

TROUBLED WATERS: CONFLICT IN PRIVATE-SECTOR WATER PROJECTS

A THESIS

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Abstract

This research examines 15 water and sanitation projects in developing countries that had private sector participation, in order to understand the association of the emergence of legal/institutional and political/popular conflict, with the features of projects, the context in which they are carried out, and the stakeholders. Even though structuring and implementing a successful tendering process, engaging in sincere and proactive consultation with stakeholders, and taking steps to become acquainted with local conditions are theoretically viewed as means to reducing potential costs of *ex-post* legal challenges and popular protests, improved understanding of their linkages with conflict in 'real world' projects is crucial to justify those costly undertakings in the planning stage. Strong consultation effort is no guarantee against conflict in projects that have a bi- or multi-lateral development bank involved, whose presence can often act as a 'lightning rod' for protest groups, or in projects with a very large size. Negative economic impacts on households (in the form of water tariff increases) and limited participation of the host country as an equity partner are associated with political conflict, consistent with expectations. Extensive connections to international NGOs, as well as a high level of socioeconomic development, are also associated with higher levels of conflict. Close relationship between 'legal/institutional' and 'political/popular' conflict raises the questions a) if NGOs attempt to exploit legal channels first, and only engage in protests outside these formal channels if their initial efforts are unsuccessful or b) if emergence of political conflict tends to trigger subsequent legal procedures.

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I. Introduction and motivation

In the late 1980s, several developing countries began, with encouragement from international financial institutions such as the World Bank, to pursue private-sector investment within the water supply and sanitation (W&S) sector. In 1990, 29% of four billion citizens from developing regions lacked access to improved water supply; 65% did not have basic sanitation services (Joint Monitoring Program, 2006). In addition, public W&S utilities that did operate in the developing regions were often characterized as inefficient, corrupt, and uninterested in extending infrastructure to poor households that lacked service (Idelovitch, 1995). Private-sector participation was thus pursued in the hopes of increasing investment, expanding access to services, and managing both W&S infrastructure and freshwater resources more efficiently (Davis, 2005).

Latin America & Caribbean and South East Asia flourished with private sector investments. Preliminary analysis carried out by authors show that total investment in projects involving private-sector firms in Latin America's W&S sector during 1991-2005 averaged US\$1.8 billion per year in 2006US\$\$. Annual investment increased six-fold during the 1990s, peaking with the divestiture of several Chilean water and sanitation companies in 1999. Starting in the year 2000, however, new private-sector investment has fallen off dramatically, with virtually no new private capital in the sector since 2004. A more or less similar situation occurred in South East Asia and other developing regions, thus declining the rapid run-up of PSP in the W&S sector.

Empirical research into the performance of privatized companies operating in the water and sanitation sector has demonstrated that gains in operational efficiency are often observed after the entry of the private sector (Davis, 2005). Such gains are often realized, however, through unpopular measures such as retrenchment, the disconnection of illegal connections (often in poor neighborhoods), and price

increases. In addition, evidence suggests that privatized water service providers regularly fall short of the pledges made during contract bidding for new investment (*e.g.*, expansion of the piped network into unserved areas). Finally, some object to privatization in the water sector on normative grounds. Some feel that the profit-seeking motive of private-sector firms is incompatible with the moral imperative to ensure that all households have access to safe, reliable, affordable water and sanitation services. Others perceive increasing private-sector participation as the result of coercive policies implemented by international development agencies. As Ettinger (2005) notes, “A number of large developed-country investors have become political targets/scapegoats for dissatisfaction including higher prices, failure to fully correct longstanding service quality problems, and disputes over regulatory rules. They have been accused of perpetuating foreign economic domination and using their home countries’ influence to get their way.”

As a result of all of these concerns, considerable legal and political conflict within projects involving the project sector has emerged over the past several decades. Such conflict has delayed and derailed projects around the world. Guasch (2003, 2004), for example, reviewed a set of private infrastructure projects across various sectors in Latin America during the 1990s and found that 30% of these were re-negotiated, typically following two years after the original awarding of the contract. In water supply and sanitation sector, however, renegotiations of private-sector concessions occurred in 74 percent of cases reviewed, and occurred more quickly, on average 1.6 years after concession was awarded. Renegotiation often increases project costs considerably. Direct transaction costs that is specifically spent on avoiding a fatal outcome and the costs of delays due to conflict would typically sum up to 5-10% of total project costs — or some US\$2billion to US\$3 billion a year, assuming that annual private infrastructure investments worldwide exceed US\$35 billion (Klein, 1996).

