

Public Participation and Water Supply The Case of Two Communities on the USA-Mexico Border

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Abstract: *This paper analyzes the experience of two communities in providing drinking water, sewer service, and sewage treatment to their residents. The communities under study are Palomas and Ojinaga located along the USA-Mexico border in the Mexican state of Chihuahua. The paper discusses the importance of incorporating what the World Bank (1997) calls “client surveys” as a public participation mechanism to obtain information regarding the level of service demanded by the community as well as residents’ ability and willingness to pay for those services. Currently, there is a debate concerning the development of a new strategy or institutional arrangements for the delivery and provision of water. The main conclusion of this article is that for any institutional arrangement to succeed, a public participation process that includes information sharing and education of the community is necessary.*

Keywords: *Water delivery, U.S.A.-Mexico border, structural adjustment policies, Water Policy Mexico, Border Environment Cooperation Commission.*

Introduction

The dismantling of the welfare state has been perhaps one of the main policy changes in recent decades in developed, as well as, developing countries. Two factors can be identified as the cause of this policy shift: one is ideological, and one is financial. The emergence of conservative governments and agendas in the United States and Great Britain with the administrations of President Ronald Reagan and Prime Minister Margaret Thatcher spurred the dismantling of a welfare state that had expanded greatly since World War II. The new agenda called for a reduction of public spending, especially in the area of social services coupled with a tax cut as the way to solve the problems of stagflation and increasing budget deficits.

In the early 1980s, several countries in the developing world, Mexico included, had serious problem meeting financial obligations on their foreign debt. This crisis originated within the fact that developing countries contracted loans at an adjustable rate at a time when interest rates were low principally due to the availability of excess capital in commercial banks: funds that had been deposited by oil-rich Middle Eastern countries. For instance, World Bank head Robert McNamara calculated that “the financial wealth of oil-producing countries would climb to \$300 billion by 1980 and \$650 billion by 1985” (Aliber, 1987: 136; Todaro 1994: 459). In response to inflation in the United States, where most lender institutions were located, interest rates began to increase causing the foreign debt in developing countries’ to skyrocket and raising questions about

the ability of these countries to meet their financial obligations. Todaro (1994) presented the dimension of the debt crisis in the following terms: “In the 23-year period between 1970 and 1992, the external debt of developing nations grew from US\$68.4 billion to just under US\$2 trillion, an increase of 2,000 percent (Todaro, 1994).

Financial problems faced by developing countries in the 1980s forced them to undertake solutions known as “structural adjustment policies” (SAPs). Often devised by international institutions such as the International Monetary Fund (IMF). SAPs redefined the role of the welfare state in developing countries. Among the objectives set by SAPs were reduction of the state’s role in the provision and delivery of goods and services and greater reliance on market mechanisms through private sector involvement. Fiscal discipline by the state also became an important instrument to sort out the financial crisis. This fiscal discipline meant cuts in subsidies and expenditures on state-sponsored social services.

In Mexico, SAPs transformed the economic development model from a highly protectionist import substitution strategy to an economic model that embraced free trade. The North American Free Trade Agreement (NAFTA) not only epitomized the new economic model but also put environmental issues along the USA-Mexico border at the forefront of the bilateral agenda. Pressured by environmental groups, the U.S. and Mexico agreed to create an institution to address environmental problems that could arise due to free trade. The Border Environment Cooperation Commission (BECC) was created to deal with

environmental infrastructure in an area within 100 kilometers (62 miles) on each side of the border.

In summary, the objectives and priorities of the state have changed since the 1980s. Using the World Bank (1997) typology, the State in recent years has focused more on basic functions, such as macroeconomic management, and less on its intermediate (social service delivery) and activist functions (fostering markets, infrastructure development, and redistribution policies).

This new approach has fostered changes in the way public services normally provided by the State, such as drinking water and sewer services, are being provided. In recent years, several alternatives or "institutional arrangements" (Ostrom et al., 1993) have emerged that range from privatization as in England (Bakker, 2000) and Bolivia (Simon and Laurie, 1999) to decentralization as in Mexico. In Mexico in 1983, Article 115, Section III of the Constitution was modified to make clear that drinking water and sewer services are municipal, not federal, responsibilities and that municipalities are entitled to seek the most efficient way to coordinate the provision of these services (Diario Oficial de la Federación, February 3, 1993) (Treviño, 1999).

