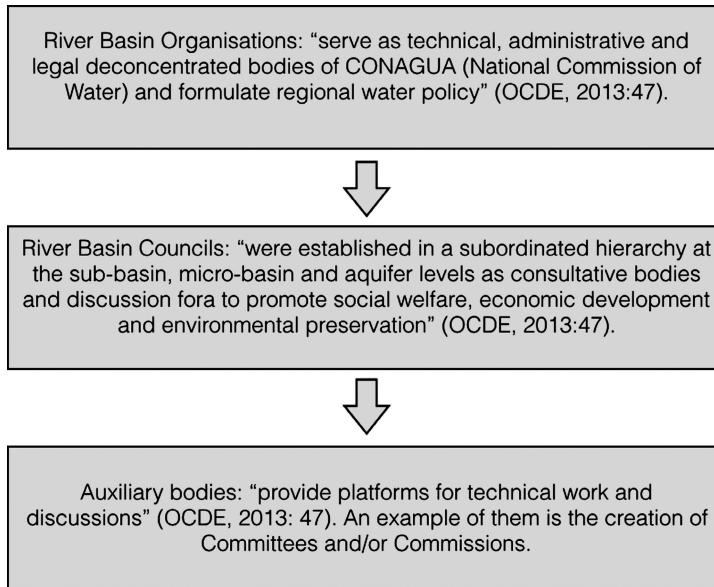
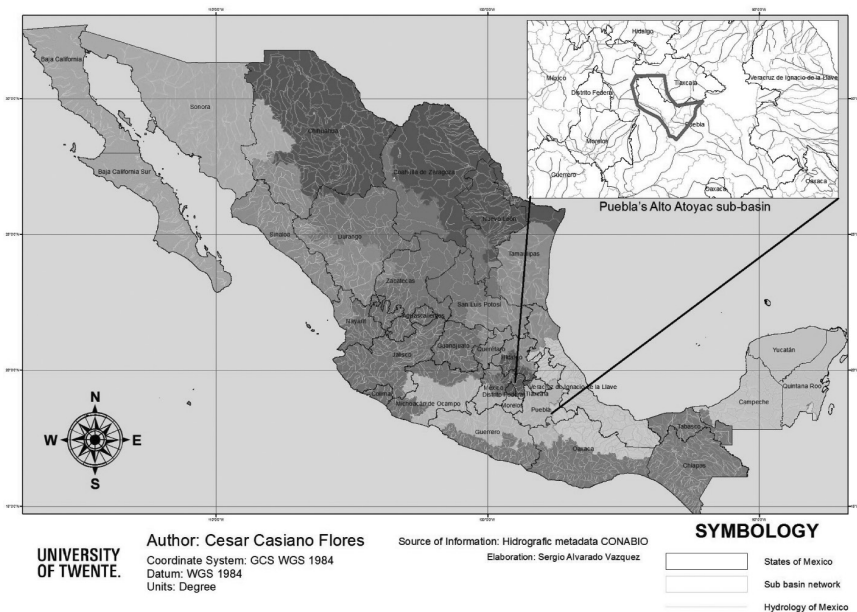


Figure 1. Basin Management structure in Mexico (OECD, 2013)

The Alto Atoyac sub-basin is shared by the states of Puebla and Tlaxcala. The following map shows the location of this sub-basin (Casiano & Bressers, 2015). According to Puebla’s 2030 Water Plan, in 2010 Puebla’s Alto Atoyac sub-basin registered 22 WTP in 7 municipalities. This sub-basin was selected as top priority for the state government as it contains 41.4% of the population and represents 12% of the territory.



In April 2013 the National Water Commission (CONAGUA) in Puebla, presented the Integral Water Management Project for the Alto Atoyac sub-basin, which included 17 municipalities (OEM, 2013). This meeting was attended by: the state governor, the current CONAGUA delegate in Puebla, the CONAGUA director from the federal government, the director of the SOAPAP, an Industry sector representative from the CCE (Business Council Coordinator) and the NGO *Los Atoyaqueros*. As Puebla does not have a Commission, there is not a general institutional space where the different stakeholders participate.

The governmental actors directly related with water management in the sub-basin are shown in Figure 2.

The federal government’s interest in the Alto Atoyac sub-basin pollution began in 1997, when it conducted a River Classification². Stages and goals were established for 2015, when 27 areas of the Atoyac River should have the capacity to protect aquatic life. However, the Atoyac River went from being the 7th most polluted in Mexico to the 3rd (Castillo, 2012). The three levels of government and society have also not perceived improvement in water quality. Therefore, the federal government changed its policy from WTP construction to WTP rehabilitation, and corrected the progress reported by the last administration from 35% to 10% treatment capacity (Casiano & Bressers, 2015). The current 2014–2018 National Water Plan has a sanitation goal of 63% of municipal residual water, with the current national capacity being 47.5% (CONAGUA, 2014, p. 137).

In 2000, different governmental levels and social actors participated to study the Atoyac River in Puebla. The study described the Atoyac river problems and made recommendations. Much later (2010) a new environmental movement led by a civil organization *Los Atoyaqueros* was born, called *Dale la cara al rio* (turn your face to the river). They made headlines in Puebla when 15 members of the group kayaked 10 kilometres of the polluted river (Leyva, 2010). They highlighted the health and environmental problems originating from the contaminated river (Rangel, 2013). This movement brought attention from different levels of government.

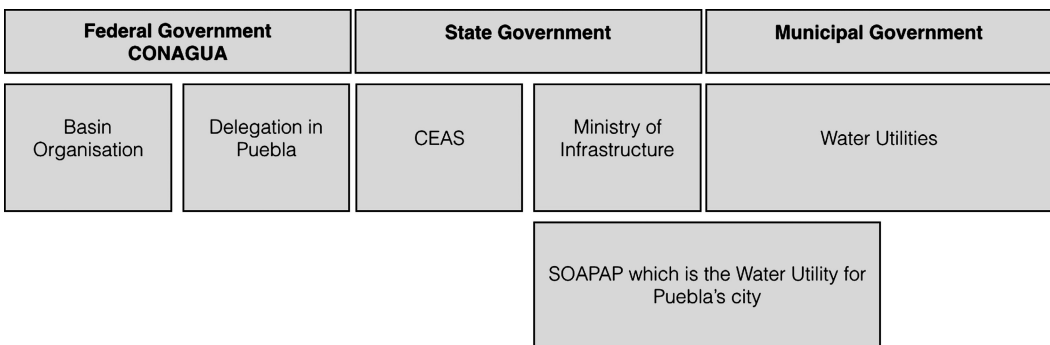


Figure 2. Governmental actors directly related to the Puebla’s Alto Atoyac sub-basin regarding water sanitation.

