Quality Drinking Water from Economically Sustainable Municipal Infrastructure: Examples from AguaClara in Honduras

Michael J. Adelman¹, Dr. Monroe L. Weber-Shirk¹, Rosa Mato Amboage², and Daniel W. Smith³

Schools of Civil and Environmental Engineering and Applied Economics and Management, Cornell University, Ithaca, NY;
¹Engineer, Agua Para el Pueblo, Tegucigalpa, Honduras

Introduction
Overview and Rationale

• Improperly treated surface water is among the most urgent global health challenges.
• Urban water infrastructure is inadequate in many places around the world, even as towns and cities have grown.
• The AguaClara program has demonstrated a novel approach to municipal-scale water treatment with field projects in Honduras.

Economic Background

• Both point-of-use and centralized solutions have often failed for reasons relating to consumer willingness to pay (WTP).
• Quality of service often determines WTP, and sustainability requires that WTP exceed the cost of operating and maintaining the system.

Figure 1. "Improved" but unsafe water in Honduras

Figure 2. Conceptual diagram of the WTP concept for water treatment systems

Grit Removal
Rapid Mix
Proposed rapid sand filter

Figure 4. Unit operations in an AguaClara water treatment plant

Engineering and Financing Methodology

Multiple organizations are involved in an AguaClara project, but the municipal water board is ultimately responsible for running the facility.

Figure 5. Conceptual diagram of AguaClara project organization

Steps for community ownership and sustainability

• Construction employs locally-available materials and local labor
• Capacity building includes water board organizational training and plant operator technical training
• Public meetings and workshops promote transparency, education, and public involvement

Figure 6. AguaClara in operation

Figure 7. Cuatro Comunidades water quality

Comparison of AguaClara

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• An AguaClara treatment plant represents considerable cost savings in construction and operation compared to a conventional facility.
• High service rates (>80%) are observed for all AguaClara plants, in contrast to point-of-use systems whose usage rate after implementation may be as low as 20%.

Figure 8. Comparison of AguaClara plant cost with a conventional facility

Conclusions and Future Research

The AguaClara project in Honduras has demonstrated the successful implementation of municipal-scale water plants through innovative design and good governance. The project will continue to expand the number of facilities, improve their design, and experiment with means by which beneficiary communities can finance the capital cost of the plants.

References


Other references available upon request.