Water Provision: In Search of a New Institutional Approach

Characteristics of Public Services

The provision of services involves a phase or phases in which the service can be broken down such as: (1) production; (2) provision; and (3) delivery (Roth, 1987). One of the peculiarities of these services is that most of them are considered public goods. A public good has the characteristic of non-excludability and collective consumption, or non-rivalry. The best example of a non-excludable good is national defense; government cannot exclude people from being defended from foreign aggression. Collective consumption, or non-rivalry, refers to the fact that two or more people can consume the good simultaneously without reducing the level of consumption or utility of other users; for instance, national defense, air, radio, and TV waves, etc. A pure private good has characteristics of exclusion and rivalry; that is, the level of consumption of one party affects the level of consumption of the other party, for example, food (Holcombe, 1996; Heikkila, 2000).

In certain situations private markets cannot necessarily provide the most efficient outcome because of market failures (monopolies, externalities, merit goods not produced in sufficient quantity) and the engagement of the public sector in providing the good is justified either to State production of the good or through such means as regulation, taxation, and subsidies (Roth, 1987). Furthermore, there are situations in which a seemingly public good is provided by the private sector, e.g., radio and television, or in which a good is subject to congestion or has reached its capacity, as in the case of highways.

The provision of drinking water could be placed in the category of public goods, which are subject to congestion because there is a point where either the source has been exhausted or the system has reached its capacity. Authors such as Montesillo (2000) describe water as an intermediate good whose main characteristic is limited access. Governments in developing countries in general, and Mexico's border region in particular, found themselves in a dilemma because of SAPs. On the one hand, they faced increasing demand for public services due to the accelerated process of urbanization. It is calculated that by the year 2000, almost 20 percent of the total population will live in the border states compared to only 15 percent in 1970. Furthermore, the main border cities such as Tijuana had a population of 429,500 in 1980 and 698,752 in 1990, representing an increase of 63 percent. Ciudad Juarez had a population of 544,496 in 1980 and 789,522 in 1990 an increase of 45 percent. On the other hand, governments were unable to increase expenditures for fear of creating macroeconomic instability (inflation and fiscal deficit) and because they could not finance infrastructure through public debt as in the past. The governments' inability to continue providing public services fostered the debate concerning new alternatives or "institutional arrangements."

Privatization vs. Decentralization, Old vs. New Agenda

Ostrom et al. (1993) and Serageldin (1994) offer a framework to begin evaluating different alternatives for the provision of public services. According to Serageldin (1994), a World Bank Vice President, the current approach to water supply is moving between two agendas: the "old agenda" and "new agenda."

The old agenda focuses on providing water to a large number of people, requiring heavy investment and subsidies by the federal government. For example, federal subsidies to Mexico City for water and sewerage services amount to more than one billion pesos (US\$100,000 million) a year, or 0.6 percent of the GDP (Serageldin, 1994) that often benefit middle- and upper-income groups in urban areas. According to Ostrom et al. (1993), this institutional arrangement is the typical centralized approach to the provision of public services characterized by high levels of expenditures by federal governments and a very politicized top-down planning approach. In addition, water users often pay a flat-fee that does not cover the operating costs, making water services an implicit subsidy for

Table 1. Main Characteristics of the Old Agenda

<i>Characteristic</i>	<i>Old Agenda</i>
Responsible for the Provision	Federal (Central) Government
Provision Criteria	Political
Planning Approach	Top-Down
Price System	Flat-Fee

middle and higher-income urban dwellers. These arguments are summarized in Table 1 where the main characteristics of the old agenda are presented.

According to Serageldin (1994), the “new agenda” incorporates three core values: efficiency, equity, and sustainability, which nations agreed to in the 1992 Dublin International Conference on Water and the Environment. This “new agenda” puts water users at the center of the decision-making process so users themselves are able to reveal their preferences about the level and quality of service. Moreover, this new agenda calls for a new set of agreements between users and providers of the service to incorporate the three core.

Table 2 shows that some issues in the new agenda are still unsettled and face many challenges for their implementation. It is fair to say that stakeholders agree about the core values upon which the new agenda should be based. Also, stakeholders agree on the need to incorporate public participation as a way to democratize the planning process. However, there is substantial disagreement concerning the strategies to accomplish the objectives, specifically, about who should supply service and how to charge users.

Table 2. Main Characteristics of the New Agenda

Characteristic	New Agenda
Responsible for the Provision	?
Provision Criteria	Efficiency, Equity, and Sustainability
Planning Approach	Democratic
Price System	?

These questions about supplying service are closely related because who supplies service to some extent determines the price structure. For instance, in a competitive market, a profit-maximizing firm will supply the service at the point where its marginal costs (MC) are equal to its marginal revenue (MR) which is equal to the price (P) of the service (MC=MR=P).

