

## **WORKSHOP BACKGROUND AND ORGANIZATION**

### **INTRODUCTION**

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This training package has been developed jointly by the Water and Sanitation and the Training Sections, UNICEF, New York. The package was developed as a result of sector needs for the 1990s. The focus of the Water and Sanitation Sector over the past ten years has changed tremendously, moving away from high cost engineering to low cost community managed systems, and from a purely technical to a mixture of socio-technical orientation. This has occurred as a result of continuous assessment and analysis which have clearly shown that more efforts have to be placed on influencing national policy in order to maximise coverage whilst decreasing per capita costs. Both the New Delhi Statement, issued at the Global Consultation for Water Supply and Sanitation, September 1990 and the UN declaration (A/45/327) supported the broadening of the sector and the need to consolidate strategies for greater cost efficiency, improved inter-sectoral linkages, community managed systems and sector capacity building.

As a result, the training package was developed for both sector and non-sector staff in order to strengthen skills in achieving the global goals of universal access to water supply and sanitation and eradication of guinea worm disease. It should also assist in re-enforcing inter-sectoral cooperation since the goals cannot be effectively achieved without sector broadening to encompass the necessary education, health and communication components.

This course has been designed to complement on-the-job training and individual work experience. We also recommend that staff members via their country office programme, avail themselves of short professional courses, such as those provided by International Reference Centre (Netherlands), CEFIGRE (France), etc. Each module contains a bibliography of references and suggested readings, copies of which can be obtained from the Water and Sanitation Section, at New York.

To gain maximum benefits from The Water, Sanitation and Hygiene Education Training Package, all staff are advised to participate in a Programme Procedures Workshop or to familiarise themselves with the Country Programme exercise prior to attending this course if they are not familiar with UNICEF's programming process.

We would like to acknowledge the assistance of the Education, Health and Nutrition clusters who contributed to the development of the materials. We would also like to thank the EAPRO Regional Office for the valuable assistance of Ms. Pamela Thomas, Regional Adviser, Communications, Ms. K. Cravero, CDD/ARI Adviser and also UNICEF (Colombo), Sri Lanka, for hosting the pre-test workshop for the training package.

## ***GENERAL OBJECTIVES***

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***By the end of the workshop, participants should be able to:***

1. Describe the most suitable low cost options for water supply and sanitation in different situations, including how to develop an effective maintenance component.
2. Develop a suitable plan for effective management of the UNICEF assisted water supply, sanitation and hygiene education programme in collaboration with government and other donor agencies.
3. Describe the most suitable methods to effectively monitor the sector including technical, economic, health and social aspects.
4. Plan for a more integrated programme with sufficient allocation of resources to sanitation and hygiene education.
5. Develop an effective hygiene education and communications component in order to encourage improved hygiene behavioural changes as a result of the interventions.
6. Ensure maximum community involvement in all aspects of project development, implementation, operation and maintenance.
7. Form effective linkages with other UNICEF-assisted sectoral programmes in order to maximise health and socio-economic benefits.
8. Develop the most suitable strategy for effective promotion of the sector at all levels.

### ***Target Audience***

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The target audience for this training package is UNICEF professional staff who have direct responsibility for the water and sanitation component of the country programme. In addition it is essential that non-sector staff are involved in the training courses since the sector now involves development of skills in hygiene education, communications and maximizing health, social and economic benefits.

The package can be used both individually and in a workshop setting, as it offers the chance to exchange experiences and learn through a participatory approach. An ideal size for this workshop is a minimum of 20 and maximum of 30 participants.

The training workshop will reinforce the following skills:

- ▶ Skills in situation analysis and programming planning
- ▶ Skills in identification of inter-sectoral linkages
- ▶ Skills in communication and advocacy planning
- ▶ Skills in monitoring and evaluation
- ▶ Skills in constraint analysis and problem solving.

### ***Duration of Training***

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The Workshop can be conducted in 6 days. However it may need to be extended to six and a half days if the optional field visit is included. Alternately the material can be spread over a few weeks so as to apply knowledge and skills immediately to the job. The latter approach may be useful if the package is part of on-the-job training.

### ***Workshop Coordinator***

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The workshop coordinator should preferably be someone well versed in water and sanitation programmes. This could be a senior project officer, or other experienced UNICEF officer. The coordinator should:

- \* be technically conversant with the training content
- \* have at least 4-5 years experience in working with water and sanitation programmes
- \* be able to adapt the material in this course, as needed
- \* have undergone a training of trainers course at a workshop.

### ***Training Team***

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The training team can be drawn from:

- \* UNICEF staff within the country or region
- \* UNDP/World Bank/WHO staff, global or regional

- \* National or regional experts from universities, NGOs or other organizations
- \* UNICEF staff from Headquarters
- \* Qualified UNICEF staff who as participants can also be part of the training team.

There should be at least four facilitators who can participate as resource persons for all group work.

### ***External Participants***

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Other major offices, e.g. WHO, UNDP, World Bank, can be consulted about the participation of their professional staff, if the organisational framework permits. It may be useful to invite government counterparts or NGO representation on a selective basis, particularly when conducting the workshop at the country level.

### ***Pre-Workshop Assignment***

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Prior to the workshop, all participants shall be requested to complete a pre-workshop assignment, described at the front of the participants manual. This consists of bringing relevant country documents including the situation analysis and the master plan of operations.

### ***Design of the Training Package***

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The package has two major sections:

1. Facilitators Guide
2. Participants Manual.

The Facilitators' Guide will be distributed during the workshop and contains the following:

- \* Workshop Background and Organisation
- \* Overall Design and Timing
- \* Session Resources

- \* Teaching Aids
- \* Transparencies
- \* Instructions on how to proceed with the session
- \* Video.

The *Participants' Manual* contains the following:

- \* Session Objectives
- \* Session Design
- \* Learning Points
- \* Worksheets
- \* Case Studies
- \* Readings

### ***LIST OF SESSIONS***

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The training package has eight modules, broken down into 29 sessions. A suggested agenda for the modules is given in Annex 1.

#### ***Module 1: Capacity Building***

- Session 1: Improved Planning at the Country Level
- Session 2: Monitoring as a Management Tool
- Session 3: Economic and Financial Aspects
- Session 4: Human Resource Development
- Session 5: Gender Issues in Water and Sanitation

**Module 2: *Integration of Water, Sanitation and Hygiene Education***

- Session 6: How to Integrate Water, Sanitation and Hygiene Education
- Session 7: Water, Sanitation, Hygiene Education Analysis
- Session 8: Field Trip: Resource Mapping

**Module 3: *Low Cost Options***

- Session 9: What are the Technical Options for Water Supply?
- Session 10: Maintenance of Water Supply Systems
- Session 11: Low Cost Options for Excreta Disposal

**Module 4: *Community Management***

- Session 12: Assessing Levels of Community Involvement
- Session 13: How to Improve Community Involvement
- Session 14: From Involvement to Management: Can the Gap be Bridged?
- Session 15: Training for Improved Local Management

**Module 5: *Inter-Sectoral Linkages***

- Session 16: Making the Case for Improved Programme Linkages
- Session 17: The Health Impact of Water Supply and Sanitation Programmes: Separating Myth from Reality
- Session 18: Water and Sanitation as an Integral Component of the CDD Programme

**Module 6: *Hygiene Education***

- Session 19: Changing Hygiene Behaviour

- Session 20: Communication Strategies
- Session 21: Research to Support Effective Hygiene Education
- Session 22: Selecting Messages and Media for Health and Hygiene Education
- Session 23: Hygiene Education for Schools
- Session 24: The Organisational Requirements for Hygiene Education

***Module 7: Sanitation***

- Session 25: The Extent of the Problem
- Session 26: Strategies for Successful Programmes
- Session 27: Urban Marginal Areas

***Module 8: Mobilising Support***

- Session 28: Identifying Allies and Partners
- Session 29: Planning Mobilisation Strategies

***Planning and Organising the Workshop***

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The booklet "*How to Organise and Run Training Workshops*" is required reading for the co-ordinator. Particular attention should be paid to the suggested criteria for selecting participants. A minimum set of facilities and equipment to run this workshop are:

- ▶ large room with space for 3-4 working groups
- ▶ multi-system video, flipcharts per group, overhead projectors per group
- ▶ stationery, etc.

***Workshop Evaluation and Follow-Up***

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The workshop coordinator is responsible for compiling the results of the final evaluation and for coordinating with the Training Section on post-workshop evaluations, and making copies of participants' action plans and "contracts" for individual country follow-up.



**ANNEX 1****TENTATIVE AGENDA****Day 1**

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**Morning**

Opening	09:00 - 10:00
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**Module 1: Capacity Building**

Tea/Coffee Break	10:00 - 10:30
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Session 1: Improved Planning at the Country Level	10:30 - 12:00
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Session 2: Monitoring as a Management tool	12:00 - 13:00
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Lunch Break	13:00 - 14:00
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**Afternoon**

Session 3: Economic and financial aspects	14:00 - 15:00
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Tea/Coffee Break	15:00 - 15:30
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Session 4: Human Resource Development	15:30 - 16:30
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Session 5: Gender issues in Water and Sanitation	16:30 - 17:30
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**Day 2**

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**Morning**

Session 5: Continued...	09:00 - 10:00
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**Module 2: Integration of Water, Sanitation and Hygiene Education**

Coffee/Tea Break	10:00 - 10:30
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Session 6: How to integrate Water, Sanitation and Hygiene Education	10:30 - 11:30
Session 7: Water, Sanitation, Hygiene Education Analysis	11:30 - 13:00
Lunch Break	13:00 - 14:00

### Afternoon

#### **Module 3: Low Cost Options**

Session 9: What Are the Technical Options for Water Supply?	14:00 - 15:30
Tea/Coffee Break	15:30 - 16:00
Session 10: Maintenance of Water Supply Systems	16:00 - 17:30

### **Day 3**

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#### Morning

Session 11: Low Cost Options for Excreta Disposal	09:00 - 10:00
Tea/Coffee Break	10:00 - 10:30

#### **Module 4: Community Management**

Session 12: Assessing Levels of Community Involvement	10:30 - 12:00
Session 13: How to Improve Community Involvement	12:30 - 13:00
Lunch Break	13:00 - 14:00

Afternoon

Session 14: From Involvement to Management: Can the Gap be Bridged?	14:00 - 15:30
Tea/Coffee Break	15:30 - 16:00
Session 15: Training for Community Management	16:00 - 17:30

**Day 4**

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**Module 5: Inter-Sectoral Linkages**

Morning

Session 16: Making the Case for Improved Programme Linkages	09:00 - 10:30
Tea/Coffee Break	10:30 - 11:00
Session 17: The Health Impact of Water Supply and Sanitation Programmes: Separating Myth from Reality	11:00 - 12:30
Lunch Break	12:30 - 13:30

Afternoon

Session 18: Water and Sanitation as an Integral Component of the CDD Programme	13:30 - 15:00
Tea/Coffee Break	15:00 - 15:30

**Module 6: Hygiene Education**

Session 19: Changing Hygiene Behaviour	15:30 - 17:00
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**Day 5**

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## Module 6 (continued)

Session 20: Communication Strategies 09:00 - 10:00

Tea/Coffee Break 10:00 - 10:30

Session 21: Research to Support Effective  
Hygiene Education 10:30 - 12:00Session 22: Selecting Messages and Media for  
Health and Hygiene Education 12:00 - 13:00

Lunch Break 13:00 - 14:00

Afternoon

Session 23: Hygiene Education for Schools 14:00 - 15:30

Tea/Coffee Break 15:30 - 16:00

Session 24: The Organisational Requirements  
for Hygiene Education 16:00 - 17:30**Day 6**

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Morning**Module 7: Sanitation**

Session 25: The Extent of the Problem 09:00 - 10:30

Tea/Coffee Break 10:30 - 11:00

Session 26: Strategies for Successful  
Programmes 11:00 - 12:00

Session 27: Urban Marginal Areas 12:00 - 13:00

Lunch Break 13:00 - 14:00

Afternoon

**Module 8: Mobilising Support**

Session 28: Identifying Allies and Partners	14:00 - 15:00
Tea/Coffee Break	15:00 - 15:30
Session 29: Planning Mobilisation Strategies	15:30 - 16:30
Final Evaluation	16:30 - 17:30

**ANNEX 2**

**DAILY FEEDBACK FORM**

1. Overall, how valuable were today's sessions for you?

<u>of no value</u>	<u>of little value</u>	<u>of moderate value</u>	<u>valuable</u>	<u>very valuable</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. For each of the sessions (tick the appropriate boxes):

Was the session relevant to needs?	Was the presentation well made & topic covered adequately?	Was there ample opportunity to answer questions/ exchange ideas?
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<u>Session/Topic</u>	<u>Yes</u> <u>Somewhat</u> <u>No</u>			<u>Yes</u> <u>Somewhat</u> <u>No</u>			<u>Yes</u> <u>Somewhat</u> <u>No</u>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What is the most important thing you have learned today?

4. What specific suggestions would you make to improve the individual sessions?

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**OBJECTIVES**

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By the end of the session, you should be able to :

- \* outline the major goals for child survival, development and protection by the year 2000 and how these relate to water and sanitation;
- \* describe the New Delhi Statement and how this relates to UNICEF sector planning;
- \* describe the UNICEF 1990-95 sector workplan goals, objectives and framework for action;
- \* list at least ten factors to consider in improved sector planning.

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Work in Pairs: Factors to Consider in Improved Sector Planning
- \* Plenary
- \* Exercise: Planning for An Impact
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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### Global Goals and Strategies

1. UNICEF in consultation with its partners in the United Nations system, proposed the following major goals for child survival, development and protection to be achieved by the year 2000.

'Between 1990 and the year 2000, reduction of infant and under 5 child mortality rate in all countries by one third or to 50 to 70 per 1000 live births respectively whichever is less.

Between 1990 and the year 2000, reduction of maternal mortality rate by half.

Between 1990 and the year 2000, reduction of severe and moderate malnutrition among under-5 children by half.

Universal access to safe drinking water and to sanitary means of excreta disposal.

By the year 2000, universal access to basic education and completion of primary education by at least 80% of primary school age children.

Reduction of the adult illiteracy rate (the appropriate age group to be determined in each country) to at least half its 1990 level with emphasis on female literacy.

Improved protection of children in especially difficult circumstances."

2. The New Delhi Statement was adopted by 600 participants from 115 countries at the Global Consultation on Safe Water and Sanitation for the 1990s held in September 1990. For countries taking up the challenge 'Some for all, rather than all for some' the New Delhi Global Consultation recommends four Guiding Principles:
  - a) Protection of the environment and safeguarding of health through the integrated management of water resources and liquid and solid wastes.
  - b) Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions.
  - c) Community management of services, backed by measures to strengthen local institutions in implementing and



sustaining water and sanitation programmes.

- c) Sound financial practices, achieved through better management of existing assets, and widespread use of appropriate technologies.

3. The following is extracted from the UNICEF Sector Workplan, 1990-95.

For the 1980s, UNICEF will actively associate itself with the primary long-term goal and some subsidiary intermediate goals:

- Primary long-term goal: Universal access to water and sanitation by the year 2000. (Indicative definition of access: for water supply, availability of at least 20 litres of safe water per person daily, located at a total distance of within one kilometre from the user's dwelling. For sanitation, hygienic practices manifested by sanitary means of excreta/waste disposal, can suffice).
- Subsidiary goals:
  - Linkage of water and sanitation with the control of diarrhoeal diseases (CDD) to assist in bringing about a significant reduction in the mortality and morbidity rates, resulting from these diseases.
  - Elimination of guinea worm disease during the 1990s via use of health education and the provision of safe water supply to affected areas in endemic countries. (The latter will be singled out for complete coverage with water supply by the mid 1990s).
  - Pursuit of water and sanitation programmes via sustainable development, including environmental sustainability, by paying attention to management of watersheds and catchment basins, lowering of groundwater levels by overpumping, and pollution of groundwater by on-site means of excreta disposal.

The framework for UNICEF's contribution to the primary and subsidiary goals, is based on the following tenets:

- Placing of water and sanitation within UNICEF corporate thrust (to ensure a greater share of communications resources, and to maximize mobilization efforts).
- Charging the UNICEF Representative with the responsibility for this corporate concern, thereby placing the focus at the country level for all major

water and sanitation actions, including establishing and monitoring of goals (especially coverage).

- Using sustainable development, including environmental sustainability, as the major conduit through which developmental assistance is channeled. Community management with active user participation (especially women), local control of operation and maintenance, and introduction and/or expansion of cost recovery measure, will be the base for sustainability.
- Paying increased attention to human resources development as an integral component of institutional development.
- Encouraging more widespread use of low-cost technologies (at the expense of high-cost urban-type ones).
- Giving greater priority to peri-urban slums (rather than focusing on rural areas only or mainly) to help meet the challenge posed by urbanisation.
- Increasing the role of monitoring and evaluation in the sector management, especially in gleaning information for rapid dissemination regarding cost-effectiveness, technological innovations, and improved social approaches at the community level.
- Continuing, with vigour, to further the linkage of water and sanitation with health and related concerns, especially with diarrhoeal diseases control, guinea worm disease eradication, schistosomiasis control, and reduction in cases of trachoma.
- Using systematic and concerted mobilisation, throughout the 1990s, as a principal vehicle to achieve universal access by the year 2000. Learn from the mobilisation techniques utilised in the UCI programme. Need to mobilise within UNICEF, Governments, External Support Agencies, the private sector, etc., to generate more funds or to better utilise existing funds, in an effort to accelerate coverage rate.
- Allocating a greater share of UNICEF budget to water and sanitation. The current \$80 million annual allocation should be increased to \$120 million in the early 1990s, reaching \$150 million by the mid 1990s and \$200 million by the year 2000, based on UNICEF's annual budget exceeding \$1,000 million by the end of this century. The water and sanitation budget should be in order of 20% of UNICEF budget, and never fall below 15%. UNICEF-assisted programmes account for a substantive share of annual coverage for the sector, because of the approaches

followed. This situation can be enhanced via greater financial contribution by UNICEF, among other things.

- Managing through objectives or short-terms goals, the entire interim, leading to the primary long-term goals. Management by objectives to guide the way to the primary long-term goal of universal access by the year 2000.

The main activities include the following: boosting the provision of water supply through innovative methods; revolutionising the programming of sanitation programmes via social mobilisation; emphasising human resources development as a sector priority; linking water and sanitation with health and socio-economic concerns; fostering of technical co-operation among developing countries; providing opportunities for inter-agency collaboration; focussing on low-cost technologies as fundamental to increasing of coverage; demonstrating cost efficiency and effectiveness as a principal means of solving the funding problem; and developing of programmes via sustainable means, including environmental sustainability.

4. In order to contribute not only to the achievement of the sector goals but also to those directly related to the health and well being of children, it is essential to plan from the onset for a more integrated programme with better inter-sectoral linkages.
5. In order for UNICEF to efficiently allocate resources, it is important to assess the present financial capacity of government and the role of other donor agencies, NGOs and the private sector in terms of provision of water supply and sanitation services. It is also important to assess the ability of communities to pay towards capital, operation and maintenance costs.
6. UNICEF's input into the sector is relatively small. In the past ten years UNICEF financial contribution was less than one per cent of the sector's total global financial expenditure. However UNICEF emphasis on low-cost approaches has resulted in an impact which has contributed to more than 12 per cent of coverage rates. Clearly our role should be to advocate more strongly with government and other donors in order to influence policy development so as to achieve the goals of universal access to water supply and sanitation.
7. Capacity building is essential in order to develop planning capacity. An assessment should be made of government and local level institutions in terms of their present manpower, training requirements, level of sector planning and coordination, monitoring and evaluation and, where necessary, recommend ways of addressing inadequacies.

8. All technologies selected for programmes should be affordable. It should be affordable to the government and any contribution from the community towards capital, operation and maintenance costs should be affordable. The technologies should also be appropriate in terms of their technical and social feasibility.
9. Sustainability is the key word in the provision of services. The project should be designed in order to ensure services will still be functioning in 15-20 years time. More emphasis should therefore be placed upon setting up community-based maintenance systems involving strengthen local capacity to manage these systems.
10. The issue of sustainability of coverage has to be given serious consideration. Universal access to water and sanitation facilities involves the functioning of services over a sustained period of time and not for only a couple of years. It is therefore crucial that the correct balance is found in terms of ensuring a sufficiently high standard is maintained in programme delivery whilst accelerating coverage.
11. Close planning and coordination with government is essential in all phases of programme development. UNICEF support is primarily to government and therefore to work without them at any stage will seriously jeopardise the success of the programme. Likewise, good coordination with other major donors/NGOs will maximise the benefits of UNICEF assisted programmes. In many countries, the establishment of a coordination committee helps to ensure that all government/non-government agencies share information and conduct joint planning exercises. This will also help prevent duplication of activities and sharing of valuable experience and lessons.
12. Standardisation is a crucial concept for improved programming. By ensuring that procedures are followed in terms of planning, design and implementation of projects, sustainability is facilitated. It also prevents a plethora of different technologies from being introduced, thus enhancing maintenance.
13. The integrated approach of water, sanitation and hygiene education is essential in terms of maximizing health, economic and social benefits. However in order to develop the most suitable balance in terms of these components, close attention has to be paid in the initial years to developing successful approaches prior to replication elsewhere.
14. UNICEF procurement procedures must be considered in planning for sector activities. The lead time involved in terms of delivery should be taken into account in scheduling of

activities.

15. Environmental issues related to water and sanitation should be considered at the planning stage in programme development. Issues relating to water utilisation, water logging, salinity and drainage, water quality, water resource management, present sanitary conditions and environmental education should be given careful consideration.
16. Operation and maintenance of water and sanitation facilities are major components of a well designed programme, especially for decentralising of responsibility for these aspects to the village level.
17. Monitoring and evaluation will assist in making suitable course-corrections in the duration of the programme and to highlight areas that require more attention. Periodic monitoring will act as a management tool in terms of making necessary programme changes. Evaluation will examine change and their significance in relation to effectiveness, efficiency, relevance, impact and sustainability.
18. Private sector involvement should be given careful consideration. It should be recognised that full service coverage of water and sanitation cannot be achieved without substantial private sector involvement. In many countries the private sector is playing a major role in the provision of water supply and sanitation services. However sometimes governments are not fully aware of their activities and are not involved in their management and coordination. In order to maximise the benefits of private sector involvement, their role should be clearly defined and activities should be coordinated by government at all levels. This will also assist in ensuring that standardised approaches and technologies are adhered to at the field level. However, this coordination is a great challenge and requires considerable effort in planning.

**References and suggested readings:**

Development Goals and Strategies for Children in the 1990s.  
UNICEF.

UNICEF and the 1990s: The Water and Sanitation Sector Workplan for 1990-95. 1989. pp 19-33.

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**EXERCISE: PLANNING FOR AN IMPROVED IMPACT**

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Each person is to review the water and sanitation chapter of the Master Plan of Operations for their own country with respect to the Global Goals, the New Delhi Statement, and the UNICEF Sector Workplan for 1990-95. Then each participant should answer the following questions:

1. Do the objectives and strategies outlined in the Master Plan of Operations contain elements of these three documents? Please comment with respect to each.

- 1.1 The Global Goals

- 1.2 The New Delhi Statement

- 1.3 UNICEF Sector Workplan 1990-95

2. Do the Water and Sanitation objectives and strategies reflect the overall country programme objectives and strategies:

3. Where do you consider there may be problems in reconciling the Global Goals, the New Delhi Statement and the UNICEF Sector Workplan in your own country planning? Can you propose any solution for this?



**MODULE 1: CAPACITY BUILDING**

**SESSION 2: MONITORING AS A MANAGEMENT TOOL**

**READING I**

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**INFORMATION  
A COMPLEX SUPPORT SYSTEM**

**Dr. Pradeep Kumar  
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# Information

## A Complex Support System

*The information required to monitor water supply in over 5000 blocks in the country has posed awesome challenges for planners. The system that evolved aimed at decentralised information management variously geared for use at the block, district, state and central levels.*

*Dr. PRADEEP KUMAR describes its different modules designed to function in an interrelated system of information flow.*

**I**n a country as complex as India, rural water supply and sanitation will never be a completed business considering demographic changes, groundwater dynamics and ecological transformations, to name a few of the variables affecting targets and objectives. In view of the magnitude of the task undertaken by the Mission, in addition to its role in overcoming technical and technological problems, an information system can serve as an effective planning and monitoring tool in a major nationwide rural water supply programme. With a lakh partially covered villages still to be fully serviced with at least one safe and potable water source, the importance of an efficient Management Information System (MIS) cannot be over-stressed.

The national rural water supply programme in India involves a large number of people and organisations with a total outlay of over Rs. 2000 crores to be undertaken in over 5000 blocks. Since the basic information system required to monitor this progress was so immense and wide-spread, it was increasingly felt that the present manual system of keeping information could not cope with the requirement.

The objective of a new information system is to provide timely and accurate information on status of water supply in villages, details of sources and chemical content/contamination in water, quantity of supply and availabil-

ity of alternative sources. These details could assist the centre and state governments to draw up meaningful project plans for improving the supply and purity of water to the rural community. In addition, it could also aid in decision-making in taking the necessary precautions for situations like drought, for setting up water treatment plants and for increasing supply through artificial canals, reservoirs and man-made tributaries.

This information system is not aimed at a highly sophisticated scale of operations covering a whole ambit of systems. Instead, designed for use at different levels, its objective is a decentralised and interrelated management system based on a realistic district-wise PC-based information system whose capabilities could be enhanced with time and use.

### Objectives of the information system:

In designing an information system, it is necessary to identify:

- the geographical coverage of water supply
- villagewise status of water supply sources and quality
- population and its distribution within villages
- planning/works monitoring/financial management

These information elements are necessary for monitoring target

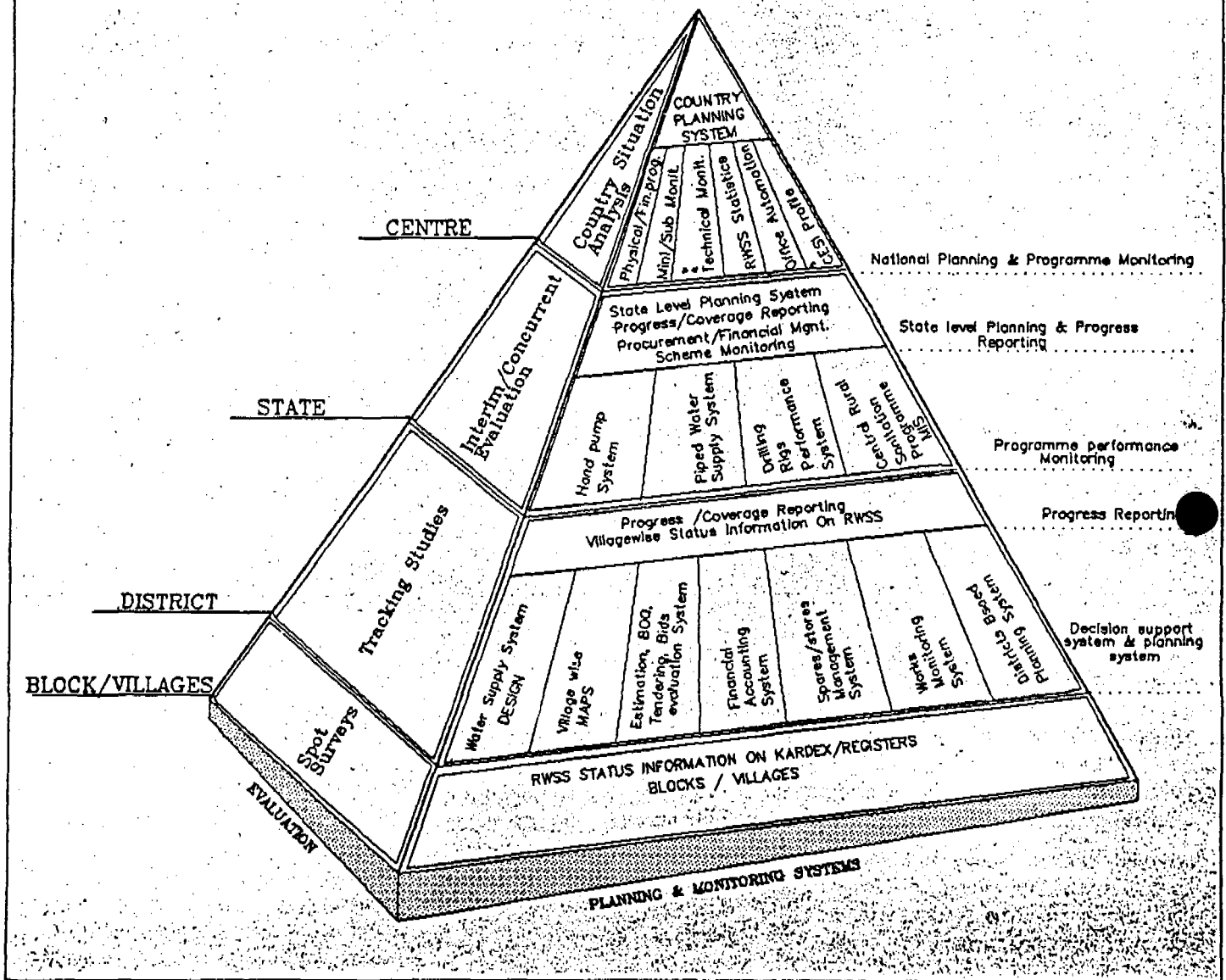
achievements, providing control and direction, improving efficiency and delivering timely results. The system is variously geared for use at the block, district, state and central levels.

**Block/village level:** With a large number of handpumps currently in operation all over the country, their operation and maintenance becomes very important. UNICEF has supported a pilot project to establish block-level data-base to facilitate all round maintenance of the handpumps. Begun three years ago in five districts of Andhra Pradesh, Orissa, Karnataka and Tamil Nadu, this project was recently extended to cover eight districts in Maharashtra and two in Gujarat. Popularly known as the Kardex system, this simple, visible, centralised data recording, retrieval and analysis system consists of a steel cabinet with sliding trays containing pockets with cards where information is entered, retrieved and analysed. These formats designed to incorporate details of social, environmental and community participation comprise cards recording information of handpump installation and their maintenance. Besides developing a data base to provide maintenance agencies with an effective base for providing prompt services, the ultimate objective of such a system is to involve communities in accepting ownership of these pumps, being fully responsive thereby to their operation and maintenance.

# MANAGEMENT INFORMATION SYSTEMS

for

## RURAL WATER SUPPLY & SANITATION PROGRAMME



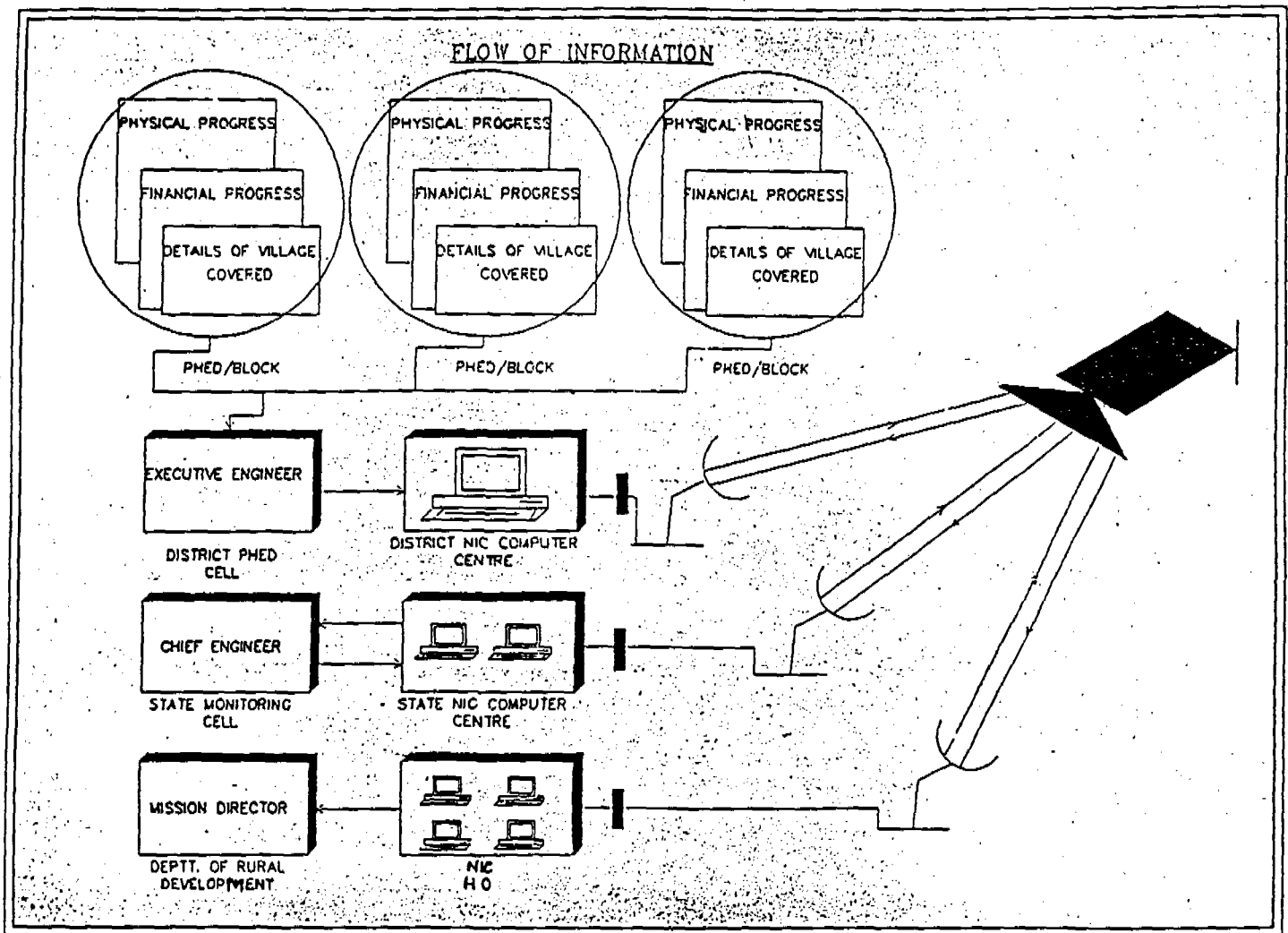
District level: The district level MIS designed to monitor water supply programme within the district comprises two components:

- a basic statistical module reporting on village-wise progress/coverage and maintaining baseline information

- a second module acts as a support for decision-making in the day to day operations of district-level functionaries. This includes sub-modules for designs of water supply systems, cartographic presentation of water supply facilities, bids evaluation, stores/

spares management and works monitoring.

Each district will have communication links with state headquarters via NICNET (National Informatics Centre Network) for information flow between the states and districts.



**State level:** The state level MIS is designed to have three modules:

- a module for state level planning, scheme monitoring, progress/coverage monitoring and financial/material procurement.
- a module for monitoring performance of specific programmes viz. handpumps, piped water supply schemes, rigs performance.
- an interim/concurrent evaluation database -- for recording and analysing feedback received on implementation/performance and use of water supply facilities. The state level monitoring cell will support all district and state government departments as well. They shall have access to the

centre via NICNET communication links.

**Central level:** The MIS designed for national level planning and monitoring shall assist the central government in preparing plans based on a country-wide analysis, monitor physical/financial progress of various states, compile national sectoral statistics and provide support for policy formulations (See Figure).

**Implementation plans:** A three-pronged strategy has been adopted simultaneously for systems implementation on an all India basis at the central, state and district levels:

Central level: Modules for implementation at the central level are already developed and are under implementation

State level: Modules for implementation at the state level are under development during Phase I. These shall be implemented in six states: Karnataka, Gujarat, Maharashtra, Kerala, Uttar Pradesh and Madhya Pradesh to be later extended to cover all states in India.

District level: A district based decision support system is under development and shall be implemented in Karnataka initially and then extended to cover other states in India.

The above information system, when fully implemented in the country, shall prove to be a vital tool for effective implementation of the water supply programme in rural India. □

-- Dr. Pradeep Kumar is Project Officer, MIS, UNICEF.

**MODULE 1: CAPACITY BUILDING**

**SESSION 2: MONITORING AS A MANAGEMENT TOOL**

**READING II**

---

**AN APPROACH TO WATER AND SANITATION SECTOR  
MANAGEMENT VIA SYSTEMATIC MONITORING**

**Christmas, J.  
UNICEF, New York  
WET/417/91  
16 January 1991**

**AN APPROACH TO WATER AND SANITATION SECTOR  
MANAGEMENT VIA SYSTEMATIC MONITORING**

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*\*Contributions made by WHO, Geneva*

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AN APPROACH TO WATER AND SANITATION SECTOR  
MANAGEMENT VIA SYSTEMATIC MONITORING

ABSTRACT

The major long-term goal of this multi-component sector is the sustainable achievement of universal access to water and sanitation, at a future date. To effectively manage the attainment of this and related goals, sector performance should be systematically monitored and corrective actions taken.

An effective country-based monitoring system has been developed by WHO and UNICEF, and is being implemented. This simplified system, known as WASAMS (Water and Sanitation Monitoring System) utilizes a limited number of performance indicators that are representative of the sector. WASAMS is linked to and complements WHO's CESI-PLUS which is a more comprehensive system for sector information management. WASAMS is the principal monitoring mechanism to be utilized during the 1990s for the annual provision of sector information on a select number of issues.

The thrust of monitoring during the 1990s pertains to its use as a management tool for the sector. Country-level monitoring will operate within the framework of a country-specific action plan which determines the path-way for the sector. By monitoring sector performance indicators, course correction, where necessary, can be made.



A National Monitoring Unit at the country level will manage the monitoring system which involves the phased establishment of a country-wide surveillance system where a satisfactory one is non-existent, the collection and analysis of data, and reporting for local use. Information pertaining to certain core indicators is to be sent to UNICEF headquarters for joint analysis and reporting by WHO and UNICEF for global use. It is expected that the Collaborative Council for Water Supply and Sanitation would use the global report for advocacy purposes on behalf of the sector.

#### 1. INTRODUCTION

At the national level, among developing countries, the water and sanitation sector is large and complex. From a global perspective, the dimension and complexity of the sector can be considered as quite daunting. The developing countries' population of approximately 4.2 billion (4,200 million) in relation to the global total of 5.4 billion, represents almost 80 per cent of the latter. The 1990s began with an estimated 1.2 billion people in developing countries without access to adequate and safe water supplies, and 1.7 billion without access to appropriate sanitation. A plethora of water and sanitation entities, at the national level, often compete rather than cooperate with one another for sector advancement. The quest still continues for relevant and regular sector information for planning and for programming.

With over 30% of developing countries' population still listed as "unserved" with safe water and over 40% "unserved" with adequate sanitation, the sector's major long-term goal is the sustainable achievement of universal access to these two basic components.

However, a mechanism for "pulse-taking" -- tracking sector performance -- along the tortuous road which leads to universal access, is not only a necessity but an imperative. A simplified sector monitoring system, with regular and systematic reporting, is the required mechanism.

## 2. HISTORICAL PERSPECTIVE

### 2.1 CESI-PLUS

During the 1980s, periodic country-level assessments were carried out by the World Health Organization (WHO) as part of its support to the International Drinking Water Supply and Sanitation Decade (IDWSSD). As a result, WHO issued Decade status reports showing sector progress, which gave the broad basis for Decade monitoring.

An outgrowth of this endeavour, was the development in 1988 by the WHO, of a comprehensive and elaborate computerized information management programme called CESI. The CESI system was designed with the aim of improving sector coordination, facilitating the exchange of sector information among national authorities and among the External Support Agencies (ESAs), and monitoring the sector.

The CESI Network Centre, located at the Community Water Supply (CWS) Unit of WHO, up to the present, relies primarily on project information supplied by ESAs. The Centre provides routine reports to approximately 60 participating ESAs, responds to specific project information requests from ESAs, national authorities, and other organizations. The CESI system was expanded to include national project data and a computer model for summarizing and reporting sector-related statistics on water supply and sanitation, from a global perspective.

CESI, thus far, has proven to be a very effective tool for information exchange among ESAs and for the many countries that have requested CESI-generated project data. However, the CESI system has some drawbacks based on the fact that it was a tool used mainly by ESAs with much of the information provided by the ESAs on projects supported by them; thus data on country-financed programmes were not initially included in the data base. These drawbacks are being rectified.

To respond to changes in the field of development, the CESI system has been expanded to CESI-PLUS during 1991. Thus, the CESI-PLUS system is broader, and includes aspects other than water and sanitation, such as the environment, water resources, infrastructure, and energy.

The overall goal of CESI-PLUS provides for development of national information management capabilities and improvement in the exchange and use of information.

## 2.2 WASAMS

The Decade of the 1980s clearly shows the need for a more management-oriented sector. Professionals and other actors within the sector regularly require, at least certain basic information concerning input, output, performance, and direction of the water and sanitation sector so that the latter can be more effectively guided towards its long-term goal of completely serving the unserved.

As CESI-PLUS is a comprehensive, all-embracing information management system which is being developed to include other sectors and elements, the need is there for a simplified sector monitoring system specifically focusing on the provision of basic, minimum information for better sector management.

WASAMS (Water and Sanitation Monitoring System) meets the conditions for this simplified, sector monitoring tool.

UNICEF and WHO collaborated to develop WASAMS which officially came into existence during 1990. Because WASAMS is simple and caters to essentially minimum sector needs, it will quickly and systematically provide information and, at the same time, help developing countries to gain skills and confidence in monitoring the performance of their sector. Thus, it contributes to capacity building. The experience gained by developing countries, via WASAMS, can be utilized by them later when they are ready for a more comprehensive and elaborate information management system. For the 1990s, WASAMS will be the principal mechanism for systematically monitoring the water and sanitation sector, using a

limited number of performance indicators, and reporting its findings annually.

As an overview, WASAMS includes the following: It places the responsibility for sector monitoring at the community level where it rightly belongs; its core performance indicators involves service coverage in terms of functioning and utilized systems, their management in terms of operation and maintenance, and funding, whilst additional country-specific indicators can be added by each country to meet its own particular needs; countries are each required to establish (with assistance from ESAs where necessary) a National Monitoring Unit (NMU) to manage data collection, analysis, and reporting for local use; information on the core indicators only is to be sent to UNICEF for joint analysis and reporting by WHO and UNICEF, for global use. A questionnaire (hard copy) for data collection is being used until the WASAMS computer programme is fully developed by 1992. This computer programme is open-ended to enable countries to add more indicators to reflect their specific needs while keeping the core ones in tact. The core indicators are for global comparisons.

### 3. MAIN THRUST OF MONITORING IN THE 1990S

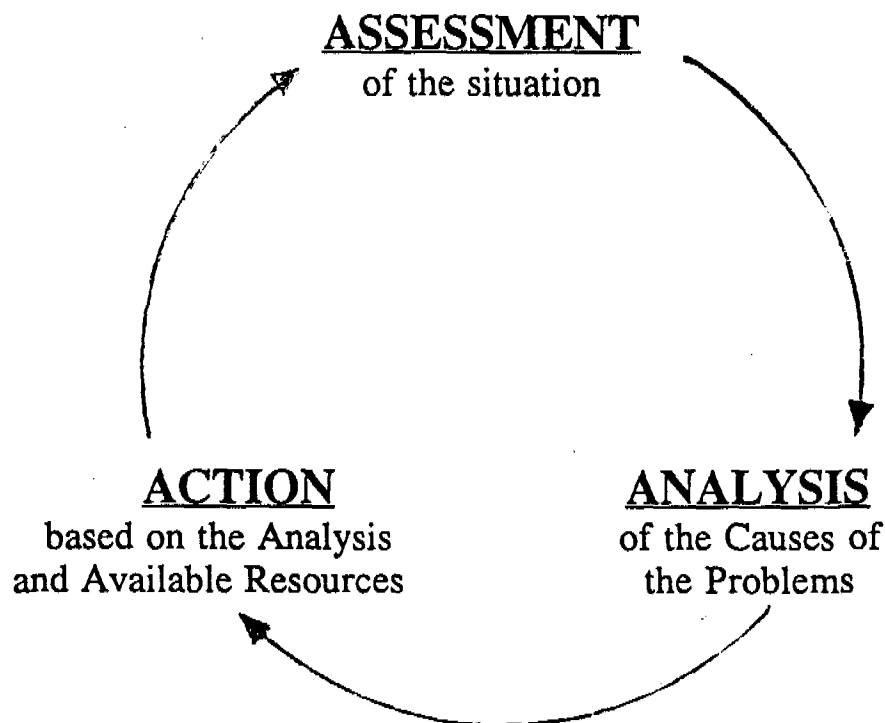
#### 3.1 Management Tool

The clarion call, at the end of the IDWSSD in 1990, for a more management-oriented 1990s, has given birth to "management by objectives" or "management by monitoring" where monitoring is to be

used as a management tool, with the focus at the country level.

The principal experience gained by UNICEF and WHO, with respect to the global immunization programme of the late 1980s, is the following: the improbable can be realized if one were to set clear objectives, develop workable strategies, and target a particular date for achievement of the objectives, so that the principal actors can be mobilized around the target date. Mobilization via advocacy and other means can be a very persuasive tool.

The management-by-monitoring concept for the water and sanitation sector, is graphically depicted in the following "Triple A Cycle":



### 3.2 Action Plans

Monitoring via WASAMS is not merely a collection of statistics on the sector. If countries can set their own realistic sector goals for achievement within a certain time frame, delineate the means for achieving these goals, and systematically monitor their own performance regarding achievement of the said goals, this endeavour can be considered as the essence of sustainability.

Thus, for monitoring to be effective, it must be placed in a framework. The framework is a National Action Plan. This should be a simple, short document developed at the country-level by the country itself with assistance, if necessary, by the ESAs. In general, the scope of the plan should reflect the following elements:

- Status of the sector at 1990 (base year)
- Realistic goals for the year 2000 (or thereabout)
- Bridging the gap between 1990 and 2000
- Technologies and approaches to be utilized
- Total resources required, a summation of local plus ESAs inputs
- Annual achievement increments to attain the goal set by the country.

Monitoring, set in such a framework, will be an essential part of the national capacity building which CESI-PLUS and WASAMS seek to facilitate.

### 3.3 Tracking Sector Performance

The water and sanitation sector is huge and consists of diverse elements and components. To systematically test the pulse of the sector, it is not necessary to assess everything -- just some of the vital "organs".

Decade assessments of 1990 reveal, among other things, the following few pertinent points:

- Sanitation coverage lags significantly behind that of water supply.
- The 1980s implementation rates for water supply and sanitation, if applied to the 1990s, will result in a large proportion of the population remaining unserved by the year 2000. These rates therefore have to be increased 1.5 to 4.0 times, during the 1990s, if the theoretical 100% coverage is to be achieved by the year 2000.
- Sector funding needs to be reviewed. Better use of existing funds and generation of additional funds are required in the 1990s. A shift of a greater proportion of funds to low-cost technologies is imperative, especially for the major unserved centres of rural and peri-urban areas.
- National institution capacity building and human resources development are given inadequate attention.

Thus, in tracking sector performance, the foregoing major issues and probably others, need to be considered under a broad



monitoring umbrella, as time evolves.

### 3.4 Performance Indicators

As indicated before, the monitoring instruments are based and controlled at the country level.

In measuring sector performance, any number and/or combination of representative indicators may be utilized. For WASAMS, three core indicators have been recommended, for global comparison, with the system remaining open-ended so that individual countries can include a number of additional indicators, for country-level use.

The core performance indicators represent three major conditions or situations, namely, coverage, systems management, and sector funding, as follows:

<u>Condition/Situation</u>	<u>Indicators</u>
(a) COVERAGE	
- Functioning:	- Systems/Installations functioning. (No. and proportion of persons served by functioning systems).
- Utilization:	- Systems/Installations utilized. (No. and proportion of persons effectively using functioning systems).
(b) SYSTEMS MANAGEMENT	- Percentage financial contribution to maintenance by communities.

## (c) SECTOR FUNDING

- Total annual capital investment for sector and proportion for low-cost technologies.

### 3.5 Elements and Process

The National Monitoring Unit (NMU) at the country level is responsible for the management of WASAMS, with assistance where necessary from the ESAs. UNICEF and WHO are the ESA focal point for this monitoring at the country level.

The NMU will establish, over a period of time, a country-wide surveillance system to gather sector information, if one is not already in existence. This is a gradual process, probably commencing with a decentralization of the data estimation process from the national to the different sub-national tiers, until the community is reached, where the information is initially generated.

The surveillance system brings sector data to the NMU which collects and analyses these in order to report on the performance of the sector. This report is for country-level use. It is expected to be done annually. A questionnaire is used to guide the data requirement process. The questionnaire will be sent by UNICEF, annually, to all developing countries until computer diskettes replace these.

The NMU will send information on the core indicators only, to UNICEF headquarters for joint analysis and global reporting by WHO and UNICEF. It is expected that the global reporting would be made to the Collaborative Council for Water Supply and Sanitation, which

will use the information to advocate on behalf of the sector. (The 1990 data for many countries have been collected and sent to UNICEF headquarters. Analysis and report-writing are in progress).

#### 4. COMPLEMENTARY ROLES OF CESI-PLUS AND WASAMS

##### 4.1 WASAMS and CESI-PLUS

CESI-PLUS consists of several data bases, one each for the following: projects, strategies and statistics, agency and institutions, and WASAMS. WASAMS is one of the tools for implementation of the Joint Monitoring Programme which involves UNICEF and WHO.

##### 4.2 Relationship Between WASAMS and CESI-PLUS

###### Linkages

WASAMS is a simplified sector monitoring tool for the 1990s, focusing on a few select performance indicators. CESI is a comprehensive system for sector information management.

The two complement each other in that generally, WASAMS is considered as the entry point or forerunner in building country level monitoring capacity to the position where a more comprehensive system can be accommodated.

###### Procedural Arrangement

To monitor the water and sanitation sector in the 1990s

all developing countries should utilize WASAMS.

In countries where CESI-PLUS is already established, WHO and UNICEF will promote and encourage the use of WASAMS for sector monitoring.

For countries requesting CESI-PLUS, WHO and UNICEF will advise such countries to first establish WASAMS for sector monitoring.

For countries without either WASAMS or CESI plus, WHO and UNICEF, via their Joint Monitoring Programme, will promote WASAMS and assist its implementation.

#### Time Frame

In general, WASAMS may take at least the first half of the 1990s to properly establish monitoring capacity at country level. CESI-PLUS which is a more comprehensive management information system can benefit from the base established by WASAMS.

### 5. CONCLUSION

Although the External Support Agencies can contribute to the monitoring initiative, if and when required, the ownership of the process is by the countries themselves. This approach brings its own reward. Thus, monitoring is seen as a development process rather than a data collection mechanism, only.

However, for such a development process, it is necessary to hurry slowly. Initially, accuracy of data is not the priority but,

instead, the focus should be on the acceptance of monitoring as a sector management tool, the establishment of the mechanisms for monitoring, and application of the system. The initial system is relatively simple but as government and other country-level institutions gain confidence and skills in this endeavour, more advanced forms of monitoring can be sought by them.

As WASAMS monitors the sector via assessment, analysis and reporting, some of the required corrective actions, in response to monitoring, may be facilitated by the more comprehensive CESI-PLUS when the latter is fully operational.

**MODULE 1: CAPACITY BUILDING**

**SESSION 2: MONITORING AS A MANAGEMENT TOOL**

**READING III**

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**WATER AND SANITATION MONITORING SYSTEM  
(WASAMS) QUESTIONNAIRE**

WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199\_\_

COUNTRY NAME:

SOURCE OF INFORMATION

The statistics provided in this questionnaire are issued by:  
(name and address of the issuing institution)

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WHAT TO DO WITH THIS DATA

If WASAMS is computerized, please do the following:

- \* down-load the collected data to the 3 1/2" or 5 1/4" diskette

alternatively, if WASAMS is not computerized:

- \* enter the collected data on this hard copy of WASAMS questionnaire

WHERE TO SEND THIS DATA

To:           The Chief  
              Water and Environmental Sanitation Section  
              Unicef, United Nations Children's Fund  
              3, United Nations Plaza  
              New York, N.Y. 10017  
              U.S.A.

NOTE:

Before completing this questionnaire please refer to the "indicative definitions" by pressing function key F1 or, if using a hard copy, see attached definitions.

WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199\_\_

LOCALITY CODE

... /... /... /... /... /...

Country : ..... Sub-level 3.: .....
Sub-level 1.: ..... Sub-level 4.: .....
Sub-level 2.: ..... Sub-level 5.: .....

PART I. SERVICE COVERAGE

I. POPULATION

1. Estimated population (in thousands)

Urban 1) ..... Rural 2) ..... Total 3) .....
..... % ..... %

1.1 Disaggregate the above urban data into following two categories (if practicable)

High-income 4) ..... Low-income 5) .....
..... % ..... %



\* W A S A M S \*

Status as at 31 December 199

LOCALITY CODE

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PART I. SERVICE COVERAGE (continued)

II. SAFE WATER SUPPLY

Population with access to functioning systems (in thousands)

	Urban		Rural	
House Connections	6).....	%	7).....	%
Yard taps	8).....	%	9).....	%
Public standpipes	10).....	%	11).....	%
Boreholes with handpumps	12).....	%	13).....	%
Protected dug wells	14).....	%	15).....	%
Rainwater collection systems	16).....	%	17).....	%
Other high-cost technologies	18).....	%	19).....	%
Other low-cost technologies	20).....	%	21).....	%
Total served	22).....	%	23).....	%
Total unserved	24).....	%	25).....	%

Disaggregate the above urban data into following two categories (if practicable)

	Urban high-income		Urban low-income	
House Connections	26).....	%	27).....	%
Yard taps	28).....	%	29).....	%
Public standpipes	30).....	%	31).....	%
Boreholes with handpumps	32).....	%	33).....	%
Protected dug wells	34).....	%	35).....	%
Rainwater collection systems	36).....	%	37).....	%
Other high-cost technologies	38).....	%	39).....	%
Other low-cost technologies	40).....	%	41).....	%
Total served	42).....	%	43).....	%
Total unserved	44).....	%	45).....	%

WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199\_\_

LOCALITY CODE

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PART I. SERVICE COVERAGE (continued)

III. S A N I T A T I O N (sanitary means of excreta disposal)

Population with access to adequate excreta disposal facilities (in thousands)

	Urban		Rural	
Household connections to conventional public sewers	46).....	..... %	47).....	..... %
Household connections to small-bore public sewers	48).....	..... %	49).....	..... %
Household connections to septic systems	50).....	..... %	51).....	..... %
Latrines, wet (pour flush etc.)	52).....	..... %	53).....	..... %
Latrines, dry (ventilated improved pit)	54).....	..... %	55).....	..... %
Latrines, dry (simple pit etc.)	56).....	..... %	57).....	..... %
Other high-cost technologies	58).....	..... %	59).....	..... %
Other low-cost technologies	60).....	..... %	61).....	..... %
Total served	62).....	..... %	63).....	..... %
Total unserved	64).....	..... %	65).....	..... %

Disaggregate the above urban data into following two categories (if practicable)

	Urban high-income		Urban low-income	
Household connections to conventional public sewers	66).....	..... %	67).....	..... %
Household connections to small-bore public sewers	68).....	..... %	69).....	..... %
Household connections to septic systems	70).....	..... %	71).....	..... %
Latrines, wet (pour flush etc.)	72).....	..... %	73).....	..... %
Latrines, dry (ventilated improved pit)	74).....	..... %	75).....	..... %
Latrines, dry (simple pit etc.)	76).....	..... %	77).....	..... %
Other high-cost technologies	78).....	..... %	79).....	..... %
Other low-cost technologies	80).....	..... %	81).....	..... %
Total served	82).....	..... %	83).....	..... %
Total unserved	84).....	..... %	85).....	..... %

WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199\_\_

LOCALITY CODE

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PART I. SERVICE COVERAGE (continued)

IV. SYSTEM UTILIZATION

1. Percentage of population using drinking water primarily from a safe source:

Urban 86) ..... %

Rural 87) ..... %

1.1 Disaggregate the above urban data into following two categories (if practicable)

High-income 88) ..... %

Low-income 89) ..... %

2. Percentage of population using sanitary excreta disposal facilities:

Urban 90) ..... %

Rural 91) ..... %

2.1 Disaggregate the above urban data into following two categories (if practicable)

High-income 92) ..... %

Low-income 93) ..... %

Comment :

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WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199\_\_

LOCALITY CODE

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PART II. SYSTEMS MANAGEMENT

1. Participants' Contribution to Operation and Maintenance Costs (in 1,000 USD)

1.1 Safe Water Supply	GOV'T	ESAs	COMMUNITY	OTHER LOCAL	TOTAL
a) Urban	94).....	95).....	96).....	97).....	98).....
	..... %	..... %	..... %	..... %	..... %

Disaggregate the above urban data into following two categories (if practicable)

b) Urban high-income	99).....	100).....	101).....	102).....	103).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	104).....	105).....	106).....	107).....	108).....
	..... %	..... %	..... %	..... %	..... %

d) Rural	109).....	110).....	111).....	112).....	113).....
	..... %	..... %	..... %	..... %	..... %
Water Total	114).....	115).....	116).....	117).....	118).....
	..... %	..... %	..... %	..... %	..... %

1.2 Sanitation

a) Urban	119).....	120).....	121).....	122).....	123).....
	..... %	..... %	..... %	..... %	..... %

Disaggregate the above urban data into following two categories (if practicable)

b) Urban high-income	124).....	125).....	126).....	127).....	128).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	129).....	130).....	131).....	132).....	133).....
	..... %	..... %	..... %	..... %	..... %

d) Rural	134).....	135).....	136).....	137).....	138).....
	..... %	..... %	..... %	..... %	..... %
Sanitation Total	139).....	140).....	141).....	142).....	143).....
	..... %	..... %	..... %	..... %	..... %

SECTOR TOTAL	144).....	145).....	146).....	147).....	148).....
	..... %	..... %	..... %	..... %	..... %

\* W A S A M S \*

Status as at 31 December 199

LOCALITY CODE

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PART II. SYSTEMS MANAGEMENT (continued)

2. Number of safe water systems managed by

	GOV'T	PRIVATE	COMMUNITY	OTHER LOCAL	TOTAL
a) Urban	149).....	150).....	151).....	152).....	153).....
	..... %	..... %	..... %	..... %	..... %

Disaggregate the above urban data into following two categories (if practicable)

b) Urban high-income	154).....	155).....	156).....	157).....	158).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	159).....	160).....	161).....	162).....	163).....
	..... %	..... %	..... %	..... %	..... %

d) Rural	164).....	165).....	166).....	167).....	168).....
	..... %	..... %	..... %	..... %	..... %

SECTOR TOTAL	169).....	170).....	171).....	172).....	173).....
	..... %	..... %	..... %	..... %	..... %

Comment :

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\* W A S A M S \*

Status as at 31 December 199

LOCALITY CODE

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PART III. FUNDING

174) Average annual exchange rate : 1 US\$ = ..... national currency units.

1. Participants' Contribution to Capital Costs for NEW SYSTEMS (in 1,000 USD)

1.1 Safe Water Supply	GOV'T	ESAs	COMMUNITY	OTHER LOCAL	TOTAL
a) Urban	175).....	176).....	177).....	178).....	179).....
	..... %	..... %	..... %	..... %	..... %
Disaggregate the above urban data into following two categories (if practicable)					
b) Urban high-income	180).....	181).....	182).....	183).....	184).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	185).....	186).....	187).....	188).....	189).....
	..... %	..... %	..... %	..... %	..... %
d) Rural	190).....	191).....	192).....	193).....	194).....
	..... %	..... %	..... %	..... %	..... %
Water Total	195).....	196).....	197).....	198).....	199).....
	..... %	..... %	..... %	..... %	..... %

1.2 Sanitation

a) Urban	200).....	201).....	202).....	203).....	204).....
	..... %	..... %	..... %	..... %	..... %
Disaggregate the above urban data into following two categories (if practicable)					
b) Urban high-income	205).....	206).....	207).....	208).....	209).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	210).....	211).....	212).....	213).....	214).....
	..... %	..... %	..... %	..... %	..... %
d) Rural	215).....	216).....	217).....	218).....	219).....
	..... %	..... %	..... %	..... %	..... %
Sanitation Total	220).....	221).....	222).....	223).....	224).....
	..... %	..... %	..... %	..... %	..... %
SECTOR TOTAL	225).....	226).....	227).....	228).....	229).....
	..... %	..... %	..... %	..... %	..... %

WATER AND SANITATION MONITORING SYSTEM

\* W A S A M S \*

Status as at 31 December 199

LOCALITY CODE

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PART III. FUNDING (continued)

2. Participants' Contribution to Capital Costs for REHABILITATED SYSTEMS (in 1,000 USD)

2.1 Safe Water Supply	GOV'T	ESAs	COMMUNITY	OTHER LOCAL	TOTAL
a) Urban	230).....	231).....	232).....	233).....	234).....
	..... %	..... %	..... %	..... %	..... %
Disaggregate the above urban data into following two categories (if practicable)					
b) Urban high-income	235).....	236).....	237).....	238).....	239).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	240).....	241).....	242).....	243).....	244).....
	..... %	..... %	..... %	..... %	..... %
d) Rural	245).....	246).....	247).....	248).....	249).....
	..... %	..... %	..... %	..... %	..... %
Water Total	250).....	251).....	252).....	253).....	254).....
	..... %	..... %	..... %	..... %	..... %

2.2 Sanitation

a) Urban	255).....	256).....	257).....	258).....	259).....
	..... %	..... %	..... %	..... %	..... %
Disaggregate the above urban data into following two categories (if practicable)					
b) Urban high-income	260).....	261).....	262).....	263).....	264).....
	..... %	..... %	..... %	..... %	..... %
c) Urban low-income	265).....	266).....	267).....	268).....	269).....
	..... %	..... %	..... %	..... %	..... %
d) Rural	270).....	271).....	272).....	273).....	274).....
	..... %	..... %	..... %	..... %	..... %
Sanitation Total	275).....	276).....	277).....	278).....	279).....
	..... %	..... %	..... %	..... %	..... %
SECTOR TOTAL	280).....	281).....	282).....	283).....	284).....
	..... %	..... %	..... %	..... %	..... %

Comment :

\* W A S A M S \*

Status as at 31 December 199\_\_

LOCALITY CODE

... /... /... /... /... /...

PART IV. GENERAL COMMENTS

1. Quality of Data Reported

Please comment on the quality of data.

Horizontal lines for writing comments.

2. Definitions Used

Please comment on the local definitions used if different from the indicative ones (1).

Horizontal lines for writing comments.

use extra sheet if necessary

3. Decentralization of Monitoring

What is the lowest administrative level from which data was obtained this year ?

(Tick appropriate box)

National [ ] Sub-level 1. [ ] Sub-level 2. [ ]
Sub-level 3. [ ] Sub-level 4. [ ] Sub-level 5. [ ]

(1) i.e. the broad indicative definitions for the "core indicators" as seen when function key F1 is pressed when running the WASAMS computer system or , the



## WASAMS QUESTIONNAIRE GUIDELINES (1)

To enable regional and global promotion and advocacy on behalf of the sector, there is need for standardization in the broadest sense of the terms used to define elements of the sector. This is of paramount importance. Therefore, the guidelines provided hereafter relate to the "core indicators" and must be considered as indicative only.

## Guidelines to Definitions:

It is important to note that the "broad indicative definitions" described herein apply to the WASAMS "core indicators" which will be the only ones to be channelled upwards from national level for use at regional and global levels for advocacy and fund raising purposes.

## GEOGRAPHIC CATEGORIZATIONS

URBAN HIGH-INCOME AREAS :

are those whose populations are perceived locally to have good access to safe water supply and sanitation, a good physical standard of dwelling and have good access to other services such as health and public transport.

URBAN LOW-INCOME AREAS :

are those whose populations do not fit into the previous category, and have minimum access to services enjoyed by the afore-mentioned group, for example, with limited access to safe water supply, sanitation and/or other social services.

RURAL AREAS :

are those populations perceived by local definition to reside outside urban centers and being generally dispersed populations. As defined in the local population census.

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(1) The questionnaire itself is being modified into an upgraded version (WASAMS Computer Programme Version 1.2).

HOUSE CONNECTIONS :

are taps installed within the individual house, normally more than one tap, irrespective of the source and extraction method.

YARD TAP :

generally a single tap installed within a private plot of land, but is positioned outside the house structure, irrespective of the source or extraction method.

PUBLIC STANDPIPES :

taps installed on public grounds and accessible to the general public/community, irrespective of the source or extraction method.

BOREHOLES WITH HANDPUMPS :

these are drilled boreholes with a final diameter (cased or uncased), generally smaller than 6 inches and with static water levels (SWL) of usually less than eighty (80) meters depth. Equipped with a handpump which is manually operated and, which is rarely able to lift water from depths greater than 80 meters.

PROTECTED DUG WELLS :

are those which are adequately protected (guarded) against surface or outside contamination through the use of lining or covering, with a rim sufficiently raised above ground level, and may be equipped with a pump (any type). In completing the WASAMS Questionnaire specify if the pump is high-cost or low-cost technology (by local definition).

RAINWATER COLLECTION SYSTEMS :

these are individual household or communal rainwater harvesting systems. The system normally consists of a catchment area (roof or other type of preferably impermeable or almost impermeable surface), and a storage system consisting of a cistern, drums, clay pots or other such container. Sometimes the system is fitted with a filter usually located between the catchment and storage components. The water must be rendered safe to drink as an end product.

OTHER HIGH-COST TECHNOLOGIES :

as defined and perceived at the country level.

OTHER LOW-COST TECHNOLOGIES :

as defined and perceived at the country level.

HOUSEHOLD CONNECTIONS TO CONVENTIONAL PUBLIC SEWERS :

this refers to a pipeline outlet from the household to the public sewerage system. Its function is to conduct and discharge human excreta and wastewater from the household to a sewerage treatment system.

HOUSEHOLD CONNECTIONS TO SMALL-BORE PUBLIC SEWERS :

refers to unconventional sewerage system suitable for areas where water supply is low i.e. where consumption is normally less than 30 liters/capita/day (which implies dwellings where public standpipes are used, usually). These small-bore sewers are normally of 4 to 6 inches in diameter and are buried at shallow depths (less than 1 meter) below the surface. Such systems are usually designed for low-income populations in unplanned settlements where the population density usually exceeds 200 persons per hectare.

HOUSEHOLD CONNECTIONS TO SEPTIC SYSTEM :

this refers to all on-site water carriage sanitation systems discharging to a septic tank, a case pool or other means into the soil.

LATRINES, WET (POUR-FLUSH ETC.) :

refers to on-site latrine system which uses a small amount of water (1-3 liters) for hand-flushing the human excreta and has single or double pits for excreta and wastewater collection. Therefore, it may or may not be connected up to a small-bore or conventional sewerage system.

LATRINES, DRY (VENTILATED IMPROVED PIT) :

refers to an on-site improved "dry pit" latrine comprising a vent pipe with a fly screen used to trap flies in the pit and, also allows evacuation of foul air into the atmosphere above the latrine roof. This minimizes foul odour within the latrine super-structure and traps flies that could spread diseases through faecal contamination.

LATRINES, DRY (SIMPLE PIT) :

refers to a conventional "dry" pit latrine without any improvements such as vent pipes and fly screen (as fitted to the VIP). This type of latrine is often foul smelling and also allows flies to escape resulting in the risk of food contamination etc.

OTHER HIGH-COST TECHNOLOGIES :

as defined and perceived at the country level.

OTHER LOW-COST TECHNOLOGIES :

as defined and perceived at the country level.

Emphasis is stressed on the following definitions as examples only. Therefore these examples should be elaborated upon at country level to suit specific needs.

Water systems:

- i. For reticulated systems leading to household connections, yard taps or standpipes. For those systems to be considered "functioning" they should operate above 50 percent of design capacity on a daily basis.
- ii. For handpumps, "functioning" will mean those operating at over 70 percent of the time, and where the time-lag between breakdown and repair does not exceed two weeks.

Sanitation:

- i. "Functioning" will mean that the facility is structurally and operationally sound and it is attractive for and encourages use.

EXTERNAL SUPPORT AGENCY (ESA)

refers to an external donor be it a multilateral or international organization such as UNICEF or UNDP, a bilateral such as USAID, an external nongovernmental organization (NGO) such as OXFAM, or intergovernmental organization (IGO) such as EEC or African D.B.

OTHER LOCAL

refers to national non-governmental organizations (as opposed to external NGOs).

"ACCESS" (2)

as a broad indicative definition refers to:

- i. Access to water supply: the availability of at least 20 liters of safe water per person per day, located within one kilometer from the user's dwelling.
- ii. Access to sanitation: the availability of a sanitary facility for human excreta/waste disposal within a convenient distance from the user's dwelling i.e. not too far away to discourage its use.

EXCRETA DISPOSAL SYSTEM :

implies a satisfactory sanitary means of excreta disposal indicating that it hygienically separates excreta from human contact.

OPERATION AND MAINTENANCE OF SYSTEMS :

implies on-going, regular or recurrent upkeep including repairs.

NEW SYSTEMS :

implies new capital investment for expansion of service coverage, but not for the rehabilitation of existing systems which may result in improvement of service level (from standpipe to yard tap).

REHABILITATION :

implies a substantial capital investment which may or may not increase the level of service (e.g. from a standpipe to a house connection for convenience), but does not contribute towards expansion of service coverage.

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**READING I**

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**UNICEF AND THE 1990S:  
THE WATER AND SANITATION SECTOR WORKPLAN FOR 1990-95**

**Extracted from:  
Sector Workplan, Water and Environmental Sanitation  
WET/628/89  
17 November 1989**

PLANNED ACTIVITIES FOR 1990-95

1. Country Focus: Sustainable National Programmes

UNICEF is well placed to act as a catalyst for sector development as it has water and sanitation (WATSAN) projects in almost 100 developing countries. For those countries, e.g., in South America principally, where UNICEF is not involved in the sector activities, the organization will mobilize others to act according to perceived needs. Assessment of countries status, in terms of coverage and needs as of 1990, will form the basis for categorization of developing countries according to their requirements and ability to achieve universal access to water and sanitation at, or prior to, the year 2000. The UNICEF Country Representatives will be a prime mover in these endeavours.

1.1 Universal Water Supply Coverage

(i) Challenge

Some countries have the potential of reaching full coverage in water supply, in the not too distant future, by systematic application of certain low-cost technologies and approaches. If some of these countries are effectively assisted and followed-up, the potential can be realized. (The other countries will be reviewed to identify constraints, and the requisite assistance provided to accelerate the coverage rate).

(ii) Objective(s)

- To give special assistance to fourteen selected countries, globally, in order that they may soon realize their goal of full coverage in water supply.

- To review the situation in the remaining countries to identify constraints, prior to giving the requisite assistance for accelerating the coverage rate.

(iii) Approach

- Intense follow-up of the selected countries by the Water and Sanitation Section at UNICEF HQ, to mobilize the respective Field Offices to accelerate their efforts.

- Identification of the low-cost technologies and social systems which are to form the thrust of the WATSAN programme.

- Liaison with the Programme Funding Office (PFO) regarding funds for the identified countries.

- UNICEF Country Offices to review national situation to identify constraints to universal access prior to provision of assistance for accelerating coverage.

(iv) Expected Achievement(s) by 1995

Virtually complete water supply coverage in the following countries:

- Asia: India, Bangladesh, Viet Nam, Thailand.
- Africa: Egypt (MENA), Nigeria, Uganda, Cameroon, Lesotho.
- Latin America: Costa Rica, Panama, Belize, Chile, Trinidad & Tobago.

(v) Implications for Country Programme Process

- The idea of full water supply coverage, in the not too distant future, should be reflected in the WATSAN programme objectives.

- There would be a need to rise to the occasion for increased local mobilization of efforts.

- WATSAN budgetary concerns may be heightened.

- In the case of Chile, and Trinidad & Tobago, where UNICEF has no water and sanitation programme, UNICEF (local) should mobilize the governments and the local External Support Agencies to take necessary action.

1.2 Sanitation

(i) Challenge

In virtually every developing country, sanitation coverage lags significantly behind that for water supply, especially in rural areas. The reasons for this may be many but the principal ones relate to the fact that, unlike water supply, sanitation is not normally a felt need and, in addition, insufficient resources are usually allocated to this component of the water and sanitation sector.

(ii) Objective(s)

- To revitalize the programming of the sanitation component.

- To broaden the definition of sanitation to include not only latrine promotion, construction and use but, also, solid waste (garbage) disposal, environmental (household) hygiene, personal hygiene, etc.

- Remove sanitation from its mainly technical mould (latrine technology) and link it more with mobilization of people (beneficiaries) -- so that communities can be viewed as programme participants rather than recipients.

(iii) Approach

- Programming more resources (funds, time, staff) to the sanitation component.

- Firmly link the water and sanitation sector with the social communications and health units at UNICEF HQ, Country Offices, and at governmental (ministerial) level.



- Establishing of at least one public-health-oriented sanitation officer or sanitation focal point in each Office that has a significant water and sanitation programme. (All WATSAN staff normally deal with all components of the sector but, to invigorate sanitation, such a focal point can be a booster).

- Training of existing sanitation officers (or focal points) in social mobilization and expose same to the techniques used in mobilizing for Universal Child Immunization (UCI).

- Recruiting of future sanitation officers not mainly on the basis of engineering degrees but, more importantly, on their training and experience in public health and other software elements, including social mobilization. Where a selected candidate lacks these elements, they should be promptly provided via a short formal course or through informal exposure.

- Focusing on sanitation (and other components of the sector) for schools and health centres, especially, as part of the sector programming for the communities selected.

(iv) Expected Achievement(s) by 1995

- Allocation of a greater proportion (about 20%) of the WATSAN country-level budget to the sanitation component. (Currently, most countries spend less than 10% of their water and sanitation budget on sanitation).

- Greater use of social mobilization in the programming of sanitation.

- Higher utilization rate among latrine owners.

- Increased sanitation coverage.

(v) Implications for Country Programme Process

Country offices should re-assess themselves in light of the foregoing exposition on sanitation, to re-determine their needs. Note-worthy are, the proportion of funds allocated to sanitation in relation to the other components of the sector, whether social mobilization plays a significant or insignificant role in the programming of sanitation, and the suitability of the sanitation staff to deal with the mobilization issue. (The sanitation staff are not expected to execute the mobilization, but to have an appreciation and understanding of it so that they can effectively relate to the social communications unit that would be encouraged to implement the activity).

1.3 Community Management of Systems

(i) Challenge

Community management of the intervention is central to programme sustainability. Maintenance by the community, community contribution to partial or complete cost recovery for operation and maintenance, and other similar efforts, need to be re-inforced in water and sanitation programming.

(ii) Objectives(s)

To enhance programme sustainability via effective community management of constructed WATSAN systems.

(iii) Approach

- Make sustainability a programme objective.
- Identify and flag WATSAN projects where community maintenance, cost recovery measures, etc., are well developed.
- Encourage visits to countries where elements of community management are advanced.

(iv) Expected Achievements by 1995

A majority of countries with WATSAN programmes having strong in-built elements of community management with respect to operation and maintenance.

(v) Implications for Country Programme Process

The issue of partial or complete community responsibility for operation and maintenance of WATSAN systems require behavioural and attitudinal changes on the part of both government and communities. Active and sustained social communications to mobilize effective support for this should be embodied in the country programme, not only for the maintenance of WATSAN systems but also for other interventions at the community level.

1.4 Human Resources Development

(i) Challenge

The issue at stake is two-fold: Firstly, many of the UNICEF water and sanitation (WATSAN) staff, globally, are technical in background and orientation but their work mainly involves managing and implementing sector inputs which are increasingly programmed as part of a multi-sectoral, health-oriented package. Secondly, institutional capacity building at the country level is normally given only ad hoc attention in WATSAN programmes thereby frustrating the long-term aim for effective local management of the sector.

(ii) Objective(s)

- To systematically train and orient the WATSAN staff in order to provide balance in terms of knowledge and skills regarding management, hardware and software issues.
- To place institutional capacity building (pertaining to country-level WATSAN entities) as one of the major objectives of WATSAN programmes so that it receives higher visibility and constant attention.

(iii) Approach

- Training/orientation of WATSAN Field staff, via a series of workshops, will take place. The first workshop will be global, involving WATSAN Chiefs, and planned for July/August 1990. Others will be regional, involving WATSAN and other sector staff, planned tentatively for 1991 (East Africa), 1992 (West Africa), 1993 (Asia), 1994 (elsewhere).

- Short training courses, formal and informal, for both Government and UNICEF WATSAN staff at appropriate institutions in developed and developing countries, to be provided in management, technical and non-technical issues, with emphasis on the software elements.

- Programming of WATSAN inputs at the country level to include assessments of the strengths and weaknesses of UNICEF counterpart WATSAN institutions, and appropriate steps taken to strengthen their capacity, within the context of UNICEF policy/mandate.

(iv) Expected Achievement(s) by 1995

- Several staff training/orientation workshops, approximately one per year.

- Institutional capacity building, at the country level, as a systematic, ongoing programme element.

- Globally, WATSAN staff more balanced in terms of knowledge and skills in both hardware and software aspects.

(v) Implications for Country Programme Process

At least two issues are of importance in this regard:

- Output/outcome: It is necessary to note that success is judged not only by output (number of water-points or latrines, etc.) but also by outcome (behavioural change, outlook modification, etc.). Thus, human resources development is at least as important as WATSAN hardware installations in the country programme.

- Budget: Resources, both financial and human, should be adequately allocated to this programme item. This aspect should be properly planned so that it effectively complements the rest of the programme, instead of being an isolated activity not rooted in the body of the programme.

1.5 Costs

(i) Challenge

Cost awareness and cost effectiveness are not given a sufficiently high priority on the WATSAN agenda in some countries. Cost effectiveness of WATSAN programmes could be an important means to further enhance coverage.

(ii) Objective(s)

To sufficiently sensitize WATSAN staff, globally, regarding cost issues, so that greater cost effectiveness is reflected in programme planning (design) and implementation.

(iii) Approach

- Collect existing cost data (unit cost, per capita cost, etc.) on WATSAN programmes from various countries, and distribute them globally for comparison. (Where technical assistance is required by some countries for the execution of these financial assessments, WET at HQ may assist).

- Encourage visits by government and UNICEF staff to other countries with cost effective activities in WATSAN.

- Raise the issue of costs and cost effectiveness at appropriate meetings between Headquarters and the Field, and at any other occasion.

- Report successful efforts at cost effectiveness in the Annual Reports and in the re-established Water Front Magazine.

(iv) Expected Achievement(s) by 1995

- WATSAN programmes would reflect cost consciousness and show greater cost effectiveness.

- To get the unit cost, in all major African countries, for the completed handpump-equipped borehole (50 metre depth, 6 inch drilled, 4 inch cased, approx.) to be less than \$5,000.00; for Asian countries, less than \$3,000.00.

(v) Implications for Country Programme Process

In practice, it may be more advantageous to look at cost effectiveness not solely from the sectoral viewpoint but also in terms of total programme delivery, so as to capture the positive effects of synergism. This total programme concept is best handled via the country programme.

1.6 Linkage of Water and Sanitation With Health and Socio-economic Concerns

1.6.1 Linkage with Control of Diarrhoeal Diseases

(i) Challenge

Diarrhoeal diseases have been identified as one of the major killers of infants and children. Oral rehydration therapy (ORT) has been very instrumental in treating some forms of diarrhoeal diseases, the principal causes of which are rooted in insanitary and unhygienic conditions. As ORT is at best a cure, the CDD equation requires complementary preventive and curative features for it to be significantly effective. Water and sanitation, in addition to nutrition, are two effective preventive interventions. Thus, if the linkage between water and sanitation (WATSAN) and ORT were to be enhanced in country programmes, the control of diarrhoeal diseases (CDD) could be made more effective.

(ii) Objective(s)

To link the programming of water and sanitation with the programming of ORT, in a practical complementary manner, so that the former intervention be a principal preventive means (in juxtaposition with the curative ORT) within the CDD package.

(iii) Approach

At UNICEF and at government level, both the WATSAN and the CDD teams should establish a working relationship, leading to joint programming. The joint programming can include the following:

- Joint planning: Ensure, via joint planning, that common areas are selected for ORT promotion as well as for WATSAN. And that strategies take atleast both interventions into consideration.
- Balanced curriculum: Courses for trainees in CDD, promotional literature, school text books, etc., should reflect both the preventive (WATSAN, etc.) and the curative (ORT, etc.) aspects.
- Suitable sanitary amenities: Generally, communities selected for the CDD programme should also have existing or planned WATSAN projects. But, specifically, CDD training centres, schools, health centres, etc., where both theoretical education and practical experiences are disseminated, should each have atleast a water-point and a sanitary latrine, so that the theory and practice of CDD endeavours can be realistic.
- Appropriate health messages: Messages emanating from CDD programmes should reflect both the preventive (WATSAN, etc.) and the curative (ORT, etc.) elements. (One of the major preventive means should always be the washing of hands after/before certain functions).

(iv) Expected Achievement(s) by 1995

- An effective linkage of WATSAN with CDD, in the Country Programme plans of action and at the implementation of the latter.
- A positive impact on the number of diarrhoeal disease cases, relative to the present.

(v) Implications for Country Programme Process

- The planners and other participants of this process should re-orient their thinking regarding CDD, to give significance not only to the curative aspect but also to preventive means. Thus, all CDD programmes should include the intervention of water, sanitation and hygiene education.
- The WATSAN and the CDD entities at the country level should determine modalities for joint programming.

### 1.6.2 Linkage with Eradication of Guinea Worm Disease

#### (i) Challenge

About 23 countries globally (4 in Asia, 19 in Africa) are adversely affected by guinea worm disease. The health and socio-economic effects of the disease wreak havoc in endemic areas, severely disrupting school attendance and interfering with agricultural production, due to the fact that victims of the disease may be immobilized for up to three months. Recent examples in India and Nigeria, to name a few, clearly show that the disease can be eliminated (and eventually eradicated) by a combination of health/hygiene education and the provision of safe water supplies.

#### (ii) Objective(s)

To eliminate and eventually eradicate the disease in the 1990s.

#### (iii) Approach

Comprehensive plans of action are to be developed, based on thorough national guinea worm disease surveys in endemic countries. The plan of action for each country will be costed and implemented. Parallel to the development of these plans, certain actions are being taken both by the individual endemic countries, themselves, and by the international community, based on current knowledge of the disease and means of elimination. The thrusts pursued are:

- Mobilization: In the endemic countries and in the world at large, intensive and extensive mobilization efforts are being made (and planned) to educate people about the disease, to raise the profile of the problem, and to sensitize, gain support, and secure funding from potential donors.
- Package of Interventions: A combination of methodologies is applied, depending on the localities within each country. Health/hygiene education, to contain the disease, is widely utilized and includes filtration (and boiling where practicable) of drinking water, ways to minimize the spread of the disease, and use of the safe chemical, temephos, to kill the water fleas and/or guinea worm larvae in the infected water bodies. Safe water supply is also provided as this, in the short and long term, will eradicate the disease. The package is flexible and, at times, reliable safe water supplies precede health education and vice versa, or both are provided jointly.
- Endemic African countries with unfunded WATSAN projects will be assisted with funding of such projects, from general resources. Affected areas in endemic countries are being singled out for full water supply coverage by 1995.

(iv) Expected Achievement(s) by 1995

- The ongoing implementation of national eradication plans of action, following completion of the national guinea worm disease surveys.
- Complete water supply coverage in affected areas of endemic countries.
- The elimination of the disease in some countries, notably India, Pakistan, Cameroon.
- Significant progress in the containment of the disease, in terms of the numbers infected and at risk, relative to the present.

(v) Implications for Country Programme Process

For endemic countries, consideration should be given to the following:

- Make guinea worm eradication an objective of the water and sanitation programme.
- Give high priority to guinea worm affected areas, when planning water and sanitation programmes.
- Mobilize locally for guinea worm disease eradication.
- Report (one statement) on the status of guinea worm disease in the Annual Report.

1.6.3 Linkage with Control of Schistosomiasis

(i) Challenge

Human schistosomiasis (bilharzia), a parasitic water-based disease, is found in many parts of the Tropics, affecting much of Africa, northeast South America, and parts of Southeast Asia, with some 200 million cases in total. Awareness concerning the morbidity of the disease is low or lacking, especially in Sub-saharan Africa where, sometimes, about 50% of the children of some schools are affected by the disease, at any one time.

(ii) Objective(s)

To raise awareness concerning the disease, and mobilize governments and the External Support Agencies to place control of the disease high on the developmental agenda.

(iii) Approach

- Identification of the endemic countries.
- Country-level mobilization of efforts to determine the degree of the problem and the actions to be taken.
- Use of health education as a major activity for the control of the disease.

(iv) Expected Achievement(s) by 1995

The systematic development of control programmes for bilharzia (schistosomiasis) at the country-level in endemic countries.

(v) Implications for Country Programme Process

For endemic countries, consideration should be given to the following:

- Include bilharzia control in the Child Survival and Development (CSD) package, focusing mainly on health education.

- Mobilize the local U.N. system and the rest of the External Support Agencies to support the governments' effort.

1.7 Technical Co-operation Among Developing Countries (TCDC)  
Within UNICEF Framework

(i) Challenge

One of the most practical and efficient measures to improve programme planning is exchange visits and educational tours, among UNICEF-assisted countries, with respect to water and sanitation programmes. Past experiences should be utilized to strengthen TCDC action in order to enhance WATSAN programming elsewhere.

(ii) Objective(s)

To promote more technical co-operation among UNICEF-assisted countries, in the field of water and sanitation.

(iii) Approach

- The Water and Sanitation Section at UNICEF Headquarters will identify countries with special learning situations and publicise these, for the Field, in the re-established Water Front Magazine and elsewhere. Also, during WATSAN programme field visits, staff from the said Section will inform the Field regarding such identified countries.

- Use will be made of suitable WATSAN Field staff to execute short-term consultancies (e.g. evaluations, studies, etc.) in other Field Offices, on behalf of the Water and Sanitation Section at UNICEF Headquarters. This movement (exchange) of WATSAN staff will provide adequate opportunities for the sharing of experiences.

(iv) Expected Achievement(s) by 1995

A significant increase in the number of WATSAN educational visits among the UNICEF-assisted countries, to the point of reaching a satisfactory level.

(v) Implications for Country Programme Process

General budget allocations for such educational (training) visits should be made early, during programme preparation, although the countries to be visited could be identified subsequent to the budgetary process.



## 1.8 Acceleration of Coverage Rate

### (i) Challenge

If the same coverage rate for the provision of water and sanitation facilities in the 1980s was replicated in the 1990s, universal access to these facilities will be far from being achieved by the year 2000. The need is there to significantly boost the coverage rate. The 1980s implementation rates for urban water and for rural water, would have to increase about 2.5 and 1.5 times, respectively, whilst urban sanitation and rural sanitation would have to increase 3 and 4 times, respectively, during the 1990s.

### (ii) Objective(s)

To seek and try innovative ways of increasing the coverage rate for water and sanitation facilities.

### (iii) Approach

A few countries have successfully tried, while others are in the process of trying, innovative means for accelerating coverage. These innovations will be monitored, evaluated and, where applicable, utilized elsewhere to boost the rate of coverage. Information exchange and field visits (TCDC) are to be used to disseminate the information.

### (iv) Expected Achievement(s) by 1995

A marked increase in the coverage rate, relative to the same period in the 1980s.

### (v) Implications for the Country Programme Process

- Make coverage rate an issue in the WATSAN programme.
- Budget for visits of government and UNICEF staff to countries with innovative ways of increasing the coverage rate.

## 2. Global Focus: Mobilization for Collaboration

UNICEF annual financial contribution (\$70 million currently and projected \$100 million in early 1990s) to the annual global sector investment of \$10,000 million in developing countries, is miniscule. But UNICEF presence in water and sanitation in almost 100 developing countries, along with its image, gives the organization considerable clout in terms of mobilization of resources. The use of this power of mobilization will be encouraged to foster alliances and to bring about positive changes for the achievement of universal access.

### 2.1 Allocation of a Greater Proportion of Global WATSAN Funds to Low-cost Technologies

#### (i) Challenge

Of the approximately \$10,000 million invested annually in developing countries in water and sanitation programmes, globally, it is reported that about 80% of this sum is spent on high-cost, urban-type schemes, and the remaining 20% on low-cost technology systems. With most of the

unserved populations living in rural and peri-urban areas where low-cost technology systems have general application, coverage in these areas could be enhanced, significantly, if the ratio were to be shifted by about 10 percentage points in favour of low-cost technology systems.

(ii) Objective(s)

To use the mobilizing power of UNICEF, globally, to achieve an increase in the proportion of global funds invested in low-cost water and sanitation systems, relative to high-cost types, by about 10 percentage points, from the existing global ratio of 20:80 to about 30:70.

(iii) Approach

This is entirely a mobilization endeavour to convert international donors, lending institutions, and other development agencies, to the idea.

- Interaction between UNICEF and other members of the U.N. family, notably, the World Bank, UNDP, and WHO. (Possible meeting between UNICEF Executive Director and President of the World Bank, on the issue.)

- Increased interaction between UNICEF, bilaterals, and NGOs, and with others involved in the funding of WATSAN programmes.

- Publicity and public promotion on the topic, in appropriate fora, by UNICEF personnel in co-ordination with the Divisions of Information, and Public Affairs.

(iv) Expected Achievement(s) by 1995

That the proportion of global investment in low-cost technology water and sanitation systems, in developing countries, reaches a level of about 30%.

(v) Implications for Country Programme Process

It would be necessary for Country Offices, especially the Representatives, to devote ample time to the issue, for adequate interaction with the UNDP Resident Representatives and with the governments.

## 2.2. Inter-agency Collaboration

(i) Challenge

Inter-agency collaboration within the U.N. system, especially among the FOUR (UNDP, WHO, World Bank, UNICEF) in the field of water and sanitation, is imperative for rendering the individual country inputs more effective. The question is how to sustain existing efforts of collaboration and even enhance their effectiveness.

