Preparatory Workshop

Promising Water Resources Management Approaches in the Drinking Water Supply and Sanitation Sector

UNDP - IRC

The Hague, 20 - 29 November 1996

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CONTENTS

GENERAL INFORMATION

Welcome to The Netherlands

This brochure contains information pertaining to our 'Preparatory workshop on promising water resources management approaches' in The Hague, from 20-29 November 1996.
Although we have tried to be as complete as possible, you may still have questions. Please do not hesitate to contact one of the staff members involved in the workshop, who will be glad to assist you.

Venue

IRC International Water and Sanitation Centre
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The Hague (Scheveningen)

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E-mail general@irc.nl

Postal address: P.O. Box 93190, 2509 AD, The Hague, The Netherlands

Sessions

Morning	09:00 - 12:30
Lunch	12:30 - 13:30
Afternoon	13:30 - 17:00

Hotel accommodation:

IBIS Hotel
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Scheveningen

telephone 31 (0)70 -35 433 00
telefax 31 (0)70 -35 239 16

Staff Involved:

Mr. Peter Bury
Mr. Jan Teun Visscher
Mr. David Saunders
Ms. Esther de Lange

Logistic coordination:

Ms. Loekie Broersma
Ms. Janine IJssel de Schepper

THE PROJECT

The International Water Supply and Sanitation Decade (1980-1990) has given a strong impulse to improve worldwide drinking water supply. It also helped to increase attention for sanitation and education. However, growing world population, rapid urbanization, increasing agricultural and industrial production, coupled with erratic changes in weather and climate patterns have led to the awareness that water is not an unlimited resource. We are realizing that we do not treat the resource water with very much care. Examples of inefficient water use (large-scale irrigation, leakages in piped systems), wasteful water use (irrigation, industry, household water use), pollution of ground and surface water (non point source pollution by fertilizer application, acid rain), and conflicts about water (Middle East, agriculture versus hydropower versus drinking water) abound. In the past water supply and sanitation projects (WSS sector) have given little if any attention to these kind of problems. Many issues related to improved water resources management need to be tackled urgently. This was the reason for the IRC International Water and Sanitation Centre together with the United Nations Development Program (UNDP) to initiate a project to collect, analyze and disseminate interesting experiences with water resources management in the drinking water supply and sanitation sector. Experiences in this field are still limited.

A number of projects, with a focus on WSS in various parts of the world, working at various levels of intervention (national, regional, local) have been invited by IRC to participate in the project 'Promising water resources management approaches in the drinking water supply and sanitation sector'. The objective is to jointly assess and document promising experiences in WSS addressing water resources management-related issues.

The Water Resources Management (WRM) project consists of the following phases: (1) formulation of a framework for discussion and assessment; (2) identification and involvement of interesting cases world-wide; (3) a first discussion / training workshop to prepare the assessment of promising approaches; (4) the assessments; (5) evaluation and documentation of the outcomes of the assessment in a second workshop; (6) publication and dissemination of promising approaches

A small international advisory group has been requested to play an advisory and backstopping role.

The first workshop in November 1996 will bring together staff from the participatory projects dealing at various levels with water resources management- related issues, the members of the international advisory group and staff from IRC.

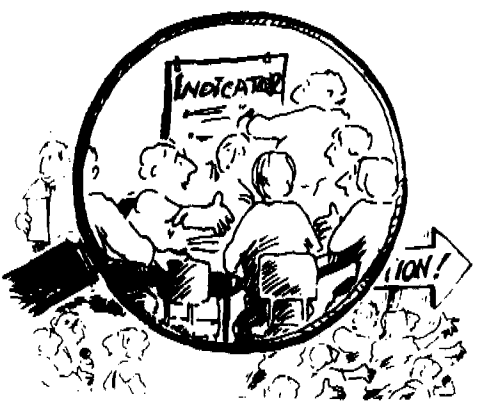
The workshop objectives

The workshop aims at developing a joint framework and methodology for a participatory assessment of practices in water resources management in each project's context. A consensus on principles, key issues and relevant indicators will be sought and participants will acquire participatory tools for assessment, communication and documentation of practices in water resources management.

Specific workshop objectives

More specifically the objectives of the workshop are to:

1. get to know each other and each others' experiences;
2. get an idea of the different projects;
3. formulate a framework and methodology for assessment;
4. become familiar with participatory assessment tools;
5. jointly define indicators and criteria for assessment;
6. discuss and practice reporting and documentation techniques;
7. formulate a plan and a timetable for the implementation of the assessment.