Privatization of public services, such as water systems, poses a big challenge because of the inherent characteristics of the good. According to Montesillos (2000), the demand for public goods or services subject to congestion, such as drinking water, has a public and private component where the private part (delivery) could mean commercialization like any other private good with the price determined by supply and demand. However, the public component (provision) often considers social costs (expenditures on treating illness due to a lack of access to clean water) and benefits (healthy population) that are harder to determine, measure and distribute. Furthermore, privatization is criticized for its emphasis on efficiency rather than equity. Finally, privatization can take several forms from the government simply selling and turning all the assets over to the private sector to accepting private sector involvement through franchises in some aspect of

the provision process such as maintenance, billing, etc.

For the above reasons, it is believed that government can continue providing water services but under a different framework. Supporters of continued government involvement in the provision of water services agree on the fact that the centralized approach is neither economically feasible nor politically desirable. Decentralization policies have emerged as the new institutional panacea to address the core values of efficiency, equity, and sustainability.

Ostrom et al. (1993) analyzes different forms of decentralization and polycentric institutional arrangements where decision-making takes place at different levels of governance (central, regional, and local). The authors conclude that no institutional arrangement is perfect; rather, decision-makers need to be aware of the pros and cons of various alternatives to try to minimize the negative aspects associated with each institutional arrangement.

Moreover, Ostrom et al. (1993) proposes a framework to evaluate the different institutional arrangements based on five criteria: (1) economic efficiency; (2) equity through fiscal equivalence; (3) redistributive equity; (4) accountability; and (5) adaptability. The issue that cuts across each criterion is *ex ante* and *ex post* transaction costs. *Ex ante* transaction costs refer to the time and resources used to acquire information, to negotiate the type of contract, and communicate with all parties. *Ex post* transaction costs are public authorities' costs for monitoring the performance of the contractors, sanctioning and governance costs, and renegotiations costs when a contract is not working the way it should (Ostrom et al., 1993).

In brief, the discussion of tensions between the old and new agendas are related to the debate concerning the proper role of the state and the appropriate institutional arrangement for the provision of basic public services. Furthermore, the success or failure of the institutional arrangement will depend on the support and acceptance of water users. Hence, a great challenge in the future would be to inform, educate, and convince people that changes in the provision of water services are needed and that it may require changes in the tariff system and development of mechanisms to deter free-rider problems so common under the centralized form of service delivery. Free-rider problems are often related to public goods given their characteristics of non-excludability or joint consumption; that is, people can enjoy the benefits of a public good without paying for it. In order to avoid the free-rider problem, government would charge user fees when feasible, as in the case of water, or through taxes as in the case of national defense.

In the following section, a case study of two communities located on the USA-Mexico border shows the struggle and learning process associated with the development of the appropriate institutional arrangement. This case study is unique in that it involves a new actor, the Border Environment Cooperation Commission (BECC), a binational agency that provides technical advice to border

communities and has the function of certifying projects to receive loans from the North American Development Bank (NADB). In addition to financial and environmental sustainability, public participation is part of the criteria used by BECC to certify a project. This paper discusses the importance of public participation, in the form of client surveys as a strategy to generate information and gather support and acceptance for the fact that change is necessary in order to be able to obtain a level of service that would be efficient, equitable, and sustainable.

Environmental Infrastructure: Public Participation and Binational Cooperation on the USA-Mexico Border

The international agreement entitled *Recommendations for the Solution to the Border Sanitation Problems* undertaken by the International Boundary and Water Commission, United States and Mexico (IBWC) in 1979 was the first formal agreement between the United States and Mexico for protecting the border environment. (International Boundary and Water Commission, United States and Mexico 1979, Minute 261.) This agreement was the result of a request made to the IBWC/CILA by Presidents Lopez Portillo and Carter to deal with sanitation issues on the USA-Mexico border (Bustamante, 1999). In 1983, the *Border Environment Protection Agreement*, known as the La Paz accord, was signed and this agreement set the basis for the protection and preservation of the environment as well as cooperation among different binational institutions. Since then, task forces have been established involving different departments and agencies on both sides of the border, such as the U.S. Environmental Protection Agency (EPA) and its Mexican counterpart the Secretariat of Environment and Natural Resources (SEMARNAT).