High rates of renegotiation can also discourage private investors, who are increasingly concerned about nationalization of assets, renegotiations, popular protests, and/or disappointing returns, from continuing to pour capital into new projects (Harris, 2003). Anecdotal evidence suggests that private firms' interest in developing country water sector investment has waned considerably over the past decade. This trend is consistent with more systematic research in the power sector, which is considerably less conflict prone as compared to the water sector. Ettinger, (2005), for example, quotes a 2002 survey of international investors in the power sector, half of whom reported being less interested in pursuing new projects in low- and middle-income countries as they had been two years prior; only 7% were more interested in such investments.

In sum, a variety of sources of conflict have emerged within the water sector centering global projects that involved the private sector. Very little research into the sources or prevention of such conflict has been carried out. The goal of the present study is to understand the features of global water projects, the context in which they are carried out, and the stakeholders responsible for their execution, that are associated with the emergence of legal/institutional and political/popular conflict related to those projects.

For the purpose of this study we classify *conflict* as being either *legal (institutionalized)* or *political (popular)*. Legal conflict emerges within formal structures of the host country, project sponsor and/or multi-lateral institutions; examples include contract re-negotiation mechanisms, court injunctions, and formal petitions. Political conflict occurs outside of these formal structures, often taking the form of popular protests. Table 2 provides more information how we categorized various degrees of each type of conflict.

II. Good governance in infrastructure projects

As noted above, few researchers have explicitly focused on the causes of conflict among water sector projects involving the private sector. At the same time, a sizeable literature does exist that relates ‘good governance’ in infrastructure projects to lower transactions costs—including avoidance of conflict. Within this literature, considerable emphasis is given to (a) transparency of process, particularly as represented by open and competitive tendering for contracts; (b) proactive consultation with stakeholders, including employees and households who will be affected by a project, and (c) appreciation of local context in governance of global infrastructure projects. These elements are central to the increasingly popular TAP concept (transparency, accountability, and participation) within the global infrastructure project management field (Dixit, 2001). For the purposes of this study, we adopt the TAP framework for analysis of these three elements of project governance.

A formal, structured, competitive tendering process is widely considered to be best practice in selecting a private company for a water-market contract (PPIAF & WB, 2006). A competitive process is believed to result in lowest-cost execution of a project as it provides appropriate incentives for firms to submit realistic bids. In addition, having procurement policies and practices made clear and accessible to the public; specifying clear and predictable rules that prevent discretion and conflict of interests; providing a mechanism for grievances; and ensuring fair and equal treatment of all economic entities, public and private, foreign and domestic all contribute to preventing disputes that can raise project transaction costs (UN, 2007).

In addition to competitive tendering, a ‘transparent and participatory consultative process’ that precedes the privatization process, is among the seven factors identified by the Asian Development Bank as being critical for the success of PSPs in

water and sanitation sector (Gunatilake 2008). In a World Bank review of fifteen projects (many involving PSP) that occurred between 2002 and 2005, outcome of 33 percent of the projects was significantly impacted from “communication with stakeholders on project design and performance;” A positive impact on “building consensus and/or credibility for the government to undertake the reform” alone was seen in 40 percent of the projects (Calabres, 2008). While admiring that “voice mechanisms are the lifeblood of participatory forms of governance” (Picciotto, 1995), developing a communication strategy for a collaborative engagement between consumers, NGOs, workers, private firms and financiers, alternative providers, opinion leaders and other politicians, and media (PPIAF & WB, 2006), by “fully utilizing formal and informal communication channels available in a country, informing and building consensus, listening to important stakeholders, conveying and sharing a vision, publicizing progress, and creating confidence” (Calabres, 2008), defines a successful proactive consultation strategy with stakeholders.

In the case of a foreign company entering a local market, ‘institutional exceptions,’ i.e. the ignorance of an entrant about the local context, actions of an entrant that deviates from practices of local institutions, and the resulting cues of disapproval from the host, result in serious ‘transaction costs’ (Orr, 2008a). Hence, project sponsors need to be well aware of the political situation and dynamics in the host country; the cultural, institutional and regulatory environment; and how the government and the legal system actually work (Orr, 2008b). Furthermore, having a ‘political insider,’ i.e. recruiting an influential local actor, or even partnering with a domestic private company, facilitates communications and operations in host country, mitigates the inherent political risks in being a foreigner, and defends the project from government and other interference (Woodhouse, 2008). Such a strategy amounts to the best-practice of tackling local context especially in infrastructure sectors with high degree of politicization.

