

Table of Contents

- 4 UNICEF & UNEP Sign Agreement
- 5 The Phungalutho: A "Peri-Urban" Sanitation Solution
- 6 One Hundred and Fifty Women in the South of Madagascar
- 8 Household Hygiene in Santo Antao, Cape Verde
- 11 Water Points Committees for Community Development
- 12 Sarasa
- 13 Sanitation: UNICEF Experience in Cambodia
- 14 Low Cost Latrine Technology Options
- 16 Sanitation Promotion through Community Based Organizations
- 18 Health Impact of Water Supply Interventions
- 20 Women Benefits from Sanitation in Vietnam
- 22 The Mangochi HTN Workshop
- 23 Nicaragua
- 25 Costing of Water and Sanitation Investment
- 26 Reducing Pests and Insect Vectors
- 28 UNICEF and World Bank Join Forces
- 28 Cost Calculation

UNICEF-WHO Joint Water Supply and Environmental Sanitation Strategy

Universal Access to Safe Drinking Water and Sanitation: Basic Elements of Health for All and the Convention on the Rights of the Child

Introduction and Background

Since the Alma-Ata Declaration in 1978, further reinforced at the World Summit for Children in 1990 and through ratification of the Convention on the Right of the Child, numerous international fora have called for universal access to safe water and sanitation. Despite the gains made toward universal access, WHO and UNICEF recognize the need for new approaches and strong advocacy for the sector and its linkage with health, nutrition, education, safe environment and above all sustainable development. A collaborative framework of understanding and complementary action needs to be developed by both Organizations at global as well as at regional and country levels. The establishment of a joint strategy for WHO and UNICEF is the first step in developing this framework.

Strategies for Effective Collaboration

Based on the above mandates, this joint strategy has been developed to operationalize the

common elements of strategies of both Organizations. The UNICEF "Strategies in Water and Environmental Sanitation" approved in May 1995 and the "Environment and Sustainable Development - UNICEF's Response to Agenda 21" in 1993, along with WHO Global Strategy for Health and Environment adopted by the World Health Assembly in 1993 will form the basis for this cooperation and collaboration between the two Organizations. Through this statement, WHO and UNICEF reiterate their intention and strategy to collaborate with their individual resources and knowledge base to support capacity building at country level towards sustainable national programmes aimed at accelerating action towards the ultimate goal of universal access to safe water and sanitation.

There are certain features of this "Joint Strategy" which makes it unique and renders it an important tool in support of the development of national water supply and sanitation programmes. First, it is the first time that the two lead UN bodies in the field of water supply

continued on page 2

■ **UNICEF-WHO Joint Water Supply Strategy**, from page 1

and sanitation have approached the goals with a common sector strategy. This in itself should strengthen the position of the partners, and form a basis for the other external support agencies, both multilateral and bilateral, to harmonize their approaches and encourage stakeholders to be part of this partnership.

Second, the emphasis on action at country level in support of national plans of action developed within the framework of the Child Summit Goals, is also unique. Collaboration exists between the bodies of the UN system at the global policy level, particularly through the ACC and the Interagency Steering Committee for Water Supply and Sanitation, however, continued efforts are necessary to encourage practical co-operation in support of individual country programmes.

Third, the Strategy also recognizes the need to take a multi-faceted and multi-disciplinary approach to water supply and sanitation development. This will be done using country and area specific strategies for behavioural change; health and hygiene education; community management of water and environment in support of sustainable development. It will be supported by a balanced mix of technology and with the emphasis on health and socio-economic benefits.

Finally, the Strategy forms an integral part of the "Health for All" approach and the Convention on the Rights of the Child, both of which aim at specific, yet complementary, objectives for the later half of this decade and into the 21st century. Within the framework of these global policy mandates, this Strategy is intended to reinforce the concept that access to safe drinking water and proper sanitation is a basic human right. Regional and country specific strategies and action plans will be evolved depending on the situation analysis and opportunities as provided in the respective regional/country plans of the two organizations.

Goals of the Strategy

This Strategy has three main goals:

- delivering consistent messages concerning integrated approaches to water supply and sanitation development;
- supporting the design and implementation of sustainable water supply and sanitation programmes at country level on the basis of a common approach; and
- maintaining a health and social em-

Despite the gains made toward universal access, WHO and UNICEF recognize the need for new approaches and strong advocacy for the sector and its linkage with health, nutrition, education, safe environment and above all sustainable development.

phasis within water supply and sanitation development at international fora, with other agencies, and with country programmes and related sectors.

Main Strategy Elements

The strategic actions necessary for the attainment of these three goals are as follows:

- 1) Delivering consistent messages at all levels of national authority concerning integrated approaches to water supply and sanitation development. This will be done within the framework of WHO and UNICEF strategies and operational policies as approved by their executive bodies from time to time. These messages should cover all areas of sector activities including health and hygiene education, operation and maintenance, women's empowerment, application and promotion of technology, school curricula and related activities. To this effect, UNICEF and WHO will:

- strengthen the development of

common approaches globally and regionally through the routine exchange of information, through regular contacts and consultation in the planning process, particularly at country and local levels and through a better understanding of the health social and economic benefits to be gained from improved water supply and sanitation.

- prioritize sanitation, hygiene and behavioural change in their programmes. Although an integrated approach to water supply and sanitation development is ideal, in many areas there is a need to give priority to the implementation of sanitation and hygiene programmes.
- promote a strong element of household and community participation with specific reference to the role/empowerment of women and gender-balanced approaches.
- promote affordable, user-friendly technologies within the framework of programmes for water supply and sanitation for the rural and urban poor.
- promote community-based management of the environment through primary environmental care at the household level.
- work towards the development of a country-level communications strategy.
- work together towards defining the meaning and impact of various financial tools commonly used like cost recovery, cost sharing etc. in the health and standard of living of poor and the unreached.

- 2) Supporting the design and implementation of sustainable water supply and sanitation programmes at country level on the basis of a common approach. The basis for this common approach will be National Plans of Action developed with support from UNICEF within the con-

continued on next page

This strategy represents a reaffirmation of the commitments made by UNICEF and WHO to work towards universal access to safe drinking water and sanitation.

text of the Child Summit Goals and other national sector development plans. The approach will be one of support to national programmes and the attainment of their targets with particular attention being paid to populations at risk (women and children, marginalized urban populations, rural poor, etc.) To this effect, UNICEF and WHO will:

- provide a special focus of support to national programmes in Africa in the light of the United Nations System-wide Special Initiative on Africa, the AFRICA 2000 initiative and National Programmes of Action.
- advise Regional Directors and Country Representatives to develop on a systematic basis similar regional/sub-regional and



UNICEF/94-0738/Nicole Tounouri

Water provision: a woman's burden

WATERfront

A newsletter for information exchange on Water, Environment, Sanitation, and Hygiene Education


UNICEF Water, Environment and Sanitation Section, Programme Div., N.Y.

Gourisankar Ghosh
Michel Saint-Lot
T.V. Luong
Brendan Doyle
Kenneth D. Gray
Karin Metell
Jingjing Qian
Luzma Montano
Gina Darcin
Surabhi Splain

Please send articles, illustrations and correspondence to:

WATERfront
WES Section, UNICEF
Three United Nations Plaza, TA 26A
New York, N.Y. 10017. U.S.A.

Telephone 1-212-824-6000
Fax No. 1-212-864-6480
e-mail: msaintlot@unicef.org

 Printed on recycled paper

- country specific strategies towards the common goal.
 - promote collaborative approaches and joint activities at country level in support of national programmes. Country level programming will be strengthened through joint missions to support government planning exercises and the development of country programmes, including sector investment projects specifically addressing priority considerations such as water scarce areas, deprived populations, vulnerable groups and emergency activities.
 - develop country sector profiles of water supply and sanitation conditions through the Joint Monitoring Programme at the community, district, provincial and national levels to enable programmes to target activities where water-related diseases and poor service levels are particularly acute.
 - promote environmental health through programmes such as Healthy Villages/Cities/Schools in rural and urban marginal communities, *using, where appropriate, district health systems.*
 - support community management and the strengthening of local capacity to plan, operate and maintain its systems.
 - support the strengthening of government and NGO capacity at the local level.
 - advise and support standardization, local manufacturing and field testing of equipment and/or components, as appropriate, to determine their feasibility.
 - foster the participation of appropriate ministries in planning, environmental impact assessment, and decision-making related to water resources management and protection as they affect water supply and sanitation.
 - support, where possible, each other's programmes at regional and country levels through staff resources.
 - strengthen monitoring and information support capabilities of national governments as tools for sector management with special emphasis on the Joint Monitoring Programme.
 - undertake joint action to enhance resource mobilization in sector.
- 3) Maintaining a health and social em-

continued on page 23

UNEP and UNICEF Sign Agreement On Strengthening Cooperation

New York, March 5, 1997

Memorandum of Understanding on Cooperation Between the United Nations Children's Fund and the United Nations Environment Programme

Purposes

1. Protecting and managing environmental resources, and ensuring that the basic needs and rights of children are met, constitute fundamental elements in the concept of sustainable development. In recognition of the need to address the close relationship and interaction between the environmental factors and the survival, protection and development of children, the United Nations Children's Fund (hereinafter called UNICEF) and the United Nations Environment Programme (hereinafter called UNEP) agree to this Memorandum of Understanding on Cooperation (hereinafter referred to as "this Memorandum").

2. This Memorandum provides the flexible framework for cooperation between UNICEF and UNEP. It further outlines several areas that will serve as the basis for collaborative and mutually complementary initiatives.

3. The cooperation under this Memorandum will take place in areas of common interests and within the scope of the respective mandates of the two organizations.

4. UNICEF is mandated by the United Nations General Assembly to advocate for the protection of children's rights, to help meet their basic needs and to expand their opportunities to reach their full potential within an overall framework provided by the goals of the World Summit for Children and the Convention on the Rights of the Child.

5. Established in 1972 by the United Nations General Assembly following the United Nations Conference on the Human Environment, UNEP is the principal environmental body within the UN system. UNEP is mandated by the Gen-

eral Assembly to promote international cooperation and provide policy guidance and coordination in the field of the environment. This mission is reaffirmed by Agenda 21, which further mandates UNEP to take into account the development aspects of environmental questions in its work.

Areas of Cooperation

6. Areas of cooperation between UNICEF and UNEP will fall under three broad categories, namely a) advocacy in areas of common concern, b) scientific/technical cooperation on programme activities, and c) collaboration within the various United Nations system-wide initiatives or inter-agency mechanisms.

7. The ultimate objective is to support programme implementation through the best scientific and environmental information that bears on children and child health, especially at the field level in developing countries.

8. Advocacy activities will be pursued in connection with child rights and raising environmental awareness, within the frameworks of the United Nations Convention on the Rights of the Child and Agenda 21 adopted at the United Nations Conference on Environment and Development. In the near-term, focus will be placed on working together to develop basic environmental and social messages for the mobilization of community action, to publish an information series on pollutants and child health, and to promote environmental citizenship and environmental content in basic education.

9. Scientific/technical cooperation will be aimed at, on the one hand, integration of environmental considerations

in UNICEF's operations and, on the other hand, greater attention to child related environmental concerns in UNEP's programmes. One of the fields of cooperation will be the development of environmental impact assessment policies and procedures provided by UNEP to support UNICEF's development of environmental impact assessment guidelines appropriate to its programme activities. In turn, the relevant field experiences gained by UNICEF could provide feed back to UNEP to inform its environmental impact assessment work.

10. UNEP and UNICEF will strengthen their consultation, coordination and collaboration in various United Nations inter-agency initiatives and mechanisms, including, but not limited to, the United Nations System-wide Initiative on Africa, the implementation mechanism for Habitat Agenda, the Inter-Agency Committee on Sustainable Development, the Inter-Agency Environment Coordination Group, and the respective Inter-Agency Task Forces for following up other major United Nations conferences and world summits.

Implementation

11. Consultation between the two parties may take place when and where necessary by mutual agreement in order to promote the cooperation provided under this Memorandum. In this regard, the respective UNICEF regional and country offices and UNEP's programme units and regional offices will be encouraged to maintain regular contact with each other.

12. Subject to their respective poli-

continued on page 7

The Phungalutho: A “Peri-Urban” Sanitation Solution for Kwazulu Natal, South Africa

By Jane Devan, Consultant, UNICEF South Africa

In Inadi, a ‘peri-urban’ area of Pietermaritzburg, is undergoing a quiet revolution—a sanitation revolution. Begun in January 1995, the Siyathuthuka Sanitation Committee has since approved and built about 150 Phungalutho toilets for its residents. The project, one of several started by the Water & Sanitation Technology Transfer Group of the Institute of Natural Resources just 18 months ago, has been handed over and is now completely run by the Committee.

In 1992, in response to local requests, the Phungalutho, meaning “no smell” in the Zulu language, was designed and developed by Don Crawford of the Institute of Natural Resources (INR), University of Natal. A variation on the VIP, the Phungalutho’s characteristic domed pit cover and roof is now a familiar sight all over the KwaZulu Natal Province. It is most prominent in and around Pietermaritzburg, where it was first developed. The reinforced dome is positioned higher than the pedestal base. This helps, despite external weather conditions, to create a constant one-way air flow up the vent pipe when used with the unique outhouse design. This circulation is claimed to be so effective that the toilet can be built without a door or regard for the prevailing wind direction. Those visited by the writer appeared to bear this out. Once completed, the dome is sturdy enough to take considerable weight. Such versatility in design allows a building to be equipped with an “in-house” toilet, with the pit and pipe outside. Free-standing units can be single or multiple, and enlarged or adapted to combine, for example, washing areas or bathrooms as required. At no greater expense than other low cost on-site sanitation options, the Phungalutho has a great advantage for

densely populated “peri-urban” areas in its adaptability for both sites and costs to suit the pockets of customers.