Workshop methodology

The workshop methodology is discovery learning oriented. Participants' own experiences and working context are taken as a starting point. Exchange and reflection on one's own experiences with other participants will contribute to insight and knowledge. A strong emphasis will be put on visualization and active involvement workshop methodology is discovery learning oriented. Participants' own experiences and working context are taken as a starting point. Exchange and reflection on one's own experiences with other participants will contribute to of all participants in conducting the workshop and documenting its outputs.

Together we will further discuss and refine the framework for the assessment exercise. This framework and additional knowledge and skills introduced during the workshop will help the participants to develop a participatory-based assessment approach and lead to a clear documentation of the project experiences with water resources management-related issues. Several tools and methods to allow for participatory assessments will be introduced and practiced, including group discussions, case studies, role plays, group assignments and reporting and documentation techniques.

The workshop is composed of a number of stages in line with the learning process, following the sequence as set out in the objectives. Different IRC staff members will facilitate reflection, diagnosis, analysis and discussion by all workshop participants. The staff will contribute specific knowledge and tools but also stimulate other participants in sharing theirs.

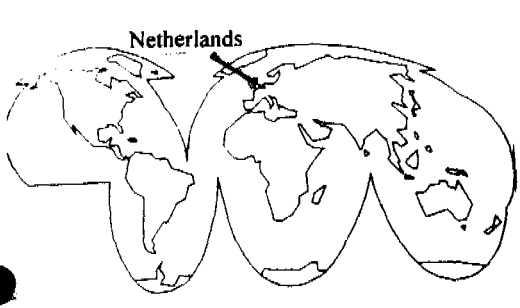
At the end of the workshop the group will agree on a joint timetable to conduct and document the individual project assessments. The roles of participating projects, advisory group and IRC staff will be further specified during the workshop.

Workshop programme

The workshop will be organized in blocks (see tentative program). In principle there will be two morning and two afternoon sessions every day with coffee, lunch and tea breaks in between.

The workshop allows for eight full working days and starts mid-week on Wednesday, 20 November. The first half week will be used to get to know each other, each other's working context and experiences, and to discuss and agree on the framework and leading questions for the assessment of experiences in water resources management. The second week will be used to introduce and apply participatory assessment tools, the formulation of criteria and indicators for the assessment and reporting. At the end of the second week we will agree on individual project workplan, timetable and further steps to implement the assessment of promising approaches in water resources management

FACTS ABOUT THE NETHERLANDS



The Hague (Scheveningen)

The Country

The Netherlands is one of the smallest countries in Europe, being between Belgium and Switzerland in size. The total area is about 13,600 square miles, of which more than half lies below sea level. A close network of canals connects lakes and rivers, forming over 3,700 miles of navigable inland waterways.

A common misconception is that the Netherlands is entirely flat. In fact there are several hilly areas; the south-eastern province of Limburg has low chalk hills through which the river Maas (or Meuse) winds its way before reaching the lowland of the Rhine-Maas-Scheldt delta. Further north, against the German border, heathland and forest cover more low hills, and then there are the vitally important sand dunes which protect the North Sea coastline; if these were breached, vast areas would be flooded by the incoming sea.

Climate

The Netherlands has a typical sea climate: rainfall is generous, with March, April and May the driest months with temperatures ranging from 10 - 20 degrees Celsius. The warmest are July and August, when temperatures may rise to 25 or 30 degrees Celsius and higher.

Workshop on Promising Water Resources Management Approaches in ti

Day / date	coffee available from 0830hrs			
	0900		1100	1130
Day 0; 19.11.96	• Arrival of participants in the Hague, registry at hotel & with IRC.			
Day 1; 20.11.96 Wednesday		• Opening by project manager. • Introduction of participants to each other. • Introduction to IRC, from Director.		• Participants exp Workshop object • Review of worksi programme & m
Day 2; 21.11.96 Thursday		• Day 1 report back., by project team. • Presentation of Posters.		• Reflection on pro advisory g p: • Introduction of fr issues by Adviso
Day 3; 22.11.96 Friday		• Day 2 report back. • technique on involving all participants. • Groupwork on identifying leading questions for framework issues. ROUND 1.		• Plenary session questions.
Saturday 23.11.96	"Free time" - participants will be free to go shopping, or see the sites in a			
Sunday 24.11.96	If of interest to participants a day visit to the delta works and southern N			
Day 4; 25.11.96 Monday		• Day 3 report back. • Introduction to identification & use of indicators. • Practice use of indicators.		• Practice use of in (cont.) • Plenary discussio practice.
Day 5; 26.11.96 Tuesday		• Day 4 report back. • Tool 2.		• Practical use of t • Plenary discussio 1&2
Day 6; 27.11.96 Wednesday		• Day 5 report back. • Tool 4.		• Practical use of t • Plenary di ssio 3&4.
Day 7; 28.11.96 Thursday		• Day 6 report back. Plenary session to finalise indicators for leading questions.		• Plenary session • Introduction to do techniques.
Day 8; 29.11.96 Friday		• Individual/ working group selection of principles, questions, levels & indicators.		• Prepare indivdual workplans; • general 5-6mth pl • detailed 1 month • present good idea