Despite wide support among practitioner organizations for the TAP priorities in project design, they appear to be based largely by both normative beliefs and practical imperatives, with little empirical evidence regarding the extent to which and conditions under which they yield tangible benefits. Structuring and implementing a successful tendering process, engaging in sincere and proactive consultation with stakeholders, and taking steps to become acquainted with local conditions are all costly undertakings. To the extent that these measures are viewed as means to reducing potential costs of *ex-post* legal challenges and popular protests, improved understanding of their linkages with conflict in 'real world' projects is an important contribution that this study seeks to make.

III. Data collection and analysis methods

D. Data sources

Information used for this study came from a variety of sources. First, authors working at the Collaboratory for Research on Global Projects (CRGP) at Stanford University, USA compiled a data base of projects with private sector participation (PSP) in the water and sanitation (W&S) sector. Authors searched publicly available documents (*e.g.*, newspaper articles, web logs and journal/research papers) and completed several interviews with executives from a few multinational firms that invested in different projects. The authors' database is limited to the W&S sector and contains over 300 projects executed between 1986 and 2006 in both developing regions and OECD countries. It has information on location, type of contract, period - both planned and actual, included subsectors, main sponsors, outcome and level of conflict. However, this database does not include investment amounts and names of all shareholders but gives access to some unique projects not covered by PPI database (see below).

Second, the authors also used information from databases compiled by other organizations. The World Bank's Private Participation in Infrastructure (PPI) database, for example, contains information on 3,100 infrastructure projects with private sector participation, in 150 low- and middle-income countries, covering projects in the energy, telecommunications, transport and water and sanitation sectors (PPI, 2008). On top of basic project information, this database includes firm-level identifiers for a given project, amount of equity investments by each firm, and sub-sector and segment of contracted service.

In addition, the authors used the Project Finance International (PFI) project database, which lists completed infrastructure deals which have reached financial closure since 1992. Information in the PFI database includes region and country of project location, industry sector, value, date of financial close, project company, and appointed project sponsor/developer. The database also provides links to related web pages and documents containing additional details of each project, including the project history, sponsors, advisors, financial breakdown, and where available, a summary of related loan data. A total of over 600 cases of projects in the water sector were identified as a result of these database searches.

Third, a desk study of newspapers, online publications, web logs and journal/research papers was also carried out for the fifteen projects selected for the study. Additional details were sought regarding type and magnitude of conflict and proactive consultation, as well as the characteristics of the project stakeholders and setting.

Fourth, in order to ensure that all available information on conflict in water projects was identified, the authors worked with a legal librarian to complete desktop study of all selected cases. The legal librarian sought and helped the team to analyze information on both legal and political conflict in the sample cases.

Fifth, the project team developed short written surveys for staff of both non-governmental organizations and bi- and multilateral development banks that were involved in water projects involving private-sector partners. The principal objective of these surveys was to receive feedback on the coding decisions made by the study team regarding characteristics of the projects and conflict associated with them. Approximately 20 of these surveys were completed by NGO and development bank personnel.

Finally, the authors carried out over 50 interviews at different stages of the project. Some team members visited World Bank headquarters in Washington DC and completed in-person interviews with Banks consultants that were involved with some of the cases or who were knowledgeable about increasing private-sector participation in water projects more generally. Several individuals from the private sector who were familiar with issues related to the planning and implementation of global infrastructure projects were invited to Stanford University to speak to the project team.

E. Selection of cases

A total of fifteen cases were selected for analysis (Table 1). The number of cases was driven by conceptual, methodological, and practical considerations. An analytical framework seeking the quantification of average effects of project, stakeholder, and context characteristics on the emergence of conflict would support a large-*N* study design. The approach employed here, by contrast, embraces the notion that different combinations of characteristics might lead to the same outcome of interest (conflict). Because traditional regression approaches cannot effectively deal with such equifinality, this study adopts a comparative case analysis approach pioneered by the sociologist Charles Ragin (Ragin, 1987, 2000, 2008). Ragin's approach, which is termed Fuzzy Set Quantitative Case Analysis (fs/QCA), is described further below.