The phrase peri-urban has a very confusing connotation in South Africa, as it is uncertain whether it is referring to former townships, squatter camps, homeland areas, or all three. Former townships may have varying levels of services, and are often situated at great distances from the towns they were intended to serve. Furthermore, townships have often grown to a level where they are larger, and have a greater population, than the adjacent town, such as Soweto (South West Township) outside Johannesburg. Every town has squatter camps, or informal settlements, which began as “illegal” dwellings, not officially recognised by the government. Some of these have latterly become so well established that the residents have managed to negotiate a state of permanency with municipalities. Only then are they considered for the provision of services such as roads, water, electricity and sanitation. Others have not been so fortunate, and have been forced to move away by the powers that be. Many former homeland areas are, under current terminology, considered rural. However, a visit to some of these such as the former Transkei (now part of the Eastern Cape Province), will explain the confusion. The population is huge and densely packed dwellings spread as far as the eye can see. Is this “peri-rural”? In terms of service provision, these areas need to be treated as “urban” although they are not officially recognised as such.

The sanitation policy (draft) of South Africa, along with grappling with these issues, stresses the need for child-friendly toilets. The government is committed to ensuring their development.

The Phungalutho’s characteristic domed pit cover and roof are now a familiar sight all over the KwaZulu Natal Province.

The Phungalutho, with its offset opening and light and airy interior is less intimidating than the more standard dark latrine with a heavy door. The local Ibunu Creche at Inadi has made a further adaptation of the Phungalutho. From a small unused building on the grounds of the school, it has created an eight-unit “potty training” toilet for the creche children. Having eight tiny seats in one room allows the teachers to toilet-train the toddlers in a group - a need recognised by the teachers who worked with the Sanitation Committee to develop a solution.

The Inadi Project is one of 12 pilot sanitation projects throughout the country commissioned by the Mvula Trust, an umbrella NGO for Water and Sanitation. The Mvula Trust has a unique agreement with the Department of Water Affairs and Forestry, which is channelling 10% of its Reconstruction and Development Programme (RDP) funding for water and sanitation through this body. The RDP is South Africa’s Development Plan for redressing the inequities of the past on all fronts. The aim of the pilot projects has been to examine different approaches to sanitation development using varying technologies, subsidies and methods of health and hygiene education. All Mvula projects have elements of local training and capacity building built into them. Much notice has been taken of the nearby and very successful Lesotho sanitation programme in this regard.

Of the Mvula pilot projects, Inadi is considered very successful in that it has been handed over completely to the community, and is set to continue beyond the life of the pilot scheme. Sufficient demand appears to have been generated in the area for the builders to

continued on page 7

One Hundred and Fifty Wells in the South of Madagascar

Jacques Boyer, Information/Communication Officer, UNICEF Antananarivo, Madagascar (Translated from French by Ms. Gina Darcin-St. Louis, WES Section, UNICEF NYHQ)

Every day, Marinette washes up with water from the well before heading out to work. She knows a lot about wells since she was one of the first animators of the “150 wells in the South of Madagascar” Project. Situated in the area of Antanimora, the Project was initiated by the Government with UNICEF support after the 1992–93 drought. From 1994 to 1995, UNICEF in cooperation with the BRGM company drilled 150 handpump equipped water points throughout Ambobombe, Beloha, Bekily and Tsihombe.

The Project was the first in Madagascar to include a social mobilisation component, supported by the effective participation of local animators. It was also the first to establish a system for the operation and maintenance of the handpumps and to maintain spare parts. Each well is overseen by a water point committee, which manages a petty cash fund of MGF50,000 (approximately US\$10.00) collected from the villages and targeted for maintenance. The approach has taken root and is now used by the Japanese Cooperation in its rural water supply project. The “150 wells in the South of Madagascar” Project also served as a model in the development of the Water and Sanitation National Policy and the National Plan of Action. Additionally, the Water Directorate at the Ministry of Mines and Energy maintains the Project’s technical database.

In 1996, UNICEF increased its support to capacity building in hygiene and sanitation at the rural level. This action was important as the Project’s three locally recruited animators could not adequately cover the 150 villages and their communication skills needed upgrading. These deficiencies would

eventually have compromised the sustainability of the project since continuous community sensitization was crucial to achieve improved sanitation and hygiene practices.

As a result the Project recruited, according to specific criteria such as their enthusiasm, popularity and level of education, thirteen main animators

The Project was the first in Madagascar to include a social mobilisation component, supported by the effective participation of local animators.

from the community. They received training in communication techniques from the Ministry of Communication, aided by the NGO, AFVP, which had taken over from BRGM in 1996. Two AFVP volunteers, outposted in UNICEF Antanimora, monitor the project on a daily basis.

These main animators received basic training in interpersonal communication, group animation, visual teaching materials, and performing skits. They were trained to use the Triple A approach and to monitor the result of their messages using monitoring cards with pictographs. They then shared their experience and knowledge with the Rural Animation Cells (French acronym: CVA). A CVA is a group of two women and one man chosen by the community to perform the same duties as the main animators; they are the link between the animators and the community. The objective for 1997 is to add 60 “cells” to the 20 created in 1996, and to have a CVA in all 150 villages

by the end of 1998. Besides training in communication and monitoring techniques, the CVA learned about water related hygiene from the main animators, who had been trained by UNICEF and AFVP. The CVAs transmit basic information on water use, maintenance of water points and ways to keep water safe from collection to consumption. This year’s training will also cover personal and household hygiene.

At least twice a month, the main animators visit the 150 villages (subdivided into 13 branches) to collect the monitoring cards and hold discussions with the CVAs and beneficiaries. The AFVP volunteers pay regular visits, followed by representatives from the Ministry of Communication and UNICEF. It was discovered that some teaching materials developed during the first phase of the project were not always appropriate for illiterate villagers; revisions were made to accommodate the needs of the target population.

Before the creation of the CVA, the project had limited linkages with UNICEF- assisted and non-assisted programmes operating in the 150 villages. Using water as an entry point to other survival and development activities, the coordinators of the 150 wells Project created the CVAs to integrate the diverse activities and harmonize the various health and hygiene messages. In the future, CVAs may be used as communication vehicles for messages about issues such as nutrition and education.

Although still new, the results of the Project appear promising. This is corroborated by the enthusiasm of the population for the animation skits; the success rate in maintaining the water points; the reduction of water related diseases; and the interest of donors in extending the “150 Wells in the South of Madagascar” Project to other parts of the country. 🌍

■ UNICEF & UNEP, from page 4

cies and rules regarding disclosure of information, the two parties shall endeavor to exchange information and documentation in matters of common interest.

13. The two parties shall designate their respective focal points who will jointly develop annual plans of action for specific collaborative activities and regularly assess the effectiveness of the cooperation under this Memorandum.

14. In the implementation of the activities, the parties agree to seek partnerships with relevant organizations within the UN system as well as inter-govern-

mental and non-governmental organizations, development banks, the private sector, donors, the scientific and academic communities, and other civil society members.

Amendment


15. The provisions of this Memorandum may be amended any time by written agreement reached between the two parties.


Termination

16. This Memorandum may be terminated by either party by giving the other party a six-month's notice in writing of the intention to terminate.

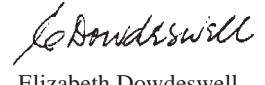
Entry into Force

17. This Memorandum shall take effect as of the date of its signature.

In faith whereof the parties have signed this Memorandum in the English language in two copies in New York City on this fifth day of March, Nineteen hundred and ninety-seven. 



Carol Bellamy
Executive Director
For the United
Nations Children's
Fund (UNICEF)



Elizabeth Dowdeswell
Executive Director
For the United Nations
Environment
Programme (UNEP)

UNEP-UNICEF partnership

In recognition of the need to comprehensively address the nexus between children and the environment, and to combine relative strengths in this regard, UNEP and UNICEF are enhancing their collaboration and stimulating this partnership through this flexible Memorandum of Understanding. This MOU will serve not only as a strong joint commitment for cooperation in support of UNEP and UNICEF's respective and complementary missions but, also significantly, as the framework within which to develop specific cooperative initiatives for practical implementation at the field level.

This synergistic partnership extends UNEP's environmental policy guidance role to the country level through UNICEF's field

network. UNEP's technical expertise will provide a substantive input to UNICEF's operational activities in the areas of collaboration and assist UNICEF to adapt and disseminate environmental information for action at the field level for PEC related activities. It will encourage UNEP to incorporate child related concerns into its programme activities. It will also facilitate the task of injecting child and environment-sensitive concerns into policies and projects within and outside the UN system. Finally, this UNEP-UNICEF partnership is a concrete response to the call from member Governments for enhanced effectiveness and improved UN system-wide cooperation, building on the comparative advantages of both organizations.

■ Phungalutho: Sanitation Solution for Kwazulu Natal, South Africa from page 5


fill their order books, and to make a very reasonable income from their work. Having obtained the moulds, the technology for building is straightforward and adaptable. Superstructures can be designed to suit the pocket of the client as doors, windows, pedestals, seats and sinks are all optional extras. A further adaptation has been a 'pit' above ground level, for areas that either have impenetrable bedrock or are prone to flooding. INR has developed an illustrated construction manual in both English and Zulu, which, with a basic understanding of construction principles, is possible to follow.

A simple bookkeeping system developed over time between the INR and its projects allows all monies to be tracked. Details of expenditures on any single job are recorded on the reverse of the

cheques paid and no cash changes hands. This is a particular feature of an urban sanitation programme that makes it relatively easy to manage financially, but that may not be feasible in more remote areas.

An example of how well this technology travels can be seen in Oshakati, the second largest town of the neighbouring country, Namibia. An urban development programme, OHSIP, imported and built several different on-site sanitation options for the residents of the informal settlements around Oshakati. The Phungalutho was chosen as the most favourable option, particularly due to its odourless quality, but also because the adapted design of the lined pit was raised above the ground level. This reduced the effects of seasonal

flooding, common in that area. The local name of "Okakedi" has developed for this adapted Phungalutho, also meaning "no smell" in Kwanyama. Over 1300 toilets have now been built in Oshakati, and they fared well during the serious flooding of the 1995 rainy season.

Following democratisation in 1994, South Africa is still debating its future sanitation development policy for the estimated 21 million people without adequate toilets. Decisions on thorny issues regarding subsidies, routine maintenance and institutional responsibility have yet to be made at a national level. A variety of technologies and approaches need to be available to suit differing conditions throughout the country. It is very likely that the Phungalutho will form part of the solution. 

Social Determinants of Household Hygiene in Santo Antao, Cape Verde

Dominique Béhague, Research Fellow in Medical Anthropology, London School of Hygiene and Tropical Medicine
Nuno Egídio, WES Project Officer, UNICEF Cape Verde,
Antero Pina, WES Ass. Project Officer, UNICEF Cape Verde

Introduction

Santo Antao, the most mountainous of the nine inhabited islands of the Cape Verde archipelago, is second in geographical size (977 km²) and third in population (43,845 inhabitants), 80 percent of which live in the rural areas. Its rugged physical and topographic conditions, and the scarcity of water (annual average rainfall of 250 mm), make living conditions for the majority of the population, which depend on traditional agriculture and government labor intensive public works for survival, very difficult.

In 1986, because only 10 percent of the rural population of Santo Antao had access to drinking water, and because sanitation was virtually nonexistent, the Government of Cape Verde and UNICEF initiated a major intervention in the island. Ten years later, the percentage of the rural population with access to drinking water was 72 percent and to sanitation, 15 percent. The great increase in access to drinking water, achieved through gravity fed systems and self-help construction of rain water harvesting systems at the household level; and the first successful history of self-help construction and utilization of dry latrines in Cape Verde (utilization rate of 72 percent), are considered the major accomplishments of the intervention.

However, despite the increased access to water supply and sanitation systems, and the concurrent implementation of hygiene education campaigns, a recent study found that Santo Antao is still one of the islands with the highest level of diarrhoeal prevalence in children under five years of age. To understand the

possible reasons for this discrepancy, an ethnographic study on household hygiene and its cultural, economic, and social determinants was conducted. The investigation of social and cultural factors is imperative since many studies have shown that access alone does not automatically affect behaviour.

Objectives, conceptual framework and methods

The study aimed to investigate specific aspects of domestic hygiene behaviour and their social, economic and cultural antecedents. In particular, excreta disposal, personal hygiene, water usage patterns and hygiene, and domestic hygiene were the foci of investigation. Social antecedents were explored not only in terms of individual cognitive factors, such as knowledge and attitudes, but also in terms of social factors, such as the household distribution of “health-improving” resources, kin relations,

parenting and child development, social status and power. Figure 1 outlines the relationship between hygiene behaviours and the possible antecedents to hygiene behaviours that were explored in this study (in italics).

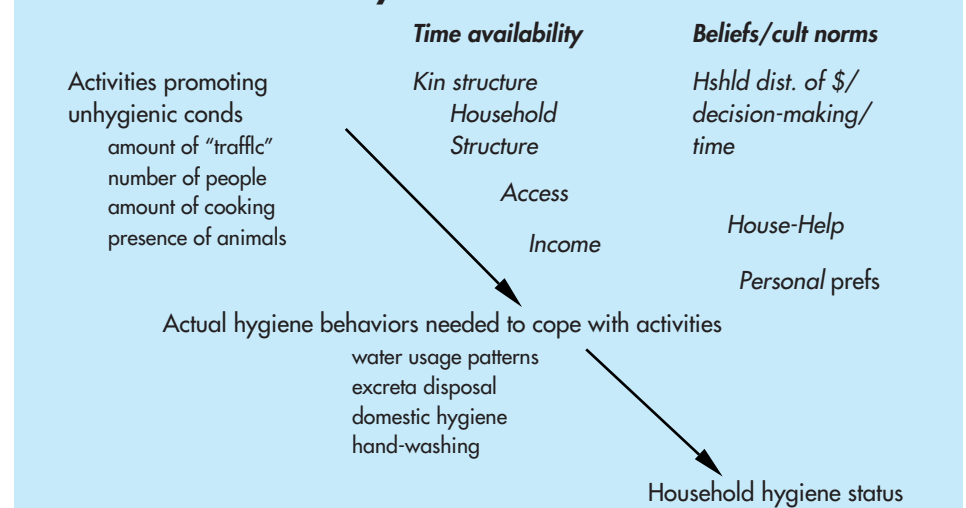
Fieldwork was conducted in two rural areas of Santo Antao during a 21 day period. Like all research studying sensitive and private behaviours, data collection relied heavily on triangulation and validation of the data by using a variety of methods. All homes with at least one child under five years of age in both communities were included. With full participation, this resulted in a total of forty-one households. Two to four members were interviewed or observed in each home, which included grandmothers, children, fathers or other kin members. In all, the views and behaviours of approximately 82 individuals were explored. Methods included informal interviewing, participation in naturally occurring group discussions, participant observation, six hour-long continuous structured and unstructured observations, and observational spotchecks.