² Legal document created by the federal government and published in the Official Gazette, where the parameters for wastewater discharges are established and must be considered to grant permits.

The WTP building policy started during the state's government of Manuel Bartlett (1993–1999) and it was followed and strengthened by Melquiades Morales (1999–2005). The French company Degremont was awarded \$150 million USD worth of contracts between 2001 and 2012 to build and operate the plants. In February 2012 the state government rescinded Degremont's contracts (Hernández, 2012). The argument was that the 4 macro-water-treatment plants did not meet the federal sanitation norms (Tirzo, 2012).

The 2006–2012 federal government allocated an important budget that required a co-investment from the state and municipal governments. The 2005–2011 state administration only spent a quarter of this however, due to the lack of state and municipal participation (Gálvez, 2011). When the current state administration started in 2011, important changes took place. A program was announced that included the participation of NGO's, companies and the government with a \$130 million USD budget from the federal government and the States of Tlaxcala and Puebla (Mondragón, n.d.). Joint participation was highly promoted by both state governments in the media as an example of political will and basin vision. CEAS directed the creation of the 2030 State Water Program that was aligned to the federal agenda. At the end of 2012 a new State Water Law was approved by congress, which gave the WU (Water Utilities) more instruments to demand water payments from users.

Between 2011–2012 the Atoyac River walk and the construction of the MIRA (Module of Information about the Atoyac River) museum were created. These actions meant a co-investment of \$11 million USD (Moreno Valle Blog, 2011). The MIRA and the river walk created a place where people could learn about the Atoyac pollution and recognize the river's importance. However, the River Walk has faced criticism; one interviewed activist said "it is irresponsible to build infrastructure for recreation next to a polluted water body."

Neither the 2001–2006 nor the 2006–2012 federal administrations achieved their water treatment sanitation goals (Casiano & Bressers, 2015), even when the former federal government established the Alto Atoyac sub-basin as one of its highest priorities. The 2006–2012 administration made important legal changes such as the River Classification for polluted rivers: Atoyac, Zahuapan, Alseseca and Apatlaco (CONAGUA, 2012b, p. 30). This River Classification was published in June 2011 and it sets water quality discharge limits, goals and stages (Secretaria de Gobernacion, 2011). The Classification helped demonstrate the degree of pollution found in the river; however its impact on policy implementation has been weak. While it can establish the quality of new discharges in the river, it does not affect the permits already given.

4. Assessment of the Governance Context

There is a complex relationship between the government's intentions and its achievements. The results from governance assessment are presented in this section to bring some clarity and insight into the dynamics that are occurring.

4.1. *Levels & Scales*

According to the legislation, all three levels are involved in governance of the WTPs. The federal and state level participate in the planning and the creation of the infrastructure but the operation of the WTP is performed by the WUs. The federal level is the primary actor and the main relationship is between state and federal actors. This is supported by the Rules of Operation for Water programs from CONAGUA. The most important programs are: PROTAR (Wastewater Treatment Program) launched in 2009, APAZU (Urban Potable Water and Sewerage Program) 1990 and PROSSAPYS (Rural Waterworks Development Program) 1996. The programs require the creation of the CORESE (Commission of Regulation and Follow up). The CORESE is established between the federal government through CONAGUA and the state government. This allows the latter to present proposals to the programs and actions established with the federation (Secretaria de Gobernacion, 2013). However, as an interviewee said, “in those meetings, the participants from the state level cannot take decisions, these are only informative”. An important gap is the exclusion of the WUs in the planning, rehabilitation and construction of the WTPs.

Not all levels work together during the implementation phase and there is a low level of trust. The federation sets the goals, approves the projects and finances them up to 50%. The state provides approximately 25% of the resources for rehabilitation and construction projects, and this is enough to have control over the total WTP construction budget. Finally, it is the WU who operates the WTPs.

Despite the poor construction and abandonment of the WTPs, the federal government can only exert limited pressure because each level is sovereign. Poor results have decreased trust, and therefore the federal government has increased the requirements to finance the projects. New requirements (2015) are that: 1) the municipal council must commit to the payment of the electricity bill from the plants' operation, 2) the municipality must have the deeds from the property where the plants will be constructed, since many plants are part of legal disputes due to property issues.

Although the three governmental levels recognize their legal dependency, they were only willing to collaborate for a short period of time from 2011-2012, when the main directors had personal connections. This helped to improve coherence and trust among the state and federal governments, leading to a more collaborative process (Ansell & Gash, 2007). During this period the River Classification and alignment among the federal and state Water Agendas took place.

All interviewed actors agreed that a hierarchical approach must be followed. If the WUs want to receive support from the federal and state levels, they must obey them. Also, WTP projects for populations of more than 2500 inhabitants are not approved by CONAGUA's delegation, this is done by the central offices in Mexico City.

The power among the three governmental levels is not evenly distributed. The main intensity comes from the federal level, which has also shown the main interest in the river sanitation leading to the creation of the 2030 Water Agenda and the River Classification. They also provide most of the budget for the construction and plants rehabilitation,

approaching 50%. The yearly allocated budget has not been matched by the state government, resulting in an under investment in the sub-basin.

4.2. *Actors & Networks*

Stakeholder selection is a political decision (Stone, 1997 in Bryson, 2004, p. 26). Not all of the relevant actors are involved in implementation in this case, as was already seen in the WU case. The civil society and industry sector left out in this implementation process. The exception was the collaboration among *Los Atoyaqueros*, the CEAS and the Ministry of the Environment from 2011 to 2012, when they worked together and there was more attention to the needs of WUs. Additionally, the industry sector only felt included during the River Classification process.

