
Water and the rural poor in Latin America: The case of Tlamacazapa, Guerrero, Mexico

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Introduction

The future of hydrogeology requires a move beyond a narrow technical paradigm and necessitates asking questions related to “people” and “process” within an integrated and cohesive water framework. This essay discusses water in relation to poor people, employing a focus on Tlamacazapa as exemplifying on a micro scale many problems that occur on a macro scale in Latin America and globally. The first author has personally worked in Tlamacazapa regularly for seven years and knows that context and its people well. Tlamacazapa is a notably complicated setting in which organizations called Caminamos Juntos (CJ) [literal translation: we are walking together] and its partners in collaboration with a small number of village women are making slow, often painful, advances.

To discuss “water and poverty” is to focus primarily on people. This essay describes a process unfolding in the midst of complicated dynamics and power struggles, often about water. A view of water that concentrates on its “technical” aspects (with an occasional nod to people as is common in technical assessments and programs) will seriously underestimate the complexity of any work towards the long-term improvement of water use, access, quality, policy and systems. Those readers working from a quantitative, empirical mindset might prefer inclusion of more facts and figures in this essay, in particular those showing the effectiveness and impact of CJ programs. If such data existed, it certainly would have been included; no one has reliable numbers for Tlamacazapa. As long as the main characteristics of a community are disorganization, distrust and violence, it is nearly impossible to get meaningful statistics. One must first focus long and hard on the inter-related processes that build trust, self-esteem and capacity. This is admittedly and clearly a work in progress.

A small group of outside individuals (of international and Mexican origin) is committed to working closely with local villagers, largely women, over the long term. These individuals take the same risks that villagers live with everyday, and deal with the established negative behavior patterns (bandit assaults; contracts to

cause harm; threats both verbal and implied; and unwarranted insults, nasty gossip, lies and manipulation). “Outsiders” can work with “insiders” to generate a hopeful energy, while asking simultaneously important questions about the synergistic negative effects of toxins, malnutrition, beliefs of the “evil eye” and isolation on the health and creativity of local people over time. There is no breakdown or step-by-step recipe for this type of iterative, evolving humanistic work that combines serious inquiry with determined action and loving compassion. Certain principles guide attitudes, decisions and actions; these principles are briefly highlighted.

Worldwide, about two billion people struggle daily for access to clean and sufficient water and adequate sanitation facilities, while those in wealthier and healthier countries take good water and sanitation largely for granted. Our sobering reality is that about 6,000 children die everyday from diseases associated with unclean drinking water, inadequate sanitation and poor hygiene (UNESCO/UN 2003). The families of these children are generally poor, trapped in downward-spiraling cycles of poverty, illness and powerlessness. These deaths are largely preventable through the implementation of acceptable water and hygiene-related measures. “Inadequate access to water forms a central part of people’s poverty, affecting their basic needs, health, food security and basic livelihoods. Improving the access of poor people to water has the potential to make a major contribution towards poverty eradication.” (UNESCO World Water Development Report 2003, p. 6)

Water is a universal treasure. Access to sufficient clean water and adequate sanitation has been internationally recognized as a basic human right, and is a prerequisite to the achievement of a minimum standard of health and to productive work. Latin America depends heavily on groundwater to satisfy its ever-growing water needs. Although there is little published data regarding Latin America, groundwater provides drinking water to about 75 million inhabitants of Mexico (Marin 2002). Conventional approaches to water programming in communities tend to be based on overly simplistic understandings of community context and relationships. These approaches most frequently underestimate the effects of existing power dynamics and the common reality of water as hard work, costly or conflict ridden. All too often, “poverty” is understood solely in the economic terms of a person’s monetary income.

This essay considers water within the dialectic interplay of oppression and poverty, a situation common throughout Latin America, using an example of rural Mexico. The villagers of Tlamacazapa live in poverty, both economic and spiritual, and within oppression, both internal and external. They have lacked sufficient water for generations. Outlining their context exemplifies the complexity of water and sanitation while acknowledging the realities and risks of working for its betterment.