(ii) Objective(s)

To improve existing collaborative efforts, within the water and sanitation sector, primarily among UNDP, WHO, World Bank and UNICEF (and to seek ways of establishing working relationships with other appropriate U.N. agencies).

(iii) Approach

- At Headquarters level: Joint planning and information exchange, via the U.N. Decade (and Post Decade) Steering Committee meetings, involving WHO, UNDP, World Bank, UNICEF (the FOUR) and others.

- At Field level: Complementarity of programmes involving members of the FOUR, in relation to WATSAN projects, guinea worm disease eradication, and the monitoring system for WATSAN coverage.

- Opportunities will be sought (through participation in top-level meetings and speech making, among others) to actively involve the UNICEF Executive Director and the Deputy Executive Director for Programmes, in the thrust for more effective means of collaboration, for example, on the question of securing a greater proportion of WATSAN investment funds allocated to low-cost technology systems.

(iv) Expected Achievement(s) by 1995

- Several concrete cases of collaboration among UNICEF, WHO, UNDP and the World Bank, primarily.

- Use of the collaborative efforts to accelerate coverage rate to achieve universal access by the year 2000.

(v) Implications for Country Programme Process

At the country level, UNICEF can involve UNDP, and perhaps other U.N. bodies (those with significant local WATSAN input) in the Country Programme Preparation or, at least, share the document with them. Such participation is collaboration in itself which, in turn, may engender further collaboration.

2.3 Monitoring of Water and Sanitation Coverage

(i) Challenge

During the International Drinking Water Supply and Sanitation Decade (1981-90), monitoring of coverage among developing countries would have been executed only about twice. For monitoring to be an effective management tool for both Governments and the External Support Agencies, it should be done at least yearly. Since the Decade concepts, strategies, and primary goal will continue in the 1990s, it is imperative that a system be devised to annually monitor coverage performance.

(ii) Objective(s)

Via the Governments and the External Support Agencies, promote the establishment of a simple, practicable system, at the country level, to annually monitor coverage progress with respect to water and sanitation. (Such monitoring, presently, is the responsibility of the Decade Secretariat at WHO's Environmental Health Division, Geneva. UNICEF should endeavour to strongly and actively contribute to these efforts).

(iii) Approach

- A general definition of "access" is essential for the monitoring system since it is "access" that will be monitored. Both Governments and the External Support Agencies should be speaking a similar language regarding "access". There is probably no problem with access to sanitation, but access to water supply should be given a indicative definition, in terms of quantity/quality, and distance. The proposed definition of access to water supply follows: availability of atleast 20 litres of safe water per person daily, located at a total distance of within one kilometre from the user's dwelling. For sanitation, hygienic practices manifested by sanitary means of excreta/waste disposal, can suffice.

- The governments of the respective countries should be encouraged to re-set or re-confirm their target dates for coverage in the 1990s, separately, for water supply and for sanitation, or the coverage expected for each by the year 2000. With such revised, official target dates, the stage will be set for a monitoring system to function.

- UNICEF is to work closely with WHO, UNDP, World Bank, and others in assisting governments to locally establish a monitoring system to annually monitor coverage rate and progress. Funds should be provided, if necessary.

- The annual monitoring is to be used as an active management tool, principally for governments, to mobilize the slothful and encourage the swift.

- The UNICEF Annual Report, available in October each year, will report on the status of coverage for the end of the previous year. Similarly, the re-established Water Front Magazine of the Water and Sanitation Section will regularly report on it.

(iv) Expected Achievement(s) by 1995

An established and functional system for annual monitoring of water and sanitation coverage, based at the country level and co-ordinated by one of the U.N. agencies.

(v) Implications for Country Programme Process

Close collaboration between UNICEF (at the country level) and the other agencies working in the field of WATSAN is necessary for the establishment of the monitoring system and for its continued functioning. The reporting of coverage in UNICEF Annual Reports from the Field, would necessarily require interaction between UNICEF and its partners, in procuring the data.

2.4 Environment

(i) Challenge

Within the context of environmental health, how should water and sanitation interventions be programmed to help minimize and/or prevent adverse environmental impact? The principal two areas of environmental concern here (since certain aspects are dealt with under sanitation) are issues relating to poor water resources management, including watershed management, and pollution of groundwater by improper design of latrine systems.

(ii) Objective(s)

To raise awareness of potential negative environmental impact, resulting from poor management of watersheds and improper design and siting of latrines, so that preventive actions can be taken.

(iii) Approach

- Establishment of firm contact with UNEP and other entities engaged in environmental activities, to keep abreast of issues regarding environmental health.

- Distribution, to the Field, of available literature on the issues at stake.

- Raising of environmental issues at programme previews, reviews, and field visits.

(iv) Expected Achievement(s) by 1995

That UNICEF-assisted water and sanitation programmes are developed in a manner which is environmentally sound.

(v) Implications for Country Programme Process

- The country programme, as a whole, should reflect concern for the environment by focusing on sustainable development, as a matter of policy.

- Projects that are planned for positive environmental impact should be given high visibility, inside and outside of UNICEF.

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**READING II**

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**MAJOR GOALS FOR CHILD SURVIVAL,  
DEVELOPMENT & PROTECTION BY THE YEAR 2000**

**Reading #1.1**

**Programme Process**

**Training Section**

**Excerpted from: Development Goals and Strategies  
for Children in the 1990s**

## ***Reading #1.1:***

### ***Major Goals for Child Survival, Development & Protection by the Year 2000\****

UNICEF, in consultation with its partners in the United Nations system, proposes the following major goals for child survival, development and protection to be achieved by the year 2000:

- a) Between 1990 and the year 2000, the reduction of the infant mortality rate (IMR) and U5MR in all countries by one third, or to 50 and 70 per 1,000 live births, respectively, whichever is less;
- b) Between 1990 and the year 2000, the reduction of the maternal mortality rate (MMR) by 50 per cent;
- c) Between 1990 and the year 2000, the reduction in malnutrition among children under five years old by 50 per cent;
- d) Universal access to safe drinking water and sanitary means of excreta disposal by the year 2000;
- e) By the year 2000, universal access to basic education and completion of primary education by at least 80 percent of primary-school-age children;
- f) By the year 2000, the reduction of the adult illiteracy rate (the appropriate age-group to be determined in each country) to at least one half of its 1990 level, with an emphasis on female literacy;
- g) Improved protection of children in especially difficult circumstances.

### ***Strategic Priorities for Reaching the Goals***

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The goals for the year 2000 enumerated are admittedly very ambitious compared with historical experience and current trends. While the goals are considered technically feasible and financially affordable, their achievement will require a set of strategic actions that will accelerate the pace of progress which surpasses historical trends.

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\* Excerpted from "Development Goals and Strategies for Children in the 1990s."

Strategies will naturally vary from country to country and will be unique to different sectors. However, the following essential strategic elements will be common to most countries and sectors.

### *Going to scale*

The experience of the 1980s has demonstrated that many programmes related to the human goals for the 1990s lend themselves to mass application at the national level. It is, therefore, no longer as necessary to devote an inordinate amount of time and energy to small-scale pilot projects in the 1990s as it was in earlier decades. The challenge of the 1990s is to disseminate what has already been learned from pilot projects to a scale that can lead to universal coverage of most of the basic services for human development.

There is, of course, always room for innovation and refinement of strategies already known to work. While this deserves support and attention, priority should be accorded to the large-scale implementation of services that work.

### *Reaching the unreached and hard to reach*

As coverage of services reaches the majority, it becomes increasingly difficult to reach the last 15 to 20 per cent of the population who live in remote, inaccessible areas or in overcrowded urban shanty-towns. These are often the poorest of the poor and the most vulnerable. The difficulty of reaching them, and sometimes the relatively high marginal cost of providing them with services, has often deterred and discouraged development workers. In any scheme of development that puts human well-being at the centre of the development strategy, a high priority should be assigned to reach the unreached or hard to reach.

Just as helping the least developed and land-locked countries should receive special attention from the international community, so should reaching the poorest communities be a priority of national development. It is, after all, among the poorest 25 per cent of families that problems of malnutrition, ill health, child deaths, maternal mortality, illiteracy and low productivity are concentrated. It is, therefore, not enough to state global goals in terms of national averages. As part of reaching national goals, some subnational goals should be specified so as not to leave out any sizeable administrative unit, ethnic, racial or gender group in reaching the national average. Improvement of the situation of such underprivileged subnational target groups should command a significant share of investments available for development.

### *Disparity reduction*

Disparity reduction is a major strategic principle that is universally applicable, and often more relevant and meaningful than reaching particular numerical targets. It identifies



people falling below the mean and targets programmes to move them into the mainstream. It helps to monitor not only key indicators of progress, but also the gap between the "haves" and the "have-nots" in the disaggregated population. Monitoring averages becomes less sensitive as service coverage expands. It is the reduction of disparities, more than the absolute level of the indicator itself, that will measure the impact of development programmes in bringing about the greater equity. It is, for instance, the analysis of disparities that has led South Asian Association for Regional Co-operation (SAARC) countries and those in the Middle East and North Africa (MENA) region to emphasize that UNICEF should champion affirmative action in favour of the female children, not just children in general.

### Community participation

Goals can be achieved in many ways, but if the achievements are to become self-sustaining, there must be active, willing and informed community participation. All development programmes, including those for child survival, protection and development, must be responsive to people's felt needs and must empower people to analyse and solve their own problems. Prescriptions based on the expertise and judgement of outsiders can be helpful, but the genuine ownership of communities based on awareness and popular demand is a *sine qua non* for the long-term success of all development programmes.

### Area-based programme approaches

Areas-based programming approaches, whether for integrated rural development or urban basic services, can serve as valuable testing grounds for community acceptance and the sustainability of new programme interventions. Such programmes also provide a helpful setting for testing the appropriateness of sectoral goals in the context of multisectoral basic services approaches. As the felt needs of communities are multifaceted and synergistic rather than sectoral, the ideal development programmes are usually area-based basic services. To be successful and sustainable, even vertical programmes must be closely linked with and supportive of such multisectoral approaches.

### Research and development

Progress towards the goals for child survival, development and protection could be greatly accelerated through further research and development in the major problem areas confronting the world's children. At present, only 5 per cent of global expenditure on health research is devoted to the health problems of developing countries. Investment in research in education, agriculture, energy, etc., to improve the quality of life of the poor masses in developing countries are similarly minuscule. Much of the world's best scientific talent is currently heavily involved in research and development in the field of military technology and in creating demand for consumer products catering to the lifestyles of the well-to-do, rather than in meeting the basic needs of the underprivileged.

In the 1990s, the international community must greatly increase its support for research and development, which will involve collaboration among institutions in both developing and industrialized countries in the major problem areas affecting the well-being of the most underprivileged children and families in the world.

### Empowerment of women for development

In the past decade, the primacy of women in much of the development process has been acknowledged and supported in various international forums and declarations. It is a well-known fact that women of the developing world are responsible for producing and marketing most of the food crops. They also assume the primary responsibility for food preparation and home making, water and fuel, nutrition and health care, hygiene and the education of the young. Women are the *de facto* heads of household in many families, particularly in situations characterized by migration, e.g., from rural to urban areas, or when families are displaced by armed conflicts or natural calamities. Women are also increasingly taking up employment in the modern sector of the economy. Yet, in far too many development programmes, most of the education and training, the technology and inputs, the credits and investments are targeted to men, not women.

To bridge this gap between the recognized role of women in development and their neglect in actual practice, it is essential that women receive equal access -- sometimes even preferential access -- to education, training, credit and other extension services. In particular, investment in female education, safe motherhood, income-generating activities and the development of labour-saving devices of particular relevance to women (such as more fuel-efficient methods of cooking and less labour-intensive ways of preparing food and fetching water and fodder) is and should be regarded as among the most productive investment in social and economic development. Empowering women for development should, therefore, be both a means and an end to development.

### Advocacy and social mobilization

The creation of popular awareness of, demand for and the participation in programmes of human development will create its own momentum for the rapid fulfilment of the human goals for the 1990s. In developing countries, politicians will have to respond to an assertive constituency. Scientists and technologists will be persuaded to orient their research to meeting human needs. In industrialized countries, public support will be generated for development co-operation. In the absence of such social mobilization and creating of alliances and partnership for children and human development, the CSD goals in the 1990s will remain an unfulfilled promise.

In the 1980s, there was an unprecedented level of involvement of the highest levels of political leaders in CSD actions. As an illustration, many heads of State or Government and parliamentarians on all continents personally participated in national vaccination campaigns. Heads of State and Government made collective declarations of their

commitment to CSD at summit meetings of the Organization of African Unity (OAU), SAARC, the Commonwealth and Francophone nations, the non-aligned countries, and even the United States-Soviet Union summit meeting in Moscow in 1988. The World Summit for Children in 1990 will undoubtedly be a milestone for placing and keeping the needs of children high on the political agenda throughout the decade.

### *Development with a human face*

The need for the "structural adjustment" of economies that are out of balance is now universally accepted. It is also increasingly recognized that too often it is the poorest segments of the population that carry the heaviest burden of economic adjustment. Whereas in the early 1980s it was assumed that the negative repercussions of adjustment were unavoidable, recent studies, including some by UNICEF have demonstrated that it is possible and, of course, highly desirable to design adjustment packages that seek to protect the poorest families and their children by improving the productivity and incomes of the poor, by maintaining well-targeted food subsidies and by expanding PHC and basic education. Of course, this imposes tough choices on policy makers, e.g., between services that are of concern to the richer and more powerful sections of society, such as the major city hospitals, universities and national airlines, versus immunization programmes, primary schools and subsidies for public transport for the poor. The choice, therefore, is not between adjustment or no adjustment, but between adjustment primarily aimed at balancing the budget and trade deficits and adjustment that also seeks to protect the poor and the vulnerable and to enhance their productivity.

### *Environmental soundness and sustainability*

With their relatively low use of capital resources and high reliance on social mobilization, community participation and appropriate technology, the programmes designed to reach the human goals of the 1990s are highly compatible with and supportive of environmental protection. However, each one of them needs to be tested against an explicit set of criteria for sustainable development as their survival, development and protection depend on it. From their point of view, all development strategies must be designed to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

### *Monitoring and evaluation*

If human goals are to be fundamental in measuring the performance of national and international development in the 1990s, data on changes in IMR, U5MR, MMR, literacy rates, nutritional status, access to water and sanitation and other social indications must be collected and updated much more frequently than every 5 or 10 years as at present. The current system of data collection and feedback are clearly not responsive enough to the rapid appraisal of progress and constraints. New and innovative ways of monitoring and evaluating the attainment of the human goals of the fourth United Nations

development decade will need to be devised to ensure rapid course correction and remedial action.

For over a decade now, the international development community has been expressing serious reservations about the primacy of GNP as the principal measure of a country's level and pace of development. If human development is accorded the place of primacy in the 1990s, the international community, under the leadership of the United Nations, should take bold measures to help develop more universally acceptable social development indicators. UNICEF would propose a set of human indicators, including the use of the national U5MR as a particularly sensitive indicator, with its average annual rate of reduction as a corresponding measure of the rate of progress. In addition, other basic indicators such as the rates of literacy, life expectancy, access to water and sanitation, nutrition surveillance data, etc., should be strengthened, refined and used to monitor progress towards the achievement of the goals of the fourth United Nations development decade. UNICEF proposes to work with countries and relevant United Nations agencies to promote the development and use of these indicators.

### *National capacity-building*

A fundamental aim of development co-operation is to help countries and communities to help themselves. External co-operation must not create or perpetuate dependency, but must enhance self-reliance. Accordingly, external aid must emphasize institution-building and the development of infrastructure. Policies and programme approaches promoted by all donors, lenders and partners in development co-operation, including UNICEF, must be tested not only for their effectiveness in tackling pressing current problems, but also for their potential in laying the foundation for longer-term, self-reliant development.

### *Building the economic base for meeting human goals*

It will become difficult to sustain the progress possible in human development without restoring the forward momentum of economic development. As the experience of the 1980s has shown, social advances cannot move - for any sustained period - in a direction that is counter to economic developments. The long-term viability of social development and, indeed, the meeting of the human goals for the 1990s, will be contingent upon significant progress in at least the following fronts:

- Alleviation of critical poverty
- Debt relief
- Trade and commodity agreements
- Increased resource flows for development
- Growth in industrialized countries.

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**READING III**

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**THE NEW DELHI STATEMENT**

**Global Consultation  
on Safe Water and Sanitation  
for the 1990s  
New Delhi, 10-14 September 1990**

## **THE NEW DELHI STATEMENT**

**THE NEW DELHI STATEMENT IS AN APPEAL TO ALL NATIONS FOR CONCERTED ACTION TO ENABLE PEOPLE TO OBTAIN TWO OF THE MOST BASIC HUMAN NEEDS -- SAFE DRINKING WATER AND ENVIRONMENTAL SANITATION.**

**THE STATEMENT WAS ADOPTED BY 600 PARTICIPANTS FROM 115 COUNTRIES AT THE GLOBAL CONSULTATION ON SAFE WATER AND SANITATION FOR THE 1990s HELD IN NEW DELHI, FROM 10 TO 14 SEPTEMBER 1990. ORGANIZED BY THE UNITED NATIONS DEVELOPMENT PROGRAMME AND HOSTED BY THE GOVERNMENT OF INDIA, THE CONSULTATION WAS CO-SPONSORED BY UN STEERING COMMITTEE FOR THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE AND BY THE WATER SUPPLY AND SANITATION COLLABORATIVE COUNCIL.**

**NEW DELHI, INDIA, 14 SEPTEMBER 1990**

STATEMENT ON WATER AND SANITATION ON BEHALF OF CHILDREN

FROM THE GLOBAL CONSULTATION ON  
SAFE WATER AND SANITATION FOR THE 1990s  
New Delhi, India 10 - 14 September 1990

TO HEADS OF STATES AND GOVERNMENTS,  
WORLD SUMMIT FOR CHILDREN AT THE UNITED NATIONS  
New York 29 - 30 September 1990

The hundreds of millions of people yet unserved with accessible safe water and sanitary means of excreta/waste disposal, pose a distinct threat to the achievement of "Health for All" by the year 2000. Almost half of these unserved are children. The consequences of this, in terms of human health and suffering, as well as social and economic cost, are staggering.

It is clear that over three-quarters of the unserved population reside in rural and peri-urban areas for which appropriate solutions at affordable cost are readily available, requiring only political will for action. As indications are that these areas can be covered with water and sanitation systems in a very cost effective manner via appropriate technologies, it is imperative that attention should be focused more on the rural and peri-urban areas, especially in terms of resource allocation.

In response to the afore-mentioned threat, the Global Consultation on Safe Water and Sanitation for the 1990s, at its meeting in New Delhi, India on 10 - 14 September 1990, urges the Heads of States and Governments at their World Summit for Children at the United Nations in New York, USA, on 29 - 30 September 1990, to support and promote efforts for the achievement of universal access to, or widespread coverage with, safe water and sanitation by the year 2000 .... as a gift to the children of the twenty-first century.

Issued 14 September 1990  
New Delhi, India

## **"SOME FOR ALL RATHER THAN MORE FOR SOME"**

### **The New Delhi Statement**

Safe water supplies and environmental sanitation are vital for protecting the environment, improving health, and alleviating poverty. Disease, drudgery and millions of deaths every year are directly attributable to lack of these essential services. The poor, especially women and children, are the main victims.

Concerted efforts during the 1980s brought water and sanitation services to hundreds of millions of the world's poorest people. But even this unprecedented progress was not enough. One in three people in the developing world still lack these two most basic requirements for health and dignity.

Every developing country learned its own lessons during the International Drinking Water Supply and Sanitation Decade (1981-1990). The global community must now more effectively combine these experiences with a renewed commitment to sustainable water and sanitation systems for all. Access to water and sanitation is not simply a technical issue; it is a crucial component of social and economic development. Sustainable and socially acceptable services can be extended by using appropriate technologies, adopting community management and enhancing human resources.

Political commitment is essential and must be accompanied by intensive efforts to raise awareness through communication and mobilization of all sections of society.

### **Challenge**

Entering the 1990s, governments face formidable challenges. Population growth continues apace. Infrastructure in many cities is stretched to breaking point. Uncontrolled pollution is putting greater stress on the living environment. Depletion and degradation of water resources are causing the costs of new water supplies to escalate. Without fundamentally new approaches, the broadscale deprivation will turn into an unmanageable crisis.

Creating the right conditions for accelerated progress will often involve profound institutional, economic and social changes, as well as reallocation of resources and responsibilities at all levels.

To achieve full coverage by the year 2000 using conventional technologies and approaches would require five times the current level of investment. However, there is a realistic two-pronged alternative:



- (1) Substantial reduction in costs of services, through increased efficiency and use of low-cost appropriate technologies.
- (2) Mobilization of additional funds from existing and new sources, including governments, donors and consumers.

If costs were halved and financial resources at least doubled, universal coverage could be within range by the end of the century.

### Guiding Principles

For countries taking up this challenge -- "Some for all, rather than more for some", the New Delhi Global Consultation recommends four Guiding Principles:

1. Protection of the environment and safeguarding of health through the integrated management of water resources and liquid and solid wastes.
2. Institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions.
3. Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes.
4. Sound financial practices, achieved through better management of existing assets, and widespread use of appropriate technologies.

### Principle No. 1: The Environment and Health

**Safe water and proper means of waste disposal are essential for environmental sustainability and better human health, and must be at the center of integrated water resources management.**

Rapid population growth and accelerating urbanization, threaten health and the environment, presenting governments with daunting challenges in the 1990s. The poor, especially women and children, will continue to be the hardest hit.

Every day, water related diseases cause the deaths of thousands of children, and untold suffering and loss of working time for millions. Safe water combined with improved hygiene and better nutrition can reduce, and sometimes even eliminate these diseases.

The dramatic reduction of dracunculiasis (Guinea worm disease) has resulted from the provision of improved water supplies and hygiene education in endemic areas. The target of total eradication by 1995 should be fully supported. Affected countries should accord it high priority in investment programmes.

Toxic and industrial wastes pose increasing dangers to the environment in developing countries. They represent a significant threat to human health through direct contact and the pollution of water and soil. Governments and responsible agencies must take steps to control these health hazards.

Improvements to the household environment can be best achieved through the community's involvement as an equal partner with government and sector agencies. This means building on indigenous knowledge, so that policies and programmes are credible and relevant to the beneficiaries. Emphasis must be placed on education, social mobilization and community participation.

Proper drainage and disposal of solid wastes have a major impact on the neighbourhood environment. New solutions are needed which are environmentally appropriate and affordable to the communities they serve and which also conserve water resources and minimize pollution.

Integrated water resources management is necessary to combat increasing water scarcity and pollution. This includes water conservation and reuse, water harvesting, and waste management. An appropriate mix of legislation, pricing policies and enforcement measures are essential to optimise water conservation and protection.

#### **Principle No.2: People and Institutions**

**Strong institutions are essential for sustainable development.**

They require sound management, motivated people and an enabling environment of appropriate policies, legislation and incentives. Institutional development takes time. The short term achievement of production targets should not take precedence over the need for capacity building. The overall objective is achieving sustainable facilities which are used effectively by the beneficiaries.

A changing role of government is envisaged, from that of provider to that of promoter and facilitator. This will enable local public, private and community institutions to deliver better services. Decentralization demands a strong policy and support role from central governments, while local private enterprise can assist in improving the efficiency and expansion of service delivery.

The special role in development of non-governmental organizations (NGOs) and of volunteers must be acknowledged and strengthened. NGOs are flexible, credible, ready and able to experiment with innovative approaches. Governments should support the NGOs in replicating these approaches, and include NGOs, wherever appropriate, as partners in projects.

Human resources development (HRD) at all levels, from community members to politicians, is essential to institutional development. Training of professionals, managers, technicians and extension workers builds competence and confidence. Information, education and communication strategies must be integrated within HRD policies. Women must be trained and guaranteed equal employment opportunities at all levels of staff and management. National professional associations can play an important role in better HRD.

Education is a key part of the new approach. Schools offer a vast, most receptive audience for hygiene education. Polytechnics and universities already include water and sanitation related subjects in their curricula, but must be encouraged to respond to this sector's needs for multidisciplinary skills. Sanitary and environmental engineering curricula should incorporate substantial elements of community development, communications, appropriate technology, and project management.

### **Principle No. 3: Community Management**

**Community management goes beyond simple participation. It aims to empower and equip communities to own and control their own systems.**

Community management is a key to sustaining services for the rural poor and is a viable option for poor urban settlements. Governments should support community management, through legislation and extension, and give it priority in national sector strategies for the 1990s.

Communities should have prominent roles in planning, resource mobilization, and all subsequent aspects of development. Within these strategies, gender issues will be all important. Women should be encouraged to play influential roles in both water management and hygiene education. Capacity building is necessary to make community management effective and enable women to play leading roles.

Linkages must be established to ensure that national plans and programmes are responsive to community needs and desires. Methods for evaluating community management have been developed for rural areas. They should now be adopted at the national level and implemented through participatory monitoring and evaluation techniques.

#### **Principle No. 4: Finance and Technology**

**Given the number of people unserved and the growing demand, more effective financial strategies must be adopted in the 1990s for the long-term sustainability of the sector.**

**Current levels of investment in the sector are about US\$ 10 billion per year. It is estimated that approximately US\$ 50 billion a year would be needed to reach full coverage by the year 2000, using conventional approaches. Such a five-fold increase is not immediately feasible.**

**New strategies should aim towards two key objectives:**

- \* Increased efficiency in the use of available funds**
- \* Mobilization of additional funds from existing and new sources, including governments, donors and consumers.**

**Substantially increased effectiveness in the use of financial resources can yield major gains in sustained coverage. This will require changes in the way service agencies operate, to make them more cost-effective and responsive to consumer needs and demands. Involving consumers in choice of technology and service levels has proved to have a positive impact on cost recovery and sustainability.**

**A powerful case can be made for greater government and external support agency support. However, economic and social benefits need to be better quantified. Clear sector strategies and action plans increase the likelihood of water and sanitation programmes receiving higher priority in national planning processes. They may also make the sector more attractive for support from external support agencies (ESAs).**

**The high debt burden of many developing countries makes it particularly difficult for them to consider loans at market interest rates for all investments in this sector. With this in mind, lending agencies and donors are urged to look favourably on requests for grants or soft loans to support water and sanitation programmes. ESAs can also help by developing procedures or guidelines which will reduce project preparation and approval time. Support should also be given for the establishment of financial intermediaries to make credit more widely available.**

**Restructuring the utilization of funds for sector investments and setting of user charges are key issues in sector finance. Maximum benefits can be accrued by allocating a higher proportion of funds to affordable and appropriate projects in rural and low-income urban areas, where needs are greatest.**

Rehabilitation of defective systems, reductions in wastage and unaccounted for water, recycling and reuse of wastewater, and improved operation and maintenance can often be more effective than investment in new services. Choices of technology and levels of service are major factors in determining construction, operation and maintenance costs of new projects. Due attention must be given to operation and maintenance arrangements which will ensure sustainability before investments are made.

Higher budget allocations and recovery of recurrent costs of operation and maintenance to ensure system sustainability are primary goals to be achieved. Effective cost recovery requires that sector institutions be given autonomy and authority. Further, there must be widespread promotion of the fact that safe water is not a free good. Appropriate charging mechanisms must be adopted, which reflect local socio-cultural and economic conditions. Collection should be decentralized so that revenues are available for management and operation of services.

Public sector institutions frequently default on payments for water supply and waste disposal services. For reasons of financial viability and equity, this practice is unacceptable. Increasing collection efficiency must be part of better financial management.

Research and development in developing countries has resulted in widespread application of much improved handpump and on-site sanitation technologies. The momentum established during the 1980s must be maintained and increased in the next ten years. Among the priority needs for the 1990s are improved household technologies for protecting water quality from source to mouth and low-cost wastewater disposal systems for low-income urban areas. Exchanges of information and experience among developing countries (South-South cooperation) must be further developed.

### Follow-up

Implementation of the approaches outlined in this Statement will need to be part of country specific strategies.

Countries and ESAs are urged to formulate and implement action plans for water and sanitation incorporating the Guiding Principles of the New Delhi Statement. UNDP is invited to take a leading role in this process, in collaboration with other UN-system agencies.

The Water and Sanitation Collaborative Council, created immediately prior to the New Delhi Global Consultation, offers a new global forum for the exchange of information and promotion of the sector.

This New Delhi Statement will be reflected in a document to be presented to the World Summit for Children in late September 1990, along with a UNICEF-initiated statement on behalf of children, which was adopted at the Global Consultation.

The New Delhi Statement will be presented by the Government of India to the 45th session of the United Nations General Assembly in October 1990.

In addition, it is recommended that this Statement be brought to the attention of the organizers of the 1992 United Nations Conference on Environment and Development in Brazil, with a request that it be tabled to emphasize the special importance of water and sanitation in environmental management.

**MODULE 1: CAPACITY BUILDING**

**SESSION 1: IMPROVED PLANNING AT THE COUNTRY LEVEL**

**READING IV**

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**UNITED NATIONS RESOLUTION  
A/RES/45/181  
20 FEBRUARY 1991**



General Assembly

Distr.  
GENERAL

A/RES/45/181  
20 February 1991

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Forty-fifth session  
Agenda item 12

RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

[on the report of the Second Committee (A/45/848)]

45/181. International Drinking Water Supply and Sanitation Decade

The General Assembly,

Recalling its resolutions 32/158 of 19 December 1977, in which it adopted the report of the United Nations Water Conference and approved the Mar del Plata Action Plan 1/ concerning drinking water supply and sanitation, and other agreements reached at the Conference, 35/18 of 10 November 1980, by which it proclaimed the period 1981-1990 as the International Drinking Water Supply and Sanitation Decade, and 40/171 of 17 December 1985 concerning the mid-term review of the Decade,

Bearing in mind that the Second United Nations Conference on the Least Developed Countries, held in Paris from 3 to 14 September 1990, the World Summit for Children, held at United Nations Headquarters on 29 and 30 September 1990, and the Global Strategy for Shelter to the Year 2000, 2/ among others, reaffirmed the goals and objectives of providing safe water and sanitation for all,

Deeply concerned that, notwithstanding the achievements attained during the International Drinking Water Supply and Sanitation Decade, the current rate of progress remains slow and would leave a very significant number of poor people in urban and rural areas without suitable and sustainable services in water and sanitation by the year 2000,

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1/ Report of the United Nations Water Conference, Mar del Plata, 14-25 March 1977 (United Nations publication, Sales No. E.77.II.A.12), chap. I.

2/ Official Records of the General Assembly, Forty-third Session, Supplement No. 8, addendum (A/43/8/Add.1).



Recognizing that in most developing countries a lowering of the rate of population growth will relieve the strains on social services and infrastructures, including services relating to drinking water supply and sanitation,

Recognizing also that the 1990s will require an intensification of national efforts and international co-operation to provide adequate and safe drinking water and sanitation, which are crucial for health, for all by the end of the century,

1. Takes note with appreciation of the report of the Secretary-General on the achievements of the International Drinking Water Supply and Sanitation Decade; 3/

2. Welcomes the New Delhi Statement, 4/ adopted at the Global Consultation on Safe Water and Sanitation for the 1990s, which was held in New Delhi from 10 to 14 September 1990, hosted by the Government of India and organized by the United Nations Development Programme;

3. Endorses the four guiding principles, the actions recommended and the proposed follow-up, as enunciated in the New Delhi Statement, pertaining to the need to protect environment and health, the need for institutional reforms, including the full participation of women, the need to promote community management and the need to adopt sound financial practices and appropriate technologies;

4. Urges Governments, in their efforts to implement the recommendations contained in the report of the Secretary-General and in the New Delhi Statement, to stress the following important objectives:

(a) To assign greater priority to the allocation of development financing to water supply and sanitation by seeking a better integration of the sector within the overall development planning process and to allocate a greater proportion of resources to low-income urban and rural areas, while addressing the deteriorating economic, social and environmental conditions in those areas;

(b) To implement programmes aimed at expanding service coverage within the framework of integrated water resources and environmental planning and management, in the context of sustainable national social and economic plans and urban and rural development policies, and to orient them towards services that reflect community needs and are used by beneficiaries;

(c) To ensure appropriate utilization of existing financial resources and mobilize additional funds from Governments, donors and non-governmental organizations, and to draw on the resources of the local communities;

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3/ A/45/327.

4/ A/C.2/45/3, annex.

(d) To assess and undertake institutional reforms to promote an integrated approach, including changes in procedure, attitude and behaviour, and the full participation of women at all levels in sector institutions;

(e) To assess the current status of institutions with a view to strengthening national capacities to plan and manage water supply and environmental sanitation programmes and to enable them to improve operational and financial efficiency;

(f) To increase their efforts to improve the efficiency and use of available financial resources by, inter alia, continuing to expand the use of cost-effective appropriate technologies, and to intensify South-South co-operation in that regard;

5. Calls upon the United Nations system and other relevant organizations to increase their financial and technical support to the national endeavours of developing countries in that regard;

6. Urges donor Governments, multilateral financial and development institutions and non-governmental organizations to give favourable consideration to requests for grants and concessional financing arrangements to support water supply and sanitation programmes in developing countries;

7. Emphasizes the importance of intensifying the co-ordination of national activities undertaken with the assistance of all relevant agencies in the field of water supply and sanitation through, in particular, the interagency Steering Committee for Co-operative Action for the International Drinking Water Supply and Sanitation Decade and the Water Supply and Sanitation Collaborative Council;

8. Decides to review, at its fiftieth session, the progress made during the first half of the 1990s, and requests the Secretary-General to submit a report, through the Economic and Social Council, on further progress made in attaining the ultimate goal of providing a safe water supply and sanitation for all, including proposals for the action needed for the remainder of the Decade, with special emphasis on the efforts made at the national level and on international co-operation.

71st plenary meeting  
21 December 1990

## **MODULE 1: CAPACITY BUILDING**

### **SESSION 2: MONITORING AS A MANAGEMENT TOOL**

#### **OBJECTIVES**

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By the end of the session, you should be able to :

- \* describe how monitoring can assist in improving sector management and accelerate coverage levels;
- \* describe the new Joint Monitoring Programme developed by WHO and UNICEF and how to apply the JMP within your own programmes;
- \* identify problems and solutions in terms of developing an effective monitoring system at the country level.

#### **Session Flow and Methodology**

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- \* Work in Pairs: How Monitoring can Assist Programme Development
- \* Overview by Facilitator
- \* Exercise: Improved Monitoring at Country Level
- \* Plenary
- \* Summary & Evaluation of Session

## Learning Points

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1. In 1980, the UN General Assembly proclaimed the period 1981-1990 the International Drinking Water Supply and Sanitation Decade (IDWSSD). The main Decade goals were full access to supplies of drinking water and to sanitation for all inhabitants of developing countries. But by 1990 these goals had not been achieved. In 1990, about 1.2 billion people in these countries remained without access to a safe water supply and about 1.7 billion had no appropriate means of excreta disposal.
2. Meeting the original Decade goals, even by the year 2000, would require better management of the sector, a massive increase in funding and much more rapid implementation than what was achieved in the 1980's. More attention must also be directed to reducing serious disparities within countries by focusing more attention on providing water and sanitation to the rural population and to the urban poor. Estimates are that annual investments of US\$36 billion (over 3.5 times annual investments in the 1980s) would be needed for full coverage to be achieved. But much of these funds can be generated via restructuring the use of existing funds and user charges.
3. The total investment required for full coverage may not be available in some countries, given the current global economic climate and priorities of most nations. However, for most developing nations, up to 80 per cent of all unserved rural and urban people can be provided with access to safe drinking water and adequate sanitation using only 30 per cent of the investment required for full coverage. Still, achieving even this more modest goal will require both extensive use of proven low-cost technologies and well managed highly productive programmes that target rural and low-income urban areas.
4. Many of the key technological innovations needed to improve water and sanitation to achieve 1990s goals are available. However, 1980s experience showed that enhancing national capacities in management and advocacy is equally important. To strengthen these national capacities, monitoring must be improved at the subnational, national and international levels.
5. Stronger monitoring systems allow managers and policy makers to use a common language for goals and those indicators which measure progress. They can more quickly and precisely identify constraints and reallocate resources to solve problems. They can also compare progress of similar activities at subnational, and even global level in order to better advocate for resources and influence policy (UNICEF, 1991).

6. It is useful to distinguish from the beginning between evaluation and monitoring, though both are similar. Evaluation aims primarily to provide feedback for planning and design and this is best achieved by carrying out a thorough systematic review of selected existing projects from time to time. To maintain or improve programme performance, information should be obtained from the regular checks (monitoring) of project performance as a routine activity of the project management system. Information from monitoring normally makes a major contribution to evaluation studies.

7. The benefits of improved monitoring include the following:

- Better management of the sector by the national authorities.
- Provision of reliable data on the performance of the sector.
- A catalytic effect in accelerating coverage.
- Increasing the potential to attract more funds to the sector.
- Identify constraints if and when they occur.
- Lead to reallocation of resources to solve problems.

8. WHO and UNICEF established the Joint Monitoring Programme (JMP) in 1991 to strengthen and expand monitoring in the water and sanitation sector. This water and sanitation monitoring system, known as WASAMS, is a system that can be adopted quickly and easily by developing countries with the support of WHO and UNICEF.

9. WASAMS is country based and country controlled. It involves a simple multi-purpose (computer) programme that tracks the progress of the Water and Sanitation Sector towards its stated targets. Country level use of WASAMS became operational in 1991 with 1990 data providing a baseline. WASAMS is designed to improved monitoring of water and sanitation activities at each level where they occur. Its design allows each user to tailor the system to track goals ranging from those at sub-national level all the way up to those of the nation's water and sanitation sector as a whole. It will also be used to track global goals.

10. The indicators to be covered are:

**Coverage:** this quantifies the population served with different systems ranging from household water connection and sewerage to handpumps and ventilated improved pit latrines.

**Systems Management:** aims at quantifying the proportion of contribution made by users, beneficiaries or by communities to operational and maintenance costs. This management indicator is used as a proxy for community management and sustainability.

**Funding:** funding indicators are used to determine total sector funding and the proportion of investments made into low-income urban and rural areas where the majority of unserved populations reside. Information obtained from data on funding indicators assist decision makers to monitor whether investments for the unserved populations are adequate.

11. The establishment of a National Monitoring Unit (NMU) at the country level is pivotal to the entire monitoring approach. UNICEF should encourage the government to speedily determine the best location for this unit. Starting of the unit with one to two persons is quite sufficient. The NMU should determine the most effective way to provide surveillance and data collection. The monitoring system can be based on some functional system rather than creating a new one, unless this is necessary.

12. Amongst the means to collect information initially, is proposed the system of "decentralised guestimating", which entails allowing information to be gathered at State or Provincial level in a first phase. In successive years the decentralization process for data collection can be pursued to district, county or local government level, to the point that the "guestimating process" gradually evolves into estimating and "real" data collection. Feedback, especially when several administrative levels are involved, is also extremely important.

13. In general, WASAMS may take the first half of the 1990 to properly establish monitoring capacity at country level. CESI plus which is a more comprehensive management information system, includes WASAMS, with the former benefitting from the base established by the latter.

**References and suggested readings:**

Water and Sanitation Monitoring System (WASAMS) Flyer. Reaching Water and Sanitation Goals in the 1990s. WET Section. UNICEF/NY. 1991.

Christmas, J. 1990. Systematic Monitoring of the Water and Sanitation Sector during the 1990s. UNICEF

Programme Process Training Manual, Training Section/Programme Division, UNICEF, New York, 1990.

**MODULE 1: CAPACITY BUILDING**

**SESSION 2: MONITORING AS A MANAGEMENT TOOL**

**OBJECTIVES**

---

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**Session Flow and Methodology**

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## Learning Points

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Christmas, J. 1990. Systematic Monitoring of the Water and Sanitation Sector during the 1990s. UNICEF

Programme Process Training Manual, Training Section/Programme Division, UNICEF, New York, 1990.

**MODULE 1: CAPACITY BUILDING**

**SESSION 2: MONITORING AS A MANAGEMENT TOOL**

**EXERCISE: INFORMATION; A COMPLEX SUPPORT SYSTEM**

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After reading the article '**Information; a Complex Support System**', describing monitoring of the India water supply and sanitation programme, please answer the following questions.

1. a). If there is already a monitoring system established in your country, how does it compare with the India system. Give at least three differences and similarities.

b). If there is no established system at present, could you apply a similar model as in India within your country of assignment. What difficulties might you encounter?

c). What are the major lessons to be learned? How would you adopt the strategy to your programme? List other strategies that are important to your programme needs.



**MODULE 1: CAPACITY BUILDING**

**SESSION 3: ECONOMIC AND FINANCIAL ASPECTS**

**OBJECTIVES**

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By the end of the session, you should be able to :

- \* know the importance of cost awareness at all stages of programme development;
- \* describe how cost-effectiveness can be considered in your country of assignment;
- \* describe the methodology developed for cost analysis of UNICEF supported sector programmes.

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Presentation of Cost Analysis Package
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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### Cost Awareness

1. Total annual funding for the sector, among developing countries during the 1980s was about US\$10,000 million. External Support Agencies provided approximately US\$3,000 million of this total. Estimated funding needs for the 1990s are US\$36,000 million annually, based on 100 percent coverage by the year 2000. As funding in this order of magnitude is unlikely under the prevailing economic conditions, greater cost awareness is necessary to accelerate coverage rates.

2. In order to raise the service coverage from the 1990 levels of 82% for urban water, 63% for rural water, 72% for urban sanitation, and 49% for rural sanitation to 100% for all four sub-components by the year 2000, several millions of unserved people must be provided water and sanitation facilities at an accelerated rate. In absolute terms this is 243 million people in urban areas and 989 million people in rural areas will require water supply, and 955 million urban and 364 million rural people will need sanitation services (if full coverage is envisaged by the year 2000).

3. There was a concerted effort during the 1980s to provide needy people in urban and rural areas with water and sanitation services on a large scale. One of the outcomes of this effort was the emergence of an array of low cost technologies which have effected significant cost reductions as they were transferred from their research and development phase into large scale implementation programmes. For example, in the UNICEF assisted programmes in Nigeria, the average unit cost of a handpump-equipped borehole was reduced from over US\$20,000 in 1982, to under US\$4000 by 1989 largely through the use of appropriate technologies. A similar trend has been observed in Sudan where more cost efficient resource management has reduced the unit cost of handpump-equipped boreholes from US\$9,500 in 1987 to US\$2,800 in 1989.

4. The following four learning points are extracted from the Decade and Beyond; at a Glance.

'A few UNICEF-assisted water and sanitation projects have derived quite accurate costs for low-cost water and sanitation service delivery. The applicability of these on large scale cost projections is, however, limited because of several factors:

- UNICEF-provided hardware (capital goods) enter countries duty free and are therefore much cheaper than private sector equivalents found in the developing countries;



- Depreciation of capital goods are usually linear and do not take into account payment of loans or interest rates because all equipment is granted to the countries.
- UNICEF is, in absolute financial terms, but a small partner in the sector. It contributes less than 1% of the sector's global total annual investment (but its impact on coverage is significant because of its emphasis on low-cost technologies and approaches).

The above mentioned facts make "UNICEF costs" low, on the cost spectrum for water and sanitation service delivery, and render them somewhat inapplicable to global cost projections. However, UNICEF's low-cost and cost reduction approaches are good pointers regarding the direction in which cost efficient water and sanitation programmes should be developed."

5. Estimates of high cost, intermediate and low cost technologies are given in table 1, based on agreements among UNDP-World Bank and UNICEF.

Table 1.

The geographic groups with their corresponding technology categories and unit costs are as follows:

<u>Technology Category</u>	<u>Cost per Capita (in US\$)</u>
<b><u>HIGH-COST TECHNOLOGY</u></b>	
Urban Water Supply	200
Urban Sanitation	350
<b>INTERMEDIATE TECHNOLOGY</b>	
Peri-urban Water Supply	100
Peri-urban Sanitation	25
<b>LOW-COST TECHNOLOGY</b>	
Rural Water Supply	30
Rural Sanitation	20

High Cost Technology applies to the urban-type system with elaborate pumping stations, water and sewerage treatment plants, complete distribution systems and individual household connections for both water supply and sewerage.

Intermediate Technology, applicable to peri-urban areas essentially, comprises pipeborne water supply (no allowance for elaborate treatment) leading to public standposts, and 'on-site' sanitation including technologies such as pour-flush and ventilated improved pit latrines.

Low-Cost Technology, targeted to rural areas essentially, includes handpump-equipped boreholes or handdug wells, rainwater harvesting systems and pipe-borne gravity-fed systems with public standposts, for water supply. Sanitation technologies are the same as those located to the 'intermediate technology' category with a slight cost reduction allowing for the use of locally available construction materials for the building of latrine super-structures.

**Cost Efficiency**

6. Based upon this costing model, it is estimated that a total of US\$357 billion is required to achieve universal access to water supply and sanitation. This is based upon allocation of resources to high, intermediate and low cost technologies. This implies an investment of about US\$36 billion per year over a 10 year period (1991-2000), with US\$15 billion for water supply and US\$21 billion for sanitation. The cost derived is equivalent to about three and a half times the investment into the sector during the 1980s.

7. Since sector funding of this order and magnitude is not forthcoming in the current economic climate, restructuring the use of existing sector funds in terms of efficiency and effectiveness must be pursued parallel to mobilising additional funds. Therefore if one was to focus on the provision of services to the poor, categorised as the total unserved rural population plus 50 per cent of the urban population (essentially peri-urban), it is clear that with only 30 per cent (US\$12 billion per annum) of the total investment (US\$36 billion per annum), over 2 billion needy people could be reached with sanitation and 1.6 billion with water supply. This means that 30% of the total cost can service 80 per cent of the unserved, if low cost options are emphasised.

8. Water and sanitation services are provided in most countries at prices which are unrelated to financial or economic costs. Large consumers do not frequently pay for the true cost of water provided to them, or even their water bills. Inadequate tariff-setting is but one reason for this.

9. It is essential to investigate the willingness of people to pay for services. Water supply agencies should provide adequate services that harmonise with the level of tariffs that the consumers are willing and able to pay for.

**Cost Effectiveness**

10. An important objective should be to optimise the use of existing assets so that they deliver the most cost-effective service without needing substantial capital investments too early. This involves effective manpower planning, optimisation of inputs and minimising unit costs.

11. Greater emphasis should be placed on improved management and planning to ensure that optimum use is made of existing assets, that proposed new investments are adequately phased, and that user charges are adequate and acceptable. Effective financial planning is facilitated by an accurate financial and technical data base incorporated in a suitable management information system.

12. Cost-effectiveness can and has been used in examining the justification for or composition of, investment in water supply and

sanitation programmes based upon the projected results in terms of impact. It can also be used for screening alternative designs for programmes. If it is decided that for social, political, humanitarian or other reasons that a certain investment is to be allocated to a water supply and sanitation programme, a cost-effectiveness exercise can be designed to determine the way in which that allocation will have the greatest impact.

13. The first steps in such an exercise are to identify the major water supply and sanitation alternatives and to cost these. Differences in items such as quality of service, quantity of service, type of service, areas to be served, training programmes, educational activities and administrative and maintenance organisations should be included. Next, one should identify (a) the existing diseases which could be affected by the defined programme; (b) the existing levels of these diseases in the areas to be served and (c) predictions of disease rate changes which might result from each of the investment alternatives. A few key diseases can be identified which would be water and sanitation related rather than a broad spectrum. Additionally, the socio-economic impact of the options can be assessed.

#### Cost Awareness

14. A software package and manual is being developed for estimating costs of UNICEF assisted water supply and sanitation programmes. In order to improve cost awareness and improve efficiency and effectiveness, it is essential to know what each activity costs. This also enables one to monitor if too much or too little is being spent on any element of the programme. The package includes costing of all intra-sectoral components, e.g. water supply, sanitation and hygiene education/social mobilisation. Each of these is in turn desegregated into activities both general, such as training, as well as specific, such as borehole, latrine construction or hygiene education training. Additionally, it allows for provision of data on a project level (geographic area), programme level (nature of programme such as urban, rural or emergency) and a country level aggregation. Finally, it allows for analysis of the costing of UNICEF interventions in the sector in a holistic way, including overhead costs at several levels from the country level through regional offices to headquarters, and taking into consideration the inputs of our partners ranging from government to communities.

15. The computer software is being developed for ease of use at the country level. A manual accompanies the computer programme which explains the procedures step by step.

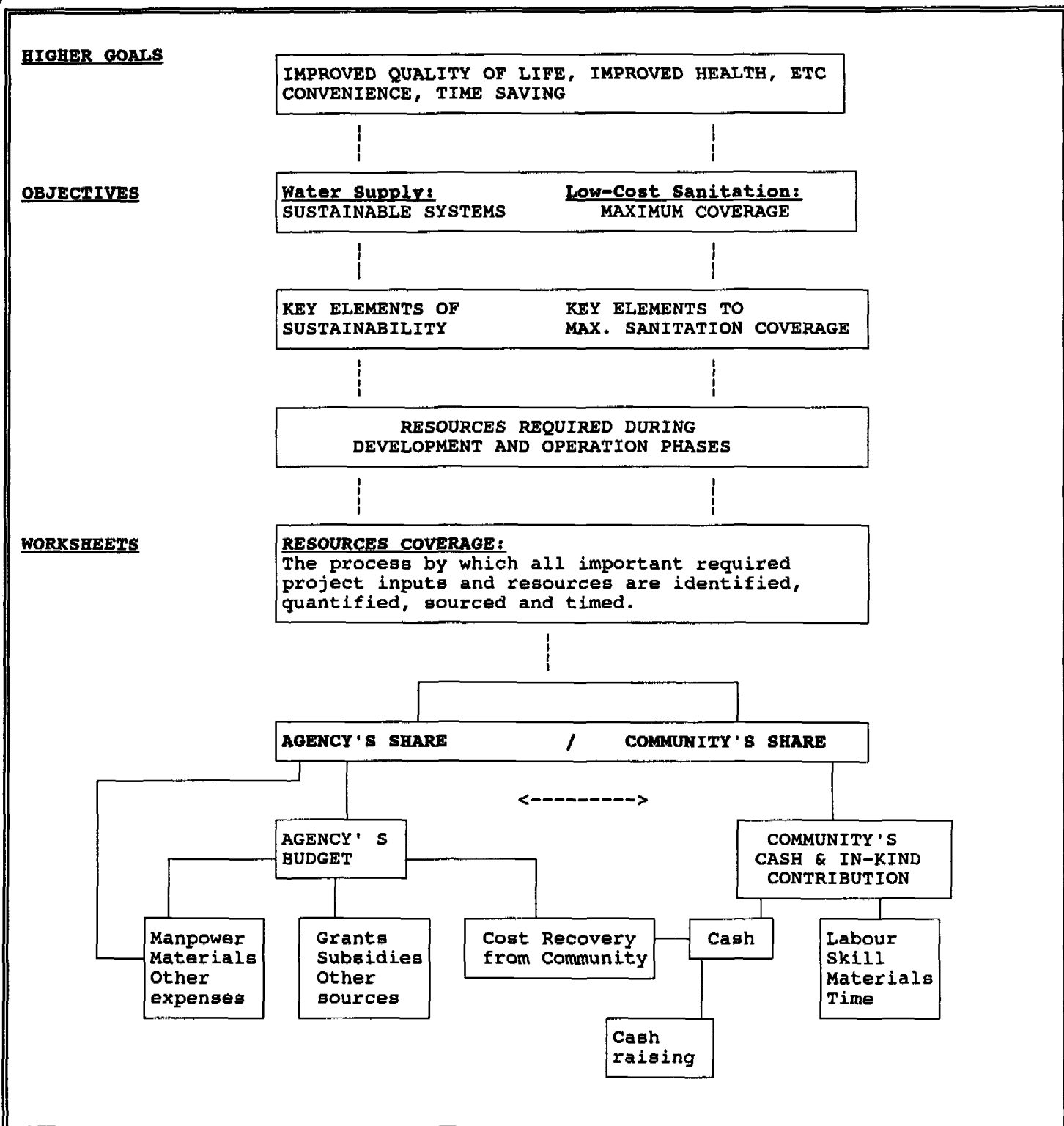


Figure 1: Resources Coverage, Cost Recovery and Cash Raising

Source: Principles and Models to Achieve Sustainable Community Water Supply and to extend Household Sanitation. WHO/CWS 89.6. Vol. 3. Geneva, 21-25 November 1988.

**References and suggested readings:**

Christmas, J. and de Rooy, C. 1990. The Decade and Beyond: At A Glance. UNICEF.

Community Water Supply and Sanitation. Managerial and Financial Principles for Water Supply and Sanitation Agencies. Report of the Fourth Consultation on Institutional Development Working Group on Cost Recovery. Geneva, 21-25 November 1988. Vol I. WHO/CWS/89.5.

Community Water Supply and Sanitation. Principles and Models to Achieve Sustainable Community Water Supply and To Extend Household sanitation. Report of the Fourth Consultation on Institutional Development Working Group on Cost Recovery. Geneva, 21-25 November 1988. Vol II. WHO/CWS/89.6.

Community Water Supply and Sanitation. Principles and Models to Achieve Sustainable Community Water Supply and to Extend Household Sanitation. Report of the Fourth Consultation on Institutional Development Working Group on Cost Recovery. Geneva, 21-25 November 1988. Vol. III. WHO/CWS 89.6.

Draft Guidelines on Cost Recovery in Community Water Supply and Sanitation. Report of the Third Informal Consultation on Institutional Development. Geneva, 11-15 April 1988. The Hague, 21-23 June 1988. WHO/CWS/88.7.

## **MODULE 1: CAPACITY BUILDING**

### **SESSION 4: HUMAN RESOURCE DEVELOPMENT**

#### **OBJECTIVES**

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By the end of the session you will be able to :

- \* identify a range of potential interventions to increase performance and productivity of staff involved in water and sanitation programmes;
- \* maximise the cost-effectiveness of the training input to water, sanitation and hygiene education.

#### **Session Flow and Methodology**

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- \* Plenary brainstorming on reasons why human resource development is important
- \* Overview by Facilitator
- \* Presentation and plenary discussion on how to overcome problems constraining the effectiveness of training
- \* Summary & Evaluation of session

## Learning Points

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1. The New Delhi Statement included **human resource development** as being essential at all levels from community members to politicians. Training of professionals, managers, technicians and extension workers builds competence and confidence. Pickford states that training is usually considered as "The most significant way of overcoming shortage of qualified staff" (Pickford, 1990).

2. Training is often seen to be almost a panacea for improving people's performance. There is a general tendency to propose training activities as essential elements of water and sanitation programmes without first doing a sufficiently good assessment and analysis of the need for training and the exact nature of such training. Sometimes there are other major problems amongst staff that need to be considered prior to undertaking training activities.

- A lack of motivation perhaps due to low or irregular pay.
- Poor supervision and a lack of accountability.
- A lack of physical facilities eg. transport, supplies and equipment, support staff/space.
- Lack of sufficient staff.
- Staff do not have time to do their job properly.
- Staff not qualified for their positions.
- The job descriptions of staff do not match what is expected from them.
- Staff are frequently transferred to other jobs.
- Staff are sometimes competing with other sectors - private or traditional.

Unless these factors are correctly assessed and the problems overcome, any investment in training is unlikely to produce an optimal return in terms of improved performance.

3. There are many other factors that need to be considered even where answers to point 2 above indicate that training probably would be a useful activity. Such factors include:

- Whether or not the trainees really do not know the proposed content already.



- Whether the trainees are really motivated to learn or rather are distracted by other considerations such as family, insecurity.
- Whether the trainees and trainers are fluent in the proposed language and 'culture' of the training.

4. Once training or "the promotion of learning" is confirmed to be a useful activity to plan and pursue, many other questions need to be asked in designing the training as follows:

- Could the proposed training/learning be imparted in a more cost-effective way e.g. through self-study (reading); on the job training; correspondence courses; exchange visits?
- Are the learning objectives fully consistent with project objectives?
- Are the learning objectives stated in behavioural terms?
- Is the proposed training methodology the best way of imparting training content?
- Is the time allocation optimal?
- Has provision been made for the pre-assessment of trainees existing knowledge, attitudes and skills?
- Has provision been made for changing the curriculum based on the result of the above?
- Are on-going evaluation mechanisms built into the training including reaction evaluation and evaluation of learning?

5. Training implementation often suffers from inadequacies:

- Are the trainers competent in terms of content and training techniques?
- Is adequate provision made to deal with the specific learning needs/questions of individual participants?
- Are the physical facilities/set-up consistent with effective learning?
- Are there sufficient supplies and equipment consistent with effective learning?
- Is the trainer-trainee ratio effective?

- Is the training monitored/supported by the trainees and supervisors of the trainers? Are evaluation results used?
- Is the allocation of time consistent with learning?
- Are there sufficient opportunities for reinforcement of learning?
- Are appropriate pedagogic methods actually used?

6. Training evaluation and follow up is usually very weak. It is important to evaluate what trainees have learnt during a particular training course but it is even more important to evaluate the extent to which trainees have been able to apply what they learnt when they go back to their jobs. There are various means of increasing the chances of post-course follow-up:

- Do trainers prepare action plan towards the end of the training on how they propose to apply what they have learnt?
- Are such plans given to, discussed and used by trainees supervisors?
- Do trainees and supervisors carry out post course evaluation of application?
- If so, how are the findings used?
- Is there an assessment of follow-up/refresher training needs?
- Does the training programme as a whole have an in-built follow-up system?

7. There are many underlying reasons why training has less than optimal impact on the achievement of project objectives:

- Programme and projects managers are frequently insufficiently involved in all the stages of training needs analysis; planning; implementation; monitoring, evaluation and follow-up.
- Too much concentration and effort generally goes into training planning and implementation (85%) and not enough into training needs analysis, evaluation and follow-up (15%). Instead of the 85:15 current ratio, it should be more like 50:50.

8. The guide 'How to Organise and Run Training Workshops' is useful in training planning, implementation and evaluation. A new

book on how to programme the training component of country programme will also be produced in 1992 and should be very useful for the WATSAN sector.

**References and suggested readings:**

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How to Organise and Run Training Workshops. December 1990. Training Section. UNICEF.

## **MODULE 1: CAPACITY BUILDING**

### **SESSION 5: GENDER ISSUES IN WATER AND SANITATION**

#### **OBJECTIVES**

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By the end of the session, you should be able to:

- \* use a gender and development framework to identify the major socio-cultural and economic factors which affect women's access and participation in water and sanitation programmes;
- \* analyse your own Situation Analysis and Master Plan of Operations and note the strengths and weaknesses of these to address identified sector disparity concerns;
- \* determine the implications and strategies for programming.

#### **Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Plenary
- \* Exercise: Gender Issues in Water and Sanitation
- \* Plenary
- \* Exercise: Applying the Framework to the Situation Analysis.
- \* Plenary
- \* Exercise: Assessment of Master Plan of Operation
- \* Summary and Evaluation of Session

## Learning Points

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1. In most societies, women fare less well than men. As children they have less access to education and sometimes food and health care. As adults they receive less education and training, work longer hours for lower incomes and have few property rights and little or no control over development resources such as information technology, credit and land.

2. Discrimination against females starts early and takes a number of forms. Young girls may not get the same health care and nutrition as young boys. UNDP studies quoted in its Human Development Report 1990, for example, showed that in Bangladesh malnutrition was found among 14% of the young girls, compared with 5% of the boys. In India the studies showed that families in rural areas of the Punjab spend more than twice as much on the medical care of male infants as on female infants.

3. The role of women within the water and sanitation sector is still not well defined. Agencies and governments are still unsure to what extent women can be involved in sector activities. Women and young girls are the major beneficiaries of improved water supply and sanitation facilities since they are primarily the ones who draw water for household use, transport it home, store it until it is used, and use it (for cooking, cleaning, washing, watering household animals). It is essential that they know about water sources, their quality and reliability, restrictions and advantages of their use, acceptable storage methods, etc.

The following three learning points (4-6) are taken from 'Women, Water and Sanitation' (Melchior, 1989):

4. Women may spend as much as 6-8 hours a day collecting water. In Kenya, it is estimated that three million women spend an average of three hours a day. Quantities carried vary greatly, but as an example, the World Health Organisation usually sets 18-20 litres per person per day as the minimum acceptable. This would mean 108 to 120 kilos or 238-284 pounds per day for a family of six.

5. The energy expended on this task may consume a third of daily caloric intake - not negligible in populations where malnutrition is already a threat apart from various infectious diseases associated with poor water quality and trauma induced by heavy load is common. For this reason women have been shown to be willing to pay 20 per cent more for improved water supplies than men (World Bank: 1989)

6. Women fortunate enough to have assistance from children to lessen their own burden may obtain more water per household. But this may be achieved at the expense of their children's as well as

their own education. Time and energy spent is inverse to time spent on homework or in the classroom. In many cultures, boys are given preference over girls to attend school precisely because of the importance of girls work at home. Time saved could be spent in literacy classes, women's cooperatives or associations, health education and other non-formal education to meet her 'strategic gender needs' such as participation in community decision-making.

7. Men, women and children in various societies usually have specific and different customs related to cleanliness and defecation. Frequently, children's faeces are considered harmless and their defecation anywhere is therefore acceptable. However, millions of children die every year because faeces are not disposed of in a sanitary way. On the other extreme, women's defecation practices are often surrounded by more strictures than men. Frequently, they must relieve themselves in secrecy, for example at night - a difficult feat in populations with endemic diarrhoea, if defecation has to be done in fields far away from the home.

8. Whether or not women face greater problems, practices often encourage separation of men and women - they may be unable to use the same facilities or to bathe in the same part of the stream. They therefore also have different priorities with respect to services. Programmes which ignore this are therefore in danger of providing services which at best can be used by one sex only.

### Gender Development Framework

9. In order to use the gender development framework, one has to firstly differentiate between 'sex' and 'gender'. As stated in UNICEF's Gender and Development Framework., as a primarily biological concept 'sex' refers to the inherent differences between women and men, such as reproductive capacity. 'Sex' is therefore a biological determinant. 'Gender, on the other hand, refers to relationships between women and men that are socially defined and sanctioned by the values and culture of any given society. Gender roles are socially constructed in given historical, political and socio-economic contexts. They centre around notions of femininity and masculinity, determining the 'appropriate' behaviours for women and men. Because gender relationships are considered to be learned behaviours they can, unlike biologically determined roles, be changed.'

10. By using a gender 'lens' with which to view development, it becomes obvious that although women, almost globally have two spheres of work -around the home and outside it, their work remains unrecognised, under-supported, under-valued and frequently under-paid. Compared to men, women have generally suffered greater historical deficits with regard to access to schooling, health care, wages, legal protection, access to development resources and decision-making at personal, community and national levels.

11. These deficits must be removed and the disparities between women and men reduced. This is necessary for many reasons including human rights, equity, social justice, and development efficiency. A gender and development framework can assist UNICEF staff and government partners to design interventions to close existing gaps between women and men, girls and boys in the major areas of UNICEF assistance. This will assist in ensuring that water and sanitation interventions benefit women and girls more equitably and achieve more sustainable benefits for the countries of cooperation.

12. A goal of water and sanitation programmes can be the reduction of gender differences in:

- i) the role of women within programmes;
- ii) involvement at village, district and central levels in decision making;
- iii) responsibilities for implementation at the village level.

In order to address these, the following factors should be considered:

#### Senior/Middle Management Level Involvement of Women

- untrained for technical positions
- not recruited for technical positions since untraditional
- leaving due to pregnancy and marriage
- assigned to less senior positions as not considered equal
- not listened to by senior staff
- reluctance of females to work outside family areas
- cultural/social/religious barriers against women working including lack of childcare support.
- insufficient incentives

#### Village Level Involvement

- cultural/social/religious barriers against women involved in decision-making
- demand for girls/women to do disproportionately heavy housework, agriculture and other labours
- pregnancy and early marriage



- lack of time and/or interest in village decision making process
- time and calories expended in collecting water by women/young children
- exposure to disease whilst collecting water e.g. schistosomiasis

12. An important priority is to remove the obstacles to women's involvement. Female-male disparities have to be identified at several levels. Policy development should address this issue and attempt to reduce or remove some or all of the barriers.

13. Education is the long term answer to the reduction in gender disparity. However educating men is as important as educating women since it is their social power and behaviour that keep women in their traditional roles in society. Traditional biases in the household and community against women's involvement must be countered by strong campaigns of community education to create awareness of importance of women in decision making.

**References and suggested readings:**

Gender Issues in Formal and Non-Formal Education. UNICEF Training Package, 1990.

Melchior, S. Women, Water and Sanitation or Counting Tomatoes as well as Pumps. PROWESS/UNDP Technical Series, 1989.

UNICEF's Gender and Development Framework. Teaching Aid # 6.1. Education Training Package, Training Section. UNICEF New York.

Women, Water, Sanitation. Annual abstract Journal No. 1. 1991. IRC, PROWESS/UNDP, Norad. IRC Publications, The Netherlands.

**MODULE 1: CAPACITY BUILDING**

**SESSION 5: GENDER ISSUES IN WATER AND SANITATION**

**WORKSHEET ONE**

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1. Work by yourself. Answer (a), (b), (c) or (d) basing your answer on your country situation.

(a) Problem: Women have too much work to spend time attending village committee meetings.

Question: Suggest one way that this could be addressed in order to ensure female representation at meetings.

(b) Problem: Women rarely speak or voice their opinions during meetings. Consequently men do not continue to invite them.

Question: List one method that could be used to encourage more active involvement of women present during meetings.

- (c) Problem: Female staff do not want to travel to more remote areas and therefore men do not recruit them for field positions.

Question: List one method to address the problem in recruiting women for field positions.

- (d) Problem: Senior level staff also have cultural/religious and social barriers in perceiving women as equal.

Question: List one way you would attempt to address these barriers within senior staff you are working with.

**MODULE 1: CAPACITY BUILDING**

**SESSION 5: GENDER ISSUES IN WATER AND SANITATION**

**WORKSHEET TWO**

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Work with your country or sub-regional team to review the situation analysis provided in the light of the gender and development framework following steps (a) through (e) below.

- (a) Define the gender issues reviewed by the situation analysis pertaining to water and sanitation. For example, women have to travel an average 4-5 hours to collect water. To what extent has data been dissaggregated by gender?

**Gender Issues:**

- (b) List the various factors affecting each gender-relevant issue described in the situation analysis. If the factors are not described, make note of this.

Issue

Factors Affecting Issue



3. Continue working in country or sub-regional teams. Each team should review the master plan of operation provided by using the following checklist.
  - (a) Examine the various sectors projects. To what extent do the objectives reflect gender issues? Are girls and women specifically mentioned?
  
  - (b) Examine the main strategies used by the project. Have gender issues been adequately considered (think about household/economic responsibilities/activities, access and use of resources).
  
  - (c) The following list of strategies cover some of the principle gender concerns UNICEF-assisted programmes should address. To what extent do projects aiming to meet basic needs of girls and women recognise them? The projects help:
    - reduce demands on girls and women's time and energy
    - lessen women's workload inside and outside the home
    - increase girls and women's knowledge and skills
    - improve girls and women's health and well being
    - increase women's productivity
    - increase women's income-earning capability
    - improve girls and women's status (political, social, legal and cultural)
    - empower women

(d) Examine the sections on project monitoring and evaluation. Are the key indicators sensitive to gender concerns?

(e) Will the evaluation methodology facilitate the identification and correction of adverse programme impacts for women?



**MODULE 1: CAPACITY BUILDING**

**SESSION 5: GENDER ISSUES IN WATER AND SANITATION**

**READING MATERIAL**

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**GENDER AND DEVELOPMENT FRAMEWORK**

**Excerpted from draft paper  
prepared by Women's Section,  
Programme Division, 1991.**

## UNICEF's GENDER AND DEVELOPMENT FRAMEWORK\*

The Gender and Development Framework presented in this paper, facilitates the understanding of forces and activities which shape people's lives from the most basic level, and elucidates the different hierarchies of causes of disparities between women and men, girls and boys.

The difference between 'sex' and 'gender' is as follows. As a primarily biological concept 'sex' refers to the inherent differences between women and men, such as reproductive capacity - only women can bear and give birth to children. 'Sex' is therefore a biological determinant. 'Gender' in development refers to relations between women and men that are influenced and sanctioned by the values and culture of any given society. Gender roles are socially constructed and center around notions of femininity and masculinity, determining the 'appropriate' behaviors for women and men. Because gender relations are considered to be learned behaviors they can, unlike biologically determined roles, be changed.

\* Excerpted from draft paper prepared by Women's Section, Programme Division

By using a gender 'lens' with which to view development, it becomes obvious that although women, almost globally, have two spheres of work - around the home and outside it, their work remains unrecognized, undervalued and frequently underpaid. Compared to men, women generally have less access to schooling, poorer health care, lower wages, insufficient legal protection and limited access to development resources such as land, credit, technology, information and skills training.

The Framework is a device to help UNICEF staff and government partners design interventions to close existing gaps between women and men, girls and boys in the major areas of UNICEF cooperation, namely, health, nutrition, education, income, basic services, opportunity and status. Further, it builds on UNICEF policy and recognition that women's importance as economic, social and political actors goes beyond their roles as mothers. Because of the huge historical deficit women have suffered through gender discrimination and neglect, there are women specific development issues which also have to be addressed. This would ensure that development resources and interventions benefit girls and women more equitably and increase the effectiveness of UNICEF programmes.

#### **Explanation of the Framework**

The rationale for devising a conceptual framework for gender and development stems from the necessity to link together the policy, programme, and training dimensions of UNICEF's overall women and development policy. The framework, in essence allows the reader to both understand the analytical concepts of the policy and to apply such concepts in a practical manner. Due to the efficacy of the conceptual and analytical framework being used to implement the UNICEF Nutrition policy and its adoption by the UNICEF programming procedures, the Gender and Development Framework (GADF) uses the same approach.

The approach consists of the "Triple A" method of programming and the analysis of problems through a hierarchy of causes - immediate, underlying, and basic or structural.

In situating gender concepts within the Triple A conceptual framework, the GADF becomes dynamic and fluid; "it allows for a repeated process of assessment, analysis, action, re-assessment, re-analysis, renewed/modified action". Incorporation of the Hierarchy of Causes Framework allows for in-depth examination of influences on gender roles and factors that act as constraints to women's development.

Overall the Gender and Development Framework makes it possible to:

- analyze the current situation, of women and men, girls and boys as a set of human relationships observed in the present;
- looks for the forces that brought them into being;
- searches for trends which point to how the future is being structured in the present.
- identifies where immediate, basic, fundamental, short term or long term changes have to be made to correct deficiencies or disparities in the situation.

The Framework embodies three distinct cyclical stages of the Triple A: Assessment, Analysis and Action. At each stage, practical activities enable participants to identify and explicate details of GAD. At all times, the Framework addresses the presence of both women and men in relation to each other. Therefore, as far as possible the roles, tasks, responsibilities of women and men, girls and boys, in the development process will be examined.

#### **Assessment**

At the first stage of the cycle, an **assessment** is made of the relevant **responsibilities and activities** in a given situation or area to draw out in detail who (women and men) does what. It is important to recognize activities both around and outside the

household, and describe them as they are. Once identified, the differences between what women do and what men will reveal a gender based division of labor and the actual and dissimilar ways in which activities affect girls and boys. This exercise also generally illustrates that the overwhelming amount of work performed by women and girls is associated with their gender role expectations, just as men and boys' work is circumscribed by their role expectation.

A primary reason for assessment is to understand how current realities of women's lives absorb the time and resources (human, informational, technological and financial) available to them, and what roles they play with regard to household and family maintenance, community organization and national development. Since interventions usually introduce some form of change, a recognition of existing parameters should help programme planners to better understand what issues need to be considered in designing programmes for women, or programmes for communities in which women are expected to participate.

The assessment of the amount and nature of activities can also identify their effects on women's health, leisure, and ability to take advantage of opportunities that exist or come up through development interventions. Women's overwork, low energy and poor general health are commonly cited as consequences of the workload and distribution of labour by gender. Ultimately, the assessment serves to generate a profile of potential target groups, especially girls and women, for UNICEF programme assistance, and, how their current roles and responsibilities have an impact on introducing change as well as offering clues about what strategies may prove helpful.

### **Analysis**

At this stage the Hierarchy of Causes is applied to a specific problem which has been identified either through the assessment or prior to the assessment. Examples include the low participation of girls in education, high maternal mortality rate, high pregnancy

and child bearing rates of female children, the high incidence of poverty and female headed households etc. Many of these problems are of particular interest to UNICEF since their manifestation implies serious consequences for children as well.

A hierarchical process of analysis deals with understanding the complex nature of a problem, it's implications and significance which will influence the response or action to be taken at the next stage. The causes are identified at three levels of increasing complexity and visibility: **immediate, underlying and basic/structural categories**

This classification of causes is most useful in pinpointing different sources of influences and control, and in identifying, in a focussed manner the appropriate levels at which interventions should be undertaken by UNICEF, government and others partners. To provide a 'depth of analysis' the causes are further separated into Socio-Cultural, Economic, Political categories.

The identification of the different categories of people and agencies from outside the household who have to undertake development interventions is made possible through use of the hierarchy of causes. For example, district and state level officials may play a crucial role in terms of the influence, authority and control they wield over issues that directly affect women's lives. To identify such key people a column on 'who controls the change decisions' has been added to the hierarchy of causes framework

In cultures where boys are preferred to girls, manifestations can range from high birth rates, low survival rates of girl children, and in some instances, high abortion rates for female fetuses. Analysis of causes will show that the preference for male children and its consequences are deeply rooted in socio-religious and political institutions. Accordingly the interventions made by UNICEF would have to adopt a multi-pronged strategy, one which raises the survival rates of the girl child in the short term along with advocacy and educational interventions aimed at the underlying causes themselves to catalyze long term social change.

For UNICEF, the goal is to analyze and understand the causes which lie behind the gender roles and gender disparities. Frequently the hierarchy of causes will show that even though the problem as it is manifested is a 'women's' problem, the presence, authority, control and influence of men is inextricably linked to the resolution of the problem!. The dynamics and interrelationships between women and men, should be sought in a deliberate manner at this stage of analysis of causes since they are often the key to developing effective strategies for bringing about the changes to which UNICEF is committed.

### **Action**

Having made an assessment of the problem or manifestation, and analyzed its causes, answers are sought to the question 'what should be done, what can be done?'. Assuming by this stage, a specific problem has been targeted the following steps and processes should be completed: **Identification, Planning and Formulation, Implementation, Monitoring and Evaluation.**

Within a specific context the first stage of action is **Identification** of what needs to be done and where, who the key players are, what they will do and at what level the intervention is to be made. For example, based on the hierarchy of causes the immediate cause(s) for the low participation of girls in Commilla district school might turn out to be the lack of women teachers, or an all girls school or the lack of household funds to pay for school fees and other related expenses. (Frequently all three immediate causes are manifest) The **Identification** stage could be used to a) decide which of the immediate causes to address eg. absence of women teachers; b) identify the community leaders including men and women, the officials and agencies to be involved; c) what UNICEF's role will be.

The Planning and Formulation process is most useful if the nature of intervention is as specific as possible. For example, has the solution to the problem been identified as a policy, programme or project intervention? Will advocacy be necessary? etc. In this instance and building on the educational example, the objective for UNICEF participants is to develop a plan of action on how to recruit more female teachers, what potential and real resources exist and how best to utilize them.

As the intervention is being developed at this point, design aspects such as the goals and objectives, inputs and outputs, outcomes and sustainability, constraints and strategies to overcome them are explored. In designing the intervention it is useful to investigate all aspects in as much detail as possible.

For example, formulation of an UNICEF intervention to benefit the girl child's education, where the recruitment of women teachers is a solution to pursue, implies that other issues will have to be addressed. Among others, the intervention must consider what incentives to offer to the teachers, how to monitor their teaching practices since they can instill and/or reinforce a bias that boys are better than girls and how to determine whether the presence of women teachers does in fact have a positive impact on the girls' participation rates. Planning and Formulation activities are particularly useful in ensuring that the principal strategy is examined from as many perspectives as possible.

The next step is **Implementation**. At this stage the questions asked should deal with issues commonly confronted. For example, are the activities to be executed congruent with the objectives of the intervention? What inputs are being provided and are the outputs being achieved? How are the activities being monitored? Is the time schedule for the intervention being met? Are reports being generated and are they helpful? If skills were being transferred how is it being measured? What sustainability issues are becoming apparent and how will they be dealt with.



The Monitoring and Evaluation process should prove useful in identifying what kinds of mechanisms are most suitable, given the client group and the intervention being made. Issues addressed include the reporting mechanisms, diffusion of findings, incorporation of feedback for both immediate and long term purposes, and individuals responsible for undertaking these activities.

It is well known that Monitoring and Evaluation of women centered interventions must be sensitive to the gender influences on their lives and interpret those accordingly. For example, when a development intervention is implemented within a community, women may readily admit to benefitting from the intervention, even if they have not. Such acknowledgements may reflect the instructions given to the women by men in the community.

Other Monitoring and Evaluation issues to consider include the diffusion of outcomes to the participants. Again where women and men are able to understand how the changes in women's lives benefit both of them and the children, the sustainability of the intervention is likely to last longer.

In summation it should be noted - the cyclical nature of the GAD Framework allows the third stage ie. action, to feed into the assessment through measurement of impact and incorporation of lessons learned. Ideally, within UNICEF use of the GADF will provide the opportunity to accommodate modifications in the interventions as they are being made, given the cyclical nature of the Framework. Such a process will also enable UNICEF staff to determine what has changed and what remains to be done, e.g. in new and subsequent country programmes.

#### REFERENCES

1. Anderson, Mary. 1991. A Gender Analysis Framework for UNICEF Programming.
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6. UNIFEM. 1990. Women on the Agenda: UNIFEM's Experience with Mainstreaming Women 1985-1989.

## **MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

*SESSION 6: HOW TO INTEGRATE WATER, SANITATION AND HYGIENE  
EDUCATION*

*SESSION 7: WATER, SANITATION, HYGIENE EDUCATION ANALYSIS*

*SESSION 8: FIELD TRIP: RESOURCE MAPPING*

**MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

**SESSION 6: HOW TO INTEGRATE WATER, SANITATION AND HYGIENE EDUCATION**

**OBJECTIVES**

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By the end of the session, you will be able to:

- \* give at least four reasons for integrating water, sanitation and hygiene education;
- \* explain how integration of water, sanitation and hygiene education can lead to improved opportunities for achieving the global goals in water and sanitation;
- \* assess the level of integration within your own programme and describe three to four ways to improve this.

**Session Flow and Methodology**

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- \* Exercise: Why Integrate Water, Sanitation and Hygiene Education?
- \* Plenary
- \* Overview by Facilitator
- \* Plenary
- \* Exercise: Present Levels of Integration in water, sanitation and hygiene education?
- \* Plenary
- \* Summary and Evaluation of session

## Learning Points

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1. Many health impact studies have been performed for water and sanitation projects which have encountered numerous methodological problems. However summaries of these studies have shown that the benefits of water combined with a strong sanitation and hygiene education component are more successful in reducing the morbidity and mortality of diarrhoeal diseases than when they are not combined. It was concluded in 1985 (Esrey et al., 1985) by reviewing 67 studies from 28 countries, that substantial reductions in diarrhoeal morbidity and mortality rates can be expected from investments in water supply and excreta disposal. Investments that improve both water quality and availability are especially effective.

2. This was followed up by a further study in 1990 which reviewed 144 health impact analyses (Esrey et al., 1990). An excerpt from this article is included in Reading I. The results of the studies showed that the impact of water supply and sanitation can be significant. Median reductions in morbidity (i.e. incidence and prevalence) calculated from the better studies ranged from 26 per cent for diarrhoea to a striking 78 per cent for guinea worm and 77 per cent for schistosomiasis.

3. The same study found a substantial positive impact of WATSAN projects on child survival. For overall child mortality, nine studies indicated a 60 per cent median reduction, with a figure of 55 per cent emerging from the better studies.

4. It is important to be initially conservative in defining health outcomes of water and sanitation projects in light of the problems in effectively measuring benefits. However there are other benefits that can accrue from projects (Isely, 1985), namely:

- 1) time and energy savings for women and young girls;
- 2) improved hygienic use of water at home;
- 3) improved economic activity related to more available water;
- 4) impact of latrine availability and use on toilet-training of small children;
- 5) improvement in water and sanitation - related attitudes and beliefs;
- 6) through successful participation in a water supply and sanitation project and through skills learnt, greater ability to apply problem solving and organisation skills in future projects.

However there are certain conditions necessary before any socio-economic changes will occur:

- 1) time and energy savings for women and young girls will not be realised unless sources of water are made more convenient and reliable;
- 2) improved hygienic use of water in the home; and availability of water for economic activities depend upon an increased quantity of water available per capita per day;
- 3) improved hygienic use of water in the home will probably be realized as latrines are put in use by nearly all families in a community and as special efforts are made to train mothers and older siblings of toddlers in the proper disposal of the stools of these small children;
- 4) changes in attitudes and beliefs related to water use and sanitation will take place only very slowly as the other benefits of a programme are experienced by a population; and
- 5) the enhanced ability of a local community to tackle other problems of local development assumes that its participation in the water supply and sanitation project has been successful.

5. A very well constructed health impact analysis was conducted in Mirzapur, Bangladesh (Aziz et al., 1990). The study investigated effective functioning and utilisation of water and sanitation facilities, prior to evaluating health impact. The project had a significant impact on childhood diarrhoeal disease in the intervention area, where the incidence of diarrhoea fell to three quarters of that in the control area. The incidence and proportion of persistent diarrhoea episodes and the incidence of dysentery also fell in the intervention area compared to the control area.

6. The most dramatic difference between the intervention and control area was in the proportion of days on which the average child suffered from diarrhoea. In the last two years of the project, this number was nearly twice as high in the control area. The Mirzapur project reduced the prevalence of diarrhoea in small children by almost half.

7. Analysis of diarrhoea rates in the subgroups within the intervention area suggested that they were lower among households within 25 metres of a handpump and among those using handpump water exclusively for all major domestic activities in the wet season. The rates were also lower among those disposing hygienically of the faeces of children under three years of age.

8. The Mirzapur project demonstrated the feasibility and operational advantages of the integrated approach in which water

supply, sanitation and hygiene education are combined. The hygiene education component helped to ensure the use of the handpumps and acceptance of the latrines, and at the same time its messages could not have been put into practice without these facilities. It is hoped that integration of the three components will lead to greater health benefits, but the operational advantages of easier project implementation is more likely to commend integration to the skeptical project manager.

9. Closer involvement of communities in the planning and management of projects, helps maximise the opportunity for developing a successfully integrated programme.

10. Developing a successful integrated programme does not have to detract from the targets of achieving universal coverage. It may slow activities for the initial phase, but thereafter, due to increased benefits, it can lead to increased involvement and sustainability at village level. The programme target area could be used as a focal point to show/train other communities and therefore help when 'going to scale'.

11. The water and sanitation sector should be aware of their own limitations in trying to develop a successfully integrated approach and should look for assistance from other sectors i.e. health, education, communications, monitoring and evaluation sections, in order to develop suitable approaches.

12. The most important justification for provision of water and sanitation facilities is the improved quality of life for its beneficiaries. The improved convenience and time saving factors are extremely important in the improvement of living conditions in developing countries. It is the basic right of every individual to have a clean water supply and access to improved sanitary facilities. It is also their basic right to be provided information regarding health education and the potential benefits of these interventions in order to upgrade their living conditions.

13. The success of an integrated programme depends on a realistic assessment of what each of the components can do. Project staff, especially at field level, should be made aware, through training, of the reasons why an integrated programme is important and how this can be achieved.

14. Time must be given to developing an integrated approach. Different approaches will need to be attempted and attention given to the development of suitable sanitation and hygiene education components. Integration is often thought to mean that all elements

i.e. water, sanitation and hygiene education have to be implemented within one programme simultaneously. This does not have to be the case. Many countries have successfully developed parallel water and sanitation programmes. However it should mean that people who receive an improved water supply should also receive improved excreta disposal facilities and hygiene education.



**Table 1**

**TECHNICAL APPROACHES TO WATER SUPPLY IMPROVEMENTS HAVING A POTENTIAL FOR INCREASING THE PER CAPITA DAILY CONSUMPTION AND PRE-CONDITIONS FOR REALIZING THAT OBJECTIVE**

Technical Approach	Pre-conditions to an Increased Quantity of Water Per Capita Per Day
Hand-dug well: open or with bucket and pulley	<ul style="list-style-type: none"> <li>. Well of sufficient capacity and flow to produce the equivalent of 20 liters/capita/day</li> <li>. At least one well for 250 persons</li> <li>. Well within 3-4 minutes walk from homes of users</li> <li>. Well of sufficient depth to assure reliability in dry season</li> <li>. Continued maintenance of bucket and pulley</li> <li>. Establishment of washing slabs at wellsite to avoid necessity of carrying water for this purpose</li> </ul>
Hand-dug well or bore hole with handpump	<ul style="list-style-type: none"> <li>. Well of sufficient capacity and flow to produce the equivalent of 20 liters/capita/day</li> <li>. At least one well for 250 persons</li> <li>. Well within 3-4 minutes walk from homes of users</li> <li>. Well of sufficient depth to assure reliability in dry season</li> <li>. Continuous maintenance of handpump</li> <li>. Availability of spare parts</li> <li>. Local financing of spare parts</li> <li>. Locally trained pump caretakers</li> <li>. Technical backup by water supply agency</li> <li>. Establishment of washing slabs at wellsite so as to avoid necessity of carrying water for this purpose to the household</li> </ul>
Gravity-fed systems	<ul style="list-style-type: none"> <li>. Production at source sufficient to supply at least 20 liters per capita per day to each community served</li> <li>. No excessive diminution of source in dry season</li> <li>. Pressure in system sufficient to maintain flow at 20 liters per capita per day even in taps at the end of a branchline</li> <li>. Reservoirs of sufficient capacity to supply at least 20 liters per capita per day to dependent users even during hours of peak usage</li> <li>. At least one tap for 50-100 persons</li> <li>. Each tap within 3-4 minutes walk from users residences</li> <li>. Measures taken to avoid wastage of water at the tap through spillage and leakage</li> <li>. Establishment of washing slabs at tap sites to avoid the necessity of carrying water for this purpose to the home</li> </ul>
Hydraulic ram-driven systems	<ul style="list-style-type: none"> <li>. Steam flow sufficient to propel water to village in the amount of 20 liters per capita per day</li> <li>. No excessive diminution in flow during dry season</li> <li>. Adequate construction and more importantly maintenance of the ram</li> <li>. Reservoir of sufficient capacity to supply at least 20 liters per capita per day to users even during hours of peak usage</li> <li>. Taps situated within 3-4 minutes walk of users' residences</li> <li>. One tap for 50-100 users</li> <li>. Measures taken to avoid wastage of water at the tap through spillage and leakage</li> <li>. Establishment of washing slabs at tapsites to avoid necessary of carrying water for this purpose to the home</li> </ul>
Motorized systems applied to wells, streams and other sources of "safe" water	<ul style="list-style-type: none"> <li>. Source adequate to supply at least 20 liters of water per capita per day</li> <li>. Continuous and adequate operation and maintenance of the pump</li> <li>. Pump of sufficient capacity to keep reservoir supplied</li> <li>. Reservoir of sufficient capacity to supply 20 liters per capita per day even during peak usage</li> <li>. Taps located within at least 3-4 minutes' walk of users' residences</li> <li>. Approximately one tap for 50-100 users</li> <li>. Measures taken to avoid wastage of water at tapsites through spillage and leakage</li> </ul>

TABLE 2

TECHNICAL APPROACHES TO WATER SUPPLY IMPROVEMENTS HAVING A  
POTENTIAL FOR IMPROVING WATER QUALITY (ESPECIALLY BACTERIOLOGIC) AND  
PRE-CONDITIONS FOR REACHING THAT OBJECTIVE

Technical Approach	Pre-conditions for improving the bacteriologic quality of water
Sedimentation techniques (jars)	<ul style="list-style-type: none"> <li>. Source not excessively contaminated initially</li> <li>. Transport in clean covered vessels</li> <li>. Sedimentation for at least 12-24 hours</li> <li>. Dipping from the top with care not to agitate the contents</li> <li>. Addition of an insecticide (iodide or a hypochlorite) if possible</li> <li>. Frequent cleansing of the jar before the last water is drawn from the bottom</li> </ul>
(tanks)	<ul style="list-style-type: none"> <li>. Lined with concrete or bricks, if possible</li> <li>. Non-use for washing, bathing, urinating, defecating, swimming, or animal watering</li> <li>. Tank equipped with outlets for water drawing</li> <li>. Frequent removal of algae and debris especially after rains including use of duckweed for continuous clearing of water</li> <li>. Frequent and adequate maintenance and repair of lining and outlets</li> </ul>
Filtration techniques (in this case infiltration galleries)	<ul style="list-style-type: none"> <li>. Selection of an adequate sandy or gravelly bed to lay the gallery or other conduit</li> <li>. Placement of an adequate layer of stones, gravel, and sand around the gallery or conduit</li> <li>. Adequate depth of the well</li> <li>. Care taken to line the well and raise the wall to a sufficient height to avoid surface runoff</li> <li>. Adequate depth of sand and gravel layer at the base of the well</li> <li>. Careful attention to maintenance: repair of cracks in well and gallery or conduit; cleansing of the sand and gravel layer</li> <li>. Use of a single bucket for drawing water or a special stand for hanging individual buckets to avoid putting them on the ground</li> </ul>
Rainwater catchment	<ul style="list-style-type: none"> <li>. Use of a foul-flush mechanism to promote runoff of roof debris at the first rain or after storms</li> <li>. Periodic cleaning and repairs of gutters and drains</li> <li>. Covering the cistern, with trap door or spigot mechanism for water-drawing</li> <li>. Single bucket if trap door</li> <li>. Adequate maintenance of cistern: repair of cracks</li> <li>. Adequate height of cistern to avoid surface runoff</li> <li>. Use of a filter box to clear water flowing from gutters</li> <li>. Careful seal around the inlet cap used for cleaning the cistern and around the spigot</li> <li>. Frequent cleaning of the cistern</li> </ul>
Spring capping (multiple methods)	<ul style="list-style-type: none"> <li>. Selection of springs for capping that do not drain likely contaminated areas such as latrines, garbage dumps, or pastures</li> <li>. Adequate gutters dug around the spring site to catch surface runoff and divert it into the drainage channel at the foot of the spring</li> <li>. Use of a single pipe or tube emanating from the spring so as to avoid the need to dip individual recipients into the basin</li> <li>. Complete closure of the basin, if possible</li> <li>. If not, protection of the basin from intrusion by animals and children from the sides, and from dust, leaves, and debris from above</li> <li>. Avoidance of washing, bathing, swimming, urinating, defecating, and animal-watering at the spring site itself; rather setting aside areas below the water-drawing site for these activities including a fenced off area for animal-watering</li> <li>. Maintenance of all structures including especially the repair of cracks and leaks</li> </ul>

Technical Approach	Pre-conditions for improving the bacteriologic quality of water
Boreholes with hand pumps	<ul style="list-style-type: none"> <li>. Same upper well construction features as for hand-dug wells</li> <li>. Careful sealing of both the slab of the well and the attachment of the pump to the tube so as to avoid the entrance of surface runoff</li> </ul>
Gravity-fed systems	<ul style="list-style-type: none"> <li>. Selection of initially nearly pure sources (less than 100 coliforms per liter)</li> <li>. Stringent avoidance of agricultural, grazing, or settlement encroachment on water drainage areas used for systems</li> <li>. Careful bacteriologic surveillance of source to help alert authorities to contamination</li> <li>. Care to bury pipes deeply enough (at least 0.5-1.0 meter) to avoid breakage - care to mark path of pipes to avoid breakage during plowing</li> <li>. Careful sealing of all joints</li> <li>. Careful watertight construction of all reservoirs</li> <li>. Strict enforcement of certain hygienic rules around tapsites: no washing of clothes or dishes, babies' bottoms, etc.</li> <li>. Careful maintenance of the entire system for cracks and leaks</li> </ul>
Motorized systems or Hydraulic Rams	<ul style="list-style-type: none"> <li>. See notes for wells or springs as appropriate</li> <li>. Careful attention to sealing all connections is most important matter</li> </ul>

Source: Isely, R. 1985. Low Cost Water Supply and Sanitation Technologies, Community Participation and Health And Socio-Economic Outcomes: An Analysis of Inter-relationships. Water and Sanitation for Health. WASH Publication. Project No. 931-1176

**References and suggested readings:**

Esrey, S.A., Feachem, R.G. and Hughes, J.M. 1985. Interventions for the Control of Diarrhoeal Diseases among Young Children: Improving Water Supplies and Excreta Disposal Facilities. Bull. WHO 63: 757-772.