For some federal actors this low level of participation is appropriate because it is stated as such in The Rules of Operation, it keeps the meetings focused, and the decision process corresponds to the needs of the governmental actors.

Due to the lack of interest from the state government a CONAGUA auxiliary body (Commission) was not created. The different actors in the network often do not have long-term experience working together. Political interests generate constant changes at the different administration levels and so there are few opportunities for long-term trust building.

The government's short-term restrictions do not enable them to perceive the society as a support, but as an ingredient for more complexity, and hence society often excluded. This results in NGOs often working on their own.

There is no flexibility in the network due to its hierarchical nature. It includes only governmental actors and is not open to including more. The state and municipal levels expect and recognise the leadership executed by the federal government. One of the WU directors said, "CONAGUA has the big picture and the resources". For the WUs its targets are only the legally constitutimizes social capital. They lack the stock of social capital that is created when a group or organisations develops the ability to work together for mutual productive gain (Agranoff & McGuire, 2001, p. 302).

The strongest pressure towards behavioural change comes from both the federal government and the non-governmental organisation. However they do not collaborate. There is some social pressure and the hierarchical position of the federal government can enable certain changes.

4.3. *Problem perspectives and Goal ambitions*

Due to the hierarchical network conformed by the state (the CEAS and the Ministry of Infrastructure) and federal government (CONAGUA), not all the stakeholders' perspectives are taken into account. The WUs, NGOs and the industries are left aside in WTP planning, construction, rehabilitation and operation. The WUs do not perceive openness from CONAGUA to listen to their proposals. For example, one mentioned that "Water Treatment Plants are constructed according to the state government's requirements and the projects are executed without consulting us. When the construction is finished, the state government

basically just hands us the keys”. The industry sector makes a similar complaint, “the government creates new legislation, but they do not provide the support we ask for, they only want to apply a stick policy”. Time perspective is another issue, as a water activist commented “the governmental perspective is mainly focused on a short-term period of 3 or 6 years, while we visualize the sanitation as a long-term process that includes the whole basin”.

The goals established by the different actors do not support each other. In theory, each governmental plan has to be in accordance with the upper governmental level plan. The 2030 Water Agenda was an attempt to improve this coherence and establish actions with a long-term perspective. It is however considered by the stakeholders as a nice exercise” without real impact in the water sanitation quality. The aforementioned political changes do have a direct impact. The current goals are now set by the 2014–2018 National Water Plan, which focuses on short-term administrative plans. Goals are adjusted to the political changes affecting the other levels.

The main possibilities to reassess programs and goals occur when elections happen and new governmental actors enter the scene. The federal and state budget are programmed by the executive powers and approved by their respective congresses months in advance. The approved budget has to be spent as agreed, otherwise the resources are lost. Goals and plans are established when a new government enters office. This occurs every 3 years for municipalities and every 6 years for federal and state levels. The interviewed actors agreed that there are no opportunities to reassess goals during the process only at the end of the project or the end of the administration. Sometimes during the construction, they know the project will not work, but since it was approved, they prefer to achieve the construction goal and continue the project. In the words of one interviewee “we do not have the capacity to cancel”. The industry and the NGOs do not participate in goal setting or in the evaluation of the programs or projects.

The goals established by the federal government have been very ambitious when compared with the existing situation. None of the two previous federal administrations have achieved the sanitation goal for WTP operation that they themselves established and have also been reducing their goals (Casiano & Bressers, 2015). The Atoyac River has moved from the seventh to the third most polluted river in the country. The 2030 Water Agenda aimed at reaching 100% municipal discharge treatment for all of the country, and the new federal plan aims at an average of 63% for 2018.

When actors were asked about water quality improvement, most of them answered that “things have not improved and pollution is worse.” The main problems they perceive are the population and industrial growth, and the lack of operation of the WTPs. The main goal of the industry is to meet the standards of the governmental permits, they do not have any interest to go beyond these expectations.

4.4. *Strategies and Instruments*

Mexico has a well-developed policy framework for water management, although it is fragmented and not fully implemented (OECD, 2013, p. 32). The types of instruments included in the Mexican context are: laws, norms, regulations, programs and projects.

Among those legal instruments are the: National Water Law, State Water Law, River Classification and four water norms. However, the secondary legislation for the 2004 Water Law “is still pending, making it difficult to enforce” (OECD, 2013, p. 41). Also some municipalities lack secondary regulations for inspection; limiting themselves to supply water, build sewage infrastructure and operating WTPs’.

Law enforcement is fragmented and difficult to implement; WU, CONAGUA and the Federal Environmental Attorney have the mandate to use the instruments for legislation enforcement, monitoring both the water discharges and the pollution impact. Law enforcement can have social consequences. As one actor mentioned “If we close the industry, people lose their jobs. If we cancel the municipal discharges, the cities would be flooded with polluted water.” Other actor mentioned: “when we visit a municipality or industry, an employee has to accompany us. Sometimes we have to wait 3 or more hours while they start running their plants, in others we are not allowed to enter, in these cases we start a legal process but the penalties are low”. Last year CONAGUA introduced a program to finance WTP operation. The WUs must meet the set norm, yet none of them do.

According to the Mexican Water Law, the relation among the different actors should be based on interdependencies and synergies. It is a “legislatively initiated coordination” in a vertical model, (Gage & Mandell, 1990) where CONAGUA plays the major role. There are no overlaps among the functions of the three governmental levels, but lack of enforcement from one level affects the other.

The resources are mainly directed to WTP construction and rehabilitation but so far this has turned into governmental conflicts. The state government’s autonomy provides it with discretionary capacity to decide which municipalities receive its support and federal resources. This political manner of assigning resources has generated disagreements across the different governmental authorities.

Another example of political manipulation is whereas according to the federal law WUs are autonomous, this is not the case in practice. One WU director said “there is a contradiction with the municipal law, because the mayor could remove me without considering my results, just for political reasons.” This is a common practice after every election. From the industry’s perspective the interviewee stated “the current enforcement policy does not create synergy; on the contrary it creates conflicts, due to the uneven governmental pressure to us -captive subjects-from CONAGUA and the WUs.”

