An Update on the Tegucigalpa Model

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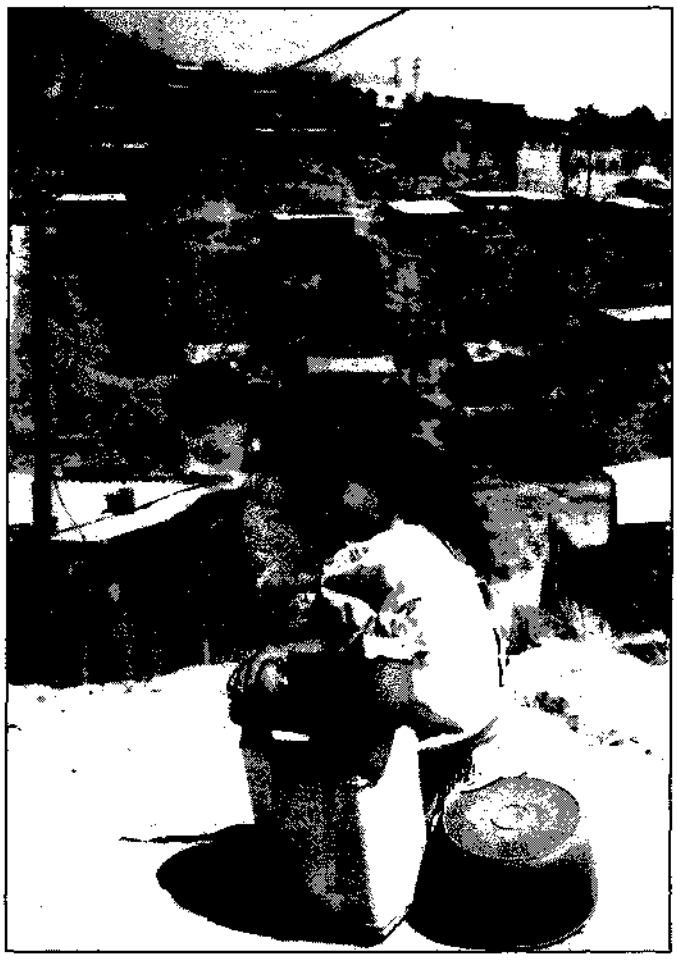

In the first issue of Waterfront, in 1992, an article was published on the Water and Sanitation Model developed in Tegucigalpa, the capital of the Central American country Honduras. Since 1992, the Model has 'matured' to a more comprehensive model. This article provides an update on the Tegucigalpa Model and its plans for the future.

Introduction

Honduras is the second poorest country in the Central American isthmus. The current total population is estimated at 5.6 million inhabitants. The annual population growth is approximately 3%. In the 1980s, Honduras faced a serious economic crisis that led to a massive migration of rural population to the capital city, Tegucigalpa. The process of urbanization continued in the 1990s and expanded to other cities, like San Pedro Sula and La Ceiba. Between 1991 and 1994 the urban population in Honduras grew by 12.2%. The uncontrolled immigration movement worsened previously existing problems because government institutions were not equipped to provide basic services to the newly established urban population.

Now Tegucigalpa has a population of 850,000 people of whom more than half live in 225 peri-urban communities. The city is very mountainous, as is most of Honduras. In the less hilly parts of Tegucigalpa the earliest settlements started, the steep slopes were virtually uninhabited until the early 1970s. Therefore, all the peri-urban areas developed on the 'useless', steep hills that form an almost complete ring around the old center of Tegucigalpa. The location of the peri-urban areas makes them very vulnerable to natural disasters, such as landslides and hurricanes. The availability of surface water is almost nil. As a result, the construction of basic services in the peri-urban areas, such as access roads, water and sewage systems, takes place under difficult circumstances and at high costs.

Because of the topography of the Tegucigalpa-area, the ground water level is very deep. Efforts to put into operation water supply boreholes up to 100 meters have often not been successful due to the limited capacities of the aquifers. In some cases, it was not possible to use the ground water due to its inferior quality. Therefore, the majority of the potable water in Tegucigalpa is transported from approximately five sources outside the city. However, the capacity within the water distribution system is too limited to provide the whole population with water. In the entire city it is common to receive water only a couple of times a week. In addition, it has been estimated that approximately 40% of the water pumped in the network never reaches its goal due to leakages in the pipes.

The History of the Programme

Before the UNICEF Programme started in 1987, most of the peri-urban communities in Tegucigalpa had a 'water-problem.' This meant that they had difficult access to or totally lacked water and had to buy it from private vendors at high commercial prices and/or collect rain water in the wet season. Families used up to 30% of their already very low income just for the purchase of water.