Tlamacazapa (Nahuatl word meaning “People who are fearful”)

High in the dry and rocky mountains of central Mexico, the indigenous Nahuatl villagers of Tlamacazapa (estimated population 8,000–10,000) earn a meager living by weaving palm baskets, their

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basic economy, against an incredible vista of hills, sky and distant lakes. Once the palm is gathered or purchased, working steadily, a woman can weave a large basket in four days; it will sell for a few dollars. Men and their sons sell the baskets on the streets throughout Mexico, often gone for weeks or months at a time. The people eat twice a day. They buy corn, grind it and make tortillas over an open fire, rapidly stripping the surrounding forests of available firewood. They will often add a weak “soup” of water, rice, onion and tomato to their meal. Sometimes they can afford to share beans, eggs or, on fiesta days, small bits of pork or chicken. The children are hungry or, paradoxically, have little appetite. Greater than 50% of them are undernourished (stunted and lacking micronutrients) or seriously malnourished. Many women are anemic due to poor diet, intestinal parasites and frequent pregnancies. Most women are illiterate and rarely leave the village; their world is small. The many female-headed households of women, widowed or abandoned, are the poorest among the poor, living in small corn-stalk houses with tarpaper roofs that allow wind and rain to pass through. Few families are corn farmers, cultivating rock-ridden land with little harvest. There is no plumbing, no running water; people use any open space as a toilet. Plastic and other garbage abound; pigs roam everywhere. This sets up horrific disease cycles.

Oppression: spiritual poverty

Villagers’ stories, especially those of women, are tragic: they speak of raw fatigue and illness, deaths of small children, beatings, husbands and brothers killed in drunken fights. Men drink away their families’ scarce pesos—an addictive way of dealing with despair and a weak male image. Women speak of feelings of ignorance, blame and exhaustion. Common illnesses, such as diarrhea and sudden death, are consistently explained by the “evil eye” (*mal de ojo*) or witchcraft rather than by such factors as parasitic/bacterial transmission or malnutrition. Years of grim survival coupled with a strong belief in the evil eye have shaped a complicated culture of destructive gossip and distrustful, resentful suspicion.

Individuals attack each other instead of their problems in attempts to release negative energy. To justify their lack of action, those in authority point to this as evidence that the people are unable to co-operate or to be civil (Freire 1970). The attacks actually are a manifestation of fear and low self-esteem; women and men cope on a day-to-day basis, but ultimately, with self-defeating consequences. This is the violence of poverty and oppression, resulting in a population severely weakened economically, culturally and spiritually. Oppressed people, insecure and with a weak spirit, possess little vision for their future, in effect saying, “What do I want? I don’t know: Tell me” (Smith et. al 1997; Smith 1995). With little faith in their ability to change their circumstances, most people of Tlmacazapa passively accept a life of fearful existence lightened with brief moments of happiness. Dreams, the inner source of life, are as dried up as the dirt of Tlmacazapa in late April.

The water situation

The village is on limestone terrain at 1,880–2,000 m above sea level on the south slope of a mountain. Within the village and surrounding area, very little arable land is available. Four village wells, approximately 10 m deep, form the primary source of water, located along a fault in the limestone and likely fed from an aquifer near the top of the mountain. The wells were created years ago by dynamiting the rock and/or excavating loose rock with picks and shovels. The wide openings of three wells allow villagers to walk down on concrete stairs into the wells to scoop water. These wells normally go dry for 4–6 months of the year. At the highest well, buckets are lowered with a rope with young men inside the well filling the buckets during the dry season. Villagers are remarkable

in their ability to conserve water, bathing, washing dishes and clothes in ways that minimize water use.

Today, water remains a scarce commodity despite a three-pump system bringing water uphill from *Los Sabinos*, a spring 5 km away. The state/municipal government designed the pumping system and turned it over to the village in 1997 with no attention to the social or economic management of this water. A small self-appointed “water committee” of two men now controls the pumping, the distribution of water every 10 days or so during the dry season as well as people’s payments for water. They decide who will and who will not receive pumped water and how much each will pay. Water is pumped infrequently, perhaps once or twice per month, during the wet season to those who have storage capacity and can afford to pay. The poorer families do not want to pay or cannot pay when they have an alternative of drawing from the wells or capturing rainwater with plastic sheets that drain to buckets or drums.