Suffice it to say that this methodology is unable to deal with a large number of cases or variables as it focuses on simultaneously comparing a large number of combinations of independent and dependent variables and identifying multiple causal pathways within the data. As a result, the team worked with fifteen water project cases for our analysis.

Table 1: Summary of selected cases

Location	Year of financial closure	Type of contract	Contract value (2006US\$ billions)
1. Bolivia: Cochabamba	1999	concession	3.0
2 . Argentina: Buenos Aires	1993	concession	5.7
3. Colombia: Cartagena	1995	lease	0.03
4. Cuba: Havana	2000	concession	0.7
5. Bulgaria: Sofia	1999	concession	0.2
6. Poland: Gdansk	1992	lease	0.7
7. Czech Republic: Prague	2001	lease	0.3
8. Philippines: Manila East	1997	concession	4.0
9. Indonesia: Jakarta	1998	concession	0.6
10. Malaysia: Kuala Lumpur	2005	concession	3.1
11. Guinea: Conakry	1989	lease	0.01
12. Senegal: Dakar	1996	lease	<.10/unknown
13. Gambia: National	1993	lease	<.10/unknown
14. Morocco: Casablanca	1997	concession	2.6
15. India: Bangalore	1999	concession /BOOT	0.7

The choice of specific projects was made so as to ensure a mix of different project sizes (in term of \$ value), contract and investor type, regional setting, time period and outcome.

Only leases or concessions, or projects whose features represented slight variations on these models, were included in the study. Hence all projects had a long-term commitment, of at least 10 years, and the private party managed some commercial risk related to operation. Including both leases and concessions also provided the

opportunity to examine cases with a range of investment values made by the private-sector company. Our final sample contained six leases and nine concessions, each of which included responsibility for both delivery and treatment of water (and/or waste water).

Although most of the private-sector investment in water supply services has occurred in Latin America and East Asia, we included cases from each developing region in our sample. Our cases represent, Latin America and Caribbean – 4 cases; East Asia and Pacific – 3 cases; Eastern Europe – 3 cases; Sub Saharan Africa - 3 cases, North Africa and Middle East – 1 case; and South Asia - 1 case.

Water and sanitation projects were rarely under private sector management before late 1980s. Hence, our projects spanned from 1989 to 2005. Even though selecting relatively recent projects ensured better availability of data, having older projects in the mix let us incorporate newest features of governance (for ex., competitive bidding as opposed to sole sourcing) thus increasing the variance in our project level indicators.

The focus of our analysis is on the emergence of political and legal conflict in the early stages of a project, i.e., up to one year following financial closure. The set of cases included in our sample represent a diversity of final project outcomes; some are ongoing or completed, some distressed or in re-negotiation, and the rest terminated before the full contract period was over.

C. Indicator coding

The fs/QCA approach requires that each case be assigned a score with respect to every independent and dependent variable in the analysis (Table 2). Researchers define variables (or ‘conditions’) as continuous fuzzy set values ranging from 0 to 1

(e.g., .25, .40, .65, etc.), for underlying interval, ordinal, or nominal indicators. Some independent variables were constructed from larger datasets and then calibrated as per Ragin (2008). As one example, coding for the variable ‘highly democratic country’ in each case was carried out after calibrating the scores of the relevant countries from the Polity IV database (Polity IV website, 2007). This approach allowed the research team to determine which range of values in the larger dataset corresponded to our notion of a case being ‘fully in’ and ‘fully out’ of the set of highly democratic countries, *i.e.*, relative to the fifteen cases under study. (Refer appendix 1 for calibration of country level indicators)

Table 2: Indicators and scoring algorithms (uncalibrated) used in analysis

	Indicator	Coding algorithm
Project level	Political conflict*	0 No evidence of conflict 0.2 Some evidence of opposition groups formed 0.4 Evidence of up to five peaceful strikes or rallies. 0.6 Evidence of more than five peaceful strikes, rallies, demonstrations; or evidence of up to five arrests and/or injuries 0.8 Evidence more than five arrests and/or injuries; or more than 14 strikes, rallies, demonstrations 1 At least one deaths resulting from strikes, rallies, or demonstrations (*square root of each value was used for final coding)
	Legal conflict*	0 No evidence of legal conflict 0.2 Evidence of tension between formal parties directly involved in contract 0.4 Evidence of any public meetings/hearings, petitions, 0.6 Labor disagreements (not just strikes but regulative processes like meetings with officers, petitions using labor law), or conflict with existing regulations on privatization; or Conflict between fractions of govt/municipality 0.8 Local permit denied, renegotiations between major parties (not including renegotiations between equity investors), official grievances filed with lenders or government that launches an official investigation 1.0 Injunction, lawsuit (national or international) (*square root of each value was used for final coding)
	Proactive consultation	0.0 Some proactive consultation (PC) 0.6 Some incomplete, insincere, or otherwise less-than-no-effort activity of PC 1 No proactive consultation (PC) at all