Results

Child defecation practices will be the focus of this article, as it is deemed more useful to explore one topic in greater depth than all hygiene behaviours superficially. Children were much more indis-

continued on next page

FIGURE 1 Preliminary Theoretical Model



criminate about the timing and place of their defecation than adults, who tended to defecate in designated areas in the surrounding parts of their community in the evening hours. Thirty-five defecation episodes for 24 children (most of whom were over one year of age) were observed during the structured observations. In 20 (57%) occasions, children were observed to defecate on the floor (patio or in the home) or in the street and in only three occasions did children defecate directly in a basin. Never was the latrine used directly by children, and in only two occasions were children's feces disposed of in a latrine. On 13 occasions (37%) the defecation site was cleaned by the mother or another adult, but in a substantial number of instances (8-23%) another child cleaned the site. In 13 (37%) instances, the site was not cleaned at all. Most of the defecation sites that were cleaned were done so with a broom, a piece of cloth, or paper. In a significant number of instances (13-39%), the child was not cleaned at all, but when he/she was, most caretakers used a cloth (6) or plain water to clean the child (6). This may be because in many instances (10) the index child either cleaned himself or was cleaned by another child. Perhaps the most telling finding pertains to hand-washing. In

only two cases did the person who cleaned the site or the child wash their hands with water or water and soap (one of each). Simple comparative analysis showed that single-headed homes, women with a greater number of children, a greater number of parental partners, and with lower schooling, all exhibited poorer hygiene behaviours relating to child defecation practices. This suggests that poor defecation practices are indeed affected by concrete conditions which limit families' abilities to respond more appropriately.

Child hygiene in the context of household dynamics

When one looks at mothers as imbedded in dynamic households rather than simply as "primary caretakers," then the questions regarding the relative importance of the various elements needed to sustain the health of household members (acquisition of water, food, employment) emerge. Placed into the context of the variety of household and child-care chores that must be done in one day, the child's hygiene had low priority. The immediacy of competing caretaking and domestic tasks was manifest in both the interviews and the unstructured observations. Promotional campaigns must speak to the reality that life events are experienced as an interaction of needs

and assessments. While it is clear from the literature and from this study that poverty affects hygiene status, it is important to stress that poverty does not lead to parental negligence.

Approaches to child development

Local approaches to child development provide a wider understanding of social factors. A child's cleanliness is, to a certain extent, seen to be part of his/her inherent nature. Not only are children expected to learn how to clean themselves (and their environment) from an early age, but the degree to which they will take up hygienic habits is dependent upon their own "nature" degree of physical discomfort with dirtiness. In this way then, a child's personal hygiene is seen by some to depend on personal temperament rather than household environment. Defecation is one of many learned behaviours that parents and older siblings consider their responsibility to teach. Children are encouraged to learn how to defecate alone or with minimal assistance (without the use of diapers) once they have learned to walk. In general, children who know how to walk and fend for themselves at an early age are considered easier to care for, but this is also a sign of good child development. As such, children's hygiene and independence were tied to mothers' sense of pride.

Teaching older children to do household chores is also considered an important part of child development. Giving older siblings chores and responsibilities in the home is not only part of managing a household, but an integral part of teaching children how to become full members of society. It stimulates order and good habits, preparing children for their future as workers and parents. "Simple" tasks, such as holding an infant, can be expected from children as young as 3-4 years old. In almost every interview, parents explained that children need greater contact with the "outside" world and environment for strong and healthy development. Children who are raised "in the mother's hand" or "on the mother's back" grow to be weak,



Water Point: the ideal place for hygiene promotion

continued on page 10

■ **Cape Verde**, from page 9

learn to sit and walk very late, and may even be more likely to die. If a child is to be put on the ground to play, it is generally considered better that they do so on the home's patio rather than inside the actual home, as this provides a more stimulating and "free" environment. Although some of these socializing routines are explicitly conscious, they constitute an important aspect of the Cape Verdean social setting. These generalized positive views of independent child development provide a backdrop for understanding care-taking approaches as something other than lack of parental attention.

We also conducted a comparative qualitative analysis to explore some issues affecting hygiene status that go beyond economic difficulties, and which may be more amenable to change. Four variables were used as proxies for socioeconomic status in this setting: mother's schooling, household headship, mother's number of parental partners¹, and number of children. For this comparative analysis, we compared those families who, despite their improved socioeconomic conditions, demonstrated poorer hygiene behaviours (based on observations and spot-checks) with families who lived in poorer socioeconomic conditions but demonstrated better hygiene status. The main differentiating variables between the two groups were social conflict and support. The families living in poorer conditions but maintaining good practices were headed by older women with many children. These women had little contact with the fathers of their children, but this caused them little overt conflict. The homes were the subject of constant visits by neighbors and friends, and discussions about infant health and community life, enthusiastically agreed to when requested by the interviewer, often involved friends and neighbors. Interviews with these women were frequently long and intricate, indicating their self-perceived knowledgeable status. Indeed, some of these women were key figures in the community, well involved in net-

works of exchange of favors and goods.

In contrast, the homes with better socioeconomic conditions but worse hygiene conditions were more socially isolated. Often the women of these families were new members to the community and their homes were at a greater distance from most of the other homes. Interviews were generally held separated from other family members and conversation more stilted. In each of the interviews, women either made negative references to the father of their last child (eg. "he does not give any money, or, he wastes it all on alcohol") or referred to soured friendships with

Good hygiene maintenance is not simply a matter of general carelessness or a lack of appreciation for the germ theory of disease transmission.

neighbors or extended family members. It is likely that women with a more extensive social support system are more likely to receive help both in completing domestic chores and with child care. In addition, maintaining a home hygienic in difficult conditions consumes a considerable amount of time, physical energy, morale, and even emotional stamina. It could be that social conflict and isolation may affect household members' ability to maintain their home in the face of possibly more compelling household dynamics that go beyond the realm of logistical issues.

Conclusions

Good hygiene maintenance is not simply a matter of general carelessness or a lack of appreciation for the germ theory of disease transmission. Furthermore, just because some families demonstrated poor environmental hygiene did not mean they would also be less inclined to wash their hands. Comparative results from this study suggest that, for example, hand-washing is a more ha-



Latrine is today a household norm

bitual practice, child defecation part of a more global approach towards child development, general home environmental hygiene subject to time constraints, and bodily hygiene possibly related to access and use of water sources. Each of these different realms of hygiene practices belongs, in a sense, to different aspects of daily living. Therefore, lumping them together in public health campaigns as part of a global effort to educate people about the transmission of diarrhea pathogens may, in effect, extract them from their local social and cultural significance. In addition, results from this study showed that households cannot be taken as discrete, insular entities. It is possible that women with more extensive and supportive kin and non-kin social networks may be in a better position to counter the structural difficulties of maintaining a hygienic household. The exchange of goods and services, including child care, makes households not only less bounded but also less "reliant" on factors such as "paternal presence" to seal their fate. In addition, what is also important about this finding is that hygiene is not solely a matter of individual will, but extends into issues of social isolation and community dynamics.

Cape Verde is characterized by an informal polygamous social organization whereby it is quite common for a woman to have her children with several different men in succession. Previous studies have shown increased number of parental partners to be associated with both economic status and maternal education. 🌐

Water Points Committees for Community Development

By Julio M. Balde, National Officer, WES, UNICEF Guinea-Bissau.

Schools and health clinics frequently serve as starting points for activities focusing on community development. However, within Guinea-Bissau, these institutions are spread thinly; only a minority of the 3,600 villages in the country has health centres or schools. Therefore the important challenge remains of finding networks and groups that could become bases for involving the population in water, sanitation, health and other development activities.

There are approximately 2,500 water points in rural areas, most of which are boreholes with hand pumps. These are managed by water point committees who have responsibility for ensuring sanitary conditions around the water points, collecting funds from users for spare parts and organizing repairs. The system works fairly well. For example, a recent survey of boreholes with handpumps showed that about 90% of them were operating.¹ However, water is not the only sector in this country in which users participate and share costs. Another example is the Bamako Initiative where village committees organize health education activities and monitor immunization. The community contributes to the purchase of essential drugs. Analogous village-based groups are being formed in other sectors, such as agriculture and promotional activities with women. It is likely that community organizations meant to manage infrastructure and share costs, nominally via single-purpose committees, will proliferate in Guinea-Bissau. However, in a nation where two-thirds of the population live in villages of less than 500

people, this can result in a multiplicity of committees, village animators and messages often competing at the village level.

To avoid this, organizational strategies are needed in communities to enable the integration or close coordination of various development activities. The water point management committees could play a significant role in this process. Presently there are 2500 water points and plans to set up 1,500 more in the next four years. In this context, water and water points could serve as entry points to address development problems and the needs of communities. The water point committees can fulfill an educational role and become focal points for information that stimulates behavioral change around health, hygiene and primary environmental care issues.

An expanded role for water point committees will induce another form of animation. The animator, is a member of the community and knows the people,

the challenges and daily problems of his or her village. UNICEF is supporting this approach via a project "Capacitation of Water Point Management Committees." The major lines of the programme will be:

- Technical assistance for the development of strategies to support and activate water point management committees. This work will be done in collaboration with the International Centre for Water and Sanitation (IRC), headquartered in Holland.
- Capacity-building of extension workers (animators) from various development projects, sensitizing them to the role that water point committees can play in support of various community development efforts.
- Training of village-based committees in communication methods and in the use of educational materials related to water and sanitation, hygiene and prevention of certain diseases such as cholera.

Elaborating follow-up strategies and defining indicators of progress will be other components in this project whose thrust is to guarantee inter-sectoral collaboration in rural areas. 🌐

Excerpt from UNICEF Statement to the 19th UN General Assembly Special Session for Review and Appraisal of the Implementation of Agenda 21 from 23 to 27 June 1997 in New York

UNICEF

"It is children who have the biggest stake in sustainable development....All too often, we find that our concerns for children and women in the social sphere are considered separately from those in the areas of environment and economic development.

...UNICEF is making a strategic shift away from pure drinking water supply and latrine construction to household water security and community-based management of water environment. Increasingly, country programmes are taking a more holistic view towards household water security stressing conservation, watershed protection and equity of access. The approach to sanitation has broadened to take in hygiene, behavioral change and relevant environmental health aspects."

¹Koen van der Werf and Jan Teun Visscher, Towards sustainable water supply: eight years of experiences from Guinea-Bissau. (Draft) IRC, 1995, 60 p. The Hague, p.21

Sarasa

By Hilda Winarta, WES and YD Mathur, Project Officer, WES, UNICEF Jakarta

Background

It is hard to reconcile the sight of the immaculately clean streets of many West Javan towns and the lush rice paddies and plantations in the region's rural areas with the fact that sanitation coverage in the province is only 40%. A survey conducted in four districts in 1993 revealed that hygienic practices are still limited; 22% of the people use latrines and only 40% wash their hands after defecation. With a population of almost 40 million people, West Java, administratively divided into 24 districts, 526 subdistricts and 5869 villages, is the second most populous province in the country.

The majority of people in rural communities in West Java consider the ideal facilities for defecation to be places with plenty of water and away from their homes. Streams, canals, fish ponds and other water bodies are the most preferred places; the local polite term for defecation is "kaca 'i" or "going to the water." It is still quite common to find modern looking houses in rural areas, perfectly constructed according to the prevailing building codes, having all the usual amenities, and lacking indoor toilet facilities.

A needs assessment exercise conducted in 1993 revealed that meeting the target of universal coverage in the year 2000, would require building 4,346,237, or at least 700,000 family latrines per year in West Java. This is clearly beyond the capacity of the Government, since the sanitation development budget could only support the construction of a few hundred latrines annually.

The alternative is to mobilise community resources. Technical and financial aspects are not a major hindrance, due to the availability of lowcost appropriate technologies, such as molds, and the renowned craftsmanship of the West Javan. However, social, institutional and more than anything else, motivational problems remain the greatest challenges.

The Clean Friday Movement was

launched by President Soeharto in November 1994 as a national effort to meet these challenges. "Gerakan Jumat Bersih" or "GJB", as the Movement is locally known, aims to promote healthy living behaviour among the communities. All institutions, governmental and non-governmental, are involved in mobilising community resources to im-

The majority of people in rural communities in West Java consider the ideal facilities for defecation to be places with plenty of water and away from their homes.

prove their living environment. In particular, the Movement calls upon religious leaders, whose influence upon the community is recognized to far exceed that of government, to motivate people to change their behaviour.

The SARASA Movement

The West Java provincial administration recognized the potential benefit provided by the existence of tens of thousands *santris* (Moslem scholars) in the province. Almost 90% of the West Java population is Moslem and to them *santris*, both male and female, have a special status. Although young, the *santris* are highly respected for dedicating their lives to full time religious study as resident scholars at the pesantrens (Islamic boarding schools) and for their future role as religious teachers.