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Aziz, K.M., Hoque, B.A., Hutly, S.R.A., Minnatullah, K.M., Hasan, A., Patwany, M.K., Rahman. M.M. and Cairncross, S. 1990. Water Supply, Sanitation and Hygiene Education, Report of a Health Impact Study in Mirzapur, Bangladesh. UNDP-World Bank Publication.



3. How did you overcome these problems (if overcome)?

4. State three ways you would improve integration within your own country?

## MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION

### SESSION 6: HOW TO INTEGRATE WATER, SANITATION AND HYGIENE EDUCATION

#### READING I

Extracted from: Esrey, S. 1990. Health Benefits from Improvements in Water Supply and Sanitation. WASH Technical Report No. 66.

A total of 144 studies were reviewed for the report. When possible, a percentage reduction in disease attributable to water, sanitation, hygiene education, or any combination of these, was calculated for each study. Only those studies with identifiable reduction rates were further analyzed. Grouping the studies for each disease, a disease-specific median reduction figure was then calculated, and a second median reduction figure was derived for the more methodologically rigorous (better) studies. These figures are shown in the table below.

EXPECTED REDUCTION IN MORBIDITY AND MORTALITY FROM IMPROVED WATER SUPPLY AND SANITATION*						
	All Studies			Better Studies		
	#	MEDIAN	RANGE	#	MEDIAN	RANGE
Diarrheal Diseases						
. Morbidity	49	22%	0%-100%	19	26%	0%-68%
. Mortality**	3	65%	43%-79%	-	-	-
Ascariasis	11	28%	0%-83%	4	29%	15%-83%
Guinea Worm	7	76%	37%-98%	2	78%	75%-81%
Hookworm	9	4%	0%-100%	-	-	-
Schistosomiasis	4	73%	59%-87%	3	77%	59%-87%
Trachoma	13	50%	0%-91%	7	27%	0%-79%
Overall Impact	9	60%	0%-82%	6	55%	20%-82%

\* Indicates morbidity reduction unless noted otherwise.  
\*\* There were no "better" studies.

The results of the studies selected for analysis show that the impact of water supply and sanitation is significant. Median

reductions in morbidity (i.e., incidence and prevalence) calculated from the better studies range from 26 percent for diarrhea to a striking 78 percent for guinea worm and 77 percent for schistosomiasis. In between lie ascariasis and trachoma at 29 and 27 percent respectively. All studies of hookworm were flawed with one exception --which found a 4 percent reduction in incidence. For hookworm, ascariasis, and schistosomiasis, the reduction in egg counts was greater than the reduction in incidence or prevalence, suggesting that there is also a reduction in disease severity which is often overlooked.

The substantial impact of water and sanitation on child survival is also demonstrated by the studies reviewed. For overall child mortality, nine studies indicated a 60 percent median reduction, with a figure of 55 percent emerging from the six better studies; unfortunately, none of the better studies specifically addressed diarrhoeal disease mortality reduction.'

In summary, broad, demonstrable health impacts affecting all age groups in most of the developing world can be expected from improvements in water supply and sanitation. This review also found that reductions in disease severity are sometimes larger than reductions in incidence. However, the importance of this impact is often overlooked. To maximize the health impacts identified in the review, the following factors should be considered:

- The water supply should be as close to the home as possible
  - to increase the quantity of water available for hygiene practices.
- Water supply and health programs should emphasize hygiene education to encourage people to use more water for personal and domestic purposes.
- Sanitation facilities should be culturally appropriate, since use of the sanitation facility will affect its health impact probably reflecting the importance of user acceptance.
- Use of facilities is essential during critical seasonal transmission periods for diseases, such as guinea worm, which have such periods.
- In achieving broad health impacts, safe excreta disposal and proper use of water for personal and domestic hygiene appear to be more important than drinking water quality.
- Sanitation facilities should be installed in conjunction with water facilities when fecal-related diseases are prevalent.'



## MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION

### SESSION 6: HOW TO INTEGRATE WATER, SANITATION AND HYGIENE EDUCATION

#### READING II

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Extracted from: Wright, A. 1983. Integration of Water Supply and Sanitation Development. Water Master Planning in Developing Countries. Edited by T. Liim and E. Skofteland, Norwegian National Committee for Hydrology, Oslo Norway.

The objective of this paper is to determine whether there is a need for the integration of water supply and sanitation in rural situations. Subject to the finding of the examination, possible approaches to integration of the two would be discussed with specific reference to the lessons from the Wanging'ombe rural sanitation project.

#### NEED FOR INTEGRATION

##### Reasons for the Water Bias

The tendency to rank water above sanitation is both natural and understandable. For although both water and excretion are physiological imperatives, no one is known to have died as an immediate consequence of a lack of latrines. The usual concern about latrines is with smells and houseflies. It is not generally appreciated that poor sanitation is actually a silent killer and a major cause of debility in developing countries. In contrast, it is common knowledge that lack of water leads to the death of men, animals and crops. Water is therefore recognized not only as a life-supporting material but also as a pre-requisite for economic productivity and development. Consequently, whenever it is unavailable nearby, people are prepared to spend hours fetching it from wherever it may be obtainable. This is not the case for sanitation. When formal latrines are not available nearby, any other nearby place which affords privacy is deemed suitable. Moreover, since the adverse consequences of inadequate sanitation are not immediate or obvious to the average rural person, responsible officials also have a tendency to give water a higher priority whenever there is a strain on available financial resources. But in the end, society pays dearly for this because delays in implementing improvements in sanitation tend to render

ineffective the investments in improved water supplies. Consequently, integration of water supply and sanitation development is essential for ensuring the realization of the expected benefits from improved water supplies.

#### Complementarily of Water Supply and Sanitation

The primary rationale for integration of water supply and sanitation is their complementarily. The expected benefits from improved water supply are basically the same as those for sanitation, namely, CONVENIENCE, HEALTH and ECONOMIC PRODUCTIVITY. For water supply, improved convenience comes from a reduction in the water-fetching distance.

This reduces the toil for water-fetching; it also minimizes the need for storage thereby minimizing the contamination of stored water and enhancing the ample use of water for personal and domestic hygiene. For excreta, improved convenience may mean reduced distance to toilet, improved privacy and cleaner fly-free surroundings for defecation. It may also mean expectations in improved sanitation are:

- (i) a safer and more durable squatting floor which is easy to clean, and
- (ii) a long lasting latrine, preferably a permanent latrine which saves the owner the drudgery of constructing latrines at relatively frequent intervals.

The improvement in health is an obvious consequence of improved water and sanitation, but it is difficult to measure it quantitatively. The improvement in economic productivity results from a reduction in sickness time which in turn leads to a reduction in loss of working days. It also results from improved vitality and improved efficiency. In fact an observer once said that in many developing countries such is the extent of worm infestations that half the work of a sick peasantry goes to feed the worms that make them sick. In effect, productivity is highly influenced by the health status; and both are highly influenced by the adequacy of sanitation as well as the safety of water supplies; for a number of water-borne diseases are of excretal origin, and a number of excreta-related diseases cannot be controlled by improved sanitation alone without an accompanying measure to improve water supply to promote liberal use of water to maintain good personal and domestic hygiene. Thus, neither of the two amenities, improved water supply nor improved sanitation, is by itself adequate for ensuring the realization of the health benefits, neither of the two amenities, when provided alone, can be expected to yield its potential productivity benefits. It may therefore be concluded that from standpoint of the health and productivity benefits, improved water supply and improved sanitation are inter-dependent and complementary to each other.

### Need for Communications Support

The mere introduction of improved water supply and improved sanitation into a community is not enough to bring about improved health and improved productivity. A third measure is required to complete the triad of basic sanitary interventions against environmental health problems. It is hygiene education and general communications support designed to promote community participation in project implementation and to promote practices of good personal and domestic hygiene. Such communications support also helps to teach proper use, care, operation and maintenance of the new facilities.

### Degree of Coverage

A final contributory factor to the realization of the expected benefits is the degree of coverage. Recent studies on intestinal parasitism in Africa (FEACHEM *et al*) indicate that the provision of superior water supply and sanitation facilities to small clusters of houses, or to houses scattered through an area, may not protect the beneficiaries from infection if the overall level of faecal contamination is high. The implication of this is that as far as possible one should aim at making a full coverage of communities with improved water supply and sanitation facilities if the expected benefits are to be realized.

### Need for Integration

The general inference from these considerations is that given the interdependence and complementarity of water supply and sanitation, an integrated approach to their development offers the best chance for realizing and optimizing their potential health and productivity benefits.

Additional benefits of integration include cost reduction and time saving. Furthermore, integration helps to exploit the goodwill gained from one project for use in the other; moreover, it helps in deciding on priorities, particularly if disease control is used as a criterion.

## **APPROACHES TO INTEGRATION**

The approach to integration of water supply and sanitation development must be based on local political and administrative structures. In the particular case of Tanzania, a possible starting point could be to identify the agencies to be involved, define national and regional guidelines and formulate policies on subsidies.

One body, like the National Action Committee for the International Drinking Water and Sanitation Decade (NAC) could be charged with the responsibility of advising government on these issues. If the NAC were to remain the national committee for this purpose, it may wish to consider whether it would be feasible and appropriate to establish similar action committees at regional, district divisional and village levels.

Technical responsibility for planning, implementation and maintenance of water supply and sanitation projects could remain with the ministries and organizations that have been exercising these responsibilities. But a system of dual reporting should be developed to ensure proper coordination and supervision. This would require that officers from the Ministry of Water and Energy (MAJI) would report both to their supervisors in MAJI and to the appropriate action committee. Similarly those from the Ministry of Health (AFYA) or any other agency involved would report both to the action committee and to AFYA or their corresponding parent agency. An interim expedient would be secondment of staff from the cooperating agencies to MAJI to simplify administrative control of staff and ensure continuity of service of the seconded staff.

There must be a clear definition of responsibilities to avoid overlaps and conflicts. National and regional guidelines should define criteria for deciding on priorities, choice between permanent and temporary latrines, levels of service and subsidies.

There are several options for an integrated approach to the planning and implementation of water and sanitation projects.

At the planning stage it would always be an advantage to plan the two together. Consequently, the task of planning could always be assigned to one consultant. Responsibility for coordination of planning of the two could therefore be combined. Hence the Water Master Planning Coordination Unit could be assigned the additional responsibility of coordinating the planning of those sanitation projects that are a part of water master plans.

At the implementation stage, the options to follow are concurrent and sequential implementation of the two. It is the local situation that would dictate the appropriate option to follow. But after a few years a general pattern would emerge to provide a basis for national and regional guidelines.

## **MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

### **SESSION 7: WATER, SANITATION, HYGIENE EDUCATION ANALYSIS FOR PLANNING INTEGRATION STRATEGIES**

#### **OBJECTIVES**

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By the end of the session, you should be able to:

- \* assess in your country what water supply, sanitation and hygiene education resources are available at national, regional and provincial level;
- \* assess how to use the information from existing data sources at the community, sub-national and national levels in order to utilise existing resources and therefore use these effectively in the development of an integrated programme;
- \* identify four to five suitable strategies for the development of an integrated programme at village, subnational and national levels.

#### **Session Flow and Methodology**

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- \* Overview: Assessment of present situation for developing an integrated programme using the situation analysis
- \* Exercise I: Assessment for Integration in Country A.
- \* Plenary
- \* Exercise II: Strategies for Improved Integration.
- \* Overview: Developing Good Strategies for Better Integration
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. Many resources are already available for the development of an integrated programme. It is important to assess these resources to ensure that these are utilised in programme development. For example, different government and non-government agencies can be utilised in addition to those directly involved in water and sanitation activities. NGOs have played a significant role in some countries and private sector involvement can also be expanded.
2. It is important to study and assess all ongoing and past sector programmes, both government and non-government, in order to ensure that successful approaches are replicated and unsuccessful ones are not. By closer interaction with related departments, agencies and non-government organisations, it will be possible to pool resources and maximise outputs.
3. Before planning an integrated programme, it is vital to consider what information and projects are already present at national, sub-national and community level. Studies should be conducted of ongoing water, sanitation, health education, and other sectoral projects within the selected programme areas. This data can only be collected by a combination of desk and field studies including assessment of the present village structures, existing committees, socio-economic status and the ability of people to pay for facilities, present hygiene behaviour patterns, distance to health clinics or hospitals, provision of health services at field level including EPI and MCH and needs assessment in order to define the priorities within different areas.
4. UNICEF has its own five year country programme exercise that can assist in the development of a suitable integrated approach. Programming is firmly based upon a situation analysis of children and women in the country. It should provide information on existing government and non-government departments working within the different sectors including details of the present status of water and sanitation facilities within the country as a whole, with hopefully some regional breakdowns.
5. Table one represents the complete UNICEF country programme process. It is important to develop an integrated approach from the onset and to consider this at all stages of the country programme. Table two gives the timing of the country programming exercise. It outlines the major meetings and report preparation for the Country Programme Recommendation.

6. The Situation Analysis can be used to assist in collecting relevant information regarding national and, to a limited degree, sub-national infrastructures. The key purposes of the Situation Analysis are:

- source of information for planning
- tool for advocacy and social mobilisation
- tool to identify research and information needs
  
- tool for fundraising
- source of information for Monitoring Child Rights

7. The Situation Analysis should examine the national context, the situation of women and children, underlying causes and structural causes. It should also provide possibilities for future planning.

8. Based on the Situation Analysis, the government and UNICEF will decide on the set of problems they want to address in the country programme. This is done by examining:

- number affected
- consequences of problem
- effect on other problems
- amenability to solution
- reaching the poorest of poor
- priorities of government, communities and other partners
- goals and strategies of UNICEF.

9. Strategies for a more integrated programme should be developed based on the Situation Analysis. Clear programme objectives should be established that aim at a behavioural change leading to improved social, economic and health benefits.

10. It is important that the UNICEF water and sanitation staff liaise with the other sectoral staff, especially health, education and communications at the planning stage of programme development. An assessment should be made of successful activities and projects within these other sectors and where possible these approaches can be adopted for use within the new integrated water and sanitation programme. It may be possible to integrate programmes in certain project areas.

**MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

**SESSION 7: WATER, SANITATION, HYGIENE EDUCATION ANALYSIS FOR PLANNING INTEGRATION STRATEGIES**

**EXERCISE I: ASSESSMENT FOR INTEGRATION IN COUNTRY A**

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Prior to arrival at the workshop, you should have read the situation analysis provided.

Answer the following questions.

**FIRST GROUP**

1. What are the major causes of morbidity and mortality at present in the country in infants and under fives and how have these been addressed in previous support from UNICEF?









**MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

**SESSION 7: WATER, SANITATION, HYGIENE EDUCATION ANALYSIS FOR PLANNING INTEGRATION STRATEGIES**

**EXERCISE II: STRATEGIES FOR IMPROVED INTEGRATION**

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1. Based on the situation analysis you have read, define 4-5 strategies you would use to develop an integrated programme at the village level.

2. For each strategy in Question 1, define what strategies would be necessary at the subnational/national level in order to support village level integration.

**Strategy - Village**

**Subnational  
e.g. district,  
region**

**National**

**MODULE 2: INTEGRATION OF WATER, SANITATION AND  
HYGIENE EDUCATION**

**SESSION 7: WATER, SANITATION, HYGIENE EDUCATION  
ANALYSIS FOR PLANNING INTEGRATION  
STRATEGIES**

**READING MATERIAL**

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**SWIP MID-TERM EVALUATION**

**UNICEF, Uganda  
Summary of the Mid-Term Evaluation Report  
of the South West Integrated Health  
& Water Programme  
November 1990**

**MODULE 2: INTEGRATION OF WATER, SANITATION AND HYGIENE EDUCATION**

**SESSION 8: FIELD TRIP: RESOURCE MAPPING**

**OBJECTIVES**

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**TRIP OBJECTIVE:**

The objective of this field visit is to improve your skills in the rapid collection of qualitative data.

**ASSIGNMENT:**

Collect qualitative and quantitative data upon which you will base four health-related behavioural objectives which will form an integral part of a water, sanitation and hygiene education project in the country.

**PROJECT GOAL:**

The overall goal of the project is to reduce by 50% by 1995 mortality and morbidity from water-borne diseases among children under five years of age.

The assignment has two parts:

1. Collection and analysis of village data
2. Development of behavioural objectives

To develop these objectives you will need to collect data on:

- existing water and sanitation practices that have positive or negative impact on children's health;
- existing beliefs about water, hygiene and disease;
- existing knowledge about causes and treatment of water and hygiene related diseases;
- constraints to making desired behavioural changes;

- major sources of credible information in the community;
- sources of health information in the community;
- existing village organisations through which health and hygiene information could be channelled;
- who, in the household, should be given information of water use, health and hygiene.

Your behavioural objectives must be related to the overall programme goal and related to specific changes in behaviour.

**A reminder:** Good objectives are:

- simple
- measurable
- achievable
- realistic
- time-bound
- location-bound

#### **PLANNING THE COLLECTION OF DATA**

1. During the bus trip please organise your group's research strategy and delegate responsibility for specific research questions.
2. Use the journey back to begin sorting and analysing data.
3. Prepare four behavioural objectives for presentation on Thursday morning. Each group must also present a short summary of research findings.

#### **POSSIBLE DATA COLLECTION METHODS**

- observation
- informal discussion/conversation with individuals
- informal group discussion
- short questionnaire with open and close-ended questions



**MODULE 3: LOW COST OPTIONS**

**SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY? (FOR NON-SECTOR STAFF ONLY)**

**OBJECTIVES**

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By the end of the session, you should be able to:

- \* describe the most suitable low cost options to be used under different circumstances;
- \* identify new technologies i.e. solar, wind energy that could be applied in your country of assignment;
- \* assess programmes in your country of assignment in terms of technical efficiency.

**Session Flow & Methodology**

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- \* Overview: Suitable Technical Options Used by UNICEF-Assisted Programmes
- \* Work in Pairs: Deciding Factors in Selection of Technical Options in your Country of Assignment
- \* Exercise: Improved Technical Efficiency; Groups to Develop Criteria for Improving Efficiency
- \* Plenary
- \* Summary and Evaluation of Session

**MODULE 3: LOW COST OPTIONS**

**SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY? (FOR SECTOR STAFF ONLY)**

**OBJECTIVES**

---

By the end of the session, you should be able to:

- \* know new technical developments in the water and sanitation sector;
- \* identify where relevant information can be obtained;
- \* assess programmes in your country of assignment in terms of technical efficiency.

**Session Flow and Methodology**

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- \* Overview: Three Separate Sessions to be Convened for Current Topics of Interest and Technical Development
- \* Case Study: Improved Technical Efficiency
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. Groundwater is the primary source of water in UNICEF-assisted projects. Such sources are usually bacteriologically pure, so disinfection is not necessary. In many areas groundwater is, in principle, accessible at relatively low cost, but the technology to reach it and get it out of the ground in many cases requires considerable skills. There are also limits to all groundwater resources, even when they appear to be plentiful. However education is required in order to ensure measures are taken to protect the water from contamination during transport and storage.
2. The existence of adequate groundwater resources has to be assessed. Some programmes have, however, spent much time and money digging/drilling without locating any worthwhile quantities of ground water. This is not only costly but discouraging and can be reduced by proper surveys particularly through the use of geophysical methods. In some areas e.g. the Sahel, Bangladesh, the ground water level has dropped considerably since the rates of drilling and pumping have increased, especially of larger wells with power pumps. In consequence many wells run the risk of drying. Both legislation and the use of deeper set pumps are the only solution. These, while employing physical principles which are not always simple to grasp, have in recent years reached a considerable degree of "demistification" by making affordable and simplified equipment available for use by inexperienced professionals and even semi-professional personnel. It is thus highly recommended for project focussing upon ground water exploration to rely heavily on this methodology. Both India and Nigeria have had their programmes under-pinned by geophysics.
3. Compared with single point systems, piped systems are more costly to establish (except for gravity systems; the per capita-cost can be below single point systems). They require much piping and, unless gravity feed is possible, motorised pumps and elevated storage tanks are necessary. To obtain the greater volumes of water necessary, high yielding sources must be available and be appropriately developed. Piped systems with individual yard taps can, in general, only be envisaged where population density and income levels are relatively high, and in mountainous areas with many natural spring sources.
4. Technologies should be selected on the basis of the nature and locations of available water resources, the quantity of water required, the number and density of the population to be served and the resources able to be mobilised to pay for the installation or at least its operation and maintenance.

5. Recent technological developments have substantially reduced the costs of handpumps installed in both boreholes and handdug wells and now this is the major method by which water can be provided at a reasonable cost close to the homes of the majority of rural people.

6. Recent technical innovations have also reduced the cost of mechanical drilling which is now affordable for many project areas. For example, high speed pneumatic and hydraulic rigs permit drilling at 20-100 times the ratio of old methods (such as cable-tool drilling). Lightweight rigs are now available which can be used in areas where road conditions exclude heavier equipment; they are also much cheaper to buy than the traditional truck mounted rigs. However one must take care not to employ too small equipment as that can seriously constrain operations. For example, if boreholes of 50m depth are to be drilled, rigs should be somewhat over-dimensioned, say, 80-100m capacity. This will provide a better chance of extracting drill pipes from the ground when these get stuck.

7. Other developments which have lowered the cost of tubewell and handpump installation are the following:

- low cost pre-packed gravel filter screens which reduce problems of well clogging and can easily be produced in developing countries;
- improved handpump designs such as the AFRIDEV, TARA and the India Mark III pump which can be maintained at the village level;
- the use of universal spanners with which all the operations necessary for the installation and repair of a particular type of handpump can be undertaken;
- the improved use of PVC casing, screens and rising mains which are cost-effective and easier to install;
- the use of simple hand-drilling equipment in unconsolidated soil conditions has drastically reduced costs and accelerated coverage in suitable areas.

8. Local manufacture of handpumps, PVC and GI casings, screens and rising mains have been encouraged where economically feasible. For example in a large country like Nigeria or Pakistan, local production of pumps plus accessories can lead to greater availability, easier maintenance since spares will be easier to make locally available and it can encourage private sector involvement therefore supporting the local economy. However in a smaller country, it may not be cost-effective to produce pumps locally.

9. To protect and improve the sanitary conditions around any water point, a proper platform/apron and system to drain away excess water must be provided. These are normally constructed in concrete by local masons with the help of the communities. When planning such installations, attention should be given to laundry and bathing. Facilities for watering animals can be provided and drainage water can be used for irrigation purposes.

10. Water quality is an important factor which should be considered from the planning phase of project development. Some methods that have been used have included disinfection of water in open wells using pot chlorinators, household sand filters and packed drum filters. The boiling of water and chemical treatment are the most effective means but can rarely be relied upon as household measures. The use of purification tablets and portable units are not practical at household level and should only be encouraged in emergency situations on a limited basis. A list of technical approaches having potential to improve water quality are included in the reading material.

11. Gravity flow water supply systems have been used very successfully in many countries e.g. Burma, Nepal, Bhutan, Rwanda, Burundi, etc. The system usually consists of an intake structure built to collect water which is then piped down to the village through buried pipe. HDP is the most suitable pipe since it is durable and flexible. However in rocky areas, GI will have to be used for difficult sections. If needed, a reservoir tank is constructed above the village. From there, the water is distributed to several public tapstands.

#### Water Pollution (Extracted from Cairncross, 1983)

12. Tube wells and boreholes are usually protected from pollution by a concrete platform, at least 2m across, used as a base for the pump. Open hand-dug wells, however, are more liable to pollution. An open well can be polluted by any of the following means, but only the first two normally affect tube wells:

- 1) *Polluted ground water.* This can result from location of the well too close to pit latrines, soakaways, or refuse dumps, whose influence may extend up to about 15m in a typical soil. In fissured strata such as limestone and fractured rock, water may rapidly flow underground rather than seeping through the soil, and so carry faecal pollution much longer distances.
- 2) *Seepage water from the surface.* This may enter through the top few metres of the well lining if it is not sufficiently watertight near the surface.
- 3) *The vessels used for drawing water.* However often these may be rinsed out, they can cause some pollution of the

well. An improvement can be achieved by having a bucket permanently hanging in the well, probably from a windlass, so that it is never taken home and never put on the ground. If the bucket is made of collapsible rubber, it is less likely to be put on the ground or stolen. Pollution can only be completely avoided by sealing the well and installing a pump, though this may cost as much as the original construction of the well.

- 4) *Rubbish thrown down the well.* The chance of this may be reduced by preventing children from playing near the well, but the only certain way to prevent it is to fit a permanent cover over the well and install a pump.
- 5) *Surface water.* This may be washed straight down the well, especially if the ground surface has sunk, as is often the case when the well does not have an adequate lining or when wells are dug upon alluvial deposits and flooding occurs. It can usually be prevented by building a headwall, which will also help to prevent animals and people from falling into the well.
- 6) *Spilt water.* If there is no headwall, or if people stand on the headwall to draw water, water which has splashed against their feet can fall back into the well.

Avoidance of pollution by spilt water is particularly important in arid savannah regions of West Africa and the Middle East, where Guinea worm (*Dracunculus medinensis*) is endemic. Guinea worm kills few people but causes debilitating pain, usually in the planting season, and so can have far-reaching economic effects by reducing the ability to work a significant portion of the population, as well a negative impact upon child development.

### Alternative Water Supplies

13. Alternative energy sources-windmills, solar power etc., currently require very large initial capital investments. However efforts are now being made to reduce costs especially for small solar pumps. Some examples are included in the reading material. The pumps avoid dependence upon imported energy sources, operating and maintenance costs are very low and in particular circumstances, the use of such technologies can be justified.

14. Windmills have been installed in many countries, particularly in West Africa, but have fallen into disuse for lack of maintenance. In some cases the wind forces have been found to be insufficiently constant to sustain all year round operations as required. With new technological developments, wind forces as low as 4 km/hour are sufficient and installation costs have been reduced. Maintenance is still a critical factor in this type of

technology. Costs vary from US\$2,000 - 25,000 depending upon size, design and materials. Designs can be obtained from ITDG (London) and there are manufacturers in USA, Denmark, Australia. (addresses provided in appendix).

15. Solar power is increasingly being used in many parts of the world e.g. in the Sahel, since the cost of photovoltaic cell panels have fallen. Costs of complete pump installations vary greatly depending upon size. One capable of delivering 4,000 litres/hour from an existing well with a water lift of 15 metres costs approximately US\$15,000 - 20,000.

16. Rainwater harvesting - the collection of rainwater from large surfaces, can be a useful source of safe, fresh water in certain regions. This is receiving attention as a source of drinking water, particularly when there are no other resources of safe fresh water available e.g. in areas of high salt or other mineral content of Karstic limestone regions. UNICEF has recently, jointly with IRC, produced a publication called "Rainwater Harvesting" which has been distributed to field offices.

17. The programme team in UNICEF New York and Supply Division, Copenhagen seek to help field workers keep abreast of technical and human developments and resources. UNICEF is linked to a network of information sources such as the International Reference Centre for Water and sanitation in the Hague, UNDP/World Bank project based in Washington and WHO in Geneva. It exchanges documentation and other information on supplies, technologies and approaches. Journals and newsletters also provide up-to-date information on current developments. This information is sent to the field regularly by the Water and Sanitation Section in New York. In addition, the UNICEF staff in New York intend to issue a water and sanitation newsletter every six months which will contain the latest technical approaches and other relevant information.

**References and suggested readings:**

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Lee, M.D. and Visscher, J.T., 1990. Water Harvesting in Five African Countries. IRC International Water and Sanitation Centre, The Hague, The Netherlands.

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Arlosoroff, S., Tschannerl, G., Grey D., Journey W., Karp, A., Langenegger, O. and Roche, R. 1987. Community Water Supply; The Handpump Option. The World Bank.

Morgan, P. 1990. Rural Water Supplies and Sanitation. A Text from Zimbabwe's Blair Research Laboratory.

Cairncross, S. and Feachem, R. 1983. Environmental Health Engineering in the Tropics: An Introductory Text. John Wiley & Sons.



**MODULE 3: LOW COST OPTIONS**

**SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY?**

**USEFUL ADDRESSES**

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Abem AB (Geophysics and Hydrogeology)  
Box 20086  
S-161 02 Bromma  
Sweden  
Telephone: 46 8 764 60 60

American Water Resources Association  
5410 Grosvenor Lane, Suite 200  
Bethesda, Maryland 20814 USA  
Telephone: (301) 493 - 8600

Asian Institute of Technology (AIT)  
P. O. Box 2745  
Bangkok, Thailand  
Telephone: 5168311 to 5  
Cable: AIT-BANGKOK

Centre for Non-Conventional Energy Development  
Ministry of Energy  
PNPC Complex  
Merritt Road, Fort Bonifacio  
Metro Manila, Philippines

Canadian International Development Agency (CIDA)  
200, Promenade du Portage  
Hull, Quebec K1A 0GA  
Canada  
Telephone: (819) 997 - 1426  
FAX: (819) 997 - 1491

Consumers' Association Testing and Research Laboratories (CATR)  
Harpenden Rise  
Harpenden  
Hertfordshire AL5 3BJ  
England

Delft University of Technology  
Department of Civil Engineering  
Stevinweg 1  
Delft, The Netherlands

Fleming  
P.O. Box 698  
Amherst, VA 24521 USA  
Telephone: (804) 277-8511

Grundfos International a/s  
Dk - 8850  
Bjerringbro, Denmark  
Telephone: 45-86 68 14 00

Hach Chemical Co.  
Hach Europe  
S.A./N.V.  
B.P. 229  
B5000 Namur, Belgium  
Telephone: 32-81-445-381

INALSA Limited  
Surya Kiran, 19 Kasturbsa Gandhi Mar,  
New Delhi 110 001  
India  
Telephone: 011-331-4214

Institute of Solar Energy and Related Environmental Research  
National Council of Research  
Khartoum, Sudan

Intermediate Technology Development Group Ltd. (ITDG)  
9 King Street  
London WC2E 8HN  
England  
Telephone: 44-71-836-9434

International Centre for Diarrhoeal Diseases, Bangladesh (ICDDR,B)  
P. O. Box 128  
Dhaka, Bangladesh  
Telephone: 600171-179

International Development Research Centre (IDRC)  
250 Albert Street  
P. O.Box 8500  
Ottawa, Ontario  
Canada K1G 3H9  
Telephone: (613) 238 - 6163

International Institute for Hydraulic and Environmental Engineering  
P. O. Box 3015  
Oude Delft 95  
2601 Delft  
Netherlands

International Reference Centre for Community Water Supply and  
Sanitation (IRC)  
P. O. Box 93190  
2509 AD The Hague  
The Netherlands  
Telephone: 31-70-331-4133  
FAX: 31-70-381-4034

International Reference Centre for Wastes Disposal (IRCWD)  
Ueberlandstrasse 133  
8600 Duebendorf, Switzerland

Loughborough University of Technology  
Loughborough  
Leicestershire LE11 3TU  
England  
Telephone: 44-509-222390

HABITAT  
Nairobi,  
Kenya

Institute of Solar Energy (ONERSOL)  
Office Nationale de l'Energie Solaire  
B.P. 621  
Naimey, Niger

OXFAM (Oxford Famine Relief Campaign)  
274 Banbury Road  
Oxford OX2 7DZ  
England  
Telephone: 865-56777

Pan American Health Organisation (PAHO)  
525 23rd Street, N.W.  
Washington, D. C. 20037 USA  
Telephone: (202) 861-3200

Windmill Group T.H.T.  
Technical University of Twente  
P. O. Box 217  
7500 AE Enschede  
The Netherlands

World Health Organization  
CH-1211 Geneva 27  
Switzerland  
Telephone: 41-22-913578

Vergnet S.A.  
66, rue Hoche  
92240 Malakoff  
France  
Telephone: 33-1-47461616

World Health Organization  
CH-1211 Geneva 27  
Switzerland  
Telephone: 41-22-91211

Water Pollution Control Federation  
2626 Pennsylvania Avenue, N.W.  
Washington, D. C. 20037 USA  
Telephone: (202) 337-2500

Water Research Centre  
Medmenham Laboratory  
P. O. Box 16  
Medmenham  
Marlow, Bucks SL7 ZDH  
England

Water and Sanitation for Health (WASH)  
1611 N. Kent Street, Room 1002  
Arlington, Virginia 22209 USA  
Telephone: (793) 243-8200

Wind Baron Corp.  
280 N. Highway 89A  
Box 2261  
Sedona, Arizona 86336  
USA

World Bank  
1818 H Street, N.W.  
Washington, DC 20433  
USA

World Water  
P. O. Box 124  
Liverpool L69 2LQ  
England  
Telephone: 44-51-236-1155

**MODULE 3: LOW COST OPTIONS****SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY?****CASE STUDY: IMPROVED TECHNICAL EFFICIENCY**

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**1. COUNTRY BACKGROUND**

The country is a Francophone West African country with a population of approximately 4.5 million people, the majority of whom are farmers in rural areas. The country is roughly divided into two climatic zones: the southern half, which is humid and tropical with two rainy seasons, and the northern half, which is Saharian with a long dry season and one rainy period.

The past ten years have been difficult financially and it is now considered one of the least developed countries in the world, and its rural population endures high mortality rates, low life expectancy and high prevalence of infectious diseases. A scarcity of both food and water has further compromised the well being of the country's rural dwellers.

The UNICEF assisted programme is based almost exclusively on drilled boreholes with the exception of the coastal strip, where large diameter wells have been dug. The southern part of the country is mainly unconsolidated soils. The northern part is hard consolidated igneous and metamorphic rocks thus necessitating the use of drilled wells.

**2. PROJECT BACKGROUND**

UNICEF supported government in starting a water and sanitation project in 1978. The original project called for 225 boreholes equipped with Moyno pumps to be installed in the north of the country. The project was fully funded and operational by 1981, but was suspended by the Department of State in December 1981 for political reasons. The suspension was halted in October 1984, and the agency conducted a water and health sector assessment. Based upon that assessment the project was redesigned.

Due to the presence of several well drilling projects in the area, the Government asked the agency to consider transferring the project to more underserved areas. These areas suffered from Guinea worm infestation and the new project design called for reducing water and sanitation related diseases, specifically Guinea worm, by 30 per cent. The project was to attain this goal by providing 225 boreholes equipped with India Mark II pumps in Northern Zone Villages (coordinated with sanitation and health

education campaigns), by building latrines, and by constructing cisterns in those villages where drilling proved unproductive.

UNICEF was responsible for supporting the following:

- Borehole construction
- Pump installation
- Train staff in water quality analysis
- Chemical water quality analysis
- Training villagers and mechanics for pump maintenance with assistance from Project Technical Team<sup>1</sup> and Peace Corps Volunteers.
- Establishing a functioning logistics system for spare-parts supply.
- Undertaking latrine construction and environmental sanitation in a separate and complementary effort.

### 3. TECHNICAL ASPECTS

Borehole construction was undertaken by drilling crews furnished by the Water Department. The agency provides technical assistance and also furnishes the drilling equipment, support vehicles and all related equipment.

Villages in the programme are selected on the basis of water needs, size of population, distance to nearest potable water source, and prevalence of Guinea worm disease. Those meeting the criteria are then approached by district team members and given a description of project activities and requirements. Villages are requested to organise a committee and to collect 60,000 francs for pump maintenance, which must be deposited in a bank account. After achieving the above, the villages are put on the list of those destined to receive a borehole. The project standard calls for one pump per 500 persons.

Boreholes are being drilled with an Ingersoll Rand TH-55 using rotary (air + mud) and down the hole hammer techniques. Hole diameters are 9 1/4 or 8 1/2 inches, and PVC casing and screens of 5 inch inside diameter are being installed. Well development is undertaken by airlift until the water is clear, and pumps are tested using a constant one step method at 1 m<sup>3</sup>/hr for several hours. If their discharge exceeds 0.7 m<sup>3</sup>/hour, wells are considered

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<sup>1</sup> The Multidisciplinary Supervisory Operational and Technical Unit of the Project, henceforth called either the "Technical Team", or the "Socio-Health Team".

productive. In some cases, where villages are small and alternative productive sites are unlikely, yields less than 0.7 m<sup>3</sup>/hr are acceptable.

The agency is responsible for training staff in the following aspects:

- project management
- work planning
- hydrogeology
- geophysics
- pump testing
- installation and repair of handpumps
- drilling techniques
- mechanics.

#### 4. ASSESSMENT

Drilling began February 1988 in a northern district of the country. By the end of October 1988, 48 boreholes were drilled with 28 providing acceptable yields. This provided a success ratio of 58.3 per cent. The wells have averaged 54 metres in depth, static water levels of 15 metres, and yields of 2.5m<sup>3</sup>/hour. To date (February 1989) 34 aprons and pumps have been installed. Only one village has failed to establish its bank account and their well will be sealed until this is done. The cost per handpump equipped borehole at present is US\$ 12,000.

The pump used on the project, an India Mark II model, is locally manufactured in a nearby country. However, the quality of the pumps vary with the batches of pumps provided. The government feel strongly that they should support pumps locally manufactured in the region. However their neighbouring country can only provide to the country 200 handpumps/annum due to their own needs and limited capacity.

#### 5. MAJOR CONSTRAINTS

- Approximately 50 per cent of the handpumps installed are malfunctioning due to aggressive groundwater.
- Government personnel were assigned to the project but residing elsewhere, accounted for time lost. At first the campaign averaged only 18 working days per month.
- Personnel expected to be assigned by the department were not available. This resulted in delays in pump installations, and affected maintenance of equipment.
- Delays in pump deliveries affected pump installations.
- The engine of one drilling rig was different from the ordered specifications. This resulted in long delays for

- reparation as no spare parts were available.
- Pump testing started only in April 1989, as the engine received did not conform to the type of pump.
  - Village delays in raising funds for pump maintenance.
  - Apron-construction team and pump-installation team had difficulty to follow rate of drilling because of shortfall in technicians assigned by the department.
  - First year of drilling campaign was slow due to lack of available pumps.
  - A high proportion of abortive boreholes was registered considering the low yields required for handpumps.





3. What major recommendations would you make for this country in terms of future technical development of the programme as a result of this case study? (List 4-5)

4. How technically efficient do you consider your own programme? Please explain. How could you improve efficiency?

**MODULE 3: LOW COST OPTIONS**

**SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY?**

**READING MATERIAL**

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**UNICEF PROGRAMME GUIDELINES**

**WATER SUPPLY, SANITATION AND HYGIENE**

**UNICEF, New York  
1987**

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## 1.0 TYPES OF SYSTEM, PREFERENCES AND CONSTRAINTS

1.1 As in many spheres of activity there are practical constraints - technical and environmental as well as financial - which limit the extent to which all user desires can be met. This section outlines some of the issues and suggests some of the compromises which often have to be made in planning water supply systems. Reference Notes R6 and R7 provide more detailed descriptions of the technological options.

1.2 Water can be "produced" from different sources by various technical means. The supplies can then be "delivered" (made available) to consumers in different ways. Whatever the technical solution adopted, the aim is make adequate quantities of water, which is safe for human consumption, reasonably accessible to all including, especially, the underprivileged groups of society.

### Design options, advantages and user preferences

1.3 Decisions on the level of service to be provided - how, where and in what quantities water will be delivered to users - are crucial in the planning of any water supply project. Table 2/1,2 (in section 2/1) provides some guidelines for estimating needs, but these will always require modification according to local conditions. System design options are:

- "Single point" systems, which usually consist of dug wells or small-diameter drilled wells from which water is drawn using a handpump. (\*)
- "Standpipes": piped distribution systems which feed a limited number of public taps, each of which serves all households - and other users - in the vicinity (usually a considerable number of people).
- "Household connections" (or "yard taps"): piped systems which deliver water to taps in individual household compounds or homes.

1.4 Piped systems are fed by gravity-flow directly from the source (e.g. a mountain spring) or from an elevated tank into which water is pumped from, for example, a deep borewell. Treatment of the supplies, where necessary, is possible in intermediate storage tanks.

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(\*) Single point systems can serve 50 to 500 people who are within convenient reach. In some instances, the pump may be operated by some other source of energy and the water may be filtered, or treated, and delivered into storage tanks nearby, from which consumers obtain their supplies. In the case of a dug well, water can be drawn from the open well using a captive bucket, but the risks of contamination are then high.

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WATER SUPPLY, SANITATION AND HYGIENE, Chapter 3, MAIN ISSUES,  
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- 1.5 Public water points - whether open wells, handpumps or standpipes - must always be provided with solid, watertight platforms ("aprons") from which waste water is drained away. These can also be supplemented with laundry, bathing and other facilities, including troughs for watering animals and collection systems watering small vegetable gardens. (\*)
- 1.6 Piped systems, especially with household connections, provide greater convenience and are thus preferred by people in most communities. Increased convenience always results in increased consumption/usage which in itself can be expected to have an impact on health status and yield other benefits. Consumption increases of up to 500 percent have been recorded following the introduction of yard taps. (\*\*)
- 1.7 Whether the extra cost of pumping, elevated tanks and yard taps can be justified depends on the natural or external resources available for large-scale coverage; the capacity of users and communities to pay much higher operating costs of motor pumping is necessary; and the incidence and seriousness of water-related diseases. A 1968 study by Misra in seven Indian villages found that diarrhoea incidents among children were reduced by 57.7 percent when open wells were replaced by standpipes, and by 66.3 percent when replaced by yard taps.

#### Constraints and choices

- 1.8 The ideal of making large quantities of safe water readily accessible to all households is often not easily realisable. In many situations:
- The resources of safe water available in the area are limited, situated at some distance and/or difficult to access; (\*\*\*)

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(\*) In the case of open or drilled wells, the apron is essential to prevent polluted water seeping back into the well. For further information concerning standpipes, criteria for their use and design, see reports of studies by the International Reference Centre, The Hague..

(\*\*) Long distances to water supply points are usually associated with high levels of water-borne disease, as people use less water and/or alternative, less safe sources. When water supply is readily accessible, adequate and dependable:

- Improved personal hygiene can be expected;
- Micro-irrigation and increased household food production become feasible;
- School hygiene and nutrition activities are facilitated.

Sanitary excreta disposal using simple water-seal (pour-flush) latrines is also easier to promote when water does not have to be carried long distances.

(\*\*\*) When water is deep underground, below hard rock, not only is it expensive to sink wells and provide the necessary motorized pumps, but it is also difficult for the community to ensure ongoing maintenance, because of high level of technology involved and the cost of fuel.

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- Financial resources are limited, and insufficient to meet the high costs of extensive pipe-work and pumping.
  - The technical expertise - the trained manpower and institutional capacity - required to design, establish and operate extensive pumping and piped systems may also be lacking (see sections 3/6 and 3/7).
- 1.9 The existence of adequate water resources in the locality is, of course, an essential prerequisite. Some programmes have, however, spent much time and money digging/drilling without locating any worthwhile quantities of groundwater. This unproductive effort is not only costly but also discouraging for the communities (and programme personnel); it can be reduced by proper surveys. Elsewhere, e.g. in Bangladesh and the Sahel, the level of the groundwater table has fallen considerably since the rates of drilling and pumping have increased, especially of larger wells with power pumps, e.g. for industry and agriculture. In consequence, many existing village wells run the risk of drying up. The required water resources legislation and management may be difficult to institute. Deeper set handpumps are often the only solution.
- 1.10 The need for good survey data and careful exploration before major drilling activities are undertaken is obvious. Careful and continuous monitoring of the condition of groundwater reserves and control of pumping, where necessary, are no less important.
- 1.11 The limitation on funds available is an obvious, major constraint. Where programmes have been planned to provide high levels of service, the number of communities covered has often been small and high proportions of the total population have remained without any reasonable access to safe supplies.
- Cost considerations
- 1.12 Compared with "single point" systems, pipéd systems are necessarily more costly to establish (except for gravity systems, the per capita cost of which can be below that of single point systems). They require much piping and, unless gravity-feed is possible, pumps and elevated storage tanks. To obtain the greater volumes of water, high yielding sources must be available and be appropriately developed.
- 1.13 Piped systems with individual yard taps can, in general, only be envisaged where population density and income levels are relatively high, and in mountainous areas with many natural spring sources (\*).

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(\*) Installation costs and maintenance requirements are both low when sufficient water from springs (and clean mountain streams) can be delivered by gravity-feed through simple pipe systems.

- 1.14 Where incomes and population densities are low, piped distribution systems can rarely be envisaged. Effort should be concentrated on minimizing the distances over which water has to be carried, and increasing the quantity and quality of what is available. Handpumps are usually the most appropriate option wherever sufficient groundwater is available at depths not exceeding 50 metres.
- 1.15 In some instances, especially in poor, high density urban fringe areas, standpipes may be appropriate. Large quantities of water are, however, often wasted at standpipes, especially when normal taps are used - the taps break very quickly, or are deliberately jammed open. "Waste-not" taps which shut themselves off immediately after use have proved to be successful in reducing such wastage. (\*)
- 1.16 In some cases, however, communities themselves have been willing and able to pay the extra cost of yard taps - they have attached great value to the extra convenience offered. (\*\*)
- 1.17 Notwithstanding such instances, sturdy handpumps installed in small-diameter wells are probably the main way in which water can be provided, at a reasonable cost, close to the homes of the majority (many millions) of rural people who are presently lacking adequate, safe water supplies. Recent technological developments have, in fact, substantially reduced the costs and increased the reliability of such installations, see 3.0 below.

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(\*) The waste-not taps presently available are not perfect but considerable experience with their use has been accumulated by some UNICEF field offices, notably Nepal, and Supply Division.

(\*\*) The following example is quoted in "Community water supply in developing countries: lessons from experience", AID Program Impact Evaluation Report No.7 (p.17), USAID, Washington, D. C., 1982:

"The Thai piped water project, with 250 systems serving 600 communities, had been a failure when it supplied water only through communal taps. By 1972, three years after the completion of the project, only one-quarter of the systems were working. In 1979, at the time of the evaluation, over 80 percent of these systems were operating and self-sufficient. The change resulted from the conversion from communal facilities to individual metered connections. The private connections provided more convenient sources of supply than had the water from existing community shallow wells."

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## 2.0 WATER RESOURCES AND PRODUCTION

2.1 There are basically three categories of naturally occurring water resources:- Surface water - Groundwater - Atmospheric water.

- Groundwater occurs under most parts of the world's land surface, but there are great variations in the depths at which it is found, its mineral quality, the quantities present and the rates of infiltration (thus yield potential), and the nature of the ground above it (thus accessibility). In hilly areas it emerges from the ground in places as natural springs, otherwise wells have to be constructed and pumps or other lift mechanisms be installed.
- Rainwater collection - from roofs or larger catchment areas - is getting renewed attention as a source of drinking water, particularly when there are no other resources of safe, fresh water available, e.g. in areas of high salt or other mineral content or in karstic limestone regions. In extreme situations, small quantities of water can be condensed from the atmosphere (as dew) on screens or similar devices.
- Surface water - in streams, lakes and ponds - is readily available in many populated areas, but is almost always polluted, often grossly so. It should, a priori, be avoided if groundwater or other safe sources are available.

2.2 The desalination of sea water, and the transportation of fresh water by sea (in oil tankers), are both extremely expensive and not practical proposals for any programme in which UNICEF might be involved. (\*)

2.3 APPENDIX A at the end of this section lists the main low-cost technological options for producing water and the pre-conditions for realizing the objective of increasing the quantities of water available to households - and therefore the per capita daily usage of water - in each case.

2.4 Figure 3/4,a shows how options available for producing water can be identified and evaluated, based on a careful survey and analysis of the local environment.

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(\*) Provoking rainfall by "seeding" major cloud formations is not very practical, see R7,2.4. Transport of icebergs is still only on the drawing board. Fanciful proposals for providing bottled water to needy areas are also sometimes received by UNICEF.



- 2.5 The amount and reliability of background data on water resources varies between countries. In many, a certain amount of additional surveying and exploration is necessary before projects can be planned in detail, especially where groundwater is concerned. For exploration, various techniques are used, normally in combination. The technical specialisms involved are "hydrology" (mainly relating to atmospheric and surface waters) and "hydrogeology" (underground water resources). The actual production of water from known sources is a matter of "hydraulic engineering". (\*)

#### Groundwater

- 2.6 Groundwater is the primary source of water in UNICEF-assisted projects. Such sources are bacteriologically pure, so disinfection is not necessary, but the need remains for community education and measures to protect the water from contamination during transport and storage.
- 2.7 In many areas groundwater is, in principle, accessible at relatively low cost, but the technology to reach it and get it out of the ground in most cases requires considerable skills. There are also limits to all groundwater resources, even when they appear to be plentiful. Overpumping has already resulted in a fall in the level of the groundwater table in several areas (see 1.9 above).
- 2.8 Groundwater resources must therefore be properly "managed", and conservation measures be enforced where necessary, including control of exploitation, use and re-infiltration (to avoid contamination from the surface through industrial effluents, pit latrines etc.). The management of groundwater resources should be assured by appropriate institutions at national level. (\*\*)
- 2.9 The various types of wells through which groundwater may be produced are described briefly in the next sub-section and in more detail in Reference Note R7, sub-section 4.0. The importance of good survey data has already been emphasized; some details of the techniques used are provided in Reference Note R6. Note that, where springs are available in hilly areas, gravity-feed systems are usually possible.

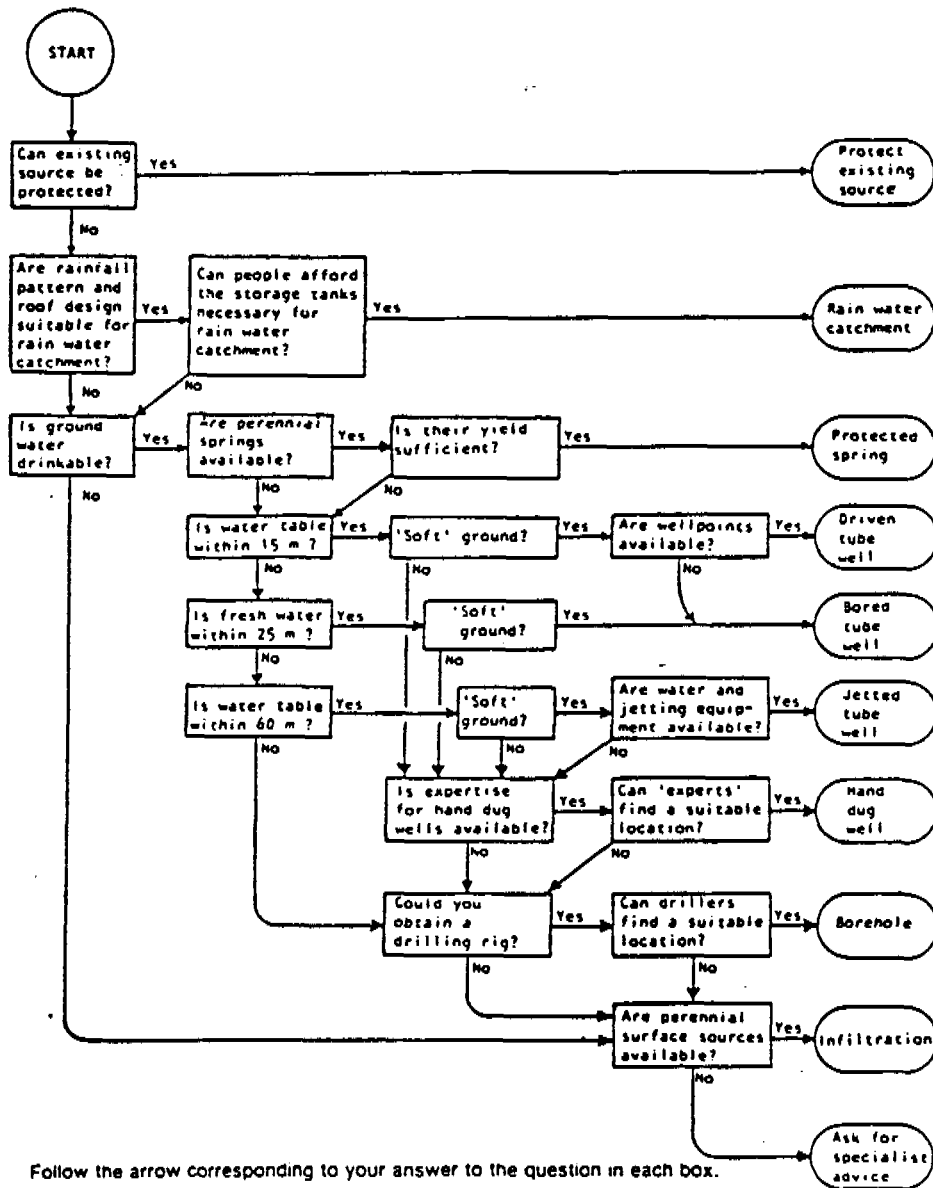
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(\*) Resource-conscious nations have specific institutions (water resource ministries, geological survey departments, etc.) dealing with such matters. Within the UN system, support for such activities is mainly provided by UNDTCD, UNDP, UNESCO, WMO and FAO.

(\*\*) Protection of forests and other vegetation in the recharge areas (where the rain and snow, which replenish the groundwater reservoirs, fall) is also necessary. The principal United Nations organisations, offering assistance in these aspects are the UNDTCD Water Resources Section (through UNDP), UNESCO, WMO, FAO and UNEP.

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Figure 3/4,a Determining feasible sources of supply in rural areas



(Reproduced from Small water supplies, S. Cairncross and R. Feacham, Ross Bulletin No.10, Ross Institute London, 1978.)

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### Rainwater

2.10 Rainwater may be collected ("harvested") from large surfaces by:

- Roof catchment: after passing through a screen, the water is conducted through gutters to large vats or cisterns. (\*)
- Ground catchment: on a small scale, the run-off from hard ground during heavy rains may be caught in lined pits; on a larger scale small dams are constructed to retain water flowing in gulleys and valleys (see 2.14 below).

2.11 Once designs appropriate to local conditions are available, collection systems can be constructed/installed at relatively low cost by communities themselves with the help of local craftsmen.

### Surface water

2.12 Where no other sources are readily available, surface waters can be contained, collected and used after some form of filtration, see R7,2.5.

2.13 Large scale treatment is generally feasible only in major urban contexts: the installations are costly and require very close and continuous technical supervision to ensure correct, reliable functioning.

### Water retention systems

2.14 Small dams and "hafirs" to retain surface water flowing in streams can be built by communities which possess the necessary skills (e.g. where there is a tradition of this kind of construction). In some cases, heavy earthmoving machinery will be required. The water must be improved before domestic use - R7,2.6. (UNICEF experience in Sudan.) (\*\*)

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(\*) In Indonesia, roof catchments are drained into locally constructed ferro-cement cisterns of nine cubic metres or larger. In Thailand, villagers build ferro-cement rainwater jars with sets of reusable moulds which are available from community health workers, including master moulds for casting additional sets. These jars have become extremely popular, require less than US\$ 10 for materials for a one-cubic-metre jar, and have become a basis for a growing cottage industry with profits going to village health committees.

(\*\*) The construction of such dams may entail risks of environmental damage by promoting proliferation of cattle with ensuing risk of over-grazing. The possibility of such risks - and thus hidden costs - has to be carefully considered at the planning stage.

- 2.15 "Sub-surface" and "sand dams" are also proving to be extremely useful for collecting and storing water, e.g. in Brazil and India. With these, very little water is lost through evaporation, and there is a natural purification of the water as it filters through the ground.
- 2.16 Sub-surface dams trap groundwater where it flows close to the surface in valleys or dried-up river beds. The water is accessed by wells - preferably combined with infiltration galleries - constructed upstream of the dam. "Sand dams", based on the same principle, store water which is then drawn off from the exposed wall of the "dam". Some expertise is needed, together with much labour. Costs vary depending on local conditions and design.

#### Levels of technology

- 2.17 Many existing, traditional community technologies, which have been shown to be both technically feasible and culturally acceptable, are still useful today. They include the use of bamboo for pipes and pumps, clay water storage vessels, and utilization of animal or wind power. They may, however, be difficult to use and can be time-consuming to maintain. In the long run they can be more expensive and less safe to operate than more modern systems.
- 2.18 High or advanced technologies have their own drawbacks. They usually come from more developed countries where costs are high. They tend to emphasize systems which minimize labour requirements. This is appropriate for higher-income countries, where labor is expensive, but not for lower-income countries which suffer from under-employment.
- 2.19 High technology drains hard currency while increasing dependence on distant sources of spare parts, fuel and expertise. It often entails long delays in both delivery and repair. At the local level, high technology can worsen the socio-economic positions of less advantaged groups when costly technology is available only to wealthier communities or individual households.

### 3.0 WELL INSTALLATIONS

- 3.1 Table 3/4,1 provides a summary of the characteristics of the various, common methods - types of well - for producing water from groundwater sources.

#### Dug wells

- 3.2 Hand-dug wells are often considered to be the cheapest solution - where the water table is not too deep and the ground conditions permit manual digging. However, they are often very expensive in both material (for the lining) and labour. Compressors are also necessary to aerate deep wells during construction, and pumps may be required to de-water the well during the final stages of deepening. When buckets are used to draw the water for consumption, the risks of contamination are high.

- 3.3 Hand dug wells can be "improved" by covering them and installing a handpump. Where the yield has diminished, it is sometimes possible to "revitalize" a large excavated (dug) well - to increase the water flow into it - by drilling small-diameter holes horizontally from the bottom of the well into its sides using a light-weight pneumatic bench drill (a technique widely used in India).

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Notes to Table 3/4,1 (next page)

All the figures are only examples (from 1976): the ranges of cost vary greatly.

- (3) An arbitrary estimate of several factors affecting drilling rates and equipment wear.
- (8) Number of eight-hour shifts needed to sink a 50-metre well.
- (9) Relates to the accessibility of the equipment to the well sites:
- "high" - over 6 tons;
  - "medium" - under 6 tons;
  - "low" - can be transported by porters.
- (10) Training background needed:
- "high" - specialized training and long experience;
  - "medium" - indigenous experience and on-the-job training;
  - "low" - indigenous experience.
- (11) Hypothetical example based on 50-metre-deep wells for potable water in villages with 1,000 inhabitants.
- (12) "High" - trained specialists needed;
- "Medium" - villagers with occasional outside assistance;
  - "Low" - can be managed by villagers.
- (13) The majority are examples from UNICEF-assisted government projects.

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Table 3/4,1

"Groundwater extraction for village water supply - methods and characteristics"

Method	Characteristics	GEOLOGICAL FORMATION			CONSTRUCTION		TECHNOLOGY		COST IN US\$	OPERATION & MAINTENANCE	PROJECT EXAMPLES																					
		Formation stability (2)	Hardness or abrasibility (3)	Particle size (4)	Type (5)	Maximum depth (metres) (8)	Diameter (mm) (7)	No. shafts per 50 m (6)				Equipment weight (9)	Sophistication (10)	Per capita for 50-m well (11)	Complexity (12)																	
I EXCAVATION	Manual: vertical	Unconsolidated	(Low)	Fine to gravel	Dug wells	80	> 1000	Low	Low	5	Low	Vietnam: shallow wells																				
													Manual: horizontal	Unconsolidated	(Low)	Fine to gravel	Ghanate kilometers	> 800	Low	Low	(10)	Iran: gravel outwash from mountain slopes										
																							Mechanical: vertical	Unconsolidated to consol.	All	Dug wells	80	> 1500	Medium	Medium	15	Sahel: deep wells
II DRILLING	Wellpoint (driven)	Unconsolidated	Low	Fine	Tubewells	40	35-50	Low	Low	1	Low	Bangladesh: Ganges delta																				
													Sludging	Unconsolidated	All	Medium to high	"Open" and screen wells	200	150-800	High	Medium	10	Medium to high	Afghanistan: valley fills								
Jetting	Consolidated to unconsolidated	High (all)	All	Exploration only	200	100-200	Medium	Medium	5	Medium	India: "hard rock" areas																					
												Percussion	Cable tool	All	All	> 300	40-150	5	Medium	High	20	(Medium)	Ethiopia: hydrogeological fill sampling									
Auger	Rotary (fullbit)	Low to medium	All except hard gravel	"Open" and screen wells	> 300	> 150	High	Medium to high	5	Medium to high	Sudan: Sudd swamp area																					
												Bucket	Auger	Low	Fine to medium	Large diameter wells	100	100-150	Medium	Medium	2	Medium	Upper Volta: weathered soil pockets									
Combination (H to L)	Consolidated to unconsol.	All	All	"Open" and screen wells	> 300	> 150	Medium to high	Medium to high	10	Medium to high	Bolivia: boulders above bedrock																					

(Source: "Drinking water for every village (choosing appropriate technologies)", M. Beyer, Assignment Children, No. 34, UNICEF, 1976)

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### Tubewells/Borewells

- 3.4 Recent technical innovations have also reduced the cost of mechanical drilling which may now be affordable for many project areas. For example, high-speed pneumatic and hydraulic rigs permit drilling in hard rock at twenty to a hundred times the rates of older methods (such as cable-tool drilling). Lightweight rigs are now available which can be used in areas where road conditions exclude heavier equipment: they are also much cheaper to buy and operate than the traditional (expensive) truck-mounted rigs.
- 3.5 In certain areas, especially river deltas, simple drilling techniques such as sludging or jetting can be used with substantial local participation (labour), see R7, sub-section 4.0.
- 3.6 Other developments which have lowered the cost of tubewell and handpump installations, and reduced the problems of breakdowns, include:
- Low-cost, pre-packed gravel filter screens which reduce problems of wells clogging and can be easily produced in developing countries: see Figure R7/j (in Reference Note R7).
  - Improved handpump designs such as India's "Mark II" and, in Bangladesh, the "New No. 6" and more recently the "TARA", which are robust and have a minimum of moving parts.
  - "Universal spanners" with which all the operations necessary for the installation and repair of a particular type of handpump can be undertaken.
- 3.7 These developments - with many of which UNICEF has been closely associated - have considerably simplified both preventive maintenance and repairs, and significantly reduced earlier problems of operation and maintenance in a number of countries.
- 3.8 Even for deep borewells in which "casings" must be inserted to reinforce the walls and encase the deep-set pump components, cost and logistical problems have been reduced by the use of PVC (cheaper and lighter than the steel previously used) which has also, importantly, eliminated corrosion problems.
- 3.9 All newly sunk tubewells must be properly "developed" and test-pumped to optimize the water flow and ascertain the potential water yield (hence any need to limit production pumping later on).
- 3.10 To protect and improve the sanitary conditions around any water point, a proper platform/apron and system to drain away excess water must be provided. These are normally constructed in concrete by local masons with the help of the communities. When planning such installations provision should, wherever possible, be made for laundry and bathing (with necessary privacy). Facilities for watering animals and micro-irrigation may also be incorporated.

#### 4.0 PUMPS, STORAGE AND DISTRIBUTION SYSTEMS

4.1 The safest - and in the case of small-diameter wells the only - means to lift water, is to use a pump. (\*) The choice is between manually operated handpumps, devices using animal power, and motorized pumps (either electric or diesel-powered):

- Handpumps are the most common and also in most cases the only feasible (affordable) water lift for community needs. Various types are available, see R7. sub-section 6. Depending on the depth (maximum 50 metres) and design, handpumps can deliver between 600 and 1,500 litres per hour during constant use. The total number of people depending on any one pump should, ideally, not exceed 150, while at 40 l/person requires six hours of pumping at 1,000 l/hour. Many countries have to start with a smaller number of pumps; 500 people are the maximum that one pump can serve (20 l/person = 10,000 litres = 10 hours of pumping). In areas of high water tables and easy construction of boreholes, better-off families may acquire their own well and handpump, and their neighbours use it. Distance of the handpump is important, as well as the number of people using it. In the Teknaf area, Bangladesh, the incidence of diarrhoea doubled between a distance of less than 25 metres and 151 metres and over. (\*\*)

Electric pumps are reliable, easy to operate and require little maintenance. Where villages are electrified - connected to a national or regional grid/network - the installation of piped systems with an electric pump will usually be appropriate. (Electrification will, however, be a long time in arriving in many parts of Africa.)

- Diesel fuel systems are usually more expensive to operate and maintain than those using electricity from a network. Maintenance frequently poses problems, and fuel supplies are sometimes difficult to assure as well as being expensive. Only in exceptional circumstances should they be considered, and then only the simplest possible technology - a reciprocating pump powered by a single-cylinder diesel engine.

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(\*) The practice of walking down into large open wells to scoop up the water (Yemen, India) is very insanitary. Lowering buckets into dug wells also entails considerable risks of contamination of both the water drawn and the well itself.

(\*\*) ICDDR,B "Final Report of the Water and Sanitation Intervention Study", June 1985, Table 15.



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4.2 The cost of the pump increases rapidly as the depth from which water has to be pumped increases:

Up to 7 metres a suction handpump can be used, e.g. Bangladesh No.6 - \$40 per pump

7-25 metres a "direct action" handpump can be used, e.g. Tara - \$60 per pump

25-51 metres a deep well handpump can be used, e.g. India Mark II - \$250 per pump

Over 51 metres handpumps are usually not recommended and more costly motorized pumps become necessary. Costs vary largely between electric (if electricity is available) and diesel pumps.

4.3 The following example illustrates how important these cost considerations are when planning for a nation-wide programme, or seeking to demonstrate methods and technologies by which national needs might be met. If a total of 15,000 handpumps would be required to provide for the needs of the presently under-served rural population, the cost of the handpumps alone would vary from \$0.6 million to \$12 million depending on the model chosen: (\*)

	Cost per pump	Total for 15,000 pumps
Deep well pumps - "Dempster"	\$800	\$12.0 million
- India Mark II	\$300	\$ 4.5 million
Direct action pump (e.g. TARA)	\$ 60	\$ 0.9 million
Suction pump - Bangladesh no.6	\$ 40	\$ 0.6 million

#### Alternative energy sources

4.4 "Alternative" energy sources - windmills, solar power, etc. - currently require very large, initial capital investments. They do, however, avoid dependence on imported energy sources, operating and maintenance costs are very low and, in particular circumstances, the use of such technologies can be justified.

4.5 Windmills have been provided to projects in several countries, but have often fallen into disuse for lack of maintenance. In some cases the wind forces have been found to be insufficiently constant to sustain all-year-round operations as required. With new technological developments, wind forces as low as 4 km/hour (2.5 miles/hour) are sufficient, and costs of installation have been reduced. Costs: US\$ 2,000 - 20,000, depending on size, design and materials. (See R7.6.17.)

(\*) Example taken from Report of a visit to Nicaragua, P.Engebak, WET/NYHQ, June 1986. In most of the region concerned, the water table is at a sufficiently shallow depth to permit the use of suction pumps, although the "Dempster" pump has, until now, been widely used!

- 4.6 Solar power is increasingly being used in many parts of the world, e.g. in the Sahel, since the costs of photovoltaic cell panels has fallen (from \$30/watt in 1970 to \$5/watt in 1985). Costs of complete pump installations vary greatly according to size: one capable of delivering 4,000 litres per hour from an existing well with a water lift of 15 metres, cost (in 1985) approximately US \$ 20,000. (See Figure R7/s.)
- 4.7 Hydraulic rams ("hydrams") - a special pipe assembly with a single moving valve - enables a part of the water in a fast-flowing stream at a low level to be pushed up and delivered at a higher level (using only the force of the original flow). Hydrams can be purchased commercially for between US\$ 500 and 4,000. They have also been manufactured in Nepal from pipes and fittings available on the market in Kathmandu. (See Figure R7/t.)

#### Storage and distribution

- 4.8 Although the ideal of water supply through individual household/yard connections to everybody is far from feasible (see 3.4, paras, 1.6 - 1.7), in many situations some form of communal storage with at least a minimum of associated pipework is necessary.
- 4.9 APPENDIX C at the end of this section indicates some of the types of tanks and pipes which are often appropriate.

#### 5.0 WATER QUALITY CONSIDERATIONS

- 5.1 Much water used in households around the world is contaminated - thus a health risk. The quality - and safety - of water to be used for drinking and domestic purposes needs to be assured by protection and control of the water sources and, where water is contaminated either chemically or biologically, through appropriate "improvement".

#### Protection and control of sources

- 5.2 Water sources are often contaminated by negligence - and children who understandably take delight in swimming in reservoirs and cisterns. Experience shows that attention is necessary to:
- Protect sources by fencing off a large area around them (to keep people and animals away) and informing and educating members of the community concerning the importance of protecting supplies; and
  - Control the quality of construction, especially of linings, head walls and aprons, to reduce risks of pollution seeping into wells.

### Improvement of water quality

5.3 In certain cases the quality of the water at the source remains unacceptable and some form of improvement is necessary. Simple low-cost methods which have proved effective in many communities (given adequate popular understanding and commitment as well as the necessary technical support and supervision) include:

- Disinfection of water in open wells using pot chlorinators or impregnated bricks (Algeria);
- Household sand filters assembled using traditional, local water containers;
- Packed-drum filters (slow sand filters using old oil drums) for small groups of households, health centres and other small institutions.

These systems require the disciplined observance of maintenance schedules, without which they become ineffective or even sources of pollution.

5.4 The boiling of water and chemical treatment (with chlorine-based compounds such as bleaching powder) are the most effective means of ensuring that water is safe for drinking, but can rarely be relied on as household measures.

5.5 Boiling requires considerable fuel, which many households cannot afford (and deforestation through over-collection of firewood is already a problem in many areas), and efforts to persuade people to boil water have often met with only limited success. Treatment of supplies with water purification tablets is not practical. These methods may, however, be used in health centres and other institutions where the resources are available and close supervision can be assured, and chemical disinfection must also be arranged without delay whenever contamination of an existing installation is suspected.

5.6 Sophisticated water treatment plants with a combination of different processes are normally outside the range of UNICEF-supported projects. They are often costly and demand considerable trained personnel to ensure that treatment is effective, and systems reliable. It has often proved to be difficult to assure the proper management and up-keep of treatment facilities.

5.7 APPENDIX B at the end of this section lists the main low-cost technical approaches having a potential for improving the quality (especially the bacteriological quality) of water, and the pre-conditions for realizing that objective.

### Iron and other mineral content

5.8 Iron, while not harmful to the human body, clogs up well installations, pumps, pipes and storage tanks, discolours laundry and gives a distinct

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taste to the water. Its removal is a problem. In small rural systems simple aeration devices can be built from local materials but need frequent cleaning and replacement. Small de-ironing aeration plants are made at reasonable cost in some parts of the world, e.g. Bangladesh, Sri Lanka.

- 5.9 High concentrations of other chemical compounds, e.g. fluorides and manganese salts, can also have certain undesirable effects. Attention should be given to such mineral concentrations in any municipal network with house connections, but this level of refinement is not (yet) possible in other, low-cost efforts to make water available in rural and urban slum areas. If possible such water sources should be avoided, as people often refuse to use them.

#### Corrosion control

- 5.10 Corrosion and other chemical damage, notably incrustations of calcium, iron or other deposits, can render any water installation - pumps, pipes and fittings - inoperable within short time. The use of plastic instead of metal parts greatly reduces these problems. Stainless steel or plastic-coated metal well screens have similar advantages but are more costly.

#### 6.0 IMPLICATIONS FOR PROGRAMME PLANNING

- 6.1 The status - yield potential, and chemical and bacteriological quality - of available water resources must be determined before projects are planned in detail, and must be continuously monitored during use.
- 6.2 All programmes which use groundwater resources should be co-ordinated and controlled within the framework of informed government policies and specific national and regional plans for groundwater and overall water resources management. Whenever drilling is to be undertaken:
- The best possible survey information must be obtained in advance; and
  - Proper drill logs should be kept for future reference (this may require (re)organizing systems for recording and storing this information).
- 6.3 Assistance may be required to establish/reinforce institutions to effectively monitor and regulate water and sanitation operations, to promote technical and organizational innovations, etc. Up-to-date information should always be available to programme personnel on technical developments and experiences both from within the country and elsewhere in order to benefit from the knowledge, ideas and experience which is rapidly accumulating. (\*)

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(\*) See next page.

- 6.4 Technologies and system designs must be selected (jointly by the community and the programme technicians, see section 3/3) on the basis of the nature and location of available sources, the quantity of water required, the number and density of the population to be served, and the resources able to be mobilized to pay for the installation, or at least its operation and maintenance. This includes, in particular, the amount the community is willing and able to invest in the construction, and/or obtain as a loan which it will repay, and to pay for the water used.
- 6.5 In view of the enormous number of people who do not presently have access to adequate supplies, it is necessary to maximize the overall benefit obtained from the funds which can be invested. In general, the amount of external funds (i.e. funds originating from outside the community itself) required for any particular project should therefore be kept to a reasonable minimum. See also 3/3, sub-section 3.0.
- 6.6 Planned levels of provision must be realistic in the context of the resources - both water and financial - available. Existing national codes and standards may need to be reviewed to assess how relevant they are for the areas concerned. (\*\*)
- 6.7 Equipment and supplies (especially for rural installations) must be carefully selected taking account of and balancing the following considerations:
- Low-cost: to permit maximum service coverage with limited resources;
  - Cost-effectiveness: considering reliability, durability, operating and maintenance costs as well as the purchase cost (what is cheapest to buy is often not the lowest cost overall). (\*\*\*)

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(\*) (From previous page) Supply Division and the team of water and sanitation specialists ("WET") in the Programme Division seek to help field workers remain abreast of technical and human developments and resources. Through them, UNICEF is linked to a network of information sources such as The International Reference Centre for Water and Sanitation in The Hague, exchanging with them documentation and other information on supplies, technologies and approaches. Journals and newsletters also provide up-to-date information on current developments.

(\*\*) The codes and standards developed for urban areas, may be inappropriate elsewhere, requiring, for example, more water than can in fact be produced or easily disposed of safely in rural areas.

(\*\*\*) Whenever possible, seek equipment which has already been extensively tested under field conditions, through efforts such as those of the UNDP/World Bank Global Handpump and Development Project.

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- User needs: items should be safe and easy to use (especially by women and children), able to be adapted to various local circumstances, maintained and repaired at community level;
- Time-saving: drilling equipment with high operating speeds to permit greater coverage within a given period of time with a restricted number of units (and technical teams). (\*)
- Long-term self-reliance: minimum dependence, in the long term, on imported spare parts and replacement items.

6.8 Chemical analysis should be made of the available water resources before deciding on the specification of pumps and other materials.

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(\*) An example is the use of "down-the hole" drilling rigs in hard rock areas instead of cable tool rigs.

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## APPENDIX A

TECHNICAL APPROACHES TO WATER SUPPLY IMPROVEMENTS HAVING A  
POTENTIAL FOR INCREASING THE PER CAPITA DAILY CONSUMPTION  
AND PRE-CONDITIONS FOR REALIZING THAT OBJECTIVE

(Reproduced from "Low cost water supply and sanitation technologies: community participation and health and socio-economic outcomes - an analysis of interrelationships", R. Isely, issued by WET/UNICEF, New York, 1985.)

<u>Technical approach</u>	<u>Pre-conditions for an increased quantity of water per capita per day</u>
Open hand-dug well e.g. with bucket and pulley	<ul style="list-style-type: none"> <li><input type="checkbox"/> Well of sufficient capacity and flow to produce the equivalent of 20 liters/capita/day.</li> <li><input type="checkbox"/> At least one well for every 250 persons.</li> <li><input type="checkbox"/> Well within 3-4 minutes walk from homes of users</li> <li><input type="checkbox"/> Well of sufficient depth to assure reliable supply during the dry season.</li> <li><input type="checkbox"/> Continued maintenance of bucket and pulley.</li> <li><input type="checkbox"/> Establishment of washing slabs at well-site to avoid necessity of carrying water for this purpose to the household.</li> </ul>
Handpump in dug well or tubewell	<p>As above, plus the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Continuous maintenance of handpump (in place of the bucket and pulley).</li> <li><input type="checkbox"/> Availability of spare parts.</li> <li><input type="checkbox"/> Local financing of spare parts.</li> <li><input type="checkbox"/> Locally trained pump caretakers.</li> <li><input type="checkbox"/> Technical backup by water supply agency.</li> </ul>
Gravity-fed systems	<ul style="list-style-type: none"> <li><input type="checkbox"/> Production at source sufficient to supply at least 20 liters per capita per day to each community served.</li> <li><input type="checkbox"/> No excessive diminution of source in dry season.</li> <li><input type="checkbox"/> Pressure in system sufficient to maintain flow at 20 liters per capita per day even in taps at the end of a branchline.</li> <li><input type="checkbox"/> Reservoirs of sufficient capacity to supply at least 20 liters per capita per day to dependent users even during hours of peak usage.</li> <li><input type="checkbox"/> At least one tap for 50-100 persons.</li> <li><input type="checkbox"/> A tap within 3-4 minutes walk of each users' residence.</li> <li><input type="checkbox"/> Measures taken to avoid wastage of water at the tap through spillage and leakage.</li> <li><input type="checkbox"/> Establishment of washing slabs at tap sites to avoid the necessity of carrying water for this purpose to the home.</li> </ul>

## **MODULE 3: LOW COST OPTIONS**

*SESSION 9: WHAT ARE THE TECHNICAL OPTIONS FOR WATER SUPPLY?*

*SESSION 10: MAINTENANCE OF WATER SUPPLY SYSTEMS*

*SESSION 11: LOW COST OPTIONS FOR EXCRETA DISPOSAL*



## MODULE 3: LOW COST OPTIONS

### SESSION 10: MAINTENANCE OF WATER SUPPLY SYSTEMS

#### OBJECTIVES

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By the end of the session, you should be able to:

- \* identify major problems of maintenance and propose possible solutions;
- \* identify the factors to be considered in the development of a successful maintenance programme;
- \* list at least five to six strategies that could be included in the development of a good maintenance programme.

#### Session Flow & Methodology

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- \* Work in Pairs: Problems of Maintenance and Proposed Solutions
- \* Plenary
- \* Group Work: Factors to consider in Developing a Good Maintenance programme.
- \* Plenary
- \* Case Study: Strategies in Developing a Good Maintenance Programme
- \* Plenary
- \* Summary & Evaluation of Session

## Learning Points

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### Technical Factors

1. All water supply systems require some maintenance and occasional repairs. Some need frequent attention even when there are no problems of misuse. Some of the major problems are:

- regular cleaning and inspection of tanks (used for sedimentation, storage, etc.).
- cleaning of surface and gutters used for rainwater collection.
- periodic lubrication of moving parts and replacement of washers in handpumps.
- inspection and repair of aprons around handpumps, open wells and standpipes.
- inspection and repair of any leaks in pipelines of gravity feed and other piped systems.
- regular maintenance of motorised pumps (where installed).
- inspection and repair of the masonry of spring boxes, the linings and headwalls of open dug wells.

2. The difficulties of maintenance and problems of frequent breakdowns have been multiplied by the selection/use of inappropriate pumps and other materials. Handpumps, in particular, have not always been appropriate for the heavy intense use to which they are subjected as communal, village facilities. Another problem is that pumps have been selected which have sometimes required specialised tools and equipment so that even the smallest maintenance task is beyond the capability of willing community members.

3. Failure to adequately maintain and operate systems appears to result as much from institutional and organisational inadequacies as from a lack of financial and technical resources. The problems can be as simple as a lack of resources such as spare parts or a motor vehicle and interventions from governments have often been misdirected or ill timed.

4. Systems of maintenance and repair which depend upon mechanics going out from a limited number of centres (eg. district level workshops) have often been found to entail:

- high costs - in vehicles, fuel, time and energy.
- systems being out of services for long periods, while waiting for the mechanics.
- reluctance of communities to take any initiatives to protect (and prevent misuse of) installations which are considered to be the responsibility of a distant government.

5. Recognising these problems - and the fact that few authorities will ever be able to pay for the operation, maintenance and repair of systems (other than those in which there are very high rates of cost-recovery), most governments and programmes are now giving priority to systems of village-level operations and maintenance, whereby community members are primarily responsible for the operation and maintenance of installations, especially handpumps.

6. In India and some other countries, three-tier systems have been developed whereby:

- handpump caretakers, selected from among the villagers, are responsible for the general care and routine maintenance of the handpumps in their own villages;
- pump mechanics at sub-district level regularly inspect all installations and make minor repairs as and when necessary;
- teams of more highly trained mechanics based at state/provincial level are called in for major repair and replacement work; they are equipped with all the necessary tools and machinery.

7. In the selection and procurement of pumps there should be the maximum possible standardisation on one or a small number of models which are robust, appropriate to the local situation, simple and on which maintenance can be undertaken by community members with a minimum of tools and training.

8. Training of personnel at all levels should include operation and maintenance. Technicians should be specifically trained in these techniques, and selected community members trained to undertake specific tasks within their capabilities.

#### Community Involvement

9. In some cases, the government pays the local-level pump mechanics and the repair teams, and subsidises the prices of spare parts which are available at the different levels; in other cases the communities have to pay. The caretakers are remunerated by their communities, which also pay for the spare parts, either out

of communal funds (from regular payments by households) or by collecting money, as and when necessary for repairs.

10. In some instances, a maintenance team has been selected, consisting of a man for the technical tasks and a woman for hygiene aspects. In other situations, women have been appointed as pump attendants (or stand-pipe controllers) and trained to undertake basic maintenance. Where systems have involved long pipelines, often buried, women have been encouraged to use the pipeline routes as paths when going about daily tasks; and to report any signs of leakages to the village caretaker.

11. Over reliance on central government bodies for the management of individual on site projects and the ongoing operation and maintenance of systems, should be avoided. Promote the development of capacity of local governments and community of cooperative structures to plan and organise water and sanitation improvement schemes, and, in particular, to assure their operation and maintenance.

#### Institutional Arrangements

12. Institutional arrangements should be developed, appropriate to the local political, administrative and geographical context which facilitate efficient planning, operation and maintenance. Systems of organisation and management should be developed, and personnel be trained in the particular skills required, in order to ensure effective and efficient operations of all bodies concerned, national and local.

13. Thorough analysis of logistic aspects is essential, followed by the inclusion of logistic considerations and needs in the planning of the overall programme. Phasing/scheduling of operation must be realistic logistically (as well as technically, socially etc.) and adequate expertise and resources be allocated.

14. Government commitment should be secured for appropriate strategies of institutional development and human resource development. Management skills must be developed as well as other functional skills.

15. In some cases, the government pays the local-level pump mechanics and the repair teams and subsidises the price of spare parts which are available at the different levels. In other cases the community has to pay. The caretakers are remunerated by their communities which also pay for the spare parts, either out of communal funds (from regular payments by households) or by collecting money as and when necessary.

**References and suggested readings:**

UNICEF Policy and Procedures Manual. Programme Guidelines. Water Supply, Sanitation and Hygiene. Vol. 3. 1988.

Proceedings of the Advisory Committee Meeting of the Operation and Maintenance Working Group. 26 Feb. - 1 March 1991. WHO, Geneva.

**MODULE 3: LOW COST OPTIONS****SESSION 10: MAINTENANCE OF WATER SUPPLY SYSTEMS****READING MATERIAL**

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Extracted from: Black, M. 1990. From Handpumps to Health: The Evolution of Water and Sanitation Programmes in Bangladesh, India and Nigeria. UNICEF.

**The three-tier maintenance system**

The pioneering organization was the Tamil Nadu Water Supply and Drainage Board. In 1976, it began to operate a "three-tier" maintenance system in Tirunelveli and Thanjavur districts, consisting of a mobile repair team based at the district level, responsible for approximately 1,000 pumps; a trained mechanic at block level, responsible for 100 pumps; and a "handpump caretaker" at village level, responsible for one pump only.

**Training the village-level handpump caretaker**

The term "handpump caretaker", coined by UNICEF in India, has subsequently been used in many other rural drinking water supply programmes, with varying connotations ranging from barefoot mechanic to sanitary inspector. In India, the designation was in no way connected with mechanical expertise or competence to mend the pump; nor originally had it much to do with public health. The most important caretaking duties were to report pump breakdowns to the block-level authorities and to keep proper records of the pump's history: dates of repair and breakdown, actions undertaken and by whom.

The caretaker was the link between village pump users and the authorities at block level. Most villages experienced the installation of the handpump as an external, Government-controlled activity and did not perceive themselves as having any control over its workings. They had little idea of who to tell about a breakdown and no confidence that time and money spent visiting some official to lodge a report would be rewarded with success. The invention of the 'caretaker' concept was designed primarily to remedy this perception.

UNICEF responded to the concept by supporting a systematic programme of training for village handpump caretakers, first in Tamil Nadu and subsequently in Andhra Pradesh, Orissa, Karnataka

and other states. At the time of a handpump's installation, local officials from the Block Development Office and the Water Department selected caretakers for each pump. They looked for someone literate, who lived near the pump, was a regular user and was prepared to undertake the duties voluntarily. Young men and women were usually chosen, sometimes teachers or people with a little extra social standing.

The 'handpump caretaker' concept represented a departure in village water supply schemes in two important respects. First, it gave an actual pump user, someone with an in-built motivation, a sense of responsibility for ensuring the pump's smooth operation. This represented the first, however fragile, step towards building a sense of community participation in rural water supplies. Second and as important, it presented the first opportunity to bring women actively into the programme.

### **Women as caretakers**

The recruitment of increasing numbers of women, initially in Tamil Nadu and later elsewhere, marked an important evolution in the role of the handpump caretaker. Whereas male caretakers normally see themselves as village associates of the block mechanic, women naturally adopt a public health role that associates them with village-level primary health care and community development initiatives. In states such as Andhra Pradesh, where the recruitment of women as handpump caretakers is specially emphasized, the role they are expected to fulfill has virtually no mechanical content. Their training focusses on health education and on the protection of children from infectious diseases, particularly diarrhoea and others associated with water use and poor sanitation.

In 1979, at the National Deepwell Conference in Madurai, CPHEEO was encouraged to recommend that the 'three tier', maintenance system developed in Tamil Nadu be adopted countrywide. The recommendation went through and with UNICEF assistance, the training of district teams and block mechanics began. By 1980, 125 mobile maintenance teams were operating in the field.

### **Limitations and successes of the three-tier approach**

The training of handpump caretakers, however, did not proceed efficiently everywhere. Some PHE Departments were not convinced that the third of the 'tiers' - the community tier - was necessary. Even in some states which showed enthusiasm, the numbers of caretakers trained amounted to only one-tenth of the number of handpumps installed.

Part of the reason is perhaps the problem common to all programmes that use community volunteers to backstop the delivery of basic services: a high drop-out rate among the volunteers discourages officials from making the effort required to run the

training courses and supervisory networks. Caretakers, like other community-based workers, can feel isolated; without institutional backing, they may become discouraged and cease to function. If the block mechanic does not appear at their command, their credibility sinks in their own and the community's estimation. In the Indian programmes, by the early 1980s, many of the caretakers in Tamil Nadu had fallen by the wayside.

In 1984, a major survey on the use and condition of handpumps in six states was commissioned by UNICEF. The overall picture was encouraging: the proportion of handpumps that were operational at any time was 80 per cent, the exact reverse of the picture of 10 years previously. However, it was not clear that this was connected with the establishment of reporting, maintenance and repair systems. Delays in reporting pump breakdowns were still common, with some remaining out of action for months. The high proportion of functioning pumps seemed to be more closely connected to the sturdiness of the India Mark II, whose breakdown rate remained minimal in the first few years of its life. The highest rate of broken pumps was in Tamil Nadu, the birthplace of the three-tier system; this appeared to be because Tamil Nadu had been in the vanguard of the India Mark II handpump adoption and its pumps were among the oldest.