iking Water Supply and Sanitation Sector

1300	1400	1530	1600	1700
			• Welcome & drinks with IRC staff in evening.	
is. ogy.	• Practical organisation. • Brief introduction to card & poster visualisation tools.		• Prepare project posters.	
y rk & up.	• Reach concensus on main issues and principles.		• Introduction to library. **Drinks with IRC Staff, after work.**	
iing	• Groupwork on identifying leading questions for framework issues. ROUND 2.		• Plenary agreement on final "list" of leading questions.	
ar Den Haag. IRC will provide tram tickets and tourist information.				
nd may be organised.				
rs	• Introduction to participatory assessment tools. • Tool 1.		• Practice use of tool 1.	
ools	• Tool 3.		• Practical use of tool 3.	
ools	• Recap on all tools used in workshop & tools practiced. • Discussion on other tools - from participants.		"Free time" - mid week break to use library - go shopping etc...	
) iting	• Prepare annotated outline for assessment report.		• Wrap up workshop reporting. • Project communication.	
	• Wrap up workshop. • Workshop evaluation.		"Free time" - participants free to use library, or leave depending on individuals schedules.	

As from September, the temperature will gradually drop to approx. 5-10 degrees Celsius in November during the day. The nights are chilly and frosty. The cold north-western wind dominates the climate during this part of the year.
It is advisable to bring warm clothing, and a raincoat is a bare necessity.
December through February are the cold wintermonths, with temperatures from +5 to -15 degrees Celsius, sometimes with snowfall. A warm wintercoat is necessary to protect you.

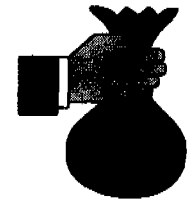
Shopping

In general, shops are open from 08:00 or 09:00 hrs. to 17:30 or 18:00 hrs. Thursday night is late shopping night, and most stores stay open till 21:00 hrs. In tourist centers like Scheveningen, shops are also open on Sundays.
In Scheveningen you will find the smaller souvenir shops, charging tourist prices. If you are looking for something less expensive, you may want to go to the department stores located in the center of The Hague, which can easily be reached by public transport. Tramline 8 will take you to the center of The Hague in approx. 20 minutes.

Currency, Banks

The Dutch unit of currency is the guilder or 'gulden'. This is divided into 100 cents. The abbreviation for a guilder is *f* placed before the amount written; this derives from the old name, a florin. Sometimes you will see Dfl or Hfl instead. Coins at present in use are:

5 Gulden	*f* 5,00	Kwartje	*f* 0,25
Rijksdaalder	*f* 2,50	Dubbeltje	*f* 0,10
Gulden	*f* 1,00	Stuiver	*f* 0,05



Banknotes are in denominations of *f* 10, *f* 25, *f* 100, *f* 250, and *f* 1000.
(Exchange rate per September 1996: US$ = approx. *f* 1,70)

Banks are open for exchange of traveler's cheques and so forth from 09:30 a.m. to 17:00 or 18:00 hrd. Mondays to Fridays. Some banks have recently decided to be open also on Saturdays from 10:00 to 14:00 hrs.
There are exchange offices open almost permanently at border, airports and big railway stations, such as in The Hague.

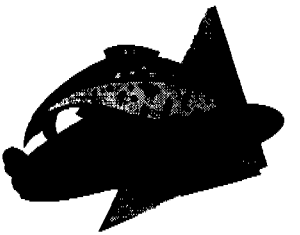
Electric Current

The voltage is 220V everywhere, with Continental 2-pin plugs. Adapters are not available in The Netherlands. If you would need one, remember to take one with you and check that it is safe to plug in before doing so.

Your Accommodation

The IBIS Hotel is a simple but comfortable hotel. The rooms are small but convenient with a private bathroom. In case you have any questions or are in need of assistance you can always turn to the reception desk.
The hotel is nicely located near the seashore of Scheveningen. Scheveningen is a village by the sea, adjacent to the city of The Hague. You can enjoy strolls along the beach and walks in the dunes, or visit the nice shopping areas.