While most of the other provinces were still struggling to define their respective provincial strategy for implementing the GJB, West Java immediately took off with a movement entitled "SARASA," an acronym of "Santri Raksa Desa" which literally means "Santris to nurture villages." R.A.K.S.A is also an acronym: R stands for *Rumah* or houses, A for *Air* or water,

K for *Kakus* or latrine, S for *Sampah* or garbage and A for *Air limbah* or waste water. The SARASA philosophy is to improve R.A.K.S.A in the *desa* (villages) through the efforts of communities guided and mobilised by the *santris*. RAKSA is also used to classify villages throughout the province. The RAKSA IV title is accorded to villages with more than 80% water supply and family latrine coverage and RAKSA I to those with coverage of less than 50%. RAKSA I and II villages were subsequently selected as targets for the SARASA activities carried out in five phases at three month intervals over the past two years. Each phase lasted for 12 days, involved 150 *santris* and was funded by a budget of approximately US \$430,000 from the provincial government. The budget was used for the development of information materials, training activities, support for the work of *santris* in the targeted villages (transport and living allowance), and materials to assist poor families. It is expected that after the completion of the 12-day programme the *santris* will maintain links with the villagers.

Local and national media have given extensive publicity to the SARASA programme, which covers a wide range of activities. Besides betterment of the WES facilities and increased awareness-raising activities, SARASA focuses on housing renovations, such as floor plastering, ventilation improvement, separate animal pen construction, and tree planting and vocational training for the development of cottage industries. From the government side, many regional agencies including Health, Agriculture, and Education, are involved in the programme. Senior officials from these agencies are appointed patrons for different villages and encouraged to monitor the progress of SARASA through informal visits, such as attending Friday prayers.

The experience of Bandung District

In Bandung District, site of the provincial capital, the fifth SARASA phase

continued on page 17

Sanitation through Schools: UNICEF Experience in Cambodia

By Festo P. Kavishe, Senior Project Officer, Community Actions for Social Development (CASD) and Wan Maung, Water and Sanitation Consultant

Introduction

The environmental sanitation situation in Cambodia in both urban and rural areas is alarming. The lack of toilets in rural dwellings, including those that are fairly modern, would strike even a casual visitor. In urban areas, the toilets in many buildings are added as an after thought. The situation is starkly quantified by the 1996 demographic survey of Cambodia. Less than half (49.5%) of households in urban areas had a toilet facility, and in the rural areas, it was a mere 10.3%. Overall, it was estimated that only about 15% of households in Cambodia have toilet facilities. One major explanation for this state of affairs can be found in the traditional behaviour associated with the use of toilets.

A micro-survey conducted in selected rural areas found that among the respondents, defecation at the edge of the yard was practised by 27%, the open field, 58%, and at the river banks, 2%. About 76% of adults used leaves for anal cleaning whereas 98% of young children predominantly used water. People have the habit of burying their faeces or simply covering the faeces with soil. About 87.7% of villagers identified lack of interest as a problem for latrine building. But clearly, this is not an issue of lack of interest, but one of behaviour. It is interesting to note the change in anal cleaning practices from adults to children. This is indicative of two things. First, the linking up of water and sanitation in Cambodia is finally bearing fruits. In the past, there was much debate about whether sanitation should be linked to water as most people did not use sanitary facilities in which water was a requirement. Second, the

change of anal cleaning behaviour in children supports the use of schools as the main agents for promoting sound sanitation strategies.

Changing sanitary behaviour through community school-based strategies

As part of the Country Strategy for Rural Water Supply and Sanitation Programme, the Royal Government of Cambodia with the support of UNICEF and several NGOs set up a sanitation awareness programme using a school-based community approach. The approach was facilitated by two developments in Cambodia. First, the Ministry of Education with UNICEF support, was successfully implementing a pilot system of community-based Cluster Schools. The system is based on selecting one school to be developed into a resource reference school for surrounding schools, using community management. The School Cluster system promotes equal access to education through sharing of technical and educational materials. Because of its success in the pilot areas, the system has now been adopted nationwide. The second development was that of a Government/UNICEF programme of Community-based Actions for Social Development (CASD) in which water and sanitation form an important component. This area-focused programme incorporates all relevant local institutions, especially schools, in stimulating community actions for the social development of children and women. The school-based sanitation related activities of the CASD programme include basic sanitation and water provision to each cluster school, and health, sanitation and environmental conservation mes-

sages in the curricula.

Within this framework, in July 1995 a pilot phase of the "School Sanitation Programme," annexed to the UNICEF-assisted Cluster School Programme, was introduced in two provinces. The Programme had the following objectives: (a) to help meet the immediate sanitation needs in the selected schools, (b) to serve as demonstration sites for family and public latrines, and (c) to provide a practical forum for disseminating health and hygiene information.

Collaboration with partners

The pilot project was introduced in two areas and implemented through two international NGOs (Refer to Cambodia Map). In Steung Treng (Northeast) province, the AICFIUSA (now Partners In Development, PIP) was selected as an implementing partner agency and CONCERN was chosen for Banteay Meanchey (Northwest) province. UNICEF support focused on material inputs for latrine construction. The NGOs were responsible for mobilising community labour and material inputs, supervising construction sites, training of teachers and students in hygiene education, and where feasible, developing water supply facilities. Government counterparts from Provincial Departments of Education, Health and Rural Development, the agency responsible for rural health care, were actively involved by providing technical assistance and supervising NGO staff. The central Government departments contributed to the preparation of a training module, design development and overall coordination. Funding was provided by the Swedish International Development Authority (SIDA) through UNICEF.

Criteria for selection of schools

The selection of the schools was decided cooperatively with representatives from the Ministries of Education, Rural Development and other concerned parties. The schools were selected from the UNICEF-assisted cluster schools; particular attention was given to ensuring a

continued on page 17

Safe Disposal of Human Excreta Low Cost Latrine Technology Options, Bangladesh

by T.V. Luong, Sanitation Coordinator, WES Section, UNICEF, Bangladesh (currently the Senior Adviser on Environment and Sanitation, WES Section, UNICEF Headquarters, New York)

Background

Today, about 48% of the population in Bangladesh have and use sanitary latrines because of the recently accelerated sanitation promotion in the country. Various lowcost latrine technology options, ranging from homemade pits to waterseal models, are being promoted to suit the financial capability of the people. Among the families who have sanitary latrines, 60% built the homemade type and 40% the waterseal. Most rural people are aware that diarrhoeal diseases are caused by indiscriminate defecation, poor hygiene practices and polluted drinking water.^{1 2} The introduction of the homemade latrine option coupled with intensive social mobilization has been an important factor in the acceleration of sanitation coverage.

Promotion of sanitation in Bangladesh started as early as 1962; however, until 1987 the waterseal latrine was the only type of latrine promoted. In 1988 the government adopted the Integrated Approaches (IA), using safe water supply as an entry point to promote sanitation.

To provide a place to procure waterseal latrine parts and promote sanitation, the Department of Public Health Engineering (DPHE) assisted by UNICEF, established in 1978 village sanitation centres (VSCs). VSCs or production centres sell waterseal latrine parts at a subsidized price. By 1990, 1000 VSCs had been established. In spite of the subsidized cost of the latrine, Taka 125, (US\$ 3) for one rein-

forced concrete cement (RCC) slab with waterseal pan and one concrete ring, many rural families still cannot afford it. Most of the people in rural areas are farmers; many are landless. The daily wage for an unskilled labourer is about Taka 40–50 (US\$ 1 –1.25).

Over the years, the demand for sanitary latrines has stimulated the growth in latrine producers. A national survey on latrine producers and the market situation in 1994 reported that there is a total of 4152 latrine producers in Bangladesh. The number of private producers doubled in the last three years reaching more than 2500. There are about 100 potters who make traditional burnt clay wares such as rings, cooking pots, water pitchers, toys, etc. and are

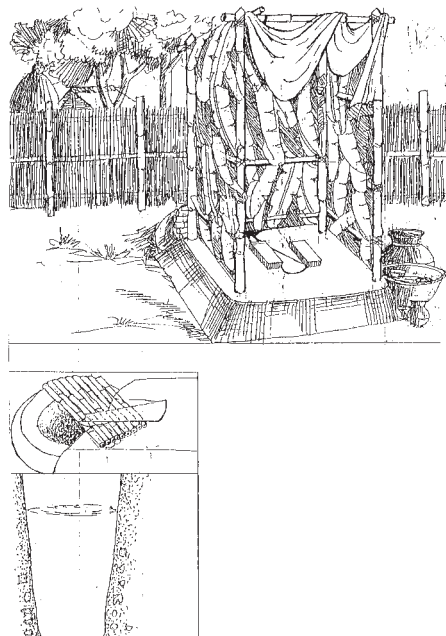


Figure 1: Home-made (do-it-yourself) Latrine (bamboo/timber platform — offset pit without lining)

now producing latrine parts. The burnt clay rings that are traditionally used as a lining for hand dug wells are now also used as latrine pit linings. Broken bottom clay water pitchers are being used as squatting holes and pit linings by some rural families.

Low Cost Latrine Technology Options

Based on a 1994 nationwide survey³, the types of latrines built and used in the rural and semi urban areas can be classified as follows:

- Type 1** Homemade (do-it-yourself) pit latrine—direct or offset pit with and without lining
- Type 2** Simple pit latrine with RCC slab and squatting hole and concrete cover with handle (SANPLAT)—direct and offset pit with and without lining
- Type 3** Simple pit latrine with concrete slab and burnt clay pan or cement pan without waterseal—direct and offset pit with and without pit lining.
- Type 4** Single pit waterseal latrine—direct and offset pit with or without lining
- Type 5** Double pit waterseal latrine with lining

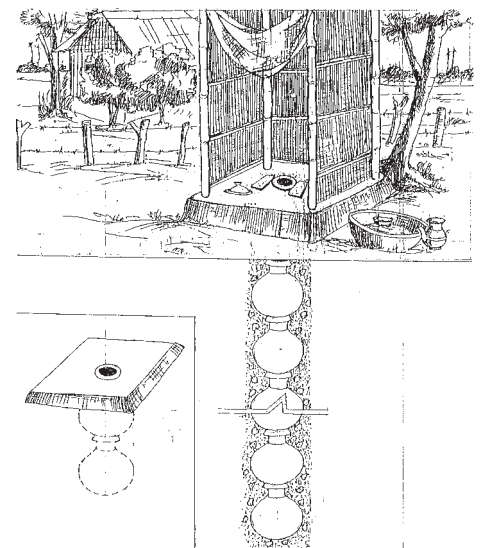


Figure 2: Home-made (do-it-yourself) Latrine (burnt clay pot as squatting hole with clay cover— direct pit lined with large burnt clay pitchers

The paper was prepared as a contribution to the WHO Sanitation Collaborative Council Working Group on Promotion of Sanitation, Geneva, Switzerland.

See illustrations of sanitary latrines constructed and used by the people.

Latrine Construction Materials

The Bangladesh people are creative. They make use of various low cost, local materials to build their latrines. These materials are summarized below:

Squatting platform

- Bamboo/timber with squatting hole;
- Compacted mud platform with burnt-clay pot as squatting hole and/or burnt clay pan with or without waterseal (for offset pit);
- Concrete platform (RCC slab) with squatting hole and concrete cover with handle (SANPLAT);
- RCC slab with cement pan or burnt clay pan without water seal;
- RCC slab with cement pan with waterseal.

Pit lining:

- Bamboo—full, half and/or split (mat)
- Burnt-clay pitchers
- Burnt-clay rings
- Bricks
- RCC rings

Superstructure:

- Dry leaves of banana, palm and/or trees;
- Bamboo (full/half size or mat);
- Thatch or dry grass;
- Dry jute sticks;
- Old jute cloth;
- Timbers and tree branches;
- Corrugated iron (CI) sheets;
- Brick mud wall.

To reduce costs even further, many rural latrines are built without roofs; roofless models are also preferred because they provide better ventilation. Materials, such as thatch, tin sheets or RCC slabs are used for roofing.

Latrine Design Criteria

Although a range of sanitary latrine technology options is adopted and promoted in Bangladesh, the design criterion summarized below is among the simplest. Most people can follow the standards but need periodic reminders to dig the pit at least 2 metres deep.

Platform:

- RCC slab: round shape, 1 metre diameter
- RCC slab: square shape, 1 metre x 1 metre

Bamboo/timber or compacted mud platform: square shape, 1 metre x 1 metre

Pit:

Diameter: 1 metre, round shape
Depth: at least 2 metres deep with smaller diameter at the pit bottom if not lined.

Cost of Sanitary Latrine

The average cost of a concrete slab waterseal latrine including a simple superstructure is Taka 200 (US\$ 5) to Taka 500 (US\$ 12.5) depending on the number of concrete rings (1 to 5) used for the pit lining. A do-it-yourself home-made latrine costs Taka 100 (US\$ 2.5) or less and can be constructed at no cost if local materials such as bamboo and tree branches are used.