For the execution of the UNICEF Programme, SANAA, the National Autonomous Water and Sewage Authority, established the Executive Unit for Marginal Settlements (UEBM). It was to be the body responsible for providing potable water to the peri-urban settlements that did not receive water through Tegucigalpa's regular water distribution network. In 1995, at the request of representatives of the beneficiary communities, the UEBM was renamed UEBD, the Executive Unit for Settlements in Development. Beginning with only 11 staff members, the UEBD now consists of approximately 30 permanent staff members financed by SANAA and five temporary staff members financed through UNICEF funds. The Unit's professional team is balanced in terms of gender and profession; the staff consists of design and field engineers and social promoters of both sexes, headed by a Civil Engineer. In 1995 the UEBD was made part of the formal structure of SANAA, falling under the direct responsibility of the General Manager of SANAA.

By the end of 1996, approximately 150,000 people in 80 communities will have benefitted from the water supply programme and approximately 5,000, in four communities, from the sanitation programme. At this point, there are fewer than 20 peri-urban communities without water supply facilities. If we assume the same rate of urbanization, by the year 1999 all legalized peri-urban areas in Tegucigalpa will have a water supply system. During the period 1997-2001, the water supply programme will focus more on upgrading the existing systems by installing house-connections where water is currently only provided at public stand-pipes.

The Characteristics of the Programme's Model

■ Technologies:

The technology provided by the water supply programme varies depending on the physical, topographic and/or financial situation of the community. Options include house connections, public stand-pipes, sale-in-block, delivery to public reservoirs filled by water trucks and boreholes equipped with electric pumps connected to elevated tanks with gravity delivery systems to the communities. Some peri-urban communities are connected to the SANAA water network, in other communities this is not possible. However, the UEBD designs the community water supply systems so that they can be easily connected to the SANAA water distribution network once its capacity and reliability are improved.

■ Community Participation:

To be considered for the programme, the community has to mobilize itself and formally apply to UEBD for a water supply system. In general, women take the initiative. In the application, the community has to prove the land tenure is legalized. Additionally, it has to commit to providing manual labor and some construction materials, financially contribute through water tariffs and recover the full investment costs. The community must establish a Water Board (Juntas de Agua) to collect the tariffs, administrate the water system and take care of the operation and simple maintenance activities. After receiving the application, UEBD staff visits the community to verify the information in the application and to make a rapid technical feasibility study to assess the capacity of possible water sources. Based on this information UEBD approves or disapproves the request.

Normally, the Water Boards employ one administrator and a plumber; elected members of the Water Boards work on a voluntary basis. After the project has been completed, the UEBD offers periodic follow-up and support to Water Boards, usually in accounting and funds management. Practice has shown that this follow-up is essential.

■ Cost Sharing, Revolving Fund, Costing System:

Through the active participation of the community's manual labor and purchase of part of the construction materials, the community's contribution is approximately 40% of the cost of the water system. SANAA contributes 25% of the costs and UNICEF, 35%.

Every month, the community's Water Boards pays a contribution to the Revolving Fund Account, monitored and managed by the UEBD. The Tegucigalpa-cost-recovery system goes far beyond securing operation and maintenance, it fully recovers the initial investments (without incorporating inflation or interest). This maintains the revolving fund, enabling other communities to develop water and sanitation systems and expand the programme's coverage. Every community can decide the speed with which it pays back the revolving fund, with a maximum recovery period of seven years. In practice, some communities completely pay for their project within two to three years. A study of 16 community systems showed that 13 of them were sustainable in respect to operation and maintenance costs; five systems also covered inflation and capital costs. The programme can be considered one of the very few examples in Honduras in which investment costs are being recovered. The Honduran water sector has not yet adopted a cost recovery policy.

In cooperation with the Sub-regional WES Programme, a costing system methodology was developed for the programme, including software to support the methodology being used by the UEBD.

■ Hygiene Education:

Until 1995, a team of social work students from the National University of Honduras conducted the hygiene education in the communities. This raised questions regarding the long term sustainability and replicability of the approach. In addition, the messages and their presentation to the community were considered too conventional and not integrated with the project. In 1996, a new hygiene education strategy and programme, *Escuela Saludable y Casa Saludable* (Healthy School and Healthy House), started as a pilot project in three communities. An explanation of this strategy is provided later in this article.

■ Training:

All beneficiary communities and Water Boards receive assistance in training and social mobilization through activities for primary schools, International Water Day celebrations, street cleaning and garbage collection actions, culvert cleaning and improvement, etc. Training programmes consist of courses on administration, accounting and maintenance; training on problem solving, conflict resolution and negotiations; training on appropriate participatory and information materials; technical training to plumbers; and health education for school teachers.

