

ECO-SANITATION IN MEXICO: STRATEGIES FOR SUSTAINABLE REPLICATION

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INTRODUCTION

Inappropriate and inadequate sanitation causes severe water pollution problems throughout Mexico. Wastewater often mixes with irrigation water to be used for peri-urban vegetable production. Soil erosion has been identified as Mexico's biggest environmental problem in Mexico, synthetic fertilizer prices are increasing and rural to urban migration continues as peasants give up farming.

A modified version of the Vietnamese double-vault dry toilet has been in use in Mexico for the last 15 years. Projects promoted by a variety of stakeholders have varying degrees of success, from widespread and well-known failures to spontaneous, successful replication. Espacio de Salud (ESAC), a small civic organization in Morelos, Mexico, works with communities in participatory eco-sanitation programs.

PROJECT IMPLEMENTATION

Mexico has been one of the world leaders in dry sanitation projects. However, when attempted on a relatively large scale, implementation continues to be hampered by inadequate community education, training, and participation in decision-making. Environmental non-governmental organizations are often successful in these areas, but on a very small scale. ESAC has been one of these small actors and recognizes that well-known failures overshadow small successes.

This project is an attempt to increase impact on two levels: 1) by working in several regions at once and 2) by providing capacity-building on the local level so that these stakeholders can become self-sufficient in sanitation services and a resource for information, skills and hardware for their region. In other words, if other near-by communities become interested, or are recipients of "toilet construction projects," they will have access to households with information regarding proper construction and use of the toilet and its products.

The project involved collaborating with community groups and civic organizations in five regions that requested assistance in establishing community projects regarding the dry "ecological" toilet. These groups have the organizational skills and experience to replicate the work and provide follow-up beyond the project's time frame when ESAC is no longer present. The organizations also have internal mechanisms for disseminating the information, and thus impacting a larger area.

Activities include a series of workshops for "regional promoters" (extension workers) in construction and maintenance of appropriate technologies pertaining to domestic waste treatment, popular education methodologies, and gender issues. Community promoters,

facilitated by a regional promoter, plan and carry out waste treatment projects within their communities.

The Autonomous Morelos State University as well as European institutions have collaborated with communities in two regions in carrying out studies regarding pathogen behavior and urine as an agricultural fertilizer. This two-year program is funded by the SanRes project with Swedish International Development Cooperation Agency (Sida) funds, the North American Fund for Environmental Cooperation, and Christians Linked in Mission.

ACHIEVEMENTS

As a result of this project, the communities are becoming self-sustaining resources within their regions; dry toilets are being built and properly used; poorly used and abandoned toilets are being rehabilitated. "New" families and villages have become interested (albeit slowly) and are requesting and obtaining information from project communities and building toilets without intervention from Espacio de Salud. In two regions, after initial, partial construction subsidies were terminated, newly participating families now contribute full construction and maintenance costs.

An important accomplishment of the program has been the greater awareness that has been generated regarding sanitation-related environmental and health issues. Training workshops given by Espacio de Salud provide promoters with methodological tools to increase their impact. Community groups analyze the relationship between water scarcity, pollution and conventional sanitation approaches. As a result, families and communities have opposed the installation of sewers in favor of dry toilets.

Dry sanitation programs in Mexico previously ignored the value of recycling nutrients. Promoters involved in this project easily grasp the importance of safely recycling human "wastes" and families have been quite open to experimenting with urine as a fertilizer. They at times give priority to experimenting with urine for agriculture before building toilets.

Involving external researchers has benefited the project by:

- assisting families in carrying out agricultural experiments using urine,
- providing laboratory analysis and reporting back to the community in order to support the local educational and decision-making process,
- increasing participating families' and project status.

Another achievement was the creation of RedSeco (Ecological Sanitation Network) together with other civic organizations, small business entrepreneurs, and research institutions in order to promote "ecological sanitation."