The cost of one RCC slab with waterseal pan and one concrete ring (12 in. height) sold by a private producer is on average Taka 150 (US\$ 3.75). The average cost of one concrete ring is Taka 60 (US\$ 1.5) from private producers, while the cost of one burnt clay ring (6 in. high) is Taka 10–15 (US\$ 0.25–0.375) from the private potters.

continued on page 19

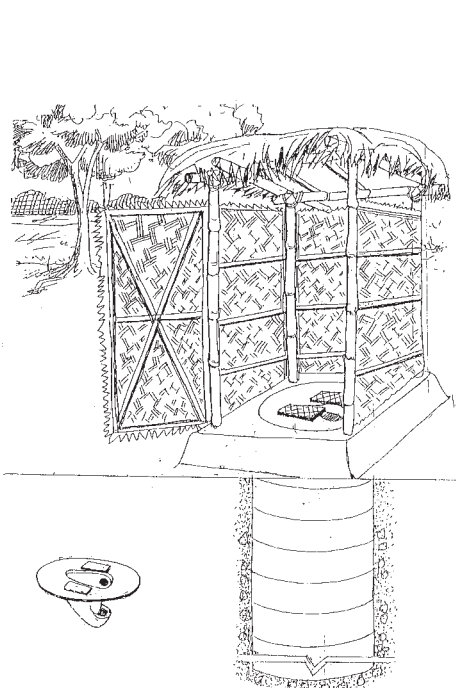


Figure 3: Single Pit Waterseal Latrine (RCC slab with more than 5 cement concrete rings as pit lining)

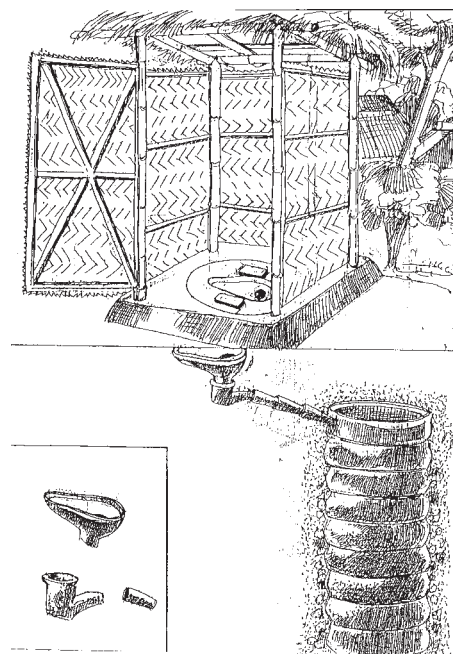


Figure 4: Single Pit Waterseal Latrine (RCC slab with burnt clay pan, water seal, connecting pipes and burnt clay rings as pit lining)

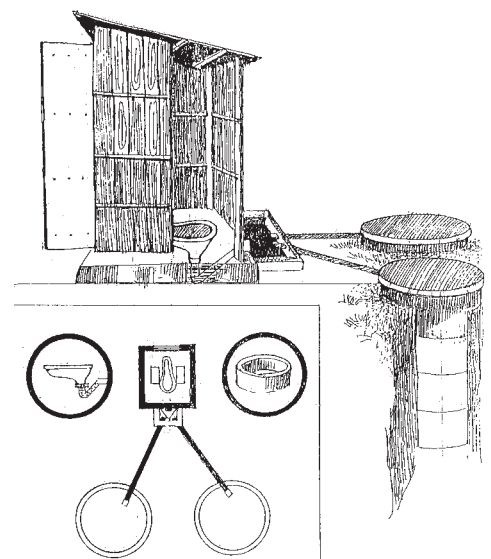


Figure 5: Double Pit Waterseal Latrine

Sanitation Promotion through Community Based Organizations: the Babuzai Experience, NWFP

By Rajen K. Sharma, formerly Project Officer, UNICEF, Peshawar

In Pakistan, 67% of the total population still does not have access to adequate sanitation¹ facilities. Although efforts to improve the situation are steadily increasing, they are limited to a few schemes carried out by specific government agencies and NGOs. Their impact on increasing coverage is negligible. To bring significant improvement in a reasonable period, more and more "actors" must be involved in mass sanitation promotion. These actors could include local NGOs, Community Organizations, village based social groups, school teachers and students. This paper describes how an active Community Based Organization (CBO) was mobilised to initiate village sanitation improvement on a self-help basis. Although it may be early to claim it as a significant achievement, keeping in mind the limited efforts made to mobilise & support the CBO, the modest achievement of motivating a few trendsetting households to build their own latrines is quite encouraging.

Introduction

Situated on the foothills of the Katlang Road, 55 kilometres from Mardan, Babuzai is a village of approximately one thousand households. Under the PAK-German Integrated Rural Development Programme (IRDP), a community based organization by the name of "SABA" was formed as part of village institution building to promote self-help initiatives in the field of basic development and income generation. With the assistance of UMP, SABA contributed directly to the improvement of the communities' living conditions through a variety of self-initiated projects.

¹Sanitation in this paper is defined as the safe disposal of human excreta through appropriate sanitary latrines.

Mobilization Phase

In January 1994, members of SABA approached UNICEF to support the construction of household latrines in the village. They expected a level of support similar to the material support provided under the UNICEF-assisted programme with Local Government & Rural Development Department (LG&RDD). Recognizing that the community of Babuzai had already carried out various projects on a self-help basis, UNICEF encouraged the CBO to mobilise the community to improve sanitation. Appreciating the organization's previous efforts, it was brought to their attention that the community had solved a major problem like water supply themselves. Therefore, if they felt the need for it, they could build household latrines. Assurance was given to the CBO members that if they were ready, UNICEF would help them in creating awareness among the communities, demonstrating the technology and providing technical support in latrine construction. The following approach was suggested:

- The initial step would be to have SABA members understand that people can build their own household latrines according to their capacity if they feel the need for it and are convinced that they can be built cheaply.
- UNICEF would then help create awareness by explaining in community meetings about the linkage of poor sanitation and disease and the importance, especially for the privacy and convenience of females, of having a household latrine.
- UNICEF would also coordinate with

LG&RDD the construction of a demonstration latrine in the village to familiarize people with the lowcost options available.

- LG&RDD would provide an initial material support grant (sanitary pan & PVC pipes) for a limited number of latrine units to enable the CBO to start work. The CBO would sell the materials to those motivated to build latrines.
- The funds generated from the sales would form a revolving fund enabling the purchase of more materials from the market and supporting the construction of additional latrines.
- Members of the CBO without latrines would build first, setting an example for others.
- Finally, CBO members would follow-up with the people in their areas regarding the construction and use of household latrines and present a progress report in their regular meetings.

Implementation Phase

Initially, the members of the CBO hesitated to motivate their people to build latrines without financial support from an external agency. They believed that building latrines would be expensive and people lacked the ability to construct them. However, after discussions with UNICEF and giving the matter careful consideration, the members were convinced that it is the responsibility of every individual to improve his/her household sanitation. After a 3–4 month period, they agreed to start the work in their village.

The process started with community meetings held in mosques and the CBO office. UNICEF, through LG&RDD, supported the CBO by explaining the linkage of poor sanitation and disease and the importance of providing privacy & convenience in open defecation. Information on lowcost latrine technology was also provided.

A one time grant of 100 sanitary Pan & PVC pipes was provided by the dis-

continued on page 19

■ Sanitation through Schools: Experience in Cambodia, from page 13

relatively even geographic distribution and the ability of the community to organize and contribute to school programmes. Since the programme also aimed at the promotion of a sanitation concept in the rural community, the approach was designed with community-based initiatives. A series of meetings was conducted with the community organization, which consisted of village leaders, Village Development committees (VDCs), Parent-Teacher Associations (PTAs), Cluster School Construction Committees and school directors and teachers. A formal contract was signed among all parties before the school/community-based health education and latrine construction were started.

Development and use of educational materials

The education package included health education to promote the understanding of the importance of the latrines among beneficiaries, and organizational assistance to ensure long-term maintenance and cleaning of the installations. A video documentary was produced under the title of *“Let’s Talk About Hygienic Latrines”* and a training module and education materials (lesson plans, game boards, posters, sketch books) were prepared in Khmer (Cambodian language) in cooperation with UNICEF, NGOs and government counterparts. The

school teachers were given intensive training to enable them to educate the students and community.

During the pilot phase, 60 latrine units were completed at five core and 11 satellite primary schools in the nine school clusters. About 70 teachers were trained in health, hygiene and caring practices and 5,030 students received hygiene education training. Hygiene education lessons were integrated into the curricula for testing. At the central level, an inter-ministerial committee with representatives from the Ministries of Education, Health and Rural Development was created to prepare lessons to be integrated into the curricula development.

During the project, the latrines provided the forum for the community health education initiatives. Most students, teachers and community members were closely involved in the construction of latrines and in education sessions. Field reports mentioned that many villagers regularly observed the construction and discussed construction techniques and the operation of the septic system. Community Health Education workers also explained the basic biological process involved in excreta disposal. Communities were informed about the dangers of ground water pollution caused by the nonseptic “soak-age” pit latrine.

Ground water pollution was traced

to the releasing of contaminants from the pit latrine design.

Though this was not necessarily bad, potential risks were foreseen which could converge and create poor sanitary conditions. Therefore the original pit latrine design, which employed septic tanks and a leach field, was modified. A septic tank, entirely sealed with the exception of a small pipe to emit methane gas and a larger pipe to discharge excess waste water into a leach field, was built. This modification made the latrine cost 28% higher than the original design. Further modifications are under consideration to produce a lowcost design.

The intention of the project is that through the school children, communities would adopt improved hygiene practices and positive behavioural changes. Therefore a participatory monitoring system was developed and testing is taking place in the targeted schools. Since the school latrine constructions were only recently completed, it is too early to measure their social and health impact. However, some communities have already responded positively, particularly in their desire for new latrine construction. The pilot phase has had a good beginning; the technical lessons and social component development are being disseminated to other community and school-based integrated WATSAN programmes in Cambodia. 🌍

■ Sarasa, from page 13

took place from 25 February to 8 March 1997. As in previous phases, six villages in two subdistricts were targeted. Santris from the local pesantrens held a series of evening community gatherings where discussions on religious matters and the importance of hygienic behaviour took place. The “Water, Cleanliness and Health According to Islamic Teachings” Handbook published under the UNICEF-MUI (Council of Islamic Scholars) Cooperation was used extensively in these activities.

During the day, the santris, who had received prior training on the use of

FRP molds from provincial Public Works officers, helped families to construct or repair their RAKSA facilities. The “stimulant approach” was adopted under which the government provided funds for procurement of cement and other non-local materials while the remaining costs, including labour, were contributed by the communities. While the first two phases were dominated by male santris, more female santris have become actively involved, not only in prayer meetings with the women’s groups but also in construction activities.

The five phases of SARASA in Bandung had the following measurable

results: 2489 new family latrines, 81 public latrines, five school latrines, six spring protection schemes, 300 dug wells and approximately 1000 refined houses with plastered floors, improved ventilation and separate animal pens. Each phase has reportedly managed to increase latrine coverage in the targeted villages from 10 to 30%. However, with starting levels as low as 9% in some villages, intensive follow-up activities have to be carried out to ensure that the programme meets its objectives. The GJB principles promote on-

continued on page 19

Health Impact of Water Supply and Sanitation Interventions

By Philip Wan, Senior Project Officer, Water and Environmental Sanitation, UNICEF Myanmar.

The International Drinking Water Supply and Sanitation Decade (IDWSSD) of 1981 to 1990 was promoted with the hope and conviction that intensified efforts would substantially reduce the incidence of disease, particularly diarrhoea, which kills millions of children annually in developing countries. At the end of the decade, reduction in diarrhoeal morbidity was not commensurate with the magnitude of the investment in water supply, sanitation and hygiene education. However, notable progress was made towards the eradication of guinea worms. Furthermore, other benefits related to an improved quality of life, such as reducing the time and energy spent by women and girls in collecting water by increasing access to safe water supplies, and providing privacy to women through sanitary latrine construction, were realised. At the turn of this decade, and in pursuance of universal access to a drinking water supply and safe excreta disposal system, the following questions are still being posed: Is there a significant health impact as a result of improved levels of water supply, sanitation services and hygiene practices? And if so, when does this happen?

In addressing these questions, the author has analyzed the findings of various studies on the health impact of water and sanitation interventions, and worldwide data, including the Bangladesh experience. The health indicator used is the incidence of diarrhoea. Other important factors, such as the awareness/literacy level and economic status, which also influence the impact of water and sanitation have not been considered in this paper. The conclusions are that the relationship be-

tween a package of water supply, sanitation & hygiene education and health is not linear, and that health benefits can be substantial only after the interventions have crossed a threshold or critical level.

Disease Transmission

The faeco-oral route of diarrhoeal disease transmission is well established. Pathogens in the human excreta constitute the disease source, and the routes from the source to the human host are largely through food, fingers and water as depicted in Figure 1. In this equation, access to and use of safe water removes the water factor; proper excreta disposal and hygienic practices reduce the risks of transmission through food, flies and fingers. The transmission routes also highlight the close interrelationship of water, sanitation and hygiene

elements in the context of community behavioral patterns to combat diseases. Experience has revealed the desirability of promoting a package of water supply, sanitation and hygiene education to achieve diarrhoeal reduction.

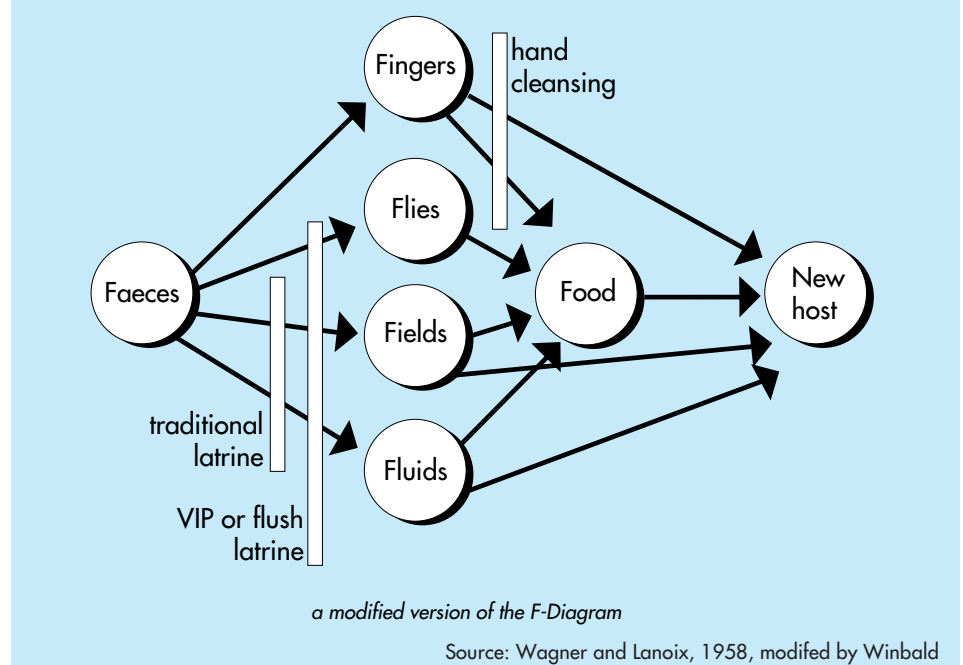
Water and Sanitation for Health

Whenever the sanitation and water supply situation worsens, for example, after a natural calamity such as a cyclone or an earthquake, or in refugee camps, the risk of a diarrhoea/cholera epidemic is readily recognized by all. This implies an awareness that there is a high correlation between a sharp drop in the level of sanitation and water supply services and an increase in diarrhoeal incidence.