However suited the three-tier maintenance system is to certain states, it is not necessarily suited to every political, geographical and environmental situation. In the late 1970s, anxious that a structured maintenance system of some kind be introduced in all states, UNICEF had perhaps somewhat hastily cited the three-tier system of Tamil Nadu as a universal pump breakdown panacea and the CPHEEO had given its official blessing. What ought to have been recommended possibly was the principle of training and equipping several maintenance tiers, each to be responsible for tasks of increasing technical complication and the initiation of a debate in every state as to how best to apportion these responsibilities and build up human and technical capacity.

Somehow, the principle of village-level reporting and referral up the line to the appropriate level of technical expertise became submerged in an unexpected controversy that developed between various protagonists about the desirable number of maintenance 'tiers'. How many tiers there should be and at which tier the onus of responsibility lies, has subsequently been recognized as a matter for each state PHE Department to work out according to the logistical, bureaucratic and technical environment in which it is functioning.

#### 1) Experimenting with "one tier"

In 1981, a different approach to handpump maintenance was developed at Tilonia in Rajasthan by a pioneering NGO, initially with assistance from UNICEF. This 'one-tier' system was based on



the idea of training local school-leavers as village pump attendants under the Government-sponsored TRYSEM (Training Rural Youth for Self-Employment) programme. The basic concept was that the task of handpump maintenance should be brought within the socio-economic life of the village. If local mistris were adequately trained at local technology institutes, equipped with the proper tools and given access to spare parts, the idea was that they could carry out the majority of handpump repairs without calling in the block mechanic or the district repair team.

As a result, the Rajasthan Water Board adopted the mistri maintenance system throughout the state. Although the system was attractive from any points of view, its designation as a 'one-tier' approach was misleading. The attendant system did not eliminate any official tier of the Government service, though it did reduce the degree of their involvement. The mistri was both a substitute and an addition to the standard system; it turned out that he could not operate independently of the Government PHE authorities since almost the entire context of his 'self-employment' - tools, equipment, spares, remuneration, accountability - was the Government RWS Programme.

As in all situations where accountability is unclear or polarized, the relationship between the mistri, the panchayat and the officials responsible for water supplies has had a troubled history. The mistri was often caught between his obligations to two masters, struggling to keep his beat of handpumps repaired without back-up from either. Over-dependent of the panchayat for his job, stipend and spares, he was criticized for failure to carry out his duties effectively. The authorities were sometimes reluctant to give his expertise the benefit of the doubt or to respect the fact that many of his problems derived from systemic weaknesses outside his control.

## 2) Designing a more serviceable handpump: The VLOM India Mark II

It was a misfortune of timing that the village mistri and the village panchayat were brought back into the maintenance picture at a moment when the handpump was not technologically mature. The original India Mark II was not designed for village maintenance. As a result, the tools were very expensive for the mistri to purchase, the possibility of error or accident relatively high and the physical strength needed for removing the below-ground pump parts too great for him to manage his beat of 30 or so pumps on his own.

In the early 1980s, a new design criterion was established for handpump design, not only for the India Mark II but for many pumps designed for use in rural drinking water schemes: the VLOM criterion. Simplicity of maintenance and repair began to be seen as the key to designing a pump which made possible village-level operation and maintenance of rural drinking water supplies.

In 1982, efforts began to redesign the India Mark II into a handpump that could be repaired without expensive tools and lifting gear. Any design change in a standardized item of equipment in such widespread use as the India Mark II - 150,000 a year are produced for the home market alone - has to be considered carefully. But change has been forced upon the Mark II because it was not possible to advocate village-level pump maintenance unless the pump met the necessary technological criteria. The change in the new VLOM version was that the below-ground mechanism positioned the cylinder into a wider rising main, so that the piston can be extracted through the rising main rather than with it. Consequently the time and muscle power needed to maintain the sub-surface components of the pump were substantially reduced.

The VLOM India Mark II and the new India Mark III are now in use in various demonstration areas, including Ranga Reddy District of Andhra Pradesh and five or six others in different parts of the country. The federal RWS authorities are encouraging its adoption in as many states as possible. There can be no doubt that the reduced manpower, the speed and the simplicity with which a cylinder washer can be replaced and other repairs undertaken, will sell the new version of the pump as effortlessly as its sturdiness sold the old. The VLOM Mark II will usher in a new era, in which the users in the village will be able to play a maintenance role. In some areas, the handpump caretaker will assume the role of the barefoot mechanic; in other, the mistri will logically take over.

### 3) Privatizing Maintenance

The maintenance system attempted in Rajashtan was the first visionary step towards a transfer of handpump maintenance into the private sector. This evolution ought to be encouraged and must occur at some point. If it does not happen before, it will surely come when India Mark II pumps, many of a certain age, are so thick upon the rural ground that public sector maintenance becomes self-evidently economically impracticable. Already, over one million are installed.

With the VLOM version of the India Mark II in place, there is a need to design a workable relationship for future handpump maintenance between the public and private sectors, both for labour and spare parts. There is approximately a five-year breathing space before the rate of handpump breakdown reaches the crisis point, which can be anticipated when many of the pumps installed in the early 1980s begin to wear out. It is during these five years that the authorities need to take another visionary step. Full community involvement in handpump maintenance, using caretaker, mistri, or both, needs to be established.



3. List what you consider are the five most successful strategies in developing a good maintenance programme. List in order of importance.

## **MODULE 3: LOW COST OPTIONS**

### **SESSION 11: EXCRETA DISPOSAL**

#### **OBJECTIVES**

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By the end of the session you should be able to:

- \* recognise the major technical problems presently met in different countries and propose possible solutions;
- \* identify different technical options that can be selected for rural and urban areas;
- \* realise the importance of monitoring functioning and utilisation of excreta disposal facilities.

#### **Session Flow & Methodology**

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- \* Slide Presentation
- \* Exercise: Selection of Technical Options and Solutions to Major Technical Problems
- \* Plenary
- \* Overview by Facilitator
- \* Summary and Evaluation of Session

## Learning Points

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1. Only excreta disposal facilities will be dealt with in this module since sanitation in the broad context of the word is a complex issue that will be dealt with separately within Module seven. Technical factors should be carefully considered in the development of suitable latrine options. A considerable number of modified designs are now available for pit latrines and composting pits. These designs are able to cope with most adverse circumstances (for instance, rocky ground or high ground water tables except for high population densities).
2. The problem with excreta disposal is to encourage the population to use and maintain the facilities. In some countries there have been programmes to provide pit latrines in rural areas for at least seventy years. In general these have been unsuccessful, not because of a problem of construction but because having been built, the latrines were either not used or not maintained<sup>1</sup>.
3. The dry pit latrine is the lowest cost option, but it is also the least satisfactory because odours and flies discourage use, and the darkness, desirable to discourage flies, may frighten children. It is only recommended where any other solution is not feasible.
4. The Ventilated Improved Pit latrine has a vent pipe and does not smell and attract flies and this can have the immense advantage of location conveniently close to the house; it is much more likely to be used than the simple dry-pit latrine. The vent pipe will double the cost compared to the dry pit, which however is still low. The investment is worthwhile wherever it is possible, because the latrine is more likely to be properly used, if well constructed. A challenge is to produce vents from local materials to reduce cost and dependence on external materials.
5. The double compartment VIP is a superior version, a permanent installation particularly suitable where the dry odourless residue can be used or sold as fertiliser.
6. The single pit water seal or pour-flush latrine is where the water seal isolates the excreta in an enclosed pit or tank directly underneath. Normally it requires two litres of water per flush, (5l/capita/day) though designs can be made to use only one litre. The cost is more than the dry pit but usually less than the VIP latrine. This option is preferable in communities that have sufficient water and use water for anal cleansing.
7. The double pit water seal latrine is ideal where household water supply is sufficient. A water seal is used similar to the single pit water seal latrine using one to two litres of water. Two pits are constructed which are indirect. Each pit is

individually in use for a period of 1-2 years and then the contents for one can be emptied while the other pit is in use after one year.

8. Whenever the groundwater table/level is high, it will be difficult to promote traditional pit latrines. Systems will be required in which the excreta is properly contained and thus prevented from polluting the ground water flows. This may involve septic tank construction leading to a soakaway, or small bore sewers in densely populated areas (more than 200 people/hectare) which becomes cheaper for high population densities.

9. Social and cultural factors must be taken into consideration when designing suitable systems for sanitation. In some countries there are certain cultural taboos regarding excreta and these may restrict any possibility for promoting the use/recycling of human waste through composting or in some other way. Therefore technical options should be selected based upon present practices and preferences. This will be discussed in greater detail in Module Seven on sanitation.

10. Few studies have been undertaken which evaluate the performance and utilisation of excreta disposal systems. A cheap, simple and quick method for evaluation both water and sanitation projects was developed by WHO called the Minimum Evaluation Procedures (1984).

11. It is possible that the reason for latrines malfunctioning is that an unsuitable technical option was initially selected for an area which did have the necessary resources for maintenance. Major problems that have been recorded are:

- inappropriate choice of technology;
- poor operation and maintenance;
- inadequate training of local workmen in construction;
- inadequate explanation to the villagers of the type of latrine to be constructed and reasons for selection.

12. Even after the construction of latrines which are functioning properly, there may still be problems of non-utilisation. As stated in the Minimum Evaluation Procedures, it is very difficult to obtain correct information about who used excreta disposal facilities.

13. Non-utilisation may be due to many factors. Wright (1978) discovered that in, Ghana, people had to walk over 50 metres to the available communal latrine. Communal facilities can be more of a deterrent to improved sanitation rather than an advantage. Public facilities tend not be maintained unless at a school or health post where someone is made responsible. In some cases, privatised or

public sector management with fees collected for usage is a means of keeping latrines clean and attractive enough to stimulate their use.

14. Distribution centres for latrine components have been successful in some countries e.g. Bangladesh, India. The centres employ masons who produce latrine pans, water and concrete ring linings which can then be purchased by the public.



**References and suggested readings:**

UNICEF Policy and Procedures Manual. Programme Guidelines. Water Supply, Sanitation and Hygiene. Vol. 3. 1988.

Minimum Evaluation Procedures (MEP) for Water Supply and Sanitation Projects. WHO. 1983.

Wright, A. Availability of Latrines in a Developing Country. In: Sanitation in Developing Countries. (A. Pacey Ed.) John Wiley and Sons. pp 4-10.

**MODULE 3: LOW COST OPTIONS**

**SESSION 11: EXCRETA DISPOSAL**

**EXERCISE: MAJOR TECHNICAL PROBLEMS**

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1. What technical options have been selected within your countries of assignment? Give three examples. Why were these options selected?

2. In each of your groups, list examples of the three major technical problems that you have encountered with excreta disposal options. List how these problems were overcome (if they were).

Problems

Solutions

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3. Are there any urban/peri-urban sanitation projects being undertaken by UNICEF at present? If so, give 2-3 examples and the technical details of each. Have they been successful? State your reasons.

## **MODULE 4: COMMUNITY MANAGEMENT**

*SESSION 12: ASSESSING LEVELS OF COMMUNITY INVOLVEMENT*

*SESSION 13: HOW TO IMPROVE COMMUNITY INVOLVEMENT*

*SESSION 14: FROM INVOLVEMENT TO MANAGEMENT: CAN THE GAP BE BRIDGED?*

*SESSION 15: TRAINING FOR IMPROVED LOCAL MANAGEMENT*

## MODULE 4: COMMUNITY MANAGEMENT

### SESSION 12: ASSESSING LEVELS OF COMMUNITY INVOLVEMENT

#### OBJECTIVES

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By the end of the session, you will be able to:

- \* define what a community is and list at least three criteria for choosing which communities to work with;
- \* list and explain at least five reasons supporting community participation;
- \* define the different types of community involvement and decide what level of community involvement exists within your own programme.

#### Session Flow and Methodology

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- \* Exercise: Definition of a Community and which Communities to work with
- \* Plenary
- \* Overview: Reasons to Support Community Participation; Present levels of Community Involvement
- \* Plenary
- \* Exercise: Community Participation: The Mythology for the Decade?
- \* Plenary
- \* Summary and Evaluation of Session

## LEARNING POINTS

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1. Community participation as a concept arose in the mid sixties. It was not adopted by the IDWSSD until the mid eighties after it became apparent that governments and donors could no longer afford totally decentralised operation and maintenance systems for water and sanitation. Planners began to realise that in order to share the responsibilities for maintenance, beneficiaries or users would have to be involved in some way in the on-going maintenance of their own community systems.

2. It is now realised that for the community to take responsibility for maintenance, it must also be involved in the planning and implementation of the project from the initial stages. It must develop a sense of 'ownership' of the system and understand that if a system is to be maintained, this is the responsibility of the community.

3. The community should be perceived as informed consumer/client/managers capable of making choices as to the type of service they have the capacity to service rather than passive receivers. The community must also acquire management and organisation skills with leadership capable of defining tasks and managing this. Many communities may already have a level of management and organisational skills and this should be recognised.

4. The central agency responsible for water and sanitation must change from benefactor that makes all the decisions to that of facilitator enabling the community to make their own decisions. The agency must learn to be responsive to consumer client demands.

5. The role of self-help activities in the construction phase is an ambiguous one, which calls for further analysis. Some projects mention voluntary labour and contributions in cash or kind as a cost saving element which also increases local pride and commitment, offers training possibilities and stimulates proper use and maintenance. However some projects maintain that private contractors are more efficient as they avoid delays, increased costs, over-burdening the community and poor construction leading to frequent breakdowns.

6. A classification of different types of community participation was developed by Whyte (1981). The classification which follows is described in terms of advantages and disadvantages, the circumstances under which it is possible and desirable to try to bring it into operations, etc.

1. Consultation
2. A financial contribution by the community
3. Self-help projects by groups of beneficiaries
4. Self-help projects involving the whole community
5. Community specialised workers

6. Mass action
7. Collective commitment to behaviour change
8. Endogenous development
9. Autonomous community projects
10. Approaches to self-sufficiency

#### 6.1 Consultation

The basic means of giving the community some voice, involving it in decision-making. Main rationale: to ensure that the project or programme introduced by the outside agency is adapted to meet the needs of community members, and to avoid difficulties in implementation. It may involve:

- 6.1.1 Consultation with community representatives or leaders only. It may be considered that such consultation does not amount to real community participation unless the decisions formally made by representatives or leaders are the result of wider consultation and consensus within the community, and unless the community is involved in decision-making on significant aspects of the project.
- 6.1.2 Consultation with all sections of the community. This involved ascertaining the view of those sections of the community which may normally be excluded from decision-making (women, certain ethnic minorities or low caste groups, the poorer sections), whose interests may not be genuinely represented in the existing processes of decision-making in the community. The rationale: to ensure that the project meets their needs also. This is not always easy, and there are differing views on the emphasis which can or need be given to it.

#### 6.2 A financial Contribution by the Community

Cash collection made by and within the community, generally prior to or at the time of implementation of a project, usually as a contribution to capital construction. Excluded, as not really constituting community participation, are cases which amount to a payment by individual families for service, even when it is an advance payment.

#### 6.3 Self-help Projects by Groups of Beneficiaries

In these projects a specific group of local inhabitants contribute their labour (and perhaps other inputs) to its implementation, while there is also the assistance of an external agency. Those who contribute will be recompensed by reduced fees for the services they receive, while non-members pay more.

#### 6.4 Self-help Projects Involving the Whole Community

Projects in which every family in the community is expected to make a contribution (usually in labour), while there is also an input from an external agency. Food-for-work projects may be included here, though the element of community participation may be considered slight if it consists only of labour which is paid in cash or kind.

#### 6.5 Community Specialised Workers

The training and appointment of one or a few community members on a voluntary basis to perform specialised tasks (e.g. as community health worker, or operator of a community water supply system). The training and technical supervision are carried out by an external agency, but some form of community authority is usually also exercised over the specialised workers.

#### 6.6 Mass Action

Collective work in the absence of a major input from an external agency. Often such actions are directed at environmental improvements (e.g. to drain waste water).

#### 6.7 Collective Commitment to Behaviour Change

Cases where a community makes a collective decision to change customs or personal habits, and collective social pressure is exercised for the realisation of such changes. Examples range from penning of domestic animals to construction and use of latrines, or to the reduction of excessive expenditures in connection with weddings, funerals, etc. While changes of behaviour may occur in other ways, community participation is involved when an explicit decision is collectively taken.

#### 6.8 Endogenous Development

Cases in which there is an autonomous generation of ideas and movements for the improvement of living conditions within the community as opposed to stimulation by outside agents. The community may, however, have recourse to external agencies to help with implementation, or indeed press for such help. On the other hand, where this is simply pressure for services to be provided, it hardly qualifies for the term "community participation", though in a wider sense this is an example of political participation.



6.9 Autonomous Community Projects

The ambiguous "self-reliance" is often understood as: projects where any external resources are paid for by the community with funds raised internally, including the hiring of outside expertise or professional staff. Such projects are therefore under community control.

6.10 Approaches to Self-Sufficiency

Projects in which the objective is to satisfy local needs as far as possible by using local materials and manpower directly, not by purchasing goods and services from outside. "Self-reliance" is also sometimes understood in these terms.

**References and suggested readings:**

Whyte, A. 1981. Community Participation in Water and Sanitation, Concepts, Strategies and Methods. Technical Paper No. 7. IRC, The Hague, The Netherlands.

Van Wijk-Sjibesma, C. 1981. Participation and Education in Community Water Supply and Sanitation Programmes. Technical Paper Series No. 12. IRC, The Hague, The Netherlands.

Glennie, C. 1983. Village Water Supply in the Decade. Lessons from Field Experience. John Wiley & Sons.

Whyte, A. 1986. Guidelines for Planning Community Participation Activities in Water Supply and Sanitation Projects. WHO, Geneva. Offset Publication No. 96.

**MODULE 4: COMMUNITY MANAGEMENT****SESSION 12 ASSESSING LEVELS OF COMMUNITY INVOLVEMENT****READING MATERIAL**

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Extracted from: Feachem, R.G. 1980. Community Participation in Appropriate Water Supply and Sanitation Technologies: The mythology for the Decade. Proc. R. Soc. Lond. B209, 19-28.

**3. COMMUNITY PARTICIPATION****3. 1. A Fashionable Approach**

Community participation is a 'buzz phrase'. Its virtues are extolled in numerous conferences and seminars. A continuing stream of documents, the flow of which increases as the Decade approaches, plead, state, exhort or demand that community participation must be included in all water supply and sanitation projects. But community participation is a very vague and open concept and is used to mean very different things. It often subsumes other substantial concepts and approaches (such as 'self-help', 'self-reliance', 'user-choice', 'community involvement' and 'participatory planning and development') which are themselves ill-defined. In connection with community participation, people will often talk of 'felt needs', 'local perceptions', 'bottom-up planning', 'motivation', 'latent development potential', 'catalytic development inputs', 'integrated development at the village level', etc. Yet these concepts are each highly complex and diffuse and their meaning in any particular context is often obscure.

There is a chasm between what is being written about community participation, mainly by people who have never actually done what it is that they are advocating, and what is seen to be necessary, practical and affordable by those charged with managing water supply and sanitation programmes in the developing countries. The manager of a water or sanitation programme may scratch her (his) head in bewilderment when faced by representatives of international or bilateral agencies who are strenuously promoting community participation. This will not, in general, be because the manager

is a technocrat lacking in sensitivity to delicate social issues, but because the manager will rightly doubt the relevance and applicability of the approach being advocated. Of course, the more wily of the managers will be outdoing the agency representative in the use of the catchy phrases and will thereby hope to achieve greater international funding for her (his) programme. This may also lead to the country in question being cited at international meetings as a paragon of socially aware development. Such references will often be made by people who have never actually visited villages in the country concerned, except in the role of amateur 'Land-rover anthropologist'.

### *3.2 Issues in Community Participation*

Before turning to the specific virtues and problems of community participation, I shall discuss five general and overriding problems that receive insufficient attention in the recent literature (see bibliography), practicability, relevance, cost, standardization and political context.

#### *3.2.1 Practicability*

In their more complete and elaborate form recommendations on community participation involve a level of intense and sustained interaction between government and community that is totally beyond the means of most governments to implement. The old community development concept, that a small governmental input into a rural community will facilitate or catalyse a chain of self-sustaining development activities on the part of the village, is now generally and properly discredited. It is recognized that there needs to be a precisely designed and sustained relation between government and community, which forms a continuing partnership. Many writers about the nature of this partnership have envisaged it at the individual demonstration project level and have not considered its upgrading into a national programme. At the demonstration project level anything is possible - at a cost - but to multiply the governmental inputs by several thousand to convert to a regional or national programme may be totally impracticable.

This point is particularly illustrated by recommendations about information flow and communications. It is asserted that governments must study and learn about communities and that communities must have the opportunity to question and influence government procedures and plans. These are highly desirable goals, but how are they to be implemented? From

where will the community workers and social scientists come? Who will pay them? How will they obtain transport? How will the water or sanitation programme react to, and incorporate, their findings and recommendations?

For instance, van Wijk-Sijbesma (1979) writes:

'Rogers (1962) categorized the adopters of new products, installations, ideas and behaviour as innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%). Identification of these categories in the community and adaptation of the [water and sanitation] programmes to their situation by involving them in planning, implementation and evaluation may limit any inequity effects the project may have.'

A noble sentiment, but how could such a study be carried out? Some countries have no team of social scientists able to conduct such an exercise; some have such researchers but not within government; even if the capability exists, such studies could only be done in perhaps one or two communities per year and it is hard to imagine what practical use the water or sanitation ministry could make of the findings.

Van Wijk-Sijbesma (1979) provides another example of the risks of taking a demonstration project approach to a national programme:

'The production situation in the community may be such that additional stimuli are necessary before people can optimally profit from the improved circumstances. Therefore, a more detailed study of the general economic conditions, such as sources of income, divisions and size of landholdings, farm implements, labour division etc. may sometimes be necessary (Kebede 1978).'

Such a study may be possible as part of a programme evaluation every 5 years (Cairncross et al. 1980) but surely not in any routine context as a preparation for a construction project.

These are perhaps extreme examples, but the general point to note is that many of the currently fashionable recommendations on community participation require a cadre of staff that do not exist; working for government bureaucracies that are already stretched to the limit; paid by funds that are not available; and engaged in community level activities that it would be immensely difficult, in any country, to incorporate

into the regular, routine functions of a large bureaucracy.

### 3.2.2. Relevance

Turning now to the question of relevance, two aspects have concerned me recently; first, is community participation a complex and inefficient surrogate for sound local government structures, and, secondly, are we ethnocentric in our approach to community participation?

Concerning local government, I wonder whether the elaborate models for community participation would seem so necessary if most developing countries had an efficient system of local government reaching down to the village or community level. Such a system might be an elected hierarchy of councils with appointed officers and the ability to raise certain revenues (as in Britain) or it might be a party system that includes party leaders, officials and workers within every community. Many other systems are of course possible. The long-run success of rural water supply and sanitation programmes may depend much more upon efficient local government, built up on solid foundations over a period of many years, than upon complex community participation procedures erected hurriedly to serve the needs of the Decade.

Turning to possible ethnocentricity of approach, one notes that most writers about community participation, and indeed most participants at this symposium are nationals of the industrialized countries of Europe and North America. Community participation is not, and never has been, a major component of water supply or sanitation development in these countries. Why then are we so ready to urge it upon others? One occasion on which community participation was tried in Britain was a notable failure. Darling (1955) writes:

**'The Department of Agriculture, at Kilmuir [Skye], constructed the supply scheme, and left its maintenance to the crofters (peasant farmers]. This presupposed a development of civic sense which did not exist, and results have not been satisfactory.'**

How many villages in the U.S.A., Canada or Europe run and maintain their own water or sanitary facilities? How many could without substantial and continuing support from local or central government? My home village in Kent certainly could not, judging from the level of apathy and lack of a consensus view on most issues.

Another example of possible ethnocentricity is the view that it is necessary to undertake numerous enquiries into community structure, organization, opinion, leadership, socio-economic stratification, religion, etc., before a water and sanitation programme can be adequately planned. When I hear this view I always imagine the Yorkshire Water Authority planning a new water and sewerage scheme in the village of Upper Gumthorpe. They employ the services of a Tanzanian consultant who represents the European Development Bank which assists worthwhile projects in the depressed and backward areas of Europe. The Tanzanian consultant insists that a socio-economic survey be conducted in Upper Gumthorpe to determine social structure, leadership patterns, community preferences, religious beliefs and customs pertaining to water and defecation and to identify marginal or disadvantaged groups who may be further exploited as a result of the new project. The Tanzanian consultant would probably be found on a plane heading back to Dar Es Salaam soon after having delivered this advice.

### *3.2.3. Cost*

Next, I turn to the cost of community participation. Community participation may or may not reduce the costs of construction, operation and maintenance for a particular project. However, community participation will always require the government to increase its overall programme costs by the employment, training supervision and transportation of the teams of community level workers that are necessary for successful community involvement. These programme overhead costs, associated with managing community participation, are seldom computed and added to the individual cost per household or per village of supplying water or sanitation. Considerably more data are required on the comparative economic costing of water and sanitation projects with differing levels and types of community participation.

The cost implications of a given approach to community participation will differ appreciably between rural and urban projects. In rural areas a single project will usually serve a single village which may mean a few hundred to a few thousand people. A project serving the urban poor, however, may cover 50,000, or many more. The costs per person or per household of managing community participation may be very much less in the suburbs of a city than in a small village in a remote area.

#### *3.2.4. Standardization*

The literature on community participation contains pronounced differences of view on whether the relation between government and community should be standardized or flexible. Similar differences exist upon whether the institutional arrangements for organizing participation within the community are to be standardized or adapted to the particular socio-economic circumstances of each community. This debate relates closely to the issues of cost and practicality raised above. Although it may be desirable to allow considerable flexibility both in village-government relations and intra-community, it may be administratively impracticable to achieve this. Additionally, a flexible approach will almost certainly add considerably to the cost of managing the community participation.

Most water and sanitation agencies within developing country governments are striving for a high degree of standardization as a partial answer to their managerial, administrative and financial problems. They may well be right to resist any attempt to encourage a very flexible approach to participation on a community-by-community basis. Flexibility at the regional, district or branch level may well be practicable, but to regard each scheme as a fresh planning exercise would strain even the most efficient bureaucracies.

#### *3.2.5. Political Context*

Community participation involves the participation by the community jointly with some external body. This external body is nearly always the government, or some manifestation of the government. Whether individuals or communities will wish to participate with government in a joint endeavour depends in part upon the political context and the background and history of their previous relations with government.

There are many countries in which certain individuals, communities, organizations or regions are strongly opposed to the ideologies and activities of the current government. These people or groups, far from wishing to participate with government in joint development projects, may have strong motives for attempting to sabotage such projects, either by refusing to take part or by employing tactics of active disruption. Government attempts to neutralize such activity by portraying water and sanitation schemes as something quite outside the political arena will, in general, be unsuccessful. Nothing that concerns influence, resource allocation and



government intervention can remain for long outside the arena of local or national politics.

A further problem surrounding the politics of community participation is that it is a taboo subject. Governments will be very reluctant to discuss the problem openly with representatives of banks and donors, representatives of banks and donors will be reluctant to raise the issue directly for fear of accusations of political meddling or bias, and local political and social scientists may be highly constrained in what they feel able to say or write about such matters.

### *3.3. Aims of Community Participation*

In preparing this paper I read a number of recent works on the role of community participation in water and sanitation programmes. I will not attempt a review because a definitive review has just been published (van Wijk-Sijbesma, 1979). It was clear from my reading that those, who extol community participation (including myself) - see Cairncross et al. (1980) and Feachem et al. (1978)) do so in the conviction that it will improve water and sanitation projects by (i) improving designs; (ii) reducing costs of construction; (iii) facilitating and reducing costs of operation and maintenance; (iv) improving the realization of project benefits; (v) encouraging the community into new development initiatives.

#### *3.3. 1. Improving designs*

There is no doubt that some water and sanitation projects have failed owing to design faults that could easily have been identified by discussions between engineers and project beneficiaries during project preparation. It is essential that designs take account of user preferences, and of the socio-economic setting of the project. In general, the design issues that will be improved through user participation are minor in their engineering or financial consequences, but major in their potential effect upon acceptance and correct use of the new facilities. Examples of design details of this kind are design of standpipes, location of standpipes, design of squatting slabs and colour of latrine superstructure.

The fundamental design issues (such as choice of water source, pumping method, treatment technology, storage requirements, latrine type, nightsoil disposal method) will also have to be decided in the light of the social and economic setting. In

other words, the appropriate technologies must be selected. However, the water or sanitation ministry will need to adopt a high degree of standardization over these matters in the interests of administrative and financial efficiency and to facilitate the maintenance programme.

In general, the government will need to select a limited range of technical solutions for various types of settlement in various physical locations. These options can then be discussed with the community during project preparation and a mutually acceptable choice can be made. After this the engineer can enter into dialogue with the community regarding the essential, but technically trivial, design details of the kind mentioned above. It is probable that, as the water or sanitation programme matures, less and less community dialogue about design will be required because the favoured solutions will become apparent and widely known. At this stage, evaluation of the maintenance and use of previous projects may be far more seminal for improved design than more consultations with communities yet to be served.

### *3.3.2. Reducing Construction Costs*

It is frequently expected that community participation will reduce construction costs, but there is little evidence at present to support this. In addition, I know of no detailed comparative project costings which include the full overhead costs of managing and sustaining differing levels or types of community participation. There will doubtless be many occasions in which community participation does reduce costs, but it cannot be assumed to do so in the absence of detailed cost studies.

### *3.3.3. Facilitating and Reducing Costs of Operation and Maintenance*

Regarding the costs of operation and maintenance, the same points apply as above. It may well be that community participation will reduce these costs in some situations, but this should not be assumed. Detailed comparative costings are required and these must internalize all costs associated with managing and supporting the community input.

Facilitating operation and maintenance is a somewhat separate issue. There will be almost no cases in which all operation and maintenance functions can be handed over to the community. Government support and input will be required. For some

programmes the best option will be to run a centrally organized system for operation and maintenance in which the users pay rates but make no other contributions. Such a model will usually apply to urban areas. However, in other programmes, especially those serving large numbers of small isolated rural communities, operation and maintenance will not be possible without a strong local input. This local input can be provided by a developed system of local government, or by the participation of the users, or by a combination of these. The choice depends not only on cost but upon which options are feasible, within the existing context of institutional capacity, manpower availability and political relationships.

#### 3.3.4. Maximizing Project Benefits

Much has been written recently about the anticipated or actual benefits from investments in water supply and sanitation. The primary benefit sought is improved health, but several studies have shown that this benefit is often not achieved (Feachem 1978; Feachem et al. 1980). It is now widely believed, although on slender evidence, that the full integration of water supply and sanitation projects, coupled with vigorous and sustained hygiene education, has the best prospect of achieving a reasonable level of health benefit.

Such an approach requires community participation, at least in the educational component. Indeed, it is now common to link community participation with community education under the general concept of 'software', and to claim that careful design and implementation of software are quite as crucial to project success as good 'hardware'.

I am convinced that substantial educational efforts are an essential part of any water or sanitation programme. These must include:

- (i) education concerning correct operation and maintenance of the new facilities;
- (ii) education concerning correct use of the new facilities;
- (iii) education concerning personal and domestic hygiene;
- (iv) education concerning other measures which may be taken against the target diseases.

These educational components will, once again, add substantially to programme costs, and much more information on costs is needed. They will also be difficult administratively, since most water and sanitation agencies will have no in-house expertise in education and collaborative arrangements with other branches of government will be required.

### 3.3.5. Encouraging New Development Initiative

It was popular a few years ago to assert that a community that successfully participated in one development would be encouraged to initiate new projects. It may well be true that a successful liaison and collaboration with government in a joint development effort will make groups and individuals prone to enter willingly into similar partnerships in the future. It is much less likely that successful community participation will initiate a self-sustaining chain of development projects, because this view presupposes the existence of untapped resources of capital, cooperation, leadership and time that probably do not exist.

Conversely, it is likely that an unsuccessful and unsatisfactory experience of participation in a development project will very much hinder the acceptance by the community of any new proposal or offer by government. Although we often hear that a particular government or agency attempted a community participation approach but abandoned it owing to a poor response by the people, it may be equally or more often the case that the people feel that the government has not fulfilled its obligations or has not lived up to the expectations which were generated by the programme propaganda. Such negative reaction will seriously damage the chances of subsequent projects.

## 4. CONCLUSIONS

Appropriate technology and community participation have become popular concepts and are often raised in connection with the Decade. This may be partly due to their innate intellectual appeal to engineers and social scientists. It may also be due to the feeling that they are aspects of a water supply or sanitation programme that outsiders can influence - irrespective of the fundamental political, institutional and administrative weaknesses that the programme may display.

Whether the poor, sick, underprivileged and exploited peoples of the world improve their lot depends very largely upon the state of their national economies, upon the nature and political stance of their governments and upon the economic relations between their governments and other governments. If a country has a strong political commitment to improve the conditions for the masses, a reasonably healthy national economy (or rich friends) and an efficient ministry of water and sanitation able to plan and execute sound programmes, then the prospects for the Decade are good. If the ministry is inefficient, poorly managed, corrupt, inadequately staffed or uncommitted, then the prospects are bleak.

With a weak ministry, a small proportion of the population may be served with improved water and sanitary facilities and a smaller proportion may retain these facilities in good working order. A tiny proportion may improve their own conditions through self-reliance with little or no help from the government. But, for the majority, water and sanitation facilities will remain little changed. This will be so even if the ministry is adopting appropriate technology and advocating community participation.

With a strong ministry, and a favourable economic and political climate, improved environmental sanitation will reach an increasing proportion of the population. This may occur even if poorly selected technology and little community participation are used.

Appropriate technology and some degree of community participation are a desirable part of any water and sanitation programme. However, in the absence of well planned national or regional programmes, executed by efficiently run governmental or parastatal bureaucracies, they will count for little. Indeed a strong government bureaucracy could achieve considerable progress without them.



3. Feachem concludes that the absence of well planned national or regional programmes run by governmental or parastatal bureaucracies are essential before considering community participation as a vital element of programme development. In fact a strong government bureaucracy could achieve considerable progress without them. Can you relate at least three country experiences from your own programmes which either refute or support this argument?

**MODULE 4: COMMUNITY MANAGEMENT**

**SESSION 13: HOW TO IMPROVE COMMUNITY INVOLVEMENT**

**OBJECTIVES**

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By the end of this session, you will be able to:

- \* understand the importance of consulting communities in the planning and implementation of projects.
- \* describe at least three different approaches to improve community participation in water and sanitation projects;

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Exercise: Role Plays for Community Participation
- \* Review of Lessons Learnt
- \* Overview: Different Approaches to Improving Community Involvement
- \* Summary and Evaluation of Session



## Learning Points

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### 1. Information Gathering

- 1.1 In order to plan effectively for community participation, a considerable amount of information must be gathered by the agency about the community.

Firstly, there is the information about a community which it may be useful to possess before any approach is made to that community in order to ensure it is made in an appropriate way.

Secondly, there is the information which may be required to confirm that the community conforms to the selection criteria set by the agency or to determine if special subsidies are required.

Thirdly, is information required by the agency in planning and design of the project? Most of this can be provided by the community during consultation but will need to be supplemented with information gathered by staff in informal contact with community members.

- 1.2 Information will be required during the planning and design phases of the project. Most of this can probably be provided during the process of consultation, but it will need to be supplemented with information gathered by staff in informal contact with community members.

### 2. Consultation

- 2.1 Consultation means involving the community to some degree in the decision making concerning the project which is proposed. If a water supply and sanitation project is to achieve its objectives, at least those in the area of health, the facilities must be used. Optimal use can be assured by prior consultation with users concerning their needs, and by devising a project which meets the needs of the community as far as possible.

- 2.2 Consultation to meet the users needs is an essential form of community participation. It should be present in all water supply and sanitation projects. The dialogue should achieve mutual understanding through a dynamic learning process for all those involved, rather than a simple exchange of information and suggestions.

- 2.3 The dialogue between an agency and the community will inevitably have an element of negotiation. It should not be forgotten in the rhetoric of cooperation that communities will generally be interested in obtaining the maximum contribution or subsidy from the agency. This may well be the main reason influencing the communities preference for one technical solution over another, or the way in which the community's ability to organise and make a contribution is presented in the dialogue.
- 2.4 Each water agency will have to balance its need for a degree of uniformity in a large-scale programme with the community's need to have a real voice in decision making.

### 3. Administrative Arrangements

Community participation techniques require dialogue with community members in which their ideas are treated as valuable contributions. These dialogues are to be conducted out by lower-level staff, whose own social position may lead them to emphasise the superiority of their technical training. The solution may lie in developing a special cadre of promoters/community development staff within a technical agency.

### 4. Representative Bodies in the Community

- 4.1 This introduces the next question to be answered, that of the community group which will be the focus of consultations and organisation of any community action.
- 4.1.1 Local authorities While some consultations take place with local authorities as a matter of course in the introduction of a new water supply or other facility, in many countries the local authority works at a level considerably removed from that of the ordinary villager (or poor urban resident). Consultation with the local authority cannot realistically be regarded as consultation with the community. In the relatively infrequent case where the local authority area covers only the community where the water or sanitation project is to be located, this council can be taken as the main focus for consultation and community participation.
- 4.1.2 Development committees Where they exist and cover an area which coincides with that of the projected water supply or sanitary improvement, a development committee is the obvious community focus for the project. A committee started for the water/sanitation project may subsequently take on other functions. Development committees are often founded with broad aims including that of raising agricultural or other economic production, but it

is precisely in the area of communal services, like water and sanitation, that they are often found to have their greatest potential.

- 4.1.3 "Traditional" bodies In some countries (e.g. in West Africa) the traditional institutions - chiefs, councils of elders - retain considerable authority. It may be expected that any approach to a community will be made through them, and in fact it may be difficult for outsiders to penetrate beyond the appearance of full harmony and unanimity presented by the community's formal spokesmen. Yet, again, there may be undercurrents of dissent within the community.

**Reference and suggested reading:**

Glennie, C. 1983. Village Water Supply in the Decade: Lessons from Field Experience. John Wiley & Sons.

Whyte, A. 1981. Community Participation in Water and Sanitation; Concepts, Strategies and Methods. Technical Paper No. 17. IRC, The Hague, The Netherlands.

Quarry and Boydell. n.d. Suggested Guidelines for Incorporating Community Communication and Participation in Project Formulation. World Bank.

Isely, R. 1985. Low Cost Water Supply and Sanitation Technologies, Community Participation, and Health and Socio-Economic Outcomes: An Analysis of Interrelationships. USAID.

**MODULE 4: COMMUNITY MANAGEMENT****SESSION 13: HOW TO IMPROVE COMMUNITY INVOLVEMENT****ROLE PLAY NUMBER ONE****COMMUNITY COERCION?**

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A local politician, anxious to demonstrate his ability to bring benefits to the people before the forthcoming election, uses his influence with other politicians and government officials and manages to get the village included in the rural water supply programme. The villagers themselves know nothing of this request until several months later, when news spreads around the village that some government people have come and taken measurements. Most of the villagers were away in the fields and only a few people saw or spoke to them. The visitors only stayed a few hours and did not say very much, so nobody knows what will happen next. Six months later the news spreads again that someone from the government has come and told one of the leaders that the project will start soon. The people do not believe this, but three weeks later someone who calls himself a "technician" comes with some pipes and other materials. He immediately asks why they have not yet started digging the trench, as they were told to by the supervisor who had visited three weeks earlier. The villagers know nothing about this, and are surprised that they are expected to provide their labour without pay as they know that people were paid to dig the trench for the water supply at the district centre. There is a heated discussion in the village; some people blame the leader to whom the supervisor spoke for not passing on the instructions to start digging; but the leader denies that he was told this; some say that they will refuse to dig the trench unless they are paid; others say they are too busy in the fields to dig a trench anyway. But the local politician manages to persuade the majority to cooperate and all the villages eventually agree to provide their labour, except for one group which lives near the source.

The villagers go ahead with digging the trench while the technician goes off to work in another village. When he returns several weeks later he tells them the trench is not deep enough and refuses to lay any pipe. This time the villagers become angry with him. He is young and seems to consider himself superior to the villagers; he never told them how to dig the trench and they suspect he is trying to show his power over them. In fact, the technician feels uncomfortable in the village; the people seem very uncooperative and troublesome and he is rather frightened by them; he has never experienced this sort of situation before and his training, which he has just completed, was mainly technical; his supervisor never visits the project and he feels very isolated and

without support. To please the villagers, he agrees to lay the pipe even though the trench is not deep enough. But when there is not enough pipe to finish the line the villagers again become angry and accuse him of selling the pipe. This is not true, but the technician hurriedly returns to the district centre to collect more pipe. His supervisor complains that the project is behind schedule, and tells him to finish it off quickly as he is needed to start two new projects immediately. The technician returns to the village with more pipe and the people are very happy when water at last reaches the village. He leaves some materials behind and tells them to construct proper aprons and drainage at all the tap sites and to finish backfilling the line. He then reports to his supervisor that the project is finished and is immediately sent to start the two new projects. The "completed" project is marked on a chart in the ministry headquarters.

Back in the village, the people consider that they have achieved their objective and feel no motivation to build proper tapstands or finish backfilling the line. Within a few months the rain comes and the pipeline is damaged in several places where the trench is not deep enough. The villagers carry out makeshift repairs each time there is a break, and the water flows intermittently throughout the first wet season. The next dry season, however, a dispute arises when the group nearer the sources, who did not participate in the project, say they want a tap of their own. When the rest of the village refuse, saying they did not help to construct the system, the first group cuts the pipe. Each time the villagers try to repair it, it is cut again. The matter is reported to the district authorities, but no action is taken. The next wet season there is more damage to the pipeline but this time there seems no point in repairing it as water is not flowing anyway.

Life returns to normal. The women of the village again draw water from their original source.

Extracted from: Glennie, C. 1983. Village Water Supply in the Decade: Lessons from Field Experience. John Wiley & Sons.

## ROLE PLAY

Develop a ten minute role play with the villagers meeting to discuss the water supply problems and how they will resolve these before the technician revisits the village. The next scene will be the meeting with the technician.

Roles to include:

Village Chief  
Teacher  
Technician  
Village Women  
Village Men

**MODULE 4: COMMUNITY MANAGEMENT****SESSION 13: HOW TO IMPROVE COMMUNITY INVOLVEMENT****ROLE PLAY TWO****NOT ENOUGH WATER?**

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The health engineering department of a local Government Ministry had launched a project to provide 60,000 villages with four tubewells each, over a 3-year period. In spite of organisational and logistical problems, by the end of its second year, the project was reaching two-thirds of the villages and was seen as a masterful job of management assistance. The people, however, were reluctant to contribute towards maintenance costs and many tubewells were showing signs of neglect or misuse.

In addition, a survey by a diarrhoeal research team showed that in many villages where wells were provided, diarrhoeal rates showed no decline. In fact, there was a sharp increase of diarrhoea in several villages where people supposedly had safe water.

The team attributed this to the fact that no real effort seemed to have been made to involve the people in decision-making and to raise their awareness of the health consequences of unhygienic practices. In particular the team noted that the following factors may have contributed to the deteriorating local situation:

- Feelings of helplessness, apathy or fatalism in regard to common ailments such as diarrhoea.
- Dependence on external resources to solve problems for the community.
- Belief that initiatives and responsibilities incurring costs (such as maintenance of improved water systems) are beyond the meagre financial resources of the community.
- Belief that those who installed the system should care for it and bear the costs.
- Belief that water, being God's gift, should not require payment.



- Lack of experience in group planning and in mobilising resources for problem-solving, particularly among women.
- Low value placed on women's contribution to community level decision-making.
- A long tradition of hierarchical relations by which only a few speak on behalf of the many at community meetings, and decision-making is generally left to prestigious leaders.
- Mistaken beliefs and obsolete local practices associated with the prevention and cure of illnesses, presenting serious obstacles to behavioural change.

The department of engineering rejected the study. They suggested that the real problem was insufficient numbers of wells. "You cannot expect people to keep clean if there is not enough water for everyone. If there had been eight tubewells, the rates of diarrhoea would be bound to go down."

The case study was developed by Jacob Pfohl, Consultant.

## ROLE PLAY

A meeting has been called by the Ministry of Local Government of the Health Engineering Department and the diarrhoeal research team to discuss their report and find ways to improve the situation. Please work out a ten minute role play of this meeting.

Roles:

Local Government Official  
Water Engineer  
District Water Technician  
Research Leader  
Doctor

## **MODULE 4: COMMUNITY MANAGEMENT**

### **SESSION 14: FROM COMMUNITY INVOLVEMENT TO MANAGEMENT; CAN THE GAP BE BRIDGED?**

#### **OBJECTIVES**

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By the end of the session, you should be able to:

- \* define community management in the context of UNICEF-assisted water and sanitation projects;
- \* list and explain at least ten pre-conditions for community management;
- \* List and explain the benefits of community management within your own programmes.

#### **Session Flow and Methodology**

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- \* Presentation of Community Management in three Country Programmes
- \* Overview: Unclearness regarding Community Management in UNICEF-assisted Programmes
- \* Work in Pairs: Pre-conditions for Community Management.
- \* Plenary
- \* Exercise: Force Field Analysis of Stages Necessary to Reach Community Management
- \* Plenary
- \* Summary and Evaluation

## Learning points

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### From Community Participation to Management

1. It is essential to define participation more precisely in the context of the Decade's experience. Communities must now be assisted to become clients, not mere users or beneficiaries, because clients manage programmes while beneficiaries do not. Participatory models for the 1990s must therefore be models of community management.
2. If real community participation and management are accepted as essential to the global thrust towards universal access to water supply and sanitation, it must be recognised that concepts of empowerment and equity cannot end at the water source. Traditional power structures can be threatened by new pumps and latrines which benefit the poor. Communities who learn to manage safe water will go on from there to make other demands on the system, and to demand management of other aspects of their individual or community lives. People cannot be motivated to participate and manage only up to a given point in a given direction.
3. UNICEF-assisted programmes should be clear regarding the definition of community management. Obviously the implications are that communities should be more actively involved in the whole programme development process including situation analyses, development of programme, strategies and formulation of UNICEF assisted programmes.
4. According to McCommon et al. (1990), 'the distinctive feature of community management is the nature of decision making and the locale of responsibility for executing those decisions. Community management refers to the capability of a community to control, at least strongly influence, the development of its water and sanitation system. Community management consists of three basic components.
  - Responsibility. The community takes on the ownership of and attendant obligations to the system.
  - Authority. The community has the legitimate right to make decisions regarding the system on behalf of the users.
  - Control. The community is able to carry out and determine the outcome of its decisions.'

5. An emphasis should be placed upon establishing good communications between professionals and communities facilitating closer dialogue and partnership, helping governments to move from being providers to becoming promoters and facilitators.
6. According to McCommon et al., important preconditions for community management are likely to include the following:
  - 'There must be community demand for an improved system.
  - The information required to make informed decisions must be available to the community.
  - Technologies and levels of service must be commensurate with the community's needs and capacity to finance, manage, and maintain them.
  - The community must understand its options and be willing to take responsibility for the system.
  - The community must be willing to invest in capital and recurrent costs.
  - The community must be empowered to make decisions to control the system.
  - They should have the institutional capacity to manage the development and operation of the system.
  - The community should have the human resources to run these institutions.
  - There should be a policy framework to permit and support community management.
  - Effective external support services must be available from governments, donors, and the private sector (training, technical advice, credit, construction, contractors, etc.).'
7. The benefits of community management should include the following (McCommon et al., 1990):
  - Short term improvements in system performance such as greater use of water and sanitation facilities, adoption of improved hygiene practices, and greater community support for system maintenance.
  - Changes in support conditions: long term improvements in available resources and complementary investments.
  - Long term impacts: anticipated health, social well-being economic and environmental quality changes.'

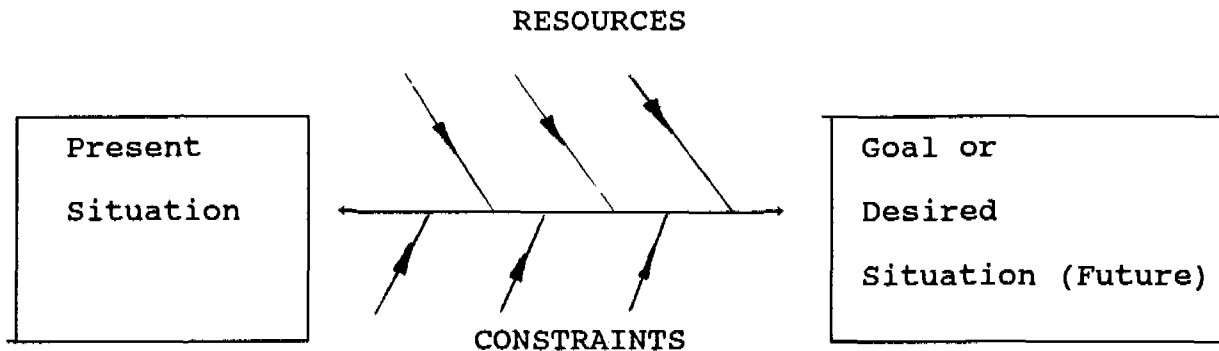
**References and suggested readings:**

Global Consultation on Safe Water and sanitation for the 1990s. Background Paper. New Delhi, India. September 10-14, 1990.

McCommon, C., Warner, D. and Yohalem, D. 1990. Community Management of Rural Water Supply and Sanitation Services. UNDP/World Bank. WASH Technical Report #67.

**MODULE 4: COMMUNITY MANAGEMENT****SESSION 14: FROM COMMUNITY INVOLVEMENT TO MANAGEMENT; CAN THE GAP BE BRIDGED?****EXERCISE: FORCE FIELD ANALYSIS****Purpose:**

To assist participants to understand the gap between present levels of community involvement and the desired level of community management within programmes and how to address this.

**FORCE FIELD ANALYSIS**

The exercise involves the identification of action steps in order to reach the desired situation. It also involves identification of the resources and constraints which affect the achievement of the desired goal.

It also assists participants to plan follow-on activities.

1. Each group will be given a chart. Their first task is to define what is wrong in the now situation, then to spell out the desired future situation and then proceed to identify the resources and constraints which apply in that particular case.
2. When the groups have completed their task, they should report in plenary.

3. The second task is for each participant to select any one constraint and identify the steps that could be taken to counteract or eliminate it with the help of one or more of the resources identified.
4. The groups should report again to plenary.

Extracted from: Srinivasan, L. 1990. Tools for Community Participation. A Manual for Training Trainers in Participatory Techniques. PROWESS/UNDP.

**MODULE 4: COMMUNITY MANAGEMENT****SESSION 14: FROM COMMUNITY INVOLVEMENT TO MANAGEMENT; CAN THE GAP BE BRIDGED?****READING MATERIAL**

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Extracted from: Extension, Communications and Community Management. Global Consultation on Safe Water and Sanitation for the 1990s. India, 1990. Conference Room Paper #2.

**Community Participation or Community Management?**

Participation should mean that communities have a role in choosing the technology appropriate to them, in developing that technology and in controlling its management. In the past when communities have been indifferent to official programmes, the assumption has often been that programme benefits need to be more intensely directed at the 'target population' in order to convince them that this is what they should want. Yet the Decade has revealed that it may often be the design of programmes and technologies that are inappropriate to community needs and aspirations. Community participation can therefore no longer be interpreted as community acceptance of a given direction. It is the direction itself which must be the community's own. The importance of such community involvement does not reduce the critical role of implementors in WSS programmes. While community and voluntary effort can help extend the range of the official motivator's influence, the role of the professional is crucial. The emphasis must therefore be on establishing networks which bring professionals and communities into closer dialogue and partnership, helping governments to move from being providers of systems to becoming promoters and facilitators. This is the objective of India's current experiment with Public Health Engineering Departments (PHEDs) in selected states, where engineering and mechanical teams are being sensitised to their potential as motivators and messengers.

It is thus essential to define participation more precisely in the context of the Decade's experience. Communities must now be assisted to become clients, not mere users or beneficiaries, because clients manage programmes while beneficiaries do not. Participatory models for the 1990s must therefore be models of community management.

India's National Drinking Water Mission (NDWM), established in 1986 with the objective of covering all rural communities with safe



supplies by 1990, demonstrates four factors most essential towards successful community projects: an effective technology (such as the India Mark II handpump), clear commitments of financial and administrative support (as in the Mission approach) and structures of self-government which can operate, monitor and evaluate programmes at each level. National commitments of this scale can only be based on an acceptance of safe water as an expression of social justice, where social benefits and costs predominate over financial considerations. Cost recovery has become a significant element in the Decade's debate on participatory strategies. Cost-sharing provides a stake for responsible community participation, indicated in the experience of Sri Lanka, Kenya, and elsewhere. Indeed, studies in India reveal a willingness of communities to pay far more than what is actually necessary. Cost recovery may therefore be legitimate as an ultimate goal through assured supplies and socio-economic processes, which ensure that participants pay as clients for services in which they have a clear management stake. Yet the survival and health of the vast majority of humankind cannot await the evolution of these processes. If safe water is an essential goal of civilised society, normal banking approaches are clearly inadequate. The political dimensions of these challenges are striking.

Urban situations offer particular contrasts if attempts are made to link them directly with rural experience. Where fund mobilisation is easier in urban areas, WSS programmes can be imbalanced in their favour. Conflicts between city needs, and those of rural communities (particularly on the periphery of urban development) can follow, as Mexico's Cutzmala project suggests. A more rational approach is to see WSS as a major instrument in improving the quality of rural life, thus helping to stem migration into cities. Sanitation projects often demand distinct requirements, being more individual-oriented and dependent on personal rather than community action. Studies in Indian locations reveal that less than one per cent of public sanitary facilities are optimally used and maintained, while considerable interest exists in access to private facilities. A package of promotional strategies is now essential, which can include the development of a greater variety of low-cost options, financial incentives for their adoption, training opportunities and marketing techniques which can create and sustain the demand for better sanitation.

### Political Frameworks for Planning

People everywhere recognise drinking water as a basic necessity for survival. Yet the absence in many countries of clear government policy and of a national approach was a major constraint in the IDWSSD. "A large number of governments relied only on external assistance...and almost refused to identify the need of water and sanitation as an instrument of social change...While on one hand community participation was being talked about, in reality the whole exercise of mutual discussion evolved around a group of

professionals, engineers, administrators, planners: it really did not involve the policy makers and people's representatives". Successful community participation will depend on a foundation of clearly articulated national policy in which WSS is accepted as a core sector of planning. Such policy must in turn be reflected in financial and physical programmes which generate a demand for safe water and simultaneously make such programmes self-sufficient and sustainable. Government and community roles must thus be in mutual support, neither in conflict nor as substitutes. The responsibility of governments to implement, train and communicate cannot be diluted.

Reducing the dependency factors of both citizens and governments is a key element in this process. Achievements in India during the past decade have taken place largely through the mobilization of indigenous resources: human, scientific and financial. The role of donor agencies has been through the provision of bilateral bridges which have served as catalysts for learning and extension. Project preparation and management, rather than finance, has been the real constraint in the Indian context, an experience which applies to many others facing equal challenges. India has demonstrated that the capital cost of water supply programmes can be reduced by 25 to 30 percent, or even more, if project planning and monitoring is effectively conducted. The Indian experience also highlights the critical need to involve community participation in low-cost water supply systems, which can be supplemented by rain water harvesting and the improvement of traditional structures, particularly in arid and semi-arid regions. During the 1980s India suffered a cycle of drought which was one of the worst in this century. These years proved a trial by fire for the philosophy and thrust of the national Mission. Despite the enormity of a natural calamity, the Mission's experience reflected that the major constraints in programme implementation were neither the non-availability of water or finance, but of management obstacles on the one hand and user apathy on the other.

If real community participation and management are accepted as essential to the global thrust toward Safe Water 2000, it must be recognised that concepts of empowerment and equity cannot end at the water source. Traditional power structures can be threatened by new pumps and latrines which benefit the poor. Communities who learn to manage safe water will go on from there to make other demands on the system, and to demand management of other aspects of their individual and community lives. People cannot be motivated to participate and manage only up to a given point in a given direction. Encounter may therefore be the other side of the participation coin. Structures for self-government, extending from village and urban communities to the highest levels of national planning, become essential therefore if community participation in safe water is to be sustained as a reality which can lift the quality of community life. India's NDWM is an expression of such a structure, initiated by a major policy decision to assign the responsibility for rural water and sanitation to the Ministry of

Agriculture and Rural Development. The Mission umbrella facilitates a total mobilisation of scientific and technical forces, with clear roles for MIS and for communities. The Mission strategy demands people's participation at the village, district, state and central levels, with state assemblies and the national Parliament as final monitors and evaluators. In Thailand, the remarkable success in achieving Decade goals offers another pointer, through sanitation projects which reflect a bottom-up, decentralised approach that responds to community requests without imposing or imploring. Project funds go direct to elected district committees, to which village committees apply after discussions based on local perceptions of need.<sup>1</sup>

The political implication of these ingredients cannot be minimised. There is an enormous reluctance for policy-makers and bureaucracies to sacrifice dependency-building practices which have so far provided political clout and leverage. The will for such change is therefore a crucial element. Without it, community participation is impossible. And without community participation, there can be no way to ensure that water which is safe at the end of a hardware system will remain safe until it is ingested by a human being. The real nuts-and-bolts of this effort will therefore not be found within the delivery system, but in the ability of users to operate and to maintain safe water sources. Such an ability will require a massive effort at building user participation and awareness. The key element will be effective decentralisation: "One of the basic conditions for the success of a project is that the community perceives the need for it". India makes evident the scale of this challenge, where over five hundred million citizens in some 560,000 villages must first learn to recognise safe water and then to manage their safe water sources as communities, as families and as individuals.

National campaigns will therefore need to be concerned above all with the strategies of participation. "Twenty years ago it was believed that a well installed by a team of experts was enough: today it is known that success depends on the communities being involved in the planning, siting, installing and maintaining of its own water supply".<sup>2</sup> The consequence of limited involvement of villagers in planning, locating and constructing facilities "is a limited sense of ownership and responsibility which leads to limited understanding of the value of the facility or the desire to maintain it. As many as 61 percent of the respondents stated that maintenance was not their responsibility". Working with NGOs, women, local self-government institutions, teachers and schools must be critical elements in a new project mix which is necessary. "Community participation implies a process whereby control of the project becomes a communal responsibility rather than a situation

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<sup>1</sup> Insights from Field Practice, UNDP/IBRD

<sup>2</sup> State of the World's Children 1989, UNICEF, Page 48

in which projet staff determines the agenda". De-learning will be necessary. India, for example, will have to turn once again to the lessons of community empowerment and self-help that were the essence of Mahatma Gandhi's movement for political freedom. The ability to share and to delegate will not come easily. Attitudes that have become ingrained over decades of centralised approaches will not change overnight. Administrative gate-keepers will not surrender their controls lightly and people whose apathetic dependence has become a source of political gain for others, cannot quickly shake off the past and accept responsibility for their future. Yet the Eighties have demonstrated again and again that such change is possible, and it is to that change that Safe Water 2000 must now address itself.

## **MODULE 4: COMMUNITY MANAGEMENT**

### **SESSION 15: TRAINING FOR IMPROVED LOCAL MANAGEMENT**

#### **OBJECTIVES**

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By the end of the session, you should be able to:

- \* relate the advantages and disadvantages of a participatory training approach;
- \* assess the "SARAR" Methodology for training communities in your own country as developed by PROWESS/UNDP;
- \* assess your own present capacity to support community level training.

#### **Session Flow and Methodology**

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- \* Video Presentation: Training for Community Management
- \* Overview by Facilitator
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. In any sector where the focus is on achieving large scale physical targets within a set time frame, there may be a tendency to treat attitudinal constraints lightly. Project personnel may be aware of community resistance and behaviours which run counter to project objectives. But many believe that these attitudes and behaviours will change when the facilities or devices are in place.

2. According to Srinivasan (1990), "the overriding goal of community participation in the water and sanitation sector is not simply to ensure sustainability of a system by teaching people how to function in a committee or how to fix a pump. Rather it is to help people to develop the outlook, the competence, the self-confidence and the commitment which will ensure a sustained and responsible community effort in the sector.

3. If a project comes up against fears, doubts, suspicion, lack of self-assurance or traditional beliefs and values that run counter to the proposed change, a participatory approach can be vital. In communities where such attitudes commonly prevail, behavioural change is unlikely to take place unless a sufficiently sensitive and facilitative approach is used to uncover, examine and address social constraints as cited below:

- \* diffidence in the presence of authority
- \* fear of speaking up in group meetings
- \* low self-esteem
- \* distrust of the motives of those in power
- \* reluctance to take risks
- \* fear of economic consequences or social loss of face
- \* fear of criticism for overstepping customary roles
- \* factional differences
- \* a sense of powerlessness or fatalism
- \* lack of experience in working with groups
- \* lack of skills in planning and problem solving

4. The responsibility in the quality of community participation rest, in large measure, in the hands of trainers. A participatory training programme cannot take place in isolation. Training programmes exist within a project context that involves many other people who affect the project outcome.

5. One cannot rely upon training alone to change the way extension staff relate to local communities. They need support, guidance and a continuing flow of inspiration from those who make policies and set standards."

#### Participatory Training

6. A participatory training strategy can be incorporated into ongoing programmes. It is pointless to train communities unless there is adequate follow-up and some structure whereby the training can be assessed and further training given at later stages of the project. Training programmes involve many people who affect project outcomes. All these people must become familiar with the goals of participatory training if the project is to succeed.

7. The participatory approach uses a learner-centred approach in which the focus is on the learner developing ability and skills to diagnose and solve their own problems. The trainer merely facilitates a process of competency-building and self-discovery for the learners, whose needs, experiences and goals are the focus of the training.

8. In order to train communities effectively, one has to train field staff to become aware of how to work more effectively at the community level. Trainers should include not only those who are on the facility of training institutions but also all those who provide in-service guidance and support through field supervision, programme monitoring and evaluation. This includes engineers, technicians, community development officers, agronomists, environmental sanitarians and health assistants.

9. Clearly we cannot rely upon training alone to change the way extension staff relate to local communities. They need support, guidance and a continuing form of inspiration from those who make policies and set standards. Without this kind of back-up from policy makers and trainers, they are not likely to innovate or make special efforts to involve people, particularly if a good performance is judged mainly in quantitative terms e.g. number of meetings held, demonstrations given or pump caretakers trained.

10. Many agencies, especially UNDP/Promotion of the Role of Women in Water and Environmental Sanitation (PROWESS) have developed methods to train trainers in order to work more effectively with communities. They have developed a manual titled 'Tools for Community Participation' by L. Srinivasan which outlines different methods that can be used including innovative exercises which allow project staff and communities to analyse their problems more effectively.

**References and Suggested Readings:**

Srinivasan, L. 1990. Tools for community Participation. A Manual for Training Trainers in Participatory Techniques. PROWESS/UNDP Technical Series: Involving Women in Water and Sanitation.



**MODULE 4: COMMUNITY MANAGEMENT**

**SESSION 15: TRAINING FOR IMPROVED LOCAL MANAGEMENT**

**EXERCISE: PARTICIPATORY TRAINING FOR LOCAL LEVEL MANAGEMENT**

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Decide how you will maximise community involvement through training of staff and communities and how you will schedule this into the water and sanitation programme of the Department of Water Resources. Please answer the following questions in your group.

1. What would be the pre-requisites/preparatory steps to ensure effective training at the community level?

2. Who would you select to train and how would you decide?

2.1 Government Staff

2.2 Community Level

3. What would be the objectives for training each?

3.1 Government Staff

3.2 Community Level

4. How would you schedule these into a heavy timetable of design and construction?

5. What type of training courses would you design, average length and content?

5.1 Government Staff

5.2 Community Level

6. What would be some follow-up actions to take "post training" to promote effective appreciation of learning?

**MODULE 4: COMMUNITY MANAGEMENT**

**SESSION 15: TRAINING FOR IMPROVED LOCAL MANAGEMENT**

**READING MATERIAL**

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**TOOLS FOR COMMUNITY PARTICIPATION**

**A MANUAL FOR TRAINING TRAINERS  
IN PARTICIPATORY TECHNIQUES**

**Srinivasan, L.**  
**PROWWESS/UNDP Technical Series**  
**Involving Women in Water and Sanitation**

## II. PLANNING A PARTICIPATORY TRAINING PROGRAMME

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### How Participatory Training Works

The overriding goal of community participation in the WSS sector is not simply to ensure sustainability of a system by teaching people how to function in a committee or how to fix a pump. Rather, it is to help people develop the outlook, the competence, the self-confidence and the commitment which will ensure a sustained and responsible community effort in the sector and beyond.

If a project comes up against fears, doubts, suspicion, lack of self-assurance or traditional beliefs and values that run counter to the proposed change, a participatory approach can be vital. In communities where such attitudes commonly prevail, behavioural change is unlikely to take place unless a sufficiently sensitive and facilitative approach is used to uncover, examine and address social constraints such as those cited below.

#### Some Constraints on Participation

- Diffidence in the presence of authority
- Fear of speaking up in group meetings
- Low self-esteem
- Distrust of the motives of those in power
- Reluctance to take risks
- Fear of economic consequences or social loss of face
- Fear of criticism for overstepping customary roles
- Factional differences
- A sense of powerlessness or fatalism
- Lack of experience in working with groups
- Lack of skills in planning and problem-solving



The participatory approach—often known as learner-centred— has evolved over the past decade as a means of helping learners take greater control of their lives and their environment by developing their skills in problem-solving and resource management. Unlike traditional teaching methods which have emphasised the transfer of knowledge, messages or content pre-selected by outside specialists, participatory training such as SARAR focuses more on the development of human capacities to assess, choose, plan, create, organise and take initiatives. These skills can then spill over to many other aspects of the person's life and community.

These aims are synthesised in the following five characteristics of the SARAR approach.

## **The SARAR Process**

### **Five Characteristics**

#### **S**ELF-ESTEEM

The self-esteem of groups and individuals is acknowledged and enhanced by recognising that they have the creative and analytic capacity to identify and solve their own problems.

#### **A**SSOCIATIVE STRENGTHS

The methodology recognises that when people form groups, they become stronger and develop the capacity to act together.

#### **R**ESOURCEFULNESS

Each individual is a potential resource to the community. The method seeks to develop the resourcefulness and creativity of groups and individuals in seeking solutions to problems.

#### **A**CTION PLANNING

Planning for action to solve problems is central to the method. Change can be achieved only if groups plan and carry out appropriate actions.

#### **R**ESPONSIBILITY

The responsibility for follow-through is taken over by the group. Actions that are planned must be carried out. Only through such responsible participation do results become meaningful.

The adaptation of this approach to the PROWWESS programme has been easy because the underlying aims are compatible. PROWWESS, committed to the involvement of local communities, and particularly women, believes that human capacity development is the key and encourages group responsibility for decision-making and action planning. These are means of ensuring that sectoral improvements correspond to people's priorities and benefit from people's willingness to use them effectively and maintain them in good order.

## **Who Should Be Involved in Participatory Training?**

Considering how greatly the attitudes and skills of field staff can influence local responses, it should not be difficult to recognise a simple truth: the responsibility for the quality of community participation rests, in large measure, in the hands of the

trainers. This implies promoting participation not only directly at the community level, but also amongst others who affect the community.

A participatory training programme cannot take place in isolation. Training programmes exist within a project context that involves many other people who affect the project outcomes. All these people must become familiar with the goals of participatory training if the project is to succeed and be sustained.

Trainers are not only those who are on the faculty of training institutions, but also all those who provide in-service guidance and support through field supervision, programme monitoring and evaluation. This includes engineers, technicians, community development officers, agronomists, environmental sanitarians and health assistants.

Responsibility also rests with those who make policy decisions affecting training, specifically those who approve or disapprove funds for training resources including representatives of donor agencies who provide the incentives or disincentives which influence the performance of field staff.

Anyone who influences the quality of programme interventions is, in one sense, a trainer and has a stake in community participation.

For participatory training to produce wide impact, policymakers will have to set higher value on qualitative change (e.g. increased community ability to take initiative, shoulder responsibilities, articulate ideas, generate solutions and solve problems).

Clearly, one cannot rely on training alone to change the way extension staff relate to local communities. They need support, guidance and a continuing flow of inspiration from those who make policies and set standards. Without this kind of back-up from policymakers and trainers, they are not likely to innovate or make special efforts to involve people, particularly if "good" performance is judged mainly in quantitative terms (e.g. number of meetings held, demonstrations given, or pump caretakers trained).

### **The Multi-sectoral/Multi-level Team Building Approach**

PROWESS workshops have often involved many different categories of personnel from other service agencies and sectors. A mixed group serves to broaden limited sectoral perspectives and also encourages a team approach in actual work settings. For example some PROWESS field-based "training of trainers" workshops have included:

- Senior and middle level staff from such ministries as Health, Community Development, Women's Affairs, and local government.
- Social workers from national NGO's.
- Hardware sector personnel such as engineers, geologists, hydrologists and others from the Ministry of Water Supply.
- Representatives of donor agencies. (e.g. in Zimbabwe, the inclusion of a person

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## **FIELD INSIGHT**

There was some initial concern as to whether or not the workshop objectives were appropriate to the needs of the village women. However, the inclusion of these women in the workshop helped forge a sense of co-operative responsibility between village pump committee members and extension workers and perhaps a rethinking of the contributions that these pump committee members might make as co-trainers at the village level.

The six village women now form a potentially effective training liaison between the extension workers and the other village committee members and non-member villagers. This, with further training and field-level collaboration, may eventually make it easier to hand over project activities to the communities.

This positive outcome is reinforced by a sense of group commitment among trainees from two different Ministries as well as Kenya Water for Health Organisation (KWAHO) extension workers to work in teams for the common goal of successfully involving villagers in their own development.

**Kenya**

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## FIELD INSIGHT

The task was for each of three "functional" groups — i.e., Health Assistants, Health Educators, and Inspectors — to write on rectangles of paper what they considered to be their own professional roles and then what they expect of the cadre immediately above and of the cadre immediately below in the hierarchy. The responses were colour-coded on the board in such a way that each group's perception of its own role was side by side with the other groups' expectations of it. The contrast was often quite dramatic and generated a very lively discussion.

Although the exercise was simple in its design it touched aspects of organisational reality that directly affected everyone involved; and it provoked some of the most animated and spontaneous responses of the workshop.

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### Zimbabwe

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engineers, hydrologists and geologists be allowed to join the workshop as observers. By incorporating them into the group as full participants rather than observers, the trainers themselves learned what a rich experience can result from an interface between technical and socially-oriented personnel. A mixed group does, however, require very special preparation so that the activities hold the interest as well as capitalise on the expertise of all concerned.

Besides multi-sectoral participation, PROWWESS has also had encouraging results with multi-level training, i.e. programmes that involve people who have different levels of authority and responsibility. The simplest type has involved trainers, extension agents and village volunteers, pump minders or other front-line staff who help organise sessions.

A bolder and more complex design of multi-level training has been attempted by bringing together supervisors, trainers, technical specialists and extension workers in a single workshop.

The positive experience of both multi-sectoral or inter-ministerial and multi-level training is illustrated in the preceding *Field Insights* from reports on PROWWESS-assisted workshops in Kenya and Zimbabwe.

## Becoming a "Learner-Centred" Trainer

The type of participatory approach described above implies a major change in the relationship between those who traditionally have the prestigious role of teacher or specialist with all the answers, and those who, being largely unschooled, perhaps illiterate, are assigned the passive role of recipients of instruction.

Some technical specialists and project staff in positions of control, may not take too kindly to villagers proposing alternative solutions or expressing reservations concerning their plan of action. As one project director put it, "I don't like being questioned. When I am questioned it lessens my authority."

But in the learner-centred approach, trainers acknowledge and respect the fact that learners, too, have expertise and talents of their own which must be given scope for expression. Only then can they truly function as partners in development.

Participatory training is two-way training, a partnership between the trainer and trainees, by which people discover their own strengths, develop problem-solving skills and together play a more effective role in managing their environment.



As participatory activities help community members learn new skills, the external agent — the trainer — in turn, learns more about the community.

For a trainer, the change from an authoritarian posture to one of partnership is not easy. The participatory process may be considered too time consuming or even seem incompatible with one's job. One engineer put it bluntly: "I am being paid to dig holes. You can do community liaison if you like, but don't interrupt my schedule."

The crux of the problem is well expressed by J. M. Flavier, the Director of the International Institute of Rural Reconstruction (IIRR) in the Philippines, who writes in IIRR's *Rural Reconstruction Review*:

The first lesson we learned involved the importance of taking enough time. This means having the patience for a lot of dialogue and consultation. Unfortunately, efficiency is often defined as output over time, so the quicker an activity is done, the better it seems. However, many times such efficiency is achieved at the sacrifice of not personally involving the people who are supposedly the target of development efforts.

At first, I was apologetic because of the time it took me in my work to involve villagers. But an Indian philosopher allayed my fears by saying: "If anyone questions your time-consuming process, give him an egg, and ask him what he wants. For a scrambled egg, ten minutes is plenty of time. For a chick, ah, that takes 21 days!"

Not only did we learn to consider time but also *timing*. Now, only when the villagers really clamor for more training to have local expertise, do we respond.

The greatest temptation is for a technical staff to set up the whole thing by themselves. But past failures have taught us not to repeat this non-involvement process.

While much can be learned from the hard school of experience, training can provide short-cuts to acquiring skills in participatory techniques and in developing the confidence and the commitment to apply them.

For example, in one country we found that some trainers and extension staff initially considered the participatory approach to be too different from their normal instructional style and they lacked the confidence to apply it. A PROWWESS evaluation consultant reported that they knew a number of techniques but had not used more than one or two for fear that the villagers might consider them too childish or might feel confused or disappointed that no lectures or messages were handed down to them. After a fresh round of field-based training these fears proved to be unfounded. They became comfortable in establishing a dialogue with villagers on an adult-to-adult peer basis.

The truth is that many of us, both trainers and participants, may be products of formal school systems where mastery of content is the goal and the lecture method is

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## FIELD INSIGHT

One of the groups included two experienced and highly respected extension agents. At the beginning of the Workshop these two often led the discussion and were looked up to by the other participants as models of "the good extension worker". They approached the field visits conservatively, relying on their well-tested expertise. They returned from their first field visit with a long list of community problems based on interviews with selected village people. During the second field visit they experimented with "Unserialised Posters", using them conservatively and, to a large extent, didactically. They came back enthusiastic about the level of participation generated and reported that the community's problems were solved.

The other two groups had taken a greater risk — using the materials more creatively, in a more participatory way and less directly. They had concentrated on more investigative methods. They too came back enthusiastic about the materials and felt they had many options for the next visit.

There was a striking contrast between the methods and experience of the groups (two were made up of people with less extension work experience and the other group included the two experienced extension workers). Though not discussed formally, this contrast generated much reflection on the role of the extension worker.

The two experienced extension workers began to question their old assumptions, seeking out the trainers privately to discuss the experience. By the end of the workshop, the less experienced participants had gained respect for their own abilities and initiatives and the more experienced workers had begun to rethink their tried-and-tested methods. The role of the extension worker as the "facilitator" rather than a "doer" gained increased acceptance among all the participants.

Kenya

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the means. The old adage that "teachers tend to teach the way they were taught" holds true in this case. If we have been taught by the lecture method, we may feel more secure using the same method to instruct villagers. That is why PROWWESS Training of Trainers workshops are designed entirely on participatory lines. By the time the group emerges from the experience on the final day, even the most formal members will know, from being deeply involved themselves, what the benefits of the participatory process are in terms of personal growth, greater confidence levels, knowledge gains, and the capability to actually *apply* new skills.

Even so, for most trainers, one workshop is never enough. It may take a series of participatory training experiences before trainers begin to feel truly comfortable in an open-ended, informal, flexible and responsive facilitator-learner relationship.

Because of a serious shortage of trainers with participatory approaches in the WSS sector, developing expertise in participatory training will be greatly valued. Through training other trainers, one can have a significant impact on training programmes and community participation projects in many areas.

## Traditional Teaching vs. Participatory Training

In the training field today, the most widely used training approach is what is known as *didactic teaching*. The use of participatory approaches is relatively new.

The traditional Didactic style is a *content-focused* approach in which information is largely passed in one direction from the outside expert to the learner. Social marketing, which involves mass propagation of messages, is a derivative of this approach.

The Participatory style is a *learner-centred* approach in which the focus is on the learners developing abilities and skills to diagnose and solve their own problems. The trainer merely facilitates a process of competency-building and self-discovery for the learners, whose needs, experience and goals are the focus of the training.

Deciding on an approach depends on how trainers diagnose the problem in the first place. Is it merely a question of lack of knowledge (which can be supplied through didactic teaching) or does the solution depend on gaining new insights and achieving fundamental changes in attitudes and behaviours (which can grow out of participatory training)?

Any training programme can include some elements of both approaches, but the hoped-for attitudes and behavioural changes should guide the selection of methodology for each activity.

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### FIELD INSIGHT

"Mapping" and "Pocket Charts" gave the participants the opportunity to discuss the situation in their own villages. The facilitators focused the discussion of the maps on water supply and sanitation while the subject of the pocket charts was Sources/Uses of Water. Although most of the women villagers were illiterate and found the mapping exercise difficult at first, they soon came to enjoy the exercise to the extent that one woman took a paper and pen home with her and drew a map of her land and house that evening. The mapping provided an experience which was concrete and meaningful for participants on a subject with which they were familiar. A lively discussion followed each group's presentation, with the Fikkal and Gajuri women comparing their situations.

Nepal

As participatory training takes hold, PROWWESS has found that the momentum created by a learner-centred approach can pave the way for better utilisation of products or messages being disseminated through more didactic means. The two strategies are complementary and should be planned as such, with emphasis on the participatory learner-centred strategy as the foundation.

Each of the options is discussed below in greater detail. It is up to the trainer to assess their pros and cons and

to determine which one is more applicable to a particular situation. However, three points should be kept in mind:

- Each of the styles has some element of participation, but there is a marked difference in the degree and quality of participation each method evokes.
- The fact that they are different does not necessarily mean that one is intrinsically better than the other at all times. They simply serve different purposes.
- The learner's own motivation and readiness may be the single most important criterion to use in determining which strategy is appropriate at any given stage of the learning process.

The choice of a training strategy or approach obviously carries with it budgetary, staffing and administrative implications, all of which need to be supported by a policy commitment. For this reason, it is useful to look closely and in great detail at each option, noting well what purposes it is intended to serve, what its characteristics are, what kind of materials it utilises and what roles it expects staff to play.

The description of options that follows is presented in a straightforward "telling" or didactic fashion. It reflects a personal viewpoint, but one entirely open to questions and challenge. It is not intended to be shared with trainees unless they are equally ready to probe, expand or refute the arguments proposed. At the trainee level, it may be best to begin with participatory activities which engage them in examining these issues on their own, drawing from their own experience. Some examples of such activities will be found in Part II concerning Training Methods and Theory.

### **Didactic Method**

This traditional Didactic style of teaching is sometimes also referred to as the "top-down" or "banking" approach since its primary purpose is the transfer of knowledge.

The didactic style assumes that the learner's main problem is lack of knowledge. Didactic instructors see a gap between what community members know and what they "should" know if they are to make the right connections between cause and effect. The instructor's task then is to fill this knowledge gap.

For example, a health educator may use didactic methods to teach villagers about water-borne diseases or the components of a balanced diet; in the same way, a pump caretaker may be taught the names of different pump parts and the order in which they should be assembled.

The methods and materials used are all geared to transferring technical content from the instructor's mind to the learner's mind. Choice of content is often done on the basis of surveys or studies conducted by researchers. The people may have little or no role in this data collection.

This pre-selected subject matter is then simplified to make it easily understandable by learners. It is divided into segments or units, preferably small enough to be mastered at a single learning session.

Content may also be condensed and presented in the form of simple messages. A number of such messages then make up the curriculum to be covered.

For example, in the WSS sector these messages may include basic sanitation/health guidelines such as the following:

- Use a clean container to draw water.
- Carry the water home in clear jars.
- Store drinking water at home in clean covered vessels.

- Use a clean dipper for taking water out for drinking purposes.
- Keep your yard clean and tidy to prevent flies.
- Use a latrine for defecation.
- Dispose of children's feces in a safe way.
- Wash your hands often with water and soap.

*Adapted from Working Together for Better Water, Foundation for International Training, Toronto, Canada, 1984.*

These messages may be organised into a logical sequence. To ensure that they will be presented in exactly the same order, they may be numbered, printed and bound together in the form of a flip chart.

To reinforce the mastery of content, instructors may employ techniques such as the following:

- use different media to make the messages more memorable;
- consistently praise "right" answers and discourage "wrong" answers;
- apply external incentives or disincentives or exclusion from benefits. These can include such incentives as certificates, prizes, attention by VIPs, example of role models; such disincentives as fines or warnings of negative consequences if behaviour is not brought in line with the given message, e.g. "If you do not build a latrine, you may all suffer from diarrhoea" or exclusion from benefits such as "Only those prepared to pay can use the pump."

The advantage of the directive approach is that it simplifies the instructor's task of teaching subject matter. For example, it is easy for a field worker to teach from a flip chart on latrine construction or child weaning foods because the instructions on what to say are printed at the back of each picture. The instructor asks questions or gives assignments that will test whether the message has been received and remembered. Thus many hundreds of field workers can be sent out to villages after short training, armed with flip charts, posters and other materials. It is also easy to mass produce such materials since they are standardised.

A serious disadvantage is that the simple transfer of information from the instructor to the learners seldom assures the latter will change their behaviour. Often the villagers can recall the messages perfectly but fail to adopt them in practice. If the instructor is seen as an authority figure the people's response may be polite and deferential but often non-committal.

Unless villagers are very highly motivated to acquire the specific knowledge and skills offered, they may not easily buy into the programme when approached in a top-down manner.

### **Social Marketing**

This is a variant of the didactic style of more recent origin, greatly influenced by modern advertising and sales techniques. Here, also, the emphasis is on the transfer of information believed to be needed by the people.

For example, health is considered to be a "marketable commodity" and, accordingly, a number of health messages are selected and tested to see if they are understandable by the people and compatible with the prevailing culture and perspectives of community members.

The original messages or recommendations are chosen on the basis of their technical soundness; by testing them intensively among small groups of people (called

“focus groups”), preferably of the same cultural and socio-economic background as the target group, the messages are refined and modified to make them more palatable. To that extent, villagers may be said to participate in the shaping of messages. For example, they may suggest a different picture or a change in colours or a different way of working the message to make it fit better into their local context or they may comment on the substance of the recommendation itself. What results from this process is a synthesis of new and traditional ways of doing things, thus making the message more persuasive.

On that basis, a larger campaign is then “launched” to “sell” the new idea or practice to the people using persuasive marketing techniques; the expectation is that the new message will be accepted and will result in behavioural change.

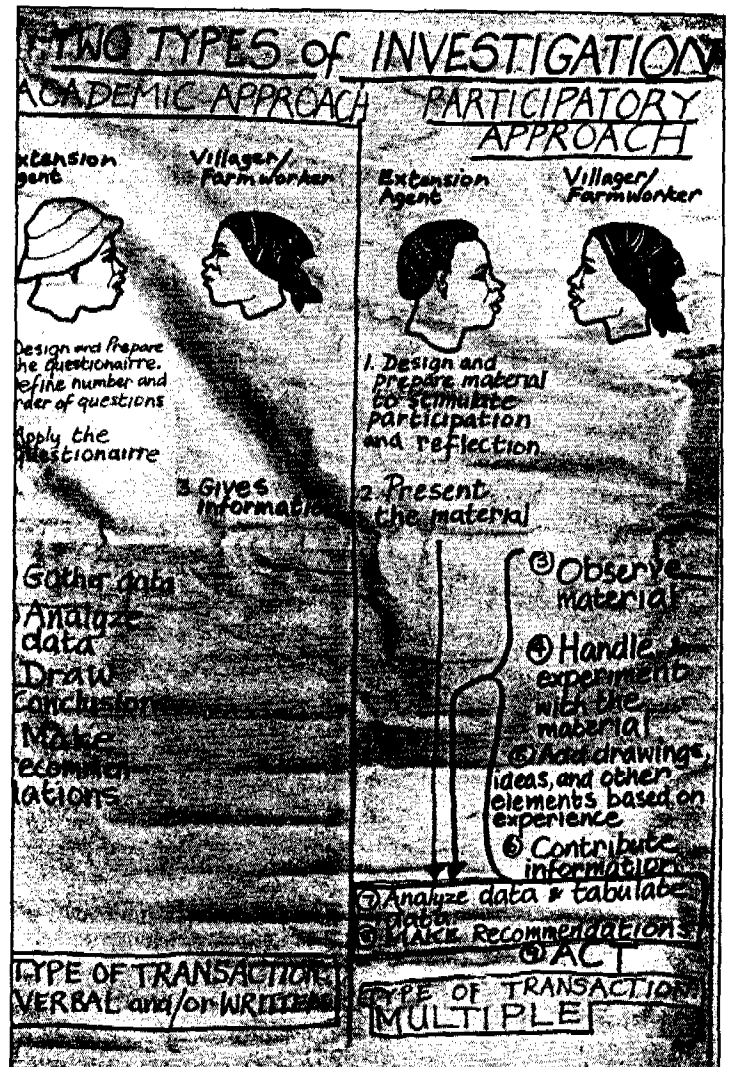
Thus social marketing is clearly much more flexible in its approach than conventional didactic teaching. The underlying structure, however, is similar: both strategies are built around pre-selected content and both disseminate recommendations or “prescriptions for action.”

While the traditional didactic style is now generally recognised as having serious limitations if used as an exclusive or main strategy at the village level, social marketing has aroused considerably more interest in recent years. It has attracted the attention of some multinational donors because it seems to hold promise of massive impact in a relatively short time. Although this benefit has yet to be substantiated across the board, social marketing has some obvious advantages over conventional didactic teaching.

### Participatory Training

The learner-centred, participatory approach is the more open and flexible of the two main options being reviewed here. Since an analysis of this approach (through PROWESS’ experience with SARAR) is the main thrust of this manual, we need not go into great detail at this point but simply highlight the major ways it differs from didactic teaching and social marketing.

Participatory training fosters a process of human development, but it does not take place in a vacuum. It is supported through a number of practical experiential activities which engage learners in creative problem-solving and provide opportunities for new forms of self-expression. By being involved in a variety of new ways, learners discover talents and abilities which they never knew they had. Their self-confidence increases enormously. The quality of their participation accordingly improves through the *cumulative effect* of several activities. Sometimes it improves by leaps and bounds depending on the enthusiasm generated in the peer group and the support forthcoming from the external intervention agency.





While an agency's field staff may be bound by specific sectoral interests — as in water supply, sanitation, nutrition or agriculture, — the content of learning is not prescribed by specialists as a set body of knowledge to be imparted to villagers or as a package of messages which they are to be persuaded to adopt. On the contrary, the field staff begin with activities which enable them to learn from and about the villagers.

Learning sessions are therefore structured in the form of problem-solving activities or tasks requiring teamwork and open peer discussion. While the field worker or trainer provides the simple structure of the problem-solving activity or task, the content comes mainly from the learners, drawn from their own rich experience of life. This increases the relevance of the learning and gives them self-assurance in practising problem-solving skills.

## **MODULE 5: INTER-SECTORAL LINKAGES**

*SESSION 16: MAKING THE CASE FOR IMPROVED PROGRAMME LINKAGES*

*SESSION 17: THE HEALTH IMPACT OF WATER SUPPLY AND SANITATION PROGRAMMES: SEPARATING MYTH FROM REALITY*

*SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME*

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 16: MAKING THE CASE FOR IMPROVED PROGRAMME LINKAGES**

**OBJECTIVES**

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By the end of the session, you should be able to:

- \* list at least three reasons why improved programme linkages are important;
- \* list at least five ways to link WATSAN with health, nutrition and education respectively;
- \* describe three ways to improve inter-sectoral cooperation within UNICEF-assisted programmes.

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Exercise: Developing Inter-Sectoral Programmes
- \* Plenary
- \* Summary and Evaluation of Session



## Learning Points

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1. Water supplies are usually the most felt need within communities. Many studies have listed water as the highest priority. Working with communities on an integrated project of water, sanitation and hygiene education can help develop a good basis of interaction for further development activities, including health, nutrition and education projects.
2. One realisation that has clearly emerged during the decade since Alma Ata is that child survival activities and improved water supply and sanitation facilities can do more together than separately to prevent childhood death and illness. Many evaluations indicate that water supply programmes operating separately, or even with sanitation, have limited effect on diarrhoeal diseases without a community understanding of health issues and corresponding changes in health and hygiene behaviours.
3. In 1988, UNICEF issued a policy statement that emphasised the inherent links between water supply, sanitation and primary health care. The importance of integrating interventions in these areas e.g. notably water, sanitation, hygiene and primary health care, within the context of child survival activities was also recognised.
4. Water and sanitation supplies can alleviate both health and labour problems if carefully designed to do so. There are many examples of calls for integrated attention to the growth and development of the young child for example (as quoted in Programming for Early Child Development, UNESCO-UNICEF Digest 30) **'The needs of the young child are inter-dependent and therefore any measures for his or her advancement must be based on a holistic approach to child development and be implemented within the framework of an integrated structure.'**
5. UNICEF should use its multi-sectorial strengths to encourage collaboration in child development in order to incorporate the education stimulation dimension into other sectors including health, nutrition and child care activities and vice versa; one should concentrate not only on child survival but on the fullest possible development, according to existing knowledge, of the full potential of each person. (UNICEF, 1984; p. 31).  
combined programme.
6. An integrating force that is not linked to a particular specialised organisation or bureaucratic structure is the local community. If the organisation of the local community is strong, the chances are that various programme components will not only reach the community (because demand and execution will be strong) but that real coordination at the local level will also be greater.