Meals



Breakfast is included in your room price. In the canteen in the IRC building you can obtain lunch at a modest price.
In the direct surroundings of the IRC building and of the IBIS hotel there are a number of reasonably priced dining facilities. In the center of The Hague you will also find a large choice of (international) restaurants. Tram 8 will take you there in approx. 20 minutes.

Your Health and Insurance

During your stay for the workshop, you need to be insured for medical and hospital treatment, as well as third party liability.
If you wish, IRC can make arrangements for insurance at approx. US$ 75 for the duration of the workshop. The medical insurance, however, only takes care of health problems you did not have upon arrival in the Netherlands. The latter is very important; it means that dental care is almost by definition excluded. (In practice, the insurance will only pay for dental care after an accident)

TRAVEL DIRECTIONS FROM SCHIPHOL (AMSTERDAM) AIRPORT TO THE HAGUE (SCHEVENINGEN)

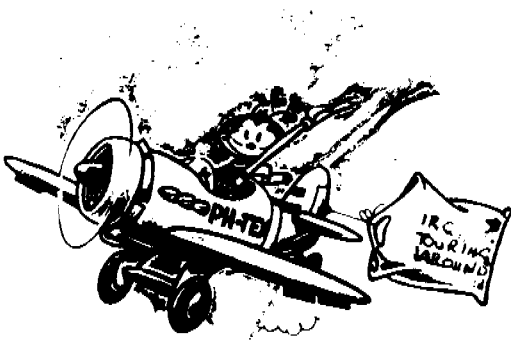
Together with this booklet, you will find a brochure about the airport. This brochure gives information on the train station and other facilities such as currency exchange. Before going to the train platform you need to buy a ticket. The cost of a one-way ticket (it is not possible to buy a return ticket) amounts to (Dutch Guilders) *f* 12,50. There are a few stations within The Hague. You need to travel to either to **Central Station (CS)** or **Hollands Spoor (HS)**

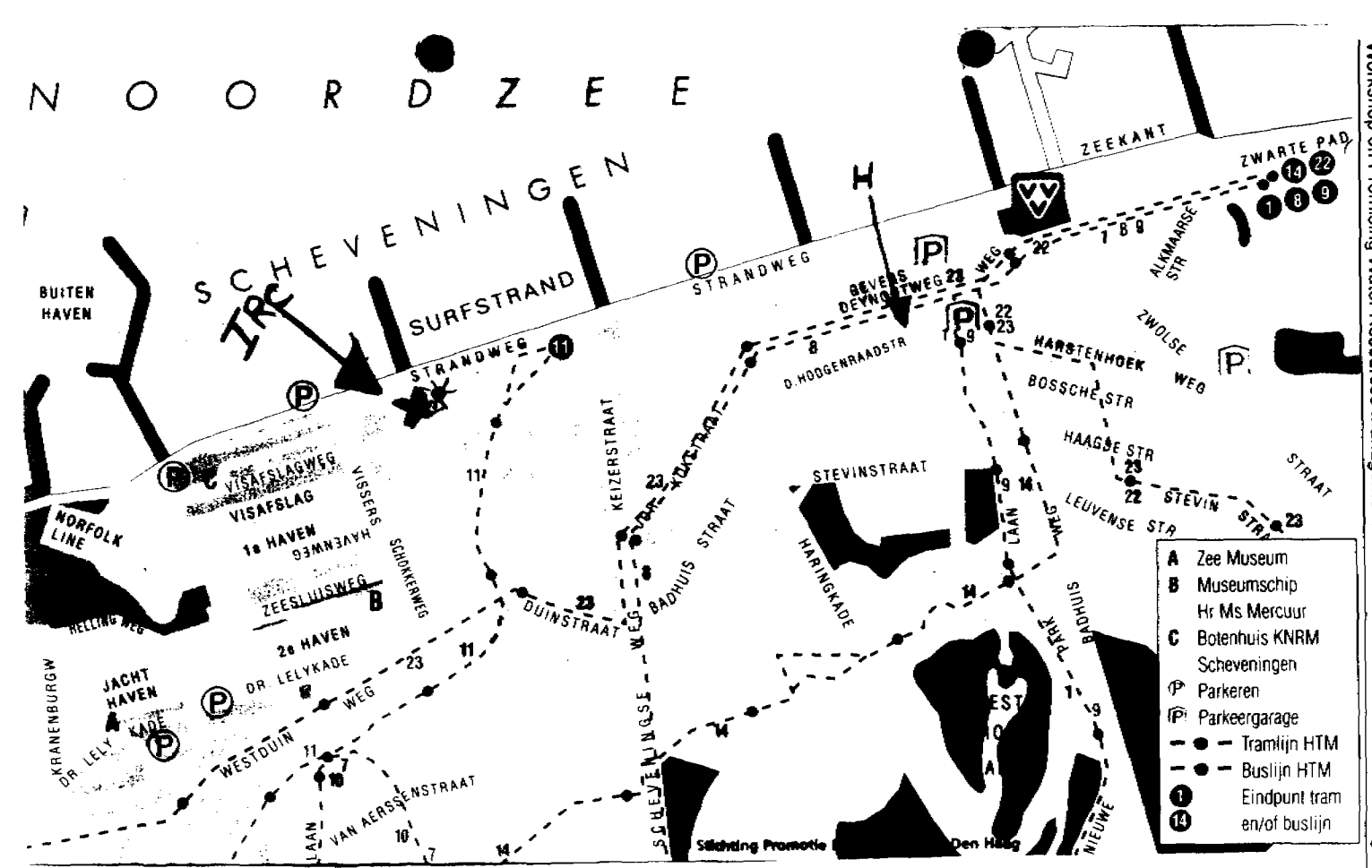
The trains that go directly to Central Station (that means no transfer in an other city needed) depart every 28 and 58 minutes past the hour. Upon arrival at Central Station (CS) it is advised to take a taxi to your end destination (e.g. your hotel or IRC). To travel by taxi to either IRC or a hotel at Scheveningen will cost maximum *f* 30,-.
Total travel time: Train 39 minutes, Taxi approx. 15/20 minutes.