On the other hand, questions are often raised about the real expectations of diarrhoeal reduction following improved water supply, sanitation and hygiene practices. These questions are naturally appropriate as one addresses the comparative benefits and effectiveness of alternative interventions to reduce child mortality and morbidity, in a social development environment where various

continued on page 21

FIGURE 1 Potential Barriers to Transmission of Disease from Excreta



■ Sanitation Promotion: The Babuzai Experience , from page 16

district office of LG&RDD, Mardan to give momentum to the work. Local masons were provided with technical knowledge of the simple twin-pit pour flush latrines that the programme promoted. During the training of masons, other interested villagers were trained in the technology.

The initial construction of a few latrines by some highly motivated people created interest among others for household latrines. Slowly people started coming to the CBO members to buy the latrine materials provided by LG&RDD. In a period of 10–11 months, 96 households built latrines and a fund of Rs.26000 was generated through the sale of the materials. More important, construction of these 96 latrines on a self-help basis influenced 76 other households to build their own latrines by purchasing materials from the market. This replication can be attributed to the fact that people were using their own resources to construct latrines; no financial support was provided by any out-

side agency.

At the time of writing this report, SABA is continuing its effort to improve the sanitation situation in the village without any outside support. They have purchased latrine materials from the local market using the funds generated from the sale of materials and have helped others to build their latrines.

Realising the need to have proper sanitary facilities in the schools, they constructed four latrines within the school premises using the generated fund.

Finally and most important, the efforts made by SABA have played a catalytic role in the village. People are slowly building their latrines by purchasing materials from the market and not waiting for SABA to help. Increases in the sale of latrine materials have been noted in the local shops in Babuzai.

Let us hope a day will come when every house in Babuzai will have its own latrine so people will not have to search for already scarce privacy for open defecation! 🌍

■ Low Cost Latrine Technology Options, Bangladesh , from page 17

Operation and Maintenance of Latrine

The routine maintenance of the latrine is done by family members. However, when the pit is filled, most latrine user families employ cleaner/sweepers to empty the pit. Often the excreta are buried into another pit, is covered with earth and the latrine is used again.

Constraints encountered are summarized below:

1. Lack of space for shifting latrine to a new pit.
2. Building a new latrine when the pit is filled is not cost-effective.
3. Cleaner/sweeper is not always available.
4. Unlined pits collapse due to high ground water table in some places or after heavy rains.

5. Soil deposited from rat-holes accelerates the filling up of pits.

References:

- ¹ Bangladesh Bureau of Statistics, Ministry of Planning (1994) Progotir Pathay.
- ² Associates for Community and Population Research (1993) Needs Assessment for the Sanitation Programme, DPHE-UNICEF, Bangladesh
- ³ WHO/DPHE/UNICEF (1994) Study to Assess the Impact of Social Mobilization Campaign for Sanitation on the Private Sector.
- ⁴ House of Consultant (1994) National Survey on Latrine Producers and Market Situation in Bangladesh, DPHE-UNICEF.
- ⁵ DPHE/UNICEF (1994) National Survey of Sanitary Technology, Bangladesh. 🌍

■ Sarasa, from page 17

going community activities, ideally weekly, towards achieving clean and healthy living environments. A gathering of all santrists participating in SARASA activities in Bandung was recently conducted to share experiences and discuss efforts to ensure community follow-up actions.

The Impact.

An evaluation has yet to be conducted of SARASA activities to assess the effectiveness of mobilising community resources in improving the WES situation or the Project's impact on institutionalizing healthy living behaviour. The provincial Government has invited three major universities in the province, the Institute for People's Welfare, the School of Government Administration and the Parahyangan Catholic University, to conduct an in-depth study of the impact of SARASA.

As far as quantifiable results are concerned, it has been reported that with SARASA activities taking place in all West Java districts, the province managed to build almost 100,000 family latrines during the 1996/97 financial year, an impressive increase of 233% over the previous year. In view of the 700,000 units required per year to meet the target of universal coverage, greater efforts will need to be made to ensure that the communities follow-up on the SARASA activities.

The provincial government is committed to at least meeting the Repelita VI (the current five-year development plan ending in March 1999) target of 60% sanitation coverage. As stated by Mrs. Neni Suhaeni, Head of the Provincial Health Education Centre, under the leadership of Governor R. Nuriana, who has a very strong commitment to improving the people's health standard and actually invented the name SARASA, the West Java province is confident that the target will be met. 🌍

Women Benefit from Intensive Sanitation in Vietnam

By Binoy Kumar Das, formerly Project Officer, Sanitation, UNICEF Hanoi, Vietnam

The people in Vietnam, particularly in the North and Central provinces, traditionally use human excreta as fertilizer. Since 1960, the government has encouraged the use of the double vault compost latrine for composting human excreta for about three months before use in the field. This was, however, not adopted by the people mostly due to the dearth of fertilizer. It was common to use even raw night soil and urine in the field. As a result, based on a survey conducted in 1990, 95% of the people in the North were infected with intestinal parasites. In 1988, water seal latrines were promoted as an alternative, but acceptance and expansion of that system were also poor. Mainly because the implementors and advocates themselves, the officials from the Ministry of Health and the Provincial Health Departments, needed additional orientation to change their outlook towards better sanitation and hygienic practices.

Officials of the Ministry of Health and the Provincial Health Services of Vietnam visited Medinipur, India in December 1991, to study its Intensive Sanitation Project. After the visit, a team member from Thai Binh Province, started a similar project in one district

and completed it in four years. The project was designed for Quynh Phu District comprising 39 communes (population 232,000, HHs 39,000). It was based on the principle of self-help, without subsidies, but with particular attention paid to the women and girls in each household. A loan component was added for income generation, leading to the construction of sanitary facilities both for the poorest families and for families owning their own tubewells. With the assistance of community associations, particularly the Women's Union, Youth Union and the Commune People's Committees (CPCs), many programs were promoted, for example, household hygiene education, safe storage and handling of food and water, improvement of animal sheds and safe disposal of animal dung. It also encouraged vector control (using biological methods such as special kinds of small fish, fly traps, etc., to destroy dengue fever larvae in household water storage tanks), installing lowcost household water treatment units and large scale use of smokeless chulas (stoves). Enthusiasm was so great for mobilizing people's participation that CPCs offered the poor families a few kg. of rice from their own

funds against the construction of each type of household sanitary facility. An Vinh commune and the WATSAN Reference Centre of Medical College, Thai Binh, took the lead.

In the same district, the Women's Union started the Women in Development Project to especially benefit women and children. Included in the project were loans for income generation programs for poor families using the VAC system (Vegetable, Aquaculture and Cage), dissemination of knowledge on "Facts for Life" from family to family, and provision of soya bean milk for children in creches/kindergartens to eliminate malnutrition.

The net result of the District's Intensive Sanitation Project and the Women in Development Project (assisted by UNICEF), are the smiles on the faces of the women in the 39 communes. Ask a woman. She will relate the benefits she received from the package of sanitary facilities in her house, how comfortable and economic the smokeless chula is, and what she gained from the VAC system. She knows the facts for life and can tell when the baby needs breastfeeding and, of course, the benefits of handwashing with soap. The women can tell the cost of each sanitary facility, how it was obtained and how easy it is to build.

I was quite surprised when, on 16 March 1995, I visited Quang Tho Commune in Thanh Hoa Province - far away from Thai Binh Province. This commune has not received any support from UNICEF yet. Ms. Ngo, the Chairperson of the Commune People's Committee, sent a team from the commune to Thai Binh at CPC's expense to study the Intensive Sanitation Project. When the team returned, the CPC became very enthusiastic. They sold some of their old iron junk and arranged a revolving fund to give loans to families to construct household sanitary facilities. One team member, who was especially motivated, was the Chairperson of the commune's Communist Party. Upon his return, he built a costly, tiled-wall water seal latrine with water storage and pumping in his house, at his own expense. His

continued on page 24

¹ The Intensive Sanitation Project began September 1989 in the Medinipur District of West Bengal State (India). It covered a population of 6.74 million (1.09 million households) in 10,468 villages, the single largest sanitation project in India. It was designed to run on a self-sustaining basis, without subsidy, to benefit primarily the women and girls. Safe latrines, bathing/urinal platforms, soakage pits, garbage pits, smokeless chulas (stoves) were the main components of the household sanitary package.

The project is a success due to the selfless service of the NGO implementors, the Rama Krishna Mission Lok Siksha Parisad (RKMLP) and the cluster organizations of the village youth clubs, who launched a massive and aggressive house to house campaign. Girls were even advised not to marry a boy who does not have a latrine and bathroom. Club members and some rich people purchased latrine pans and slabs on their own to give to the poor families on loan. Now in many villages in Medinipur, 100% of the families possess safe latrines. Women and girls enjoy pride, privacy, convenience and comfort.

■ Water Supply and Sanitation Intervention, from page 18

sectors are competing for dwindling resources. This concern arises since, in many developing countries, improvements in one or more of the following, namely water supply, sanitation and hygiene practices were not accompanied by significant diarrhoeal reduction. For example, despite the high water supply coverage in Bangladesh, where 95 percent of the population drinks tubewell or tap water, the reduction in diarrhoea has been marginal. The corresponding sanitation coverage was much lower at 35 percent in 1994, rising from 16 percent at the end of 1990. Due to the sparse data on the level of hygiene education in countries, this parameter has not been analysed.

Therefore, it appears that the relationship between a package of improved water supply, sanitation and hygiene education and diarrhoeal incidence is quite complex and nonlinear.

Review of Studies

Studies on health impact due to water supply, sanitation and hygiene interventions have been carried out in many countries. An analysis of 144 worldwide projects by S.A. Esrey et al. (1991), revealed that the median reduction in diarrhoea morbidity due to combined water and sanitation inputs was 26 percent, ranging from 0 to 68 percent. The findings also showed that, taken individually, sanitation improvement yielded a diarrhoeal morbidity reduction of 36 percent compared to 17 percent by water supply. However, the studies did not indicate the size of the interventions. Nor did they indicate “base levels”, i.e. the prevailing level of services at which the interventions were operating. This brings into question whether there is a critical or threshold value above which health impact is triggered. Before looking into the threshold value, let us reflect on the base levels.

Base levels

An analysis was carried out using the statistics on access to water supply and sanitation for 96 countries with “middle” to “very high” under-five mortality rates (U5MR), as compiled in the UNICEF

“State of the World’s Children 1993”; this excludes the industrialized countries. The data revealed that in 53% of the countries, over 60 percent of the population have access to water supply, compared to 35% of the countries having access to sanitation at or above 60 percent. This reflects the generally greater perceived felt-need and higher political commitment for water supply. Under this global situation, sanitation interventions usually operate at higher prevailing water supply base levels, whereas water interventions operate at lower sanitation coverage levels. Therefore, the conclusion of the study on 144 worldwide projects referred to earlier, that sanitation has greater impact than water supply, needs to consider the base levels at which interventions were initiated.

Threshold Value

Can we realistically expect to see health improvement immediately following the interventions or are there other necessary conditions to be fulfilled? Consider the analogy of pushing a heavy load on a surface. The load will move only after the applied force exceeds the frictional forces that need to be overcome. In other words, the force exerted has to cross a critical level. To analyse this concept, let us turn to sanitation. Consider a homogeneous settlement of 100 households. If 30 random households have recently been motivated to

use sanitary latrines, while the remainder continues to pollute the environment through open defecation, it is quite likely that the whole community, including the latrine users, will still be exposed to high risks of diarrhoea due to the overall high pathogenic load in the environment. On the other hand, if 60 families use sanitary latrines, it may not be surprising that the incidence of diarrhoea, even among the non-users of sanitary latrines, is reduced significantly. The argument made, based on the herd immunity concept, is that there is a critical level that has to be crossed before the intended impact is felt. Therefore, investments made before reaching this critical level are not wasted, although the derived health benefits may be initially insignificant. These investments are preconditions to achieving the desired level of services necessary to yield the benefits.

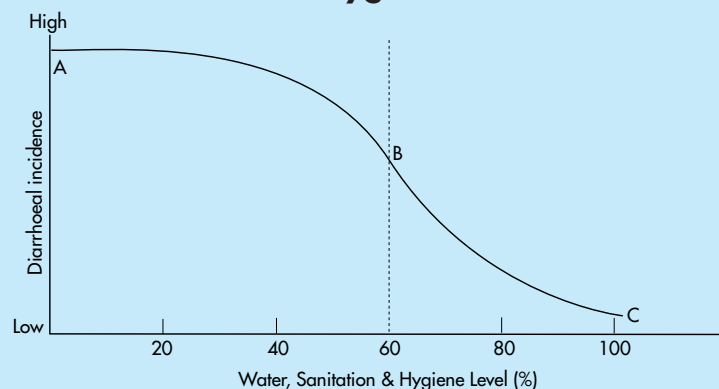
Defining the threshold value is not easy, as the behavioural patterns linked to other factors, such as literacy, awareness, economy, settlement density, etc. influence the magnitude of this value. Each developing country may have a different value, depending on its social and economic status.