Western funding sources	<p>0 Project company received no funding from any western/OECD sources (as detailed below)</p> <p>0.6 A bilateral aid agency (or an export credit agency) of a western/OECD country was involved (in any capacity) in the project</p> <p>0.75A regional development bank (with or without western bilateral) was involved (in any capacity) in the project</p> <p>1 World Bank was involved (in any capacity) in the project</p>
Host country equity	<p>The national/local government's equity share of the project company;</p> <p>0 >50% (i.e., controlling share)</p> <p>0.1 Exactly 50%</p> <p>0.4 20% <= equity < 50%</p> <p>0.8 5% < equity < 20%</p> <p>0.9 0% < equity <= 5% (i.e., token)</p> <p>1 None (Does not matter if equity stake is covered by loans)</p>
Size	<p>Size of project as in equity capital of project company, (in 2006US\$);</p> <p>1 Large (i.e. more than 1 billion)</p> <p>0.6 Medium (i.e. less than 1 billion, more than 0.1 billion)</p> <p>0 Small (i.e. less than 0.1billion)</p>
Contract type	<p>The project is a;</p> <p>1 Concession</p> <p>0 Lease</p>
Mode of award of contract	<p>Award of project to private party is by;</p> <p>0.0 (Perfect) competitive bidding (CB)</p> <p>0.4 Not successful CB*</p> <p>0.8 Highly unsuccessful CB**</p> <p>1.0 (Deliberate) sole sourcing</p> <p>*Not successful CB - Effort taken for competitive bidding, but major companies / contract conditions/ having unqualified competitors favored one major company)</p> <p>**Highly unsuccessful CB - Effort taken for competitive bidding, but only one company left by the final bidding stage</p>
Sponsors' experience	<p>The foreign-based equity partner(s) had previous experience;</p> <p>0 In same country; in any infrastructure sector as an equity partner</p> <p>0.75In another country within the region of host country; any infrastructure sector as an equity partner</p> <p>1 In none of the above;</p>
Retrenchment of laborers of water utility	<p>0 No retrenchment</p> <p>1 Any level of retrenchment</p>
Price impacts on water usage on households served by utility, from pre signing till ~ 1 year from contract signing	<p>0.0 Price decrease at contract signing following 'flat' pricing during pre-signing</p> <p>0.2 Price decrease at contract signing following some increases during pre-signing</p> <p>0.4 No price increases following contract signing</p> <p>0.6 Price increase following contract signing as per contract stipulations</p> <p>0.8 Price increase following contract signing beyond contract stipulations; increase is not 'large'</p> <p>1.0 Price increase following contract beyond contract stipulations; increase is 'large'</p>

Country level	Extent of democracy	Polity IV data (Polity IV website, 2007) was calibrated across all available countries in the dataset by the average democracy score for the years 1996-2000. The fuzzy set score for an individual project is based on its host country's average democracy score, coded using annual information on regime and authority characteristics, in the dataset over the three years prior to the year of the project's financial closure.
	INGO memberships	World System Integration data (UIA website, 2008) was calibrated across all available countries in the dataset for the year 1998. The fuzzy set score for an individual project is based on its host country's score based on number of international non-governmental organizations (INGOs) of which a state is a member or of which at least one citizen of the state is a member, in the dataset in the year of the project's financial closure
	Prior conflict	The Weighted Conflict Index was calibrated across all available countries in the dataset for the average score across the years 1996-2000. The fuzzy set score for an individual project is based on an average score of its host country, based on the weighted calculation of the occurrence of events such as political assassinations, general strikes, guerrilla warfare, government crises, purges, riots, revolutions, and demonstrations, in the dataset over the three years prior to the year of the project's financial closure.
	Level of development	The fuzzy set score for an individual project is based on its host country's Human Development Index (HDI) score (HDR website, 2008), which is a comparative measure of life expectancy, literacy, education, and standard of living for countries worldwide. The fuzzy set was calibrated for the countries in our dataset using closest data available to the year of the project's financial closure