Resources cannot be combined outside CONAGUA’s programs, due to transparency and accountability restrictions. All allocated resources have to be used as they are assigned. There are some possibilities to use the resources more efficiently as happened in 2011; when the CEAS divided the state into sub-basins and tried to implement other federal and state programs not included by CONAGUA to increase the budget’s efficiency. For example in the case of the Institute for Indigenous People, which has a budget to improve the marginalization index in indigenous communities. Part of this index includes water quality, hence instead of CONAGUA’s budget; this budget could have been used. This would synergistically improve the marginalization and water quality indexes. However this did not happen due a disruption caused by internal and external political changes.

PROFEPA and CONAGUA tried to visit industries together. On the one hand PROFEPA monitors the pollution and its health impacts; on the other, CONAGUA supervises the quality of the discharges. The interviewees from these governmental bodies commented, “The visits together were more complicated, people from the companies complained, they said they could not attend to both at the same time. Also, according to our administrative rules, each institution must follow its own procedure, otherwise it is not valid, so we ended up inspecting separately.”

CONAGUA’s intensity is more focused on the results related to building the infrastructure building than on the operation of the plants. Monitoring in both building and operation needs to be improved. In some cases, the construction does not meet the standards required. One of the federal level interviewees mentioned “in one occasion a constructor came to visit us to see if there was a way we could help them because they did not have the capacity to reach the federal standards but they were selected by the state’s government anyway.” CONAGUA monitors the water discharges from the municipalities and industries in federal water bodies; if the WUs and the companies do not meet the norms these are sanctioned; and as most of them do not meet the standards, they have high debts with CONAGUA. However, enforcement is complicated because it creates other negative impacts for some members of society.

The state government needs to be more critical in selecting the WTP constructors and more open to meeting the necessities of the WUs. But WUs need to enforce the water sanitation laws and norms equally to large, small, legal, and not legally constituted companies and slaughterhouses. Different actors mentioned, “the main problems are not the big companies but the small ones, which are under the responsibility of the municipality.” These depend on the businesses’ permits for income, and monitoring resources are not available.

4.5. *Responsibilities & Resources*

The responsibilities are clearly assigned across the three levels. The federal government has the most important budget and qualified human resources, yet their capacity for accountability does not match this. CONAGUA “is the biggest spender in the water sector [...] representing in 2012 close to 55% of the estimated total sector expenditures” (OECD, 2013, p. 27). CONAGUA lacks the resources to monitor the industry and the municipalities.

The state level does not provide sufficient resources to its employees to fulfil their responsibilities to monitor WTP construction or rehabilitation. For example, employees said that they have to pay for the visits to the WTPs with their own salary. On one occasion a state employee asked the constructor to go together to visit the WTP as a way to save some money for the travel expenses. The number of employees also affects the monitoring. The CEAS went from a staff of 120 in 2011 to 40 in January 2014.

The WUs do not have enough resources for the operation of their WTPs. One of the WUs’ director is glad that the state government has not fully paid the WTP constructor, since then they would have to operate it. This would increase their spending and they

might not be able to afford it. Many interviewees gave examples of plants that were operating only for two or three months because WUs did not have the resources to continue operating them. WUs also have poorly trained employees.

Even SOAPAP is facing challenges due to a lack of resources. For example, when they were assigned to operate the four macro-plants in 2012, no resources were provided to fulfil the new responsibilities. In 2014 as part of the privatisation process, private investments were expected to solve the problem. However now federal governmental actors perceive less interest from SOAPAP-Agua de Puebla. Another case is Santa Rita Tlahuapan, a small locality of 8,412 inhabitants (INEGI, 2014), where there is no WU, but seven WTPs were constructed and the municipality does not have the capacity to operate them.

Another element that limits WU economic capacity is that water tariffs must be approved by the State Congress, which makes it a political issue since legislators do not want to face be criticised by society for increasing prices.

Cooperation across institutions is very limited. CONAGUA and PROFEPA tried, but it did not work. Within CONAGUA's departments, communication is limited, and there is no integrated vision for WTP projects. At the state level lack of communication is also perceived. According to the federal government, this is clear during the meetings where the state Ministry of Finance, Infrastructure and the CEAS participate. This creates inefficient planning and delays. For example, as of mid-2015 the state had not yet presented its 2015 annual plan.

Conflicts are created when responsibilities are not fulfilled. A SOAPAP study found that due to the lack of enforcement from the federal government on water discharges, SOAPAP has to clean 20% more of the total residual water volume, and also more than 40% of the organic matter, creating extra costs for them (SOAPAP, 2013, p. 9–12).

Combining responsibilities and resources without compromising transparency is possible through co-investments, since the programs have their own audits established. Looking for co-investments other than the already established programs is dissuaded under the argument of favouring accountability.

In the case of the WTP construction or rehabilitation, the state government only has one year to plan and execute any associated actions, thus low quality planning and poor execution is common. Some projects require from six to eight months to be planned, leaving the government only a few months to implement them. The federal government does not easily approve multi-annual investments, so the state plans annually to avoid more complications. Accountability mechanisms are inadequate. The auditor at each governmental level belongs to the same political group. One interviewee said: "Accountability is only on paper". And when one level oversees the other there is low capacity to monitor it.

CONAGUA provides the largest financial contribution to the projects. Despite this, resources are not sufficient and depend on the state's willingness and municipal resources for long-term operation of the WTPs. The state government has co-invested but are not able to match the federal resources. They are thus not able to use all the budget assigned, and this potential source of funding is lost. The state does not have any legal responsibility to match the resources or to operate water treatment plants.

The WUs have difficulties allocating the resources for the co-investments and WTP operation. Society is not used to paying for water service, but the municipality does not want to absorb the political cost of enforcing payment and it does not want to fine another municipal body by acting against the slaughterhouses.

5. Summary of findings

In general terms, extent, coherence and flexibility are assessed as low, and intensity as medium.