Relationship between diarrhoeal reduction and water sanitation & hygiene practices

The desirability of promoting a package of water supply, sanitation and hygiene education is well recognised. Taken as a

continued on page 27

FIGURE 2 Postulated relationship between water, sanitation & hygiene and diarrhoeal incidence



The Mangochi HTN Workshop

Mangochi, 17–21 March, 1997

by Erich Baumann, SKAT, Switzerland

The Handpump Technology Network (HTN)

Over 4 years ago in November, 1992, the last international handpump workshop, sponsored by the UNDP/World Bank Water and Sanitation Program, was held in Kakamega, Kenya. The participants discussed issues pertaining to VLOM handpumps, maintenance strategies, manufacturing and drilling. Drawing upon India's pioneering work in the field, the workshop placed considerable emphasis on the promotion of low-cost water supply and sanitation technologies, including handpumps. The need for global co-ordination and collaboration between governments, external support agencies and other sector agencies was emphasised, both to avoid duplication of efforts and to ensure optimal utilisation of scarce resources. It overwhelmingly mandated the formation of the Handpump Technology Network (HTN).

The HTN is a network open to all organisations and individuals interested in rural water supply who are ready to contribute to the development of the sector. It has been functional since 1993 on a small budget—funded largely by the Swiss Agency for Development and Cooperation (SDC). SKAT, located in St. Gallen, Switzerland provides professional support and runs the secretariat. Since 1995, an HTN Sector Professional based in UNICEF India office covers

During his speech to inaugurate the Handpump Technology Network (HTN) Workshop in Mangochi, Malawi, the Hon Edward Bwanali, Minister of Irrigation and Water Development, MP, highlighted the need for a renewed impulse to serve those who were left behind. "It would be a criminal negligence if we were not trying our utmost to bring safe water to our unserved rural population."

mainly the Asia region. The current focus of the network is on promoting the sustainability of handpump technologies, in terms of both hardware and software issues. It has published a number of documents, which have found wide acceptance and usage, initiated research and provided assistance to several countries on request. The organisation of the Mangochi workshop was another important initiative taken by HTN.

The Mangochi Workshop

The sector has made significant progress and many changes have taken place since Kakamega. Handpumps continue to be the principal technology used in rural water supply. They are often the most cost-effective option for supplying low-income communities with safe drinking water. They are also environmentally friendly, relatively simple to operate, and manageable by the community itself. However, maintenance of community handpumps is still a major problem. Many questions remain unanswered: How can the impact of investments in handpump programmes be maximised? How can additional resources, especially at the local level, be mobilised? How can the sustainability of water facilities be improved? How can the different players cooperate and interact?

Considering the need to draw together experts from the field to share experiences and lessons learned, HTN conceived and planned the Mangochi Handpump Workshop as a follow-up to the Kakamega Workshop. It was hosted by the Government of Malawi and UNICEF Malawi under the auspices of HTN, sponsored by SDC and UNICEF, NYHQ.

The workshop received an excellent response, over 150 participants from

nearly 40 countries with diverse experience and expertise representing governments, NGOs, the private sector, bilateral and multilateral agencies actively participated and shared experiences. The workshop provided an excellent opportunity to exchange information on an inter-regional basis, discuss issues affecting sustainability and make realistic recommendations for the sector policy. The location of the workshop, held on the shores of Lake Malawi, lent a positive and stimulating atmosphere to the formal daytime deliberations and facilitated an informal and congenial interaction of the participants between the sessions.

The theme of the workshop "Partnership, Roles and Responsibilities" illustrated that unless additional financial and non-financial resources are mobilised through user participation the goal of universal access to safe water will not be achieved in the foreseeable future. Government agencies, donors, advisors, and community leaders have to recognise the principle that the local community itself must be the primary decision-maker in the planning and up-keep of the water points. With the changing role of governments, the private sector has to play a greater role in service delivery.

The Workshop Objectives

The workshop had the goal:

- To make recommendations on basic principles of implementation strategies related to technical, financial and institutional aspects which will promote resource mobilisation, community involvement, increased coverage and enhanced sustainability;
- To adopt guidelines on technology choice and standardisation;
- To look for specific solutions in the Africa Perspective, keeping in view the prevailing field situation in Africa, where most countries have distinctly different conditions (industrial growth, technical manpower, market demand, availability of raw materials, groundwater quality, drilling capacity etc.) when compared with

continued on page 24

Nicaragua

A Village Preventive Health Center-Sanitary Block

By UNICEF Managua, Nicaragua

The installation of 260 Sanitary Blocks in as many villages in Central Nicaragua's Matagalpa Region has created the physical environment for villagers to satisfy their basic water and sanitation needs and provided an entry point for other developmental activities. A Sanitary Block, costing on average US\$700, is simply a handpump installed in a deep or shallow well, two washing basins and two bathing cubicles adequately protected with a platform and a drainage system. One set is for women and girls and the second, for men and boys. The area is usually fenced in, with vegetables and trees planted around it. Villagers see this physical environment as a park, serving as an area for recreation and a center in which preventive health is practiced.


For women and children, the Sanitary Blocks are particularly important. They provide a place to gather, where water is accessible and close to home. One can also take a bath in privacy and wash family clothing in a hygienic and easy way.

After a long drawn out civil war, it is the first time poor rural women are involved in a project in which they are not only the beneficiaries but the force behind an innovative approach. Their basic needs such as water security, improved personal and community hygiene, and environmental protection, can be satisfied at the community level. The creation of the Sanitary Block as the center of community social life has renewed some traditional community support systems that had disintegrated during the war.

Exchanges of information and experiences, ways to raise healthy children and protect them from abuses, are some topics of conversation that one can hear when visiting a Sanitary Block. The Block is the social center of the village where the volunteers of the Village Water Committee promote preventive health and child protection. The Committee, on which several women members usually serve, is also responsible for the operation and maintenance of the system.

Fighting diarrhoea, parasitism, dengue and cholera are community health challenges undertaken by women who have grown to learn the beneficial effects of the Sanitary Blocks on their families and communities. The strengthening of leadership capacities among women has been a positive outcome of this intervention. The increasing number of rural women in the community social environment has opened the opportunity for them to play a more visible role in the decision-making process. It has strengthened their faith in their skills and capacities. In a quiet way, a personal and collective process of empowerment has begun.

The starting point of this transformation has been the strengthened confidence that with a little help from outside, women could improve their lives and that of their families. This occurred in the installation of new water sources and Sanitary Blocks. It is sometimes difficult to separate women's new found role from their daily domestic experience. Yet their new role has brought to life processes of reflection, knowledge, and opportunities for action, resulting in increased self-esteem and respect from the community.

Sanitary Blocks, which started as a humble intervention of the Nicaraguan WES Programme, have become the symbol of what communities and, in particular women, can achieve if opportunities are created. 

■ UNICEF-WHO, from page 3

phasis in water supply and sanitation development with other UN organizations and external support agencies, within country programmes and related sectors and at various international fora. These fora include the Inter-agency Steering Committee for Water Supply and Sanitation, ACC Sub-Committee on Water Resources, Collaborative Council and its working groups, United Nations System-wide Special Initiative on Africa, and other groups. To this effect, UNICEF and WHO will:

- advocate that water supply and sanitation development be under-


taken at several levels and through joint position papers.

- promote country-level coordination between sector agencies and the health authorities in order to motivate national and local decision-makers to consider the health, social and economic benefits of water supply and sanitation.
- closely work with NGOs, the private sector, research and academic institutions and other stakeholders.

Conclusion

This strategy represents a reaffirmation

of the commitments made by UNICEF and WHO to work towards universal access to safe drinking water and sanitation. More specifically, it is a commitment by the two organizations to seek out and implement, where possible, joint actions to achieve this goal. While water supply and sanitation are properly undertaken for a variety of health, social and economic reasons, this Strategy recognizes that the primary concerns of UNICEF and WHO continue to be the health and social aspects of people in need.

The two organizations intend to plan collaborative activities annually at appropriate level with progress reporting to be made to the Joint Committee on Health Policy every two years. 

■ **HTN Workshop**, from page 22

developing countries in Asia.

- To define HTN mandate and scope.

Key Recommendations

A brief summary of the results from the workshop's deliberations are listed below:

- Changes in implementation strategies are required to include: demand driven approach, private sector based service delivery mechanism, cost sharing by all stakeholders, capacity building at all levels. With a corresponding change in the institutional role of the Governments—from a provider of services to a facilitator;
- Community management and decentralisation of maintenance leads to enhanced effectiveness and accountability;
- User contribution is essential to mobilise additional resources;
- The impact of investments can be maximised by using appropriate technologies;
- Standardisation renders significant benefits;
- An efficient service delivery can be achieved through decentralised procurement with the private sector playing the lead role, providing complete service delivery packages including production, supply of pumps, installation, training, spare parts supply, repairs, and after sale services;
- Support to R&D on public domain handpumps should continue but be confined to the fine-tuning of existing pumps;
- Drilling costs can be reduced by optimising well design, adoption of appropriate low cost drilling or digging options;
- HTN should expand its scope of activities beyond handpump based water supplies to include: operational research, drilling and digging, environmental sanitation;

The Mangochi Declaration

The Mangochi Workshop found that although low-cost technologies are well proven, and despite the existence of many examples of successful implementation strategies, progress remains slow. In a declaration ratified during the final deliberations, the workshop proposed that new impetus should be given to the global efforts in the sector. It pointed out the need for a partnership-based approach, including the creation of an effective framework for co-ordination of efforts and closer collaboration on a global scale.

- HTN should place more emphasis on dissemination of information.

Focus on Africa


The workshop recommended focusing the work on those regions where the need is the most pressing. In partnership with UNICEF, HTN intends to strengthen efforts in Africa by launching a Capacity Building Project. Funding is solicited to establish a posting for a HTN Sector Professional (HSP) based in Africa. Within a regional framework of HTN partners the HSP will provide demand-based support to sector agencies in the planning of demand driven implementation, private sector based service delivery, and changeover from centralised to decentralised maintenance.

The United Nations System-wide Special Initiative for Africa (UNSI), has launched a new water strategy for Africa that will co-ordinate the fragmented efforts. The implementation of the new strategy will require substantial co-operation among all stakeholders. In this context, the HTN Capacity Building Project will help to avoid cross-purposes or duplication of each other's efforts.

The Warm Heart of Africa

For many of the delegates, the Mangochi Workshop represented their first opportunity to experience the 'The Warm Heart of Africa'. Malawi certainly lived up to its reputation. The UNICEF Malawi team headed by Ms. Nathalie Hahn and Christopher Zulu put


The United Nations System-wide Special Initiative for Africa (UNSI), has launched a new water strategy for Africa that will co-ordinate the fragmented efforts.

so much hard work into the preparation and the organisation of the workshop. Even though it took place in a perfect setting, the location presented at the same time a logistic nightmare. The tireless effort and the excellent support from the UNICEF Malawi team created the pleasant atmosphere that helped to find the consensus, which is reflected in the Mangochi Declaration. It remains now our challenge to maintain the momentum created by the workshop and to ensure that the sense of co-operation and partnership continues in our common endeavour to provide safe water to those who are unserved. 

An Infopage on the workshop can be found on the Internet: <http://www.skat.ch> The full proceedings of the workshop will be available in August 1997. Those who would like to receive a copy or who are interested in further information concerning HTN please contact:

Mr Erich Baumann or Ms Catherine Dia SKAT, Vadianstrasse 42, CH-9000, St Gallen, Switzerland. Phone: + (41) 71 228 54 54. Fax: + (41) 71 228 54 55. E-mail: erich.baumann@skat.ch

■ **Women Sanitation Health Benefits**, from page 20

daughter, a student in class IX at a boarding school in Thanh Hoa City, the province capital, does not like living in the boarding school because there are no sanitary latrines. She comes home as frequently as possible with her friends and classmates to enjoy the latrine, water facilities and clean environment in her house. Her friends enjoy it and, naturally, wish to have the same facilities in their own houses. 

The Costing of Water and Sanitation Investment

Experience from Guatemala

Orlando Lugo, Senior Programme Coordinator UNICEF, Guatemala

Jorge Mario Molina Water/Sanitation Programme Officer UNICEF, Guatemala

The Instituto de Fomento Municipal (INFOM), a Government of Guatemala institution, adopted the Unified Cost System for Water and Sanitation (SUCAS) in March 1996, a system developed and used by UNICEF Guatemala since 1993. A reform of the water and sanitation sectors is underway and, is likely that INFOM will become the national coordinator for those activities.

In Guatemala, the water supply and sanitation activities are managed by a total of 330 municipalities, 12 NGOs, UNEPAR (Ministry of Health's Executing Unit for Rural Aqueducts), INFOM (National Institute for Municipal Support), PAYSA (Water and Sanitation Programme for the Highlands), DSM Environmental Sanitation Division) and EMPAGUA (Guatemala City Water Company). Some smaller institutions perform the same task. In addition, the Social Investment Fund channels funds from the World Bank and the InterAmerican Bank of Development to increase coverage. All these bodies work independently and lack a unified cost system. It is, therefore, difficult to calculate the precise allocation of Government funds for water and sanitation activities.

It is estimated that the Government allocated 0.06 percent of the GDP in 1996 for water and sanitation. This amount is lower than the 0.17 percent allocated in 1988. The National Programme of Action, prepared by the Planning Secretariat (SEGEPLAN), indicates that the end-decade goal is 82% for potable water and 82% for sanitation. Those estimates are based on a population of 8.3 million people. However, according to the most recent census, the population of the country is 10

million. Some international agencies are disputing the figures of the census, stating that the real population figure is 11.2 million. In any case, the coverage at the end of the century will be lower than expected and the country will not achieve the goals for water and sanitation. The absence of a costing system, adds to the constraints in obtaining the resources needed to provide water to all the people. Cost is the missing element of the equation to realistically plan end-decade goals for water and sanitation. This scenario renders the goals for water and sanitation, a statement of good intentions.