Whereas large databases were used to derive case coding values for several of our variables, for others—including our outcome variables of legal and political conflict—such data were not available. As a result, we created our own fuzzy set scoring scheme for these variables, based on our knowledge of the cases and comparisons between the cases. *(Refer appendix 2 for all the scores assigned for all the indicators for each case)*

IV. Results

The fs/QCA results for political conflict and legal conflict (outcome conditions) were derived separately. For each set of results, fs/QCA identifies which causal conditions are necessary or sufficient to produce the type of conflict under investigation.

Necessary causal conditions (or combinations of necessary conditions) are those that

must be present for conflict to arise, but which are insufficient on their own to produce conflict. Sufficient causal conditions (or combinations of causal conditions) are those that are sufficient but not necessary (because of multiple causal pathways) to produce the outcome of interest. Taken together, necessary and sufficient conditions can be organized into a number of 'recipes' that explain emergence of conflict in one or more cases.

The robustness of fs/QCA results are traditionally evaluated using two statistics. *Consistency* measures the extent to which one causal condition is a subset of a outcome condition. A consistency score of greater than 0.8 for sufficient conditions (or causal combinations) and 0.9 for the necessary conditions (or causal combinations) are the necessary thresholds in the measure for consistency (Ragin 2008). Assuming this test is met, a second statistic of *coverage* can be invoked to evaluate the extent to which a set of 'recipes' identified in the analysis explains the cases included in the study. Higher coverage values indicate that a greater share of the cases is explained by the recipes identified in the analysis.

C. Political conflict

Our analysis suggests that, for political conflict to emerge in water projects, the following conditions were generally necessary:

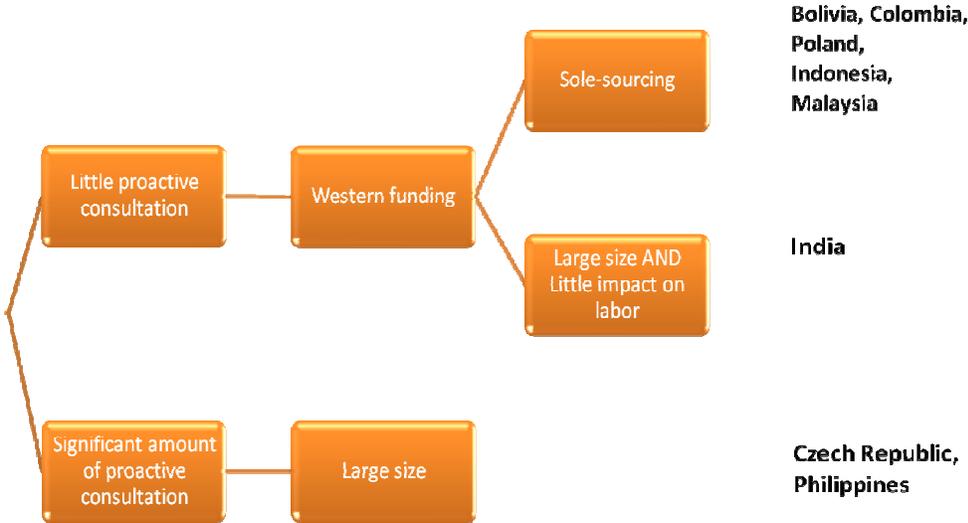
- Significant, negative economic impact on households
- Insignificant role for the host country as an equity partner
- Extensive connections between the host country and international NGOs
- Legal conflict

Thus, each of the 'sufficient recipes' presented in Figure 1 below has at least three - in most all four - of these necessary conditions. The first three of these conditions is consistent with expectations, whereas the lattermost was unanticipated. We

hypothesized that emergence of political conflict would be associated with the extent of negative impact on households (*e.g.*, through water tariff increases), a limited equity stake for the host country, and the extent to which the host country was connected to international NGOs who could bring resources to bear on nascent protests against water privatization.

We did not anticipate the finding that legal conflict appears to be a necessary condition for political conflict. This result could indicate either that groups seeking to influence the trajectory of water projects generally attempt to exploit legal channels first, and only engage in protests outside these formal channels if their initial efforts are unsuccessful. It is also possible that the emergence of political conflict tends to trigger subsequent legal procedures. Additional investigation is needed to understand the relationship between these two forms of conflict.