LESSONS LEARNED AND DISCUSSION

Community projects were tailored to the experience and interest in each region, which meant that they differed widely from each other. For example, a political party leader who promoted dry sanitation was elected town authority, and thus incorporated dry sanitation into the political agenda. A cooperative of organic coffee producers became interested in dry sanitation in order to prevent water pollution and "produce" organic

fertilizer. A local civic organization was concerned about the health implications of poorly functioning dry toilets. They instructed their constituency (women organized to improve health conditions) in proper use and maintenance and eventually promoted new construction in other villages.

This model, in which communities develop their own project, depends heavily on the skills of the facilitator ("regional promoter"). Workshops for regional promoters were held throughout the project rather than expecting to cover all issues at the beginning. Promoters shared their problems and solutions as they arose. All workshops were held in a central location. Nevertheless, rotating the workshop site among the regions would probably have improved the educational process for promoters and families. Also, designating two local promoters to attend the workshops and share responsibilities with the regional promoter would provide a better foundation for the project as a whole.

New projects must be limited to a scale that allows adequate follow-up (e.g., house visits). The local groups/organizations were encouraged to limit their work to only one community at the beginning. Four regions followed this advice. ESAC continues to work with the fifth region, which decided to work in 20 isolated communities, in order to correct errors resulting from over-extending.

Supervising five regions at once was very difficult (working in several regions in one state would have been more practical).

When working in several regions where supervision must be delegated, systematic monitoring becomes obligatory. Otherwise, project implementers tend to optimistically over-estimate achievements, which tend to hide problems needing correction. For example, rather than reporting, "100 toilets are under construction," the construction-monitoring tool specifically measures progress according to construction steps completed for each toilet.

Affordability must be considered seriously before implementing the project.

A major complicating factor within the project was the negotiation of external subsidies for construction. The Mexican government allocated funds for construction subsidies through several agencies and ESAC believed that approval would be a simple administrative procedure. On the one hand, governmental bureaucracy and political disagreements have blocked access. On the other hand, knowledge that such funds exist, the communities' experience with both governmental and civic organization projects, and the families' desire to pick the "high-status" (i.e., most expensive) model result in families waiting to build until the funds are eventually freed.

One local organization provided subsidies and established mechanisms for ensuring progress. For example, five toilets were built at a time with subsidized building materials. Only after a group of five were built and properly in use, were materials released for the others. Thus the families are pressured by their larger community to meet their target.

Design options should be considered with the families, enabling them to weigh the advantages and disadvantages of different alternatives. When families were left to design their own toilets (with minimal technical support), they tended to build a single-vault toilet. But after considering more options, their analysis led them to the shallow-pit "arbor-loo", with the possibility of building a permanent double-vault toilet in the future.

Financing schemes for local-income households could include a combination of family contributions, small subsidies and a revolving loan fund.

Educational materials produced for (and during) the project were very helpful. These include posters for promotion and use, construction manual, information sheets for trouble-shooting, explanatory brochure and a promoter's kit consisting of these materials and ideas for carrying out workshops.

Monitoring tools, which consisted of checklists of proper construction and use, **were among the best educational tools**. The families appreciated the immediate feedback, and were motivated to make corrections where needed. The promoters and the project in general also better understood the families' problems and perceptions, and thus could quickly focus on these.

The most useful tools were those developed in the field as they were designed to respond to real problems experienced repeatedly.

The establishment of local, independent workshops, which produce and sell the toilet seat risers within the region, is important for long-term sustainability of the project. The sales help finance the work of the local promoters. The incentive to sell the product motivates the producer/promoter to provide sufficient information and follow-up to the buyer so that the toilet functions correctly, thus resulting in sales by referrals through these satisfied customers.

A fiberglass mold was "loaned" to the local promoters, as this is a costly initial investment. The local workshop is then expected to include the replacement cost of the next mold in the price of the seat-risers, and/or access a loan. This first mold was a loan in the sense that ESAC could reclaim it, if not used properly.

Despite identifying key elements necessary for successful projects, progress was slow, demonstrating that this model alone will not result in large-scale implementation. Multi-sector networking should give priority to three areas which could greatly improve impact: local government involvement in community projects, public policy changes to provide incentives for families and communities that don't pollute the environment, and public education through the mass media.