■ Empowerment:

Though it is difficult to measure, the programme has clearly led to empowerment of the population in the communities. The Water Boards were the first type of organization to achieve 'something' in the community. In most communities the struggle for improvement has not ended with the installation of a water system. They continue to fight for proper schools, health clinics, electricity, sewage systems and access roads.

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■ **Fund Raising:**

In 1993, the programme Agua Para Todos (Water for All) was founded jointly by the Chamber of Commerce and SANAA project as a complementary strategy to search for other sources of programme financing. Agua Para Todos collects voluntary contributions from Honduran citizens and manages contributions received from donor countries. Agua Para Todos so far participates in infrastructure projects.

■ **Financial Sources:**

Besides Swedish funds, which form the main source of financing for the UNICEF Programme, the governments of Japan, Canada and Taiwan, the Inter-American Development Bank and the International Red Cross have directly supported the UEBD. The Japanese contribution is US$ 10 million. Because of this additional support, the programme may be expected to expand much faster than originally foreseen.

Latest Developments

■ **Sanitation Programme:**

Less than one-third of the peri-urban communities in Tegucigalpa have a sewage system. In the other communities, the only sanitary facilities available are dry-pit latrines. It was becoming increasingly recognisable that large scale use of latrines could cause a future environmental problem by its local pollution. In addition, some communities started asking UEBD for the construction of a sewage system because they felt that flush toilets were more hygienic and would provide significantly higher health benefits than their pit latrines.

In 1995, the first sewage project started with support from the Canadian Government. This was a traditional sewage design and for financial reasons not considered an appropriate strategy for large scale use in peri-urban areas. Therefore, in 1996, the programme developed a different approach, the construction of lowcost, non-conventional sewage systems. The technologies used are known as simplified sewage design and small diameter sewage systems, which have had successful results in Brazil and Australia. This is the first experience with these technologies in Central America. The technologies are much cheaper than traditional sewage designs, due to factors, such as gradient reduction, smaller pipe diameters, and smaller concrete collectors. To limit the amount of water used by the community, the programme promotes and installs pour-flush-toilets. The first systems have been connected to the existing sewage network, but the UEBD is considering the development of a small scale sewage treatment programme. Initial calculations show that the investment costs for these systems are approximately US$ 45 per person (including the community contribution of US$ 20). By comparison, the investment cost of a *Letrina Abonera Sanitaria Familiar*-latrine in Central America is US$ 26.70 (source: Evaluation of UNICEF's Programme for Water and Sanitation in Central America, 1996).

As in the water supply projects, the community provides manual labor and some of the construction materials. The sewage systems are being administered by the Water Boards and similar cost recovery policies are applied as in the construction of water systems. Due to the high demand and because the need for water supply projects is nearing its end, plans have been made for a gradual shift from water to sanitation projects for the period 1997-2001.

■ **Health Education:**

It is necessary to accompany the physical execution of both water supply and sewage systems with a Health Education component. Until recently, this has been carried out by the project jointly with UEBD-promoters, Water Boards, social work students from the National University of Honduras and the community. The education primarily consisted of holding educational talks with the community.

Knowing that the education component needed improvement, a new strategy is being developed in 1996 using two existing methodologies, 'Community Visitors' and 'Healthy School and Healthy House'. The first methodology is successfully used by UNICEF-El Salvador, the other in Honduras, Nicaragua and Guatemala through a pilot project by CAPRE, Water Utility Coordination Committee for Central America, Panama and the Dominican Republic, and the National Water Authorities. However, both have been developed in rural areas. The UEBD team of promoters is developing a project in four urban communities, making necessary methodology adaptations for implementation in the peri-urban area.

A group of community members is being trained in adequate use of water, cleanliness in sanitary units, adequate hygiene habits, etc. Subsequently, the UEBD promoters will train the same group on how to carry out the methodologies. Once the members, now called Community Visitors, have been trained, they are responsible for individual visits to a specific number of families, a set number of times. If this pilot project is a success, it can be replicated in the rest of the peri-urban communities where the UEBD has been and is developing water supply and sewage projects.

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ernment, technocrats, academics, community leaders and NGOs has helped the National Government get a better feel for people's attitudes and aspirations. It has also helped local people understand the limitations of Government funding and assistance. They have become aware of the extent to which communities will need to show their motivation and demand for sanitation. In both cases, attitudes have had to change and compromises reached.