## Health

7. Water supply and sanitation are essential components of primary health care. Neither water supply or any other primary health care information can by itself fully meet the objectives of primary health care. According to Mc Junkin (1982): Most real world programmes will incorporate a mix of activities, but for many poorer countries, a necessarily incomplete programme. This means that the level and extent of primary health care activities must be weighed in accordance with their contribution to national current objectives, health and otherwise.

8. Isley in his article named 'How can Water Supply and Sanitation Serve the Goals of "Health For All" in Africa' (1983) stated that as one travels to countries of the developing world, one is impressed with the widely varying ways in which both governments and non-governmental agencies have interpreted in operational terms the meaning of primary health care. In many parts of the developing world, primary health care efforts at the level of populations have begun with improvements in water supply.

9. Isely cites a case study where: "when the need for water was met, the people of the village were able to focus on other priorities: school nutrition, child health, and better housing. Improved water supply, when it responds to a felt need, can open the door to other primary health care and more broadly defined development efforts. The degree of felt need for water supply varies from drier to more well watered regions and in fact from dry to wet season, but is experienced by nearly every population at some point in its history after decades of abundant rainfall."

### 10. Ways in which to Link Health and WATSAN

Water and sanitation programmes invariably have field staff interacting at the community level for a sustained period. Since water is a felt need, the field staff have high credibility and status whilst working in the village. It is therefore advantageous to use this opportunity to also introduce other development activities. Isely gives some examples. One, 'The Malawi Rural Water supply Project is well known. For fifteen years rural communities, cooperating with government agents, have been installing gravity-fed piped water supply systems.

- In Nigeria the UNICEF supported water supply and sanitation programme has been linking with primary health care since 1981. Brody et al (1988) quotes 'Water is a good focal point for mobilising communities. The community structures created around this initial mobilisation can be used for promotion of additional health initiatives.'

## Nutrition

11. Infections are closely related to hygiene and especially to water use. Tafari and Naeye in Addis Ababa showed that there was a striking reduction of cases of materno-foetal infection even in poor families where there was an increased use of water.

12. Several studies have noted the close association between nutritional status and socio-economic and environmental factors. Thus children with poor nutritional status are more likely to come from disadvantaged homes. It could be argued therefore that moderate protein energy malnutrition has no direct biological effect on the risk of infection, but simply acts as a marker for poor social and environmental conditions which are themselves responsible for an increased incidence of infection and possibly, through reduced use of or access to curative care, for more persistent or severe illness (Tomkins, 1989).

13. Tomkins (1989) in Gambia found a significant difference in cases of diarrhoea between households having an improved water supply compared to those without. A relationship was then found between stunting and an increased prevalence of diarrhoea. However no direct relationship was found between diarrhoea and wasting. **This led Tomkins to conclude that some of this association is due to the effect of morbidity on growth rather than the effect of growth on morbidity.** Children who for some experience have had frequent bouts of diarrhoeal illness are likely to have had poorer than average nutritional status. This indicates that in order to improve nutritional status by reducing stunting, a more long term developmental approach is necessary combining health care, improved nutrition and environmental factors including better water and sanitation facilities.

14. Clearly, combining nutrition interventions with an improved water supply system and improved excreta disposal facilities in order to reduce the risks of infection, will have an improved impact upon nutritional status of mothers and children. In India, for example, the fruits of the agricultural revolution do not adequately reach the non-privileged in society. Multi-sectoral programmes are undoubtedly necessary to eliminate malnutrition. A simultaneous development of agriculture, fishery, animal husbandry, education, communication, and transportation will yield promising results if elaborated in connection with primary health care, the equitable distribution of food, environmental sanitation, and the control of infectious diseases.

15. A conceptual framework for analysing the underlying causes of morbidity and mortality was developed by the Nutrition Section, UNICEF, New York (1990). These underlying causes can be due to an inadequate supply of food, for example, or by too little time to prepare food or feed children. Similarly, deaths from diseases may

result from any one or a combination of causes such as lack of health services, poor water supplies and sanitary facilities, poor food hygiene and inadequate child care. The framework is outlined in Table 1.

16. An example of some successful linkages of water and sanitation programmes with nutrition are given below:

a) Nutrition Programme in Costa Rica.

It is difficult to establish which factors accounted for the drastic decline in diarrhoeal disease, malnutrition and infant mortality rates in Costa Rica. Based on current knowledge it appears evident that the decline should have been due to an improved host resistance on the part of infants and/or a decrease in exposure to infection. Mata records that in the rural areas, water supply coverage increased from 34 to 61 per cent in 12 years and this contributed to a significant decrease in typhoid, giardiasis and shigellosis. He concludes that 'the holistic approach of water supply and sanitation, improved health, better family planning all combined was most effective in reducing malnutrition'.

b) Casamance, Senegal

Garden groups were established by the women which were an excellent example of how improved water supply can lead to multiple benefits for women and children, and also can demonstrate the important role women can play in leading the community into a more active effort to improve the quality of life.

c) Iodine Control Programme, Mali and Vietnam

A method is now being used (Rhodifuse Iode by Rhone Polenc Rorer, France) for the addition of iodine to water supplies. The iodine is diffused into the water through the insertion of a cartridge into the well/borehole. It has been field tested in Mali and Vietnam and is proving to have a positive impact as a low cost intervention for iodine deficiency. This is now being followed up by the Water and Sanitation and Nutrition Sections of UNICEF, New York in order to investigate its cost-effectiveness as a nutrition intervention.

d) Schools Garden Project, The Gambia

In the Gambia UNICEF has been supporting the linking of education to the development of kitchen gardens to assist in nutrition education. In addition the water and

sanitation programme will now be providing basic services to the schools within the programme.

## Education

17. The need for education to maximise health benefits from water and sanitation is well documented. The sector however is aware that in order to address these issues, it is essential to link more effectively with expertise in this field. The following is extracted from 'Promotion of Health Behaviour in Water and Sanitation Programmes' (1985): Health promotion includes educational and related organisation, political and economic interventions designed to facilitate behavioural and environmental adaptations that will improve or protect health. Behaviour is largely determined by "upstream" factors in contrast to many health promotion strategies that address only the 'downstream' lifestyle and at-risk behaviours of people who live in environments that contradict healthy habits. Health education in this context includes an emphasis on predisposing, enabling and reinforcing factors that influence health behaviour. Predisposing factors include the awareness, interest, understanding, attitudes, beliefs, perceptions and values that people hold prior to exposure to new ideas about health practices. Enabling factors refer to the skills and resources they need, whether or not they choose to carry out these practices. Reinforcing factors are the tangible rewards for successful trials: social supports, peer influence, community incentives and other environmental factors that sustain practice.

18. According to Connor (1990): 'UNICEF has concentrated on the immediate or short term environment of the child in its focus on health. The programmes in Water and sanitation have provided UNICEFs strongest extension into the medium term as well the other focal areas of social forestry and household food security. The time is opportune for a much larger educational effort into all three focal areas since they cry for attention and leadership at international, national and local levels'.

Environmental education at each level of the child's maturity will progress from awareness and interest to some behavioural and attitudinal changes. It will not be smooth road, especially as the gap from mere awareness and interest leads gradually to some changes of attitude. But a change of attitudes does not mean there will be a change in behaviour. In fact, the behaviour changes will usually be imposed from the outside (peer pressure) rather than from the inside (self-motivation).

### 19. Ways in which to Link WATSAN and Education

The linkage between WATSAN and schools will be discussed in detail in module six in hygiene education.

- Examples of appropriate technologies can be placed at schools including simple and inexpensive latrines, handpumps, piping and rainwater catchment devices. Teachers should show these to the children around the school grounds and if possible help the community study which of them are needed for a more healthy environment.
- The value of a nearby water supply system needs to be stressed. A local water supply saves many of children's mothers hours of walking each day to fetch from a distant source.
- At present hygiene education activities are undertaken by water and sanitation personnel. Much emphasis is now being placed upon provision of services for schools linked to improved hygiene education. However it is essential to tackle the long term problem through sustained educational approaches. By addressing curricula reform and teaching patterns, one will be far more effective in eventually leading to behavioural changes among children.
- The sector can also link with adult education programmes to address environmental health issues. This was attempted in the Seti Education Project in Nepal where the potential of primary schools was exploited as a means by which to effect rural development, by encouraging teachers to relate what they teach to the environment in which they operate. Communities were also assisted to improve physical facilities in their schools by supporting the construction of new buildings, compound walls, latrines and simple gravity feed systems.

### Ways in which to more effectively link sectors

20. Shared planning is essential for improved inter-sectoral linkages. Planning in isolation will not allow for analysing problems adequately at the grass roots level and developing suitable solutions jointly to address these. For example, if communities have sufficient water, then their other priority needs will have to be addressed, for example, low literacy, malnutrition, etc. In order to improve the mechanisms for shared planning both at UNICEF and government level, far more coordination of sector programmes is necessary.

21. The preparation of the situation analysis allows for joint analysis of underlying causes of mortality and morbidity of women and children as well as existing government efforts to address these problems. Obviously, the underlying causes may vary according to district/regional problems and conditions. This then allows for the development of joint strategies and programmes to address problems at the community level.

22. The sector, as it has now developed, is much broader in its scope of operation than ten years ago. Education and health activities are now undertaken through the development of hygiene education and improved linkages to CDD. The nutritional linkages are apparent in the planned reduction of diarrhoeal diseases that can lead to malnutrition. However there are plenty of opportunities to strengthen inter-sectoral planning at the field level.

23. Water and sanitation programmes can benefit from working within areas where education programmes are being implemented, for example, in countries with low literacy rates, especially female. Likewise other programmes may wish to focus their activities where people have already received improved water supply and sanitary facilities since they are more likely to have sufficient time to spend upon other activities such as improved maternal and child care, household food security and income generating activities.

24. Recommended management strategies for better inter-sectoral linkages can include the following:

Enhance Programme Management Capabilities. Linking child survival with water and sanitation means active collaboration between separate ministries and agencies and between technical specialists and field staff from very different backgrounds. A project start workshop can be helpful followed by periodic workshops or trainings.

Establish Supportive Personnel Policies. A linked programme will require programme staff to strive to collaborate with an unfamiliar sector. The new programme environment should recognise the increased workload that staff may be taking and motivate staff to take this on by increasing certain benefits such as increased training opportunities,.

Decentralise Coordination. A coordinating committee at the national level usually includes high level ministry and donor agency representatives. Establishing regional or local committees can allow day to day coordination and collaboration to take place. Such an arrangement proved successful in Togo.

Establish Realistic Plans of Action. This should spell out activities to take place and take into consideration government and community priorities. The plan should clearly

define monitoring and evaluation indicators sensitive to all sectors. Project objectives and success indicators should be clear to all programme staff.

Develop a Collaborative Training Strategy. A programme's training component is particularly suited to linking sector activities. Personnel all sectors should be trained together as much as possible and should also train other sector staff.



# Determinants of Child Survival & Development

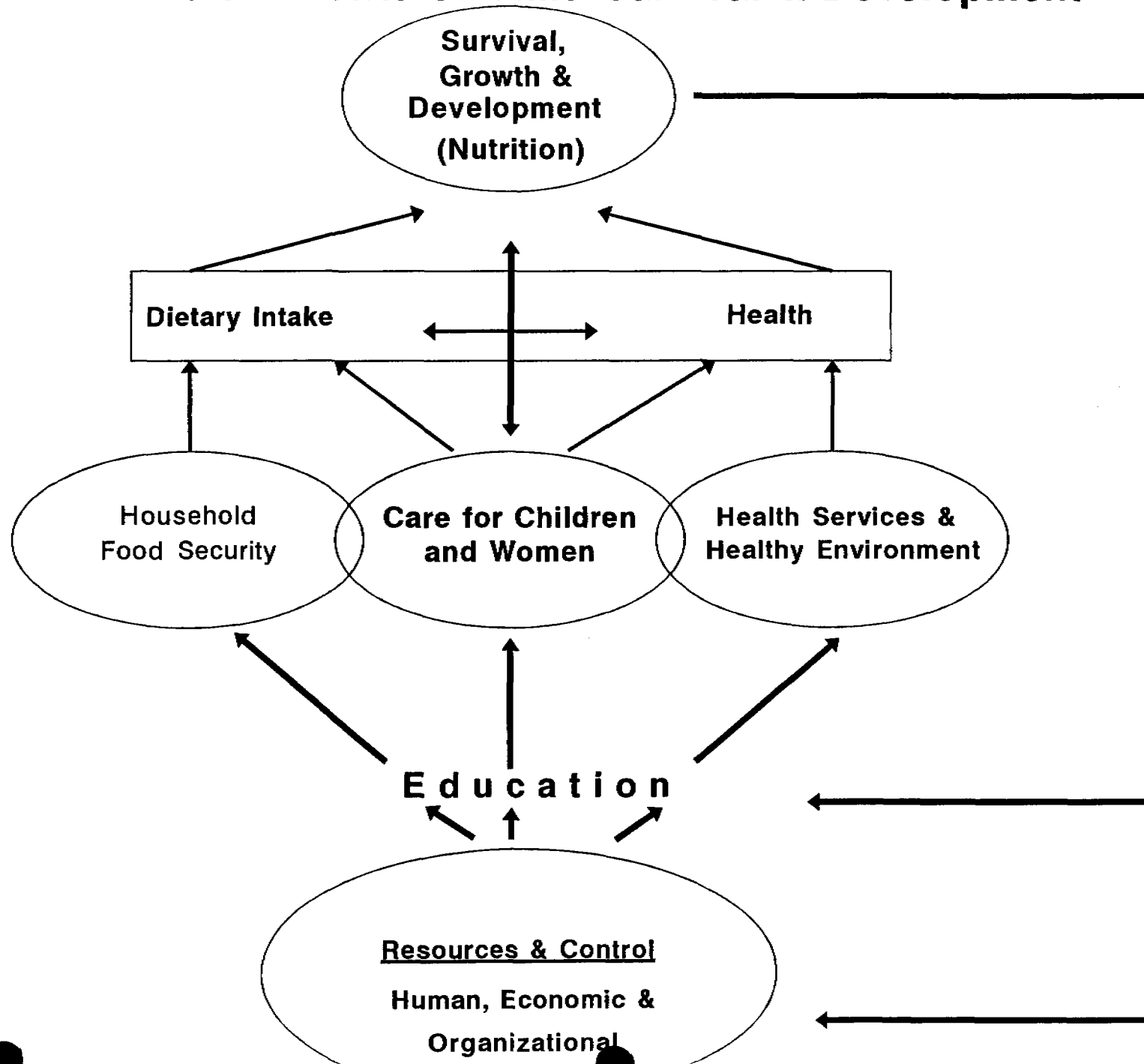


TABLE 1.

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**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 16: MAKING THE CASE FOR IMPROVED PROGRAMME LINKAGES**

**EXERCISE: DEVELOPING INTER-SECTORAL PROGRAMME OBJECTIVES**

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- a) Each group will take one country programme goal and develop four to five country programme objectives from these. The objectives should take into account the need for a broad based multi-sectoral approach in order to fully address the problem as stated in the goals.
- 1) To reduce infant mortality rates from 130/1000 to 85/1000 in five years.
  - 2) To reduce moderate child malnutrition from 60 to 40 per cent in three years.
  - 3) To increase adult literacy rates by 10 per cent in the next five years.

b) Describe at least five ways to link activities with education, nutrition and health. (one group will take each sector).

c) Describe at least three ways you would improve inter-sectoral coordination at the country level.

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 17: THE HEALTH IMPACT OF WATER SUPPLY AND SANITATION PROGRAMMES: SEPARATING MYTH FROM REALITY.**

**OBJECTIVES**

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By the end of the session, you should be able to :

- \* understand why water and sanitation are considered basic elements of primary health care;
- \* list key elements and weaknesses of health impact studies;
- \* Explain why water and sanitation interventions are considered more expensive than other aspects of child survival;

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Plenary
- \* Exercise 1: Health Impact in Developing Countries: New Evidence and New Prospects by A.M. Cairncross
- \* Plenary
- \* Summary and Evaluation of Session

## LEARNING POINTS

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### Basic Elements of Primary Health Care

1. In 1979 The World Health Assembly adopted the goal of 'Health for All by the Year 2000' with increased emphasis to be placed upon primary health care. Water Supply and Sanitation are, by WHO and UNICEF definition, a component of primary health care. (WHO, 1978; UNICEF/WHO Joint Committee, 1979)

As P.F. Basch states in the recent edition of the Textbook of International Health (1990):

The consensus reached at Alma-Ata was confirmed in a resolution at the thirty-second World Health Assembly (WHA) in May 1979, and over the next few years a defined strategy was developed by which PHC was honed as the instrument by which to achieve the goal of "Health for All by the Year 2000. "the Global Strategy" was officially adopted by the thirty-fourth WHA in 1981.

It should be emphasized that primary medical care, that is, preventive or curative personal care carried out by a primary-care physician specializing in general or family practice, should not be confused with primary health care, as defined in conference documents:

Essential health care based on practice, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in a spirit of self-reliance and self-determination. It forms an integral part of both the country's health system of which it is the central function and main focus of the overall social and economic development of the community. It is the first level of contact of individuals, the family and the community with the national health system, bringing health care as close as possible to where people live and work and constitutes the first element of a continuing health care process.'

The core components of PHC as defined at Alma-Ata are shown in Table 1. There may be differences in implementation among countries, depending on local conditions and customs, but the underlying theory represents an integration of PHC with socio-economic development so that each would support the other in a context of equity and social justice. The conference emphasized universal access and participation, with reallocation of resources, if necessary, to reduce inequalities in status and availability.

TABLE 1. The Essential Components of Primary Health Care

- 
1. Health Education
  2. Environmental sanitation, especially of food and water
  3. The employment of community or village health workers
  4. Maternal and child health programs, including immunization and family planning
  5. Prevention of local endemic diseases
  6. Appropriate treatment of common diseases and injuries
  7. Provision of essential drugs
  8. Promotion of nutrition
  9. Traditional medicine
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Source: Alma-Ata Conference Documents.

2. Water is of course an absolute necessity for life. According to USAID: 'The ready availability of water makes possible a hygienic environment that prevents or limits the spread of many human and animal diseases. In the United States, with occasional exceptions, endemic and pandemic disease has been of minor consequence in the overall national health status for over half a century. It is often forgotten that during the 19th-century cholera pandemics, thousands died of water borne cholera in such American cities as New York, New Orleans and St Louis.' The same was true in England, where in 1854 John Snow discovered through path-breaking epidemiological methods that the famous "Broad Street Pump" was responsible for the cholera outbreak in central London.

#### Health Impact Studies

3. However we are still uncertain whether we have proved what the health benefits are of improved water and sanitation services. According to Esrey, discussed in Module 2, more than 144 studies have been conducted to analyse the health benefits of water and sanitation interventions, including diarrhoeal diseases, helminth infections and skin diseases. Overall, these studies show a significant reduction in diarrhoeal disease morbidity and mortality.

4. According to an innovative study by John Briscoe et al. (1986), there is general agreement that water supply and sanitation facilities do play a role in health, there is disagreement on the priority that should be given to the sector as a whole or to specific activities within the sector. Improved information on the impact of different levels of specific water supply and sanitation activities and different mixes of these activities are thus needed for two purposes. First planners have to decide how resources should be allocated between water supply and sanitation programmes,

on the one hand, and other health programmes such as oral rehydration and immunisation programmes), on the other. Second, once the level of resources available to specific water supply, sanitation, and hygiene education activities, and the level of services to be provided.

Because water supply and sanitation programmes have economic and social, as well as health implications, these decisions are not and should not be made solely on the basis of health considerations. Nevertheless, it is evident that reliable information on the impact of water supply and sanitation programmes on health in some settings is necessary if sound decisions are to be made.

5. A workshop was conducted in November 1983 on "Measuring the health impact of water supply and sanitation programmes" organised by the International Centre for Diarrhoeal Disease Research (Bangladesh), and the London School of Hygiene and Tropical Medicine, with support from UNICEF, the international Development Research Centre (IDRC), and WHO. The workshop was attended by 42 scientists and planners representing the bio-medical, engineering and social sciences. The overall purpose of the workshop was to take stock of the information that has been accumulated over the past decade and to determine whether it was possible to develop a valid, coherent and comprehensive body of information on the health impact of water and sanitation projects.

6. As a result of the 1983 workshop and a further two years of research conducted by the Division of Environmental Health and the Control for Diarrhoeal Disease programme of the WHO, a series of guidelines were developed for the conducting of health impact evaluations. Blum and Feachem (1984) produced a paper titled "The Methodological Problems of Health Impact studies" which identified several major methodological problems re-occurring in nearly all of the studies reviewed namely:

a) Lack of Adequate Control

Control observations are essential for meaningful interpretation of data. Two kinds of control problems arise in some of the studies. First, there is the absence of an external control sample. Without an adequate control sample, there is no way of distinguishing between health improvements from water supply or excreta disposal improvements and health improvements that would have occurred in any case due to other factors of social, economic and environmental change.

b) One to One Comparison

Even when control communities are selected and monitored for comparison with intervention communities, it is common practice to select a single control community and compare it to a single intervention community. Community in this context usually means village. A 'one to one village' comparison is analogous to basing a conclusion in the effect of a treatment solely on the differential



response between two individuals, one treated and one untreated. The sample size in each category is one and hence no statistically valid conclusion can be drawn.

c) Compounding Variables

Controlling for the different variables that might possibly influence selected indicators is probably an impossible task except in the context of a randomised intervention with adequate numbers of villages in both groups. The selections of compounding variables for measurement will depend on the health indicator selected. For example, in the case of studies on excreta disposal facilities and diarrhoeal diseases, major compounding variables include water supply, socio-economic status and levels of education.

d) Health Indicator Recall

One of the commonly used indicators of impact is diarrhoeal disease morbidity, particularly in young children. This information is usually obtained by making regular visits to each household and asking an adult present to recall the diarrhoea episodes. However the information may be unreliable or incomplete. Firstly the diarrhoea history may not be known to the respondent. Secondly there may be unwillingness to divulge this information even if known. Thirdly the ability to remember diarrhoea is limited, even when an adult is asked to recall his/her own diarrhoea history or when a mother is asked about her own children.

e) Health Indicator Definition

All health indicators must be precisely defined. Diarrhoea leads itself to imprecise interpretation which may vary from respondent to respondent in the same study if particular care is not taken to standardise a definition which is applicable to that cultural setting.

f) Failure to Analyse by Age

Diseases and infections considered in environmental impact studies are, without exception, unevenly distributed among various age groups. Most types of diarrhoea for instance have their highest incidence in young children.

g) Failure to Record Facility Usage

Water supplies or latrines by themselves have no impact on health. All health improvements depend on how the new facilities are used and by whom they are used. Many studies fail to record facility usage. This can be documented by asking people about usage and/or by observing usage. Observational data will be more reliable, especially data on quantity of water used or use of excreta disposal facilities.

h) Seasonality

Diarrhoeal diseases and their associated infections are markedly seasoned in most parts of the world. This is also true for some parasitic infections such as ascaris and hookworms. While the most reliable information on seasonal impact indicators and usage is obtained by observations taken continuously through the year, such observations are labour and cost intensive and may be impractical.

7. Further work was performed in conducting less expensive case-control studies. However even these were subject to methodological problems. Cairncross produced a paper in 1990 called 'Health impacts in Developing Countries' that concluded 'considerable health impacts can occur under appropriate conditions, and that it is suggested that the greatest impact can be produced by targeting water and sanitation facilities to those whose existing water sources are furthest away, or whose environment is most faecally polluted'. Cairncross states that it is likely to be easier, more reliable, and more useful to water and sanitation programme managers to assess hygiene behavioural changes as an operational evaluation tool.

### Cost Effectiveness

8. Some studies have also questioned the relative economic importance of a series of different interventions including CDD, immunisation, nutrition and water and sanitation. One study commissioned by UNICEF in 1990 (by M. Patel) suggests that 'Safe water and sanitation are essential for social infrastructure. A lack of these is akin to a lack of adequate clothing or shelter. Unnecessary hardship is imposed upon women to fetch water long distances. However, although water supply and sanitation are highly conducive towards improving health, they are not at all cost efficient in promoting child survival. For similar expenditures, far more effective programmes are available. The study offers estimates of the cost of each intervention for saving the life of one infant. It fails to consider adequately the value of long-term versus short-term interventions.

9. The debate on the "cost-effectiveness" of water and sanitation interventions started in 1978 with the Warren and Walsh paper 'Selective Primary Health Care'. The conclusions of this paper maintain that 'until comprehensive health care can be made available to all, services aimed at the few most important diseases (selective primary health care) may be the most effective means of improving the health of the greatest number of people'. The Warren and Walsh and Patel studies fail to consider some important factors. First, the per capita costs quoted in each study are based upon the initial capital investment. If prorated for the 'lifetime' of the system, the cost of water interventions would reduce considerably, i.e. because the water system will continue to save infant and child lives beyond one year. Interventions such as ORT, ARI are costed on the basis of one episode, therefore representing single point interventions rather than long term ones.

10. Briscoe reviews the cost effectiveness of water and sanitation projects in his paper 'Water Supply and Health in Developing Countries: Selective Primary Health Care Revisited'. 'If appropriate procedures were to be used for determining the net costs of improved supplies, if all available information on health impact was to be considered, if impacts other than just

improvements in infant mortality were to be included and if poor women themselves were to be asked to weigh the relative benefits, then it is apparent that community water supplies would be high priority items in those large areas of developing world where access to adequate water supplies is restricted. Not surprisingly, in many countries in which PHC programmes have been successfully implemented, improvements in water supply and sanitation have been an integral part of development policy.'

11. Clearly water and sanitation interventions can have a far greater impact if they are combined with other interventions especially health, nutrition and education. Rather than continuing to devote time and energy on "proving" the importance of water and sanitation for improved health, it seems more profitable to maximise the chances of this occurring by improving programme linkages. In other words, the key questions for UNICEF is not whether improved programme linkages are desirable but rather how they can be achieved.

12. UNICEF is supporting government in all the sectors where water and sanitation would benefit from improved linkages. More effort is necessary, however, to develop stronger interaction at the field level. This can be achieved by combined planning, especially in the development of the new country programme preparation. Some countries have succeeded in combining programmes. For example, the UNICEF 1991 Annual Report cites several countries that are attempting to improve the relationship between WATSAN and other sectors, particularly CDD. These include: Bangladesh, Burundi, Cape Verde, Indonesia, Lao Peoples Republic, Pakistan, Sierra Leone, Solomon Islands, Sudan, Tanzania, Thailand and Vanuatu. Water, as a felt community need, is an ideal entry point for other programme activities. When a community already has sufficient water, it is more able to concentrate on improving its quality of life through health, education and nutrition efforts.

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**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 17: THE HEALTH IMPACT OF WATER SUPPLY AND SANITATION PROGRAMMES: SEPARATING MYTH FROM REALITY.**

**EXERCISE 1: HEALTH IMPACTS IN DEVELOPING COUNTRIES**

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Answer the following three questions by referring to the Cairncross article entitled "Health Impacts in Developing Countries: New Evidence & New Prospects". Integrate your own experience where appropriate.

1. "Health impact studies are not an operational tool for 'project evaluation' or 'fine-tuning' of interventions".
  - a) What justification does Cairncross give for this statement?



If possible list 2 or 3 additional problems with health impact studies, based on your own experience.

3. Given the several problems he identifies, what alternative(s) does Cairncross suggest?

Do you agree? Can you think of any others?

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 17: THE HEALTH IMPACT OF WATER SUPPLY AND  
SANITATION PROGRAMMES: SEPARATING MYTH  
FROM REALITY.**

**READING MATERIAL**

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**HEALTH IMPACTS IN DEVELOPING COUNTRIES:**

**NEW EVIDENCE AND NEW PROSPECTS**

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## Health Impacts in Developing Countries: New Evidence and New Prospects

By A. M. CAIRNCROSS, PhD, MICE (Member)\*

### ABSTRACT

This review of recent studies of the health impact of water supply and sanitation programmes in developing countries shows that they share many findings, and some methodological problems, with older studies of the subject. Considerable health impacts can occur under appropriate conditions, and it is suggested that the greatest impact can be produced by targeting water and sanitation facilities to those whose existing water sources are furthest away, or whose environment is most faecally polluted.

Another finding is that health benefits stem from the changes in hygiene behaviour which water and sanitation make possible. The measurement of such behavioural changes is a subject in need of development. Nevertheless, it is likely to be easier, more reliable, and more useful to water and sanitation programme managers as an operational evaluation tool than any attempt to measure the health benefits directly.

*Key words:* Diarrhoea; epidemiology; hygiene; sanitation; water supply.

### INTRODUCTION

Attempts to measure the health impact of water supplies and sanitation have a long and chequered history. Many of them have been made by amateur epidemiologists at the behest of the agencies financing the construction of the facilities, and with insufficient planning and rigour. Even some studies supervised by eminent specialists have produced almost useless or meaningless results, after taking years to complete and costing substantial sums of money. This unhappy experience led a panel of experts, convened in 1975 by the World Bank, to conclude that the Bank should not undertake any long-term longitudinal studies of the question<sup>1</sup>.

A more sanguine mood prevailed, however, at the international workshop convened in 1983 at Cox's Bazaar, Bangladesh, on 'Measuring the health impact of water and sanitation programmes'. Agen-

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cies such as the United Nation's Children's Fund (UNICEF), the World Health Organization and the International Development Research Centre supported the meeting, which gave rise to a set of methodological guidelines<sup>2</sup> and a document<sup>3</sup> explaining how a new technique (the case-control method) could be used to measure impact on diarrhoeal disease, in less time and at lower cost than with conventional methods.

Since that time, new evidence has accumulated. About a dozen studies focusing on diarrhoeal disease have been carried out by reputable research groups, which have endeavoured to incorporate in their methodology the lessons learned at Cox's Bazaar. The results are summarized in Appendix 1. As the Water Decade draws to its close, the time is opportune for (a) a review of the results of this activity, (b) a synthesis of the lessons to be learned from them so far, and (c) careful consideration of their implications for future work.

A review of the published and unpublished results of this new generation of health-impact studies suggests two important conclusions. First, health-impact studies are not an operational tool for project evaluation or 'fine tuning' of interventions. The results are not only unpredictable; they are sometimes so surprising that they offer no firm interpretation. In particular, the short-duration studies sometimes advocated as an operational tool are those which offer least information to assist the interpretation of their results. If no health impact is detected by such a study, the design is too basic, and the sample is too small, to permit any further analysis to discover why this might be so.

Second, notwithstanding the unpredictability of the results of these studies, taken as a whole they provide firm evidence that water supplies, excreta disposal, and hygiene education can have a significant impact on diarrhoeal disease, similar to that indicated by Esrey *et al*<sup>4</sup> on the basis of the older literature. The overall picture suggested by the recent studies is not very different from that offered by the older ones. Most of the studies suggest that access to water, increased water usage, and improvements in hygiene may have a greater impact on diarrhoea than water quality and excreta disposal.

However, any such conclusion can only be a personal assessment of the literature, because considerable (sometimes insuperable) methodological problems beset anyone seeking to conduct such a study<sup>5,6</sup> and can cast doubt on the results. One of

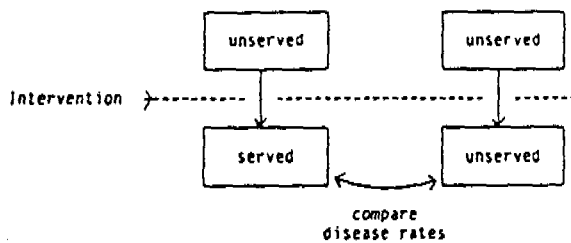
these problems is 'confounding' at the household level, which deserves more thorough consideration than it has received so far. It arises because of the way most health-impact studies are designed.

### A MAJOR PROBLEM

Briefly, there are two main approaches to the design of an epidemiological study to measure the impact of water and sanitation on disease: (i) quasi-experimental, and (ii) observational (Fig. 1).

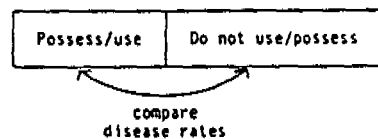
In 'quasi-experimental' studies, the health of two groups of people is studied, one group being provided with water supply and/or sanitation facilities. This is not a true experiment, because it is not possible to allocate people to the groups at random - as is carried out when evaluating drugs and other medical interventions. Apart from any ethical misgivings it might arouse, in most circumstances the strategy is not politically feasible. Moreover, it is often impractical to observe the two groups before the facilities are installed.

#### Quasi-experimental studies

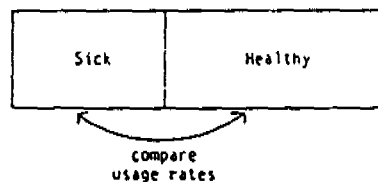


#### Observational studies

(a) Conventional



(b) Case-Control



**Fig. 1.** Types of epidemiological study to measure health impact of water supplies and sanitation

This means that most studies essentially belong to the other type, i.e. 'observational'. The researcher simply observes the health of groups who have and who have not benefited already from water or

sanitation facilities, and tries to eliminate any bias due to the way they have been allocated.

Observational studies are of two basic types: (a) conventional, and (b) case-control. The 'conventional' observational study compares the groups served and not served by the facilities, with regard to their disease rates. The 'case-control' study is the exact opposite of this approach. A group of people who suffer from the disease in question (cases) is compared with a group of comparable people who do not (controls). The investigators compare the proportion of individuals in each group who are served by the facilities, and from this they can deduce the relative odds of becoming sick among those who are served and not served; in other words, the health impact.

These two types of observational study are mirror images of one another, and both have several problems in common. A major question relates to how the facilities have been allocated among the population. In the case of water supply the allocation is often made to whole communities at a time, e.g. a whole village when a hand pump is installed, and is dictated by administrative or technical convenience, political patronage or other factors only loosely associated with health. In the case of sanitation, however, and in some cases the use of a protected water source, the allocation depends on a decision taken at the level of the individual household.

Serious problems arise because the households which are most likely to invest in a latrine, or to prefer a protected source of water, are probably atypical in other respects. The occupiers of the household may be wealthier than average, their members more educated, or simply more aware of the benefits of hygiene; various studies have shown that this is the case. Wealth, education and hygiene consciousness are also associated with a lower incidence of disease. Hence those using water and sanitation facilities will tend to have less disease, whether or not the facilities have any protective effect. This phenomenon is known as 'confounding'. Statistical techniques exist to 'control' for confounding, with a view to eliminating its effect; however, they are effective only if the confounding factor is accurately measured for each household. In practice, wealth is usually assessed from one or more 'proxy' variables, such as the possession of a metal roof, a watch or bicycle, and education in terms of years of schooling of the adults in the household. Hygiene consciousness, as expressed in hygiene practices, is measured crudely or not at all.

Esrey and Habicht<sup>7</sup> found that sanitation seemed to have a greater impact on diarrhoea incidence than water-supply improvements. It is possible that this apparent finding simply reflects the degree to which studies of the health impact of sanitation have been bedevilled by confounding at the household level, and have only partially succeeded in its control.

Many of the studies where water-quality improvements seemed to reduce diarrhoea, even when conducted by eminently competent researchers, are also open to suspicion.

hard to interpret in this respect, it is clear that in most of those where a significant health impact was found, the provision of water supply or sanitation had been accompanied by improvements in hygiene.

### TARGETING FOR HEALTH IMPACT

It is probably not very productive for anyone other than academic researchers to agonize any longer about such methodological problems and whether an impact on diarrhoea exists at all. Some studies have shown conclusively that it does. Most studies, if less conclusive, tend to support the view that water and sanitation can reduce the incidence of diarrhoea by about 25%<sup>4</sup>. Moreover, water supplies and sanitation can have a powerful impact on other infections. Water supplies can almost eliminate Guinea worm<sup>8</sup> and substantially reduce the prevalence of trachoma<sup>9</sup> and schistosomiasis<sup>10</sup>. Excreta disposal is a prime control measure for intestinal parasitic worms, and most studies of the impact of water and sanitation on the parasitic diseases have underestimated its public-health importance<sup>11</sup>.

It is perhaps more constructive to ask under what conditions the greatest benefit to health may be obtained. Some researchers have focused on whether the groups which are likely to benefit most are in a particular socio-economic group<sup>12</sup>, or have a particular set of infant feeding practices<sup>13</sup> or level of education<sup>14</sup>. However, the policy implications of such studies are obscure. It would often be administratively impossible, and usually politically unacceptable, to target water and sanitation investments explicitly at such groups.

There is another approach to targeting which is clearly politically equitable but has largely been neglected in the health-impact literature, most of which considers water supply and sanitation as interventions defined by the level of service provided. These interventions can only be fully defined with respect to the conditions prevailing before they were implemented. Piped water in a household which previously used a hand pump in the backyard is unlikely to have the same impact as in one which collected its water from a muddy puddle 1 km away. Where previously-existing water and sanitation conditions are least hygienic, provision at a given level of service is likely to have the greatest impact. Few would dispute that it is equitable to target such environmental improvements on those whose environmental conditions are worst; for example, those whose water sources are furthest away or whose environment is most faecally polluted.

Such target groups are also most likely to feel a need for water and sanitation and therefore most likely to pay for it<sup>15</sup>. They are also most likely to respond to them by improvements in their hygiene. While the evidence from health-impact studies is

### MEASUREMENT OF HYGIENE

'Hygiene' in this context refers to practices such as the washing of hands, food and utensils, or the disposal of children's stools. It may be promoted by better access to water and sanitation or by hygiene education, and improvements in hygiene may be reflected in increased water consumption. It appears that the most significant impacts on disease incidence stem from the behavioural changes which constitute hygiene improvements, and which interventions in the water sector seek to bring about. If no such change in behaviour results from improved water supply or sanitation, the only health benefits which are likely to occur are those stemming from improved water quality; in many settings these are relatively minor or even negligible.

Unless more is known about the conditions for these behavioural changes to occur, it is not possible to know how a health benefit can be expected. However (and this is a third conclusion to be drawn from the recent health-impact studies), all of them had difficulty in measuring the simple behavioural factors such as household water consumption. In some studies these factors were neglected because of an emphasis on water quality. In others an effort was made to examine them, but the study team lacked the necessary expertise or resources. In several, only a simple questionnaire was used, and the results showed too many discrepancies for detailed analysis to be considered worthwhile.

However, the objective study of human behaviour is not impossible, as a wealth of anthropological literature can testify. The problem is that the necessary techniques are not well known in the water and sanitation sector, and no coherent attempt has been made to adapt them to the needs of the sector.

A set of guidelines for the study of hygiene practices would provide practical tools for the operational evaluation of water and sanitation projects. A study of behavioural factors can be carried out more quickly, and much more cheaply, than a health-impact study, and its results would offer far greater power to diagnose problems in an existing programme. For example, a finding that health impact is small does not indicate how the impact can be increased; on the other hand, a finding that, say, latrines are not widely used will suggest measures to improve the situation. In fact, the guidelines envisaged would greatly facilitate implementation of the Minimum Evaluation Procedure for Water Supply and Sanitation Projects<sup>16</sup>.

Operational tools for the assessment of changes in hygiene practices would be particularly valuable for the evaluation of hygiene education programmes. Little is known about the relative cost effectiveness of the various possible approaches to hygiene education, and without objective (preferably standardized) methods to measure the impact on the behaviour of each approach, an understanding of this subject is unlikely to improve. Methodological guidance on the measurement of intervening factors would be invaluable to researchers planning any future health-impact studies. It would help them to design their investigations in such a way as to permit a better examination of the pathways by which water and sanitation may influence health. Future interventions can then be designed to maximize their health benefits, although this, it must be stressed, is not a short-term goal.

### CONCLUSIONS

1. Reconsideration of the evidence, old and new, on the health impacts of water supply and sanitation programmes in developing countries offers new prospects for programme design and evaluation, by which those impacts can be increased.
2. By considering the existing conditions of water collection and excreta disposal, the provision of water supplies and sanitation facilities can be targeted to the groups which are likely to benefit most from them. These groups are also most likely to be willing to pay for them. On the other hand, it is now clear that these impacts stem from changes in hygiene behaviour.
3. Measurement of the changes will improve the ability to evaluate water, sanitation and hygiene education programmes to make them more effective. However, reliable methods for studying such behaviour has proved elusive, and the assistance of anthropologists is needed to develop better techniques.

### ACKNOWLEDGEMENTS

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## APPENDIX 1

## SUMMARY OF RECENT HEALTH IMPACT STUDIES

LOCATION, SECTOR (SOURCE)	TYPE OF STUDY	PROBLEMS	CONCLUSIONS
Mirzapur, Bangladesh: Rural WS, Sanitation and health education <sup>17</sup>	Longitudinal, children under 5	Difficult to distinguish between effects of different interventions.	Combined package of WSS and health education resulted in significant decrease in diarrhoea and dysentery; relative proportion of children suffering from diarrhoea at any one time fell by 46% in intervention area. Closeness to handpump and use of latrine for disposing of children's faeces also significant.
Mohale's Hoek, Lesotho: Rural sanitation <sup>18</sup>	Case control, children under 5	Water use not studied in detail. Private water source associated with 38% reduction in diarrhoea, but this may be largely a socio-economic effect. Surprisingly, significant improvement in children's height-for-age associated with latrine ownership arouses suspicion that results may be due to latrine owners being unrepresentative of population.	Latrine ownership appears to be associated with 24% reduction in children's diarrhoeas, but this is not quite statistically significant at 5% level. Impact of water supply seems likely to be connected with increased use and better hygiene, rather than improvements in water quality. Preliminary analysis of data showed no apparent difference between VIP, pit and bucket latrines, in respect of health impact.
Kurunegala, Sri Lanka: Rural WS <sup>19</sup>	Case control, children under 5	Apparent impact varies widely between the 5 hospitals at which cases and controls were recruited, ranging between 90% reduction in diarrhoea incidence and no significant reduction at all.	No association between childhood diarrhoea and sanitation, access to water or quantity of water used. Quality of water used has an impact: use of protected sources resulted in about 35% reduction in the risk of diarrhoea on average, even among people claiming to boil their water. Hygienic disposal of children's faeces was also associated with 34% less diarrhoea.

## CAIRNCROSS ON

LOCATION, SECTOR (SOURCE)	TYPE OF STUDY	PROBLEMS	CONCLUSIONS
Porto Alegre and Pelotas, Brazil: Urban WS <sup>20</sup>	Case control, infant mortality	Small sample size leads to few statistically significant results after correcting for confounding factors. No measurement of factors such as water consumption or quality.	Infants in houses sharing a tap with neighbours are 50% more likely to die of diarrhoea (even after adjusting for confounding factors) than those from houses with in-house piped water (but this result is not statistically significant). Infants from houses using a public standpipe or well are 4.8 times more likely to die of diarrhoea than those from houses with in-house piped water (significant at the 1% level).
Villa Carlos, Fonseca, Nicaragua: Rural WS <sup>21</sup>	Case control, children under 5	Relationships between distance to source and water consumption not studied, despite finding that distance linked to diarrhoea incidence.	Wide variations in level of faecal contamination. Relationship with proximity to water source (especially during dry season) detected, and just significant.
West Zomba, Malawi: Rural WS <sup>22</sup>	Longitudinal, children under 5	Problems in implementing the intervention to be evaluated.	Inconclusive.
East Zomba, Malawi: Rural WS <sup>23</sup>	Case control, children under 5	Sample too small to provide significant results. Distance to both improved and traditional water sources almost the same so water consumption (as reported) did not vary much.	No significant association was found between risk of diarrhoea and type of water source or presence of latrine. Improved water supply and possession of a latrine might reduce diarrhoea risk by 23% but this conclusion is not statistically significant due to small sample size (15% probability it arose by chance).
Cebu, Philippines: Urban WS <sup>24</sup>	Case control, children under 2	Sample too small to provide significant results. No direct measurement of water consumption.	No consistent relationship was found between type or quality of water supply, presence of a latrine and risk of diarrhoea (note that adjustments were made for effects of boiling and proper storage of water).
Imo State, Nigeria: Rural WS, sanitation, health education <sup>25</sup>	Longitudinal study: mainly diarrhoea in children under 6; nutrition in children under 3; and Guinea worm for entire population	Emergence of a new spring in the control area confounded water source comparisons. Improved water supply still not very accessible (median distance 500 m). KAP changes also detected in control area, probably due to exposure to project monitoring.	No consistent reduction in diarrhoea was found, nor any relationship between water source quality and diarrhoea (adults had higher incidence of diarrhoea with improved water quality). Time spent collecting water was linked to diarrhoea incidence: if the collection time was 2 h children aged between 0-4 are 2.9 times more likely to have diarrhoea in any week (for children aged 5-14, 2.0 times). Distance to a borehole is also important: children aged 0-4 from houses more than 250 m from a borehole were 23% more likely to have diarrhoea (but this is not statistically significant).

HEALTH IMPACTS IN DEVELOPING COUNTRIES: NEW EVIDENCE AND NEW PROSPECTS

LOCATION, SECTOR (SOURCE)	TYPE OF STUDY	PROBLEMS	CONCLUSIONS
Lesotho: Rural WS <sup>26,27</sup>	Longitudinal, children under 3	Detection of impact required comparison of households within the improved villages, contrary to the original intention of conducting a randomized controlled trial.	Children in villages without improved water supply grew better and did not have more diarrhoea than in those which had one. They did however, have less <i>Giardia</i> and <i>E. coli</i> . In the improved villages, growth rates (but also diarrhoea rates) were higher among exclusive users of the improved supplies. <i>Giardia</i> infection rates were lower and diarrhoea rates among infants higher, among those using more water <i>per capita</i> .
Teknaf, Bangladesh: Rural WS and health education <sup>28</sup>	Longitudinal, children under 2	Lack of baseline data prevents distinction between impact of hygiene education and possible difference between areas. Hygiene observed for only one day, not in peak diarrhoea season.	Provision of 1 handpump to 4-6 households plus hygiene education associated with 17% less diarrhoea. Within both intervention and control areas, diarrhoea rates were significantly lower when good hygiene practices were observed: - no faeces in yard - hands washed before serving food - ash/mud used for handwashing after defaecation - use of handpump water for washing. These practices were reportedly more than 9% more common (the last two over 27% more common) in the intervention area.
Bakau, Gambia: Urban WS	Retrospective child mortality under 3	Probable confounding at household level.	Risk of death in households using public taps twice as high as for those with yard connection.

A copy of the discussion to this paper, and a copy of the full version of the proceedings of the Symposium, may be obtained from the Institution's Headquarters.

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME**

**OBJECTIVES**

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By the end of the session you should be able to:

- \* list at least three measures to advocate at the global level to integrate CDD and WATSAN interventions;
- \* understand the synergistic effect of integrating CDD and WATSAN interventions;
- \* identify the programme implications of health impact studies related to WATSAN and CDD.

**Session Flow and Methodology**

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- \* Overview by Facilitator
- \* Plenary
- \* Exercise I: Improved Linkages between WATSAN and CDD
- \* Plenary
- \* Exercise II: Health Impact of Water and Sanitation Programmes
- \* Plenary
- \* Evaluation of Session



## LEARNING POINTS

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### Part I - CDD and WATSAN: Making the Connection

1. As far back as the early 1980s, improved water and sanitation was recognized as having significant, positive effects on the reduction of diarrhoea-related morbidity and mortality. An early review on the subject, based on 67 studies from 28 countries, concluded the following:

- \* Median reductions in diarrhoea morbidity rates are between 22-27 per cent.
- \* Median reductions in diarrhoea mortality rates are between 21-30 per cent.
- \* Improvements in water quality have less of an impact than improvements in water availability or sanitation.

2. At that time adequate data did not exist to draw firm conclusions on the impact of hygiene education, either alone or as part of water supply projects. Nonetheless, the authors concluded that "... it is possible that well-designed projects combining water supply, excreta disposal and hygiene education may achieve diarrhoea morbidity rate reductions of 35-50 per cent. It is to be expected that, in any given project, the impact on diarrhoea mortality rates will be larger than that on diarrhoea morbidity rates, except in areas where other interventions, such as oral rehydration programmes, have substantially reduced the risk of death from diarrhoea."

3. In the 1990s a number of attempts have been made to confirm (and specify) the impact of water and sanitation programmes on the health status of populations. Unfortunately, the results of these efforts have been inconclusive. As one recent analysis (Cairncross, 1989) suggests:

"Attempts to measure the health impact of water supply and sanitation have a long and chequered history. Many of them have been made by amateur epidemiologists at the behest of the agencies financing the construction of the facilities, and with insufficient planning and rigour. Even some studies supervised by eminent specialists have produced almost useless or meaningless results, after taking years to complete and costing substantial sums of money....."

It is probably not very productive for anyone other than academic researchers to agonize any longer about methodological problems and whether an impact on diarrhoea exists at all. Some studies have shown conclusively that it does. Most studies, if less conclusive, tend to support the view that water and sanitation can reduce the incidence of diarrhoea by about 25%. Moreover, water supplies and sanitation can have a powerful impact on other infections. Water supplies can almost eliminate guinea worm and substantially reduce the prevalence of trachoma and schistosomiasis. Excreta disposal is a prime control measure for intestinal parasitic worms, and most studies of the impact of water and sanitation on the parasitic diseases have underestimated its public-health importance.

It is perhaps more constructive to ask under what conditions the greatest benefit to health may be obtained.

#### Part II - Policy at the Global Level: Setting the Example

4. UNICEF tends to agree with A. M. Cairncross. While remaining interested in further specifying the health impact of WATSAN programmes, the fact that there is a substantial impact is widely assumed. UNICEF offices are encouraged to integrate CDD and WATSAN efforts to the fullest extent possible.

5. At the global level, commitment to fuller integration has been clearly articulated. In the 1991-1995 workplan of the Water and Environmental Sanitation Team (WET), for instance, one of the key goals is to "link water and sanitation with the control of diarrhoeal diseases (CDD), in order to bring about a significant reduction in the mortality and morbidity rates resulting from these diseases" (p 12).

6. In the list of planned activities for the same five year period, the workplan includes a special section entitled "Linkage with CDD":

- \* **Challenge.** Diarrhoeal diseases have been identified as one of the major killers of infants and children. Oral rehydration therapy (ORT) has been very instrumental in treating some forms of diarrhoeal diseases, the principal causes of which are rooted in unsanitary and unhygienic conditions. As ORT is at best a cure, the CDD equation requires complementary preventive and curative features for it to be significantly effective. Water and sanitation, in addition to nutrition, are two effective preventive interventions. Thus, if the linkage between water and sanitation (WATSAN) and ORT were to be enhanced

in country programmes, the control of diarrhoeal diseases (CDD) could be made more effective.

- \* Objective. To link the programming of water and sanitation with the programming of ORT, in a practical complementary manner, so that the former intervention be a principal preventive means (in juxtaposition with the curative ORT) within the CDD package.
  
- \* Approach. At UNICEF and at government level, both the WATSAN and the CDD teams should establish a working relationship, leading to joint programming. The joint programming can include the following:
  - Joint planning: Ensure, via joint planning, that common areas are selected for ORT promotion as well as for WATSAN and that strategies take at least both interventions into consideration.
  
  - Balanced curriculum: courses for trainees in CDD, promotional literature, school text books, etc., should reflect both the preventive (WATSAN, etc.) and the curative (ORT, etc.) aspects.
  
  - Suitable sanitary amenities: Generally, communities selected for the CDD programme should also have existing or planned WATSAN projects. But, specifically, CDD training centers, schools, health centers, etc., where both theoretical education and practical experiences are disseminated, should each have at least a water-point and a sanitary latrine, so that the theory and practice of CDD endeavors can be realistic.
  
  - Appropriate health messages: Messages emanating from CDD programmes should reflect both the preventive (WATSAN, etc.) and the curative (ORT, etc.) elements. (One of the major preventive means should always be the washing of hands after/before certain functions).

\* Expected Achievements by 1995

- An effective linkage of WATSAN with CDD, in the Country Programme plans of action and at the implementation of the latter.
- A positive impact on the number of diarrhoeal disease cases, relative to the present.

\* Implications for Country Programme Process

- The planners and other participants of this process should re-orient their thinking regarding CDD, to give significance not only to the curative aspect but also to preventive means. Thus, all CDD programmes should include the intervention of water, sanitation and hygiene education.
- The WATSAN and the CDD entities at the country level should determine modalities for joint programming.

7. Similarly, the Global Strategy for the Control of Diarrhoeal Diseases, written in March 1990, includes "improved access to and use of safe water supplies and sanitation facilities" as one of three key interventions to reduce diarrhoea morbidity. The strategy states:

- \* Two of the major goals for children in the 1990s are universal access to safe drinking water and sanitary means of excreta disposal. Interventions in both these areas have also been identified as effective measures for preventing diarrhoea, although their precise impact on diarrhoea incidence requires further study. There are already examples of UNICEF-assisted CDD programmes that incorporate water-related interventions (e.g., Bangladesh, Lesotho, Pakistan). These interventions are appropriate areas of emphasis for UNICEF for at least three reasons:
  - UNICEF is firmly committed to the goals of universal access to safe drinking water and sanitary means of excreta disposal by the year 2000. Closer links with other programmes and

sectors, e.g., CDD, will contribute toward the achievement of these goals.

- Water and sanitation efforts are a major component of most country programmes, often constituting the largest financial commitment outside the health sector. While the UNICEF contribution to the water and sanitation sector in any given country may be small in relation to other agencies, it is often quite substantial relative to UNICEF assistance to other areas within that country.
  - UNICEF is one of the few agencies that has close working relationships with both the CDD programme (i.e., the Ministry of Health) and water and sanitation efforts (i.e., the Ministry of Water and/or Hydraulics). In addition, most UNICEF offices have staff responsible for both these sectors. For these reasons, UNICEF may be in a unique position to forge meaningful programme connections and integrate efforts in these two areas.
8. In addition, the following specific actions are recommended:
- Training UNICEF staff working the water and sanitation (WATSAN) sector in CDD principles and techniques. This can be done during the workshops for WATSAN staff planned during the next few years, by participation in CDD training workshops and/or through programme directives from Headquarters or regional offices.
  - Training of pump/water source caretakers in basic principles of diarrhoea prevention, including the use of water to wash hands, food, etc. Basic sanitary measures can also be communicated. In turn, health workers advising mothers on the home management or prevention of diarrhoea can stress the importance of appropriate use and storage of water, careful disposal of children's stools, etc.
  - Co-ordinating sites and programme interventions. Sites chosen for water or sanitation interventions can also be the focus of efforts to improve case management of diarrhoea (and vice versa). In addition, pumps and other "hardware" installed with

UNICEF assistance can be designed to include diarrhoea treatment and prevention messages (e.g., decals or plaques on handpumps). This will help co-ordinate and reinforce efforts to prevent as well as treat diarrhoea among young children.

- Integrating training for health professionals. Information on how the use of water and sanitation facilities protects against diarrhoea can be included in the curricula of DTUs as well as in revised curricula for medical and nursing schools.
- Demonstrating benefits by example. All health and other facilities (especially DTUs and ORT units) that provide information and training on correct case management should have an adequate number of water points and latrines for the populations they serve. This will facilitate both the demonstration and reinforcement of messages linking water and sanitation to the prevention of diarrhoea.
- Integrating health education messages. Messages on the protective benefits of improved access to an use of water and sanitation facilities in preventing diarrhoea can be integrated into the communication component of all CDD programmes. Such messages can be incorporated, for example, into materials developed for face-to-face communication, posters, informational brochures and mass media efforts.

9. The strategy also contains a section on "improved personal and domestic hygiene practices". It makes the following recommendations:

- \* The pathogenic organisms that cause diarrhoea are transmitted primarily by the faecal-oral route. Improved personal and domestic hygiene practices can reduce this transmission and therefore have the potential to reduce diarrhoea incidence. In some settings, it is estimated that changes in hygiene practices can reduce the incidence of diarrhoeal disease among young children by 14-48 per cent. There are very few studies, however, that explore systematically the relationship between hygiene practices and diarrhoea incidence.

Specifically, more information is needed about existing hygiene practices, the effectiveness of efforts to change these practices, the role of water availability in facilitating improved hygiene and the efficacy of soap substitutes. WHO is now funding studies to look at these issues in more detail.

In light of existing information, UNICEF may also consider support to intervention-related research, including studies and/or trial projects in the following areas:

- Identifying existing hygiene practices that affect diarrhoea incidence. This will require in-depth investigation of current practices, their relationship to diarrhoea transmission and the efficacy of measures to either change or reinforce them. Such exploration should precede the development of other interventions.
- Improving hygienic disposal of the faeces of children too young to use latrines. Children's stools constitute an important reservoir of several agents of diarrhoea (in particular, rotavirus and enterotoxigenic Escherichia coli). Simple technologies can be developed for the safe disposal of children's stools.
- Reducing the exposure of crawling children to environmental contamination. Protecting crawling children from contact with environmental contamination can reduce the opportunities for the transmission of infection. Simple, inexpensive and culturally acceptable techniques are necessary to reduce the risk of contamination of crawling children without depriving them of normal stimuli.
- Promoting the construction and use of household and institutional latrines. This includes provision of material and technical assistance

as well as the development of information/education materials on the links between latrine use and reduce diarrhoea incidence.

- Developing educational materials on improved hygiene practices, for use by health workers, in school curricula and/or in messages to the general public (e.g. through posters, mass media, etc.).

### Part III - CDD vs. WATSAN: Examining the Issues

10. Far from being considered complementary, CDD (specifically ORT) and WATSAN efforts are sometimes seen as competitive, i.e., attention to one leads to neglect the other. One of the most comprehensive statements of this view is contained in an article by Daniel A. Okun. Large portions of the article are extracted below:

11. In the introduction to his article, Okun States:

- \* In aqua sanitas, "in water is health", led the ancient Romans to invest heavily in public water supply facilities, some of which are still in service. Public water supplies in Western Europe and America resulted in the virtual disappearance of cholera and typhoid before immunizations and other medical measures were introduced. More important, the availability of water supply and sanitation (WS&S) facilities became the hallmark of civilized living. Accordingly, the provision of WS&S facilities in the developing world would seem to need little justification. Yet, WS&S programmes are being displaced by the more dramatic "life-saving" ministrations of oral rehydration therapy (ORT).
- \* ORT is the oral administration of a mixture of salt, sugar, and water to sufferers of acute diarrhea. Its appeal stems in large measure from its relative ease of administration. Because of its low cost, apparent simplicity, and the dramatic response it sometimes elicits, ORT has come to be viewed not only as an efficient way of averting child deaths but as the basis for health programmes of many international development agencies.



- \* The priority position of ORT as a major health intervention is based on a paper by Drs. Julia Walsh and Kenneth S. Warren of the Rockefeller Foundation, who criticized the concept of primary health care incorporated in the Alma Ata Declaration of 1978 as being too comprehensive in scope to be implemented in the face of limited financial resources. Alma Ata included "an adequate supply of safe water and basic sanitation" as well as immunizations, appropriate treatment, and provision of essential drugs. In its place Walsh and Warren proposed "Selective Primary Health Care" which involves examination of the costs of each separate element of primary health care, whether ORT, or WS&S, and the effectiveness of each in reducing infant mortality. They concluded, after examining all interventions, that the most cost-effective "package" costing about \$200-250 per child death averted, would include ORT but that WS&S, costing about \$4,000 per child death averted, should not be included.
  
- \* ORT has understandably become attractive to agencies such as UNICEF, the World Health Organization (WHO), and the US Agency for International Development (AID) because of its apparent low cost and the instant gratification provided through averting child deaths. Making ORT more widely available is commendable, a moral imperative, akin to providing food during famine. But ORT does not prevent the next epidemic nor does food relieve the next famine.
  
- \* Unfortunately, the focus on ORT has diverted attention and funds from assessing the causes of diarrhoeal disease and from other programmes essential for sound overall efforts to improve child health, including particularly WS&S. In its report in 1986 to the US Congress on its Child Survival programme, AID omitted water supply. In a recent flyer requesting funds, the US Committee for UNICEF listed four "simple, low-cost techniques" for saving lives, the first of which is ORT, at 10 cents per life saved. WS&S was not mentioned. A description of the WHO Diarrhoeal Diseases Control Programme in

the most recent edition of Maxcy-Rosenau Public Health and Preventive Medicine mentions WS&S only in passing.

12. In the next section of the article, Okun describes the wide range of potential benefits from water and sanitation projects. He points out that the provision of safe water supplies has a dramatic impact on the health status of populations. "The benefit from WS&S programmes range far beyond the prevention of diarrhoeal deaths among children. Improved WS&S addresses the causes of the diarrheas responsible for the deaths and, at the same time, prevents their transmission of other diseases, raises the efficacy of other health interventions, and provides benefits not directly related to health" (p 1464). Okun groups these benefits into several categories, including prevention of disease; improved primary health care; improvements in nutritional status; services to health centers, clinics and schools; time released for women; household irrigation and animal watering; promotion of commercial activity; strengthening community organizations; support for other sectors; financial viability, and improved quality of life (pp 1463-1465).

13. In contrast, Okun emphasizes the limitations (and narrow focus) of ORT as a health intervention. He states:

- \* Rehydration by perfusion of fluids lost during periods of acute and prolonged diarrhoea has been practiced for many years, but it was only beginning in the early 1960s that successful field trails in the developing world demonstrated the role of replacement fluids and salts administered orally. In recent years, considerable effort has gone into identifying readily available oral rehydration salts in the community and developing simple procedures and user education programmes for their application.
- \* ORT is low cost, is relatively easily administered, and helps with rapid recovery from many previously fatal diarrheas. ORT has been responsible for dramatic reductions in child mortality from diarrheas in Egypt (49 per cent), Bangladesh (67-91 per cent), and India (65 per cent) as well as in Dominica, Haiti and among Apache Indians in the US. Such a dramatically successful remedy must be offered wherever and whenever necessary. A caring society cannot fail to offer this opportunity for life. ORT has understandably become attractive in child survival programmes. What is not so readily

demonstrated is why ORT has become the primary intervention. The following points characterize the role of ORT, demonstrating why it cannot stand without WS&S:

- ORT is not a primary preventive measure. It is initiated only after an attack of diarrhoea. ORT serves as a secondary measure for "damage control".
- While ORT may be effective in preventing diarrhoeal deaths from dehydration, it cannot be expected to have any significant impact on diarrhoea morbidity. In a broader sense control of morbidity may be as important a goal as averting child deaths from diarrhoea.
- The life that might be saved by ORT is only saved until the next attack of diarrhoea. The conditions responsible for the diarrhoeas remain; the "saved" child may need to be "saved" again and again unless the environment is improved.
- ORT is not an investment in future public health. To be effective, ORT must be administered *ad infinitum* unless other interventions are introduced. Should the financial or administrative support for ORT falter, the community will be in little better shape than if ORT had never been initiated. "In the long run only sanitation, clean water and food, better nutrition and improved living conditions can reduce the incidence of diarrhoea among infants and children."
- ORT programmes must generally be initiated, organized, and funded by central governments. On the other hand, communities can and have taken the initiative in developing a water supply.
- ORT, if applied without major changes in nutrition, will have little effect on the increasing frailty in the population at risk.

Because children may have numerous diarrhoeal episodes during their first five years, if other interventions are not pursued, an increase in frailty in these impoverished children is bound to occur, which puts them at a greater risk of death than the population of children at large. Resuscitation of children who otherwise would have died thus increases the risk to survivors. The net effect of ORT is, therefore, significantly less than is estimated simply on the basis of deaths averted by the procedure.

- Lastly, because ORT is directed only at averting child mortality from diarrhoeal diseases, the cost or so-called cost effectiveness of ORT cannot be compared with the cost effectiveness of interventions such as WS&S where child survival from diarrhoeal disease is only one of a wide range of benefits.

- \* In summary, ORT is an important curative measure, but it should not be the keystone in child health programmes. Hirschhorn puts it well when he states in a recent review of ORT: "ORT probably can do only little by itself to assure child survival, but needs integration ... with other strategies..." One necessary element of such strategies is WS&S. (pp 1465-1466).

14. Okun follows the section on ORT with a critical analysis on traditional ways of "costing" WS&S interventions. He questions "the simplistic approach of assessing the cost effectiveness of simple interventions against single diseases". The work of W. H. Mosley is cited as follows:

- \* There is a common failing among many health professionals who are proposing choices among health care strategies. The typical approach is to begin with a specific disease such as diarrhoea and then examine the cost-effectiveness of alternative intervention strategies. As is clear from this model, if strategies are selected only on the basis of their benefits in preventing disease-specific

deaths, narrowly focused technologies will almost always appear to be far more cost-effective than the broad based program interventions. However, if one is looking beyond disease-specific death prevention to the promotion of survival, the broad based interventions will generally prove more favorable, even when implementation costs are taken into account.

15. Finally, Okun draws the following conclusions:

- \* International, national, and voluntary public and private agencies throughout the world are committed to programmes of primary health care generally and child health and survival particularly. The picture of emaciated children at death's threshold has impressed itself on the conscience of society.
- \* Despite the fact that WS&S programmes, when initiated with community participation and accompanied by hygiene education, continue to demonstrate their efficacy in preventing diarrhoeal diseases, and confer a host of other benefits, the promise of dramatic life-saving by ORT has led to the diminishment of investments in WS&S programmes by donor agencies.
- \* ORT has been shown to prevent death from diarrhoeal diseases simply and at low cost. ORT, however, makes no attempt to cure or prevent disease. Rehydration therapy alleviates the physiological imbalance caused by the disease. Children require ORT many times during their first five years. Each bout of diarrhoea renders them more frail and more vulnerable to death, which means the data on the "life-saving" attributes of ORT are overstated.
- \* If, while ORT is being administered, measures are taken to improve WS&S, the prospects for improving child health and averting death are substantially enhanced over either the ministrations of ORT or the provision of WS&S alone.
- \* ORT and WS&S should not be compared in monetary terms per death averted because their benefits are so disparate. WS&S costs, while

varying widely among communities, amount to \$5 to \$10 per capita annually, or pennies per day for each person benefitted.

- \* A reassessment of the role of WS&S appears to be underway. James P. Grant, a strong advocate of ORT, states that, "Diarrhoea and allied diseases will recur unless safe water and hygiene practices support the life of the poor." WHO now recommends that WS&S be included in national diarrhoeal disease control programmes.
  
- \* The real financial constraint to implementing WS&S programmes is lack of initial funding. Ample evidence exists to show that in villages and periurban slums of Africa, Asia, and Latin America people are prepared to pay for water service. What is needed is the initial capital investment and means for ensuring effective O&M. Donors can make loans or grants which, with establishment of revolving funds, can help ensure long-term viability of WS&S programmes.

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Mosley, W.H. 1986. The Demographic Impact of Child Survival Programs. Presented at International Symposium on New Avenues in Health Care Organizations: From Research to Action. Center for Public Health Research, Ministry of Health, Mexico.

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME**

**EXERCISE I: IMPROVED LINKAGES BETWEEN WATSAN AND CDD**

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**GROUP WORK**

- 1) Work in pairs to list three additional ways in which WATSAN and CDD can be more fully integrated at the country level (i.e., in addition to those specified in learning points 6 through 9). Include policy decisions that might be taken at the global level to promote this integration.
  - a)
  - b)
  - c)



- 2) Work in groups to list five obstacles to the effective integration of CDD and WATSAN, citing at least one possible solution to each problem. Insofar as possible, answers should reflect the real problems being faced in your countries of assignment.

<u>Obstacles</u>	<u>Potential Solutions</u>
a)	a)
b)	b)
c)	c)
d)	d)
e)	e)

**MODULE 5: INTER-SECTORAL LINKAGES****SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME****EXERCISE II: HEALTH IMPACT OF WATER AND SANITATION PROGRAMMES**

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- 1) Case studies have been selected to indicate the current status of health impact resources. They are:

Zeng-sui, W., Shepard, D.S., Yun-cheng, Z., Cash, R.A., Ren-jie, Z., Zhen-xing, Z. and Fu-min, S. 1989. Reduction of Enteric Infectious Disease in Rural China by Providing Deep-well Tap Water. Bulletin of The World Health Organisation, 67 (2) 171-180.

and

Blum, D., Emeh, R.N., Huttly, S., Dosunmu-Ogunbi, O., Okeke, N., Ajala M., Okoro, J., Akujobi, C., Kirkwood, B. and Feachem, R. 1990. The Imo State (Nigeria) Drinking Water Supply and Sanitation Projects 1 and 2. Transaction of the Royal Society of Tropical Medicine and Hygiene. 84, pp 309-321).

Each group will be assigned one of these articles, which should be read the night before the session takes place. After reading the article assigned, participants should fill in the attached worksheets. During the session, each group will be given 45 minutes to discuss their reactions and reach consensus on strengths and weaknesses of the studies.

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME**

**WORKSHEET**

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Name of article:

Reference (including dates, journal, etc.)

Short description of project under study:

Objectives:  
(including those related  
to diarrhoea morbidity  
and mortality)

Target Group:

Geographical Coverage:

Key Interventions:

Results (specify findings related to diarrhoea, morbidity and mortality only):

**STRENGTHS AND WEAKNESSES OF THE STUDY DESIGN**

**STRENGTHS**

**WEAKNESSES**



Programme Implications: Given the strengths and weaknesses specified above, what could a UNICEF programme officer learn from or conclude from this study?

- a)
- b)
- c)
- d)
- e)

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 18: WATER AND SANITATION AS AN INTEGRAL  
COMPONENT OF THE CDD PROGRAMME**

**READING I**

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**REDUCTION OF ENTERIC INFECTIOUS DISEASE  
IN RURAL CHINA BY PROVIDING DEEP-WELL TAP WATER**

**Zeng-sui, W., Shepard, D.S., Yun-cheng, Z., Cash, R.A., Ren-jie, Z.,  
Zhen-xing, Z. and Fu-min, S.**

**1989**

**Bulletin of The World Health Organisation**

**MODULE 5: INTER-SECTORAL LINKAGES**

**SESSION 18: WATER AND SANITATION AS AN INTEGRAL COMPONENT OF THE CDD PROGRAMME**

**READING II**

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**THE IMO STATE (NIGERIA) DRINKING WATER SUPPLY AND SANITATION PROJECTS 1 AND 2**

**Blum, D., Emeh, R.N., Huttly, S.,  
Dosunmu-Ogunbi, O., Okeke, N., Ajala M.,  
Okoro, J., Akujobi, C., Kirkwood, B. and Feachem, R.  
1990**

**Transaction of the Royal Society  
of Tropical Medicine and Hygiene**

## **MODULE 6: HYGIENE EDUCATION**

*SESSION 19: CHANGING HYGIENE BEHAVIOUR*

*SESSION 20: COMMUNICATION STRATEGIES*

*SESSION 21: RESEARCH TO SUPPORT EFFECTIVE HYGIENE EDUCATION*

*SESSION 22: SELECTING MESSAGES AND MEDIA FOR HEALTH AND  
HYGIENE EDUCATION*

*SESSION 23: HYGIENE EDUCATION FOR SCHOOLS*

*SESSION 24: THE ORGANISATIONAL REQUIREMENTS FOR HYGIENE  
EDUCATION*

## **MODULE 6: HYGIENE EDUCATION**

### **SESSION 19: CHANGING HYGIENE BEHAVIOUR**

#### **OBJECTIVES**

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By the end of the session you will be able to:

- \* identify the most important changes in behaviour needed to achieve health and hygiene goals;
- \* recognise the major steps in facilitating behaviour change and be able to assess the likelihood of desirable changes in behaviour being made;
- \* write objectives that take behaviour change into account and to assess the planning implications of behavioural goals.

#### **Session Flow and Methodology**

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- \* Overview by Facilitator: Elements of behaviour change
- \* Dramatic presentation: Different perceptions of hygiene behaviour
- \* Exercise: Changing Hygiene Behaviour
- \* Plenary
- \* Overview by Facilitator
- \* Exercise: Setting behavioural objectives
- \* Plenary
- \* Discussion: The planning implications of integrating water, sanitation and hygiene education
- \* Summary and Evaluation of Session



## Learning Points

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"Water supply projects do not achieve their full impact unless they are linked first to hygiene education and then to sanitation...the critical factor in the success of hygiene education is reaching people and changing the way they do some very private, personal things - defecating, washing, cooking, getting, carrying and using water"

(Lessons Learned from the WASH Project, USAID, Washington, 1990:31)

"Health and hygiene education components are essential parts of water supply project"

(AIDAB and Water Development, Australian International Development Assistance Bureau, Canberra, 1991:32)

1. Reaching people and encouraging them to change their behaviour are fundamental factors in the success or failure of any social development programmes. Effective communication is the key. It is often forgotten that it is easy to change technology but hard to change beliefs and behaviour.

2. There are a number of theories and models of behaviour change. In the health sector the best known is the health belief model. It proposes that changes in health behaviour can be explained and predicted by four basic factors:

- The way in which the individual perceives the risk.
- The way the individual perceives the severity of the problem should it occur.
- The way the individual perceives the benefits of taking a health action.
- The way the individual perceives barriers or obstacles to taking the action.

3. Another important factor in health behaviour changes is the individual's perception of his ability to make the change (Kelly et al., 1991, pp. 311-320). It is recognised that an intention to change may not lead to actual change.

4. A further approach, is based on the principle that behaviour change is determined by an inter-relationship between the characteristics of the individual, the physical, social, and institutional environment within which the individual lives and works, and the characteristics of the health behaviour change.

Important factors are the extent of support for change provided by the family, the peer group and in the work place. This approach is called reciprocal determinism (Baranowski 1990:297-327).

5. The process of behavioural change incorporates several steps. The steps are usually sequential. The individual must:

- Receive information about the change
- Be interested in the information
- Believe the information and discuss it
- Be attracted by the benefits of the change
- Understand the reasons for the change
- Know what to do, how, when and where
- Be able to overcome physical, social, economic or psychological barriers to making the change
- Be motivated to try the change
- Be encouraged to continue the change

7. Some behavioural changes may not be possible because of existing traditional or religious beliefs, well entrenched social practices, and additional demands on time, money, energy required. It is more effective in the long term to begin by encouraging changes that are seen by the target audience as small, easy, and to have a relatively rapid and obvious impact. This provides the confidence and the goodwill for further more difficult changes.

8. Sustained changes in behaviour take time. As a result quantifiable health benefits may not be apparent until some years after the introduction of the programme.

9. Adequate communication and health education support is impossible unless the existing behaviour of the target audience and the constraints to changes are known by those responsible for planning and implementing the programme and are addressed and overcome.

10. Individuals can be motivated to change behaviour through a variety of approaches. The most effective approaches are usually emotional. Messages may appeal to the individual's fears, greed, self esteem, or desire to live a long time. Individuals can also be motivated to change behaviour through bribery, legislation, persuasion. In industrial countries many important changes in health behaviour have been achieved only through legislation.

11. Project objectives need to reflect any planned changes in behaviour. If behaviour change is not considered when writing objectives there is the danger that project implementation may not be appropriately guided.

**References and useful readings:**

AIDAB and Water Development, Australian International Development Assistance Bureau, Canberra, Australia. 1991.

Baranowski, Tom. 1990. Reciprocal Determinism at the Stages of Behavioural Change: An Integration of Community, Personal and Behavioural Perspectives. International Quarterly of Community Health Education. 10 (4) 297-327.

Beliefs and behaviour: Why do mothers wash their hands? Dialogue on Diarrhoea. 39. 5 December 1989.

Communication for Child Survival. Academy for Educational development. Washington 1989.

Feachem, R.G. 1984. Interventions for the Control of Diarrhoeal Diseases among Young Children: Promotion of Personal and Domestic Hygiene. Bulletin of the World Health Organisation, 62 (3) 467-476.

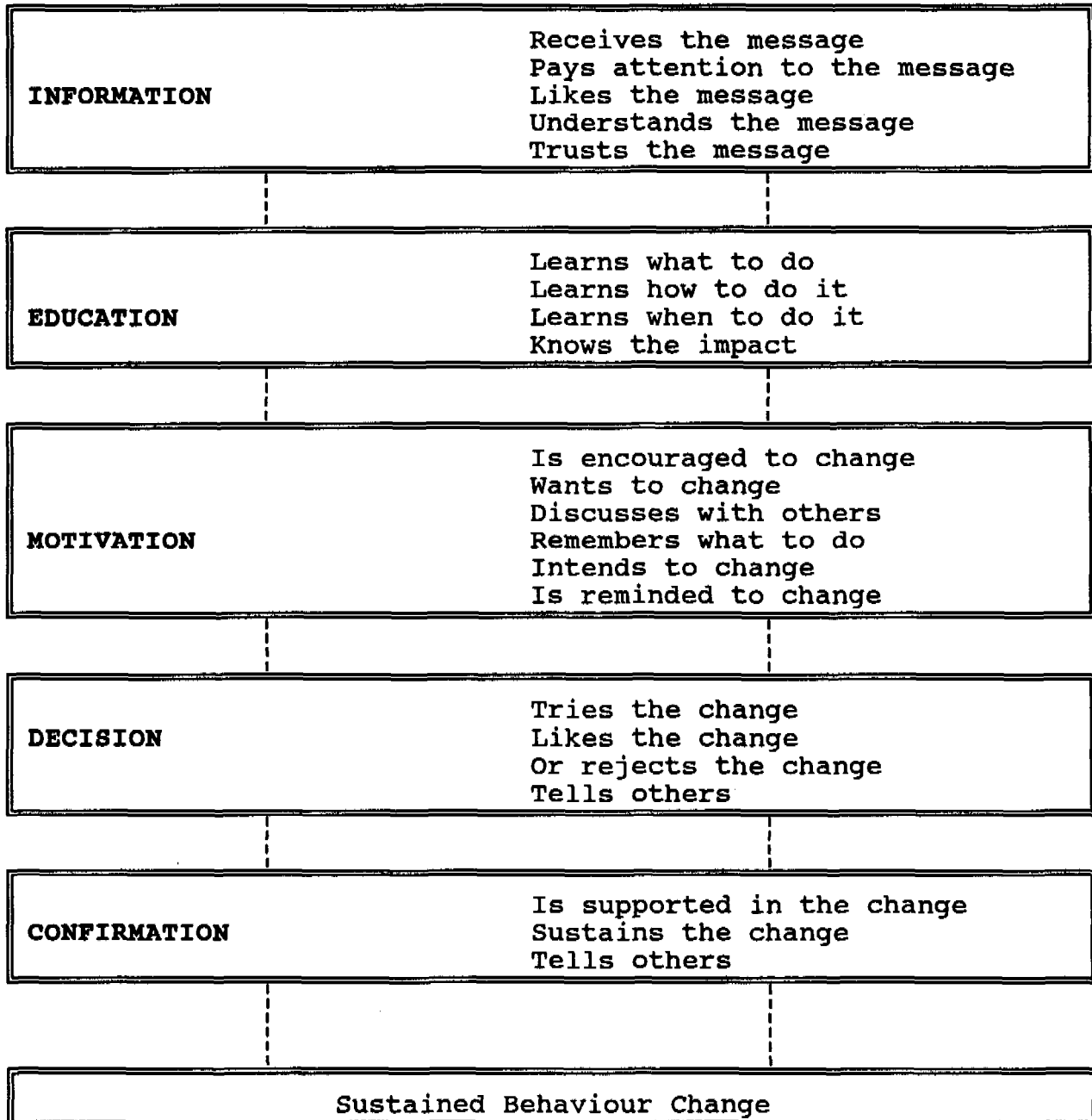
Kelly, R. et al. 1991. Prediction of Motivation and Behaviour Change Following Health Promotion: Role of Health Beliefs, Social Support, and Self-efficacy. Social Science and Medicine, 32 (3) 311-320.

Lessons learned from the WASH Project. USAID, Washington. 1990.

**THE ROLE OF COMMUNICATION IN BEHAVIOUR CHANGE**

**Communication Process**

**Impact on Audience**



**MODULE 6: HYGIENE EDUCATION****SESSION 19: CHANGING HYGIENE BEHAVIOUR****VILLAGE CASE STUDY**

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This village is typical of those in Nongbok District of Khammouane Province, Lao Peoples Democratic Republic.

**Village Information**

Dang Bok is a Lao Loum village where the Putai dialect of Lao language is spoken. There are 152 households with a village population of 930. The village is 90 kilometers from the provincial capital. The road is unpaved and unpassable for the four months of the wet season. During the rest of the year it is accessible only to four-wheel drive vehicles. The village is on flat land with no river or perennial streams. There is no electricity. The nearest health centre is 45 kilometers away. There is no public transport. The village has a four-class primary school but no health centre. The school teachers have not been paid for over 12 months but each household with children at school provides the teachers with rice. One hundred and forty six households had children under 15 years of age and most had at least one child at school. Forty one percent of men had some primary education but nearly all women were illiterate.

Houses are of woven bamboo with thatched or wooden shingle roofs.

The main occupation is rice farming with animal raising and weaving providing the only source of income. All families have land. Women assist on the land and are responsible for planting rice, helping harvest and for threshing. Women weave during the dry season.

Most households had a radio. Two houses had television run on batteries. Thai programmes were most popular on both radio and television as reception from Thailand was stronger than from the Lao stations and the programmes were considered more entertaining.

**Water**

The water sources available in the village included three public dug wells without casings, one private dug well, one Rower handpump tubewell, three big swamps and 61 cement jars, each with a capacity of 2,000 litres. All dug wells with the exception of one which was two kilometers from the village, were between 600 and 800 meters

from the village. None of the dug wells had any protection and the surrounds were wet and very muddy. The most popular well did not have sufficient water during the dry season.

The handpump tubewell was two months old and located in the primary school. The well was 12 meters deep but the pump was very heavy to operate and either too much water came up and missed the buckets or only air came out. It sometimes took over half an hour to get a 10 litre bucket of water. Ankle-deep water lay around the pump. This had to be stood in to operate the pump. Villagers said they knew the pump was not operating properly but did not know how to fix it. Villagers have tried to dig two wells inside the village but both collapsed and they do not want to try again.

The two swamps are 500 meters from the village and are used mainly for watering animals.

The preferred source of drinking water was the handpumped-equipped tubewell, when it worked, and the cement jars. The preferred source of water for domestic use was the handpump tubewell - when it worked. The actual sources used were the dug wells and the cement jars for both drinking and domestic purposes. The large cement jars are usually 25 to 30 meters from the house and contained water from the dug wells which was poured in by bucket. None had lids. Roof water was not used as it is thought that the thatch and the wooden shingles made it taste bad. Drinking water was stored inside or near the house in small clay jars. Water for domestic purposes was stored in larger clay jars and drums.

All households said they used the same source of water for drinking and domestic use but stored it separately.

Water for bathing and washing clothes was used at the source. The quantity of water used at home for drinking and domestic purposes was about 25 litres per person per day. The average distance to carry water was 700 meters. Women are responsible for water collection and on average make four trips a day. Each trip takes approximately 30 minutes. Two metal buckets on either end of a shoulder stick are used to carry water.

Most people felt they had water problems because of the distance they had to carry water.

### **Perceptions of Water Quality**

All households felt that their water was clean and tasted good. They considered that it was clean because it looked clean. Dirty water was that which was muddy, smelled bad, or had visible debris floating in it.

Forty per cent of households said they sometimes boiled water for drinking but did not do it all the time because they did not have

enough pots or enough time - firewood was not considered a problem. Most households said they boiled water for guests. It was observed that in all households people drank unboiled water even when boiled water was available. In the fields people said they preferred to drink unboiled water because it was cool and tasted better.

It was observed that boiled water was easily contaminated as it was drunk cold and had been transferred into plastic jugs which were left uncovered. Water was drunk from plastic cups which were usually shared around the family and children with dirty hands were frequently observed playing with the cups and with the water in the jugs.

When asked what they thought could be done to provide safer or cleaner drinking water fifty one percent of respondents said that it should be boiled. The others did not know.

### **Sanitation and Personal Hygiene**

There were no latrines in the village. Adults and older children went to the forest to defecate. Small children defecated around the village. Excreta was not covered. All households kept animals under their houses and animal excreta was widespread.

People bathed each day at the water source. All respondents said they washed their hands when they were dirty. None used soap. Forty per cent said they washed their hands before eating. Two per cent said they washed their hands after defecation. Nobody washed their hands after handling infants faeces. It was observed that women did not wash their hands before preparing food.

Dishes were washed with water once a day. There was a small pond of water under most houses and a number of mosquitos. Malaria is endemic.

### **Perceptions of Sanitation and Hygiene**

Sixty two per cent of the people asked did not know that human excreta could cause disease. Those who thought it could did not know what kind of disease it could cause or why. Nobody considered that small childrens' excreta could cause disease. Nine percent of those asked considered that animal excreta could cause disease but did not know what kind of disease.

### **Major Causes of Illness**

Malaria was considered to be the most serious disease in the village. Other common diseases were colds, fever, diarrhoea and pains in the uterus. Illness was considered a problem only if it interrupted the daily work routine. Treatment was provided first by the household, then by the traditional healer. Only in very serious



cases were patients taken to the health centre or the hospital in the provincial capital.

There was limited awareness of the link between mosquitoes and malaria. Nine households had mosquito nets but did not use them in the hot season.

When asked what they thought caused diarrhoea seventy two percent of people thought it was caused by eating the wrong food or bad food, or by upsetting the balance of the body. It was considered common knowledge that breastfed babies got diarrhoea because their mothers had got cold or had eaten the wrong food.

A local plant was used to treat diarrhoea. Most mothers continued to breastfeed their infants during bouts of diarrhoea but food intake was severely restricted. Older children were not encouraged to drink during diarrhoea and food was restricted. Diarrhoea was not considered a very serious problem as it was common and "all children got it often". It was not recognised that diarrhoea could cause death.

**MODULE 6: HYGIENE EDUCATION****SESSION 19: CHANGING HYGIENE BEHAVIOUR****EXERCISE I**


---

**CRITERIA FOR EVALUATING LIKELIHOOD  
OF BEHAVIOUR CHANGE**

<p><b><u>Health Impact of the Behaviour:</u></b></p> <ol style="list-style-type: none"> <li>0. No impact on health problem</li> <li>1. Some impact</li> <li>2. Significant impact</li> <li>3. Very significant impact</li> <li>4. Eliminates the health problem</li> </ol>	<p><b><u>Complexity of the Behaviour:</u></b></p> <ol style="list-style-type: none"> <li>0. Unrealistically complex</li> <li>1. Involves a great many elements</li> <li>2. Involves many elements</li> <li>3. Involves several elements</li> <li>4. Involves few elements</li> <li>5. Involves one element</li> </ol>
<p><b><u>Positive Consequences of the Behaviour:</u></b></p> <ol style="list-style-type: none"> <li>1. None which mother could perceive</li> <li>2. Little perceptible consequences</li> <li>3. Some consequences</li> <li>4. Significant consequences</li> <li>5. Major perceptible consequences</li> </ol>	<p><b><u>Frequency of Behaviour:</u></b></p> <ol style="list-style-type: none"> <li>0. Must be done at unrealistically high rate to achieve any benefit</li> <li>1. Must be done hourly</li> <li>2. Must be done several times each day</li> <li>3. May be done every few days</li> <li>4. May be done occasionally and still have a significant value</li> </ol>
<p><b><u>Cost of Engaging in the Behaviour:</u></b></p> <ol style="list-style-type: none"> <li>0. Requires unavailable resource or demands unrealistic effort</li> <li>1. Requires very significant resources or effort expenditure</li> <li>2. Significant resources or effort</li> <li>3. Some resources or effort</li> <li>4. Few resources or little effort</li> <li>5. Requires only existing resources</li> </ol>	<p><b><u>Persistence:</u></b></p> <ol style="list-style-type: none"> <li>0. Requires compliance over an unrealistic long period of time</li> <li>1. Requires compliance for a week or more</li> <li>2. Requires compliance for several days</li> <li>3. Requires compliance for a day</li> <li>4. Can be accomplished in a brief time</li> </ol>

<p><u>Compatibility with Existing Practices:</u></p> <ol style="list-style-type: none"> <li>0. Totally incompatible</li> <li>1. Very Significant incompatibility</li> <li>2. Significant incompatibility</li> <li>3. Some incompatibility</li> <li>4. Little incompatibility</li> <li>5. Already widely practices</li> </ol>	<p><u>Observability:</u></p> <ol style="list-style-type: none"> <li>0. Cannot be observed by an outsider</li> <li>1. Is very difficult to observe</li> <li>2. Is difficult to observe</li> <li>3. Is observable</li> <li>4. Is readily observed</li> <li>5. Cannot be missed</li> </ol>
<p><u>Approximations Available:</u></p> <ol style="list-style-type: none"> <li>1. Noting like this is now done</li> <li>2. An existing practice is slightly similar</li> <li>3. An existing practice is similar</li> <li>4. Several existing practices are similar</li> <li>5. Several existing practices are very similar</li> </ol>	<p>Adapted from <u>Communication for Child Survival, AED, 1989.</u></p>

Using the Criteria:

For each proposed behaviour change score 0-5 for each of the nine sections. Aggregate the total score for each behaviour change. If the score for each behaviour change is less than 20 it is highly unlikely that the audience will make the change. Different goals must then be set. If the score is over 36 it is highly likely that the goal will be achieved.

**MODULE 6: HYGIENE EDUCATION**

**SESSION 19: CHANGING HYGIENE BEHAVIOUR**

**EXAMPLE FOR GROUP EXERCISE 1**

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**DESIRED BEHAVIOUR CHANGE AND LIKELY CONSTRAINTS  
(Example)**

1. Behaviour Change: Bury childrens' faeces  
Constraints: Common belief that childrens' faeces are not harmful. During dry season ground too hard to dig. Many children. Mothers work in fields during the day.  
Score: 21
  
2. Behaviour Change: Boil drinking water from non pump sources  
Constraints: Boiling takes time, energy and firewood. No recognition of benefit of boiling water. No recognition of link between contaminated water and disease.  
Score: 25

**MODULE 6: HYGIENE EDUCATION**

**SESSION 19: CHANGING HYGIENE BEHAVIOUR**

**EXERCISE 2: ASSESSING BEHAVIOUR CHANGE AND SETTING BEHAVIOURAL OBJECTIVES**

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1. Read the case study of Dang Bok village in the Lao People's Democratic Republic. The situation in this village is typical of villages in Khammouane Province, where ninety eight per cent of the population is rural.