The trains that go directly to Hollands Spoor (as above) depart every 16 and 46 minutes past the hour. Again a taxi is advised at the same cost as above.
Total travel time: Train 30 minutes, Taxi approx. 15/20 minutes.

Upon arrival at your chosen end destination, further information will be available for you. The marked X on the map below indicates the location of IRC.
Street address: VUURTORENWEG 37 (Vuurtoren = lighthouse). We are located right next to a red lighthouse.
The IBIS HOTEL is indicated with and H.
Street address: Gevers Deynootweg 63

P.S. PLEASE BE AWARE OF PICKPOCKETS. THEY OPERATE OFTEN ON AIRPORT(S) AND TRAIN STATIONS AS WELL AS ON THE BUSSES AND TRAMS.




NOORDZEE
SCHEVENINGEN
IJ
SURFSTRAND
STRANDWEG
BUITEN HAVEN
NORFOLK LINE
VISAFSLAG
VISAFSLAGWEG
1e HAVEN
2e HAVEN
ZEESLUISWEG
HELLING WEG
JACHT HAVEN
DR. LELYKADE
KRANENBURGW
WESTDUIN
VAN AERSSENSTRAAT
VISSERS SCHOKKENWEG
KEIZERSTRAAT
DUINSTRAAT
BADHUIS STRAAT
D. HOOGENRAADSTR
STEVINSTRAAT
HARINGKADE
ZEEKANT
ZWARTE PAD
ALKMAARSE STR
ZWOLSE WEG
HARSTENHOEK
BOSSCHE STR
HAAGSE STR
LEUVENSE STR
STEVIN STR
PARK
NIEUWE
A Zee Museum
B Museumschip Hr Ms Mercuur
C Botenhuis KNRM Scheveningen
Parkeren
Parkeergarage
Tramlijn HTM
Buslijn HTM
Eindpunt tram en/of buslijn

IRC INTERNATIONAL WATER AND SANITATION CENTRE

IRC is an independent, non-profit organization. Its international character is reflected in its ties with UNDP, UNICEF, the World Bank and WHO. For the latter the centre has acted as a Collaborating Centre for Community Water Supply and Sanitation since 1968. A core budget is provided by the Netherlands Government's Ministry of Housing, Physical Planning and Environment and the Ministry of Foreign Affairs. In addition, multi- and bilateral donors, UN organizations and international development banks contract IRC expertise in information dissemination, training, advice and applied research for water supply and sanitation programmes they support in developing countries. IRC also has strong partnership links with developing countries in Africa, Asia and Latin America, and is establishing linkages with CIS countries.

Furthermore IRC is an active contributor to the work of the Water Supply and Sanitation Collaborative Council. This is a group of professionals from developing countries, external support agencies (ESAs), and non-governmental organization s each dedicated to accelerating the achievement of sustainable water, sanitation and waste management services to all people.

IRC has a kaleidoscopic staff consisting of, among others, sociologists, anthropologists, psychologists, economists, engineers, geologists, journalists and documentalists. Over half of the staff are women, and 15% of the staff come from developing countries.

IRS wishes to thank all of those with whom it has worked in partnership over the years, and those who have granted financial and other support, for making its continued growth and contribution to the sector possible.