Figure 1: Sufficient recipes for political conflict



Notes:
Solution coverage = 0.78
Solution consistency = 0.84
Bulgaria, Senegal and Morocco not explained by these recipes

Our analysis identified three different causal pathways sufficient to give rise to political conflict (Figure 1). The *consistency* of this set of sufficient causal recipes in producing political conflict is 0.84 – meaning that cases with these causal configurations are 84% consistent in exhibiting political conflict. The *coverage* is 0.78 – meaning that 78% of the sum of the membership scores in the outcome can be explained using these causal recipes.

Projects that had both high and low levels of proactive consultation experienced political conflict, whereas we would have predicted that greater efforts at consultation would be associated with reduced levels of conflict. For very large projects such as the Manila concession in the Philippines, however, even extensive consultation procedures were unable to prevent popular opposition to the project. Pathways associated with little consultation also had funding from a bi- or multilateral agency such as the World Bank. With these conditions met, projects in which contracts were awarded through sole sourcing rather than competitive bidding experienced conflict. Large projects (in \$ terms) with little proactive stakeholder consultation and bi-/multi-lateral funding also experienced political conflict, even if impacts on labor were minimal. The projects in Bulgaria, Senegal, and Morocco are not well explained by any of these causal pathways.

D. Legal conflict

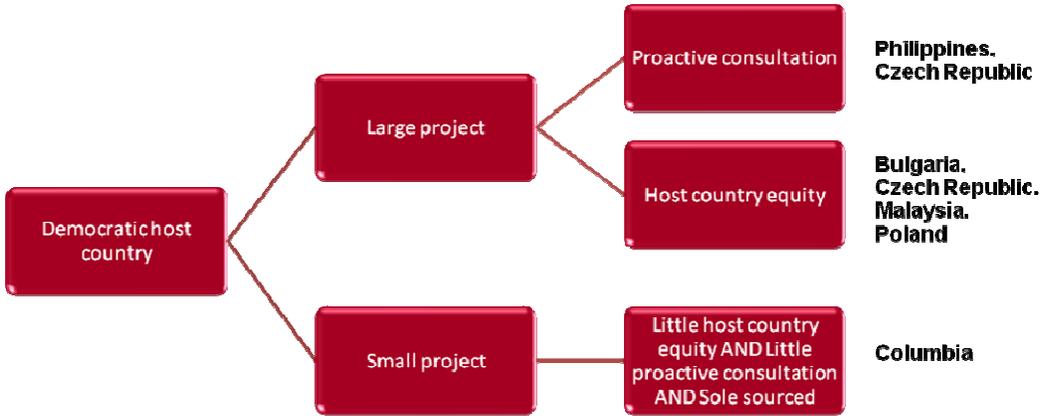
Our analysis suggests that, for legal conflict to emerge in water projects, the following conditions were generally necessary:

- High level of socioeconomic development, and
- Extensive connections between the host country and international NGOs.

Thus, each of the ‘sufficient recipes’ presented in Figure 2 below has both of these necessary conditions. Both are consistent with expectations. We hypothesized that

countries with relatively higher levels of socioeconomic development to have a greater number and more reliable channels for legal opposition to infrastructure projects. We also hypothesized that opposition groups in countries with relatively more connections to international NGOs would be able to mobilize those networks in support of their efforts to lodge protests against water projects.

Figure 2: Sufficient recipes for legal conflict



Notes:
Solution coverage : 0.46
Solution consistency = 1.00
Bolivia, Indonesia, and Morocco not explained by these recipes

Our analysis identified three causal pathways sufficient for the emergence of legal conflict, all of which required a highly democratic host country. With that condition met, the recipes broke along project size lines. For countries with large projects, conflict emerged in cases with high levels of proactive consultation or substantial participation of the host country as an equity partner. For countries with small projects, conflict emerged only when the project included sole sourcing, minimal consultation with stakeholders, and a limited role for the host country as an equity partner.