2. For Khammouane Province each group should:

- a. Develop objectives for a water, sanitation, hygiene education project.
- b. List in order of priority the changes in behaviour needed to meet these objectives.
- c. List whose behaviour you would attempt to change.
- d. Using the assessment sheet attached assess the likelihood of these changes being made.
- e. Re-assess the project objectives and re-write if necessary to reflect achievable changes in behaviour.

**Reference:**

Case Study, Dang Bok Village

Criteria for Evaluating Behaviour Change

**MODULE 6: HYGIENE EDUCATION**

**SESSION 20: COMMUNICATION STRATEGIES FOR CHANGING  
HYGIENE BEHAVIOUR**

**OBJECTIVES**

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By the end of the session you will be able to:

- \* recognise the major communication strategies and know how and when to use them;
- \* provide a framework for integrating communication support into a water, sanitation and hygiene education plan;
- \* recognise the importance of identifying appropriate target audiences for hygiene messages.

**Session Flow and Methodology**

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- \* Overview by Facilitator: Communication strategies for improving health and hygiene education and motivating changes in behaviour
- \* Plenary
- \* Exercise: Identifying primary, secondary and tertiary target audiences and communication strategies
- \* Plenary
- \* Discussion: The planning implications of the communication component
- \* Evaluation

## Learning Points

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1. In a water, sanitation and hygiene education programme, a variety of communication strategies can be used to facilitate changes in water use, personal and household hygiene and sanitation. The strategies include:

- social mobilisation
- advocacy and information
- communication support, including health and hygiene education
- alliance building
- social marketing
- community participation

Each addresses a specific audience or audiences. All must be mutually supportive. This requires careful planning.

2. The relationship between these terms becomes clearer if it is recognised that social mobilisation is the overall process for enlisting support for policies and activities that will help achieve goals; advocacy, alliance building and programme communication are communication activities; social marketing is a technique and community participation is an ideology and a process. The process, the activities, the technique and the ideology are utilised in different combinations to support the country programme and to achieve the changes in behaviour that are needed to fulfill the programme goals.

4. These communication processes and activities operate at different levels of society. For example, advocacy is usually undertaken among planners, political leaders and allies at national level; alliance building usually takes place among institutions and organisations at national and provincial levels while programme communication is usually directed at communities and individuals and is designed to bring about specific behavioural change through information, education and empowerment (see reading 5.2.1).

5. In any communication or hygiene activity it is of vital importance to identify the target audience or audiences to whom you want to address messages or information.

6. Adequate communication and health education is impossible unless the existing behaviour of the target audience and the constraints to change are known by those responsible for planning and implementing the communication aspects of the programme and are addressed and overcome.

7. One of the most important rules governing effective communication is:

**"Base the communication strategy and message on detailed knowledge or a carefully selected target audience".**

A common reason for failure of development projects is addressing the wrong people with the wrong information. The most common reason for failure of water supply and sanitation programmes is expecting people to change without providing them with any information at all.

8. Changing behaviour is more rapid and more sustainable if the same messages are received through a variety of communication channels and if an integrated approach is used involving all appropriate organisations, institutions and government departments to channel information. A fragmented approach causes confusion and is counter-productive.

9. Repetition and reinforcement of the same messages is imperative. This is seldom given consideration and a common problem is trying to spread health education messages too far, too thinly.

10. The mass media can provide awareness and information but alone seldom bring about desired changes in the way people act.

11. Face-to-face communication and demonstration on a sustained basis can persuade people to change their behaviour.

12. The communication component must be incorporated and budgetted for in the initial programme plan.

13. Effective communication and community participation may mean that planners and implementers also have to change their way of doing things.

14. Participatory and inter-active hygiene education is much more effective than lectures.



## References and useful readings

Thomas, P. 1991. An Introduction to UNICEF Communication Strategies. UNICEF, EAPRO.

Section 1: "Introduction to Social Mobilisation and Communication", Chapter 5, UNICEF Policy and Procedure Manual

Tobin, V. 1985. "Hygiene Education in Evaluation for Sanitation Planning". Unpublished MSc Thesis. London School of Hygiene and Tropical Medicine.

**MODULE 6: HYGIENE EDUCATION****SESSION 20: COMMUNICATION STRATEGIES****READING MATERIAL**

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**HYGIENE EDUCATION****1. Design of Suitable Programmes**

Although hygiene education is a component of most health programmes only its role within water supply and sanitation programmes is being considered here. Such integrated programmes are advocated as part of the International Drinking Water Supply and Sanitation decade (Feachem, 1984). Much progress, though, still needs to be made in ensuring that the programmes develop the necessary expertise for including an education component and coordinate their activities with the agencies responsible for health education.

As Feachem (1984) states, there are great operational differences between hygiene education programmes and water supply and sanitation projects where the two are usually implemented by different Ministries and agencies, require different levels of personnel and have different costs. When different agencies are involved in the education component, an inter-agency cooperation at all levels is essential right from the start (Van Wijk, 1981).

**1.1 Field studies**

In the design of health education programmes, it is important to use an adaptive and flexible approach aimed at reinforcing positive practices already present in the community (Van Wijk, 1981). In order to do this, socio-cultural research on local environmental health habits can provide the necessary information for the design of suitable programmes. They are not, however, a regular part of health education programmes. Out of 142 programme studies, APHA found that less than 40 per cent had carried out such background studies (APHA, 1977). Listed below are some factors which should be investigated and given consideration at the planning stages of programme development.

**a. Categories of disease and causation**

Information should be collected on the present beliefs of the causes of excreta-based diseases. When a germ theory of disease is non-existent, even rejected, motivation to change traditional hygiene practices may be unrecognised. (Elmendorf, 1980). The communities may have their own categories of classifying diseases. In Latin America and the Indian sub-continent many cultures classify diseases into hot and cold, which leads to a totally different interpretation of the relationship between disease, foods, drinks and medicine (Van Wijk, 1981). For example Wellin (1975) described the problems of rural health workers in Peru who had difficulties telling the villagers to boil their water when this was culturally linked with illness in the village.

Tentori (1962) writes that sometimes what is stated in the health education posters is untrue since if latrines are constructed it does not mean that the people will not get sick. Perhaps the diseases they get are not intestinal but the community do not see the difference, since their grouping of diseases may not be the same. There may be 2-3 groups of one, maybe the one that causes "fevers", and these local beliefs will cause confusion in the explanation of transmission route of excreta-based diseases. It is important therefore to be aware of the level of knowledge and beliefs in the community. These can be determined by questioning villagers. Simpson-Herbert (1983) describes various methods that can be used, including open-ended questionnaires and performing suitable extensive surveys for estimating the prevalence of different attitudes and beliefs.

b. Current sanitary practices

Efforts should be made to discover what is the extent of present health and hygiene practices; cultural and religious. In rural West Bengal (Kochar, 1978), notions of pure and sacred and of the polluted are the rules for personal hygiene. In fact, the concern of Bengali peasants for cleanliness of the person and of their dwellings results in an obsession for washing hands and clothes which is very closely linked to their Muslim religious doctrines.

In Indian villages, value of ritual purity form an important role in hygiene practices (Douglas, 1966; Khare, 1962). Douglas (1966) states that hygiene

practices, although serving a practical purpose, are apt to express religious themes at the same time. Among high caste Brahmins, all body emissions are sources of impurity; water not paper must be used for cleansing after defecation, and this is only done with the left hand, while food may be eaten with the right hand. To step on faeces causes impurity. There can be social resistance if the programme contradicts present traditional practices. Khare (1964) found that the village clean up campaign introduced in a village in Lucknow, India, created resistance among the community. It involved values of ritual purity and impurity in cleaning lanes and refuse heaps. The traditional occupation of higher castes conflicted with cleaning activities traditionally belonging to the "sweeper" caste. Thus the caste hierarchy, occupation and tradition were all opposed to the activity. Khare (1962) states that one should be concerned with the relations that various beliefs and practices of ritual purity and impurity have with physical cleanliness. Physical cleanliness is practiced for its own sake in the normal life and even the most backward people have values of physical cleanliness and dirtiness. They have practices designed to keep cleanliness, for example, in the kitchen, the washing of hands may be for cleaning, for ritual purity, or for both.

The best method of investigating present sanitary practices is by direct observation. An observation checklist can be made, noting for example street conditions, how much water is collected and other practices. Questions can also be asked regarding hygiene behaviour, although this may not elicit true or accurate responses. Observation methods are therefore strongly recommended to verify the information collected (Elmendorf, 1980).

c. Identification of influential people

Village leaders and others can play an important role in hygiene education programmes. There may be special opinion leaders for matters of health or water technology, who may or may not overlap with other leader categories in the village, including political groups (Van Wijk, 1981). According to Pisharoti (1975), it has been observed many times that families look to their peer groups, leaders or other reference group members before they may change behavioural patterns. He states that individuals tend to conform with accepted standards

and sanctions of their families and friends. People will try to influence the behaviour of others since beliefs reinforce social pressure (Douglas, 1966).

In a field study undertaken in Guatemala (Elmendorf, 1980), it was found that the most influential people in persuading people to construct latrines were the auxiliary Mayor in one village and the school teacher in the other. Both innovators managed to gain the allegiance of a small group active in the community and capable of generating community support. The commitment of the rest of the community members was obtained in a gradual process of individual persuasion by core leaders. Many, though, perceived the primary benefits as not cleanliness and sanitation but community values such as unity and progress.

Identifying the influential people within the community can be done by key informant interviewing, that is people in the community who are knowledgeable about certain matters (Simpson-Herbert, 1983). It is also useful to identify people who have played a major role in the implementation of other development projects. This can be determined by interviewing villagers and project staff of other programmes.

d. Local constraints

An investigation of local constraints should be made to ensure that any health education messages that are given are possible to implement. For example, if the posters used in a hygiene campaign suggest more frequent washing and bathing, then enough water must be available for this purpose. Elmendorf (1980) states that in Guatemala customs of water use and hygiene have been shaped by conditions of water scarcity and inaccessibility. An increase in water use and therefore more frequent bathing and washing may result from an increase in water rather than from education messages. Another example of local constraints was in a village in Nepal; there was no available space for the construction of latrines but during the village health campaign, it was found that 80 per cent of the villagers were prepared to construct the latrine within their houses. (New Era, 1983).

Economic constraints are also of major importance. The radio messages and posters may quote the

importance of using soap for more frequent handwashing, but if the people cannot afford it the campaign cannot succeed. An investigator should therefore include a survey of socio-economic conditions and other possible constraints to organisational and administrative arrangements.

## 1.2 Using the information collected

The data collected should be used to build upon positive ideas, practices and involvement of the appropriate local people. Examples of education methods that are used at present within water and sanitation programmes are described in Appendix 3 (Van Wijk, 1981). Choosing the right approaches, though, are of primary importance in order to introduce new concepts into the village.

In the design of suitable programmes, the emphasis should be upon the changing of behaviour rather than the provision of health knowledge. For example, it is the act of using a latrine, constructing a compost pit, etc. which are important for the programme outcomes. The individual's knowledge and beliefs about health factors may be related to desirable behaviour change but may not in themselves lead to changes in health (Steurt, 1969). By being aware of present beliefs and behaviours within the community, changes can be more easily introduced. Tentori (1962), when visiting a health education programme in Mexico, met with the villagers and discussed local problems. The people were aware of how by eating dirty food and drink, one could become ill. They were also aware that contact with human excreta could cause worms. This had not led, though, to the construction of latrines. The control measures suggested by the villagers for worms were initially curative and eventually they suggested the washing of hands and the construction of latrines. Apparently, although the health knowledge was present, this had not led to the required behavioural changes.

Practical examples of how improvements are made can be a more effective method of introducing new ideas. The construction of demonstration latrines at the health post or government offices may be more effective in convincing people to build latrines than mass media campaigns. If the project staff are able to give good supervision in the construction of soakpits, clay water filters etc., then these are practical examples of hygiene education that the people can act upon.

In bringing about behavioural changes, it is important to bridge from present positive ideas and practices to new

information and practices that will be culturally, socially and economically acceptable. For example, in the inclusion of oral rehydration education messages the content may have to be adapted to telling the people to use the cleanest water available if there is insufficient firewood for boiling water, rather than discourage the villagers from making the solution. By having sufficient knowledge of the community and using this information in the design of suitable programmes, the people will be more receptive (Loring, 1977) and the required behavioural changes are more likely to occur.

### 1.3 Evaluation

- 1.3.1 In selecting suitable indicators, it is important to be aware of evaluating the programme based upon its objectives. Pisharotti (1975), in view of the close relationship between formulation of objectives and evaluation, developed a conceptual model (Appendix 2) for the evaluation of health education, based upon the theory that ultimate behaviour changes are the interaction of education, technology and administration. In the model, the input variables are termed "structural". These include personnel, agencies roles, training materials, etc. The health education activity variables are termed "effort" or "process" variables. The end product of education activities are the output variables.

If the objectives are to improve hygiene behaviour, though, the programme should be measuring the actual behavioural changes. Steurt (1966) states, however, that it is highly unlikely that a common sequence consisting of knowledge leading to attitudes, in turn leading to behavioural change is valid. This seems to be a simplistic approach to a complicated process where needs, motives, feelings and beliefs all interact. Most health education programmes have used knowledge and attitudes as indicators for evaluation and by aggregating them, have assumed that they represent community changes (Baric, 1980). In support of this, Hauchbaum (1971) argues that sometimes one is forced to use indirect or intermediary measures and evidence of appropriate knowledge and attitudes is a clue to the probability that people will act in an accordingly prudent manner. But this may not necessarily be so. Behavioural changes may occur without prior knowledge and attitude change. In fact sometimes both are a consequence rather than a cause of behavioural change. As Pisharoti (1975)

states, for example, a change in attitudes and knowledge regarding the use of latrines may take place only after their use for a period of time. But, even if a high percentage of people, as a result of the programme may be able to quote the health advantages of clean water, this does not indicate whether the programme has succeeded in convincing them to use cleaner water sources for washing and bathing.

It is very important, therefore that assessment of health knowledge is not given priority over changes in attitudes and behaviour as a result of the programme. Attempts can be made to assess these over a period of time and make comparisons to baseline data collected and to areas of similar socio-economic status where no interventions have been introduced. The Minimum Evaluation Procedure (MEP, 1983), described in Chapter 2, also includes evaluation techniques for hygiene education components within water supply and sanitation programmes. It describes methods for evaluating the utilisation and functioning of the component and methods for the measurement of behavioural changes.

It also describes the data-gathering techniques that can be used and includes questionnaires for the assessment of these.

The indicators chosen for assessment of behavioural changes will depend upon the nature and objectives of the educational messages. For example, in the MEP sequence, in order to assess an improvement in water-related behaviour, the proportion of households who cover their water container can be compared with a control group or a baseline study of the area.

### 1.3.2 Reasons for Behavioural Changes

It is important to investigate why changes in behaviour have taken place in order to use this information for the design of future programmes. The evaluation should include questions upon the following subjects.

#### Motivation

Who was responsible for motivating the villages to make changes. It may be that other projects within the programme area may have influenced the



villagers. If so, it may be worthwhile to investigate their methods and coordinate activities accordingly. If one or two villagers are responsible, then they can possibly be influential in introducing other new ideas and sustaining successful approaches.

#### Useful information

What information was perceived by the villagers as being useful and which messages were not considered so. This will indicate what changes may be necessary in order to make the information more appropriate for the particular area and socio-economic conditions.

#### Methods used

Villages can be compared in order to investigate which methods used were the most successful. For example if there was a higher percentage of people able to prepare oral rehydration solution in a particular village, it may be important to investigate whether the methods used differed. Therefore, the different media and approaches used should be recorded.

#### New resources

Where new resources were made available to a community, changes in hygiene behaviour may have resulted from these, rather than from health education. For instance, an increase in water availability may, over a period of time, bring about an increase in water use and therefore lead to an increase in bathing and handwashing. This may account for the improved behaviour that the people already wanted and the posters, radio messages, etc. used were superfluous.

### 1.3.3 Reduced Diseases Morbidity and Mortality

Various studies have already been performed investigating the decrease in diarrhoeal diseases as a result of hygiene education programmes. Feachem (1984) reviewed the results of studies of the impact on diarrhoeal diseases in Bangladesh, Guatemala and the USA and found that there were reductions in incidence rates between 14 and 48 per

cent as a result. He suggests that such programmes may be a cost-effective intervention for diarrhoea morbidity reduction.

Other health impact indicators suggested by Schultzberg (1982) are:

1. Infection by nematodes, e.g. ascaris, trichuris, hookworm
2. Nutritional status of young children
3. Guinea worm

The same methodological problems of survey design for impact evaluation can occur, however, as in measuring the health impact of water supply and sanitation programmes (Blum and Feachem, 1983).

It should be remembered, though, that any studies for health impact should only be performed if the project is functioning properly and behavioural changes are occurring. For example, if it is found that a high percentage of women are using soap for handwashing, then a decrease in mortality and morbidity rates of diarrhoeal diseases in young children and infants can be investigated. If only a low percentage have changed their behaviour as a result of the programme, then it is highly unlikely that there will be any significant changes in health status. It is important therefore to ensure that impact studies are only performed in more successful programmes based upon evaluation performed which include indicators for behavioural change, rather than gain results which will reflect the actual performance of the programme. An example of this is the Levine study in Bangladesh (1976). Within an area where the incidence of cholera was high, use of sanitary wells did not protect against cholera or related non-cholera diarrhoeas partly because well users also used contaminated water sources regularly enough to maintain high infection rates. Koopman (1978), though, measured the prevalences of diarrhoea, vomiting and the common cold in relation to the classroom size and investigated the actual hygienic condition of the toilets in school in Cali, Colombia. The study found that unhygienic toilets were related to diarrhoea ( $p = 0.0001$ ) and also found a significant difference in diarrhoea prevalence rates between those that used toilets

that had toilet paper, soap and towels and those that did not ( $p = 0.001$ ).

Since hygiene education programmes can be a cost-effective intervention for diarrhoeal diseases (WHO/CDD, 1985), it is important to gain a more accurate estimate of their ability to decrease morbidity and mortality among children and infants in order to compare it with other interventions. This will be more possible if projects which have shown good levels of changes in hygiene behaviour are then evaluated for health impact. For example, if a total of 10 projects are evaluated and only 5 of these have satisfactory levels of functioning, utilisation and behavioural changes, then it is suggested that only these should be investigated for a further year for health impact.

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Source: Tobin, V. 1985. Evaluation for Sanitation Planning. MSc CHDC Thesis.

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**MODULE 6: HYGIENE EDUCATION**

**SESSION 20: COMMUNICATION STRATEGIES**

**EXERCISE: SELECTING TARGET AUDIENCES AND COMMUNICATION STRATEGIES**

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1. Using the Lao case study identify three target audiences to whom you would address messages. The primary target audience should be those whose behaviour you hope to change; the secondary target audience will be people whom you wish to influence the primary audience; the tertiary audience may be those who can influence overall health education and communication activities, policies and plans.

2. State why these audiences were chosen and any specific characteristics of these audiences that may influence your communication and health education strategy.

3. Provide suggestions for the kind of communication strategy or strategies you would consider using.

## **MODULE 6: HYGIENE EDUCATION**

### **SESSION 21: RESEARCH TO SUPPORT EFFECTIVE HYGIENE EDUCATION**

#### **OBJECTIVES**

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By the end of the session you will be able to:

- \* assess different research methods and select those most appropriate for gathering information that will facilitate desired changes in behaviour;
- \* identify priority communications research needs and know at what stage in the programme cycle research should be conducted.

#### **Session Flow and Methodology**

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- \* Group participation exercise: Perceptions and their social, cultural and physical determinants
- \* Plenary
- \* Overview by Facilitator: Types of communication research, when to use them; where to use them. Using research results.
- \* Video presentation: Rapid Assessment Procedures
- \* Discussion: Research methods used in RAP
- \* Exercise: Planning research for developing a hygiene education strategy.
- \* Plenary
- \* Evaluation



## Learning Points

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1. The importance of communication research in planning health and hygiene education for water supply and sanitation programmes is not well recognised.

2. Communication research is an essential element in all effective **commercial** marketing campaigns. The same research is needed for campaigns designed to change health and hygiene behaviour. The pre-requisites of commercial marketing are:

- clear identification of a major target audience;
- knowledge of the target audience and their perceptions, practices and beliefs about the product or behavioural change to be promoted;
- knowledge of the competition and constraints to behavioural change;
- knowledge of the target audiences' media habits;
- careful pre-testing of all communication training, messages and materials.

3. To plan the health and hygiene education component data is needed on:

- the major target audience or audiences
- their existing knowledge, attitudes and practices relating to hygiene, sanitation and health
- likely constraints to changes in health and hygiene behaviour
- the existing channels of communication and possible communication resources, including those provided by the mass media, front-line workers (health workers, school teachers, water and sanitation facilitators), NGOs, community leaders, and community groups including formal or informal women's groups
- existing hygiene and health education, its quality and quantity
- training requirements of health workers, water and sanitation engineers, community workers, village women
- opportunities for integrated communication efforts

4. Several research methods can be used to collect communication data. The most common are KAP studies, media surveys, focus group discussion (FGD) and rapid assessment procedures (RAP). Full KAP and media studies require a large sample and one-to-one interviewing and are therefore expensive and time consuming. FGD and RAP are less expensive and provide rapid results as they rely on a small but very carefully selected sample and group discussion. FGD methods can be used for modified KAP studies.

5. **Data on Women:** WES programmes have not paid enough attention to collecting data on women and from women. This is particularly important for the health and hygiene education component. In some countries this will necessitate women researchers who can observe women's activities and hold discussions with women. Particular care must be taken to desegregate data by gender and to provide gender analysis.

6. **Observation:** Informal observation, discussion and asking informal questions of villagers, health workers, sanitation workers, water engineers are valid and important ways of getting information. Communication planning cannot be undertaken by officers who have not spent time "in the field".

7. **KAP Studies:** Knowledge of the target audience is usually gained through knowledge, attitude, practice and belief (KAP) or (KAPB) studies. While these studies provide useful information they are prone to distortion and should be supported by observational research and any secondary data available. Good KAP studies should be undertaken by institutions with trained staff and experience in field research. Questionnaires should be field-tested prior to the full study. KAP studies for health and hygiene would seek information on:

- educational status
- social, political and economic status
- community and household social structure
- usual daily activities allowing for seasonal variation
- knowledge, attitudes and practice of water use, water quality, sanitation, personal hygiene, environmental hygiene and health/ill health
- usual source of any health-related information
- major channels of communication used by the target audience
- available channels of communication
- differential access to media
- differential perceptions of visual materials
- preferred channels of communication
- legitimate and trusted channels of communication
- media habits of the target audience/audiences

8. **Media Surveys:** Media surveys may not require primary research as many countries have undertaken national surveys of media coverage or have commercial or non commercial organisations which undertake regular surveys. This information supported by limited primary research in the programme areas can provide useful micro and macro-level data. It is important to know how extensive media coverage is, how influential it is and whether the selected target audience has access to it.

9. **Focus Group Discussion:** FGD uses trained interviewers or facilitators to promote and guide discussion with a number of groups of people. Groups usually comprise between six and eight. A representative sample of villages or communities should be made. In this way information can be gathered on a community, its structure, its common values and beliefs, its access to media, the communication opportunities, its perceptions of water and health and its felt needs.
10. **Rapid Assessment Procedures:** RAP methods involve selection of specific "sites" for detailed investigation over a set period of time. The sites are representative of the area/region/ethnic group/community and are known as sentinel sites. Usually a number of sentinel sites are selected and the data gathered amalgamated. RAP is particularly useful for establishing base-line data and for monitoring and evaluation. RAP methods can be used for different types of communication research.
11. **Pre-testing Messages, Training Packages and Materials:** Pre-testing is usually ignored or done "in the office corridor". Failure to pre-test is the most common reason for poor or useless communication support and training materials. Pre-testing costs money but poor materials cost not only money and time but programme credibility. Pre-testing must take place among the target audience. It does not need to be extensive or expensive. A very small sample of 30 to 40 respondents can provide useful feedback.
12. It is of vital importance that before research is commissioned the programme officer has a very clear idea of exactly what questions need to be answered and exactly how the results of the research will be used. Terms of reference must include clear guidelines of expectations and the reasons for the research.
13. Insist on consultation when developing the questionnaire or FGD topics.
14. Insist that the questionnaire or FGD questions are pre-tested on a representative pilot group prior to the full survey.
15. Insist on a brief summary of research findings prior to final analysis to ensure that the analysis is focussed on what is wanted. When a large amount of data is collected it may take some time to analyse it all. Make an initial selection of what is of immediate importance.
16. Research is the responsibility of the programme officer who commissions it.
17. Results of communication research should be used to:

- establish which interventions are feasible
  - identify which desirable changes in behaviour are possible and at what stage of the project
  - identify exactly whose behaviour you want to change and how
  - identify priority target audiences
  - develop messages that are culturally appropriate and have an emotional appeal that will be effective among the target audience
  - ensure the selection of the most effective media channels and communication strategies
18. Research is not useful if the results are biased. The most common biases are to undertake research close to town, near the road, among people of high status, among men rather than women, among the literate rather than the illiterate, in the village rather than in the fields and during the day time rather than at night.

## References and useful readings

"The Research Agenda", Communication for Child Survival, Academy of Educational Development, USAID, Washington, 1987.

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SOME EXAMPLES OF COMMUNICATION RESEARCH METHODS

Research Method	Data Collected	Cost	Time	Staff Needed	Remarks
Literature review	Research done to date: <ul style="list-style-type: none"> <li>. Clinical</li> <li>. epidemiological</li> <li>. media studies</li> <li>. ethnographies</li> <li>. market research</li> <li>. demography</li> </ul>	Not very costly	A few months depending on quality of and access to information	Epidemiologist Social researcher	<ul style="list-style-type: none"> <li>. identifies what areas lack relevant research</li> <li>. sets research priorities</li> <li>. avoids duplication of efforts</li> <li>. requires ability to synthesize</li> </ul>
Observation of health practices	Determine actual behaviour pattern  Identify obstacles in performing tasks  Qualitative	Transport  Repeated measurements required in different settings	Quick results	Supervisors  Trained observers  Participant observers	<ul style="list-style-type: none"> <li>. Not very reliable if observation unstructured (e.g. no rigorous definition of indicators)</li> <li>. Helps establish how widespread a practice or product is and whether materials or training are needed to support the practice</li> <li>. Also good for monitoring</li> </ul>
Ethnographic profiles	In-depth study of a culture into which a given health practice will fit  Qualitative	Depends on variety of ethnic groups to be studied	A few months	Participant observer  Informants  Anthropologist	<ul style="list-style-type: none"> <li>. Determine how other cultural aspects can be used to promote a new idea</li> <li>. Reveal cultural taboos</li> <li>. Important as baseline information</li> </ul>
Household surveys	What proportion of the total target population have a given belief or behaviour?  Quantitative	Expensive: may need large samples to be statistically significant	A few months to: <ul style="list-style-type: none"> <li>. design questionnaire</li> <li>. pre-test</li> <li>. train</li> <li>. collect data</li> <li>. analyze data</li> <li>. write report</li> <li>. use results</li> </ul>	Trained interviewers  Supervisors  Data analysts  Statisticians	<ul style="list-style-type: none"> <li>. Needed to validate hypothesis formed from qualitative research</li> <li>. Also good for periodic evaluation of behaviour or knowledge changes</li> <li>. Can be biased by respondents who do not understand questions or are not willing to answer them or want to please interviewer</li> </ul>

SOME EXAMPLES OF COMMUNICATION RESEARCH METHODS (Cont.)

Research Method	Data Collected	Cost	Time	Staff Needed	Remarks
Central location intercept interviews	To obtain target audiences reactions to messages from large number of respondents at central location (e.g. market place) in a short period of time  Quantitative	Not very costly	Use of close-ended questions (yes-no) allows quick analysis of results	Easily trained interviewers	<ul style="list-style-type: none"> <li>. Very superficial insight</li> <li>. Inappropriate for sensitive or emotional subjects</li> <li>. Good for pretesting materials and messages in a variety of locations</li> </ul>
Focus group discussions	Major trends in feelings, beliefs, attitudes of homogenous groups on product, practices and ideas  Qualitative	Depends on number of group meetings necessary and what financial incentives are needed to have participants attend meeting  Cost of facilitator  Sample size is small	Relatively rapid results	Trained facilitators	<ul style="list-style-type: none"> <li>. Group setting useful in opening people up to talking more freely among peers</li> <li>. Generate a lot of ideas on the reasons products are liked or disliked</li> <li>. Form a hypothesis which can be validated by a survey</li> <li>. Results may not be applicable to entire population</li> </ul>
In-depth individual interviews	Further understanding of particular values or viewpoints previously identified during group discussions	Expensive  Difficult to get large number of interviewees	Time consuming to arrange, conduct and analyse results	Trained interviewers	<p>Useful for getting private opinions of:</p> <ul style="list-style-type: none"> <li>. Leaders</li> <li>. physicians</li> <li>. health workers on sensitive issues</li> <li>. hard-to-reach audience</li> </ul> <p>. Cannot be used to make broad generalisations</p>

Source: Communication: A guide for National Managers of CDD Programmes, WHO/UNICEF, Geneva, 1987.

**MODULE 6: HYGIENE EDUCATION**

**SESSION 21: RESEARCH TO SUPPORT EFFECTIVE HYGIENE EDUCATION**

**EXERCISE: ASKING COMMUNICATION QUESTIONS**

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1. Read the readings provided on research methods.
  2. Using the Lao case study and the results of the exercise and discussion from session 2 the group should decide on and list:
    1. Any questions that need to be answered that will help you establish priority target audiences.
    2. Any questions that need to be answered before messages about hygiene can be developed for the target audience(s) and appropriate communication channels selected.
    3. List the research methods you would use and who the respondents would be.

The group could present its work in the following format:

Questions	Respondents	Research Methods
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**Readings for exercise "Asking Communication Questions"**

"The research agenda", Communication for child survival, Academy of Education Development, Washington, 1987

**MODULE 6: HYGIENE EDUCATION**

**SESSION 21: RESEARCH TO SUPPORT EFFECTIVE HYGIENE  
EDUCATION**

**READING MATERIAL**

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**"THE RESEARCH AGENDA"**

**Extracted from: Communication for Child Survival**

**Academy of Education Development**

**USAID, 1987**

Following the review of basic health-related data, the focus of investigation shifts to obtaining detailed information about the audience, health providers, the service delivery system, and potential communication channels.

Extensive preliminary research is vital for two reasons:

- The effectiveness of the public health communication program is founded on its orientation to the consumer. Successful interventions—educational messages and promotions of new products and services—are built on knowledge about consumers and their environment.

- The goal of the public health communication program is change in health practices and in health status. In order to determine whether the program accomplishes these goals, it must have baseline data for comparison.

Program managers are often anxious to move ahead quickly in launching actual communication interventions. However, experience suggests that careful research is directly related to effective message development. Three to six months should be anticipated for conducting developmental research and strategy design.

## THE RESEARCH AGENDA

Developmental research (also known as formative research, since the results are used to “form” programs) should gather the following kinds of information:

### Facts about the caretaker, or consumer:

What are current levels of knowledge, attitudes, and practices (KAP) of audience groups regarding the health problem?

What concepts and vocabulary do they use in discussing it?

What are their beliefs about the causes of the problem?

What are their current treatment practices?

Whom do they go to for advice about health problems?

What are the costs and benefits of engaging in the proposed health practice?

What factors might motivate mothers to adopt the new health practice?

### Facts about the provider:

What are current levels of knowledge among health personnel and other providers regarding treatment norms and procedures?

What are their actual practices?

What are current health education methods?

What are the current health education resources?

What factors might motivate health personnel to adopt new treatment or teaching practices?

### Facts about the service delivery system:

What are the number and types of facilities available to provide preventive and treatment measures?

How many and what kinds of personnel are available?

How many and what kinds of training institutions address the health problem?

### Information about media:

What is the national mass media structure?

What is the effective signal coverage of radio and TV stations?

What are typical costs for production and airtime, and how is broadcasting controlled?

What percent of the population owns radios and TVs?

What are the patterns of radio/TV use?

What are individual and household literacy rates?

Can the audience interpret two-dimensional pictures easily?

What are the language patterns?

What other means of communication are prevalent and powerful?

### Information about ministry and program policies:

What are the plans and priorities of relevant ministries?

What are the individual program policies and objectives?

What are national treatment norms?

### Information about background influences and constraints:

What might the public suspect is the hidden motive of the communicators?

How can resistance to the product or message be anticipated and prevented?

**SURVEYS**

Surveys provide the most systematic means of sampling a large population's belief system. They allow researchers to determine the percent of people in a certain group who reportedly think or act in a specified way. Surveys can be either limited or comprehensive; they can be geared to particular program needs; and they can be efficient. Success in using surveys is dependent upon clearly defined research goals; careful sampling design, questionnaire development and testing; organization of the data collection and processing; and timely analysis and interpretation of results.

**Advantages of surveys:**

- Provide quantifiable data on which to substantiate hypotheses;
- If the sampling frame is correct, it is the only research technique which allows valid projections to large numbers of the target audience.

**Disadvantages:**

- More costly in terms of time and money than other research techniques;
- No capability of uncovering areas of information not specifically targeted by the researchers. Questions should be developed from qualitative research or a survey may totally miss areas of concern;
- All responses indicate "reported behaviors," not actual behaviors. The interviewee is more likely to answer the way he/she believes the interviewer wants. Moreover the greater exposure to a communication campaign, the more likely the respondent is to report having adopted the desired behavior. Capturing reliable self-reports on attitudes and behaviors requires sophisticated survey design and measurement techniques.

**Approximate time required:**

- Two to six weeks to design and pretest the instrument (depending on the objective of the research);
- Two to six weeks to gather data (depending on the size of the survey);

- Two to six weeks to code and analyze data;
- Total time to completion—six to eighteen weeks.

**Resources needed:**

- Trained interviewers;
- Good sampling methods;
- Questionnaires;
- Data Analysis.

**FOCUS GROUP INTERVIEWS**

Focus group interviews bring together eight to ten respondents typical of the intended target audience. A trained interviewer uses a prepared list of probing questions to collect information on vocabulary, attitudes and concepts related to the selected health problem. These questions should be designed so as to reveal bias on the part of the interviewer, but rather to elicit as much detail and diversity from the group as possible. In many countries, focus groups have proved to be an efficient method to analyze commonly-held or traditional beliefs which might not emerge in individual interviews and cannot be anticipated in surveys.

Subgroups within the target audience should be represented. For example, when a group of mothers with young children tests ORT messages, a researcher should be certain to include women who are first-time mothers along with those having two, three, or more children and therefore more experienced in maternal care. If one subgroup might be expected to inhibit discussion, for example if new mothers would tend to defer to the "expertise" of more seasoned parents, then these two groups should be interviewed separately.

A session lasts between 60 and 90 minutes. A moderator follows a discussion outline to keep the session focused on topics of concern. At the same time, the moderator encourages participants to talk freely and spontaneously, probing any relevant new topics that emerge during discussion. The moderator must emphasize that there are no "right" or "wrong" answers to questions raised in the group.

Although the moderator does not need to be an expert in the subject matter, certain "process" skills

important. He or she must build rapport with the group and be able to ask questions and receive answers without influencing respondents' reactions.

Ideally, respondents are recruited ahead of time and do not know each other. They should be assured that their reactions will be kept strictly confidential. Individuals are sometimes offered an "incentive," most often monetary, to participate.

The number of focus groups that should be conducted to gather views on a particular subject varies. Ideally, researchers should conduct focus groups with different clusters of a single audience segment until no new information is forthcoming. However, the number also depends on the needs and resources of the specific program. If target audience perceptions appear to be similar across groups, three to four groups are usually sufficient.

#### Advantages of focus groups:

- The group atmosphere may stimulate more in-depth discussion than individual interviews do;
- Insights can be obtained relatively quickly.

#### Disadvantages:

- Focus groups should not be used when quantitative data are needed (such as a measurement of choices between two concepts);
- The qualitative nature of the data and the small sample sizes do not provide a clear basis for comparing the results of different groups.



*Focus group discussions must be carefully structured and yet have an atmosphere of openness to encourage the exchange of ideas. Here, a focus group discussion in Malawi begins with songs.*

**Approximate time required:**

- About two weeks for designing the study;
- Two to six days to conduct groups;
- Five days to analyze interviews and write report;
- Total time, from planning to completion of report—up to three or four weeks.

**Resources needed:**

- Discussion outline;
- Trained moderator familiar with appropriate regional dialect;
- Observer to record group reactions as they occur;
- Respondents typical of the target audience;
- Comfortable meeting place for conducting interviews;
- Tape recorder and blank audiotape.

If a meeting room isn't available, the researcher should find a space which is relatively quiet and free from distraction. The observer can sit in the same room with the respondents, placed behind them and out of their line of sight, quietly taking notes. Participants will quickly get used to this presence.

**CENTRAL LOCATION INTERCEPT INTERVIEWS**

Central location intercept interviews or other small sample surveys are based on results of other research efforts. They help substantiate hypotheses.

Intercept interviews are based on "chance encounters." An interviewer goes to a place frequented by members of an intended target audience. Randomly selected individuals are asked specific screening questions to determine whether they fit the criteria of the target audience. The interviewer then invites them to participate in the study. The interview is conducted in a quiet area at the site.

Since a highly trafficked area can lead to a relatively large number of interviews in a reasonably short period of time, the central location intercept method can be

quite cost-effective on a per-interview basis. The kind of questions asked at central location intercept studies are highly structured and may require both open-ended responses and closed-ended responses. Interviews typically last 10 to 30 minutes depending upon the extent of the information covered.

Researchers should select the central locations *relevant* to their target audiences in determining sites for this technique. Message-testing for ORT or immunization promotion might take place at a clinic, while family planning intercepts might be conducted at a pharmacy or general market area. If the area is under some kind of formal management, the interviewer should obtain permission in advance.

Although central location intercept interviews (like focus groups) provide quantitative data, the respondents interviewed may not be representative of the entire target population. Planners should be aware of the limitation of these data. Nevertheless, a group of between 100-200 respondents for each discrete test will provide a solid set of insights for fine tuning of message products.

**Advantages of intercept interviews:**

- The opportunity to obtain a large number of interviews;
- The flexibility of choosing a variety of central locations, as needed;
- The use of highly structured questions to allow quick analysis of results.

**Disadvantages:**

- No capability of gathering a large number of spontaneous and statistically representative responses;
- The unsuitability of certain sensitive or emotionally laden subjects;
- The time limitations placed on each interview.

**Approximate time required:**

- Three weeks to design questionnaire and administer interviews;

- Number of days required for field work varies depending upon length of interview, number of interviewers, and traffic in central location; average should be about four days.

- Total time required—four to five weeks.

#### Resources needed:

- Structured questionnaire;
- Trained interviewers familiar with appropriate regional dialect;
- Access to central location frequented by individuals typical of target audience;
- Interviewing area.

### INDIVIDUAL IN-DEPTH INTERVIEWS

Individual in-depth interviews build on information gathered during other research efforts, to probe deeper into individual attitudes and concerns. They are useful when sensitive topics are addressed, when issues must be probed deeply, when individual rather than group responses are needed, or when it will prove difficult to gather respondents for a group meeting. They are often conducted along with health practice observations.

These interviews can be conducted in any quiet spot where both interviewer and respondent can concentrate. Home interviews may be appropriate for nursing mothers or mothers with young children.

The interviews should be conducted by an experienced interviewer, or someone who is at least well-acquainted with the discussion outline. Sensitivity to respondents' feelings and a complete understanding of the material are essential. Interviews last anywhere from 30 to 90 minutes, depending upon the depth of coverage required.

Like focus groups, in-depth interviews provide qualitative insights. The sample size is usually small, although 20 to 30 interviews should be a minimum. This limited sample size means that while the data can assist planners in making decisions, findings should not be used to generalize to the broader population.

#### Advantages of the individual in-depth interview:

- The opportunity to probe individual respondents in depth;
- The opportunity to discuss sensitive or emotion-laden topics without scrutiny from others;
- The opportunity to interview hard-to-reach audiences by going to their own homes or own choice of locations.

#### Disadvantages:

- Such interviews may be time-consuming to arrange, conduct, and analyze;
- The information obtained cannot be used to make broad generalizations.

#### Approximate time required:

- Three weeks to design questionnaire and arrange interviews;
- Number of days required to conduct interviews varies depending upon availability of respondents;
- Five to 10 days to analyze interviews and write report;
- Total time, from planning to completion of report—up to four to six weeks.

### ETHNOGRAPHIC STUDIES

Ethnographic studies combine anthropological techniques to analyze how specific health practices relate to the larger cultural context. They require several months and a trained ethnographer, but provide invaluable information about the importance of health practices and beliefs in the larger social system.

#### Common Techniques:

An ethnographic study may employ several or all of the following approaches:

- **Participant observation**—The researcher participates in the daily life of the community(ies) he or she is studying—observing what is happening, listening to what people talk about, asking questions in various ways

over a period of time. Participant observation is the most typical anthropological research technique. It requires study over a period of time—at least six weeks.

- **Direct observation**—The researcher observes, but does not “participate” in an event. The product is a narrative description of certain activities.

- **Informal conversations**—The researcher takes advantage of any opportunity to converse informally either individually or in small groups with members of the community being studied.

- **Directed interviews (in-depth)**—The researcher conducts open-ended interviews with “key informants” (selected persons in the community) over a peri-



*Ethnographic studies help planners understand how health practices relate to the larger cultural context. (Honduras)*

od of time. The interviewer follows a general list of questions, which may evolve over the course of the study.

#### Methods of Record Keeping:

In an ethnographic study, the researcher maintains three types of information: a daily diary, abbreviated field notes, and expanded field notes.

- **Daily diary**—In one notebook, the researcher describes briefly what he or she does every day of study, also noting special events that take place in the community. This is basically a description of the work schedule of the research.

- **Abbreviated field notes**—The researcher keeps notes during visits to homes of key informants. This information is very simple, sometimes only key words which can be written without affecting the conversation.

- **Expanded field notes**—The same day of the observation, the researcher expands the notes taken during that day's visits. The expanded field notes include the researcher's personal impressions of what happened during the conversation. These notes are then xeroxed and divided into a series of files for further review and analysis — the community file, the family file, and the individual file.

#### Advantages of ethnographic studies:

- Opportunity to compare actual and reported behaviors;
- Opportunity to observe the cultural context of behavior or series of behaviors;
- Capacity to follow families and groups over a long period of time.

#### Disadvantages:

- Takes a long period of time;
- Analysis of data can be affected by the bias of the researcher who has spent long periods of time and has become emotionally involved with the people she is studying;
- Not as systematic as other techniques.



## **MODULE 6: HYGIENE EDUCATION**

### **SESSION 22: SELECTING MESSAGES AND MEDIA FOR HEALTH AND HYGIENE EDUCATION**

#### **OBJECTIVES**

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By the end of the session you will be able to:

- \* develop criteria for assessing the likely effectiveness of hygiene education materials;
- \* list the major characteristics of the different media;
- \* select appropriate media for disseminating hygiene education messages to specific audiences;
- \* select appropriate messages for encouraging hygiene behaviour change and know how to phase these messages over time.

#### **Session Flow and Methodology**

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- \* Plenary: Develop criteria for assessing hygiene education materials
- \* Individual exercise: assessment of hygiene education materials
- \* Plenary
- \* Overview by Facilitator: The characteristics of the media; message development and message phasing
- \* Exercise
- \* Plenary
- \* Summary and Evaluation of Session

**Learning Points**

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**"I give them a lecture about bacillus, amoeba, and how germs get into the alimentary tract and cause morbidity and mortality....No they never ask questions"**

Sanitation promoter explaining the information he gives village people. North West Frontier Province, Pakistan, June 1990

**"Yes, I like that wall paper - I like the colours"**

Woman in a Papua New Guinea health clinic when asked if she looked at the hygiene posters on the clinic walls. Mende, Southern Highlands, October 1989

1. How messages are understood differs depending on gender, culture, education, and experience. All messages must be field-tested to ensure they mean the same thing to the target audience as they mean to you. Visual materials are particularly culture specific. Even large international marketing companies sometimes get their messages wrong.
2. Messages must take into consideration the existing knowledge of the target audience and what they perceive as important. Where possible build on to existing positive behaviours.
3. Messages must overcome resistance points (see Manoff case study) and use the words commonly used by the target audience. Within the one district or province there may be local variations in the words or expressions used for basic words like clean water, diarrhoea, excreta. It is common to find different words for children's excreta and that of adults or animals.
4. Good messages are simple, short, clear, easy to understand, in simple language or pictures, and contain only one piece of information. The most common mistake in health-related messages and communication materials is to try to include too much information.
5. Messages should be placed in a logical sequence. If the major communication goal is to reduce childhood morbidity and mortality from diarrhoeal disease and the objectives are to improve personal hygiene, promote safe water handling and encourage breastfeeding, a number of independent but mutually supportive messages and materials must be produced. The messages must be promoted one at a time rather than all at once. The logical sequence of messages

will depend upon specific situations and existing knowledge and behaviour. In one target audience the first messages may be alerting the community to the fact that diarrhoea is a serious disease. Among another it may be ways to prevent or treat diarrhoea.

6. Facts for Life provides a useful source of basic messages.

7. Once the basic message has been decided, its presentation, or "treatment", must be developed. This will depend on the knowledge that the target audience has, their perceptions of the subject, their aspirations and what is likely to attract, interest and motivate them.

8. Changes in health and hygiene behaviour are seldom motivated by initial messages about germ theory and disease reduction. Being modern, providing good care for children, avoiding "eating excreta" are usually more effective motivation points. To motivate demand for latrines and to encourage their use, privacy, convenience and being modern usually have more direct appeal than improved health.

9. Media selection should be based on research results, the characteristics of the target audience, and the content and "treatment" of the major messages. The usual criterion is cost-effectiveness. However, some media are inappropriate for some messages. In some societies it is not possible to mention bodily functions on radio or television. In others, bodily functions cannot be discussed face-to-face, while in others they can be discussed only among groups of one gender.

10. UNICEF has frequently failed to consider the target audience when developing or funding communication materials for hygiene. Radio programmes for women are broadcast when they are too busy to listen, posters using a complex system of arrows, crosses and ticks to explain waterborne disease are developed for largely illiterate and sometimes visually illiterate rural communities, messages on treatment of diarrhoea are aimed at mothers of small children when siblings or grandmothers are the child minders.

11. In most countries radio reaches the widest audience for the least amount of money but has the disadvantage of being "one-way" communication. This can be overcome by using village or community radio listening groups which allow for discussion. The press usually has limited coverage and is seldom effective in rural areas. Television and video can be very effective but production is expensive and time consuming and coverage can be limited. Videos can provide good support for training in water and sanitation programmes if used properly.

12. Posters are the most common but least useful form of communication support. To be effective they usually need to be explained.

13. Interpersonal communication through field workers is the most effective way of motivating change. It is expensive in terms of time, money and personnel and should involve training in communication skills for field workers.

14. A well planned hygiene and health education campaign uses the same messages on all media including field workers. This provides continual reinforcement of the message.

15. A specific time frame should be established to meet a specific communication goal. For example the Water Users Programme in Ghana developed a series of hygiene and health education campaigns which dealt with one topic annually. In subsequent years the initial messages were reinforced. It allowed four to five months for message and material development and training and seven months for implementation and evaluation.

16. An important part of any hygiene and health education component is communication training for front-line workers. This should include information and education on the major messages, how to organise communities, how to use communication support materials, and how to motivate communities to attempt changes.

17. Those responsible for giving hygiene and health education must be considered credible and to have the right to give this information.

18. Information given by those considered to have high status and popularity usually confers legitimacy to the information. In societies where age, rank and masculinity are the major criteria for status young women are usually ineffective change agents.

19. In some cultures difficult or embarrassing information can best be given by people from outside the community.

20. Puppets, plays and role play can often be used to promote information or messages that would be difficult to promote in any other way.

21. Care should be taken in using communication channels which are closely associated with political propaganda or unpopular regimes.

## References and suggested reading materials

Manoff, Richard, "Designing the Message", extract from Chapter 9, Social Marketing: New Imperatives for Public Health, Praeger, New York, 1985

"Message Design and Material Production", in The Water Utilisation Project: A case study of a water and health education project in Northern Ghana, CIDA, Ottawa, 1991

"Media and Messages", in Communication: A Guide for Managers of National Diarrhoeal Disease Control Programmes, WHO/UNICEF, Geneva, 1986

**MODULE 6: HYGIENE EDUCATION**

**SESSION 22: SELECTING MESSAGES AND MEDIA FOR HEALTH AND HYGIENE EDUCATION**

**EXERCISE: SELECTING MESSAGES AND MEDIA FOR THE WATER, SANITATION AND HYGIENE EDUCATION PROJECT IN KHAMMOUANE PROVINCE, LAOS**

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1. Read "Message design and material production", The Water Utilisation Project: A Case study on a water and health education project in northern Ghana, CIDA, Ottawa, 1991

2. Review the criteria developed earlier in the session for assessing hygiene education materials

3. Review the research results provided (these results are based on the research questions your group developed in the previous session).

4. Using the research results provided, the information contained in the case study, and the objectives your group developed in session 2 for the water, sanitation and hygiene education project for Khammouane Province, undertake the following activities:

1. For each audience list the major messages you would use to bring about the behaviour changes planned for in the previous exercises.



**MODULE 6: HYGIENE EDUCATION**

**SESSION 22: SELECTING MESSAGES AND MEDIA FOR HEALTH  
AND HYGIENE EDUCATION**

**READING I**

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**MEDIA AND MESSAGES  
COMMUNICATION: A GUIDE FOR MANAGERS  
OF NATIONAL CDD PROGRAMMES**

**WHO/UNICEF, GENEVA, 1986**



## MEDIA AND MESSAGES

The coordination of communication activities with other CDD programme activities, as indicated in the timetable (page 38) is essential to reach overall CDD goals. For example, trained providers, ORS, and educational materials must be in place before the mass media begin creating a demand for services and ORS products.

CDD programmes should begin with an active training component. This may involve:

1. Improving and accelerating the training of Ministry of Health service providers in correct case management if sufficient providers have not already been trained,
2. Teaching service providers about the communication objectives and the use of the newly developed educational materials,
3. Informing groups such as private physicians, pharmacists, traditional healers, media people, or other important opinion leaders about the goals and strategy of the CDD programme and what is expected from them as providers or communicators. Frequently print materials are distributed to these groups during training or briefing sessions.

Important issues during implementation are:

- Media mix
- Message phases
- Message design

### 1. Media mix

Media mix is the term used by communication planners to define the combination of media (or channels) - face-to-face, print, radio, television, etc. - used to deliver messages.

The combined use of several channels of communication, for example, giving a message in interpersonal exchanges and reinforcing that message in print and broadcasts, is the key to successful implementation. The same messages using the same vocabulary should be repeated by nurses, physicians, radio spots and posters.

Media mix is determined by considering:

#### Audience

- its level of education
- its access to information technology (e.g. traditional media or electronic media)
- its media usage patterns and preferences

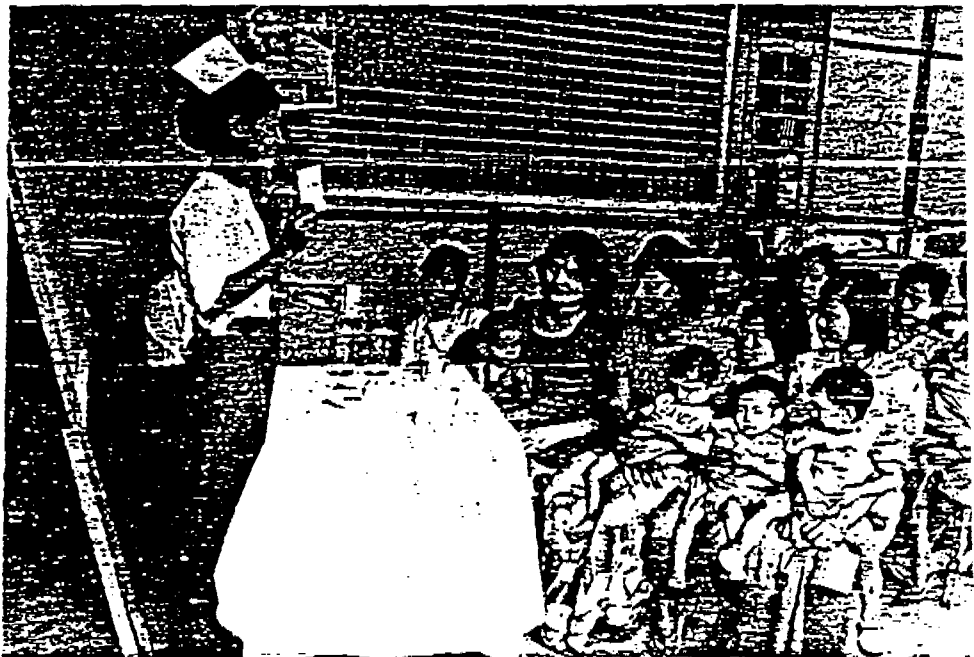
## Communication objectives or tasks

- to inform
- to motivate or reinforce behaviours
- to teach specific skills

## Characteristics of the medium\* or channel

To what extent does the channel:

- allow for dialogue and exchange? That is, is it a two-way communication channel? This will enable checking for understanding. Two-way communication is accomplished by well informed, well trained, motivated and empathetic health workers.



### Interpersonal Communication

Professional health staff, village health workers, traditional healers, and other opinion leaders give CDD products and messages credibility. The interactive dialogue between the audience and a credible source of information is an effective channel for teaching about ORT and reinforcing correct behaviours, especially at the community level. Techniques to strengthen interpersonal communications include demonstrations, which are particularly effective for modelling desired behaviour and audio-visual aids such as posters, slides, cassettes or printed materials, which help the audience visualize or memorize key ideas.

- allow for timeliness and act as a reminder?



#### Audio-visual aids and printed materials

Each kind of printed material has its own strength. Flyers and ORS packaging give the mother detailed instructions on correct preparation and use of ORS in her home at the time she most needs it. Point-of-purchase materials displayed where ORS is sold or given, such as bill-boards, posters, and containers reinforce simple messages, but are not an effective medium to teach complicated skills. Flip-charts, slidetape shows, and other audiovisual aids ensure the delivery of correct messages in interpersonal communications. Press releases, magazines and newspaper advertisements can give status to programme messages. It is important, however, that printed and audio-visual materials be designed for a particular target audience. Booklets would not be effective materials for illiterate mothers, for example.

- allow for culture or audience-specific messages? That is, is it familiar to the audience and entertaining?

#### Folk Media\*

Community theatre, puppets, singing groups, and other folk media are important traditional channels in many countries. These can be used to give CDD programme messages credibility within traditional cultural patterns. Used on mass media, they can help give credibility and creativity to radio and television materials. At the community level, they help trigger community involvement for promotion of services and adoption of preventive measures.

- allow for “reach and frequency”? That is, do we achieve good coverage with messages? Reach is the number of members of the target audience who can see or hear a programme message during an established period of time. Frequency is the average number of times the target audience hears or sees a specific message. The key is for the target audience to be exposed to messages a sufficient number of times over a period of time so that they will remember and act on them.



#### **Broadcast Media**

Both television and radio can extend coverage with CDD messages. Radio is more widely available in most developing countries, but television is becoming increasingly widespread. “Reach and frequency” are key words in the use of mass media materials. Effective mass media use includes repetition of a few practical messages on the most popular broadcast stations during “prime time” (hours of greatest audience listening or viewing) for a sustained period of time. Mass media has been demonstrated to create awareness of ORT and increase demand. In many countries, television can also increase the prestige of the CDD programme and teach skills for correct ORT use.

Longer radio programmes are more time consuming and costly to produce but can discuss behaviours in more detail. They also are a cost-effective way to reinforce training given to health staff and other providers by increasing community interest and support.

- not involve a lot of recurring costs?

Use of sophisticated audio visual equipment such as video can be expensive.

Reaching enough people with interpersonal communication requires a very large number of trained personnel and a way to supervise them and can involve buying means of transportation and gas for field staff.

Private sector broadcast time is more expensive than donated government station time. However, it may be more cost-effective to pay for air time on stations and programmes which will deliver the messages with the reach and frequency needed to be effective.

Printed materials can also be very expensive if they are to be attractive and printed in the quantities needed.

**Media mix determines:**

- a) which channels will be used for each message and for each target audience. Different media may reach different segments of the audience or may be valued by a particular audience for different purposes.
- b) what particular role each channel will play: dialogue, credibility, coverage, reminder, educator.
- c) with what frequency each channel will be used and how the messages will be scheduled.
- d) how the channels will be combined and mutually supportive (for example, health workers could inform mothers when to listen to the radio to hear CDD programme; printed materials could show the steps for correct use of ORT; radio could motivate users to follow all of the instructions on the printed materials about ORT).

## 2. Message phases

Not all messages should be delivered at once. Phasing messages wisely can increase impact and save money. For example, the first messages would be those which are absolutely necessary for initial knowledge and successful trial of ORT, first by health staff and then by mothers. During the diarrhoea season, more messages on treatment might be appropriate. The communication planner should also be careful to coordinate with other health or developmental messages in order to avoid giving so many messages that the audience loses interest.

## 3. Message design

The message is the heart of communication. In public health communication, message design is the art of highlighting the benefits the audience receive for adopting a new behaviour or technology, in order to reduce their perception of the social cost of adopting it.

Messages should be:

understandable  
technically correct  
brief  
attractive  
standardized

memorable  
convincing  
practical  
relevant to the target audience

Meeting these goals is accomplished, not by following a standard recipe, but through creativity and use of audience research results to determine:

- how to "position" or place the product or behaviour into the audience's mind. Psychology applied to market research has helped uncover the symbolic value that we often unconsciously assign to products or events (e.g., pleasure/pain, young/old, power/weakness, etc.). For example, "Give power foods to your child during diarrhoea episodes" might be attractive to a given audience.
- what key benefit to emphasize to make it appealing to the audience. For example, "ORT restores appetite of your child" might be an important benefit.
- how to make your message more credible. For example, identifying the Minister of Health or a famous physician or actress as the source of the message might increase compliance.
- the tone of the message. Will you use threat, fear, ego, self-esteem, positive features or negative, modernity, or another approach? For example, "ORS is the medicine for diarrhoea used by the modern, loving mother".



ANAK SEHAT  
KELUARGA BAHAGIA

"A healthy child, a happy family"

**MODULE 6: HYGIENE EDUCATION**

**SESSION 22: SELECTING MESSAGES AND MEDIA FOR HEALTH  
AND HYGIENE EDUCATION**

**READING II**

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**ADVANTAGES AND DISADVANTAGES OF DIFFERENT MEDIA**

ADVANTAGES AND DISADVANTAGES OF DIFFERENT MEDIA

A. INTERPERSONAL	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
1. Public meetings/ lectures/press conferences	Easy to arrange. Reach many people. Create public interest and awareness. Stimulate follow-up discussion.	Audience is usually passive. Speakers may not understand audience's needs. Difficult to assess success. Audience might not learn the main points.	Presentation should be clear. Use visual aids when possible. Give handouts. Encourage audience to raise questions and participate.	Advocacy Social Mobilization	Inform
2. Group discussion	Builds group consciousness. Provides chance to exchange opinions.	Some members may dominate. Sometimes difficult to control or to keep focusing on the main issue. Requires trained leaders/good chairman.	Should be used with an interested audience to discuss a specific problem. Should be informal. Present summary of discussion at end. Decision should be made by group regard- ing issue discussed.	Community Participation Advocacy Social Mobilization Training	Educate Motivate
3. Role Play	Facts and opinions and controversial issues can be presented. Can encourage people to re-evaluate their stand on issues and can invite audience participation. Persons insight into	Participants may feel upset at playing a role they do not agree with. Requires preparation in selection of issues and actors.	Use in training courses. Follow-up discussion should focus on the issue rather than performances. Source material about the issue should be provided to the actors.	Community Participation Training	Inform Educate



A. INTERPERSONAL	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
4. Drama	: Attracts attention : and stimulates : thinking. : Provides ways to : discuss difficult : issues in an : entertainmet format. : Can reach large : audience.	: Actors need training : in preparing script : and acting. : Requires considerable : skills and careful : guidance by the field : worker. : Professional actors : may be expensive.	: Should be restricted : to one issue. : Can be used as : entertainment if well- : prepared. : Can use well-known : entertainers.	: Social Mobilization : Programme Support	: Inform : Motivate
5. Home visits/ clinic visits	: Can establish good : relationship between : field workers and : families. : Can provide : opportunity for : personal discussion. : Can provide : information about : rural families that : cannot be collected : otherwise.	: Accessible families : can be visited. : Time-consuming, small : coverage. : Expensive	: Records should be : kept of families : visited. : Home visits should be : included in field : worker plans. : Handouts should be : given.	: Programme Support	: Inform : Motivate : Encourage
6. Demonstration (with a small group)	: Participants can : learn by doing. : Establishes : confidence.	: Requires preparation : and careful selection : of demonstration : topic and place. : Outside factors can : affect demonstration.	: Demonstration : processes should be : rehearsed. : Audience should : participate in the : actual process.	: Social Mobilization : Community : Participation	: Educate

B. MASS MEDIA	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
1. Radio	Reaches most households. Reaches remote areas. Reaches illiterates. Inexpensive Messages can be repeated at low cost. Is flexible. Formats include drama, lectures, folklore, songs, interviews and variety shows.	One-way channel. Complicated technical issues. Difficult to illustrate. Audience reaction is difficult to assess. Requires special skills.	Radio effectiveness increases if messages used in group discussions (e.g. farm forums) or regular training courses. Desirable for radio to cover local events, assist in explaining and promoting local projects and	Social Mobilization Social Marketing Programme Support	Inform Make aware
2. Television	Attracts large audience. Can explain complicated messages. Programmes can be repeated at cost. Folklore, art and music, community events, and animated public speeches and debates. Efficient in bringing issues to public attention. Powerful in setting public agenda. Successful in creating awareness. Can be used for short spots.	Expensive Receivers not available in many rural areas and among poor population. Educational programmes may face competition from entertainment. No audience participation. Requires careful planning and preparation. Professional technical, creative, and communication skills needed.	Can play an important role in development. More educational training is required for staff. Effective for activating group learning when used in viewing centers or as part of multi-media campaign for education, information and motivation. Can use entertainment style for educational messages.	Social Mobilization Social Marketing Advocacy Programme Communication	Inform Educate Motivate

D. MASS MEDIA	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
3. Newspapers	Can provide detailed information. Influential in creating awareness and mobilizing public opinion. Material published can be shared and used as reference. Can be used to support radio and television.	Can be used by literates only. Difficult to reach isolated communities. Can be expensive for poor families. Requires special writing and editing skills. Feedback difficult because audience reluctant to contact editor. Difficult to publish at regional level. Small communities can not afford to publish own newspapers.	Good source of information if topics of development are covered on regular basis. Can be used to establish community local papers and bulletin boards. Can be circulated to community members to reduce cost per individual family. Could be used to support literacy classes.		
4. Comics	Entertainment and popular. Can provide information to semi-literate. Can cater to special groups. Can include traditional characters and art forms.	Can be expensive for the poor. Need good graphic artists.			

B. MASS MEDIA	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
5. Cinema	Captures attention. Reaches big audiences in selected countries and can be very cheap (particularly with semi-permanent and travelling cinemas). Can reach lowest strata in certain countries.	Is expensive in some countries. Reaches only sub- groups. Distribution can be a problem.	Care must be taken in preparing the film clips.		
6. Bulletin Board/ Wall Newspaper	Striking, graphic, informative, flexible replaces local newspapers. Keeps community up-to-date with Cheap.	Requires preparation and attention to community needs.	Should be combined with maps, and photographs. Suitable for posting articles, announce- ments and news of development in the community.		
7. Folk Theatre	Culturally relevant. In some countries is easily available and inexpensive. Often more credible than modern media.	Format can distract from content. Hard to control message content.	Form varies from country to country. Can be used with a modern medium such as: television, radio, or supported by loud- speakers.		
8. Wall Painting/ Billboards	Potentially available to large audience. Low costs per person reached if well located.	Easily ignored. Limited to simple messages.	Message must be well designed and pretested. Sitting is critical to be able to reach the kinds of people intended.		

: B. MASS MEDIA	: MAIN ADVANTAGES	: MAIN DISADVANTAGES	: COMMENTS	: COMMUNICATION STRATEGY	: OBJECTIVE
: 9. Mass Media Group : Listening	: Combines mass media : and personal channels : Can be used for : many audiences over : Encourages group : participation.	: Requires preparation : for establishing : groups, training : group leaders, and : preparation of : education material. : Can be expensive. : Drop-out a problem : if special efforts : not made.	: Should be held : regularly. : Participants should : be provided with : educational material. : Programmes selected : should be about local : problems. : Tape recorders can : be used.		

C. OTHER MEDIA AND MATERIALS	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
1. Video (Forum)	Excellent tool for micro-teaching. Can introduce complicated concepts and technical issues. Can record field operations and activities. Can be used to teach skills and change attitudes. Feedback to the broadcaster can be immediate and relatively accurate. Can be handled by model farmers and community leaders.	Breakdown in hardware. Batteries run out. Requires highly skilled personnel and extensive hardware. Restricted to communities where trained field agents are available. Requires continuous servicing and maintenance and up-dating. Can become negative tool for development if it fails to attract different sub-groups in the community (such as the poorest, and religious or racial minorities).	Forums require continuing attention from professional organizers. Most successful in small group learning. Training materials must be carefully organized and kept in order. Efficiency increases if used in combina- tion with booklets and handouts.		
2. Films	Can make great emotional appeal to large audience.	Good films are rare. Equipment costly to buy and maintain. Frequent equipment failure. One-way communication: unless properly used. Requires skill in running film projectors.	Best if combined with discussion groups. Films should be used for stimulating discussion rather than for teaching alone.		

C. OTHER MEDIA AND MATERIALS	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
3. Slides	Have all the advantages of film strips plus more flexibility and can be more topical. They can be used in a series to illustrate a concept.	Can be expensive. Difficult to have them on all subjects of teaching.	Prepare logical sequence and a good commentary.		
4. Flannelboard	Portable and mobile. Can be prepared in advance. Little skill required in operation. Could be used to make presentation more dynamic.	Can only be used for what it is prepared. Cannot adapt to changing interest of group. Difficult to keep up-to-date. Bulky to carry.	Should be used step-by-step. Flannel materials should be stored properly for future use. Flannel graphs should be numbered according to their order in the presentation.		
5. Flipcharts	Can be stopped to allow discussion. Can be prepared locally. Ideas can be illustrated in sequence. Illustrations on flipchart could be used many times for different audiences in different sessions.	Soon torn. Can only be seen by a few at a time. Can be difficult to illustrate complicated ideas.	Should not be overlooked for illustration of simple sequences - especially with small groups. Lectures should be prepared in advance for use on several occasions.		

C. OTHER MEDIA AND MATERIALS	MAIN ADVANTAGES	MAIN DISADVANTAGES	COMMENTS	COMMUNICATION STRATEGY	OBJECTIVE
6. Models, Exhibitions, and Displays	Appeal to several senses. Can be used in various occasions and situations. Can illustrate ideas in details.	Not many workers can build them or use them properly.	Useful model and exhibitions could be built up locally. Should be used in familiar places - centers.		
7. Maps, Charts, Diagrams	Visual appeal. Should simplify details. Permit leisurely study. Can develop sequence on display boards.	May mislead by over-simplicity. Can create transport and storage problems.	Should be made especially for groups. May need careful explanation at first. Could be used as summary of information. Symbols and layout should be familiar to the audience.		
8. Blackboard	A flexible tool. Easy to make and to use. Can be very attractive if used properly. Use of coloured chalks can add to its visual appeal. Can be portable.	Requires some manipulation skill (though quickly acquired). Requires teaching skills to make best use.	Should be essential in every group. Very useful for schematic summaries or talk or discussion. Audience can participate. Small blackboards can be portable. Writing should be clear and organized.		



## **MODULE 6: HYGIENE EDUCATION**

### **SESSION 23: HYGIENE EDUCATION IN THE EDUCATION SYSTEMS**

#### **OBJECTIVES**

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By the end of the session you will be able to:

- \* identify and assess the opportunities available for integrating hygiene education into the formal and non formal education systems;
- \* list the ways the formal and non formal education systems can be used to reinforce desired behavioural change;
- \* assess the likely effectiveness of educational materials and methods in facilitating changes in hygiene behaviour.

#### **Session Flow and Methodology**

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- \* Plenary: Develop criteria for assessing education materials
- \* Exercise: Review school primers
- \* Plenary
- \* Presentation of country experiences in using the education systems
- \* Exercise: Identifying opportunities for hygiene education within the formal and non formal education systems
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. It is tempting to use the formal education system to solve the problems of hygiene and health education and to pass on to the Department of Education the responsibility for this task. The Department of Education can provide an extremely valuable channel for hygiene education but the responsibility for this task must be shared between the water and environmental sanitation implementing departments or institutes, the Departments of Health and Education, and in some instances, NGOs.
2. Integration and co-ordination of this sort must **first** take place within the UNICEF office.
3. Incorporating hygiene and health education within the formal and non formal education systems requires agency and departmental co-ordination. This is usually provided by establishing a Hygiene Education Task Force or Committee. National committees are frequently little more than a formality and a fancy name. However they can provide national legitimacy for a hygiene education policy. As it is usually the provincial or district level task forces who do the work, this is where support should be given. UNICEF may have to initiate and provide support to the provincial and district task forces. The extent and duration of this support is open for discussion.
4. Early in the planning process all formal and non formal educational opportunities within the programme target areas should be reviewed. These might include those within the formal schooling system - primary schools and colleges, universities, medical colleges, teacher training colleges and religious training institutes and non formal education systems - adult literacy classes, and training in income generation and home gardening.
5. Reviews will be needed of all existing formal health, science and hygiene curricula and any non formal education materials including those for literacy, animal husbandry, and income generation.
6. Special attention should be given to the content of non formal education courses for women and girls. Excellent work is already being done in this area by some NGOs and national women's organisations. In Pakistan, NGOs in Punjab and North West Frontier Province have included health and hygiene information on cassette with accompanying flip charts as part of women's literacy classes. In urban areas NGOs have incorporated health and hygiene education within home school programmes. In Cambodia and Viet Nam national women's unions have included practical health and hygiene education within their village women's education programmes.

7. NGOs in many countries have also produced excellent hygiene education curricula for the formal education system. These are often little known outside the district and their use is restricted to relatively small areas or specific cultural groups. Where appropriate support should be given to expanding and/or adapting these materials.

8. Attention should be given to the actual health and hygiene training given to teachers and health workers as this is often poor and inaccurate and may not reflect the curriculum intentions.

9. One of the most common "lost opportunities" for health and hygiene education is failure to include water use, health and hygiene education within the training given water and sanitation engineers, sanitation inspectors, programme promoters and/or facilitators. Their curricula should be reviewed. As these are the people who usually make first contact with the community and this contact may be relatively long term they are in a unique position to discuss hygiene and health behaviour with the community.

10. School curricula for hygiene and health education are frequently badly presented and the information is not expected to be applied in students' lives. This inappropriate approach needs to be changed. There are many innovative approaches available, including setting up school hygiene groups, class hygiene monitors, hygiene games, regular hygiene song or poem contests, and school plays on health and hygiene topics performed in the community, school class or inter-school competitions.

11. In assessing formal and non formal curricula you should ask:

- is the information accurate?
- does the information complement the messages given through the mass media or by front line workers?
- is the level of information appropriate for the level of the students?
- is the language used appropriate?
- are the lessons presented in an interesting way?
- does the curriculum allow for regular practical activities?
- is the material well illustrated?
- are there teaching support materials - e.g. charts, posters, cassette tapes, videos, games?
- are there texts books for each student?
- are the hygiene and health messages continually reinforced?
- does the curriculum encourage students to practice good hygiene or is it presented as a theoretical exercise?

12. Priority should be given to introducing health and hygiene education throughout the formal and non formal education systems in those areas where water supply and sanitation programmes are being implemented.

13. It is not uncommon for trained health personnel to have very limited knowledge of hygiene and sanitation.

## Readings and References

Tion and Meere: The New Water Supply, Te Ran Tai Bakataeia, Kiribati, 1990

Nase Primary Science and Health for Uganda: Health Education, Pupil's Book Six, National Curriculum Development Centre, Kapala, 1991

Thomas, Pamela, "Preliminary Report on a Mission to Pakistan", UNICEF, Bangkok, 1990

Prototype Action-Oriented School Health Curriculum for Primary Schools: Teacher's Resource Books, Units 3 and 11, UNICEF MENA and World Health Organisation, Alexandria, 1988

Prototype Action-Oriented School Health Curriculum for Primary School: Teacher's Resource Book, Unit 10-12. UNICEF/WHO, Alexandria, 1988

**MODULE 6: HYGIENE EDUCATION**

**SESSION 23: HYGIENE EDUCATION IN THE EDUCATION SYSTEMS**

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**Exercise 1: Reviewing School Primers**

1. All participants should read the two school primers "Tion and Meere".
2. Groups 1 and 2 should also read chapter 5 in "Basic Primary Science and Health for Uganda: Health Education" and groups 3 and 4 chapter 11.
3. Using the criteria developed earlier in the session the group should assess the two primers.
3. For each primer list the following:
  1. What problems were being addressed?

2. The target audience or audiences.

3. The major messages and the secondary messages.

**Exercise 2: Using the education systems to support the Water, Sanitation and Hygiene project in Khammouane Province, Laos.**

1. Read the Preliminary Report on a Mission to Pakistan, 1990.

2. Using all the documentation available for the Khammouane Province project decide on:

1. The formal education channels you would use to reinforce hygiene education and how you would use them.

2. The non-formal education channels and how you would use them.



**MODULE 6: HYGIENE EDUCATION**

**SESSION 23: HYGIENE EDUCATION IN THE EDUCATION  
SYSTEMS**

**READING I**

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**PRELIMINARY REPORT  
ON A MISSION TO PAKISTAN**

**5-8 September 1990**

**UNICEF, BANGKOK**

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## 1.0 Objective

1. To review the status of the UNICEF-assisted Water and Sanitation Programme in Pakistan with particular reference to the communication and health education components.
2. To prepare an initial draft strategy for the communication and training requirements of the programme, with particular reference to the next Five-Year Country Programme.

This mission concentrated on rural water and sanitation programmes in Punjab and North West Frontier Provinces. Further consideration needs to be given to the specific requirements of urban programmes.

## 2.0 Activities

During the 14-day mission, meetings were held with UNICEF personnel in Islamabad, Lahore and Peshawar offices; Local Government and Rural Development Department officers in Lahore, Peshawar, Kohat and Rawalpindi; Public Health Engineering Department personnel in Lahore, Peshawar and Kohat; Department of Health personnel in Lahore and Peshawar; NGOs involved in community development, water and sanitation, health education and adult education in Lahore, Rawalpindi, Peshawar, Behrain, and Kalam. Field visits were made to water sanitation and community development projects in the villages of Nirali Kaswal, Dhudhian, Halloke and Gaggu Matta in Punjab and Chakur Kot, Behrain, Kuza Gharay, and Charot in NWFP. Interviews were held with community leaders, and field workers in water sanitation, education, women's income generation, and health. Meetings were also held with staff in tertiary institutions concerned with communication and water sanitation training and with communication advisers in USAID and CIDA (Appendix A).

## 3.0 Background

Over the last 10 Years UNICEF's approach to water sanitation programmes has varied. Between 1982 and 1985 strategies were based on community involvement in water and sanitation and village level promotion and health education through sanitation promoters. A number of communication support materials were produced. In 1985, the focus changed to the delivery of high cost water supply in areas where water provision was particularly difficult. There is little evidence of a communication support component.

Over the last 18 months the approach has been re-oriented back towards the integrated provision of low cost water and sanitation with community participation in site selection, provision of land, labour, operations and management. Sanitation promoters and field technicians have been responsible for encouraging acceptance and for providing health education. While recognition has been given to the importance of communication support and health and hygiene education, the major focus has remained on providing hardware.

#### 4.0 Summary of Findings and Suggestions

##### 4.1 Future Strategy

It is suggested that the future water and sanitation programme strategy be based on:

Promotion of sustainable, low cost, water and sanitation.

Community involvement, including that of women's and youth groups.

Dissemination of effective health and hygiene education and communication support down to village level.

Sustained advocacy and social mobilization for increased government and private sector support.

Integrated involvement of all relevant government sectors, agencies and NGOs.

Provision of services to those areas most in need including urban slums.

Strengthening government infrastructure in community-based training and communication support, monitoring and evaluation.

This approach will require a re-orientation of the Water and Sanitation Unit and the amalgamation with Primary Health Care or the incorporation of personnel with primary health care and communication experience. It will also require the sensitization of WATSAN staff to the importance of the communication/health education component.

It is suggested that if improved health is a WATSAN goal and if health education is to be an important focus of the future programme this might be reflected in the programme name - perhaps Water and Environmental Health, rather than Water and Sanitation? The acronym WATENHEL however leaves a bit to be desired. WATHEAL?

#### 4.2 Programme continuity

There has been a lack of continuity and little consideration for institutional memory in the UNICEF approach to WATSAN programmes. As the Islamabad PCI Unit was involved in the communication and community participation components of the 1982-85 programme, it would be useful if the WATSAN Unit reviewed this experience with the PCI people involved.

Given the preliminary work involved in establishing community-based programmes and the time required for developing effective communication methods and materials, adequate lead-time and programme continuity are important. This seems to have been overlooked in the past.

#### 4.3 Demonstration and demand

The entry point for WATSAN projects in the past has been water. Demand in most project areas now outstrips supply. Acceptance of latrines remains slow. Requests in both provinces for additional UNICEF support for latrine construction suggests low priority and need for more emphasis on demand creation.

Where demonstration latrines and water were in place there was little evidence of sanitary practice or knowledge of water-related health and hygiene practices, highlighting the need to provide on-going hygiene education and appropriate communication support.

#### 4.4 Community involvement and incorporating women

The establishment of community water committees in project areas has been relatively successful but community is synonymous with male. Although village women's direct involvement in committee activities is problematic there appears to be no cultural barrier to the involvement of respected older women.

Incorporation of women into WATSAN and health activities at village level will need increased support and co-operation from NGOs and perhaps the Pakistan All Women's Association which has outreach to district and sub-district level.

There are several independent, village-level women's activities that could provide channels for hygiene and health education as well as women's active involvement in hygiene programmes. These include adult literacy and income generating classes and home schools supported by a variety of organisations. For example, in NWFP there is a women's cell in LGRDD which operates 415 community centres, with 26 women community supervisors employed by the District Councils. UNICEF already provides libraries and other inputs. These activities should be identified and the inclusion of practical hygiene education promoted and if necessary, supported.

Existing literacy classes, youth groups, school teachers associations, health centre personnel, and existing village committees should be the focus of WATSAN communication and education activities.

The Health Education Adult Literacy (HEAL) modules produced in Lahore and those developed by the Allama Iqbal Open University currently used in Punjab are excellent examples of how hygiene and health messages can be integrated into adult education and women's literacy programmes. UNICEF could support the expansion of these activities and encourage similar methodologies in other provinces. A major goal should be the integration of appropriate hygiene messages into all literacy materials and adult education curricula.

#### 4.5 Training for field workers

The hygiene knowledge and training of field workers appears to be inappropriate. Words like virus, protozoa and bacteria are being used in village health education. It is unlikely that germ theory and jargon will promote understanding and behavioural change. A thorough review of the both the training given, the field workers health and hygiene knowledge, and the work they undertake in the village is a priority activity. It should provide a basis for restructuring the training curriculum.

The training in community organisation, participation, and education used by the Adult Basic Education Service, (ABES), Lahore appears to be excellent. This organisation could be utilised to undertake training of trainers, or if possible, direct training of sanitation promoters and field workers.

Field worker training and field activities would be more effective if they were more closely monitored. UNICEF might consider funding six-monthly two-day refresher courses for field workers and their supervisors. This would upgrade training, and provide the opportunity for regular monitoring, evaluation, encouragement and advocacy.

Sanitation promoters, field technicians, engineers and women's interest officers would communicate more effectively if they were given a short training course in interpersonal communication skills. UNICEF has a satisfactory communication training module which could be adapted to WATSAN concerns and incorporated in all training schedules, including that used by ABES. Existing sanitation promoters and field technicians should be given communication training once satisfactory communication materials have been produced.

#### 4.6 Tertiary training and advocacy

Support for water and sanitation education and training through provincial rural academies and educational institutes should be increased. Courses like those provided at the Tando Jam Rural Academy, need to be reviewed, revised and expanded to incorporate communication skills, community organization, and participatory health education methods and research methodologies.

UNICEF should aim at getting hygiene education included within all tertiary health, agricultural, home economics and adult education curricula. For example hygiene education could be included in the curriculum of the courses run for women by the Food and Vegetable Board in the Department of Agriculture, Peshawar.

A seminar series of the political economy of water and sanitation for tertiary institutions could be funded.

#### 4.7 Field staff levels

There are too few sanitation promoters and field technicians to adequately promote the programme and provide necessary follow-up in existing project areas. In particular there are too few women as both field worker and supervisors.

UNICEF should continue to advocate for female involvement in the programme at all levels and may wish to consider re-introducing payment of salaries for additional female sanitation promoters and supervisors.

With increased emphasis on communication and health education a team of three (two of them women) additional workers is required at provincial level to provide a focus for communication and health and hygiene education activities. They should have communication skills and be responsible for providing communication support and advocacy at district, union, and village level and for regular supervision of the communication aspects of sanitation promoters activities. It may be possible for integration with the Health Education Units of the Department of Health - where these are not totally moribund. As the World Bank/CIDA Family Health project will upgrade provincial and district health education units this is worth investigating.

This team could comprise one person funded by Department of Health, one by Local Government and Rural Development Department and one by UNICEF and have close links with UNICEF provincial WATSAN, Health and PCI programme officers.

#### 4.8 Communication support materials for field workers

Field workers would be more effective if they had appropriate communication support materials and knew how to use them. Some good communication materials exist but are not widely distributed. Field workers were unaware of their existence.

Hygiene messages and health information used by field workers must be based on appropriate research to ensure messages are understood and are motivational. The promotion of germ theory is seldom effective while the "eating excreta" approach is more easily understood and, in most societies, is effective in bringing about behavioural change.



Promotion of latrines and latrine use is seldom effective if messages focus on improvements to health. The causal links between latrines, hygiene and health are too diffuse to be readily accepted by poorly educated or illiterate communities. As Ken Gibbs states in his "Design Manual" (page 90) privacy, convenience, safety and being modern, are more effective selling points.

The Health Education Resource Centre, (HERC), Peshawar, produces good, durable, hygiene education materials that could be adapted for use in all ethnic groups. UNICEF should support their wide distribution including to NGOs working in the water sanitation sector. Cloth posters on hand washing and latrine use should be distributed to health centres, schools, women's home schools, village committees and all households constructing latrines in project areas.

The Adult Based Education Service, (ABES), Lahore, have a useful guide for developing and using visual aids. Its called "Visual Aid Design and Use" and was prepared for the Pak-German Integrated Rural Development Program.

#### 4.9 Communication Support and Advocacy

Over the last five years very little communication support and planned advocacy have been included in the WATSAN programme. It is only in the last three months that assistance has been sought from PCI unit, Islamabad.

On-going national advocacy and mobilization at Federal level would raise national awareness of water sanitation issues and hopefully, provide greater political support. Television should provide a major focus for this activity, supported by radio, press and a series of participational seminars using video.

It is suggested that PCI Unit, Islamabad be responsible for overseeing the production of radio and television documentaries and spots and that the World Bank/UNDP/GoP Federal Water and Sanitation Cell fund air time. It is likely that the USAID Child Survival Project would fund air time for television and radio spots.

An on-going series of national, provincial and district level half-day seminars on water sanitation should be planned, using a briefing kit which incorporates a video, overheads and instructions in participational presentation. This should be presented to LGRDD, PHED, Health, Education, Social Welfare and Women's Ministry personnel at federal, provincial and district level and to universities, training institutions, appropriate academies and the mass media.

A core of three instructors will be required to organise and run these seminars and to follow up. Funding could be sought from multi sectoral agencies.

These should be developed by PCI Unit, Islamabad.

#### 4.10 Social Mobilization

Little attempt has been made to mobilize religious leaders, the commercial sector, the media or NGOs to support health and hygiene. Mobilization of religious leaders should be made through a series of seminars at the International Islamic University. The seminars should focus on the religious importance of hygiene and on how religious leaders can encourage better hygiene practices.

In association with the advocacy campaign effort should be made to get support from the commercial sector. Soap manufacturers, lota producers, pan producers should be approached to advertise their products using the same major hygiene messages used in the advocacy campaign. Lota manufacturers could be encouraged to include hand washing pictures on side of lota. Soap manufacturers to include hygiene messages on soap wrappers and in their advertising. Manufacturers should be approached to fund the production and/or air time for a series of entertainment/educational television spots focussing on hygiene. Sponsorship may be found for the HERC flip charts and posters.

#### 4.11 Intersectoral linkages

UNICEF co-operation with NGOs and bilateral donors is good. In both Punjab and NWFP there was very active co-operation in water and sanitation activities. Where possible these could be expanded.

Links between government sectors however are poor. Neither implementating agencies - LGRDD or PHED - have communication or health and hygiene education capacity. They also exhibit very limited understanding of the need for these components. As the sole implementers of the programme this must seriously restrict their effectiveness.

Communication support, hygiene education and women's involvement will remain difficult while the programme remains isolated from the Departments of Health, Education, and Social Welfare. Involvement of the Women's Ministry and All Pakistan Women's Association should also be considered. The cooperation of these sectors and the dissemination of co-ordinated messages through their field staff would provide a dramatic expansion in both outreach and advocacy.

A Federal "Water and Environmental Health" Steering Committee, involving all relevant ministries and agencies should be established if this is not a function of the World Bank/UNDP/GoP/UNICEF project.

Opportunities exist to include line agencies at all levels. In both Punjab and the NWFP Department of Health personnel expressed willingness to be involved and were aware of the benefits of complementarity. The start of the World Bank/CIDA Family Health programme would seem an opportune time to integrate WATSAN with health.

The education system has not been widely used to support hygiene education. There is some feeling that the provision of school latrines has had a negative rather than positive demonstration impact. This needs to be reviewed. Efforts are already being made in Punjab to incorporate hygiene education in the primary school curriculum. This could be encouraged in other provinces.

#### 4.12 Inter-office linkages

There is little co-ordination within the UNICEF Islamabad office between WATSAN and other units. Monthly meetings between these sectors, chaired by the Senior Programme Planning Officer, might help overcome the current WATSAN isolation and provide greater integration of WATSAN with health, education, communication and women's concerns. The integration of WATSAN with Primary Health Care might be seriously considered.

The communication and health education component outlined for the next five year programme cannot be implemented without an additional staff member. This officer should be responsible for overseeing and co-ordinating WATSAN communication/advocacy activities and for providing the major link with the Federal World Bank/UNDP/GoP/UNICEF project. This officer should be physically located with the PCI Unit with supervisory arrangements ??

#### 5.0 Outline for a National WATHEAL Communication Strategy

The communication strategy is based on:

1. Community involvement and responsibility for water and sanitation with community organization and health and hygiene education as the entry point;
2. The active involvement of women at all levels;
3. On-going advocacy, information and motivation through the mass media;
4. Social mobilization at federal, provincial, district and sub-district levels;
5. Development and distribution of effective, standardised communication materials and messages through all appropriate sectors;
6. Integration of water and environmental health activities within health, education, women's affairs and other appropriate agencies and the establishment of an on-going consultative process for decision-making and evaluation..
7. Improving Government capacity to undertake and monitor training and sustained communication support for water and environmental health programmes;
8. On-going monitoring and evaluation of training, village-level hygiene education activities, advocacy and social mobilization.

**MODULE 6: HYGIENE EDUCATION**

**SESSION 23: HYGIENE EDUCATION IN THE EDUCATION  
SYSTEMS**

**READING II**

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**PROTOTYPE ACTION-ORIENTED  
SCHOOL HEALTH CURRICULUM**

**For Primary Schools**

**TEACHER'S RESOURCE BOOK**

**Units 10-12**

**UNICEF/WHO  
Alexandria, 1988**

### 11.1. ALL LIVING THINGS NEED WATER

Every living thing needs water! Humans can exist for a longer period of time without food than they can without water. Man's need for water is vital to every system in the human body, particularly the system that flushes out waste products. Humans and animals take water from all the food they eat, as well as the liquids they drink. Some animals, such as Koala bears and desert rats, never drink any water. They obtain all of their liquid nourishment from the leaves of the plants upon which they feed. Plants need water to circulate nutrients within their structure and to hold themselves rigid. Animals and plants are capable of using water directly from the natural source, but humans should use water that has been treated to remove substances that might cause illnesses.

#### Directions

Duplicate picture below for each pupil. Read the following directions to the class:

**NUMBER ONE** Draw a picture of the animal who lives here.

The picture drawn should be of an aquatic animal. These creatures extract oxygen from water. They cannot live outside of water because their bodies are made in a special way.

**NUMBER TWO** Draw a picture of a plant or flower receiving the water it needs to live.

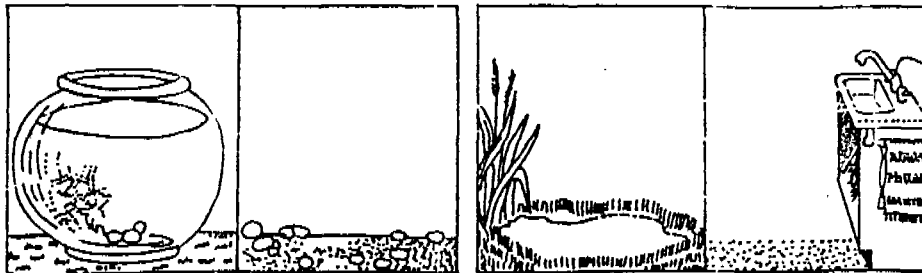
This picture should be of a plant that lives on rainwater or irrigation of some sort; or someone watering the plant.