For more information contact:

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PROPOSALS ARE WHAT YOU CAN DO.

I R C
International Water and Sanitation Centre
Centre international de l'eau et l'assainissement
WHO Collaborating Centre / Centre Collaborant de l'OMS

Preparatory Workshop 'Promising Approaches in Water Resources Management in the Drinking Water Supply and Sanitation Sector
20- 29 November 1996, The Hague, The Netherlands

Provisional list of participants

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Preparatory Workshop on Promising Water Resources Management Approaches in the Drinking Water Supply and Sanitation Sector
20-29 November 1996 at IRC, The Hague, The Netherlands

Day / date	0900	1030 1100	1230 1330	1500 1530 1700
Day 0; 19.11.96	• Arrival of participants in the Hague, registry at hotel & with IRC			• Welcome & dinner with IRC workshop staff in evening
Day 1; 20.11.96 Wednesday	• Opening by project manager. • Introduction of participants. • Introduction to IRC, from Director. • Expectations	• Workshop objectives. • Review of workshop programme & methodology. • Daily reporting techniques	• Brief introduction to poster visualisation tools. • Prepare posters • Parallel session with AGroup	• Prepare project posters (continued) • A Group meeting
Day 2; 21.11.96 Thursday	• Day 1 report back., by project team. • Presentation of Posters	• Reflection on projects by advisory group. • Introduction of framework & issues by Advisory Group.	• Reach concensus on main issues and principles.	• Introduction to library **Drinks with IRC Staff, after work.**
Day 3; 22.11.96 Friday	• Day 2 report back. • technique on involving all participants. • Groupwork on leading questions for framework issues (ROUND 1)	• Plenary session on leading questions.	• Groupwork on identifying leading questions for framework issues (ROUND 2)	• Plenary agreement on 'final' list of leading questions. • Short evaluation
Saturday 23.11.96	"Free time" - participants will be free to go shopping, or see the sites in and near Den Haag. IRC will provide tourist information.			
Sunday 24.11.96	Excursion to the delta works and southern Holland.			
Day 4; 25.11.96 Monday	• Day 3 report back. • How to carry out assessment. • Participation analysis and exercise	• Why participation and participation methodologies • Exercise	• The use of indicators and means of verification, an introduction • Exercise on indicators for leading questions	• Exercise on indicators continued. • Presentation of indicators in plenary
Day 5; 26.11.96 Tuesday	• Day 4 report back. • Introduction and exercise with participatory assessment tool 1	• Introduction and exercise with participatory assessment tool 2	• Introduction and exercise with participatory assessment tool 3	• Introduction and exercise with tool 4
Day 6; 27.11.96 Wednesday	• Day 5 report back. • Introduction and exercise with participatory assessment tool 5.	• Recap on tools practised, discussion • Recap on process from leading question to tool.	• Introduction and discussion on documentation techniques • Introduction and discussion on individual assignments	"Free time" - mid week break - to use library - go shopping etc.
Day 7; 28.11.96 Thursday	• Day 6 report back. • Individual assignments: selection of project relevant issues and questions.	• Individual assignments (cont.): objectives of assessment	• Individual assignments: draft anotated outline of assessment report	• Presentation of good sample assessment plans
Day 8; 29.11.96 Friday	• Individual assignment (cont.) • Preliminary formulation of project relevant indicators, MOV's • Finalise assessment plan (5 months)	• Short presentations of project assessment plans in plenary	• Communication between participants and IRC during assessment • Wrap up workshop • Short workshop evaluation	"Free time" - participants free to use library, or leave depending on individuals schedules.

EXPECTATIONS AND FEARS EXPRESSED AT THE FIRST WRM WORKSHOP

November 20, 1996

Expectations

- NARROW DOWN DISCUSSION ON WRM TO DWSS
- FOCUS ON DWSS SECTOR

- DISCUSS WRM IN BROADER CONTEXT; WRM WITHIN BROADER CONTEXT OF NATURAL RESOURCES MANAGEMENT
- SYNERGY OF VARIOUS STAKEHOLDERS; DEAL WITH WRM INCLUDING OTHER SECTORS
- CONNECT WRM ISSUES TO NATURAL CONTEXT

- CLOSE GAP BETWEEN WATER & SANITATION

- UNDERSTAND WHY WE ARE PROMISING

- SHARE EXPERIENCES
- ALSO LEARN FROM MISTAKES
- LEARNING FROM OTHERS
- LEARN FROM EACH OTHERS EXPERIENCES

- UNDERSTANDING WHAT WRM IS
- DEFINE COMMON DENOMINATORS
- DEFINE TERMS USED
- COMMON UNDERSTANDING OF KEY ISSUES
- CLARITY ABOUT WHAT WILL BE ASSESSED