Extent was assessed as low, and is therefore restrictive. Although there is a highly developed legal framework, the secondary legislation is missing. This creates an important gap since in the Mexican context this is the legal element that enables law implementation. Imbalance is also a characteristic found in the extent, because there is not an equal participation among the actors (Ansell & Gash, 2007, p. 551). There is a hierarchical inter-governmental network, and the multi-level setting is composed by unequal partners. The NGOs and industry are not considered during WTP policy implementation. WUs do not participate in the planning or construction/rehabilitation process resulting in WTPs that are inadequate to the needs of the WUs. Low stakeholder participation limits the ability to increase resources and makes policies less effective (Sandfort & Milward, 2008, p.162).

Coherence is assessed as low, and is therefore restrictive. No institution has been created to promote and facilitate the interaction among all the stakeholders and there is a clear lack of trust in the vertical and horizontal governmental relations. The four main contributors to this situation are: 1) the frequent turnover of policy implementers in the three governmental levels, 2) lack of enforcement, 3) short-term perspective and 4) political manipulation.

Flexibility had the lowest evaluation, it was assessed as very restrictive. It was not found in any of the five categories. This is due to a highly hierarchical system that excludes the participation of non-governmental actors in the implementation and limits the WU participation for WTP operation. This limits the creation of social capital. There are no opportunities to reassess the policy during the implementation process. The priority to show results in short-term periods incentivises poor planning.

Intensity was assessed as medium, making it the only supportive quality. This means that the quality is supporting the implementation partially. Intensity is unbalanced, uneven and fragmented. The largest source of intensity towards sanitation is from the federal level. Intensity is lacking in the other levels because the state level limits its support and the WUs lack capacity to operate the WTPs and the NGO works on its own. While high intensity is found in short-term results such as the construction and rehabilitation of the WTPs, less intensity is provided for monitoring and accountability. As previous studies found “[c]ross-sector collaborations are more likely to be successful when they have an accountability system that tracks inputs, processes, and outcomes [...]” (Bryson, Crosby, & Middleton, 2006, p. 52). Intensity from CONAGUA and the WUs towards law enforcement is uneven. A long-term perspective requires actions against all

Table 3
Assessment Results

Governance Dimension	Qualities of the governance regime			
	Extent	Coherence	Flexibility	Intensity
Levels & Scales	Extent – Medium and imbalanced extent with municipal level excluded of planning, rehabilitation and construction of the WTP.	Coherence – Low. Coherence is medium between the federal and state levels. The municipalities are not very coherent with either the federal or state level. There is low trust among governmental levels, even in horizontal interdependency.	Flexibility – Inflexibility, no degree of adaptation, the rules must be followed.	Intensity – Medium yet imbalanced intensity, with the federal level as the main actor.
Actors & Networks	Extent – Low extent without social, municipal and industry participation in the different stages of the implementation phase.	Coherence – Low coherence due to the lack of institutionalization for the inclusion of all the stakeholders and lack of trust.	Flexibility – Inflexibility in the actors' network, it is not inclusive and does not create social capital.	Intensity – Medium and fragmented intensity, the governmental actors and the NGO work separately.
Problem Perspectives & Goal Ambitions	Extent – Low extent without participation of the social and industry sector and the municipal actor partially excluded.	Coherence – Low coherence, different perspectives between governmental and social actors.	Flexibility – Inflexibility to reassess goals during the administration period.	Intensity – Low and fragmented intensity with different perspectives, goal ambitions are decreasing as they are not achieved.
Strategies & Instruments	Extent – Medium extent but incomplete, fragmented and difficult to implement.	Coherence – Medium coherence, the instruments are prompt to political manipulation.	Flexibility – Inflexibility to combine resources outside CONAGUAS' programs, and there is room for a more efficient spending.	Intensity – Low intensity to change current practices and to enforce instruments evenly.
Responsibilities & Resources	Extent – Low extent, there is a lack of resources for the actors to fulfil their responsibilities properly.	Coherence – Medium coherence, there is interdependency but needs improvement. Lack of responsibilities' fulfilment creates struggles.	Flexibility – Inflexibility to pool resources beyond the co-investment programs.	Intensity – Medium intensity, there is an imbalance in resources to achieve the intended changes.
Assessed as:	Low/Restrictive	Low/Restrictive	Low/Restrictive	Medium/Supportive

the polluters in order to build trust, “Regulations and agreements that cannot be enforced will suffer from a lack of credibility and, in the end, legitimacy” (Van Rijswick et al., 2014). The fragmentation incorporates actors that are not directly related with the water policy, such as the Congress or the municipal presidents who are more concerned about the political impact of their decisions than the sustainability of the resource. Table 3 summarizes these findings.

6. Discussion and conclusions

This governance assessment of the WTPs policy concludes that the context is mostly restrictive for the implementation. This case provides examples of factors that limit the implementation process 1) Power imbalance (McGuire & Agranoff, 2011, p. 280) in legally created networks; 2) Constant changes due to political reasons, lack of knowledge and short-term vision (Cornell, 2013); 3) Complexity in the cross-sector collaboration, which is not a panacea and requires trust building (Bryson et al., 2006) and 4) A network composition ineffective for tackling the pollution problem (Provan & Milward, 2001).

The 20 governance elements allowed a detailed analysis that provides a systematic way for assessing and giving a diagnosis of the problems in the implementation process. However, our context sensitive methodology still requires refinement in operationalization. Assessing more cases in similar contextual situations could help us to standardize common elements. During this research new questions arose about the behaviour of the qualities in a hierarchical context. What happens if extent is decreased and the implementation is only among the state and federal levels? Can more balanced intensity improve implementation? Is the institutionalisation of the stakeholders participation (increasing extent) more supportive for the implementation? What degree of participation is supportive for implementation? Which combination of the qualities can be more supportive for a long-time perspective?

