

PLAYING CATCH UP WITH SANITATION

Until recently, sanitation has been a poor stepsister to water supply. But the realization is growing that, when it comes to health benefits, safe water by itself yields little. Sanitation, particularly excreta disposal and safe hygiene practices, appears to be of prime importance. In this "Lessons Learned Forum," WASH director J. Ellis Turner and staff members Eduardo Perez and John Chudy discuss the difficulties of compensating for years of neglect of sanitation with "WASH Update" editor Diane Bendahmane.

Q.: The plan of action for the Water Decade (1981-1990) called for accelerated programs in both water and sanitation. But looking back we see that while 1.348 billion were provided with water, only 748 million received sanitation, leaving 1.7 billion still unserved. How do you explain this neglect?

E.P.: A critical factor is the lack of demand for better sanitation. There's no question that for most people water has a much higher priority than sanitary facilities. There's just no glory in latrines, but we have all seen those great photos of villagers posed next to a gushing tap.

Also, in the early 1980s, most bilateral and multilateral agencies involved in the sector focused on rural areas. There, to a large degree, it was appropriate to emphasize water. But, as urbanization has accelerated — especially dense peri-urban settlements, sanitation has become an urgent health and environmental problem.

Another related point is that early in the Decade, it was believed that building a latrine solved the sanitation problem. It took a long time for the realization to sink in that maybe people weren't using these latrines or that, even if they were, they still had not changed their unhealthful behaviors. Sanitation was not totally ignored during the early 1980s, but overly simplistic approaches were followed.

J.C.: I can give a specific example of how sanitation was viewed. In the 1970s I worked with water supply projects in Bolivia with CARE. We thought clean water alone would reduce the incidence of diarrhea. Sanitation was not included. Local communities were thrilled with the convenience of water coming near or into their yards or homes. They didn't care

if water accumulated on the ground around the spigot creating a sanitation problem. A.I.D., which financed our project, didn't think about sanitation either, nor did anyone at the national level in the country.

Q.: In the 1992 World Development Report by the World Bank, the chapter on water and sanitation is called "Sanitation and Clean Water." Why were these terms switched?

J.E.T.: I believe the switch was intended to call attention to the neglect of sanitation and to signal the growing awareness that sanitation is extremely important from the health benefits point of view. In 1990, WASH published a review of studies on the health effects of water and sanitation. One important finding of this study was that the most effective intervention was safe excreta disposal, as far as reducing the incidence and severity of the six diseases studied was concerned.

Q.: Where is the sanitation problem most severe, in rural or urban areas?

E.P.: Urban areas now present the greatest need because urban growth is exploding, especially peri-urban growth. Between 50 and 80% of the growth in most developing country cities is taking place in the informal sector, in outlying squatter areas.



J.E.T.: Just the sheer amount of waste and wastewater being produced and discharged into the environment in urban areas creates tremendous problems. I would not want to devalue the impact of the lack of sanitation on individuals in rural areas, but because of the lower population density and the lower volume of waste, it's not quite as severe in rural areas as it is in urban.

Very little of the sewage that's collected is treated. In Latin America, for example, less than 2% is treated.

Huge volumes are simply discharged into the environment. One study showed that a river running through a residential area in Jakarta contained densities of fecal bacteria of the same order as the human intestine.

Q.: What would you say are the special challenges to solving sanitation in urban and peri-urban areas?

E.P.: Historically, with formal urban development, undeveloped land is urbanized first by putting in place an urban infrastructure: water, sanitation, roads, electricity. Then people buy lots and build houses. But in peri-urban areas, new growth occurs in the opposite order. People settle on the land and build houses first, and once they are there, it's much more difficult to go in and put in sanitation systems and water mains.

Also, the relatively cheap land poor people settle on is the least desirable — steep hillsides, low-lying flood plains by river banks, contaminated sites, and so on. To put in any kind of sanitation system is extremely expensive. Even a simple latrine is much more costly to build in a densely populated urban squatter area. And if, by some magic, everyone could build a latrine, that would also become a problem because of population density. The soil or the groundwater would probably become contaminated.

To solve these difficult problems, one has to have a clear idea of what is possible given the physical site, the economics, the cultural setting. We may have to live with a long-term process where informal, peri-urban settlements become more formal or urbanized incrementally. Often sanitation is one of the last pieces of the puzzle because demand for sanitation is low. People are willing to pay for it after they have paid for electricity, school, a television set, and so on.

Q.: Have any attempts been made to quantify the health effects of the lack of sanitation?