The subsidies should be no more than an incentive to help people to help themselves and for the Government to show it is trying to right some of the wrongs of the past. The challenge of implementation still lies ahead. It will take more time, further consultation, community input, practical projects and trials before a national sanitation strategy can successfully be put in place.

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strategic concerns inherent in these hydrologically-interlinked systems. The advantages of considering the sustainable use of water resources in a single management continuum were recognised by the world community in Washington D.C. In November 1995, UNEP was designated as the Secretariat for the historic agreement on the Global Programme of Action for Protection of the Marine Environment from Land-Based Activities. Similarly, UNEP's "Environmentally-Sound Management of Inland Waters"(EMINWA) approach comprehensively addresses such factors as soils, forests, agriculture, energy, human settlements, industry, and the entire water system at the scale of the drainage-basin. Such an approach seeks to balance water's role as a resource for human welfare and development on the one hand, with its environmental value on the other.

This integrated approach to sustainable water development, and the incorporation of environmental concerns into national development plans and programmes, requires close interagency collaboration. UNEP and UNICEF continue their collaboration in several ways. UNICEF is an active member of the UN System-Wide Special Initiative on Africa's water working group, co-chaired by UNEP and the World Bank. The group identified its objectives as: equitable access to and sustainable use of water resources; improved household water security; freshwater assessments; and ensured water for food production. Within the context of sustainable development, UNEP proposed the equity-led growth approach to the management and use of freshwater resources in Africa. The dominant challenge in Africa concerning freshwater resources is ensuring that everyone gets reasonable access to a "fair share" of safe water. The proposed approach calls for a larger role for municipal and local government authorities, communities, user groups, women and youth in planning, development, management and protection of the water services. Water policies, plans and programmes will be assessed in terms of their economic viability, environmental sustainability and equity impacts. Helping governments to implement this new approach, including creating practical and affordable techniques for helping the poor to get access to safe water, will also be important criteria.

In an interagency context, UNEP had the opportunity to collaborate on UNICEF-supported National Programmes of Action supporting water, environment and sanitation activities. For almost two decades, the Water Programme of the joint UNEP-World Health Organization Global Environment Monitoring System (GEMS/Water) has been involved in water quality monitoring and assessment projects at the global, regional and subregional level. GEMS/Water provides assessments of freshwater pollution issues to Governments and water resources managers, studies global pollution and its movement via rivers to the oceans, and strengthens national water quality monitoring activities in developing countries.

These effects are particularly felt among the world's children, who from the prenatal phase, are exposed to serious health risks from environmental hazards.

In other areas, UNEP's Water Branch is in the process of developing and assessing practical economic tools to manage water resources more efficiently. On a regional scale, UNEP is compiling information and experience on alternative technologies for augmenting freshwater resources. To raise awareness on issues related to environmental health, UNEP contributes to the development and dissemination of guidelines for drinking water supply and controlling water pollution.

Through these examples of water-focused activities and its related programme, UNEP is striving to protect the environment and move towards the goal of sustainable development. Together UNEP and UNICEF are working to ensure the health and well-being of our planet and our children.

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It should be noted that the people, themselves, are being trained in this programme. This implies a greater degree of participation and more responsibility on the part of the community.

■ Expansion to peri-urban areas of San Pedro Sula:

At the end of 1995, UNICEF, through the Municipal Water Division of the City of San Pedro Sula, the second city in the country and considered the most important industrial area, started a new programme to offer water and sanitation services in peri-urban settlements of San Pedro Sula. The San Pedro Sula programme will use the experience gained from the Tegucigalpa Model. A unit similar to the UEBD, the USAP (Peri-urban Water Service Unit), coordinates and executes the project within DIMA. USAP has two civil engineers, two social promoters and one secretary. However, where UEBD has its own design engineers, USAP uses the DIMA-Design Department to design the projects.

One important difference from the Tegucigalpa Programme bears mentioning. In Tegucigalpa, the UNICEF-supported programme used community organization for operation and maintenance due to the lack of any municipal organization. The municipality in San Pedro Sula is much stronger in water and sanitation and will rely on the USAP more for the organization of communities in hygiene and sanitation.

In 1996, the construction of three water supply and three sewage systems is expected. To date, one water supply system has been completed, three sewage systems are under construction and soon two more potable water projects will open.

As shown in this article, even after almost ten years, the Tegucigalpa Model is still dynamic and improving. The model shows that universal sustainable access to water supply and sanitation services can be achieved integrating low-costs, participation of the population, education, cost sharing, cost recovery and the use of innovative technologies. An interesting experience we are sharing for possible replication in other cities in other countries.