The GAT helps us to provide explanations of the outcomes for cases where relevant stakeholders are not involved in the implementation process. In Puebla’s case extent is low in most of the governance dimensions negatively impacting the implementation. According to the hypothetical regime cases from De Boer (2012), the combination of incoherence, inflexibility and intensity create an “[...] extremely inefficient combination for the local level actors, yet is the easiest manner for upper levels to appear to be in control and to be delivering high accountability to the public on a specific set of policy goals” (De Boer, 2012, p. 57). When we incorporate the low extent variable to the discussion, we can also add other impacts in the implementation. The lack of important legislation such as the secondary water law has limited the participation of relevant social and governmental actors. The lack of inclusion of the WUs, provokes the creation of inadequate infrastructure, lacking involvement of the industrial sector leads to disagreements for how to support common goals, and a lack of social participation contributes to the short-term vision. These limitations of the extent also impact the other qualities. For example, coherence is restricted due to political manipulation, if more instruments and actors are included,

discretionary decisions can be decreased (Bryson, 2004) (Klijn & Skelcher, 2007). Flexibility with low participation limits the creation of social capital when decision makers are not held accountable. It seems that accountability is more an intensity issue, if the high intensity for construction and rehabilitation would shift to monitoring efforts, this could result in a more adequate spending of the budget.

Therefore, we can conclude that a combination of low extent, incoherence, inflexibility and intensity create an extremely inefficient combination for the local level and social actors who are not considered in various parts of the policy implementation phase, yet it is the easiest manner for the upper levels to appear to be in control. There is a lack of check and balances. Limited accountability and implementation will favour short-term goals. This situation enables upper levels to prioritise visible actions over solving the problem, resulting in a symbolic implementation. An example is the former federal administration, where building an enormous number of WTPs did not have any positive impact in the water quality status.

The practical lessons derived from this analysis show the necessity of including some relevant actors. For example the Rules of Operation could include the participation of the WU in the building or rehabilitation of the WTPs. If the federal actor is really interested in a long-term implementation, participation and involvement of the excluded actors is important. Participation of civil society can support the checks and balances system by monitoring the state government's support for the WUs as well as the political changes, in order to bring more stability to the implementation process. This is strengthened by other studies that conclude that inclusion of the stakeholders in the policy implementation increases the likelihood of success (Ansell & Gash, 2007; Bryson, 2004; De Boer, 2012; Klijn, 2008; Van Rijswick et al., 2014).

WUs and CONAGUA must be more equal in law enforcement to start building trust among the different stakeholders. CONAGUA's shift towards higher monitoring capacity can help improve the spending. Also allowing more flexibility and increasing extent in the WTPs' planning and construction can support better implementation.

The last relevant action from the state government was in mid 2014 when the privatisation of the SOAPAP took place, it is now called *Agua de Puebla*. It incorporated most of the WUs in the metropolitan area of Puebla city. The argument is to increase the investment capacity of the WU and make it more efficient, but the federal government perceives less interest now and civil society perceives this reform as another political agenda that will only benefit a select few of the many actors. While the negative impacts of high turnover and low institutional memory have been highlighted here, opportunity for change is also very real. In the event that societal actors become involved and concerned about water quality enough to influence voting patterns, real improvements in the operation and maintenance of WTPs could be achieved. A regime with strength in its intensity can bring out real change. Granted, this would require the willingness to increase planning periods, since the nature of sustainable water management is longer term. As such, the results of the Governance Assessment Tool in this case highlight opportunities for improvement that will help the Mexican government to move past merely symbolic implementation of their water policies.

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References

- Agranoff, R., & McGuire, M. (2001). Big questions in public network management research. *Journal of Public Administration Research and Theory*, 11(3), 295–326.
- Ansell, C., & Gash, A. (2007). Collaborative governance in theory and practice. *Journal of Public Administration Research Theory*, 18(4), 543–571. doi:10.1093/jopart/mum032
- Aragon2m, D. (2001). [The environmental decay of the Atoyac river in Puebla city: Actions for its restoration] El deterioro ambiental del rde Atoyac en la ciudad de Puebla: Acciones para su restauraciic. Puebla: CONAGUA, Universidad Iberoamericana & SOAPAP.
- Birkland, T. (2011). An introduction to the policy process: Theories, concepts, and models of public policy making. Armonk, NY: M.E. Sharpe.
- Bressers, H., Boer, C. D, Lordkipanidze, M., Özerol, G., Vinke-De Kruijf, J., Furusho, C., . . . Browne, A. (2013). *Water governance assessment tool: With an elaboration for drought resilience*. Report to the DROP project, Enschede, The Netherlands: CSTM University of Twente.
- Bressers, H., & Kuks, S. (2003). What does “governance” mean? From conception to elaboration. In H. Bressers & W. Rosenbaum (Eds.), *Achieving sustainable development: The challenge of governance across social scales* (pp. 65–88). Westport, CT: Praeger.
- Bressers, H., & Kuks, S. (Eds.). (2004). *Integrated governance and water basin management: Conditions for regime change towards sustainability*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Bressers, H., & Kuks, S. (2013). Water governance regimes: Dimensions and dynamics. *International Journal of Water Governance*, 1, 133–156. doi:10.7564/12-IJWG1
- Bressers, N. (2015). *Benefit of Governance in DRought AdaPtation*. ISBN: 978-9-0823-5170-5. Retrieved from: <http://www.dropproject.eu>
- Bryson, J. (2004). What to do when stakeholders matter: Stakeholder identification and analysis techniques. *Public Management Review*, 6(1), 41–53. doi:10.1080/14719030410001675722
- Bryson, J., Crosby, B., & Middleton, M. (2006). The design and implementation of cross-sector collaborations: Propositions from the literature. *Public Administration Review*, 66, 44–55. doi:10.1111/j.1540-6210.2006.00665.x
- Cámara de Diputados del Honorable Congreso de la Union. (2014). *Ley de Aguas Nacionales*. Retrieved from http://www.diputados.gob.mx/LeyesBiblio/pdf/16_110814.pdf
- Casiano, C., & Bressers, H. (2015). Changes without changes: The Alto Atoyac sub-basin case in Mexico. *Water Governance*, Science Publishers Baltzer, 01-2015, 12–16. ISSN: 2211-0224
- Castillo, J. (2012, September 10). *Se embolsó Dégremont más de 2mmdp en 10 años*. Intolerancia Diario. Retrieved from http://www.intoleranciadiario.com/detalle_noticia.php?n=100245
- CEAS. (n.d.). *Planeación hídrica estatal por cuenca con visión 2030*. Retrieved from <http://ceaspue.puebla.gob.mx/phocadownload/programacion/hidrica-estatal-por-cuenca-con-vision-2030/planeacin%20hidrica%20estatal%20por%20cuenca%20con%20vision%202030.pdf>
- CONAGUA. (2007). *Plan Naciona Hídrico 2007–2012*. Retrieved from http://www.conagua.gob.mx/CONAGUA07/Contenido/Documentos/PNH_05-08.pdf
- CONAGUA. (2011). *2030 Water agenda*. Retrieved from http://www.conagua.gob.mx/english07/publications/2030_water_agenda.pdf
- CONAGUA. (2012a). *The CONAGUA in action*. Retrieved from <http://www.conagua.gob.mx/english07/publications/Conagua%20in%20action%20carta%20cor.pdf>