Knowing context and building trust: “Bridge activities”

Caminamos Juntos Para Salud Y Desarrollo (Walking Together for Health and Development) is a non-profit, non-governmental civil organization with a humanistic philosophical basis working in Tlmacazapa since early 1997. The CJ team was initially overwhelmed by the rough yet intense conditions, and recognized that the villagers had little trust in themselves or in each other, and even less in strangers. They wanted to better understand the village context and dynamics, recognizing that they needed to develop trust and confidence by doing something such as offering a needed service, responding to questions, being attentive and listening. The CJ volunteers started with simple “bridge” activities to introduce themselves to villagers and to allow villagers to get to know them, for example, teaching a simple rehydration drink for the treatment of diarrhea to groups of women gathered in a church yard. In the following months, they moved house-to-house, weighing children under five years old and preparing soya-based dishes in the largest and poorest neighbourhood. During the first five years, CJ slowly evolved simple, small programs in direct response to key requests of villagers (“Teach me to sign my name;” “We don’t want to give birth alone in our dark houses anymore;” “I am 27 and have six children, help me;” “My 4-year-old child doesn’t walk, why?”) while continuously assessing the village context, strengths, and obvious problems with insufficient water and inadequate income.

Tasting freedom

In 2000, CJ collaborated with village men to protect the *Los Sabinos* spring, and on routine water testing, discovered lead and arsenic in all water sources. The poorest people were increasingly unwell with multiple vague or acute symptoms beyond that which could be attributed to malnutrition or parasites. The CJ strategy in response to problem denial by local and municipal authorities and to increasing tension with the continued dissemination of water findings was to focus on the construction of household dry toilets and rainwater harvest tanks and on the development of health and healing programs. Simultaneously, the team compiled evidence of contamination through monthly water sampling and other studies and in 2003, established links with a national research institution (the National Autonomous University of Mexico—UNAM) and subsequently, with the Mexican Academy of Sciences. Most importantly, courageous local women, literate or not, have participated in every step, attending meetings with officials, learning the signs of toxicity, and taking samples; slowly educating themselves and family members about environmental contamination. They are gaining courage, as one promoter put it, “to stand up and say my own name,” as they withstand the constant and frequently severe criticisms from their families and other villagers.

Water data and actions

Arsenic concentrations exceeding the U.S. Environmental Protection Agency drinking water standard of 0.01 mg/l (ppm) were measured in all village wells. Concentrations ranged from 0.02 to 0.042 mg/l. Lead concentrations exceeding the Mexican Norm of 0.01 mg/l were consistently measured in all wells and seasonally in Los Sabinos. Concentrations ranged from 0.03 to 0.15 mg/l (unpublished CJ Document, April 2003, *Una valoración técnica y social preliminar de la situación del agua en Tlmacazapa, Guerrero, México*: [A Technical and Social Preliminary Analysis of the Water Situation in Tlmacazapa, Guerrero, Mexico]). Participatory investigations related to health and environmental contamination have included: monthly water sampling; hair and nail sampling of symptomatic people; determination of lead presence in common glazed terracotta cooking pots with low-cost sales of safe cooking pots; promotion of the use of natural palm in place of harmful dyes used to color palm strands; hydrogeological studies including soil sampling in collaboration with the University of Calgary, Canada; design and pilot testing of a dry toilet and rain-water catchment tank appropriate to the setting; and 198 home interviews of women for baseline data and histories of birthing and child deaths.

Tlmacazapa constitutes a multi-factorial situation. The working hypothesis is that there is a “toxic synergy” between the multiple sources of contamination and the malnutrition found in conditions of poverty. Malnourished and underhydrated villagers are very vulnerable to the harmful effects of chronic exposure to low levels of multiple toxins and metals. At high risk is the poor weaver who eats a basic diet of tortillas and salsa, dyes and then weaves colored palm strands, drinks well water, lives in a dirt-floor hut, and cooks in a low fired glazed clay cooking pot. Particularly at risk are the pregnant woman and fetus and the young child who live in these conditions.