**NUMBER THREE** Draw a picture of an animal taking a drink from a pond.

This could be a drawing of any animal(s) drinking from a natural source.

**NUMBER FOUR** Draw a picture of yourself drinking a glass of water.

A self-portrait of the student drinking water from a glass helps to demonstrate that humans should drink water from sources that have been treated and are clean.



## 11.2. SOURCES OF WATER IN THE COMMUNITY

Water goes round in a cycle: it falls as rain, and some soaks into the ground while some runs off as streams; gradually much of it collects into rivers and runs into the sea. From the sea, and also from inland lakes and any wet areas such as forests, water evaporates into the air; there it forms into clouds and travels with the wind finally it falls again as rain. As water goes round this cycle it picks up a number of substances some of which are helpful and some harmful to man.

Every community is concerned about how much rain it will get to meet its water needs. They should also be concerned about what happens to the rain after it has fallen. How much just runs off down to the sea and how much is caught and stays in the area? Water that runs off quickly does the community little good. What is held in the soil, particularly the root systems of forests, will benefit the community over a long time. Water stored underground lasts longer than water in surface dams. So trees (forests) are very important to the community and we should try to see that trees are not thoughtlessly cut down for fuel and that more trees are planted than are being cut down.

**Forests are a community's best water store**

Some of the advantages and disadvantages of different types of water as it goes round the cycle are briefly described below.

### 1. Rain water

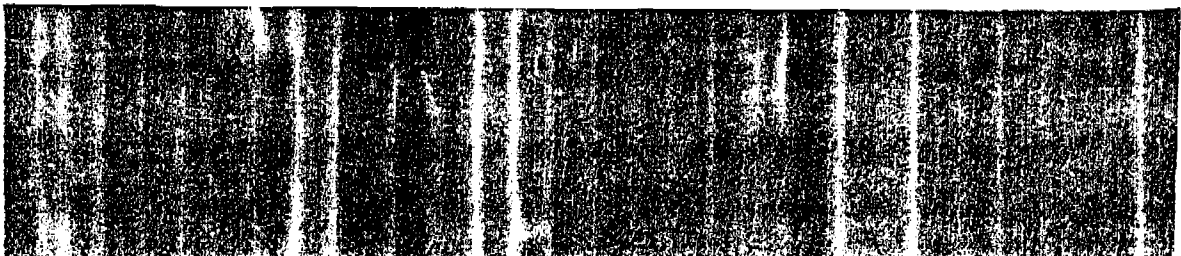
If collected from iron sheets or tile roofs into gutters and led by pipes into clean and closed tanks; this is normally the purest natural water available.

#### DISADVANTAGES

- (a) It is very difficult to collect from thatched roofs.
- (b) Gutters and large tanks are required to store sufficient rain water to last into the dry seasons.
- (c) The water is 'soft' and does not contain any of the essential mineral salts. It may not taste very good.

### 2. Water that falls on high hills (upland surface water)

The water that collects into streams above where people live is often plentiful and clean and makes very good drinking water. If it can be piped to people living lower down the hills, the water comes by gravity and no pumping is required.





#### DISADVANTAGES

The source must be protected. If animal grazing or human settlement occurs in the catchment area the water will be polluted. In some places the increasing population has led to shortage of land on the lower slopes of hills and people have moved up into the catchment area, polluting the supply to those living below them.

#### 3. Water in all other areas (such as plains and on coastal belts).

Most villages and towns are not on or near high hills where they can get clean water from above the level where people live. Water in these areas, which cover a large part, sometimes most, of the country, is of two main kinds: surface water and underground water.

#### SURFACE WATER

Surface water, whether in ponds, lakes, shallow springs, streams, or rivers or in water holes, shallow wells, or dams, is the most common source of water for most people. Unfortunately it is also the most frequently polluted. Its advantages are that it is easily accessible; it can be obtained by hand by simple pumps; and the larger lakes and rivers are permanent sources all year round. Hand pumps are inexpensive and many suitable designs are now available; but the communities must work together to have them lubricated and maintained.

#### DISADVANTAGES

This water is easily and frequently polluted as it runs over the ground where humans and animals urinate and defaecate. Also people wash and bathe in it. It may also be polluted by chemicals used in agriculture or industry. Attempts must be made to prevent pollution and also to purify this water, as described below (see 13.3 and 13.4).

#### UNDERGROUND WATER

As the water soaks through the ground and travels underground it is filtered, as soil is a good filter. Underground water is therefore usually clean and often plentiful and permanent. It may come from a long way away and is not so dependent on local rain. Many rural areas and small towns use this type of water.

#### DISADVANTAGES

- (a) Water from deep wells and deep springs usually contains a lot of salts and other minerals and so it becomes salty, sometimes too salty for any use unless the salts are removed, which is an expensive operation.



- (b) This water generally needs pumping from great depths, often to tanks and reservoirs before reaching the user.
- (c) Underground water can become contaminated from a latrine built too close or from bucketfuls of dirty water tossed by people into the well.

#### 4. Sea water

By the time that water reaches the sea it always contains some salts. These become further concentrated by evaporation and thus over millions of years sea water has become too salty to drink unless subjected to a very expensive purification process to remove the salt.

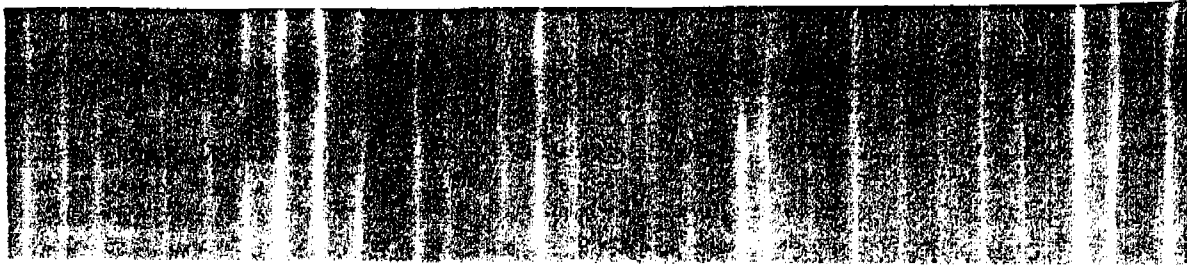
Source: Community Health op. cit.

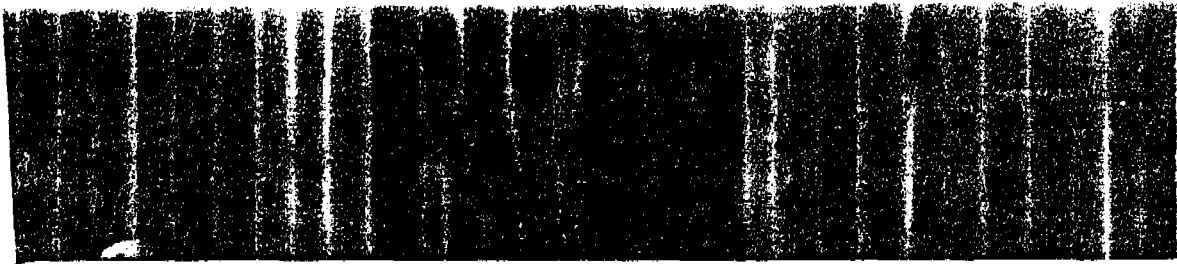
### 11.3. CONTAMINATION OF WATER SOURCES AND HOW TO PROTECT THEM

#### A. Contamination of water sources

It is easier to prevent water getting dirty than it is to clean it. It is important therefore to consider again all the possible sources of contamination between the time that water falls as rain and the time it is used.

1. Surfaces where rainwater collects may have leaves, insects, or bird and animal faeces on them.
2. When water runs over the earth it may become contaminated with human or animal excreta, refuse, fertilizers, or industrial waste. This contamination is less high up on mountains and greater nearer towns.
3. Shallow wells may be contaminated by excreta and refuse washed into them, especially if there are latrines nearby.
4. Wells may also be contaminated by the use of dirty containers for drawing water, or by oil from a pump.
5. Rivers, lakes, or dams may be contaminated by bathing, or urinating or defaecating in the water.
6. Even piped water may become contaminated from leaks in the pipes, especially when these pass near foul water or dirty drains.
7. Water may go bad if it is stored for too long in a pot or cistern.
8. Water from any source may become contaminated if it is drunk from dirty or communal drinking vessels.





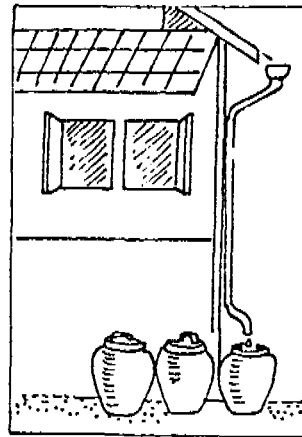
It is easier to protect water sources than to cleanse dirty water afterwards

**B. Protection of water sources**

Protection of water means keeping germs out. For this we have to make sure that humans and animals have no contact with the ground above the water or with the water itself.

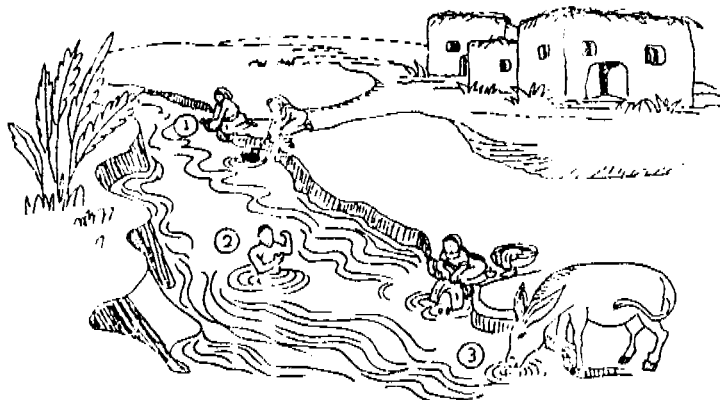
**1. RAIN WATER COLLECTION**

- Collect rain water from a clean roof and drain it into a clean receptacle with a tight lid so that the water can be used throughout the year. The receptacle might be, for example, an earthenware jug, a metal or concrete tank.



**2. WATER FROM A RIVER**

- Draw water from the river before it reaches your village (see drawing below, identify spot 1). Tell the pupils to boil the water before they drink it.
- Let people bathe in the river only where it leaves the village; let the animals drink the water only further down the river (see drawing and identify spots 2 and 3).
- Note that water which runs over rocks or in sunshine is not necessarily safe.

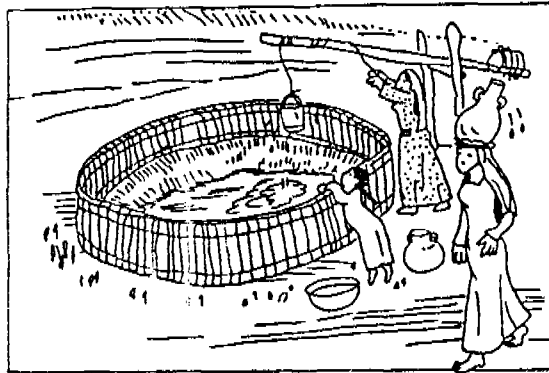


### 3. WATER FROM A WELL

- Get the well cleaned and disinfected. If possible, get the well covered and install a pump for drawing the water.
- If the well is not covered, see that no dirt or rubbish is thrown into it.
- See that there is no pit latrine or cesspit within 25 feet of the well.
- Drain away the water spilt near the well and do not allow surface water to flow into it.
- Keep the buckets on a clean surface. Do not place buckets used for drawing water from the well, on ground on which people walk.
- Keep clean the vessels and rope used to take water out of the well.
- Do not wash clothes or bathe near the well; otherwise, impure water will get into it.
- Advise the people not to use water from the pond where cattle get their water.

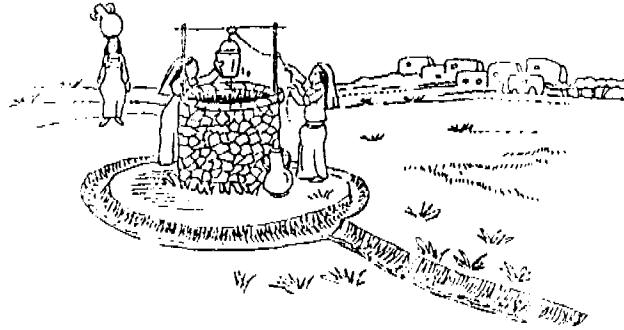
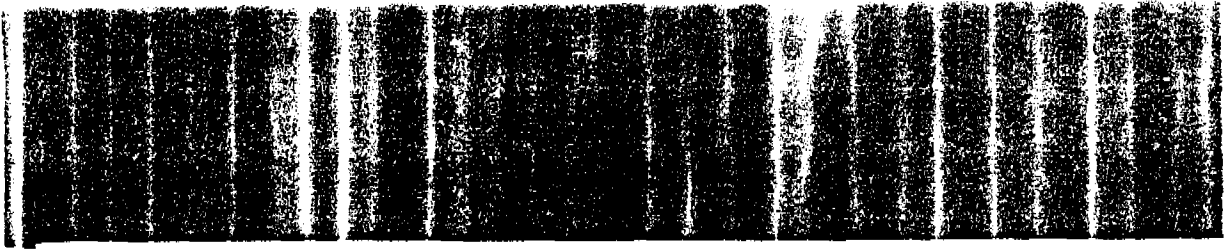


Women using an infected pond as a water source.



Women using improved water hole.

Avoid wasteful use of water

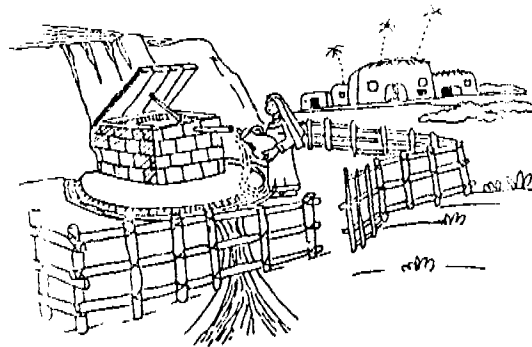


Women using a protected well

#### 4. WATER FROM A SPRING

The spring is properly protected if: (see drawing)

- There is a fence all the way round it about 20 metres away from the spring, and the gate is kept closed.
- There is a ditch around the spring to let the rainwater drain away.
- There is a 50 cm high cemented stone wall round the spring.
- There is a pipe coming out of this wall and the water is taken from this pipe.



If there is no other place to get safe water,  
tell the people to boil the water before they drink it

- Sources: 1. The Primary Health Worker. WHO, Geneva, 1980.  
2. Community Health op. cit.

## 11.4. SAFE DRINKING WATER

### Water purification

#### SIMPLE METHODS

It should be said again that it is generally easier to prevent water getting dirty than it is to make it clean afterwards. However, there are many occasions when relatively dirty water has to be used, so it is important to know the simple ways of cleansing it.

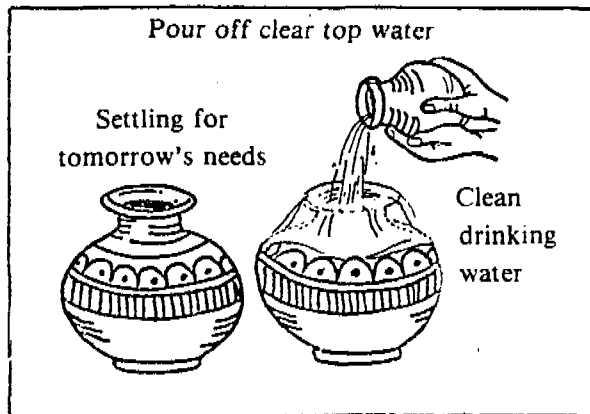
The main methods used for cleansing water are:

- storage
- filtration
- sterilization

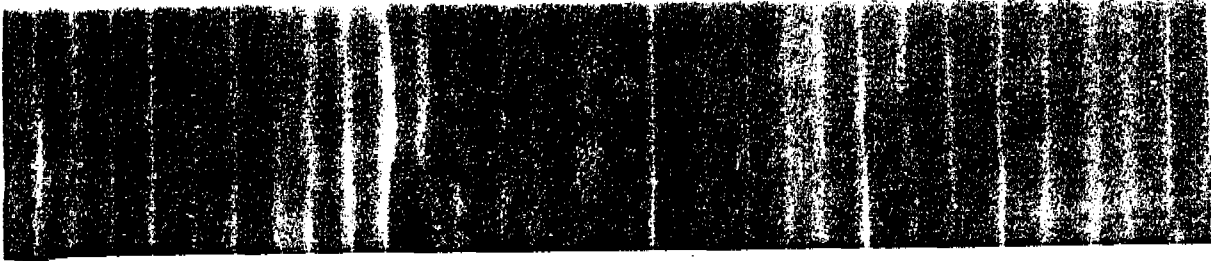
#### Storage

##### THE THREE-POT SYSTEM

If water is allowed to stand, many of the harmful organisms which may have got into it die because they cannot survive in water for a long time. Also a lot of the suspended matter settles to the bottom. If the water was cloudy or turbid to start with, the difference can easily be seen; if it was clear, standing will still reduce the number of living organisms although the improvement cannot be seen with the naked eye. Water improvement by storage can be simply done in the home by using three pots for water. Two big pots are used for fetching water on alternate days. The first pot is allowed to stand for 24 hours. Then the clear top water is carefully poured into another smaller pot for drinking and the remaining water used for washing. When the first pot is empty it is cleaned and refilled and allowed to stand for 24 hours again while the second big pot is used in the same way as the first. In this way each day's water has been standing for 24 hours before it is used.



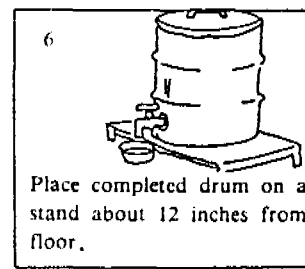
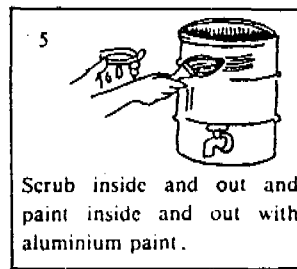
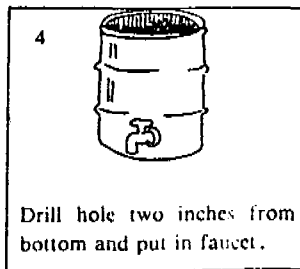
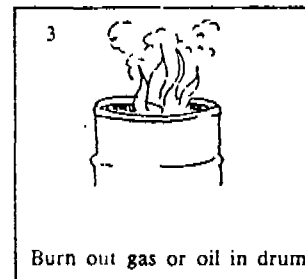
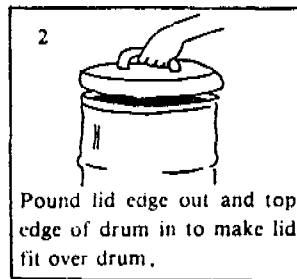
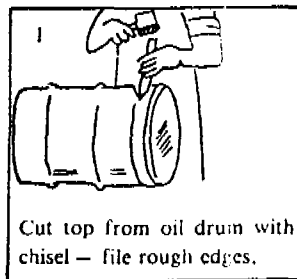
THE THREE - POT SYSTEM OF WATER STORAGE



This method of storage may be done on a larger scale in tanks or on a very large scale in reservoirs. In these cases the water should stand for three to seven days before use.

#### ANOTHER METHOD OF STORING WATER IS USING A DRUM

These steps may be followed:



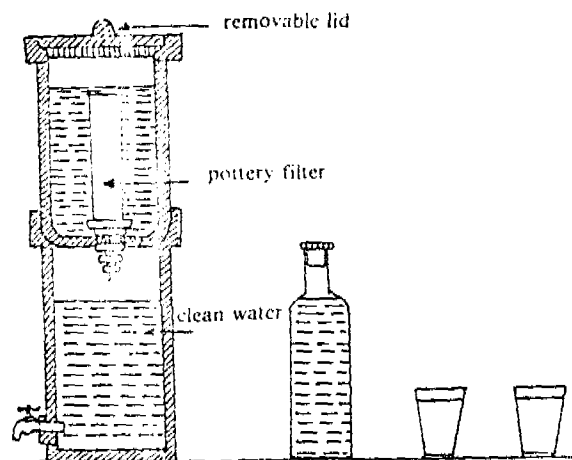
Keep cover on drum except when filling

#### Filtration

Filtration is the next stage of purifying water. This too can be done on a small scale for a household or on a large scale for a village or town.

The best simple household filter is a candle filter. It is, however, rather expensive. The filter is made of pottery in the shape of a big candle. It also needs two containers (diagram is on next page). Water is put into the top one, filters through the pottery candle, and is stored in the bottom one. From time to time the candle is brushed to clean it.

The commonest filter for use on a larger scale is one made of sand. This is made in layers with stones at the bottom, then coarse sand and fine sand (sand with small



A candle filter

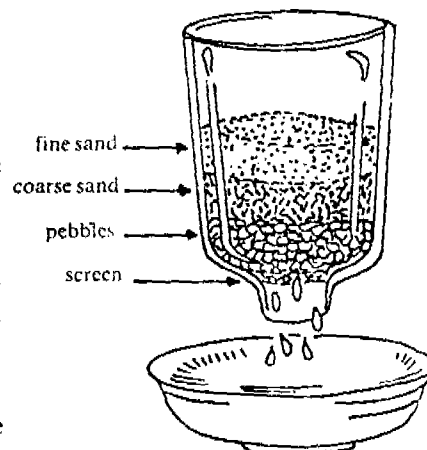
grains) on top. Sand filters for a public water supply are usually built in concrete containers. For a few houses smaller sand filters in special metal containers may be used.

#### TO BUILD AND USE A SIMPLE WATER FILTER

Teacher notes:

As a demonstration or an extra assignment this project shows how filters work to cleanse water of large particulate matter. However, caution your students not to drink this water. Although it will appear clean, it is not clean enough to drink. There are still impurities that must be removed by other means.

**DIRECTIONS:** You will need a one quart (one litre) plastic bottle, a piece of wire screen, pebbles, coarse sand and fine sand. Collect rain water, puddle water or some other "dirty" water from a natural source. If necessary, you can mix some dirt into tap water yourself. Cut the bottom out of the bottle, invert the bottle and place the piece of screen in the neck. First place a layer of pebbles, then a layer of coarse sand, then the fine sand. Pour some tap water through to remove any dust. Then slowly pour the dirty water through the filter. Water that goes through the filter should be cleaner than what was poured in.





## **Sterilization**

Sterilization is the final stage of water purification necessary for wholesome drinking water. On a large scale, for big towns, this is done in the waterworks by adding chlorine automatically to water that has been filtered. On a small scale, water may be sterilized either by boiling or by adding disinfectants such as chlorine or iodine.

- (a) Boiling water is the simplest and safest method of sterilization but very few people are prepared to do this regularly. They can, however, sometimes be persuaded to do it, if there is an outbreak of water-borne disease. (Because tea is made with boiling water, weak tea is an excellent safe drink for small children.) Water can also be sterilized by filling up transparent glass bottles and exposing them to sunshine for two hours.
- (b) Chlorination: A 1% solution of chlorine can be purchased for household use. Two drops to a litre of water will provide reasonable sterilization. Chlorine tablets may be used as directed by the manufacturer. For more complicated treatment of larger quantities of water, you should check with your district health officer for advice.
- (c) Iodine is an excellent disinfecting agent which may be purchased as 2% tincture of iodine. Two drops are sufficient to disinfect one litre of water and iodine tablets are also used in the sterilization of small amounts of water as directed by the manufacturers.

## **Summary**

The provision of adequate quantities of safe water near people's homes is one of the most important aspects of primary prevention. It is not enough just to tell people to boil their water – because very few will do so. Instead, encourage the simple ways of protecting water sources and of cleansing water.

## **Testing water**

When new supplies of water are being developed on a large scale it is very desirable to test the quality of the water. The two principal methods of testing are:

- bacteriological analysis
- chemical analysis

## **Bacteriological analysis**

It is very difficult to find the actual organisms that cause diseases, e.g. typhoid bacilli or poliomyelitis viruses. Instead the most important test is for an organism



E. coli (Escherichia coli); this is a normal inhabitant of human and animal intestines and it cannot live elsewhere for very long. If there are many E. coli in a sample of water (ideally there should not be more than 10 per 100 ml) this shows the water is being contaminated by excreta. This is a clear danger signal.

**E. Coli – Faeces – Danger**

**Chemical analysis**

This involves testing for a number of different substances. Some, such as ammonia, are also indicative of contamination with organic matter, often excreta. Other tests can be done for hardness or softness, or for other salts or minerals, which may affect the taste, or suitability of water for drinking.

**Sources:** (1) Community Health op. cit.  
(2) Alaska, Dept. of Health 1965. Health and First Aid Guide for Home and Village.

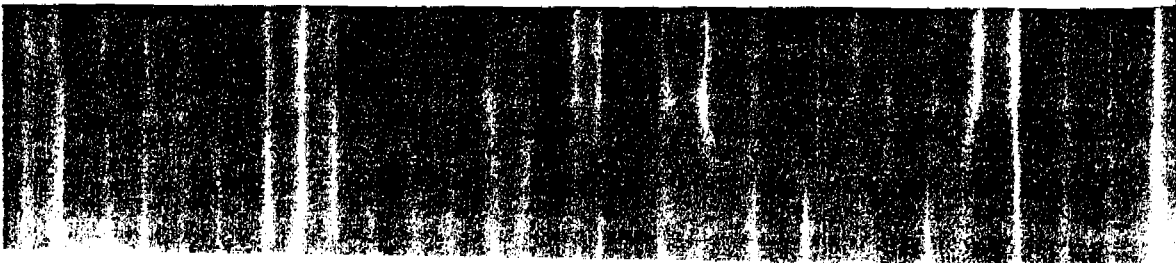
**11.5. THE ROLE OF WATER IN PREVENTING COMMON SICKNESS**

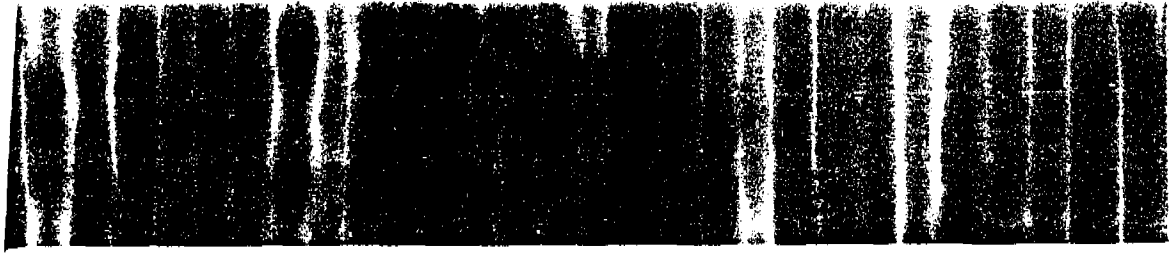
**Water**

Water is essential to life. It is a part of every cell and is necessary for most basic functions like respiration and digestion. Water is also a good solvent and many substances, some useful and some harmful to life, may be dissolved in it.

Water can affect health in a number of different ways. Lack of water for personal hygiene may result in the increased transmission of some diseases, called water-washed diseases. Water may carry the micro-organisms of specific diseases, called water-borne diseases. Or it may be necessary in the life cycle of a disease vector – such diseases are called water-related diseases. The important diseases affected by water in these ways are:

- |                       |   |
|-----------------------|---|
| Water-washed diseases | – diarrhoea and dysentery<br>– skin diseases (including scabies)<br>– eye diseases (including trachoma) |
|-----------------------|---|





- Water-borne diseases**
  - typhoid
  - cholera
  - poliomyelitis
  - amoebiasis
  - hepatitis A
  
- Water-related diseases**
  - malaria
  - schistosomiasis
  - onchocerciasis

When trying to control these diseases we should consider carefully the role that water plays. The water-washed diseases are transmitted by (1) the faecal-oral route because people do not wash their hands, eating utensils or vegetables and by (2) lack of personal hygiene – washing face, eyes and body. The main cause of this is lack of water; either there is very little water available or because it has to be carried a long way, requiring time and energy. The water-borne diseases, in contrast, are due to dirty water containing the disease organisms themselves. Water-related diseases involve water with vectors, which transmit the diseases (see Unit 20).

In preventing the increase of water-washed diseases, the quantity of water is important. To prevent water-borne diseases it is necessary to improve the quality. As the water-washed diseases are generally more common than the water-borne diseases, we can do a lot to improve health if we can make more water easily available. Of course, the cleaner and purer the water the better, but we should not delay increasing the quantity of water just because we cannot obtain water of the best quality.

Everyone requires about two litres of water a day for basic physiological needs. However, if water has to be fetched from a source half a mile away people can manage with a total of about six litres a day; if they can get water from a tap in the compound, they will use up to 25 litres; and where a house is provided with many taps and there are flushing latrines they will use 100 litres or more a day.

It is the long-term aim of most governments to provide piped water for all, but before this happens there are many simple improvements that can be made in village supplies to ensure that both a larger quantity and a better quality of water are increasingly available.

Get enough water first; then improve the quality

### Healing with water

Most of us could live without medicines. But no one can live without water. In fact, over half (57%) of the human body is water. If everyone living in farms and villages made the best use of water, the amount of sickness and death – especially of children – could probably be cut in half.

For example, correct use of water is basic both in the prevention and treatment of diarrhoea. In many areas diarrhoea is the most common cause of sickness and death in small children. Contaminated water is often part of the cause.

Giving lots of liquids to a child with diarrhoea is more important than any medicine. In fact, if enough liquid is given, no medicine is usually needed in the treatment of diarrhoea (see Unit 18).

In the next section are a number of other situations in which it is often more important to use water correctly than to use medicines.

#### WHEN THE RIGHT USE OF WATER MAY DO MORE GOOD THAN MEDICINES

##### PREVENTION

To prevent:

1. Diarrhoea, worms, gut infections
2. Skin infections
3. Wounds becoming infected; tetanus

Use water:

1. Boil drinking water, wash hands, etc.
2. Bathe often
3. Wash wounds well with soap and water



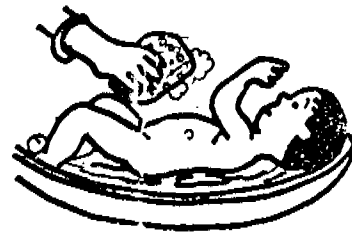
##### TREATMENT

To treat:

1. Diarrhoea, dehydration
2. Illnesses with fever
3. High fever

Use water:

1. Drink plenty of liquids
2. Drink plenty of liquids
3. Soak body with cool water



- To treat:
4. Minor urinary infections (common in women)
  5. Cough, asthma, bronchitis, pneumonia, whooping cough
  6. Sores, impetigo, ringworm of skin or scalp, cradle cap, pimples
  7. Infected wounds, abscesses, boils
  8. Stiff, sore muscles and joints
  9. Itching, burning, or weeping irritations of the skin
  10. Minor burns
  11. Sore throat or tonsillitis
  12. Acid, lye, dirt, or irritating substance in eye
  13. Stuffed up nose
  14. Constipation, hard stools

Use water:  
 Drink plenty of water

Drink a lot of water and breathe hot water (to loosen mucus)

Scrub with soap and water

Hot soaks or compresses

Hot compresses

Cold compresses

Hold in cold water

Gargle hot salt water

Flood eye with cool water at once

sniff salt water

Drink lots of water (also enemas are safer than laxatives, but do not overuse)



In each of the above cases (except pneumonia) when water is used correctly, often medicines are not needed. Use medicines only when absolutely necessary.

Sources: (1) Helping Health Workers Learn op. cit.  
 (2) Community Health op. cit.

**MODULE 6: HYGIENE EDUCATION**

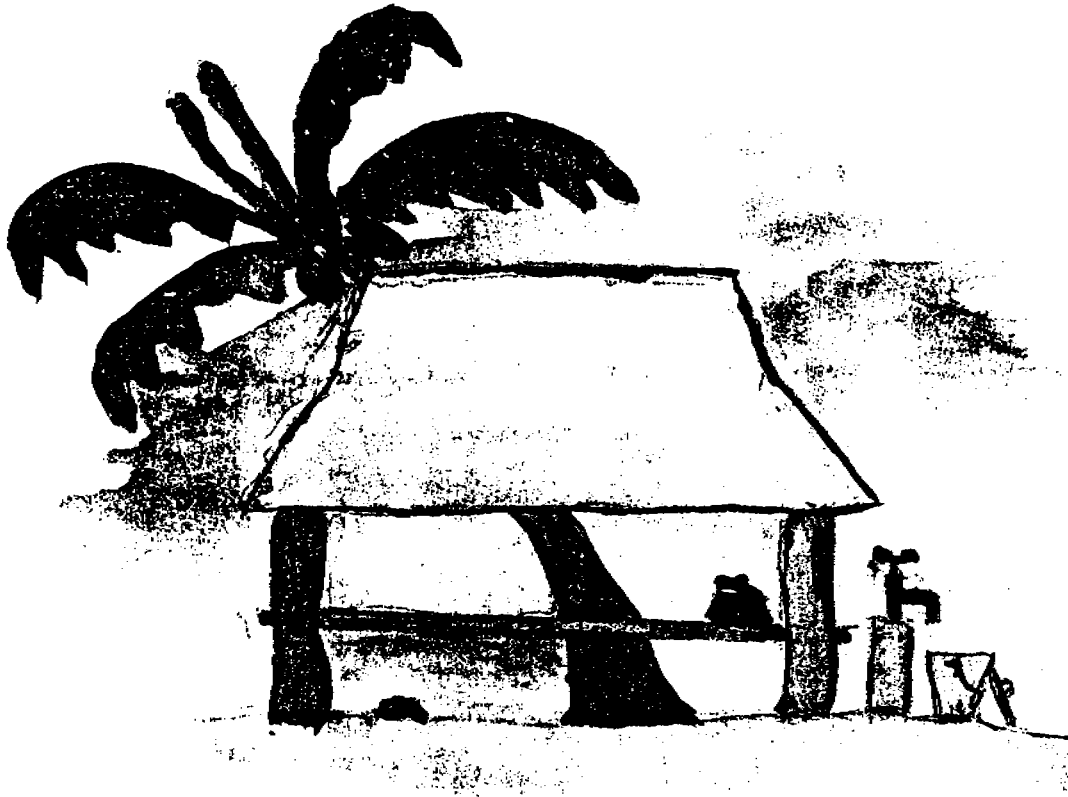
**SESSION 23: HYGIENE EDUCATION IN THE EDUCATION  
SYSTEMS**

**READING III**

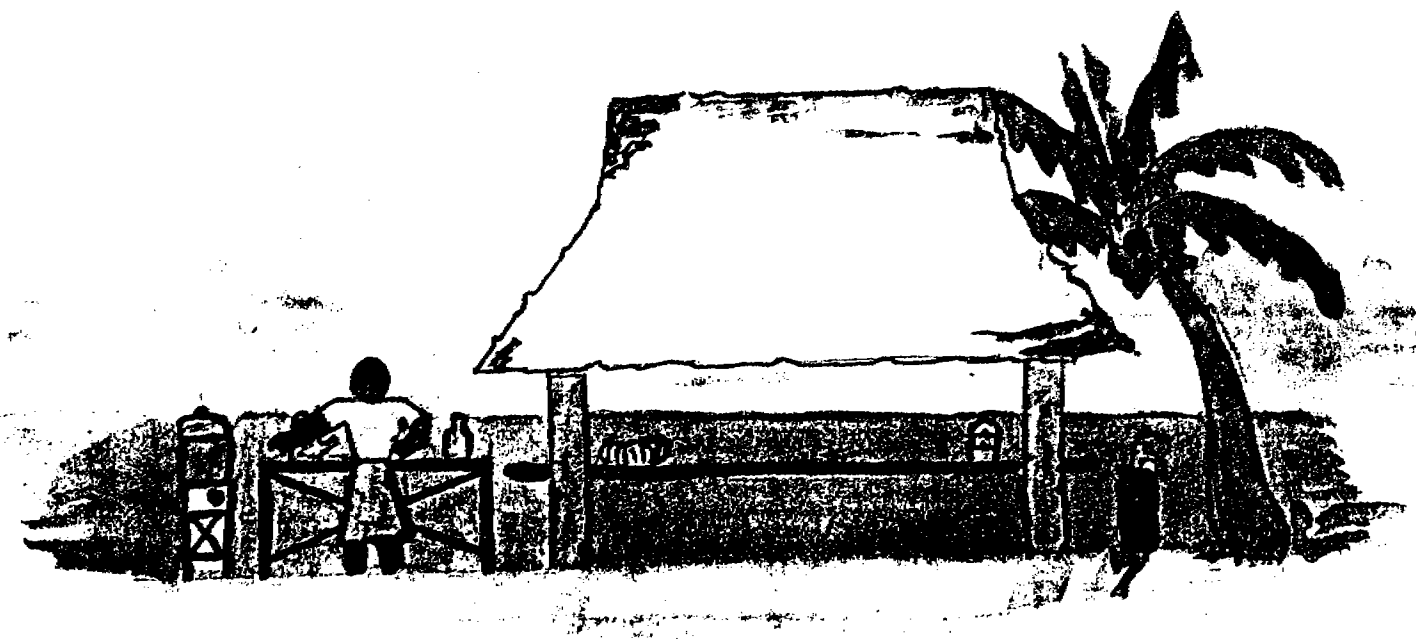
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**TION AND MEERE  
THE NEW WATER SUPPLY**

**TION AND MEERE**



**THE NEW WATER SUPPLY**



Ruuta is cooking the meal. She calls Tion and

from the new top "







Tawita comes home. "Where are Tion and Meere?"

"They are in the forest, sleeping and fresh."

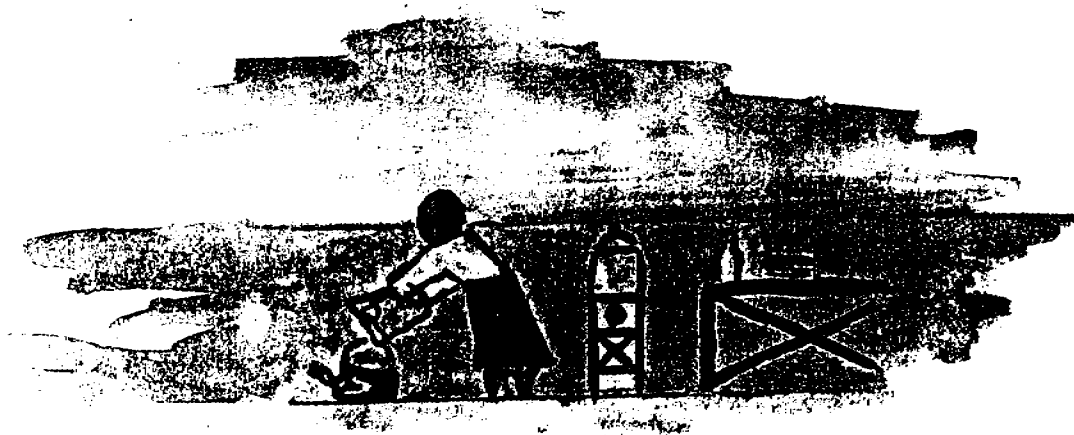


Tion and Meere are playing with the water.

"That's enough Tion and Meere," says Tawita.

"Don't waste the water. We must look after the

water. We must share it with everybody."



"The food is ready," says Ruuta. "Mix the toddy  
and the water. Meere." Meere prepares the drink.



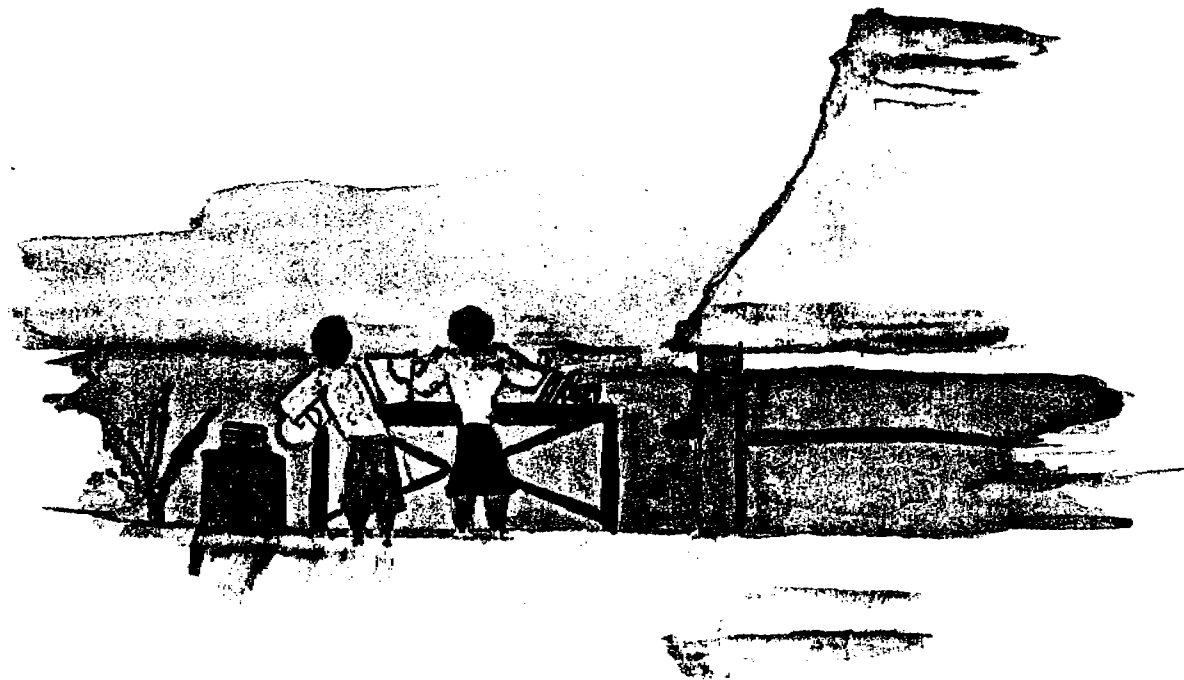
The food is good. The drink is good too.



"Run and turn off the tap, Tion. You forgot to turn it off. Don't waste the water. Remember to



"Run and turn off the tap, Tion. You forgot to turn it off. Don't waste the water. Remember to turn it off."



Meere and Ruuta wash the plates. Everything is clean.





**MODULE 6: HYGIENE EDUCATION**

**SESSION 23: HYGIENE EDUCATION IN THE EDUCATION SYSTEMS**

**READING IV**

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**BASIC PRIMARY**

**SCIENCE & HEALTH FOR UGANDA**

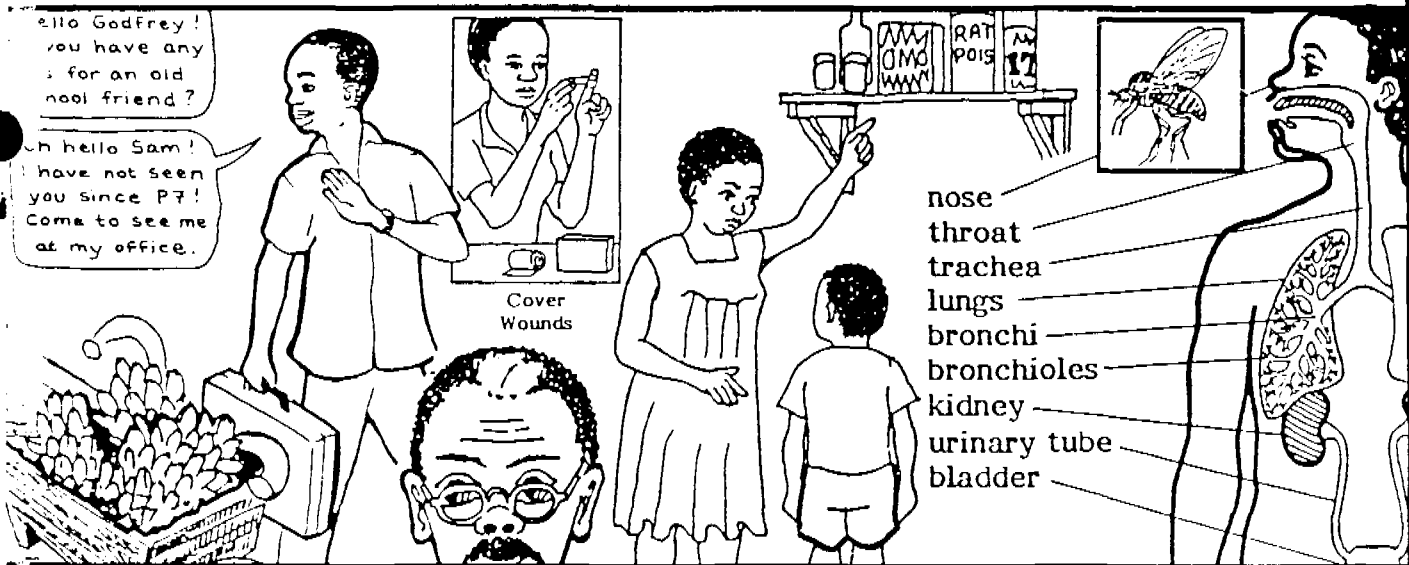
**HEALTH EDUCATION**

**Ministry of Health/Ministry of Education**

**Republic of Uganda**

*Basic Primary  
Science & Health for Uganda*

# HEALTH EDUCATION



## *Pupil's Book Six*



THE REPUBLIC OF UGANDA

National Curriculum Development Centre  
Interministerial Expert Panel on School Health Education  
Ministry of Health, Ministry of Education  
Republic of Uganda

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# 5 Latrines and Toilets

## How We Work

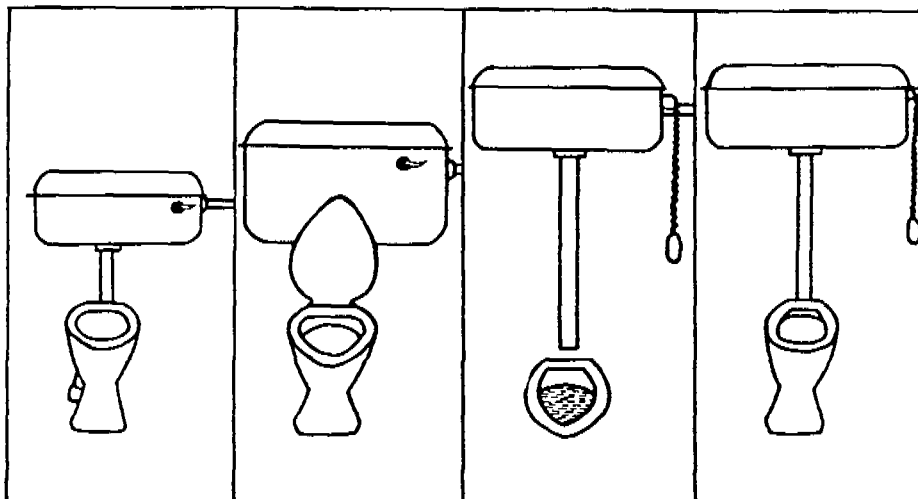
### HOW TOILETS AND LATRINES WORK TO PROTECT OUR HEALTH

Where do you live? In town or village?  
What latrine or toilet do you use?  
Do you have a toilet at all, or do you use the bush?

#### Activity

Find out how many of the homes of your classmates have toilets or latrines.  
How many homes in your community (village) or neighbourhood) have no toilet or latrine?

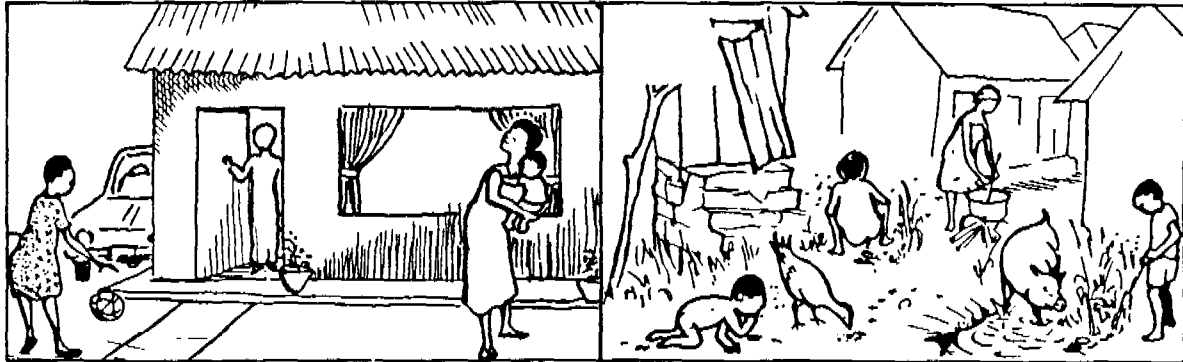
Some of you may have toilets like these:



### **Note to Teacher**

(Syllabus pp 57  
Term 2, Unit 17: Sanitation  
"Building and Maintaining A VIP"  
"Explain and Maintain an Urban Toilet")  
**Teacher's Guide**  
"Toilets and Latrines" p 175

## Latrines and Toilets



What is difference in the homes protected by toilets or latrines, and an unprotected home?

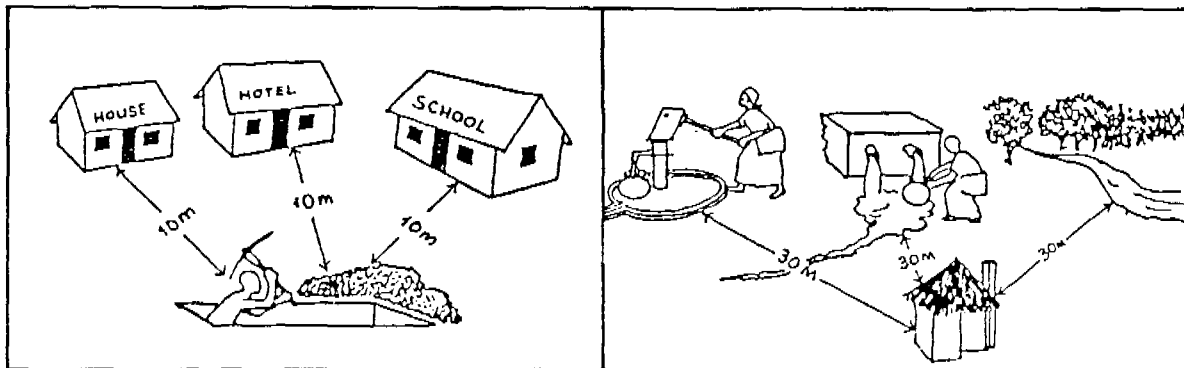
We should put our faeces in a toilet or latrine NOT in the bush, NOT behind the house, and NOT in the water.

Then this will not happen:

**FAECES, FINGERS, FOOD, FLIES**

Remember, a latrine needs to be  
at least 10 metres away from any building

and at least 30 metres away from any water source



## What Can Go Wrong

### WHAT CAN GO WRONG WITH A TOILET OR LATRINE

#### Toilet

- The toilet will not work properly if there is no water.
- The toilet can get dirty if you stand or squat on the seat.
- If you use something to clean yourself after urinating or defecating:  
DO NOT put hard paper in the toilet  
IF YOU USE IT BURN IT  
DO NOT put anything else in the toilet  
USE ONLY SOFT TOILET PAPER

#### Latrine

- The slab may get dirty.
- Flies may get in if:
  1. The latrine hole does not have a cover.  
or
  2. The "chimney" of a VIP latrine does not have a screen.
- The pit may get full so there is need to dig a new one.
- If the pit is dug above a water source, the water will be dirty and contaminated.

## How We Can Help

### HOW WE CAN USE AND CARE FOR OUR TOILET OR LATRINE

If you have a toilet use it like this:

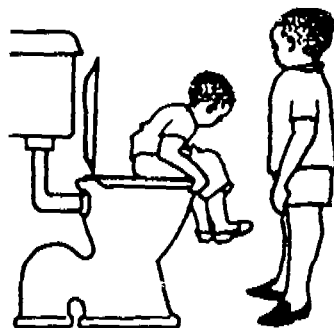
Lift lid

Yes sit on seat

OUR TOILET

Lift seat when urinating

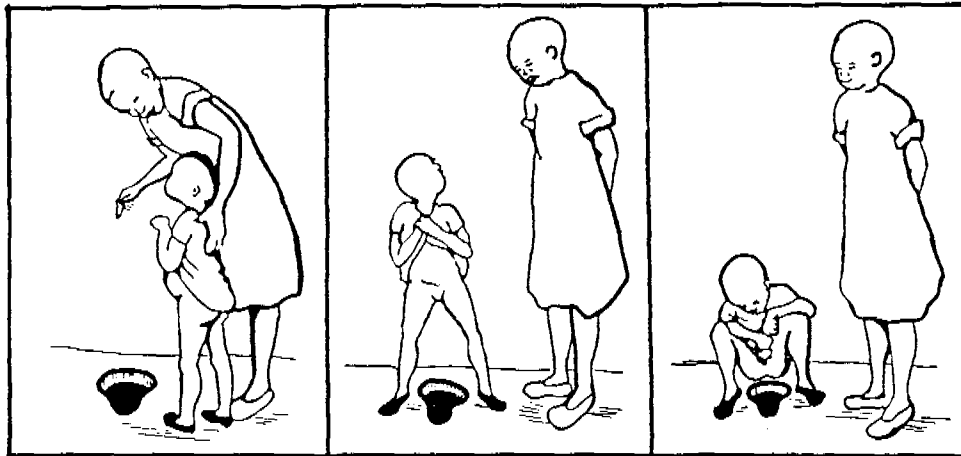
flush after use



## Latrines and Toilets

If you have a latrine use it like this:

1. Take the cover off the hole
2. Place feet on both sides of the hole
3. Squat directly over the hole



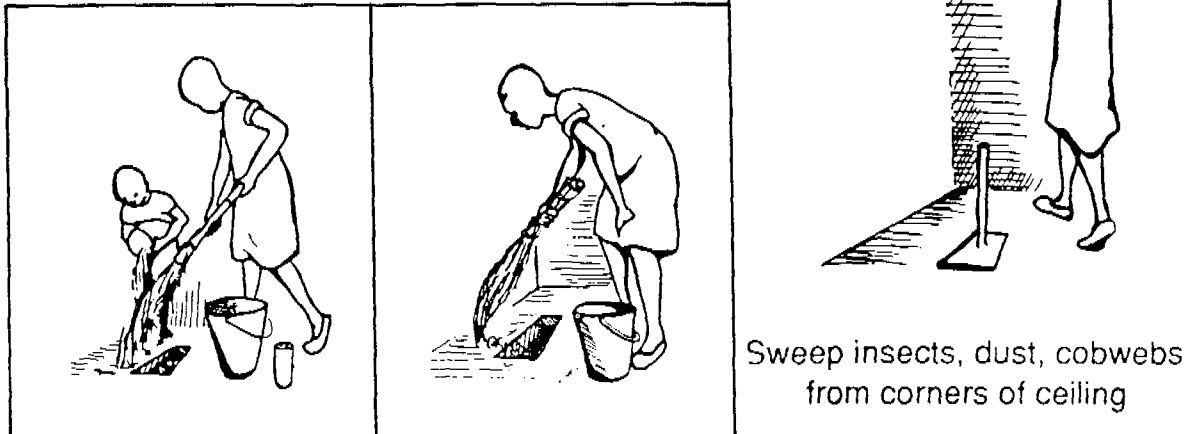
4. Take care nothing gets on the slab
5. Put the cover back on the hole
6. And always WASH HANDS

Keep your latrine clean like this:

Use water to clean the slab

Wash any faeces from walls

If it is cement, use soap or VIM or disinfectant

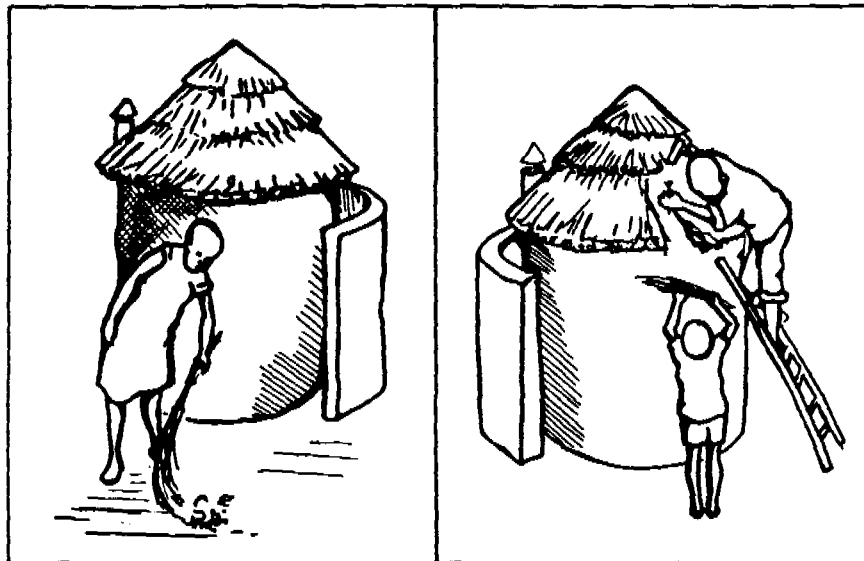


Sweep insects, dust, cobwebs  
from corners of ceiling

## Latrines and Toilets

Trim grass and bushes outside latrine and sweep around area.

See that walls, doors, roof or slab are repaired



- If your latrine has too many flies you may want to smoke them out. Get an adult to help you put burning banana fibre into the pit on a stick or wire.

Keep your toilet clean like this:

Wipe seat rim, tank and handle

Scrub bowl with brush (and VIM, or disinfectant if you have it)

Sweep floor

Burn rubbish

- If the handle, seat, WC or bowls need repair, or if the pipes are blocked up, find an adult to help repair these things.

Care for your toilet or latrine!

Be proud of how you keep them clean!



## Latrines and Toilets

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**CHILD-to-child**

### CHILD-to-child Activities

- Teach younger brothers or sisters to use the latrine or toilet, instead of the compound.
- Teach them to use the latrine or toilet properly.
  - Make a model of a latrine to show them how it works.  
Can you also make up a story: "Lucy and her Latrine".
- Have a class health committee check the school latrines.  
Organise a group to clean them every week.  
Teach children in other classes to use them and keep them clean.
- Draw a poster to encourage children to use latrines properly.

# 8 Diarrhoeal Diseases

## How We Work

### HOW DIARRHOEAL DISEASES AFFECT OUR BODY

Can you remember when you last had diarrhoea?

How did you feel?

Has anyone in your family had it in the last 2 weeks?

What happens when a baby or young child gets diarrhoea?

Can you remember the definition of "diarrhoea"? (Look in the glossary)

#### Activity

Make a diarrhoea baby

Dehydration information sheet 1 P1  
(Diarrhoeal Diseases Kit)

- 1.
- 2.
- 3.
4. Pull the plug (delete "cloth sinks")

If you do not have a gourd, use a plastic bottle or empty tin.  
What happens to the cloth when you pull the plug out?

The cloth on the diarrhoeal baby is the baby's soft spot" (fontanelle) on the top of the head. If you have a baby brother or sister look at the top of their head and see if you can find the fontanelle.

When the baby has diarrhoea, this soft spot sinks in, just like the cloth on the head of the diarrhoea baby.

Why did the cloth sink in?

Do you see why the soft spot in a real baby sinks when it loses water?

### **Note to Teacher**

(Syllabus pp 57  
Term 2, Unit 7: Common Diseases  
"Intestinal Diseases")  
**Teacher's Guide**  
"Diarrhoea & Dehydration" p 9

## Diarrhoeal Diseases

Diarrhoea is dangerous mainly because water is lost from the body. We call this dehydration.

A Healthy Baby with Enough Water  
Dehydration can make a baby dry up

A healthy older person with enough water  
Dehydration can make an older person dry up, too.

- When someone is severely dehydrated, especially young children, they can die.

## What Can Go Wrong

### WHAT CAN HAPPEN TO CAUSE DIARRHOEAL DISEASES

#### How Douglas and his family got Diarrhoea

Douglas' father works away from home.

1. He has diarrhoea and needs to use the latrine a lot. Because the latrine is also far away, he uses the river instead.
2. Should he do this?



3. Douglas' mother collects her water from the river. She does not know that her husband has been using the river as a latrine. Do you think she would use it if she knew?

4. She brings the water home and gives Douglas and her son a drink. This water has his father's disease in it, but he does not know. Should Douglas drink this water?

Activity

In chapter 6, you learned about the Four F's. Can you remember what each 'F' stands for?

- F.....
- F.....
- F.....
- F.....

Draw a picture showing how diarrhoea germs spread, using the four F's.

## How We Can Help

### HOW WE CAN HELP TO PREVENT DEHYDRATION

Activity

Take two plants. Keep one plant watered, put the other one where it will get no water. What happens? Do both plants need water?

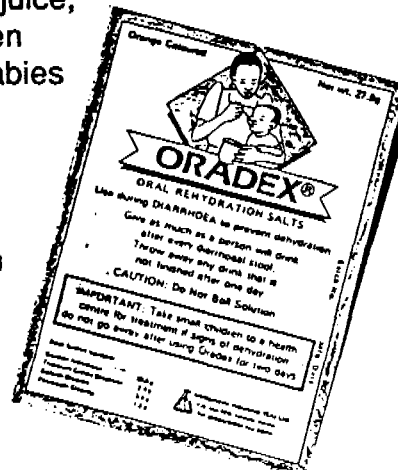
Water both plants. In a few days, does the other plant look better?

When we have diarrhoea, we lose a lot of water, we get d.....d

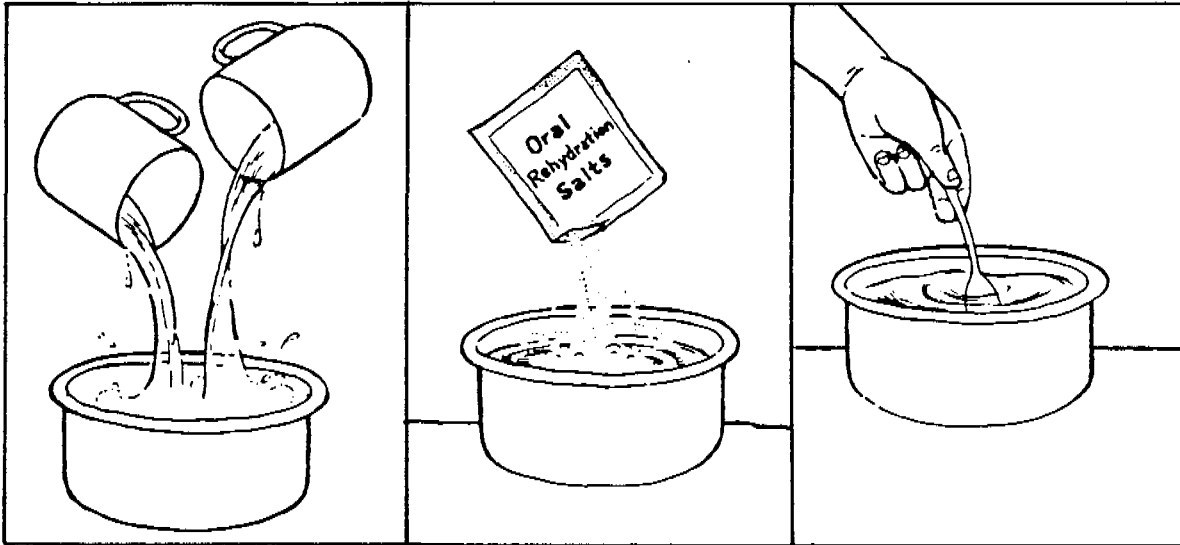
What do we need to do to stop this happening?

We can put back the water through drinks of tea, fruit juice, breastmilk, rice water, water that vegetables have been cooked in, or soup. We should also keep feeding. Babies should still be breastfed.

There is a special drink called ORS (Oral Rehydration Salts). Oral = mouth  
Rehydration = the opposite of dehydration (put water back).



## Diarrhoeal Diseases



**CHILD-to-child**

### CHILD-to-child Activities

- Find out how many children in your school have been absent in the last two weeks. Find out why. Did other children in their families get the same sickness?
- Keep a record of each class and how many children get sick with diarrhoea over one term. Teach the other classes how to prevent diarrhoea. Can you draw some posters to help them?
- Make a diarrhoea baby and show your families what happens when a lot of water is lost. Show children in other classes, too.
- Show them how to mix the ORS drink.
- Next term, keep a record of how many children in each class get sick with diarrhoea. Has it improved?

WE SAY  
"YES"  
to  
ORS.



# 11 Water and Disease

## How We Work

### HOW WATER WORKS TO PROTECT OUR HEALTH

Make a list of things you use water for.

How many uses have you listed?

What do other people use water for in other places?

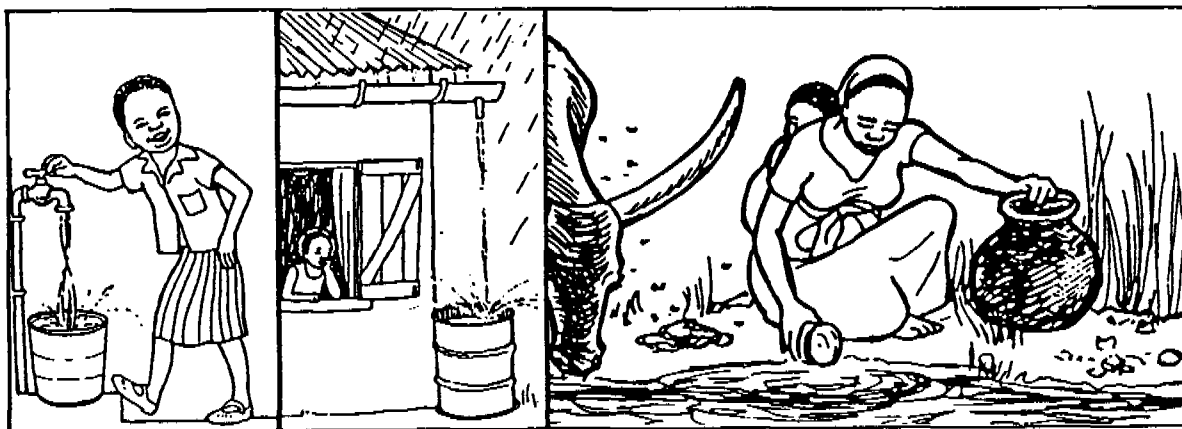
Do you live near a river, or one of the lakes in Uganda?

What do you know about these rivers or lakes? How are they used?

Are there stories about them?

From where do you collect water for your home?

Is it from any of these, or do you have a tap in your house?



### *Note to Teacher*

(Syllabus pp 62

Term 3, Unit 8: Air, Water and Weather

"Diseases Associated with Water and their causes, Transmission, Effects")

Teacher's Guide

"Diseases Associated with Water" p 135

## Water and Disease

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### Activity

Find out where people collect water from your community (village or neighbourhood). Show the places on a map. Ask each member of your class how far they go from their house to get water. How long does it take?

What container do you use to store water?

### Activity

Find out from each member of the class how they store water.

What container do they use?

# What Can Go Wrong

## WHAT CAN GO WRONG WITH WATER

### 1. Water Can Get Dirty

#### Activity

Draw the route of your water from the place of collection to your home.

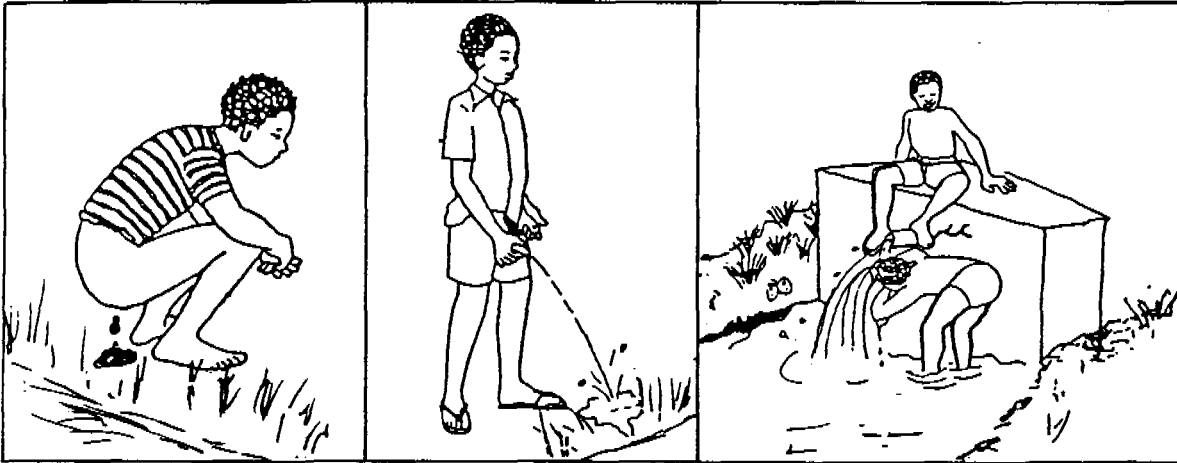
Where does it get dirty? (Is it at the place of collection, is it at home or somewhere else?)

Can you think of ways in which water gets dirty?

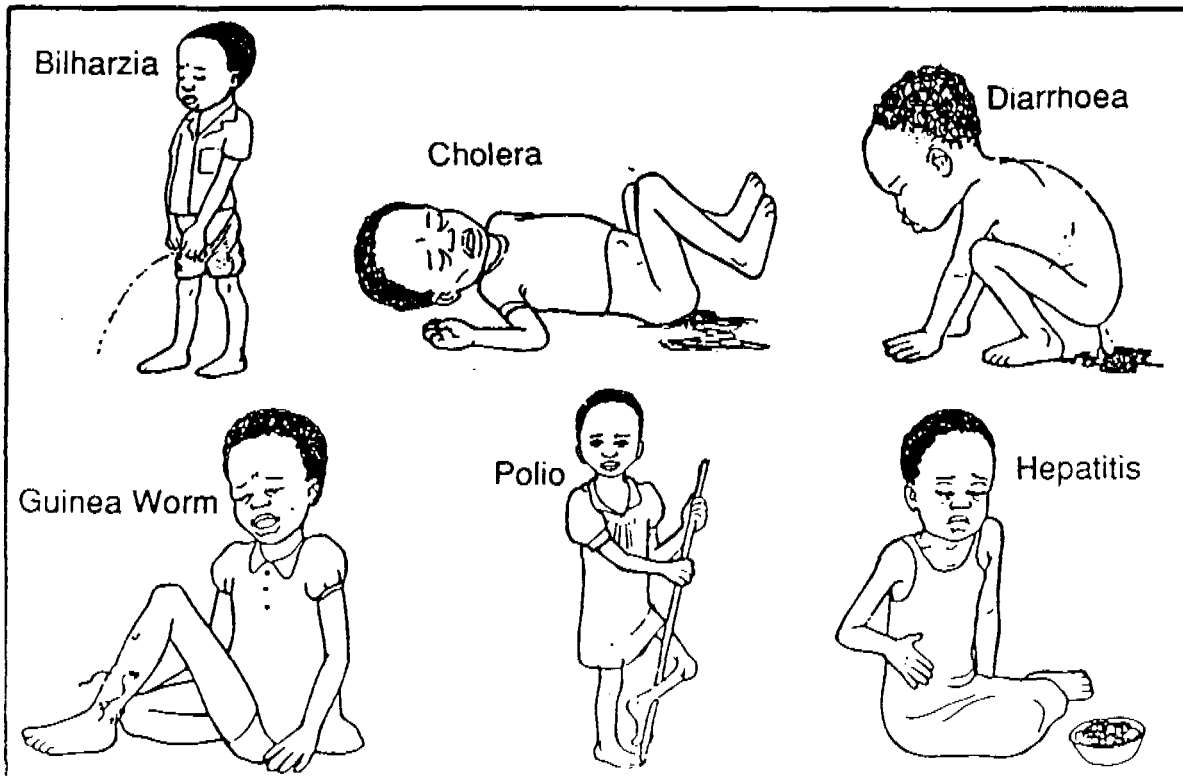
#### Exercise

Here are some suggestions. How is the water getting dirty in each of these pictures?

How Water Gets Dirty  
(WATER CONTAMINATION)



What Diseases Can We Get From Drinking Dirty Water?





## Water and Disease

### What Diseases Can We Get from Bathing in Dirty Water?

#### Water Contact Diseases

Bilharzia

Ear, Eye and Nose Infections

Swimmer's Itch

How many of these diseases have you or your family had?  
From where do you think they got it?  
How did they feel when they were sick? What made them better?

### 2. Water May Not Be Enough

Do you know how much water each person needs to drink each day?

It is this many Tumpeco mugs:

4 Tumpeco mugs. Each Tumpeco mug holds half a litre.

So how much water is this?

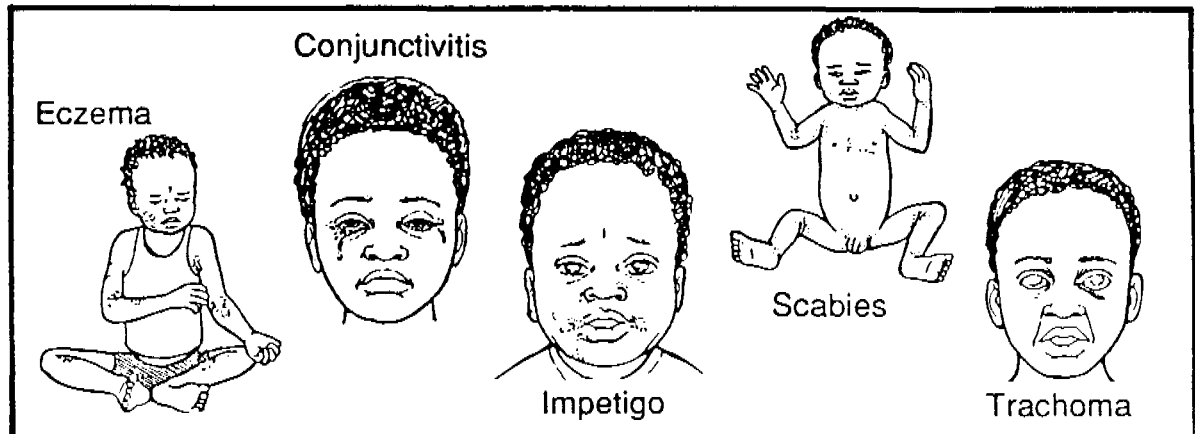
What happens if we do not have enough water?

Do we stop washing our bodies, stop cooking, drinking, washing our clothes or our house?

What would you do first if you only had a little water?

This can be a big problem. We can get many diseases if we do not use enough water to keep clean.

#### Water cleaned Diseases



Which of these diseases have you already learned about in this book?

3. Water may help some things breed

Some insects or their eggs live in or near water and they can also give us diseases. Which of these do you know?

Water Habitat Diseases

- Malaria
- Yellow Fever
- Dengue Fever
- River Blindness
- Sleeping Sickness
- Bilharzia

Which of these diseases have you or someone in your family had?

Where do you think they got them from?

How did they feel when they were sick?

What made them better?

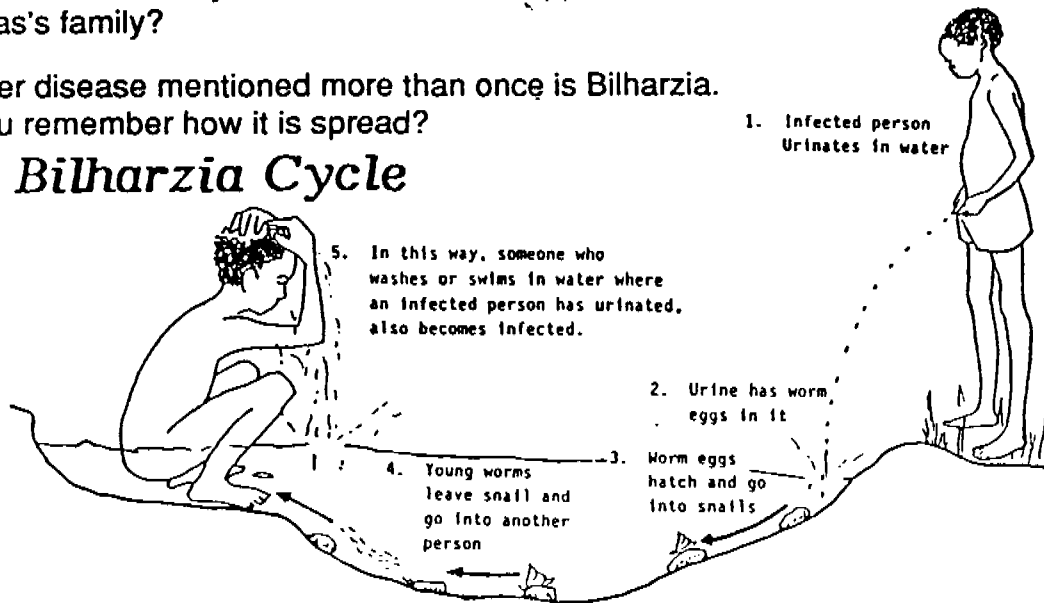
Look at all the diseases mentioned in this Chapter.

There are some diseases which are mentioned more than once. Which are they?

In Chapter 9 you learned about diarrhoea. Dysentery is very similar. Can you remember how it is caused and given to others? Do you remember what happened in Douglas's family?

Another disease mentioned more than once is Bilharzia. Do you remember how it is spread?

**The Bilharzia Cycle**

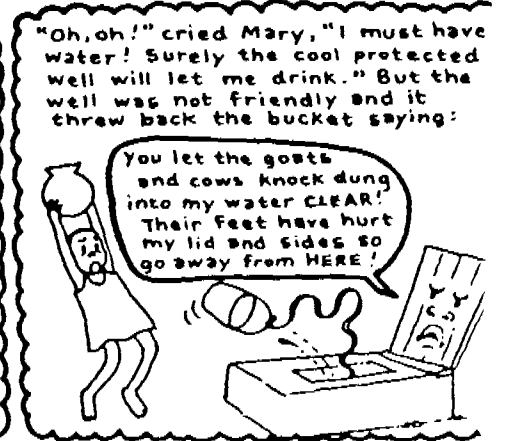
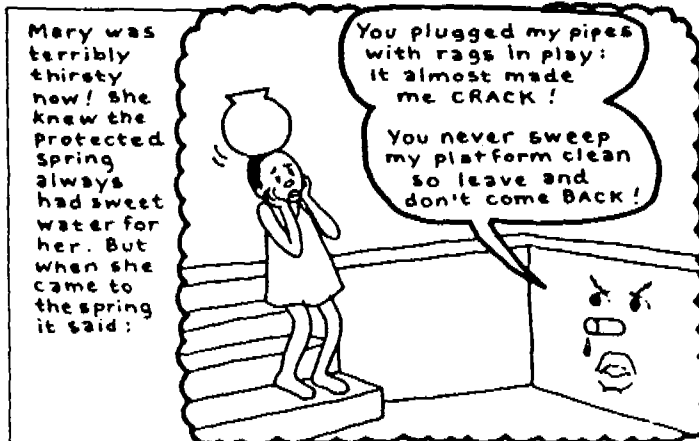
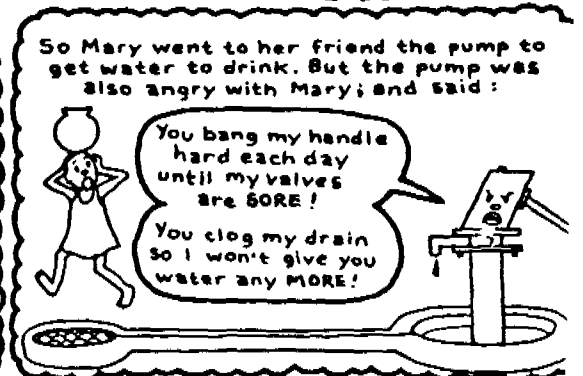
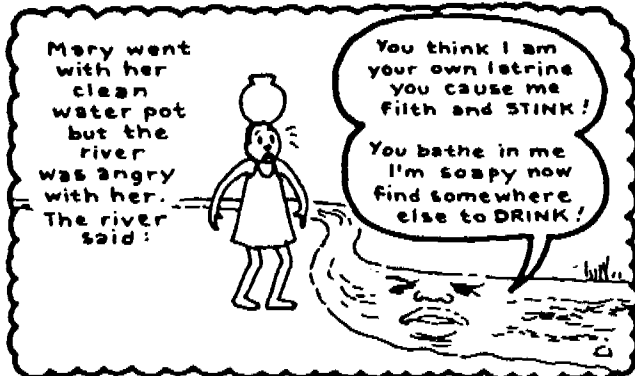
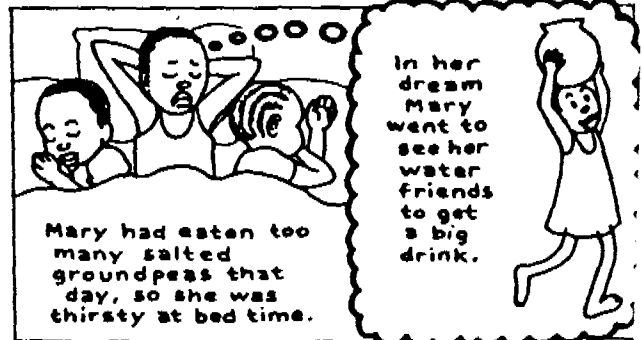


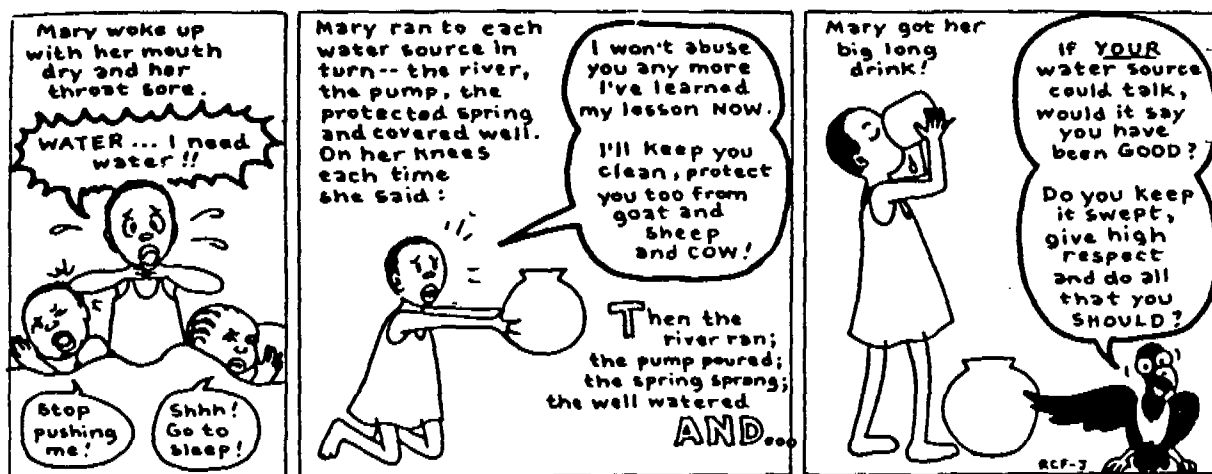
# How We Can Help

## HOW WE CAN HELP PROTECT OUR WATER AND OURSELVES

Have you heard about MARY and her Water Friends?

### MARY and her water friends





What lessons did she learn about:

- the river?
- the pump?
- the protected spring?
- the well?

Exercise

What lessons did you learn in Chapter 6?

What was happening in the picture of the unprotected compound?

How should we make the compound better (protected)?

If you build a pit latrine how far should it be from the home?

Where should a pit latrine not be?

Where should we let animals be?

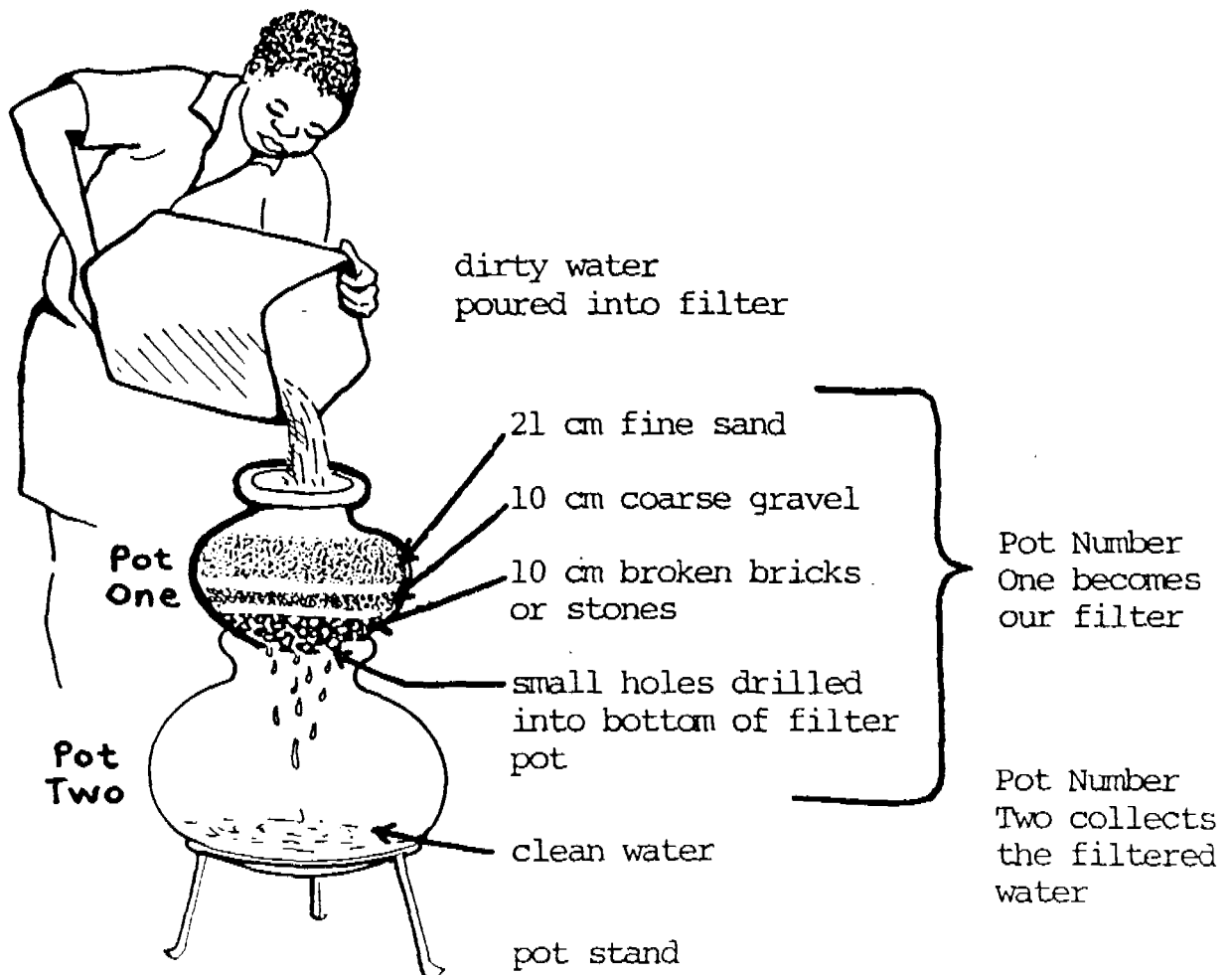
Look back at the route of your water from collection to your home. Where does it get dirty? How can you keep it clean?

Clean water for drinking can be got in several ways:

1. By boiling. Boiling water for 20 minutes can kill most all disease germs, and organisms in water.

## Water and Disease

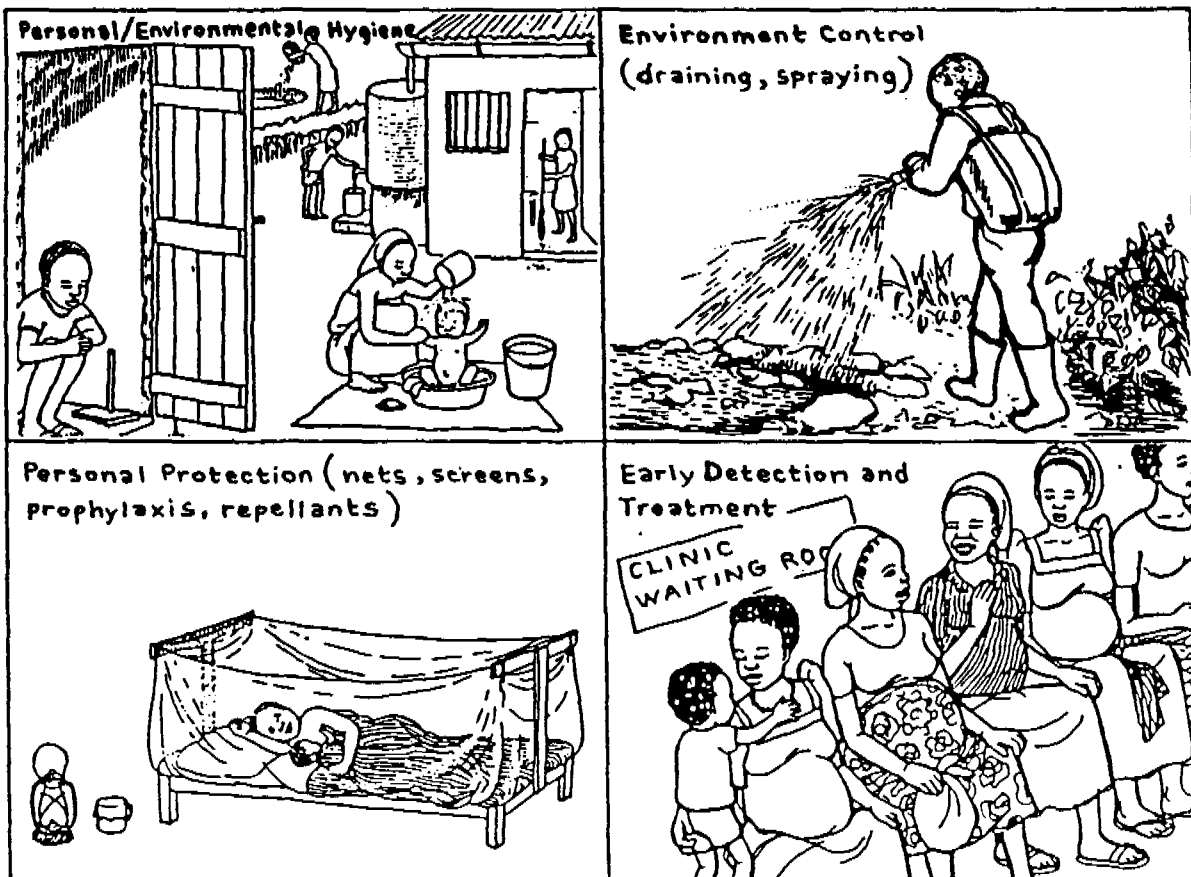
2. By filtering. Filtering water can stop guinea worm disease and sometimes other worms, but not viruses and bacteria (germs).
3. By the 3-pot system. Settling water only removes dirt from water. It does not stop disease or worms.