- ACQUIRE PARTICIPATORY SKILLS

(To be dealt with in the next workshop:)

- FIND ABOUT PROMISING EXPERIENCES MADE
- LEARN FROM SUCCESFUL APPROACHES
- REACH CONCRETE RECOMMENDATIONS
- FORMULATION OF PROMISING APPROACHES

Fears

- WILL NOT BE LOOKING AT OTHER SECTOR ISSUES
- WRM MUST CROSS SECTORS - CANNOT INFLUENCE OTHER SECTORS
- PEOPLE MAY HIDE EXPERIENCES OR FAILURES
- WE MAY GET LOST IN DEFINITIONS
- IF DEFINITIONS ARE NOT SIMPLE MAY BE MISUNDERSTANDING
- DIFFERENT DEFINITIONS MAY LEAD TO MISUNDERSTANDING
- TO GO INTO A MORE ENDLESS TUNNEL
- GET LOST IN TOO WIDE DISCUSSION
- DURING STUDIES WILL MISS ISSUES IN WATER SECTOR
- CULTURAL DIFFERENCES MAY MAKE IT DIFFICULT TO APPLY
- APPROACHES MAY NOT BE PRACTICAL
- NOT NARROWING DOWN DISCUSSION
- UNCLEAR OBJECTIVES

PROJECT/ PROGRAMME	CONTINENT COUNTRY	ADMIN. LEVEL	MAIN ACTIVITIES	SECTOR(S)	RURAL/ URBAN
Northern Province Development Programme	Africa Zambia	regional local	Hygiene education, provision of had dug wells and pit latrines	water and sanitation	rural
Drought Intervention East & South Provinces	Africa Zambia	national district local	water, sanitation, community mobilisation	water and sanitation	rural
Rural Water Supply & Sanitation Project	Africa Ghana	national regional local	water, sanitation, hygiene education	water and sanitation	rural
Tonga Water Supply Project	Africa South Africa	regional local	capacity building, provision of water supply, hygiene education	water supply	peri urban
Umgeni Management Catchment Plan	Africa South Africa	national regional local	integrated water management, solving problems related to water quality and quantity, health and ecological, providing sound framework for future planning and development	water resources management (river basin), industry, agriculture	rural, urban and peri urban
Water, Source of Peace	South America Guatemala	national regional local	water, sanitation, hygiene and environmental education	water and sanitation	rural and peri urban

PROJECT/ PROGRAMME	CONTINENT COUNTRY	ADMIN. LEVEL	MAIN ACTIVITIES	SECTOR(S)	RURAL/ URBAN
Rural Water Supply & Sanitation Project	Asia India	state district	water supply, sanitation, health education, community development	water supply & sanitation	rural
Rural Water Supply in Gujarat	Asia India, State of Gujarat	regional local	DWS & sanitation	water supply and sewerage	rural
Integrated Watershed Development in District Jhabua/MP	Asia India	district	integrated water shed development, optimal dev'ment & utilisation of nat. resources, capacity building of community to plan, implement manage & maintain watershed activities	natural resources management	rural
Rural Water Supply & Sanitation Project Lumbini Zone	Asia Nepal	regional local	capacity development (institutional/HR) of partner organisations, provision of water supply and sanitation	water and sanitation	rural
Promotion of WATSAN Project	Asia Cambodia	all levels	water, sanitation, health education through VDC	water & sanitation related to integrated water development programme	rural and peri urban

WATER RESOURCES MANAGEMENT - CONCEPTS ~~& TOOLS~~

WATER RESOURCES DEVELOPMENT (WRD)

- PHYSICAL & ADMINISTRATIVE ACTIONS LEADING TO THE BENIFICIAL USE OF WATER RESOURCES FOR SINGLE OR MULTIPLE USE

WATER RESOURCES PLANNING (WRP)

- PLANNING OF THE DEVELOPMENT & ALLOCATION OF A SCARCE RESOURCES (SECTORAL / INTER SECTORAL) MATCHING WATER AVAILABILITY AND DEMAND TAKING INTO FULL SET OF NATIONAL OBJECTIVES & CONSTRAINTS AND THE INTEREST OF STAKE HOLDERS

WATER RESOURCES MANAGEMENT (WRM)