The *consistency* of this set of sufficient causal recipes in producing political conflict is 1.00 – meaning that cases with these causal configurations are completely consistent in exhibiting political conflict. The *coverage* is 0.48 – meaning that 48% of the sum of the membership scores in the outcome can be explained using these causal recipes (considerably less than with the case of political conflict above). The projects in Bolivia, Indonesia, and Morocco are not well explained by any of these causal pathways

V. Discussion and conclusions

The results of our analysis include a mix of expected and surprising results vis-à-vis the relationship between ‘good governance’ variables in water infrastructure projects and legal and political conflict. As expected, we found that non-competitive bidding was associated with both forms of conflict. In addition, projects with significant negative economic impacts on households were also associated with political conflict, consistent with expectations.

By contrast, we were surprised that a sponsor’s experience implementing projects in the host country or region contributed little to the causal recipes that explained the majority of our cases. Given the increasing emphasis in the project management literature on cross-cultural understanding we would have expected firms with previous experience working in a given setting to experience less conflict as compared to companies with limited regional experience.

We were also surprised by the role that labor impacts played in the recipe, given the considerable emphasis placed on managing retrenchment in the project management literature. Indeed, we found that projects in which significant steps had been taken to minimize impact on labor still experienced political conflict as a result of other factors (*e.g.*, large size and limited consultation with stakeholders).

The fact that projects with very different scores for proactive consultation experienced both political and legal conflict is one of the more fruitful results of the analysis. The data seem to suggest that failing to engage with stakeholders in a proactive manner is often part of a recipe for conflict; however, a strong consultation effort is no guarantee against conflict. Projects that have the participation of a bi- or multi-lateral development bank, whose presence can often act as a 'lightning rod' for protest groups, and projects with a very large size, experienced conflict even when they included significant, proactive consultation.

VI References

A. Appendices

Appendix 1: Table 3: Calibration of country level indicators

Country level indicator	Source	Fully out	Maximum ambiguity	Fully in
Set of projects in democratic host country	Polity IV	-4	0	9
Set of projects in host country with high levels of previous conflict	WCI	0	3000	8000
Set of projects in relatively developed host country	HDI	0.4	0.58	0.75
Set of projects in host country with many memberships in INGOs	INGO	200	500	1800

Appendix 2: Table 4: Fuzzy set scores assigned for all the indicators for each case

Project ID	Indicator		Proactive consultation	Western funding sources	Host country equity	Size	Contract type	Mode of award of contract	Sponsors' experience	Retrenchment of laborers of water utility	Price impacts on water usage on households	Extent of democracy	INGO memberships	Prior conflict	Level of development
	Political conflict	Legal conflict													
w01Bolivia	1	0.77	1	1	1	1	1	1	0.75	0	1	0.95	0.63	0.92	0.73
w02Argentina	0	0	1	1	1	1	1	0	1	1	0.2	0.91	0.9	0.68	0.98
w03Colombia	0.63	0.89	1	1	0.8	0	0	0.8	0.75	0	0.6	0.95	0.78	0.1	0.96
w04Cuba	0	0	1	0	0.1	0.6	1	1	0.75	0	0.6	0.01	0.63	0.05	0.99
w05Bulgaria	0.63	0.89	0.6	0.75	0.4	0.6	1	0	1	1	0.8	0.94	0.86	0.86	0.97
w06Poland	0.63	0.77	1	0.75	0.4	0.6	0	1	1	1	0.8	0.88	0.9	0.88	0.98
w07Czech	0.63	0.63	0	0	0.4	0.6	0	0	0	0	0.4	0.97	0.89	0.05	0.99
w08Philippines	0.77	1	0	1	1	1	1	0	0.75	1	0.2	0.94	0.8	0.61	0.94
w09Indonesia	0.77	1	1	1	1	0.6	1	1	0.75	0	0.8	0.01	0.78	0.99	0.82
w10Malaysia	0.63	0.89	1	0.6	0.4	1	1	1	0	0	0.6	0.73	0.8	0.15	0.98
w11Guinea	0	0	1	1	0.4	0	0	0.4	0.75	1	0.8	0.01	0.02	0.05	0.1
w12Senegal	0.77	0.45	0	1	0.8	0	0	0	0.75	0	0.8	0.32	0.6	0.35	0.07
w13Gambia	0	0.45	0.6	0.75	1	0	0	0	1	0	0.4	0.94	0.08	0.05	0.16
w14Morocco	0.63	0.77	1	0	1	1	1	1	1	0	0.4	0.01	0.7	0.08	0.5
w15India	0.63	0.45	1	0.6	1	0.6	1	0	1	0	1	0.95	0.94	0.82	0.37

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