In 1990, U.S. President George Bush and Mexican President Carlos Salinas de Gortari made environmental conditions at the border a top priority of the binational agenda. As a result, both countries agreed to develop a comprehensive plan entitled *Integrated Environmental Plan for the Mexico-U.S.A. Border*; the purpose of the plan was to foster environmental coordination and cooperation between the two countries. The Border XXI program continued these cooperative efforts and attempted to promote and include public participation in the design stage of the plans. Both governments, pressured by environmentalists during the NAFTA negotiations, agreed to establish the Border Environment Cooperation Commission (BECC) as an institutional mechanism to deal with the environmental impacts on both sides of the border resulting from the increase of economic activities and trade between the two countries.

Public Participation and Client Surveys: The BECC Experience

The main function of BECC is to provide technical assistance to border communities to meet the BECC's certification criteria so communities can qualify and apply for loans from NADB. The BECC supports projects related to water supply, wastewater, and solid waste within 100 km (62 miles) of the U.S./Mexico border.

Figure 1 presents the BECC's certification process. This figure shows how the certification process works; it begins with the application stage where a project sponsor prepares and submits the application to the BECC. In the case of Palomas, La Junta Central de Aguas (Central Water Board) recommended to the BECC the need for implementing a plan to deliver safer drinking water to the community. Once the application is reviewed and it is determined that it meets all the criteria set by BECC (geographic location and type of project), the certification documentation begins. In the certification stage, information is gathered for the project to document that it complies with the geographic criterion, relates to human health and environmental issues, meets technical and financial feasibility requirements, involves community participation, and promotes sustainable development.

The implementation of client surveys as a community participation strategy comes in the certification stage particularly when the BECC assists the project sponsor and/or community to gather and present the evidence that the project complies with all the certification criteria so it can

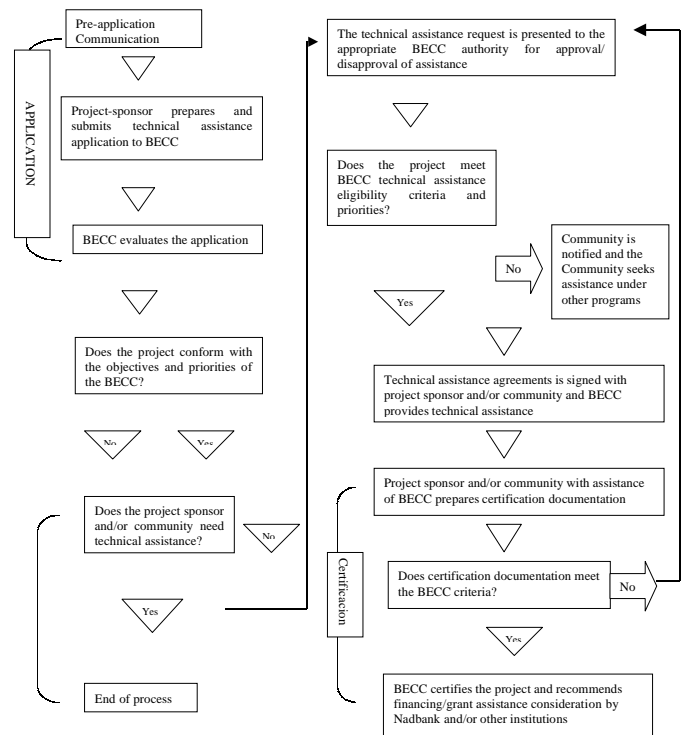


Figure 1. BECC Certification Process.

be recommended for certification. Figure 2 presents in more detail how the community or project sponsor and BECC coordinate as well as the role client surveys play.

Client Surveys and Public Participation

Figure 2 presents the different actors involved in project documentation for certification purposes. The BECC provides technical assistance through their staff assigning a project manager who works in collaboration with the public participation review officer and the environmental and sustainable review officer whose functions are to ensure that the project meets public participation requirements and sustainable development objectives. Another role of the project manager is to collaborate with the steering committee, coordinate, and supervise the work of consultants whose function is to complement the work of the project manager with studies on the technical and financial feasibility of the project. Also, the steering committee and the technical consultant work together in gathering and providing information to each other. Direct communication links also exist between the public participation officer and the steering committee and between the technical consultant and the sustainable development review officer.

It is important to point out that the steering committee normally is formed of a few stakeholders from the community representing diverse interests in the community. Prior to the implementation of client surveys, the steering committee was the only interlocutor that spoke for the community. The public participation officer used client surveys as a tool for two reasons: (1) to generate more channels of communication and citizens involvement; and (2) to gather information on service delivery, ability and willingness to pay for improvements, and degree of public support. As stated before the BECC's certification criteria is that the project must be financially feasible. That is, the project must generate enough revenue to cover the operation and maintenance costs as well as debt amortization.