J.E.T.: The report I mentioned earlier found that a 22% reduction in diarrhea as well as substantial reductions in other diseases resulted from improved water and sanitation. Based on that study, the World Bank estimates that 2 million deaths from diarrhea per year among children under five could be prevented through provision of water and sanitation. But such evidence has been a long time coming. Early attempts at quantifying impact involved elaborate and costly epidemiological studies. People were left with the impression that impact studies were inherently expensive. As a consequence, few were undertaken during the Decade. Fortunately more cost-effective ways of evaluating impact are now being developed, such as the baseline study of diarrhea and health behaviors that WASH is helping CARE/Guatemala to put in place.

Q.: What about some of the other impacts of lack of sanitation?

E.P.: The environmental problems are enormous. In

peri-urban settlements with no formal sanitation, most of the fecal matter ends up on the ground. As a colleague of mine used to say, a thin veneer of fecal matter covers everything. Either it washes down to the nearest river, or it gets diluted by rain and seeps into the ground or the water table. So either the river, the ground, or the water table are being polluted. But it doesn't hit people as an environmental problem because the pollution is more dispersed.

J.E.T.: Economic impacts can be severe. In 1991 the cholera epidemic had a significant impact on Peru's exports. And, in the future, the environmental effects of lack of sanitation will become more of an issue as world trade increases and economic trading blocs are formed. In the European Community, standards have been set for bacteriological quality of imports. Such standards will have to come to the Americas or many countries will not be able to export their products.

Q.: Could you describe the cost-of-illness methodology WASH has developed for water- and sanitation-related illnesses?

J.E.T.: Last year WASH developed a method of computing the economic cost to a country of diseases such as cholera or diarrhea. All costs are taken into consideration, those arising directly from treating the disease as well as indirect costs resulting from losses in productivity and redirection of resources for health care. We hope that cost-of-illness studies will be helpful in establishing the priority of health care investments in cost-conscious environments. When we can show the true economic cost of preventable diseases, governments might be more interested in providing the water and sanitation infrastructure that would put an end to them.

In early 1992, WASH applied the cost-of-illness method to cholera in Peru. The study found that, on a very conservative basis, the cost to the country of the 1991 epidemic was in the neighborhood of \$250 million. If that amount had been invested in water and sanitation, maybe the epidemic would not have occurred or would have been less severe. It's like they say in TV commercials, you can pay me now or you can pay me later, but eventually the costs are going to be incurred.

Q.: Isn't the cost of providing water and sanitation beyond the reach of most countries?

J.E.T.: There is no question that it is expensive, but I believe that the costs have been exaggerated and the benefits minimized. Just before the Decade began, an important study related the cost of water and sanitation only to providing specific health benefits. It ignored the broad economic, social, and other benefits. Viewed as

solely a health intervention, water and sanitation appeared to be very expensive. This misconception led to the development of curative strategies, such as the use of oral rehydration therapy, to address what are fundamental water and sanitation problems.

While oral rehydration therapy has unquestionably achieved reductions in infant-child mortality, and remains one of the most effective treatments, it is not that cheap when compared on an annual basis with the cost of providing water and sanitation. Long-term investments in water and sanitation bring substantial health benefits and should not be ignored.

J.C.: Still, at a recent cholera meeting that took place in Bolivia, with representatives of all the Latin American countries, the role of sanitation as a preventive barrier came up only a few times. One physician from Argentina said that in his opinion, figures that suggest that water and sanitation interventions are too costly are used like "terrorist devices" to scare people off.

Q.: How can balance be maintained between treatment and prevention?

J.E.T.: There's increasing recognition that once a problem has occurred, it's much more expensive to deal with. Clearly the millions suffering from water and sanitation-related diseases can't all be treated. It is most cost effective to change people's behavior and prevent the occurrence of a disease or problem in the first place.

Countries are finally accepting the need to focus on longer-term prevention. For example, many countries are taking hygiene education seriously and accelerating sanitation improvements.

Q.: Are there ways that sanitation can be made more affordable?

J.E.T.: I think so. In the past, sanitary engineers accepted as given that a certain volume of waste would be generated by a certain number of people and that it was the engineer's job to build a system large enough to handle that volume. Now some engineers are looking at wastes in a more systematic fashion — where are they coming from, why are they generated, how can their volume and toxicity be reduced, and so on.

The traditional way of dealing with wastes is through water-borne collection systems, which increase the volume. So now people are looking at options that use less water, or looking at other ways to intervene in the system. In the case of industry, which produces a lot of wastewater, the products or the materials that are used can be changed so that less water is needed.

Viewed in this systemic fashion, there is not just one solution for the problem of wastewater disposal. In

some places on-site disposal may be used; in others, collection systems and oxidation ponds; in still others, sophisticated industrial treatment plants.

Q.: According to UNICEF, sanitation can cost anywhere from \$30 to \$350 per capita, depending upon the technology. Do these costs strike you as reasonable?

J.E.T.: The numbers look reasonable. One of the challenges to WASH and to the profession is to change the mix toward the lower-cost solutions and to consider a wider range of options, and to educate both decision-makers and the engineering profession about this approach.