- CONAGUA. (2012b). *Programa Hídrico Regional Vision 2030, Región Hidrológico-Administrativa IV Balsas*. México D.F.: SEMARNAT.
- CONAGUA. (2014). *Programa Nacional Hídrico 2014–2018*. Retrieved from <http://www.conagua.gob.mx/conagua07/contenido/documentos/PNH2014-2018.pdf>
- Congreso del Estado de Puebla. (2012). *Ley del Agua para el Estado de Puebla*. Retrieved from <http://www.aguapuebla.mx/images/Documentos/ley-del-agua-31122012.pdf>
- Cornell, A. (2013). Why bureaucratic stability matters for the implementation of democratic governance programs. *Governance*, 27, 191–214. doi:10.1111/gove.12037
- De Boer, C. (2012). Contextual water management: A study of governance and implementation processes in local stream restoration projects. Enschede, The Netherlands: Universiteit Twente. ISBN 9789036534277
- De Boer, C., & Bressers, H. (2011). Complex and dynamic implementation processes: the renaturalization of the Dutch Regge River. Enschede, The Netherlands: University of Twente, in collaboration with the Dutch Water Governance Centre. ISBN 9789036532570
- De Boer, C., Vinke-de Kruijf, J., Özerol, G., & Bressers, H. (2013). Water governance, policy and knowledge transfer: International studies in contextual water management. Oxon, England: Earthscan studies in water resource management from Routledge. ISBN 9780415625975
- Domínguez, J. (2011). Institutional barriers for effective water governance in Mexico: Study of the central gulf hydrological administrative region X. In U. Oswald (Ed.), *Water resources in Mexico: Scarcity, degradation, stress, conflicts, management, and policy*. Springer.
- Durlak, J., & DuPre, E. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, 41, 327–350. doi:10.1007/s10464-008-9165-0
- Franco-García, M., Hendrawati-Tan, L., Gutierrez-Díaz, C., Casiano, C., & Bressers, J. (2013). Institutional innovation of water governance in Mexico: The case of Guadalupe Basin, near Mexico City. In C. De Boer, J. Vinke-de Kruijf, G. Özerol, & H. Bressers (Eds.), *Water governance, policy and knowledge transfer: International studies on contextual water management* (pp. 188–204). Oxon, England: Earthscan Studies in Water Resource Management from Routledge. ISBN 9780415625975
- Gage, R., & Mandell, M. (Eds.). (1990). *Strategies for managing intergovernmental policies and networks*. New York, NY: Praeger
- Gálvez, G. (2011). [Industries and governments delay Atoyac sanitation] *Empresas y gobiernos demoran limpieza del Atoyac*. NG Puebla. Retrieved from <http://www.ngpuebla.com/reporte-ng/4192empresas-y-gobiernos-demoran-limpieza-del-atoyac#.UifFABahD0d>
- Hernández, E. (2012, May 16) [Accusations say, OHL is victim of political revenge] *Acusan que OHL es víctima de revancha política en Puebla*. 24 Horas. Retrieved from <http://www.24-horas.mx/acusan-que-ohl-es-victima-de-revancha-politica-en-puebla/>
- Hufty, M. (2009). *The governance analytical framework*. Retrieved from http://dpp.graduateinstitute.ch/files/live/sites/dpp/files/shared/executive_education/IMAS/Modules_IMAS_2009_2010_S3/Gouvernance/ANG/Governance_Analytical_Framework22%20février.pdf?v=1392752313000
- Klijn, H. (2008). Governance and governance networks in Europe. *Public Management Review*, 10(4), 505–525. doi: 10.1080/14719030802263954
- Klijn, H., & Skelcher, C. (2007). Democracy and governance networks: Compatible or not? *Public Administration*, 85, 587–608. doi:10.1111/J.1467-9299.2007.00662.X
- Leyva, B. (2010, October 18) [Young people are willing to rescue the Atoyac river] *Dispuestos jóvenes a rescatar el Río Atoyac*. Azteca Noticias. Retrieved from <http://www.aztecanoticias.com.mx/notas/estados/25230/dispuestos-jovenes-a-rescatar-el-rio-atoyac>
- Luna, A. (2011, July 17) [The sewer of SOAPAP and Degremont] *La cloaca del SOAPAP y Degremont*. Puebla online. Retrieved from http://www.pueblaonline.com.mx/garganta_prof/?p=3661
- McGuire, M., & Agranoff, R. (2011). The limitations of public management networks. *Public Administration*, 89, 265–284. doi:10.1111/J.1467-9299.2011.01917.X
- McLaughlin, M. (1987). Learning from experience: Lessons from policy implementation. *Educational Evaluation and Policy Analysis*, 9, 171–178. doi:10.3102/01623737009002171