Most cost analysis manuals or "models" consist of a guide or checklist for data collection. They are exhaustive and comprehensive and identify data that may aid in calculating the total cost of a water supply system or a latrine, but are practically impossible to obtain from the Government's budgets. In contrast, SUCAS is straightforward, user-friendly and simple. It is based on the collection of information that is readily available from three different levels: community and municipal, regional and national. In this regard, the system considers pre-investment, investment and costs, such as management, administrative and technical assistance. An important characteristic of this system is the participation of the community leaders, government officials and NGOs. The application of SUCAS involves three steps: organisation and training, collection of data and analysis.

The organization and training phase includes identifying the people who are working on a specific project and holding a national seminar to train them along with senior staff. During the seminar the principles of SUCAS, along with

the forms, are explained and discussed with the participants. It is helpful to conduct an exercise to determine the comprehensibility of the questions on the form. If necessary, adjustments in the questionnaires should be made. However, although the words can be changed, the content of the questions should remain the same. During the meeting a work plan is prepared to follow up the application of the system.

In the second phase, data is collected through four questionnaires, numbered one to four, administered at the three levels. The local committee or the water council completes questionnaire one, which describes the community's contribution, such as labor and materials or any preliminary study that may have been conducted. Questionnaire two is the responsibility of the technician or health inspector who supervises the project locally; information on the work of the technicians, masons or inspectors should be included. Questionnaire three adds the cost of technical assistance and the supervisor to the information obtained through the first two questionnaires. The fourth is the responsibility of the central level and consists of a compilation of the data of the first three questionnaires plus administrative costs (telephone, electricity, rent, vehicles, gasoline, etc.). This design ensures that each questionnaire summarizes the information from a lower level as a means to consolidate the data and for quality control. Thus, the regional questionnaires include data on the community and municipal contributions and the national questionnaire is a compilation of the available data at both the local and regional levels.

The third phase is the analysis of the data using the computer programme developed for this purpose. Upon request, the programme is distributed free of charge by the UNICEF Office in Guatemala. The computer programme functions as a data bank and an instrument to generate reports, and it allows the comparison of each project among municipalities or by the type of technology used. The programme is flexible and can

continued on page 27

Reducing Pests and Insect Vectors

by Michael Nathan & Annette Wiltshire¹

In the Caribbean and Latin America, dengue is an important public health problem. The dengue virus is spread by a mosquito, *Aedes aegypti*, which breeds in the water that collects in the wide variety of containers associated with everyday living.

There is no vaccine against dengue; prevention and control of the disease are dependent on taking measures against the mosquito vector. Central to these efforts is the involvement of communities in eliminating unwanted containers and managing others in ways that prevent mosquitoes from breeding in them. Over the past three years, 15 schools in Barbados, Dominica, Montserrat, St. Kitts & Nevis, and St. Lucia became involved in the Dengue Prevention and Control Programme to foster young children's awareness of and commitment to the improvement of school, home and community environments.

Existing Health and Family Life Education programmes have been supported by the development of action-oriented curricula designed to meet the identified needs of the children, their families and communities. Teachers participated in the development of the curriculum and its implementation at three 5 day workshops. This approach has enabled the teaching to be infused into subjects, such as Art, Music and Language and the regular science-based subjects, allowing for better use of available time.

¹Michael Nathan
Entomologist
Office of Caribbean
Program Coordination
Pan American Health Organization
P.O. Box 508 Bridgetown, Barbados

Annette Wiltshire
Education Consultant
2, Old Paddock Link Road
Blue Range, Diego Martin Trinidad


Children's knowledge of environmental health issues has been enhanced, and their application of new skills and responsibilities has led to major improvements in the school environments. Acute littering problems have been successfully addressed as children recognise the importance of keeping their surroundings clean and tidy. At several schools the pupils separate their garbage at the point of disposal, e.g. into biodegradables used for composting and application to vegetable and horticultural gardens; combustibles for on-site incineration; and non-combustibles and plastics for reuse, or for pick-up by the municipal authorities or burial, where there is no collection service. The efforts of one school in Barbados reportedly reduced the volume of garbage for collection by over 90%.

Mosquito breeding sites on the school compounds, such as old tires, plastic containers and discarded tin cans, have been virtually eliminated with a simultaneous reduction in rodent and other pest problems. Problems associated with stray animals have been resolved in some schools by fencing the compounds or getting the help of the community to set up a watch, as has happened in Montserrat. This has allowed the children to plant shade trees, grow decorative shrubs and flowers and cultivate vegetables. In Dominica, the salad vegetables grown at Mahaut School now supplement the school feeding programme.


Through outreach activities, the children have carried the information and skills they learned at school into the wider community, directly through their own actions and indirectly via family and friends. Parent Teacher Associations have also played an important role in this process and, in some instances, interest and support from the local business sector has been forthcoming. In St. Kitts & Nevis, one school's concern

over the health risks from an asbestos roof prompted the children to write to the Minister of Health to lobby for the roofs replacement. This endeavor proved successful.

The provision of a nominal "start-up" grant for each school was dependent on their developing a programme of activities for the first year of what is now a three-year-old initiative. The seed money was made available through a Caribbean Dengue Prevention and Control Project financed by the Government of Italy and managed by the Pan American Health Organization. Any additional inputs have been the result of the schools' own efforts in mobilising resources from the wider community.

The school programme, though conceived in the context of a growing concern about dengue, was designed with a much broader goal: fostering a sense of personal and social responsibility, gaining a greater awareness of environmental health issues; and acquiring the skills needed to act on the knowledge gained about health. The programme has recently expanded to schools in several other islands of the English-speaking Caribbean. 

■ Cost Calculation from page 28

tation is obvious and initiatives like the SUCAS are very much welcomed. However there is an apparent risk that such systems are created more in response to demands from donors than for increased efficiency of the sector as a whole and that input and reporting will be designed accordingly. As an isolated attempt, distinct from the country's overall budgeting, it also runs the risk of quickly becoming obsolete and unsustainable. The institutional capacity needed to run and maintain the system needs to be carefully appraised before implementation. Finally, the involvement of users both as providers of data and in the analysis of data is essential from the creation of a cost calculation system to ensure its sustainability. The example of Guatemala where the system now has been adopted by the government may prove to be a successful one. 

■ Water Supply and Sanitation Intervention, from page 21

package, the author postulates that, in simple terms, the relationship between the package intervention and diarrhoeal reduction is expressed in the model displayed in the graph of Figure 2.

The graph shows a nonlinear relation that exhibits different steepness in the slope at different parts of the curve. Unless the pathogen load ingested is reduced substantially, the diarrhoeal incidence will remain high. However, a dramatic reduction in the incidence rate occurs because of reduced pathogen load in the middle part of the curve. The pathogen load in the environment is high in region A of the graph where the access to and use of the services is low. A sharp reduction in diarrhoeal incidence is likely to occur in region B when the threshold value is crossed.

Another important feature of the nonlinear relationship is that a given incremental improvement need not yield the same magnitude of benefits. For example, a 20 percent improvement will produce a substantial benefit, if the prevailing service level at the time of intervention is 50 percent, whereas, the impact will be negligible if the same improvement operated at a prevailing level of 10 percent.

The proposed relationship can also explain the wide range of impact from 0 to 68 percent for water and sanitation interventions, as revealed by the review of the 144 studies referred to earlier. The impact depends on the prevailing condition and the size of the intervention.

Bangladesh Experience

Against a background of high water supply coverage, the significant increase in the use of sanitary latrines in recent years combined with improved handwashing practices has raised expectations of substantial reductions in diarrhoeal incidence. This has not been realised on a large scale. Earlier studies in Mirzapur (Aziz, et al. 1990) have shown that a package of water, sanitation and hygiene practices yields a diarrhoeal reduction of about 25 percent over a period of two years.

In other project areas where sanitation coverage has reached 60 percent and above, e.g. in certain Thanas of Barisal District, people have claimed a substantial reduction in diarrhoeal incidence. A study is underway in Barisal to scientifically assess the health impact of the sanitation and hygiene interventions.

Based on the proposed model depicted in Figure 2, the use of sanitary latrines and hygiene practices need to reach a higher level, probably around 60 to 70 percent, before the health impact can be triggered.

Therefore, the strategy currently promoted by UNICEF in support of the Government programme is to adopt an Accelerated District Approach to achieve and sustain high sanitation and hygiene coverage through intensive social mobilisation efforts in each District. The sanitation coverage has increased significantly from about 20 percent in 1990 to 41 percent nationally in early 1995 (BBS, 1995).

Conclusion

The positive impact of water supply, sanitation and hygiene education, as an integrated package, on diarrhoeal disease is supported by various field studies and aetiological consideration. Studies have also pointed to improvements in nutritional status. However, it is postulated that the health impact of the interventions is governed by the magnitude of the interventions and the prevailing service levels. The interventions need to be substantial enough and cross a threshold level to realise significant health impact. Therefore, initial investments in the sector should not be considered as ineffective from a health status consideration, but instead, as vital building blocks for crossing the threshold level. 🌐

References:

1. Aziz, K.M.A, et al. "Water Supply, Sanitation and Hygiene Education: Report of a Health Impact Study in Mirzapur, Bangladesh. UNDP/World Bank, 1990.
2. Bangladesh Bureau of Statistics, "Progotir Pathay 1995". March 1995.
3. Esrey, S.A. et al. "Effects of improved water supply and sanitation on ascaris, diarrhoea, dracunculiasis, hookworm infection, schistosomiasis and trachoma. "Bulletin of WHO" 69(5):609-621. 1991.
4. UNICEF "State of the World's Children". 1993.

■ Costing of Water and Sanitation from page 27

be adapted to the local jargon.

The experience of other countries in applying the cost system indicates that local jargon should be used when preparing the questionnaires. For example, in the Central America region, there are different names for public taps. In El Salvador, they are called "cantarero" while in Guatemala, "llave chorro." In Guatemala the questionnaires are completed by community leaders (question-

naire one), the masons or bricklayer (questionnaire two), the environmental sanitation technician (questionnaire three), and the project supervisor (questionnaire four). In applying the system, it was observed that some community contributions shot up unexpectedly. A closer look at the situation revealed that incentives were offered to people in the community to report twice the labor they were contributing.

Another observation was that the daily wage reported by communities may vary. Using standard criteria, such as the minimum wage as a base line, may aid in this situation. The training of all the actors and participants has been the key element for the successful implementation of the system. Besides these observations, no problems in the use of the system have been observed. It is expected that the experience of INFOM will motivate other institutions in the country. 🌐

UNICEF and World Bank join forces for Safe Water and Environmental Sanitation in Africa

UNICEF and the World Bank made a commitment to work together to support the countries of Sub-Saharan Africa in their efforts to promote access to safe water, environmental sanitation, and hygiene education for the poor in rural and urban areas.

The Memorandum of Understanding (MOU) between the two agencies was signed in Washington on 9 October 1997 by Mr. Sadig Rasheed, Director of UNICEF's Programme Division and Mr. Peter Watson, Sector Director, Infrastructure and Energy, Africa for the World Bank.

Over 250 million people—half of Africa's population—are without access to safe drinking water and almost 300 million do not have adequate sanitation. With the current rate of population growth and extension of water and sanitation services, a "business as usual approach" would result in over 500 million without water and sanitation by the year 2020. Much of Sub-Saharan Africa is threatened by growing water scarcity and deteriorating water quality, increasing water costs as well as conflicts among users. The human impact—especially on the poor and most particularly on

women and children—will be unprecedented, as will the environmental impacts in cities where almost half the population live.

Primary areas for collaboration between UNICEF and the World Bank under the MOU will be in the development and implementation of water, environmental sanitation and hygiene education programmes in villages, small towns and poor urban neighbourhoods and in extending sustainable services to the poor.

This is not the first time that UNICEF and the World Bank have collaborated closely in this area. For example, in Benin, Burkina Faso and Malawi the two organisations have worked together in the preparation and implementation of water and sanitation projects.

The scale of the challenge ahead, the need for innovative national programmes and the complementary nature of the two organisations make collaboration an imperative if there is going to be a serious effort to significantly improve the availability of water, sanitation and hygiene education to those that will not be reached by conventional services in the near future.

Cost Calculation: A manual for water and sanitation developed by UNICEF Guatemala

Karin Metell, Assistant Programme Officer, UNICEF WES Section, New York

A system for cost calculation SUCAS (Unified Cost System for Water and Sanitation) and a manual has been developed and published by the area office of UNICEF in Guatemala. The system may be applied to the construction and use of a gravity water supply system, a handpump water system or latrines. Although a system to calculate costs does not solve the problem of overall diminishing resources, it may help to justify the right investments and to improve the cost-efficiency of investments being made. Ideally a systematic approach to calculate costs of water and sanitation should:

- enable a systematic calculation of all costs that appear in the construction of a project—pre-investment costs, investments, administrative costs and costs for operation and maintenance.

- constitute a tool for supervision and monitoring
- clarify and account for all contributions from different parties
- enable a comparison between different technologies and between different project components.

The manual

The cost-calculation system is presented in the manual, which in rather detail presents the different forms to be used for the three types of projects that it applies to. The first section of the manual describes the forms, while the second outlines the types of reports that can be generated using the software developed for SUCAS.

The system distinguishes costs at different stages of the project cycle and con-

solidates the costs, whether in cash or kind, attributed to the respective actors. Costs may arise from the purchase of material, labor (unpaid or paid) transport, fuel etc. The manual suggests that indirect costs should be calculated according to a proximate share of administrative and overhead costs of the institutions involved. Benefits are consistently calculated in terms of people who will benefit from the services provided. In that way it is possible to calculate not only the unit cost of an investment but also the costs per beneficiary.

The forms may be adapted for local use and has been so in the case of Central America (see article in this issue). Institutions who already have a functioning system to calculate and monitor costs may continue to use it as a basis for the data which is required in the last form. The last form should however always remain the same to allow comparison between projects, institutions and even countries.

Difficulties and constraints

The rationale for improving costing in social sectors, including water and sani-

continued on page 26