4. By storing in a covered washed container, and keeping a special ladle or mug to pour water out. This prevents germs and worms from contaminating clean water.

How should we protect ourselves from some of the other diseases?

- Those that we get from not keeping clean. The best protection is:
  - to wash our bodies twice a day
  - to wash our clothes and bedding and
  - to wash our hands, before preparing and eating food and after defecating or urinating.(Remember the advice in Chapter 3?)
- Diseases we get from things that live in or near water





CHILD-to-child Activities

- Teach your younger brothers and sisters, and other children at school to wash themselves to prevent diseases. Teach them to wash their hands before food and after the toilet.
- Teach them only to drink safe water.
- Show them the picture of the unprotected home (Chapter 6). Can they learn what is wrong?
- Make puppets or pictures which can act out the story of Mary and Her Water Friends.
- Get children acting Mary's story and learning the lines. You need a story teller, Mary, her two friends, the river, the pump, the protected spring and the well. Can you think of names for them? Make masks for *each of the characters in the play.*

## **MODULE 6: HYGIENE EDUCATION**

### **SESSION 24: THE ORGANISATIONAL REQUIREMENTS FOR HYGIENE EDUCATION**

#### **OBJECTIVES**

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By the end of the session you should be able to:

- \* assess the organisational requirements needed to implement integrated water, sanitation and hygiene education projects;
- \* list how you would go about co-ordinating the hygiene education activities of different agencies, organisations and departments involved in a water, sanitation and hygiene education project;
- \* determine the personnel and training requirements for an integrated project.

#### **Session Flow and Methodology**

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- \* Plenary: Review the organisational structure established for the Northern Ghana Water Users Project
- \* Presentation of three country office examples of existing organisational structures
- \* Individual exercise: Reviewing existing UNICEF organisational structures for hygiene education
- \* Exercise: Designing an organisational structure for the integrated Khammouane Province project
- \* Plenary
- \* Summary and Evaluation of Session



## Learning Points

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"Developing the Water Education for Health (WEFH) project on an interagency basis has been a fundamental part of the mass education approach. Obtaining the practical support of such departments as Community Development and Environmental Health enabled WEFH to create a network of extension teams...The development of an annual campaign cycle also helped to make the large-scale health education operation possible".

Draft, "The Water Utilization Project", 1991,  
CIDA, Ottawa

1. To provide a working structure for any integrated hygiene education activities there must be a co-ordinating agency that provides clear and continued leadership and follow-up. The co-ordinating agency is not necessarily the implementing agency or agencies. UNICEF is sometimes the appropriate agency to play this role. In some instances, only an international or external agency is in a position to act as co-ordinator or "honest broker".
2. The co-ordinating agency is usually responsible for establishing and monitoring task forces, working groups or working committees among co-operating agencies.
3. Most commonly, committees or task forces are established at national level, however the utility of national committees needs to be queried. In most cases task forces that are directly involved in implementation are more successful. Short and direct chains of command which allow high levels of responsibility at district or community level are usually more successful than longer more diffuse ones. For example it proved more effective in Ghana to have one co-ordinating agency and a series of integrated and semi-independent teams in each district rather than a co-ordinating agency which supervised several provincial teams who in turn supervised district teams.
4. Prior to establishing inter-agency working groups the co-ordinating agency needs to have a very clear idea of the hygiene and health education goals and major messages. It should be aware of the communication resources available at all levels, the personnel available, the training required and the approximate role of each agency. Planning should be a co-operative activity.
5. Regular meetings and clear communication channels must be established between co-operating agencies/organisations at all levels.

6. The role of each "partner" must be very clearly spelled out and mutually agreed upon.
7. The organisational structure must allow for regular follow-up, on-going monitoring and evaluation of the hygiene education activities and dissemination of this information to all partners. This is commonly where co-operation collapses.
8. Support and follow-up for field workers and village groups are of vital importance. Volunteer or village-level health and hygiene workers need considerable support and encouragement or they drop out or have little motivation.
9. The support of all agencies/institutions involved must be regularly acknowledged by the co-ordinating agency.
10. Before integration can be expected between different government departments or implementing agencies, there must be integration within the UNICEF office.
11. Some type of organisational structure should be established within the country office which ensures that programme officers from health, education, water and sanitation, communication and women's development meet regularly and are involved jointly in planning integrated water, sanitation and hygiene education projects.

## References and suggested readings

"The Interagency Network", in The Water Utilisation Project: A case study on a water and health education project in Northern Ghana, CIDA, Ottawa, 1991 pp 95-107

"Project Management", as above, pp 158-159

**MODULE 6: HYGIENE EDUCATION**

**SESSION 24: THE ORGANISATIONAL REQUIREMENTS FOR  
HYGIENE EDUCATION**

**EXERCISES**

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**Individual Exercise 1: Reviewing existing UNICEF organisational structures**

1. Each participant should outline the existing organisational structure within his or her country office and suggest ways for ensuring an improved hygiene component.

**Group Exercise 2: Designing an organisational structure for the Khammouane Province project**

1. Describe the kind of organisational structure that you think would be appropriate for planning and implementing the Khammouane project.

2. List the major agencies, government departments, or NGOs who will be involved in the project and what they will be responsible for.

3. List the activities that should be undertaken to ensure there is integrated effort.

4. List the responsibilities of the UNICEF office.

## **MODULE 7: SANITATION**

*SESSION 25: THE EXTENT OF THE PROBLEM*

*SESSION 26: STRATEGIES FOR SUCCESSFUL PROGRAMMES*

*SESSION 27: URBAN MARGINAL AREAS*

## **MODULE 7: SANITATION**

### **SESSION 25: THE EXTENT OF THE PROBLEM**

#### **OBJECTIVES**

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By the end of the session, you should be able to :

- \* define what sanitation means and the extent of activities that can be undertaken with UNICEF assistance;
- \* identify 4-5 major problems encountered in sanitation programmes and propose suitable solutions;
- \* identify social and cultural barriers to successful sanitation programmes;
- \* develop at least 3-4 methods to overcome the barriers to sanitation programmes.

#### **Session Flow and Methodology**

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- \* Exercise (in pairs): Definition of sanitation in the context of UNICEF-supported programmes
- \* Plenary
- \* Overview by Facilitator
- \* Plenary
- \* Case Study: The Sanitation Programme in Wagoma
- \* Plenary
- \* Exercise: Values of Latrine Users and Administrators
- \* Plenary
- \* Summary and Evaluation of Session



## Learning Points

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1. The meaning of the word sanitation, in the context of UNICEF-supported programmes, should be clearly defined and understood by all. Sanitation includes the environmental measures necessary in order to improve the health and well-being of both rural and urban populations. It has come to focus mainly upon excreta disposal facilities. However, it may also include solid waste, drainage and environmental hygiene. Sanitation should always be implemented in conjunction with a hygiene education component. It is also of great benefit to integrate both within the ongoing water supply project in order to maximise health, social and economic benefits.

2. Presently, global sanitation coverage levels are 72 per cent for urban and 49 per cent for the rural population. This has increased from 69 and 37 per cent respectively in 1980. However there is still a long way to go in order to achieve universal access to safe excreta disposal.

3. At first sight, data for the urban sector appears more encouraging with nearly three-quarters of the population benefitting from adequate excreta disposal facilities. However urban marginalised areas are still very under-served, congestion and poverty contributing to this.

4. In rural areas, population densities are lower and natural assimilation of human wastes has been less damaging in physical terms, but lack of sanitation may have a greater impact on health than in urban areas because people may still largely depend on surface water for domestic purposes. Children are also randomly defecating within the family compound and therefore are a focus of contamination for the whole household.

5. UNICEF should investigate the actual inputs that are being made to sanitation and hygiene education within their country of assignment as a percentage of the overall water and sanitation programme. At present it is estimated that less than 10 per cent of the total water and sanitation budget is allocated to sanitation. Clearly offices should be making endeavours to increase this to at least 20 per cent. As stated in the Water and Sanitation Workplan for 1990-95:

**"Country offices should re-assess themselves in light of the foregoing exposition on sanitation, to re-determine their needs. Note-worthy are, the proportion of funds allocated to sanitation in relation to the other components of the sector, whether social mobilization plays a significant or insignificant role in the programming of sanitation, and the suitability of the sanitation staff to deal with the mobilization issue."**

6. The government may have different departments responsible for water and sanitation. It is important to find out what is the

government's understanding of the present problems in sanitation. It would be helpful to analyse what are their present resources in terms of manpower and finances and are these realistic in order to achieve universal access. Is there sufficient government commitment to the programme and if not, how will this be addressed at the country level.

7. The major problems encountered within sanitation programmes fall into different categories including technical, social, managerial, cultural and economic. It is essential to try to identify the major problems within your own programmes and address these at the necessary level. For example, if it is discovered that people have not constructed latrines to a sufficiently high standard then this could be both a technical and managerial problem. The design and construction may not have been adequately performed or insufficient supervision was provided by the project.

8. Changes in attitude on the part of people and institutional changes in government will be necessary in order to achieve the needed balance between water supply provision and sanitation services. To reach the target of universal access to sanitation, international, national and local finance must be allocated to sanitation programmes at unprecedented levels, and the administrative and technological systems must be geared to handling them efficiently.

#### Social and Cultural Barriers

9. Sanitation and hygiene behaviour have much to do with human behaviour. It is impossible, therefore to find a suitable technical solution to solve the problem. The success of a latrine depends upon its individual or community acceptance, understanding and use, rather than upon the simplicity or complexity of a design.

10. Excreta disposal is a sensitive matter about which people have strong cultural preferences. Therefore, it is imperative to achieve the maximum involvement of the community in the design and implementation of any latrine programme. Solutions imposed from outside are unlikely to succeed. Often a modification to an existing practice or type of latrine may be much easier to implement than a completely new package of technology. There are often strongly felt reasons for existing sanitary practices.

11. Whenever there are problems of bad sanitation in rural areas, with all the sickness and disease that results, it is easy to assume that technology is the answer and that new latrines will provide the necessary 'technological fix'. However technology by itself is far from the complete solution, and in rural areas of developing countries it is often found that latrines when built, are not fully used, and when used do not always banish the diseases of good sanitation. The essential point is that good sanitation

depend primarily on people and how they organise hygiene related activities.

12. People require a reason or motivation for using a new kind of latrine. In general, health improvement may not provide such a motivation because the connection between latrine usage and health may not be perceived. Experience in South East Asia indicates that an economic motivation, money for the re-use of excreta in agriculture or fish farming may sometimes provide the necessary incentive.

13. Convenience is a rather wide concept, but includes such factors as how much time is saved, how the location of facilities influences their use, and whether facilities are equally convenient to all household members and at night. Most evaluations have found that people construct for reasons of convenience, privacy and status and not for reasons of health.

14. The promotion of sanitary practices by women and children is very important, but this factor is sometimes overlooked when sanitation programmes are introduced. Green found in Swaziland that the use of a latrine conflicted with traditional values of female modesty and also a fear of sorcery associated with bodily wastes. However Gibbs, (1984) in Bangladesh found a very strong correlation between the quality of the superstructure and the frequency of use by women. This, however, was not the case with children. Since Bangladesh is a Moslem country, women value privacy highly and therefore prefer a more private latrine.

15. Children are quite happy to defecate in the open and will regard the dark interior of a latrine which provides privacy as frightening. Similar findings were found in Sri Lanka, as a result of which latrines were placed within the houses where womens privacy was assured and children will feel safe. Clearly many evaluations have shown the need for designing excreta disposal facilities which are 'child friendly'.

#### Making Programmes Socially Acceptable

16. The people who plan sanitation programmes are likely to have an expert knowledge of either medicine or engineering. The needs of the community are therefore looked at in a relatively specialised way which may contrast sharply with the way in which local people see their problems. The risk that new technology will not be socially acceptable or appropriate arises most strongly when experts fail to recognise and reconcile these different points of view. If the question is asked: "Who will decide which technology is appropriate?", the answer ought to be that the experts and local people will come to an agreed view.

17. One task of appraisal work is to collect information that clarifies the goals of the experts and the local people, and seeks

common ground between them. Table 1 illustrates the kind of difference in goals and attitudes which may be found, and may help, therefore, to indicate questions that need to be asked in planning a project. With regard to cultural values, for example, Table 1 notes that people may sometimes feel that there is prestige associated with owning a latrine (or other modern equipment); it also warns that the cultural attitudes of experts can create barriers to the acceptance of new techniques. Those who may be involved in such work need to be careful that their belief in the scientific principles of hygiene does not make them arrogant. One should not pretend that one always knows what is best for other people, as all of their problems may not all be apparent.

18. Many rural communities have distinctive ways of organizing sanitation and hygiene - their own "hygiene culture" - and it is part of the task of appraisal work to understand what this involves. Local hygiene culture may sometimes be a source of difficulty for a programme, but it may also present an opportunity, in that many communities (especially Moslem and Hindu ones) set a high value on cleanliness.

19. Apart from cultural values, there may be many practical issues about which experts and local people have different points of view. For example, experts may not always recognize how great a cost a project may impose on the families taking part. "Low-cost" latrines, judged in terms of capital investment, may in practice be very costly to local families if, for example, they take a long time to clean, are difficult to use, or involve radical changes in organization.

20. The most vital issue on which the attitudes of local people and experts may diverge concerns the goals or objectives of sanitation projects. Experts will see the main goal as the prevention of disease, and will sometimes concentrate on the control of some specific disease, such as hookworm. By contrast, the local people will usually have a far more general view of the types of improvement they expect from the project. They may judge it according to what it will contribute to their overall standard of living, in terms of convenience, comfort, cost, and status. Thus, if people accept the use of a latrine, it will be because they see it as a desirable addition to their home. They will never see it solely as a device for protecting health.

21. Common ground must be sought before the project can have goals which the people and the experts share. In an extreme case, where the people seem totally uninterested in any aspect of sanitation, and see development as a means to acquire goods, then there is no common ground and no basis for a project. More usually, though, there will be several aspects of housing and environmental conditions where the people want improvements that are of significance for better hygiene."

22. Many rural communities have distinctive ways of organising sanitation and hygiene and it is part of the task of appraisal work to understand what this involves. Local hygiene culture may sometimes be a source of difficulty for a programme, but it may also present an opportunity in that many communities (especially Moslem and Hindu) set a high value on cleanliness.

**Table 1. The outlook of those who plan sanitation projects compared with the views of local people.**

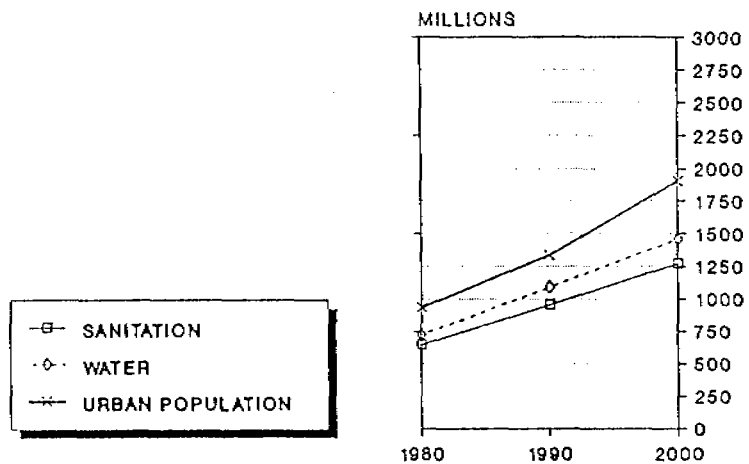
This is a table adapted from work by Curtis (1978). It is suggested that you modify and extend the comments in both columns of the table to suit your local situation.

	PLANNER'S VIEW	PEOPLE'S VIEW
<b>Practical Factors</b>		
<b>Objectives:</b>	Aim for very specific improvements to environment and to health.	Generalized view of better living standards and housing.
<b>Costs:</b>	Costs falling on project are examined.	Cost to family, including money, time, and stress examined.
<b>Organization:</b>	Operation and maintenance problems; health education.	Change in habits required by new techniques.
<b>Cultural Values</b>		
<b>Hygiene:</b>	Scientific concepts of health and hygiene.	Traditional views of cleanliness and disease - religion and folk medicine.
<b>Status:</b>	Attitudes to poverty.	Tendency to associate status with modern technology.
<b>Taboos:</b>	Privacy of latrines; taking openly about sanitation.	Privacy and orientation of latrines; anal cleansing methods; sex segregation.

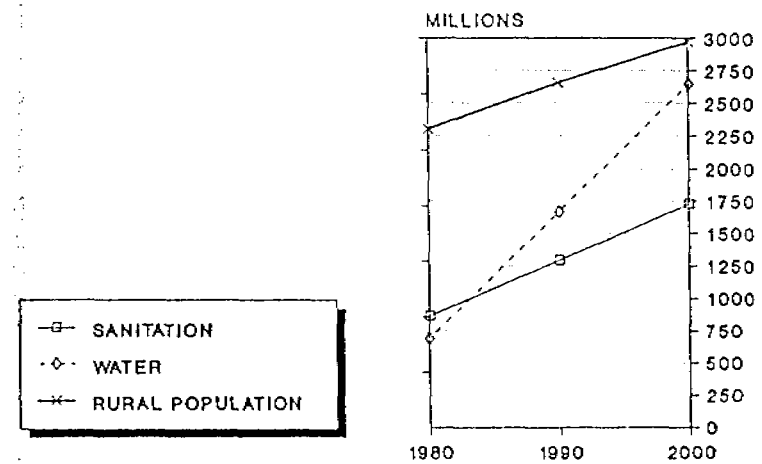
Source: Rural Sanitation (Planning and Appraisal) by Arnold Pacey, 1980.

# COVERAGE TRENDS DURING THE 1990s GIVEN THE 1980s' IMPLEMENTATION RATES

## URBAN AREAS



## RURAL AREAS



**MODULE 7: SANITATION****SESSION 25: THE EXTENT OF THE PROBLEM****CASE STUDY: A SANITATION PROGRAMME IN WAGOMA**

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**Project Background:**

Improved sanitation was one the earliest aims of the child survival and development programme in Ruru State of Wagoma. Families who understood its importance, and who had access to effective and affordable latrines, would be less likely to fall prey to childhood diseases.

A major drive was launched by government to improve the quality of latrines in the region. Several types of Ventilated Improved Pit (VIP) latrines were piloted in Nasu Division.

Substantial efforts were initially put into training people in the skills needed to construct the latrines and the division became a training resource for other areas. The plan was that workers would come from all over the region to learn how the latrines should be built, and take those skills back to individual villages.

The style adopted for most villages in the Nasu Division was a double pit, designed to be long-lasting and efficient. Each latrine has two deep pits, dug side by side and lined with porous material so that liquids seep out slowly at a safe depth. The top is covered by a heavy slab which allows only one of the pits at a time to be exposed.

After a further five years, when the second pit is almost full, the family digs down outside the latrine and alongside the first pit. They remove a rough plug in the pit wall and dig out the contents, which have been breaking down over the previous five years. The family spreads this rich source of fertilizer onto their crops.

For success the scheme depends on the right materials being used, and on villagers receiving the right training.

**Problems Encountered**

In the Nasu Division thousands of the new style latrines were erected and it was estimated that 93 per cent of households have or had VIP latrines.



Yet in some villages the latrines have collapsed and villagers are returning to earlier less hygienic and less efficient forms of pit latrines. In these villages few if any families have reached the stage of spreading the fertilizer onto their crops.

Moreover the VIP design has been slow to spread to other divisions and other regions, and there has been a marked reluctance on the part of villagers to pay workers to travel to Nasu to be trained. Why is this?

Mayale village in the Njombe district is one where the majority of VIP latrines built with brick chimneys and woven grass roofs less than ten years ago, are falling into disuse, and many have collapsed. Originally UNICEF provided two bags of cement and the householder was supposed to provide another two. One reason is the spiralling cost of cement which rose from 50 shillings a bag when the project started to over 1,000 shillings a bag today. But this is only part of the story.

VIP latrines succeed it seems only when villagers are convinced of the need for them, and of the need for building methods which are often more rigorous than those used to build their homes. Close supervision of the building programme is as necessary when the project is under way as it was when it was first launched. Secondly there was insufficient training in the proper use and maintenance of the latrines and no hygiene education.

### Reaction of Villagers

Villagers say that the only latrines to stand the test of time are those that were built as examples. Village chairman, Samweli Nyika, blamed the organisers for not providing enough material. "One of the biggest reasons why the latrines are falling down is lack of cement. Two bags of cement are not enough. The pit latrines that were built as an example had more cement used on them".

Another village leader, Eliudi Msgwa, said that the design was not sturdy enough to stand up to the weather. "It is a question of poor design. They should improve the design to stop the water from coming in. The chimney should be blocked. If it is open it will allow the water in".

One young man in the village was clear about why the latrines were collapsing. Alfred Kilasi had studied them carefully so that he could build a better one for his widowed mother. "VIP latrines are not popular in this village", he said. "There are only three that are surviving properly and villagers are going back to the traditional ways. No one understands how the latrine is supposed to function and therefore do not know how to repair it when the chimney is damaged. The people are not motivated enough to repair the latrine."

He pointed out one latrine where the chimney and roof were parting company. "After a few days this one will fall down", he said.

### Views of Government Staff

Stanley Mwajeka, district planning officer for the Njombe district, said the Mayale situation was not typical. "With the VIP latrines, the younger ones always accept this new system, and some of the villages have started to use the waste for their crops and vegetables. The result has been very good and they are pleased because they don't have the job of digging another pit".

But he agreed that Mayale was not unique either. "We have noted this problem. People misuse the cement by putting it in their houses, and then they use mud in the latrine. When the latrines get wet they collapse. Many that collapsed were made with mud.

"They were given two bags of cement but they were supposed to buy another two as well. Two bags were for the underneath and two for the superstructure. Cement cost 50 shillings a bag then. Now it costs 1,100 shillings. There was no close supervision. Of course it is discouraging if you give someone something for free and he uses it for something else".

Sanitation officer, Mama Haule, noted that in some latrines the bricks had not been properly fired. "You must make sure that the bricks are baked until they are really hard. When you tap it, it is supposed to sound like iron".

She said it was difficult for supervisors to keep an eye on every village. "The villagers may not have been sure about what they were supposed to do. They may have been given cement, but maybe they didn't use it. They may have used soil instead and together with bad roofing, the rain water gets in and eventually crumbles the latrine. "

She admitted " We (sanitation officers) were not trained for the non-technical problems. Our supervisors only informed us to ensure that as many latrines as possible were constructed since the donors were demanding them."

Reluctance to use expensive building materials on a latrine is not unique to Mayale. In the neighbouring region of Morogoro the scheme is newer but it is also meeting resistance. In Fulwe village on VIP latrine with a corrugated iron roof has been built as an example. It stands proudly close to the village hut.

There are trained workers who could help erect similar latrines for anyone who will pay for the materials and put in the time. So far there have been no takers, and village leaders said

it had proved too expensive for them.

Water engineer and facilitator in the Nasu Division, Edmund Mahugi, said: "The construction is not complicated. They need, say, 1,500 bricks fired in a kiln. But they say "Why has the VIP latrine got a corrugated iron roof, when my house does not?"

Dr. Kuppa Veso, from the Musoma Regional Hospital in the Nasu Division, expects the same problem to arise as the child survival and development programme begins in his region.

He said: "Put yourself in the mind of a villager. His house is not good and it is not permanent. He is thinking of building a permanent hut and you are urging him to build a permanent latrine first, which costs 50,000 shillings.

Adapted from Case study prepared by P. McIntyre, Consultant, UNICEF.



3. Sanitation in the project was taken to mean construction of latrines only. In your own programmes give details of what your sanitation programmes have included. (Give at least three country examples from your group.)

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**MODULE 7: SANITATION****SESSION 25: BARRIERS TO SUCCESSFUL PROGRAMMES****EXERCISE: VALUES OF LATRINE USERS AND ADMINISTRATORS**

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Extracted from: Curtis, D. 1978. Values of Latrine Users and Administrators: Sanitation in Developing Countries by A. Pacey. John Wiley & Sons.

**The "social factor" in sanitation programmes**

In planning and development, the 'social factor' is often invoked to explain the failures of technically competent, scientifically convincing, and financially sound projects. When the sociologist is called in to provide explanations, those who request his services usually expect him to provide an analysis of social or cultural 'obstacles'. They hope that he will find something in the values or institutions of the community in question which is different, strange, exotic and capable of accounting for aberrant behaviour. But sociologists are generally very reluctant to accept this interpretation of where the problem lies. There are two sides to these social problems, and planners, administrators, or health officials bring their own complex values and procedures into programmes. These, as much as the values of the people, may be the source of the trouble.

The more we incorporate the elaborate analytic procedures and weighty words of science into our approach to hygiene, the more invulnerable we consider our programmes to be. So if we are right, then it must be them, the users of the system we provide, who are wrong when the programmes fail. Everything in our predisposition towards the non-elites of this world, the poor, the uneducated, the primitive, the lower classes, or however else we regard them, will tend to confirm our view.

Thus sociologists are called in to explain social and cultural 'obstacles': the exotic factors arising from the particular culture of the system's users, which we assume should be educated away so the system can work. But there are also a range of mundane considerations arising from the differences in viewpoint between clients and planners, and in most cases, it will be these differences in viewpoint which explain resistance to particular items with health and sanitation programmes. Furthermore, mundane factors are much more predictable, amenable to analysis, and remediable than are the exotic. A common example of a mundane factor is that little children avoid using pit latrines for fear of

the cavernous hole that opens below them. This is an argument for altering the design of the latrine rather than for conducting a health education campaign.

In like manner, when exotic factors in a community's culture really do cause problems, it is usually less fruitful to try and re-educate people than to modify designs so that they suit the users' requirements better. For example, an exotic factor found among the Lubale of Zambia is that sons-in-law and mothers-in-law avoid using the same latrine. Here it is presumably better to design sanitation systems that give them easy access to different latrines than to try to persuade them to alter their ways.

People's concepts of health and hygiene do vary greatly from one culture to another in ways which are significant for health programmes. So although the mundane factors, recognisable by common sense, are the most frequent cause of difficulty, there are exotic, unexpected variations in hygiene concepts, and the next few pages will attempt to map out a way of thinking about them.

#### **Concepts of Hygiene: The Exotic Factor**

Central to the question of perceptions of planners and users is a concept of hygiene. In the scientific culture, hygiene is a question of creating the physical conditions and personal practices which will prevent the spread of pathogens, but among ordinary people, hygiene is usually a much broader concept. Certainly, it is about those conditions which prevent disease. But disease is the consequence of disorder, and for most people whether they subscribe to the scientific approach or not, disorder has much wider connotations for their lives than the invasion of a bodily system by submicroscopic organisms.

For many of us, part of the proper order of things is that defecation should be done in privacy. But there is no scientific reason why this should be. For some of us also, 'cleanliness is next to godliness' and, as in our various approaches to God, cleanliness procedures are highly ritualized. They are ritualized because they express an order of things and our relationship to that order and place in that order. Nevertheless, in the West, religion and hygiene are increasingly segregated into discrete conceptual spheres. In many cultures, however, relationships with the powers that be are not so segregated. The rituals of getting on well with the gods are part and parcel of getting on well with the physical environment and with the neighbours.

For all peoples, also, the unhygienic has a special status. We avoid polluting materials or practices verbally as well as physically, inventing euphemisms like 'night soil' for excreta and all sorts of funny names for lavatories like 'privy', 'smallest room', or 'loo'. The special status of these things lends itself to jokes, the humour arising from the fact that we trespass upon



forbidden territory. These things are taboo, and this special status, in some cultures, may have significance for the design of sanitary systems.

One way of understanding taboo factors is to note that all people encounter problems in their attempts to conceptualize the universe, and have difficulty in fitting certain things into a safe, understandable pattern. Mary Douglas illustrates this point from the biblical record of the ancient Israelites. For them, the universe was divided between earth, waters, and the firmament. Each of these areas had its proper kind of animals. Birds with wings and two legs fly in the air; fish with scales and fins swim in the sea; and on earth, four-legged animals, hop, jump, or walk. But various kinds of creatures do not fit this classification well. Eels seem to be neither fishes nor land animals. Insects both fly and walk. In this way, the book of Leviticus builds up a list of creatures that break the rules and must be avoided.

Bodily functions tend to be taboo for the same sort of reason. In most cultures, a fundamental distinction is made between man and animal. Man is a thinker, a tool user, a cultured being, and the higher rank we claim, the greater emphasis we lay upon these values. Animals are the obverse: instinctive and propelled by uncontrolled natural functions. Yet this elementary distinction is hard to maintain intact. We hunger, desire, bleed, and die with disconcerting similarity to animals. So bodily functions are difficult to handle culturally. Some we surround with ritual, other we hide away discreetly. In the European tradition, eating is surrounded by a paraphernalia of plates and cutlery; sex is sanctified and put between sheets; defecation is confined to the smallest room. Much of the early upbringing of our children consists of convicting them of the demerits of eating like animals, and we fill both themselves and ourselves with anxiety as we discipline them into use of the potty.

In discussing ritual cleanliness and pollution, one tends to look to India, where the traditional values of Hinduism produce a highly pollution-conscious society. Different occupational roles entail different hazards of pollution. These occupations are therefore ranked in a hierarchy of ritual cleanliness, and certain residual functions like handling dead bodies or removing 'night soil' are left to categories of people who, for historical reasons, fail to make the grade in the ritual cleanliness stakes altogether. Such a system makes people highly conscious of the boundaries between groups; caste groups become clearly demarcated.

Mary Douglas uses for her exposition a study by Srinivas of the Coorgs, a group who have the status of a caste, although they live as a relatively isolated community in the mountains. 'The ritual like of the Coorgs gives the impression of a people obsessed by the fear of dangerous impurities entering their system', says Douglas. 'For them the model of the exits and entrances of the

human body is a doubly apt symbolic focus of fears for their minority standing in the larger society. Here I am suggesting that when rituals express anxiety about the body's orifices, the sociological counterpart of this anxiety is a care to protect the political and cultural community of a minority group.' Body relics, especially excrement, must not be touched if the body is to be protected, and by implication, people who must handle such materials have to be regarded as untouchable if the integrity of the group is to be protected.

In various cultures, sensitive body relics not only include excrement but the remains of food, finger nails, hair, blood, and even foot prints. Much of their significance, I suggest, arises because things like finger nail parings and spilt blood trespass on the boundary between life and death. What leaves the body and becomes dead is a threat to the body.

Menstruation particularly lends itself to difficulties of interpretation in terms of life and death. Clearly menstrual blood is the stuff of life, yet it is destined not to be. In many societies it is regarded as particularly dangerous, and women avoid crossing the paths of men and vice versa.

What is the significance of all this for scientific sanitation programmes? Clearly the logic of ritual purity and danger does not coincide with the logic of epidemiology, although in some cases the practices themselves may be compatible. For example, the frequent bathing, careful cooking, and other dirt avoidance practices of high caste Hindu families probably correspond with good 'scientific' hygiene, and are often explained away in this fashion. Others are definitely not. By the curious process of inversion, common in many cultures, dirt may be used in ritual cleaning practices. Also there is no agreement between science and ritual on the subject of what is dangerous and polluting. Hair, nail parings, and foot prints do not interest public health workers, while in many cultures, faeces may not be regarded as particularly threatening at all.

How do these values influence defecation habits? Sometimes they emphasize the importance of avoiding contact with excreta, or with objects that have had contact with them - the untouchability aspect. Sometimes also they encourage secrecy and anonymity in defecation. This latter may be different from privacy in the Western sense, in that the object may be to avoid having a sorcerer trace one's faeces and use them against one. Hiding in the bush during defecation may be a more effective way of doing this than using a pit latrine, where one's wastes can be all too easily traced.

With exception of Hinduism, these examples of taboos affecting defecation are mostly to be found in small, relatively isolated communities with a distinctive cultural identity and history.

Increasingly, such communities are being drawn into a wider economy and society where their own beliefs must exist alongside others. Here they must explore intellectually all sorts of things anew as they are embraced within the communications and education process of mass society. In this situation, those two are upwardly mobile, who see opportunities to improve their standing in society, may well aspire to the standards of living and lifestyle of these who they see above them. If now, sanitation technologies are prestigious, they will adopt them even if this clashed with their customary beliefs and values.

On the other hand, in most parts of the world there are groups at the bottom end of society, without opportunities of advancement, for whom modernization is a threat rather than an aspiration, who may maintain a reactive identification with traditional values and beliefs. They will take much more convincing that new technologies have something to offer for them.

#### **The Mundane Factors: Cash, Organisation, and convenience**

Mundane factors require less interpretation. They are the social facts which applies common sense should reveal. Costs, project organisation, sound engineering and maintenance are basic to good sanitation programme, but the mundane factors which are sometimes not considered are the user's problems, and the cost, convenience and organisation necessary for him if he is to make routine use of the sanitation system.

Costs to the user may be quite considerable. In some rural areas, pit latrines may cost each household as much as the rest of their accommodation, and may compete as a priority with extra living space or other home improvements. In other words, there is for each household an opportunity cost. Some systems may require new routine payments for disinfectants or cleansing materials if they are to remain hygienic. Under these circumstances, the needs, objectively speaking, for all households may be the same, but responses may differ according to household income levels.

Convenience is perhaps a rather all-embracing concept, but one should look at such factors as how much time is saved, how the location of facilities influences their use, and whether facilities are equally convenient to all household members.

Organisation only becomes critical when facilities like latrines or water supplies are to be used communally by people who are not otherwise co-operating in the use of resources. Put in a latrine for every household and the householders should manage them successfully because there is no room for dispute about ownership and responsibility (though servicing and emptying may still need to be publicly provided). But if facilities must be shared between households, then problems will arise unless somebody is specifically given control and adequately rewarded for doing so.

**Evaluation of Social Factors**

From the above, I draw two sets of conclusions about evaluating the 'social factor' in sanitation programmes. The first is that both the authorities' viewpoint and the users or clients' viewpoint should be allowed to have some influence upon the design of the schemes, and the second is that mundane as well as exotic considerations are relevant on both sides.

Table 1 expresses schematically the dimensions of the problem and provides a checklist of factors to be considered in each dimension. Below I apply the scheme to the latrines component of a housing project in India, but it could be used to check out any project component in the health and sanitation field where the co-operation of the public is essential.

**Table 1. Evaluation of Social Factors in Sanitation Programmes**

	Administration Values and Goals	User Values, Taboos and Objectives
Exotic Factors	<ul style="list-style-type: none"> <li>- inherent values</li> <li>- assumptions about users</li> </ul>	<ul style="list-style-type: none"> <li>- avoidance of dirt</li> <li>- avoidance of people (privacy)</li> <li>- own interpretations of hygiene and health</li> </ul>
Mundane Factors	<ul style="list-style-type: none"> <li>- scientific objectives</li> <li>- low cost to authority</li> <li>- administrative convenience</li> <li>- operational and maintenance procedures</li> </ul>	<ul style="list-style-type: none"> <li>- low cost to household</li> <li>- organisation (if communal)</li> <li>- convenience of householders</li> </ul>

The procedure may seem to be elaborate and its emphasis almost philosophical, but the objective is economy, and in two ways a careful appraisal of our own as well as our clients values may be useful. By eliminating our own non-scientific predispositions from the project design, we can clear the ground for more careful consideration of how to achieve our scientific objective more cheaply. Also, by identifying more clearly our clients' perceptions and problems, we may make schemes more acceptable to them and that in itself is an economy.

In one Indian city, squatters were recently moved into four-story tenements in the course of a major rehousing programme. These apartments consisted of two rooms and an interior flush toilet. Housing managers complained about the misuse of these toilets. Some people damaged them by attempting to clear blockages with inappropriate tools. Others filled the pans up with sand and used the space for storage. Children continued to defecate in the open space surrounding the flats. In the fact of these malpractices, the authorities commissioned social workers to educate the tenants into new ways. For the officials, the poverty and social background of their clients was adequate explanation of the malpractices. The social workers soon came to a more

sympathetic interpretation, and often found themselves representing the clients to the authorities. For instance, the social workers soon realised why the children fouled the pavements. In many households, both parents were obliged to work, so children were left to fend for themselves throughout the day and had no access to the toilets in the locked flats.

Such things were revealed through the mediating role of sympathetic social workers. No systematic study was conducted, but following the scheme outlines above, a number of questions could have been posed to both authorities and tenants to try to explain the emerging patterns of behaviour. I list them in Table 2. If this had been done at the beginning of the project, the relevant social factors could then have been used as design constraints instead of being assigned the status of cultural blockages that needed to be educated away.







## **MODULE 7: SANITATION**

### **SESSION 26: STRATEGY FOR SUCCESSFUL PROGRAMMES**

#### **OBJECTIVES**

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By the end of the session, you should be able to:

- \* determine what are the essential elements of a successful sanitation programme;
- \* list at least five key strategies that can be used in the development of more successful sanitation projects.

#### **Session Flow and Methodology**

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- \* Exercise (in pairs): Key Elements of a Successful Programme
- \* Plenary
- \* Overview: Review of Key Elements that have been Successful; Developing Suitable Strategies
- \* Plenary
- \* Case Study: Developing Suitable Strategies for More Successful Programmes
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. By studying both successful and unsuccessful strategies for sanitation, one can determine the most suitable strategies for different cultural, social, technical and economic considerations.
2. Sanitation programmes rely heavily upon householders to build their own latrines, although they may be given some assistance for example, by the sale or distribution of slabs for pit latrines. The programmes therefore require the greatest input of health education, technical assistance and follow-up extension work if they are to succeed. Local organisations can play an important role.
3. 'It is essential that a villager builds a latrine only as a result of a conscious decision that he/she wants to use one. The strategy to be adopted, therefore, is to encourage at least some villagers to decide that they want to use latrines, thereby stimulating a genuine demand.'
4. The period of construction of a water supply is an outstanding opportunity to stimulate such demand. The community is in a dynamic state - meetings are being held and discussion is taking place; field staff are regularly visiting, or may be resident in the community giving the opportunity to bring in new ideas which are related to the water system.
5. To stimulate a demand for sanitation, it is necessary to create some awareness of the benefits. Very often villagers are not aware of the link between human excreta and disease, and this relationship must be continually stressed. However the villagers may be more attracted by other potential benefits of a latrine particularly convenience, privacy and status; these benefits should also be highlighted in the awareness campaign. The process of awareness takes a long time and a whole community cannot be expected to change lifelong habits during the period of construction of a water supply project. Nevertheless, some villagers will become aware during this period, and they are the seed from which the adoption process grows. The purpose of the awareness campaign is to create a favourable atmosphere of reinforcing messages for the seed to take root and grow. The awareness campaign should start right from the beginning of the water supply project.'

6. Key elements that a sanitation programme should contain, are as follows (Cairncross and Feachem, 1983):

- i) 'A central steering committee comprising the ministries or departments responsible for finance and planning, health, urban or rural development, water supply and sewerage.
- ii) Sound project management, site investigations careful technology choice and design;
- iii) Pre-programme study of social factors and beneficiary preference;
- iv) Development of an extension system including health education, technical assistance to self-building householders and feedback from the community.
- v) Access to and delivery of construction materials and mass-produced components, combined with financing mechanisms.
- vi) Integration of designs with infra-structure development, particularly water supply, stormwater drainage and waste disposal, especially for urban areas.
- vii) Integration of programme management with existing administrative structures, such as villages or town councils.
- viii) A monitoring and evaluation programme.
- ix) A programme for briefing central government personnel, and training engineers, technicians, artisans and extension workers.'

IRC/WHO also developed a checklist of key elements which are included in Table 1. at the end of the learning points.

7. Special attention should be paid to schools for two reasons. Firstly school children need to be taught personal hygiene and sanitary practices of excreta disposal and secondly, school children will learn more easily than adults, whose habits are already established. The children can be used to convey messages to their parents, thus contributing to the atmosphere of reinforcing messages.

8. Special attention should also be paid to involving the health post or clinics in the project area. The staff of the health posts are valuable extra manpower to propagate sanitation more effectively.

9. 'No engineer or social scientist should be considered competent to design or implement a sanitation programme unless they have personal experience of both the social and technical issues at community level; if they do not have such experience then the first step is to acquire it by living in the communities and working in some related activity for a while. If this is done then there is no need for a social scientist as many of the issues that are endlessly debated in the capital city become much more obvious and understandable at village level.'

TABLE 1. The following key elements of low-cost sanitation were developed by IRC/WHO.

In order to maximize low-cost sanitation (household latrines) coverage, the 10 key elements listed below must be in place. The development and maintenance of these key elements should be stressed during all phases of the project.

No. 1 Support of Local Leaders. Strong support for health improvement actions by recognized formal and informal Community leaders, which motivates Community members to take action.

No. 2. Created Awareness. Awareness and reinforcement of beliefs amongst individuals and households concerning benefits of, and needs for, better hygiene and sanitation.

NO. 3. Involved Women. Communication with and meaningful involvement of women who should be recognized as prime movers and family-unit opinion-former for better hygiene and sanitation.

No. 4. Household Priority. Genuine individual/household attitudes and desires to construct and use latrines. Priority implies willingness to contribute required cash and/or in-kind contributions.

No. 5. Examples of Low-Cost Sanitation Successes. Positive promotional effects gained by having successful latrines projects to refer to visit and learn from.

No.6 Developed Skills. All technical and non-technical skills required to successfully financially support, implement and sustain household sanitation schemes.

No. 7. Appropriate Technology. On-site sanitation technology suitable to technical and socio-cultural conditions of the area. Affordability, acceptability, availability of materials, local soil conditions, locally-known construction techniques, etc. should be amongst criteria that influence technology choice.

No. 9. Allocation of Responsibilities Formal decisions and allocation of responsibilities between all concerned parties at the start of the project. A clear joint understanding, acceptance and agreement as to who is responsible for what, when.

No. 10. Execution of Responsibilities. Timely execution of development and operational phase responsibilities as agreed to in Element No. 9.

Source: Key Elements of Extended Low-Cost Sanitation Coverage  
IRC/WHO Publication, 1987.

**References and suggested readings:**

Colin, G. 1983. Village Water Supply in the Decade: Lessons from Field Experience. John Wiley & Sons.

Cairncross, S. and Feachem, R. 1983. Environmental Health Engineering in the Tropics: An Introductory Text. John Wiley & Sons.

Chadha, S. and Strauss, M. 1991. Promotion of Rural Sanitation in Bangladesh with Private Sector Participation. Swiss Development Cooperation.



3. What additional strategies you used in your own programmes and how successful have these been?



**MODULE 7: SANITATION**

**SESSION 26: STRATEGY FOR SUCCESSFUL PROGRAMMES**

**READING I**

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**RURAL SANITATION IN LESOTHO**

**THE RURAL SANITATION SECTOR IN LESOTHO  
AND THE DEVELOPMENT OF THE NATIONAL  
RURAL SANITATION PROGRAMME**

**Water and Sanitation Discussion Paper Series  
DP #3  
UNDP/World Bank/PROWESS**

## II. THE RURAL SANITATION SECTOR IN LESOTHO AND THE DEVELOPMENT OF THE NATIONAL RURAL SANITATION PROGRAM

Lesotho is a small country with a relatively dispersed, largely rural population. Most of the country is extremely mountainous and has a harsh climate, which limits agricultural productivity (only 13 percent of the land is arable). Partly for this reason, migrant labor in neighboring South Africa is an extremely important source of income in rural areas, with roughly 40 percent of Lesotho's active male labor force employed outside of the country. This means that unlike many other developing countries, the rural economy in Lesotho is largely cash based.

Environmental health conditions in Lesotho as a whole are poor, especially in rural areas. Although Lesotho is free of most major tropical diseases due to its altitude, infant mortality is high, typhoid is endemic, and a high incidence of gastro-intestinal diseases causes much suffering and debilitation. These diseases are caused, in part, by the lack or poor quality of drinking water; inadequate facilities for bathing, washing, and excreta disposal; poor housing; and malnutrition. This situation is compounded by generally low standards of personal and domestic hygiene.

Water supply and sanitation services in Lesotho have improved significantly since the nation gained its independence in 1966, but coverage is far from universal. Recent estimates show that only about 20 percent of rural households have sanitation facilities (generally pit latrines, one in four of which is of the improved design). Rural water supply coverage is approximately 35 percent. In urban areas about 40 percent of households have unimproved pit latrines, 9 percent have improved pit latrines, 11 percent have waterborne systems, 20 percent have bucket latrines, and 20 percent have no sanitation facilities whatsoever.

For the first ten years of Lesotho's independence, government development efforts in the rural water and sanitation sector focused solely on improving rural water supplies. The only form of improved sanitation provided by the government was the bucket latrine system used in urban government housing. Government promotion of pit latrines began in the 1970s, but there was no technical capacity to assist in implementation.

In 1975, an evaluation funded by the United Kingdom Overseas Development Administration (ODA) of Lesotho's water supply program laid out the program's shortcomings, and recommended that a broader approach to sectoral development be undertaken, which would supplement water supply activities with improvements in sanitation and hygiene (the study's results were published in Water, Health and Development, by R.G. Feacham et al., 1978).

A broader, integrated approach was also recommended by the Technology Advisory Group (TAG), a UNDP-funded, World Bank-executed project aimed at developing low-cost

### Lesotho: Basic Socioeconomic Indicators

Population: 1.6 million  
19% urban, 81% rural  
Annual growth rate: 2.6%  
Density: 53 per square kilometer

Infant mortality:  
100/1,000 live births

GNP per capita: US\$370

Source: World Bank (1987)

technologies to augment the extension of water and sanitation services. TAG began working in Lesotho in the late 1970s, helping to develop an on-site sanitation project for urban areas and a phased rural sanitation project to be integrated with village water supply and primary health care programs. Between 1978 and 1983, more than a dozen TAG missions of varying durations were undertaken.

At the same time, in 1978-1979, the United States Agency for International Development (USAID) was helping Lesotho's government to design a major rural water supply project, which initially had no sanitation or health education components. At the request of USAID and the government, TAG assisted in the design of these components for the project, with the understanding that the sanitation component would be implemented through a linked long-term rural sanitation program.

As Lesotho's need for coordinated development in water supply, sanitation, and health care became clear, it was also clear that piped sewerage systems would be prohibitively expensive and that sanitation services could not be extended to the country's dispersed rural population unless affordable, on-site technology was employed. Fortunately, research work done in other countries of the region (particularly Zimbabwe and Botswana) on low-cost, on-site sanitation technologies had led to the development of the ventilated improved pit (VIP) latrine in the 1970s.

The VIP latrine had emerged as a superior form of on-site sanitation hardware due to the fact that it circumvented the two major disadvantages of traditionally designed pit latrines--odors and fly infestation--through the inclusion of a screened vent pipe in the design. By the early 1980s, Lesotho was able to turn to the VIP latrine as a tested and proven technology. While many sanitation programs begin with a strong technical bias due to the need to test and select a technology to use, Lesotho could be more immediately concerned with broader software issues, such as community participation and health and hygiene education.

Improved and effective low-cost sanitation technology, in the form of the VIP latrine, was first put to use in Lesotho through several urban development and housing projects that were implemented in the capital city of Maseru in the early 1980s. The basic VIP design was adapted for Lesotho, and private sector production of the VIP was encouraged through design improvement workshops. The plans for the improved VIP were also distributed to urban housing contractors. These early efforts were important in establishing the VIP as the preferred pit latrine style in Lesotho.

Late in 1983, a TAG-executed pilot rural sanitation project, funded by UNDP, UNICEF, and the Government of Lesotho, was launched through the Ministry of Health. This pilot project was designed as a means of testing and refining methods of service provision that were effective, sustainable, and cost-effective, with a view toward gradual expansion into a large-scale national program. The project employed a decentralized strategy for rural sanitation improvement, based on the principles of self-help and minimal long-term reliance on government funding. The pilot phase was designed to last three years, and was the country's first systematic approach to rural sanitation.

The southern district of Maseru's Hoek was selected as the location for the pilot project, as it was representative, both in size and topography, of conditions in the country as a whole. The first year was devoted to team building, technical design and modification, and sociocultural field investigations. In mid-1984, a series of planning workshops were held during which members of rural

communities were invited to review a variety of VIP latrine designs and to discuss possible implementation strategies. The VIP latrine was already gaining strong recognition, and thus the main technical problems facing the rural sanitation project were to modify designs to suit the rural environment and reduce unit costs to an acceptable level.

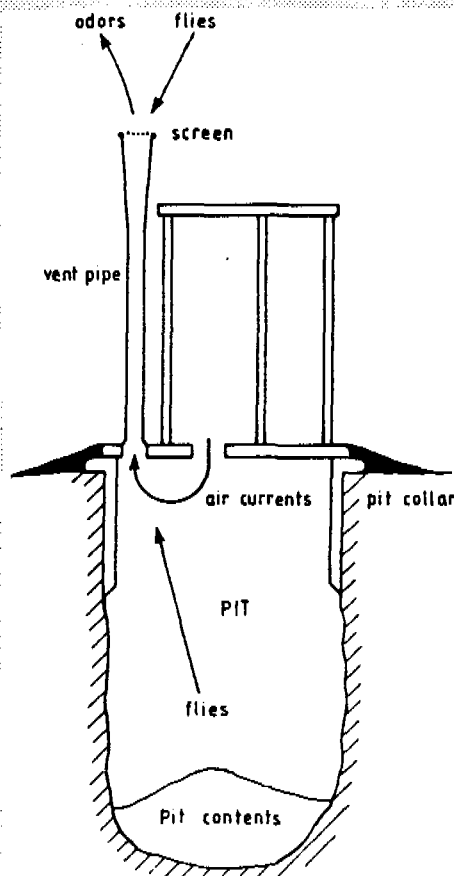
Due to severe budgetary constraints, the Government of Lesotho stipulated that beneficiaries of the project would be required to make a significant contribution to overall costs, through direct payment of latrine construction expenses. Construction of VIP latrines was to be handled by the private sector, with government playing a largely facilitative role through organizing and training. Prospective latrine builders were to be recruited from the local population, and would then receive instruction in VIP construction from project technical assistants. These local latrine builders (LLBs) could then offer themselves for hire to householders, at rates agreed between the community and the rural sanitation project; householders were given the responsibility for procuring materials and employing the LLB. It was hoped that this method of execution would allow latrine construction to become integrated into the local economy, creating income opportunities for local artisans and stimulating cash flows. The transfer of construction and technical skills to the communities was

### The Improved Design of the VIP Latrine

Traditionally designed pit latrines have two main disadvantages: their interiors smell bad and they attract flies. The VIP latrine is designed to avoid both of these problems through the use of a vertical screened vent pipe; in other respects the VIP is designed like a traditional pit latrine.

The VIP's vent pipe is able to control odors because of the suction effect of wind across the top of the pipe and the thermal effect of solar radiation on the pipe's external surface. The effect of wind passing across the top of the vent pipe is to create a suction pressure within the pipe, which draws air and odors up from the pit below. Solar radiation works to heat up the vent pipe and thus the air inside of it. As this air becomes less dense, it rises, and is replaced by cooler air from below. In this way air circulates from the outside, into the superstructure, through the pit, and up the vent pipe, pulling odors up with it.

Flies are attracted to pit latrines by the odors emanating from them. In VIP latrines flies are attracted to the top of the vent pipe where odors dissipate, so this is covered with a fly screen and flies are unable to enter the pit and lay their eggs. A few flies will enter the pit through the superstructure and eventually their offspring will emerge from the pit. Since newly emergent flies are phototropic, however, they will fly toward the light at the top of the vent pipe (the only light source since the superstructure is kept dark) where the fly screen prevents their egress and in time they fall back into the pit and die. The VIP latrine is highly effective at reducing fly infestation: experimental data have shown that the VIP design lowers the numbers of flies in a latrine by upwards of 99 percent in comparison to traditionally designed pit latrines.



essential to the development of self-sufficiency in implementation and to long-term absorption of on-site technology. The contributions of beneficiaries and the involvement of the private sector in construction also allowed the government to devote more of its resources to software issues such as community involvement and health and hygiene education.

Coordinating the technical aspects of latrine construction with the need for village level self-sufficiency was not always a straightforward proposition. As an example, four different approaches to the fabrication and distribution of concrete components were tried in succession: central production by the rural sanitation project technical assistants; larger-scale central production by inmates of the district prison; village-level production by commercial concrete block makers; and on-site production by LLBs.

On-site production by LLBs turned out to be the most cost-effective method, reducing the logistical problems associated with central production, and keeping costs down by eliminating the profit margin required by local commercial producers. Central production was necessary in the initial stages to maintain quality control, but LLBs proved capable of high standards of work, and component production was progressively handed over to them, with government technical assistants maintaining regular checks on standards. An obvious benefit of this approach was that all stages of production were placed in the hands of local artisans.



Field implementation of the pilot project began at two sites in October 1984. The construction target for the pilot phase was modest, requiring that only 400 latrines be built during the three-year project cycle. This target was surpassed by 50 percent, with 600 latrines being built by the end of 1986. Almost two-thirds of the latrines were built in the final year, underscoring the long lead-up time that the project's approach required. Roughly 90 percent of the latrines built in 1986 were fully paid for by rural householders, who purchased the required materials and paid builders' fees.

### Local Latrine Builders: Entrepreneurship Promoting Health in Lesotho

Latrine building has been a kind of "saving grace" for Teboho Raleteng, who has constructed 34 latrines in Liphiring, Lesotho. Before he was trained in latrine building, Mr. Raleteng's only source of income was whatever unskilled labor he could find in his rural area, where only 14 percent of the labor force is employed in non-farm work; he drove tractors, fixed fences, and took on odd jobs. He had no steady form of income, and with only one year of education, he had little chance of providing more than a subsistence level of income for himself.



*Teboho Raleteng, local latrine builder, constructing the pit and foundation of a VIP latrine*

In 1984, Mr. Raleteng—functionally illiterate and inexperienced in construction work—attended a two-week latrine building course, sponsored by the Mohale's Hoek district rural sanitation project and taught by technical assistants from the Ministry of the Interior. Mr. Raleteng successfully completed the course, and he was given his local latrine builder certificate and encouraged to actively market his new skills. The course's graduates were helped by local health assistants from the Ministry of Health, who worked to increase latrine demand through health education campaigns and sales of VIP latrine kits to households, and by the technical assistants, who provided supervision and encouragement to those who lacked confidence in their skills.

The training course gave Mr. Raleteng the skills he needed to establish himself in a new career. He has become very successful, creating a reputation as a competent and reliable builder and earning a steady income. Mr. Raleteng is proud of his work, and although he is sometimes teased by a few local men who consider latrine building a lowly occupation, he has had the last laugh, knowing that they are unable to earn the amount of money that he does.

As latrine construction proceeded, sanitation hardware needed to be integrated into overall efforts to improve health and hygiene. Studies were conducted of prevailing attitudes and levels of knowledge among the district's rural population, with emphasis on sanitation-related diseases. These studies suggested that a good proportion of the rural population tended to favor germ-related theories of disease transmission, although knowledge was often fragmented and not integrated into an overall theory of prevention and cure. To improve understanding, sanitation-related messages were integrated into other aspects of primary health care education already underway, such as campaigns related to water supply, nutrition, and mother and child health.

By 1986, activities in the Mohale's Hoek district had expanded considerably and work began on handing over the project to a district-based team. UNICEF agreed to carry over remaining funds from the pilot phase to continue to support activities in the Mohale's Hoek district, until this responsibility was fully taken over by the national government in 1987.

Strategies and methods of project implementation were developed in an iterative manner over the course of three years of experience in Mohale's Hoek. While the pilot phase was able to significantly exceed its construction goals, the government's ultimate determination of success was based on the project's ability to create a solid, operable framework for developing sanitation services, working within existing administrative structures and with a low level of state financial involvement. With pilot phase judged a success, at the end of 1986, the decision was made to expand the project and to attempt to replicate success on a national scale, as the Government of Lesotho endorsed a National Rural Sanitation Program (NRSP). UNDP agreed to support the expansion of the program by providing funds for a three-year period (1987-89) for a national core team, made up of experienced field workers from Mohale's Hoek.

The strategy for the national plan called for a phased series of district-based sanitation projects, maximizing the private sector's involvement in planning, managing, and implementing improvements. The national plan stipulated that the district projects should be thoroughly integrated with rural water supply and primary health care programs, sharing staff and other resources as much as possible. The Government of Lesotho demonstrated its commitment to rural sanitation by incorporating the national sanitation strategy into its 1986-1990 national development plan.

As the rural sanitation program expanded to national scale, it retained a focus on district-level activities, and donor funding proceeded on a district-by-district basis. This allowed the NRSP to work within the existing district-based administrative structure of the government. The expansion relied heavily on external funding, with international donors financing all of the capital and training costs of district programs for the first three years, and funding a limited amount of the recurrent costs on a declining basis. In 1986, with ODA funding, the program was launched in the northern districts of Leribe, Butha-Butha, and Mokhotlong. In the following year, USAID began support of the Quthing district program and the Government of Ireland agreed to support the program in the Berea district. The Swiss Development Corporation signed an agreement in 1989 to fund the Maseru, Thaba-Tseka, and Qacha's Nek districts, and the Reconstruction Loan Corporation of the Federal Republic of Germany (KfW) agreed to fund the Mafeteng district program; by 1990, all ten districts of the country had funding agreements or functioning district programs. The Lesotho government also increased its overall program funding, to a level of roughly 25 percent of total program costs, with donors financing 50 percent and rural households contributing 25 percent. Over time, as district programs become well-established and initial training and organizational costs decline, the contributions of householders as a percentage of total program costs will increase substantially and the percentage of costs financed by external donors will decrease.

At present, Lesotho's National Rural Sanitation Program maintains a bi-level structure, with responsibilities delineated between the national and the district levels. Overall operational coordination of the NRSP is the responsibility of a core national team. This team handles general organization, develops education and training materials, conducts national monitoring and evaluation, extends technical support, trains district teams, and backstops active district programs. The national team consists of a national rural sanitation coordinator, a chief technical officer, a health education and training officer, and a monitoring and evaluation officer. In addition, there are two national training teams: one made up of four technical assistants (who teach the techniques of latrine construction), and the other consisting of two health assistants (who concentrate on health and hygiene matters). These two training teams instruct district teams and give general back-up to district programs, particularly in the early stages of development.

Actual field implementation is the responsibility of district sanitation teams. These are made up of a district sanitation coordinator (usually a senior health assistant) and a field staff made up of four health assistants (provided by the Ministry of Health) and four technical assistants (provided by the Ministry of the Interior). The district sanitation coordinator is responsible for the general management of the district program, and accounts for program expenditures under the supervision of the district health inspector. Field staff take responsibility for local sites and undertake training, promotion, and health and hygiene education at the village level. They often work with local volunteers such as village health workers.

A combination of on-the-job, in-service, and fellowship training is provided at the national and the district levels. Most senior national staff have received overseas training, and all have worked extensively with the international experts who have worked in Lesotho. Local training is given to new district teams, starting with approximately one month of in-service training and continuing with five to six months of on-the-job training and supervision before assuming full responsibility. A newsletter was launched in 1988 to improve communication among those involved in the program at the national, district, and village levels.

During the pilot phase of the rural sanitation project most aspects of project implementation were carried out with assistance from international experts. When the pilot project was expanded into a national program, technical and capital assistance from external support agencies was instrumental in making the transition. Over time, however, the role of international experts has diminished as domestic institutions have developed and national counterparts have assumed responsibility. In 1989, the efforts of the UNDP-World Bank chief technical adviser to the program were terminated ahead of schedule, since core national staff were trained and in post and the institutional framework of the NRSP was felt to be well-established.



## Women Latrine Builders

Roughly one in four of all latrine builders trained in Lesotho is a woman. Interesting contrasts have emerged between the sexes as far as orientation and attitudes toward the work of a LLB. While men have been found to be generally more versed in construction techniques and to have more of a market orientation, women have been more aggressive in creating demand for their skills, having no qualms about house-to-house promotion. While men usually work alone, women nearly always work with a partner. In addition, women have been generally less dissatisfied with price guidelines and contracts worked out with village chiefs; male builders have been known to take action on this problem by charging more for their work than stipulated in the contracts.

While female LLBs have on average built fewer latrines than the males, compassion and cooperation often seem to be stronger motivators among women than simple profit. This has been shown by a greater willingness among women to build latrines for people who cannot assure them of payment, attempts to keep prices down (despite dissatisfaction with pay), and a willingness to voluntarily train other women as builders.

The Monnanyane household in Tsime, Butha-Buthe district provides an example of the life of a female LLB. There are two latrine builders in the family: Mr. Monnanyane, who works as a house builder and occasional latrine builder, and his wife, Mateboho Monnanyane, who pursues latrine building full time and has completed 40 VIPs, perhaps more than any other woman in the country.

Mrs. Monnanyane not only constructs latrines, she also actively markets her skills, going to neighboring towns to offer her services. Sometimes she goes house to house, telling of the importance of having a latrine, sometimes she visits the local chief to get his support. She has trained five other builders, one man and four women, who are now constructing on their own. And although the number of builders has increased in the area, she says there is still plenty of demand for her work.

Mrs. Monnanyane is a true entrepreneur, and the success of her building has led to thoughts of expansion. She's thinking of buying materials and constructing latrine superstructures at her house--a sort of mass production effort. Her background as a village health worker has convinced her of the need for improved latrines.



*Mateboho Monnanyane, one of Lesotho's most prolific latrine builders, with an example of her work.*

"Being a village health worker was a logical jumping off point to becoming a latrine builder," her husband says with pride. "I have understood why she does it from the beginning because she had been a village health worker, so it makes sense that she's gone on to building latrines. She's working for everyone's health, particularly children's."

In fact, her husband says, the hard work she does, such as cutting rock to dig pits, often makes her sick. Some people take advantage of her, not paying as much for a local person as they would for someone from outside the community. And even though the ground may be harder to dig out in some areas, she is paid the same amount for each job--around 70 maloti (US\$35) per latrine, about 30 maloti less than many men earn.

What keeps Mrs. Monnanyane going? "I want to make an impression on the village," she says. "There is competition when I go to other villages, but people request me because I have a good reputation. This is my work."

**MODULE 7: SANITATION**

**SESSION 26: STRATEGY FOR SUCCESSFUL PROGRAMMES**

**READING II**

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**PROMOTION OF RURAL SANITATION IN BANGLADESH  
WITH PRIVATE SECTOR PARTICIPATION**

**PILOT PLAN FOR PRIVATE PRODUCERS' PARTICIPATION**

**Chadha, S. and Strauss, M.  
Swiss Development Cooperation**

## **4. Pilot Plan for Private Producers' Participation**

### **4.1 The Central Question**

While Bangladesh as a whole is the addressed market for rural sanitation product, there are at least three distinctly different channels for meeting this total demand namely:

- the formal sector through the formal public sector
- the Private producers
- the NGOs

The reader is, at this stage, directed to refer back the discussion on the strength and weaknesses of the different channels of delivery of sanitation products (3.5) before going further in the discussion to follow.

It will be interesting here to speculate what would happen if the private sector was involved in the production of latrines sets on similar conditions like the formal sector. If the distributing agency (either public or private) can procure the latrine sets from either the formal sector or the private sector before marketing the latrine units with or without subsidy to the beneficiaries; the public sector production would have to directly compete with the private sector production. Which channel would be able to supply more and economical sanitary latrines is a question for which the answer looks pretty obvious. Such an arrangement would, however, put additional load on monitoring efforts needed to sustain such a system. Monitoring of production of quality latrines and control on the actual sale and subsidy extension to the beneficiaries would then become very important. Such a system can, however, perhaps not be proposed in the present context where the situational parameters of past developments have to be taken into consideration. Moreover, it is also possible to improve upon the production capacities in the public sector.

The authors consider that the role of the NGOs in the promotion of sanitation is interesting (because of their capacity to direct to mainly poorest segment of society) but will need some re-thinking in terms of its monitoring. DPHE is the main delivery channel but it will never be able to meet the demand in the country. It is also understood that this channel can not be easily multiplied in size as it will lead to a very large scale bureaucratic set-up making the dismantling operation rather difficult, if

found necessary later on. The necessary complementary delivery channel should be a flexible one which can adopt itself quickly to the area based market requirements and changes in demand in need of better service.

**The central question, therefore is, whether we all concerned with sanitation promotion, are serious to involve the private producers or not.** The strategies to follow entirely depend upon how we answer the above question. If the answer to the above question is yes then the strategies necessary to increase the sanitation coverage in Bangladesh should look at all the DPHE, the NGOs and the private producers as complementary channels for delivery of sanitation components and should aim at producing the total most optimum results. The strategies must address and develop all the three channels of delivery.

## 4.2 Outlines of the Pilot Plan Proposal

So far the Unicef/GoB strategies followed for improved sanitation coverage have only concentrated on the use of the formal subsidised channel of delivery and only a minor attempt, with limited success, has been made to involve NGOs. No direct strategies have been evolved in involving the private producers as a delivery channel for sanitation components.

If we now start attempting to actively think about and facilitate involving the private producers in the marketing of sanitation components, it will be interesting to first ponder about the kind of strategies that have negative or positive influence on the participation of the private producers. The following factors influence the private producers participation per se in the negative direction:

- Increase in the level of subsidy per set delivered through the formal sector.
- Further enlargement of the formal sector channel of delivery
- Reduction of number of rings per set delivered through the formal sector without complementary sale of additional rings from private producers and a single outlet sale
- Convincing the rural population that the one slab one ring ratio is sufficient for a sanitary latrine.
- Involvement of the formal sector even in mobile sale and mobile production centres.

As we can see institutional strategies in Bangladesh have been followed to provide support in all the above mentioned directions. In other words this has led to blocking of the private producers in the market rather than to support their increased participation.

The only strategy that has helped the private producers is the increase of effort on the improved motivation of the rural population for the need of a sanitary latrine.

The authors suggest that for the best possible sanitation coverage both the formal and the private sector participation has to be optimised in totality so that the natural strengths of the delivery channels are used in a way to complement each other for a most efficient combination mix.

The sanitation programme covering the whole country has, by now, a very long-standing and accepted system. So as not to disturb the present balance without understanding all the elements of any new strategy applied, it is suggested that new strategy for involvement of the private producers should be pre-tested as a pilot exercise in a limited area and evaluated before its application on a wider scale.

The Pilot Plan for Private Producers' Participation (5-P exercise) suggested below is based on the underlying principle that they should not be a reduction of the present level of organizational set-up of the DPHE channel of delivery which should be maintained at the planned level (By June, 1991) of 1,000 DPHE production centres in the country. This however, does not exclude that the DPHE delivery channel can not be further improved in its production and delivery efficiencies to increase the sanitation coverage.

#### **4.2.1 Objective**

The objective will be to actively promote participation of private producers in order to increase the sanitation coverage in the selected area so that an optimal mix of strengths of the two delivery channels i.e. the DPHE channel and the private producers is strived at.

#### **4.2.2 The Strategy**

A limited area pilot plan is launched in which an effort is made to carry out the following:

- DPHE production centres carry out only the production of latrine slabs including pans.
- The entire subsidy on the sanitation components is concentrated on the latrine slabs only.
- All production of necessary rings is carried out by the private producers.
- DPHE centres procure rings from private producers and market the total requirement of the customers.
- To promote a system for mobile sale and mobile production through the involvement of private producers.

- To considerably increase efforts in motivational activities in the limited area.
- Complementary superstructures are marketed through private sector.

The main item in the latrine components is the latrine slab which has no alternate use. Every slab is a latrine. This will mean that the entire DPHE production capacity is directed towards production of latrine slabs which in fact will entail in delivery of more latrines in comparison to any other strategy followed so far. The subsidy level on the sale of the recently nationwide introduced FC slab is already rather high (though less than the previous RCC slab) being of the order of 60%. This level of subsidy can be retained or even increased to include also the subsidy now being offered on the sale of rings, if one stresses on the delivery of the same amount of subsidy as at present in terms of the absolute figure. The rings, however, have found even alternate uses. The present level of subsidy on the first ring is of the order of 70% whereas the subsequent rings are sold at a subsidy of about 35%. It is suggested that this subsidy on the rings is eliminated or at least not delivered in the form of subsidy on the rings. If more or less the total subsidy being offered presently is retained and given on the slab it will amount to sale of slab at a nominal token price.

The proposed 5P exercise experience will show the exact working arrangement that may be most feasible for complementary operation of the public sector and the private sector.

#### **4.2.3 The Plan Elements**

The 5-P exercise adopting the above strategies in a limited area will consist of the following elements:

- Selection, enrollment and pre-selection of potential entrepreneurs for imparting training
- Training of the potential entrepreneurs. This will consist of three types of training:
  - Training in identification and development of entrepreneurial skills
  - Training in production of proper latrine sets and marketing skills
  - Training in production of other complementary items for business promotion
- Extension of one time assistance to the selected entrepreneurs perhaps in the form of free moulds and tools and the extension of credit to set up private enterprises of both fixed location and mobile type. The need of credit has been strongly felt during the survey carried out under phase II. Refer section 1.2.
- Motivation of the rural population in use and procurement of sanitary latrines.

- Monitoring of the pilot programme to include the following aspects:
  - ▣ Monitoring of the use and repayments of credit funds
  - ▣ On going monitoring of the pilot programme to ensure that the intended path is being traversed and to carry out necessary adjustments immediately.
- Evaluation, reviews and reporting of the progress of the pilot plan.
- Final recommendations and report for wider implementation strategy.

The details of the working methodology of each of the above elements of the pilot plan and the interaction between the institutional organisations and the private producers has been more or less developed after the receipt of a comments on the phase III report i.e. during Phase IV. There is a potential advantage of the use of the DPHE staff in imparting training in the production of latrine components to the private producers etc.

#### **4.2.4 Schedule of Activities**

It is suggested that the pilot programme is carried out for a period of two years to refine the various elements on the basis of experience for an extended wide scale application.

The schedule of activities will be included in the detailed 5P proposal.

#### **4.2.5 Selection of Geographical Area**

It is suggested that for the pilot programme with a suitable monitoring of the intervention, three upazilas are selected on the basis of the following criteria:

- All the three upazilas should be adjoining to facilitate training, monitoring & evaluation and exposure to the motivational efforts.
- The selected upazilas are generally from the areas of sandy soil requiring more number of rings for pit stability
- The selected upazilas should be large enough with not more than preferably one but certainly not two DPHE production centres to provide advantages for mobile sale and production possibilities. This should naturally take into consideration not only the physical distance but also the logistics of the existing infrastructure in its purview.
- The area should preferably not be the one already actively served by any NGO.
- The area should be preferably from the diarrhoea prone areas (216 upazilas) or C.D.D. (Control of diarrhoeal disease) area (102 upazilas)

- Should be preferably from the IA area (146 upazilas)

It is understood that the above is an ideal list of criteria and during the exact selection, some compromises shall have to be made.

#### **4.2.6 Requirement of Resources**

An introduction of the above will obviously require resources of various types namely:

- Financial resources to cover the cost of one time assistance, credit, training, motivational activities and personnel.
- Trained personnel on short term from within and outside the existing strength of DPHE and Unicef to cover the elements like training and advisory services.
- Equipment for necessary logistic support

#### **4.2.7 Organizational Set-up**

It is suggested that, as far as possible, the existing personnel resources are utilized to facilitate retention of sustained experience for the programme efforts. The exact interaction between different organizations specializing in training and credit monitoring of small scale enterprises shall be given in the detailed proposal.

### **4.3 Benefits**

Following are some of the expected benefits to result from this proposal:

#### **4.3.1 Increased Coverage**

The total institutional coverage of the rural population shall increase considerably because the DPHE shall be producing only slabs. It is anticipated that even with the present level of efficiency DPHE centres shall be able to produce as many as 600 latrine slabs per year per centre. With the planned improvements in the efficiency in production and associated with only the production of slabs in the centres the total DPHE production capacity should become 800 latrines per centre per year.

#### **4.3.2 Flexibility in Meeting Demand Needing Subsidy**

The effect of the greater motivational development and social mobilisation, as envisaged, will lead to an increased demand of all types because as discussed under 3.2.2 the demand curve will move to the right and upwards by this effort. There shall be a greater demand for people who can afford Tk. 450 and above. These people will



be able to buy either from the private sector or from DPHE centres (since the subsidy is not directed to the poor only). But the major increase shall be for the people who cannot afford the market price and are dependent on the subsidised price. The 5P proposal offers a very important avenue through which production capacity of the subsidised sale shall be increased dramatically without further investments in the public sector. Besides the people will be able to purchase any number of rings from 1 to 5 along with the slab depending upon their need and choice.

#### **4.3.3 Subsidy and Pricing**

It is interesting to note that the prices will not vary from the present very much. Since the entire subsidy will be based on slab which will have practically no separate price, a 1 slab : 1 ring latrine will cost Tk. 60 only and a 1 slab : 5 rings latrine will cost Tk. 300 which compares well with the present pricing level based on the assumption that the market price of a ring is Tk. 60. This will also mean that the subsidy level will be more stable and will not automatically rise very much due to rise in material costs.

#### **4.3.4 Employment Generation**

A number of private enterprises will be set up for the production of rings. Each such unit will employ about 3 persons and the total number of enterprises thus supported will correspond to the total need created.

### **4.4 Detailed Proposal**

The above discussion under item 4.2 provides for an outline of the proposal only. Detailed comments from the various persons have been received during Phase IV on the Phase III report on Promotion of Rural Sanitation in Bangladesh through the Private Sector. A draft report on the detailed 5P proposal is available separately and covers a number of relevant topics.

It contains the detailed modus operandi of each of the elements of the plan mentioned above like various kinds of training, selection of geographical area for intervention, suggested mix of medias for improved motivation, close co-ordination with developments in action research exercise, operational organization and manpower requirement etc. It also includes details of the credit scheme including various sub-elements like size of loan, interest on fixed and working capitals, grace period, re-payment schedules, incentive for timely recovery and role of the bank etc. Besides the information regarding equipment requirement and financial requirement it includes recommendations for survey of initial and final situation in the area regarding sanitation, monitoring, programme adjustments, evaluation of impact. The exercise will end with final reporting and recommendations.

**MODULE 7: SANITATION**

**SESSION 27: URBAN MARGINAL AREAS**

**OBJECTIVES**

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By the end of the session, you will be able to :

- \* assess the major sanitation problems in urban marginal areas;
- \* list four to five strategies that can be used for urban sanitation programmes.

**Session Flow and Methodology**

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- \* Video Presentation: Slum Improvement Project, Bangladesh
- \* Overview: Review of urban sanitation projects in different countries; strategies used and activities undertaken
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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1. Urban sanitation coverage levels have improved by three per cent in the past ten years from 69 to 72 per cent. However urban marginal areas have received the least attention. The problems of poor urban sanitation can be the greatest in terms of health, social and living conditions.
2. The major problems in urban slums can include the following:
  - crowded living conditions
  - poor excreta disposal facilities
  - inadequate drainage
  - insufficient waste disposal facilities
  - low literacy rates
3. The inter-actions between housing and human health are numerous (Cairncross, 1983). The location of the house can have important effects on the health of the inhabitants. This is particularly relevant to vector-borne diseases such as malaria or sleeping sickness where housing built close to high vector concentrations may increase disease transmission.
4. The manner in which the house design and location promotes or hinders domestic hygiene will have bearing on all diseases related to domestic hygiene. These are all the faecal-oral infections and all the water-washed infections including cholera, typhoid, rotavirus, E. Coli, polio, helminth infections, scabies, trachoma etc.
5. Housing has an influence on airborne infections including measles, diphtheria, meningitis, mumps, acute respiratory infections etc. Housing design will affect the transmission of airborne pathogens. Housing conditions will affect ventilation, air temperature and humidity, all of which will affect the transmission of air-borne pathogens. A smoke filled environment will also influence the susceptibility of individuals to respiratory infections. However no decisive relationship has been proven between larger better ventilated rooms and better health.
6. A major problem in developing countries is excreta and refuse disposal in high-density low-income communities. Such communities are found in increasing numbers around all major towns. High-density communities without adequate sanitation range from the totally unplanned squatter settlements and slums to planned high-density housing areas where adequate sanitation has not been provided, largely due to the absence of an acceptable system for which the community could afford to pay.

7. Water borne sewer systems are too expensive with very high capital construction costs. The initiatives of many internal agencies has led to the identification of a number of technologies which are less costly the water-borne sewerage as discussed in module three. Recent developments in shallow sewers have been encouraging (Habitat, 1990). This technology has been successfully applied in Brazil and Pakistan. Shallow sewerage can eliminate the public health risks usually associated with inadequate excreta and waste water disposal in areas of high population density.

8. Drainage in many communities is considered a priority need. This is partly due to houses built upon unstable land since it is the most affordable (Cairncross, 1991). Health problems caused by poor drainage can include malaria, schistosomiasis, filariasis. However drainage improvement can be very costly and beyond the scope of UNICEF-assisted programmes. Low cost drainage projects have been implemented which are community intensive. In many urban areas there are existing drainage systems than can be rehabilitated at low cost with some engineering assistance and good community participation.

9. Some of the more successful urban sanitation programmes have been ones where the communities have been very involved e.g. Baldia and Orangi in Pakistan, Tegulcigalpa, Honduras. In Nepal (Ghur, 1985) a community-based cleaning programme was instigated after the people were consulted as to their needs and priorities. Clear project objectives should only be formulated after the views of the communities have been collected. Assistance is more likely to be forthcoming if the project responds to the needs of the people.

**References and suggested readings:**

Cairncross, S. and Feachem, R. 1983. Environmental Health Engineering in the Tropics: An Introductory Text. John Wiley & Sons.

The Design of Shallow Sewer Systems. United Nations Centre for Human Settlements (HABITAT). Nairobi, 1986.

Cairncross, S. and Ouano, A.R. 1991. Surface Water Drainage for Low-income Communities. WHO.

Guhr, I. 1985. Alternative Sanitation in Bhaktapur, Nepal. Community Development Unit. Nepal.

## **MODULE 8: MOBILISING SUPPORT**

*SESSION 28: IDENTIFYING ALLIES AND PARTNERS*

*SESSION 29: PLANNING MOBILISATION STRATEGIES*

## **MODULE 8: MOBILISING SUPPORT**

### **SESSION 28: MOBILISING SUPPORT FOR WATER, SANITATION AND HYGIENE EDUCATION**

#### **OBJECTIVES**

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By the end of the session you will be able to:

- \* identify the kind of support needed for effective water, sanitation and hygiene education programmes;
- \* list appropriate political, economic, social, commercial and religious allies or partners who could support WATSAN and hygiene education activities;
- \* assess the contributions these partners could make, how often, for how long, and on what basis;
- \* identify the major steps required to mobilise support for water, sanitation and hygiene education;
- \* identify how the New Delhi Statement can be used to mobilise support.

#### **Session Flow and Methodology**

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- \* Video: Race Against Time
- \* Overview by Facilitator: The mobilisation process
- \* Exercise 1: Identifying appropriate partners and mobilisation activities
- \* Plenary
- \* Exercise 2: Using the New Delhi Statement to mobilise support
- \* Plenary
- \* Summary and Evaluation of Session

## Learning Points

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### Identifying Allies and Partners

1. Social mobilisation is an important way of expanding water, sanitation and hygiene education projects at little additional cost. It can provide awareness of the need for water, sanitation and hygiene education, widespread support and increased involvement at community level.
2. Social mobilisation is a process for planning and implementing a variety of mutually reinforcing communication activities to achieve specific goals. It aims at engaging a large number of people, groups and organisations in action for achieving these goals through largely self-reliant and sustainable efforts. Social mobilisation relies on group or institutional action and the networking opportunities this provides. In the water, sanitation and hygiene education context, social mobilisation is a planned process to support large-scale implementation and involvement in integrated projects that will benefit children and families.
3. The social mobilisation process is concerned with mobilising human, financial and technological resources through several approaches. These are:
  - a) Political mobilisation, which aims at getting political commitment for a specific goal and attaining necessary resource allocations. The targets are national policy and decision-makers. The methods are advocacy through meetings, seminars and use of the mass media.
  - b) Government mobilisation, which aims at informing and enlisting the support of senior civil servants, service providers, and other government organisations which could provide direct or indirect support, including the mass and traditional media. The methods used include training programmes, study tours and mass media.
  - c) Commercial mobilisation, which aims at enlisting support of national and international companies to promote and support water, sanitation and hygiene education projects. The method used would be advocacy.
  - d) Community mobilisation, aims at informing and gaining to commitment of local political, religious, social and traditional leaders and any locally-based government and non-government organisations. The methods used are training, consultation, special events, campaigns at local level, participation in planning exercises, community needs assessments and use of mass media.



- e) Beneficiary mobilisation, aims at creating demand for and encouraging utilisation of services and changes in behaviour. The methods used are information, education, motivating and empowering householders and beneficiaries to undertake self-reliant action.

4. To mobilise support you must start with a very clear idea of exactly where you need support, what needs to be done, how you would like different groups or individuals to assist and for how long.

5. With increasing UNICEF focus on mobilisation there is an increased likelihood of "mobilisation overload" and "burnout" as the same people, groups, organisations are mobilized to support different CSD activities. This is particularly true of well established women's organisations or groups. To avoid this, mobilisation for water, sanitation and hygiene education must be co-ordinated with the mobilisation efforts of the country programme.

6. Important allies fall into two major groups - those who can influence political and/or economic policy; and those who provide widespread or popular appeal for water, sanitation and hygiene education activities. The two are not necessarily mutually exclusive!

7. The commercial sector can sometimes provide very important support for water, sanitation and hygiene education. Manufacturers of pans, pipes, plastic products, soap and cleaning agents can carry health and hygiene messages on, or with, their products. Those who already advertise can be persuaded to include a health or hygiene perspective to their advertising. This costs them no more but provides support for health and hygiene goals.

8. To mobilise support you must go through steps similar to those for motivating changes in behaviour. People must:

- know about the programme and its benefits;
- be interested and attracted by the goals;
- understand the benefits to themselves;
- be motivated and encouraged to do something to help;
- be given recognition for their support.

9. Support is easier to obtain if the personal or corporate advantage in doing so is made clear. This may be earning personal merit, maintaining a good political or social image or improving business.

**Methods to Mobilise**

10. Methods of mobilisation vary with the target audience and the society. They can include seminars, consultations, field trips, inter-ministerial briefings, workshops, letters. The amount of participation allowed in the seminars, field trips etc. influences the level of commitment obtained. The amount of follow-up directly influences the duration of commitment.

11. Mobilising support takes time and careful planning. To avoid wasting time and effort you should choose possible partners carefully and ensure that the activities they will be responsible for are well co-ordinated with other support activities. Some of the more obvious criteria for selecting partners are:

- widespread networks among the groups you are hoping to reach
- good resources
- aims or activities that are consistent with those of UNICEF
- a good reputation
- high status
- credibility

12. Responsibility for mobilisation efforts within UNICEF and between government ministries and other partners must be clearly spelled out.

13. Factors to consider are:

- what kind of support can be expected?
- how long can support be expected for?
- what do our allies get out of it?
- what do UNICEF/government/beneficiaries get out of it?
- how sustainable is support without UNICEF input?
- what are YOU prepared to do?

**The New Delhi Statement**

14. Enhanced communications and mobilisation for water and sanitation was demanded at various consultations leading to the Global Consultation held in New Delhi, September 1990. In the New Delhi Statement, produced from the Consultation, which was endorsed by 71 heads of states attending the World Summit for Children in September 1990, and in the United Nations Resolution (A/RES/45/181) that was passed, it was noted that mobilising support at all levels was essential.

15. The New Delhi Statement noted:

**'Political commitment is essential and must be accompanied by intensive efforts to raise awareness through communication and mobilisation of all sections of society'.**

16. The water and sanitation sector needs to be placed higher upon the political agenda, both globally and nationally, via sustained mobilisation. This may result in more resources from donor agencies, government and users.

17. The New Delhi Statement can be used for fostering professional solidarity for concerted action and forming coalitions for inter-sectoral support, to disseminating information to target audiences through mass media, social institutions, and interpersonal communication. Monitoring and evaluation should be an integral part of the activities in the continuum.

18. The sector, from planners to field implementers in voluntary agencies, in order to face the challenges ahead, must first internalise the lessons of the decade and make the necessary changes. The sector should improve its ability to communicate effectively at all levels and to commit itself to participatory community-based management of programmes.

19. For the crucial tasks at various levels, it is essential to earmark a percentage of water and sanitation resources to activities in the social mobilisation/communication continuum. This will assist to strengthen political will, generate more resources, facilitate community management and cost recovery, ensure maintenance of projects and encourage effective hygiene behavioural change. Investment in this area of work is relatively low compared to its benefit in the overall work of the sector. Indeed communication for mobilisation can break or make the movement towards water and sanitation for all.

**References and suggested readings:**

The New Delhi Statement. Global Consultation on Safe Water and Sanitation for the 1990s. New Delhi, India. 10-14 September 1990.

United Nations Resolution (A/RES/45/181). 20 February 1991.

**MODULE 8: MOBILIZING SUPPORT**

**SESSION 28: MOBILIZING SUPPORT FOR WATER, SANITATION  
AND HYGIENE EDUCATION**

**EXERCISE 1: IDENTIFYING APPROPRIATE PARTNERS AND  
MOBILISATION ACTIVITIES**

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The group as a whole should develop criteria for selecting appropriate allies and partners for water, sanitation and hygiene education programmes.

**MODULE 8: MOBILIZING SUPPORT**

**SESSION 28: MOBILIZING SUPPORT FOR WATER, SANITATION  
AND HYGIENE EDUCATION**

**EXERCISE 2: USING THE NEW DELHI STATEMENT TO MOBILISE  
SUPPORT**

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Discuss in your groups how you could use the New Delhi Statement to mobilise country support.

**MODULE 8: MOBILISING SUPPORT**

**SESSION 29: PLANNING HEALTH EDUCATION AND MOBILISATION STRATEGIES**

**OBJECTIVES**

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By the end of the session you will be able to:

- \* identifying any changes that should be made to your water, sanitation and hygiene education programme to ensure adequate integration of health and hygiene education and mobilisation;
- \* develop a plan for incorporation of health, hygiene education and social mobilisation.

**Session Flow and Methodology**

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- \* Overview by Facilitator: Planning the Social Mobilisation Component
- \* Group Work: Review existing water, sanitation and hygiene education programmes and develop a social mobilisation plan for water, sanitation and hygiene education.
- \* Plenary
- \* Evaluation of Session

## Learning Points

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1. The social mobilisation component is integral to the water, sanitation and hygiene education programme. It must be planned as such and adequately budgeted for.
2. There are a number of sequential activities needed prior to developing the plan: These include:
  - review overall programme goals and objectives
  - include communication-related goals where appropriate (these are often related to behaviour change)
  - identify behaviour changes needed to meet the goals and objectives
  - assess likely constraints
  - review overall situation
  - review communication resources available and/or needed
  - identify the target audience
  - review budgetary resources
3. The plan should allow for:
  - research on target audience/audiences - the community situation; existing knowledge, attitudes, practice and beliefs; media habits; communication channels available; constraints to changing behaviour
  - communication/mobilization goals and objectives
  - message development
  - identification of media and communication channels
  - identification of personnel and training needs
  - plan for communication/health education training (who, where, how long, in what)
  - development of training materials
  - review and pre-test training materials
  - time sequence for training
  - responsibility for training
  - develop communication support materials
  - pre-test messages and materials
  - time sequence for communication support activities
  - monitor and evaluate
4. The plan must state who will be responsible for each of these activities and which organisation will be responsible for overall co-ordination.



5. All those responsible for helping implement the health and hygiene education component must be given the opportunity to discuss the plan.
6. Co-ordinated planning and monitoring must initially take place within the UNICEF office. This may mean the establishment of a regular in-house meeting of water, sanitation, health, education, women's programmes and PCI personnel.
7. The social mobilisation plan must be developed in association with the overall plan to ensure synchronisation of activities. Too often demand and supply activities take place in isolation from one another. Demand is created where supply is not yet available or supply is provided where there is no demand.
8. While communication/promotion activities for water and sanitation are given lip service they are often glossed over in the planning stage. The rhetoric is reduced to a fuzzy sentence or two. For example: "Communication support will be provided", or "appropriate posters will be developed", or "communication activities - \$50,000". Each activity must be clearly specified, give a time-frame and a budget and responsibility delegated.
9. In developing the overall social mobilisation plan it is more manageable to draft four individual plans - one for research; one for the mass media; one for mobilization; and one for face-to-face health and hygiene education through both formal and non formal channels. Once these have been drafted it is a relatively easy task to put them together and to integrate them into the overall plan.
10. Allow for regular monitoring and follow up.