The steering committee worked in close collaboration with consultants from the Colegio de la Frontera Norte (COLEF), an academic research institution, in developing

the questionnaire. The client surveys not only helped the community develop a communication channel with the steering committee but also generated data and information concerning support or rejection of the project that would help the public participation review officer and the technical consultant. The next section presents the methodology and results of the client surveys implemented in the border communities of Palomas and Ojinaga located in the state of Chihuahua, Mexico.

Methodology and Findings

Sample Design

The client survey was implemented first as a pilot study in the city of Palomas and later as a new public participation vehicle in the city of Ojinaga. Palomas is located in the northeastern Chihuahua just south of the city of Columbus, New Mexico; Ojinaga is located in the northwestern part of the state just across the Rio Grande from Presidio, Texas.

The cities of Palomas and Ojinaga were divided into sectors for practical reasons only. Each sector has a number of blocks and each block has a number of housing units. It is important to clarify that a block is a geographic unit delimited by streets in the four directions (north, south, east, and west) and the number of housing units may vary in each block. Each block in each sector was assigned an identification number and then blocks were selected randomly in each sector. Once the blocks were selected, the next issue was how to select the housing unit where the questionnaire would be applied. The main problem was that some blocks have more housing units than others; so it was assumed that each block would have ten housing units, then the housing unit was selected randomly. The enumerator was instructed to begin counting in the northeast corner clockwise until they found the selected housing unit (Figure 3).

Methodology Process

The city of Palomas was divided into two sectors. In one sector, 167 blocks were identified, and in the other, 145 blocks were identified using the city maps (see Figure 4). A total of 60 questionnaires were scheduled, 30 for each sector. The city Ojinaga was divided into 14 sectors, and in each sector, ten blocks were selected randomly (see figure 5). A total of 140 questionnaires were planned. It is important to clarify that the sample size was determined based on the budgetary restrictions of the sponsoring agency, BECC, rather than through statistical procedures. Taking into account this restriction, the authors attempted to implement the best methodology and make the most valid inferences with the information collected.

The sample size consisted of 82 observations for Ojinaga, which represents about 59 percent of the sample originally planned. The sample size in Palomas consisted

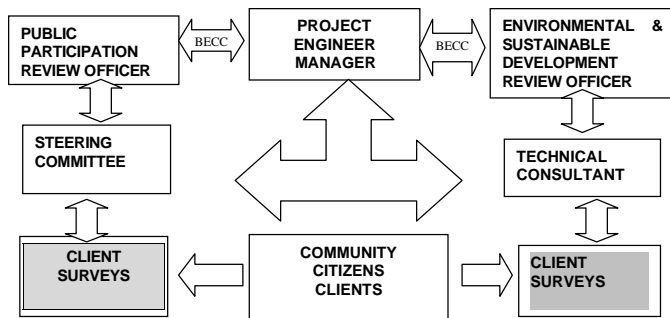


Figure 2. Client surveys and public participation.
 Source: Adapted from BECC's Technical Assistance for Border Communities document.

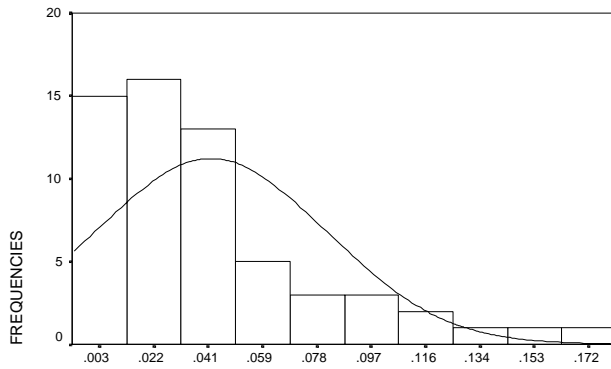


Figure 3. Ability and willingness to pay (% income).

of 45 questionnaires, representing 75 percent of the sample originally planned. The sample size was smaller than originally planned because some of the blocks selected were marked on the city's map but the land was not developed yet.

The interviews were conducted face-to-face with the head of the household or an adult resident of the household. The surveys were applied by high school students who participated as volunteer enumerators; a training course was given to the enumerators stressing the content and form, methodology, proper procedures for selecting the housing unit, and the importance of the survey. The steering committee proposed to use the students as a way to engage young people in the community and as a way to make people aware of the problems facing the community.