- Mondragón, A. (n.d.). [Yesterday, they were guilty and today, they are the solution] *Ayer fueron culpables del problema, hoy la solución*. Status Puebla. Retrieved from http://www.statuspuebla.com.mx/index.php?option=com_content&view=article&id=6160%3Aayer-fueron-culpables-del-problema-hoy-la-solucion&Itemid=72
- Moreno Valle Blog. (2011, May 4) [Atoyac river rescue] *Rescate del río Atoyac*. Retrieved from <http://www.morenovalleblog.com/2011/05/rescate-del-rio-atoyac.html>
- OECD. (2013). *Making water reform happen in Mexico*. OECD Studies on Water. OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/9789264187894-en>
- OEM. (2013, April 29). [CONAGUA presents integral project to treat residual water of the Atoyac river] *Presenta CONAGUA proyecto integral para tratar el agua del río Atoyac*. OEM en Línea. Retrieved from <http://www.oem.com.mx/oem/notas/n2966198.htm>
- Ostrom, E., Janssen, M., & Anderies, J. (2007). Going beyond panaceas. *PNAS*, *104* (39), 15176–15178. doi:10.1073/pnas.0701886104
- O'Toole, L. (2004). The theory–practice issue in policy implementation research. *Public Administration*, *82*, 309–329. doi: 10.1111/j.0033-3298.2004.00396.x
- Pacheco-Vega, R. (2009). [Institutional Arrangements for water sanitation in Mexico. The case study of Lerma-Chapala basin] Arreglos institucionales para el saneamiento de aguas residuales en México. Un caso de estudio en la cuenca Lerma-Chapala. In I. S. Osorio, R. L. do Carmo, S. V. Velázquez, & N. B. Guzmán (Eds.), *Gestión del agua: una visión comparativa entre México y Brasil* (pp. 97–106). Jiutepec, Mexico: Instituto Mexicano de Tecnología del Agua (IMTA).
- Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change*, *18*, 354–365. doi: 10.1016/j.gloenvcha.2009.06.001
- Peniche, S., & Guzmán, M. (2012). [Water governance in Jalisco] La gobernanza del agua en Jalisco. In Ochoa, H., & Burkner, H.-J. (Eds.), *Gobernanza y gestión del agua en el occidente de México: La metrópoli de Guadalajara* (pp. 101–128). Guadalajara, México: ITESO.
- Provan, K., & Milward, B. (2001). Do networks really work? A framework for evaluating public-sector organizational networks. *Public Administration Review*, *61*, 414–423. doi:10.1111/0033-3352.00045
- Rangel, X. (2013, April 17) [Atoyac river, the third most polluted in Mexico] *Río Atoyac, el tercero más contaminado del país*. El Universal.mx. Retrieved from <http://www.eluniversal.com.mx/notas/917423.html>
- Rhodes, R. (1996). The new governance: Governing without Government. *Political Studies*, *44*, 652–667. doi: 10.1111/j.1467-9248.1996.tb01747.x
- Rodríguez, E. (2010). [Governance of the sanitation policy in the Atoyac-Zahuapan basin, in the state of Tlaxcala] *Gobernanza del saneamiento en la cuenca Atoyac-Zahuapan del Estado de Tlaxcala* (Unpublished master's thesis). Instituto Mexicano de Tecnología del Agua, México
- Rogers, P. (2002). *Water Governance in Latin America and the Caribbean*. Inter-American Development Bank. Retrieved from <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=355237>
- Sandfort, J., & Milward, B. (2008). Collaborative service provision in the public sector. In S. Cropper, M. Ebers, C. Huxham, & P. Smith Ring (Eds.), *Handbook of inter-organizational relations* (pp. 147–174). Oxford, England: Oxford University Press.
- Secretaría de Gobernación. (2011, July 6). [River classification of the Atoyac, and Xochiac or Hueyapan rivers and their tributaries] *Declaratoria de clasificación de los ríos Atoyac y Xochiac o Hueyapan, y sus afluentes*. Diario Oficial de la Federación. Retrieved from http://dof.gob.mx/nota_detalle.php?codigo=5199672&fecha=06/07/2011
- Secretaría de Gobernación. (2013, December 27). [CONAGUA's Rules of operations for Water Infrastructure, drinking water, sewages and sanitation programs, since 2014] *REGLAS de Operación para los Programas de Infraestructura Hidroagrícola y de Agua Potable, Alcantarillado y Saneamiento a cargo de la Comisión Nacional del Agua, aplicables a partir de 2014*. Diario Oficial de la Federación. Retrieved from http://www.dof.gob.mx/nota_detalle.php?codigo=5328237&fecha=27/12/2013
- Shanik, D. (2013, April 15). [CONAGUA denies Atoyac sanitation: only 10%] *Desmiente la CONAGUA saneamiento del Atoyac: sólo va al 10%*. e-consulta. Retrieved from <http://archivo.e-consulta.com/2013/index.php/2012-06-13-18-40-00/ecologia/item/desmiente-la-conagua-saneamiento-del-atoyac-solo-va-al-10>

- SOAPAP. (2013). [Report of water polluters in the water treatment plants in Puebla city and the metropolitan area] *Reporte de cargas de contaminantes aportadas y excedidas en las plantas de tratamiento de aguas residuales ciudad de Puebla y zona conurbada* (Unpublished). Internal Report.
- Thiel, A., & Egerton, C. (2011). Re-scaling of Resource Governance as institutional change: The case of water governance in Portugal. *Journal of Environmental Planning and Management*, 54(3), 383–402. doi:10.1080/09640568.2010.507936
- Tirzo, I. (2012, February 23) [The contract with Degremint was ended for public interest] *Terminó contrato con Degremont para salvar intereses ciudadanos*. El Sol de Puebla. Retrieved from <http://www.oem.com.mx/elsoldepuebla/notas/n2440811.htm>
- UNDP. (2013). *User's guide on assessing water governance*. Retrieved from http://www.undp.org/content/undp/en/home/librarypage/democratic-governance/oslo_governance_centre/user-s-guide-on-assessing-water-governance/
- Van Kersbergen, K., & Van Waarden, F. (2004). 'Governance' as a bridge between disciplines: Cross-disciplinary inspiration regarding shifts in governance and problems of governability, accountability and legitimacy. *European Journal of Political Research*, 43, 143–171. doi: 10.1111/j.1475-6765.2004.00149.x
- Van Rijswijk, M., Edelenbos, J., Hellegers, P., Kok, M., & Kuks, S. (2014). Ten building blocks for sustainable water governance: An integrated method to assess the governance of water. *Water International*, 39(5), 725–742. doi: 10.1080/02508060.2014.951828