Tunisia, for one, has accepted the idea of a range of options. WASH provided assistance to that country to develop five or six different sanitation alternatives to choose from, depending on the conditions and circumstances, and those choices have been institutionalized. Another example: Brazil has moved forward significantly in changing the design norms for sewer systems. Such changes have cut the costs 30 to 50%. And yet, there's a lot of resistance on the part of the engineering community to accepting cost-cutting modifications.

Q.: They don't want to practice a second-rate technology?

J.E.T.: Some of the alternatives are looked at either as second-rate or too risky. The engineering community generally holds to very conservative approaches that approach zero failure. But the capital cost of zero-failure systems is very high.

Q.: Has WASH looked at low-cost solutions to sanitation?

J.E.T.: Rather than looking at low-cost solutions ourselves, the WASH approach has been to help develop local institutions and give them a capability to look at low-cost and appropriate technologies on their own, because these things are very site-specific and very sensitive to cultural practices and the availability of local materials. That's a much more sustainable approach.

WASH helped design and implement a seminar on wastewater options this fall for several Latin American countries. It introduced the concept that there is a range of technical and managerial options for solving wastewater problems. We believe that if we can change the thinking along those lines the attempts to deal with wastewater collection and treatment will be more successful and much cheaper.

Q.: What progress has been made in making technologies more affordable?

E.P.: "Affordability" is a tricky concept that is closely allied to willingness to pay. In peri-urban areas, as people increase their incomes, they are *able* to pay for a latrine but they're not *willing* to maybe because it smells bad and it's not a good long-term investment. So they will not spend their money on that. On the other hand, these same people may be willing to pay more money for a flush toilet. It adds to the value of their house, so they don't mind paying 10 years for it. When urban projects provide different options and the community has an opportunity to debate and choose what they want to invest their money in, they don't necessarily choose the lowest-cost technology.

Another important point about low-cost technologies is that they contain hidden costs. The lower cost the technology, the greater the need for individual participation, community participation, hygiene education, etc. For example, the World Bank is currently promoting "condominium sewers," sewage systems with smaller-diameter pipes that are laid just a few inches below the ground in places without much car traffic. They are a lot cheaper because they can be curved around the backyards of existing settlements, but this type of sewer system requires a lot of attention by each household. When it gets stopped up, everybody has to get out and take a pipe and clean it out. People hate that.

J.E.T.: You're right. Low technology options do call on small groups or individuals to handle problems and maintenance, and for that reason, a number of systems fail. But the alternative is not to try to do anything.

Q.: Do you think it's realistic to think of sanitation for all in the foreseeable future?

J.E.T.: Although I don't think it's realistic to expect coverage for all — the best-case forecasts show slow progress in extending coverage in the face of population growth — I think that, as long as countries can step away from the idea that they have to resolve all the problems right now and can instead set some priorities, they can make some dramatic improvements. For instance, in some areas, the discharge of raw wastewater into a river, although aesthetically and, in the longer run, environmentally unacceptable, may be something that a country can live with in the short-run while focusing their attention on higher priority problems. And I think that

there has to be a balance in investments: critical environmental and environmental health issues must be addressed, but at the same time they must not become too much of a drag on economic growth.

It's futile to set unrealistic goals. It's better to chip away at the problem, do what is doable within the context of that country. I think the conditions for getting more for our money in sanitation are very good. Countries are becoming more responsive to their populations. Privatization, although it's not the panacea that it's touted to be, is an untapped resource to be drawn upon in appropriate circumstances. Another major trend is decentralization. All around the world, the creation of smaller or decentralized units for dealing with problems will enable us to do a lot more than we did in the Water Decade.

E.P.: The lessons we've learned over the years have also put us in a better position to do more. Take the example of the new latrine construction manual WASH is working on. The original manual concentrated almost completely on teaching people how to build a latrine, literally, hammering nails, mixing cement, digging the hole. That was the state of the art 10 years ago. The new manual adopts a totally different approach. It starts right off by saying, "If your goal is to improve excreta sanitation, the first thing you need to do is understand what's going on now in the target community. What are the routes of fecal-oral contamination? Go in and identify what the existing fecal-related behaviors are. And once you understand them you can go ahead and design an intervention."

Q.: What do you think can be done to increase the attention to sanitation?

E.P.: I think the shift is already underway, as organizations like WASH and the World Bank emphasize sanitation more. Programs should be funded that are focused just on sanitation. We are not there yet, but I sense a growing momentum in that direction, at least by external donors, think tanks, and the multilateral and bilateral agencies. Cholera in Latin America provided some push, without a doubt. It is my hope that the epidemic will mark a turning point in attitudes, the dawning realization that the longer sanitation problems are deferred, the higher the cost of solving them.

Prepared September 1992.

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