A household is defined in accordance with the definition used by Mexico's National Institute of Geography and Statistics (INEGI) as a set of persons who are not necessarily by blood, who live in the same housing unit, and who support themselves from a common income (this definition of household also applies to a single person living alone). This concept is also understood from a social con-



Figure 4. Palomas, Chihuahua



Figure 5. Ojinaga, Chihuahua

text where people share a unit and organize with a common interest.

Instrument Design

The survey consisted of three sections. The first section focused on capturing socioeconomic information about the household (number of persons living in the household, number of persons employed, physical characteristics of the housing unit, etc.). The second section looks into the type of services available in the unit (drinking water, sewer, etc.), level of satisfaction with the provision of the service, ability, and willingness to pay for the service or infrastructure projects, and what type of projects the community considers a priority and need. The third section surveyed community preferences concerning the project.

Findings

The findings show that water users do not drink water supplied by the local water board authorities and instead choose to purchase drinking water from neighborhood stores, supermarkets, and water companies. Households spend about 3 percent to 5 percent of their income on the purchase of drinking water from local retailers in addition to the regular fee that they pay for piped water. This shows that some people are willing and able to afford supplemental water supply services in order to obtain the quantity and quality of water desired. Health and savings are among the main benefits that households believe improvements in environmental infrastructure would bring to the community. Households are more likely to support charging interest on the unpaid balance rather than cutting service to force water users to keep up to date with their payments.

Infrastructure and Service Availability

Table 3 shows that electricity and running water are the most ubiquitous services; more than 90 percent have access to those services. Street lighting (73 percent) and sewer (72.7 percent) are in second place, but compared to Ojinaga, Palomas is worse off in the sense that fewer

households have access to those services. To a lesser degree, households have access to garbage collection (57.6 percent), telephone (33.6 percent), and paved streets (29 percent).

Table 3 shows that the majority of households in those communities have access to the most basic services such as running water and electricity. However, the quality of those services, as Treviño (1999) pointed out, is questionable. Both communities are divided about their assessment of the quality of the drinking water; 52.7 percent considered the quality to be good or very good, whereas 47.3 percent rated the quality as bad or very bad.

A better way to evaluate water quality is whether or not people drink tap water in their homes. Table 4 shows that only 33.3 percent of the population drinks the water. The water being delivered does not meet safety standards in Palomas because of the infiltration of sewage into the aquifer where water is pumped. The water quality study was conducted by Southeastern Center for Environmental Research and Policy (SCERP).

Table 3. Infrastructure and Service Availability

Type of Service	% Households		
	Total	Palomas	Ojinaga
Electricity	95.8	94.4	96.3
Running water inside house	92.1	86.7	95.1
Sewer	72.7	48.6	84.0
Street lighting	73.0	50.0	81.5
Garbage collection	57.6	11.4	82.7
Telephone	33.6	22.6	38.0
Pavement	29.0	14.8	34.2

Source: COLEF-BECC client survey (n=127)

Table 4. Drinks the Water Delivered?

City	Percent		Number of Responses
	No	Yes	
Ojinaga	75.6	24.4	82
Palomas	50.0	50.0	44
	66.7	33.3	126

Source: COLEF-BECC client survey

Table 5 shows that of the households that do not drink tap water, 80 percent mentioned that they purchase bottled water and a smaller percent (8.9 percent) boils the water to make it drinkable. Furthermore, households spend about 24 to 30 pesos (US\$2.50-\$3.00) a week on bottled water. The medium is 24 pesos, and the mean is 30 pesos per week.

Assessing the Ability and Willingness to Pay

The BECC was concerned not only with whether people in the community would be willing to pay for the

Table 5. Where Is Drinking Water Obtained?

	Boils the Water (%)	Purchases		Other (%)	Number of Responses (%)
		Bottled Water (%)	Uses Chemicals (%)		
Ojinaga	6.5	82.3	6.5	4.8	62
Palomas	14.3	75.0	0.0	10.7	28
Total	8.9	80.0	4.4	6.7	90

Source: COLEF-BECC client survey.

service but also whether they have the ability to pay between three percent and five percent of their income. In the case of Palomas, the project was offered in a package, which included drinking water, sewer, and a sewage treatment plant. Households will be connected to the sewer lines and people will obtain their drinking water by purchasing it at the purifier source for a price of 2 pesos for a 19 liter container that is sold by private companies at a cost of about 15 pesos. In order to assess the ability and willingness to pay of the households, two methods were used, direct and indirect.