Today CJ focuses on four small integrated programs in Tlmacazapa: (1) Family Health: Safe Motherhood with training of Health Promoters and of Midwives; (2) Stimulation, Support and Nutrition for Special Needs People (with disability or at risk); (3) Micro-enterprise: small business development for women; (4) Water and Sanitation: construction of dry toilets and rainwater harvesting tank with training of local men. Cross-cutting activities are community education and human/environmental investigation and monitoring. Twenty-five CJ promoters, midwives and trainees, all local village women and men, take different responsibilities for the various program activities. The villagers’ struggle for clean and sufficient water, a reflection of their strength as a people, continues as a work in process.

Awakening

Effective and comprehensive water programming rests on principles that speak to healthy communities, human rights, civil society, and environmental sustainability. In order to assume responsibility for water, health and development, people must have control over resources, access to relevant information, the competency to take the right actions, the rights of freedom of association and expression, and ways to hold government accountable. This principled foundation is the crux of people-centered, sustainable development and constantly informs decisionmaking. (Note: certain concepts like “people-centered development,” “empowerment,” “sustainability,” “conscientization” or building awareness and understanding, and “action-reflection” have assimilated into the everyday language of participatory development and, the authors believe, can no longer be attributed to particular sources in any meaningful way without citing a comprehensive literature review that is not possible or desirable here.)

People in poverty actually live within a tightly woven web of physical weakness, vulnerability, powerlessness and isolation (Chambers 1983). The chronic stress, low control, little social support and few resources of chronic poverty cause more illness

and disease and subsequently, lead to fewer life opportunities, which again deepens poverty. People living in the daily violence of crushing economic poverty suffer from an external oppression and very often have submitted to internal oppressive messages of inferiority. This internalization is a form of spiritual poverty, an internal oppression that is most frequently not recognized nor addressed by professionals.

Community-based water programs aimed at those living in oppressive poverty, economic and spiritual, will first loosen tight strands of distrust and insecurity, allowing for slow, progressive changes in established patterns. This allows glimmers of new possibilities among participants: to trust each other, to legitimate feelings, to listen and be heard, to authentically participate, to critically analyze, and to gain the courage to speak (Smith 1995). Participants move back and forth between actions and reflection on actions. This alternating pattern of reflection and action helps people to “see” and then “do” in order to solve problems, to attend to fundamental needs, or to realize capacities. Participants in this process gradually unravel and clarify their expectations, assumptions and analysis. They begin to critically investigate their key issues and questions while working towards an empowering goal (Freire 1970). Actions can range from the minuscule to the hugely significant, depending on the situation and the people at hand.

Oppressive circumstances mark a person. Empowering events also do so but people likely require many more instances of this freedom to erase the effects of the subtle everyday messages that eat away confidence and inhibit personal and social development. People who are no longer enmeshed in tangled, confusing reactions are able to gradually distance themselves and to realize the necessity of actual change. Despite inevitable tensions, they are capable of thoughtful actions to alter their conditions. Vulnerability, risk-taking, trustful openness, truth-telling are spiritual dimensions of developmental work. They are as necessary to the process as are the dimensions of investigation, action, thoughtful reflection and dialogue. When people, be they insiders or outsiders, accept the need for these qualities, they begin also to integrate them more securely into the self, developing trust in themselves as well as in others, allowing a mutual caring, a fuller sense of place and personhood, and a creative capacity for construction.

Participatory development of water programs

Why is it critical to understand oppressive poverty, its consequences and the means for personal and social change? Professionals, decisionmakers and power brokers with political or economic authority often tend to underestimate, not understand, or choose to ignore these concepts and methodological choices. People impacted by daily problems or decisions that affect their well-being have the right to be involved in activities directed at those problems, and in fact, must be involved for any chance of success over the long term. If these statements are accepted, then the need for more support for participatory development of water programs becomes generally evident as does the very different knowledge and skill sets required, the shifting of financial priorities, the interdisciplinary collaboration urgently needed among hydrogeologists and social scientists, and the longer time frame necessary for successful development of water programs at the community level.

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