The direct method consisted of asking how much the household would be willing to pay monthly for drinking water, sewer, and a sewage treatment plant. The question was open as follows: "How much would you be willing to pay monthly for drinking water, sewer, and a sewage treatment plant?" Also, a hypothetical situation was offered to evaluate whether or not there existed a willingness to pay between three and five percent of household income for those services. Households were given the following question: Assuming that the monthly income of the household would be of 1000 pesos, would you consider a payment between 30 and 50 pesos for sewers, drinking water, and sewage treatment plant services to be: (1) very high; (2) high; (3) ideal; (4) low; and (5) very low?

Table 6 shows that slightly more than half (52.8 percent) considered the payment as ideal and about 38 percent considered the payment as high or too high. Another conclusion that we could draw from Table 6 is that Ojinaga's households have a lower propensity of willingness to pay compared to those in Palomas; about half of the households in Ojinaga considered the hypothetical payment as high or very high. The explanation of this difference can be due to the fact that the problem of potable water in Palomas is more serious than in Ojinaga. Household income does not affect the results; for instance, 48.2 percent of households whose income is above the median considered the payment as ideal compared to 59.2 percent of households below the median income.

A shadow pricing method was used as an indirect method to assess the ability and willingness to pay of households. Households were asked whether or not they drink the water being delivered and, when the answer was nega-

Table 6. Willingness to Pay Three to Five Percent of Household Income

	<i>Very High</i> %	<i>High</i> %	<i>Ideal</i> %	<i>Low</i> %	<i>Very Low</i> %	<i>N</i>
Ojinaga	18.5	30.9	49.4	1.2	-	81
Palomas	6.8	9.1	59.1	13.6	11.4	44
Total	14.4	23.2	52.8	5.6	4.0	125

Source: COLEF-BECC client survey.

time, they were asked how they obtain potable water. The majority of households that did not drink the water delivered purchase bottled water (80 percent) and they were asked how much they spend weekly on bottled water. This information and the income information were used to assess and calculate the percentage of household income spent on drinking water and can be used as a proxy of ability and willingness to pay for cleaner water. The results show that the percentage mean income spent on bottled water is 4.15 percent and the median is 3.06 percent. Using a 95 percent confidence interval, people spent between 3.12 percent and 5.18 percent of their income on bottled water. The summary statistics are the following: mean=.0415, median=.0306, variance=.002, standard deviation=.0399. Figure 4 shows the frequency distribution and the range goes from as low as one percent to as high as 17 percent of income.

Benefits of Cleaner Water

The community's perception concerning the benefits of cleaner water is another important topic. The percep-

Table 7. Benefits Purification Plant Would Bring

<i>City</i>	<i>Health</i> %	<i>Cost Savings</i> %	<i>Service</i> %	<i>Other</i> %	<i>N</i>
Ojinaga	45.8	26.4	13.9	13.9	72
Palomas	41.2	29.4	29.4		34
Total	44.3	27.4	18.9	9.4	106

Source: COLEF-BECC client survey

Table 8. Benefits of Purification Plant By Income

<i>Income (Medium)</i>	<i>Health</i> %	<i>Cost Savings</i> %	<i>Service</i> %	<i>Other</i> %	<i>N</i>
Less than	37.5	35.4	20.8	6.3	48
More than	52.4	21.4	19.0	7.1	42
Total	44.4	28.9	20.0	6.7	90

Source: COLEF-BECC client survey

tion is crucial because it provides the citizens' committees in charge of promoting the project(s) with information to support the project. Health (44.3 percent) and savings (27.4 percent) are among the main benefits cited by the communities of Palomas and Ojinaga; service improvement (18.9 percent) was the next benefit most commonly cited as Table 7 shows. However, households in Palomas seem to pay more attention to service improvement than households in Ojinaga; an explanation is that Ojinaga, to some degree, is better off than Palomas in terms of access to public utilities.

When the same benefits are evaluated taking into account income, Table 8 shows that cost savings (35.4 percent) are more important for people with income less than the median than for those above the median (21.4 percent). These findings are consistent with Serageldin's (1994) assessment that the poor often pay more for services and that middle and upper-income residents are the ones who benefit. Households with incomes above the median give more importance to health (52.4 percent) than those households with incomes below the median (37.5 percent).

Coercive Measures and Cost Recovery

As stated by Treviño (1999) and Serageldin (1994), the new agenda concerning the organization and management of water institutions consists of transforming users of the resource into consumers and the institutions into financially self-sufficient suppliers. The reality is that most of the operating systems supplying water struggle not only to cover their costs but to make people pay for the service. Another objectives of the client surveys was to explore to what extent people would support the implementation of coercive measures, such as service suspension and/or charging interest on the unpaid balance, to

Table 9. Supports Service Suspension to Debtors

	<i>No</i>	<i>Yes</i>	<i>N</i>
Ojinaga	73.2	26.8	82
Palomas	44.2	55.8	43
Total	63.2	36.8	125

Source: COLEF-BECC client survey

Table 10. Support Service Suspension to Debtors by Income

<i>Income (Median)</i>	<i>No</i>	<i>Yes</i>	<i>N</i>
Less than	51.8	48.2	56
More than	69.4	30.6	49
total	60.0	40.0	1.05

Source: COLEF-BECC client survey

Table 11. Support Charging Interest on Unpaid Balance

	No	Yes	N
Ojinaga	52.5	47.5	80
Palomas	26.7	73.3	45
	43.2	56.8	125

Source: COLEF-BECC client survey

make users pay for the service.

Table 9 shows that overall the population does not support (63.2 percent) the suspension of service to those who do not pay by nearly a two to one margin. However, the most interesting finding is that the community of Palomas shows a stronger propensity to support (55.8 percent) service suspension to free riders than Ojinaga (26.8 percent).

It is important to point out that, overall, Ojinaga is better off than Palomas in terms of income and access to services; this suggests that, given that those services are scarce in the community of Palomas, Palomans would tend to value more the access and consequently would be less tolerant of those who do not pay for the service. Furthermore, looking at the same issue and considering income, Table 10 shows that people whose income is less than the median are more likely (48.2 percent) to support the service suspension than those whose income is above the median (30.6 percent). This shows that for those households whose income is lower, payment for utilities represents a higher burden; consequently they are less likely to tolerate free-riders.

Looking at the propensity to support service suspension as compared to charging interest on the unpaid balance, the findings in Table 11 show that people are more likely to support (56.8 percent) charging interest on the unpaid balance than service suspension (36.8 percent) as previously shown in Table 10. Once again, the findings show that people in Palomas, a community with a more severe problem of public services, are more likely to support coercive measures against free riders.

Conclusions

After conducting the first client survey to identify the ability and willingness to pay, an information campaign in Palomas was implemented that included fliers, radio spots on stations that the client survey identified, and newspaper ads. This campaign informed people about the benefits and importance of the project. A public meeting attended by approximately 300 people took place on October 19, 2000, and attendees were informed again about the importance of the project and the need to increase fees to make the project financially sustainable.

In another survey implemented at the time of the meeting, people were asked if they would accept an increase in the fees and 95.2 percent out of 250 respondents men-

tioned that they would accept an increase. This shows how important it is to implement client surveys and develop public participation strategies in order to not only gain support for the project but also to make people understand that a better service delivery system involves costs and, therefore, an increase in users fees.

In recent years, governments at different levels have begun to change their approach to the provision of public services, moving from strictly political criteria whose only goal was to create electoral support for the ruling Institutionalized Revolution Party or PRI, to more economic-based criteria. This transition has created certain tension between the local operating systems in charge of the provision of water, such as the municipal water and sanitation boards, or *Junta Municipal de Agua y Saneamiento*, and the residents. This change has forced the water boards to make adjustments to recoup the operating costs by adjusting tariffs, measuring, and billing according to the level of consumption instead of a flat fee.

Client surveys demonstrated that public service delivery and coverage is not enough, but there is also a need to improve the quality of the product being delivered (water). Currently, the delivery of water is not only inefficient but also raises questions about equity since people who can afford safer drinking water do so by purchasing bottled water, whereas those who cannot afford it must drink unsafe water.

The overwhelming support and willingness to accept a change in the fees by the residents of Palomas show how important a client surveys can be as tool to generate information and support for the project. Client surveys allowed us to obtain information not only about the ability and willingness to pay but also concerning the degree of support for implementing coercive measures so that the water boards could recoup costs and continue performing their function of water delivery. Client surveys could offer a starting point for boards and clients to negotiate and develop strategies to increase the availability of public services and improve the quality of the product (water) and service.

Finally, the article shows that two of the unsettled issues in the "new agenda" relate to who will provide the service and how to charge for it. This study showed that there is no institutional arrangement that is better than another; however, it is clear that to succeed the chosen institutional arrangement needs to include public participation as part of the decision-making process. Water users in the community need to be informed and educated about the costs of providing the service in order to accept a change in the status quo.

The importance of public participation is acknowledged by the BECC in its 2001 statement where they point out that has been one of the most significant successes of the institution that allows them not only to socially validate the projects but also to acquire information and promotion of democratic practice. In five years, there have been 45

public consults in 43 communities involving 300 civil organizations in both sides of the border.

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Discussions open until March 1, 2002.

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