- THE WHOLE SET OF TECHNICAL, INSTITUTIONAL, MANAGERIAL, LEGAL & OPERATIONAL ACTIVITIES REQD. TO PLAN, DEVELOP, OPERATE & MANAGE WATER RESOURCES

$$WRM = WRP + WRD$$

ASPECTS OF SUSTAINED WRD

- TECHNICAL SUSTAINABILITY - BALANCED DEMAND & SUPPLY
- FINANCIAL SUSTAINABILITY - COST RECOVERY
- SOCIAL SUSTAINABILITY
  - STABILITY OF POPULATION
  - STABILITY OF DEMAND
  - WILLINGNESS TO PAY
- INSTITUTIONAL SUSTAINABILITY - CAPACITY TO PLAN, MANAGE & OPERATE
- ENVIRONMENTAL SUSTAINABILITY - NO LONG TERM NEGATIVE OR IRREVERSIBLE EFFECTS.

PRINCIPLE I - WATER SOURCE & CATCHMENT PROTECTION ARE ESSENTIAL

ENVIRONMENTAL DEGRADATION OF WATER RESOURCES

- POLLUTION OF THE SURFACE WATER
  - INDESCRIMINATE USE OF FERTILIZERS/ INSECTICIDES & PESTICIDES
  - DIRECT DISCHARGE OF UNTREATED SEWAGE
- MINING OF GROUND WATER - DUE TO OVERPUMPING
- DECLINE IN AGRICULTURAL OUTPUT & PRODUCTIVITY
  - POOR DRAINAGE & INEFFICIENT IRRIGATION PRACTICES
- WASTAGES & LEAKAGES OF WATER IN DISTRIBUTION

WATER CONSERVATION & PROTECTION - IMPORTANT FOR SYSTEM DESIGN & MANAGEMENT

GUIDING QUESTIONS:

- WHY & HOW WAS WATER SOURCE & CATCHMENT PROTECTION IDENTIFIED AS A NEED?
- WHAT ACTIVITIES ARE UNDERTAKEN TO PROTECT WATERSHED AND OR WATER SOURCES AND TO WHAT EFFECT?
- WHO HAS BEEN INVOLVED & WHO TOOK THE DECISION?
- DOES ANY CURRENT DEVELOPMENT ENDANGER THE PROTECTION?
- IS THERE ANY SYSTEM OF MONITORING AND SURVELLIANCE OF THE WATER QUALITY?

PRINCIPLE II - ADEQUATE WATER ALLOCATION NEEDS TO BE AGREED UPON BETWEEN STAKE HOLDERS WITHIN A NATIONAL FRAMEWORK.

KEY USERS OF WATER RESOURCES HAVE
- SEPARATE SUB SECTORAL POLICIES BOTH IMMINENTLY CONFLICTING & WITH NARROW SUB SECTORAL INTEREST.
- LITTLE REGARD FOR SOCIAL, ECONOMIC & ENVIRONMENTAL OBJECTIVE.

- FORMULATION OF AN INTEGRATED COMPREHENSIVE WR POLICY FOR SUSTAINED, COST EFFECTIVE & EFFICIENT DEVELOPMENT & MANAGEMENT OF WATER RESOURCES
- THERE IS COMPETING DEMAND FOR DOMESTIC, INDUSTRIAL & AGRICULTURAL WATER DEMAND. BETTER MECHANISM IS NEEDED FOR ADEQUATE & EQUITABLE ALLOCATION OF WATER TAKING INTO ACCOUNT OF ECONOMIC & SOCIAL CONCERNS.

GUIDING QUESTIONS

- IS WATER ALLOCATION A PROBLEM ? WHO PERCIEVES THIS ?
- WHAT SPECIFIC MECHANISMS HAVE BEEN ESTABLISHED TO ALLOCATE OR REALLOCATE WATER RESOURCES ?
- DOES IT FIT WITHIN THE NATIONAL LEGAL FRAMEWORK & TRADITIONAL PRACTICES.

Principle 3:

Efficient water use is essential and often an important water source

* Rain water to "purposeful" use

* From water source (e.g. reservoir) to use(r)
  - leakage in pipes
  - seepage & evaporation from canals
  - bad timing between delivery & use
  - illegal withdrawal & unrecorded use

* By the user
  - use too much in relation to what is "reasonably" needed or required
  - "wrong" products

Principle 4:

Management at the lowest appr. levels

Management by users best guarantee:

- get what they want and can afford
- scheme is kept in order
- lowest overall cost

→ promotes skill, "capacity building", democracy, etc.

but: some functions must be at aggregate level:

- legal aspects
- technical support
- "equity watch"
- cross - subsidies
- allocation (upstream - downstream, urban - rural, etc.

→ levels

PRINCIPLE 2 - INVOLVEMENT OF ALL STAKEHOLDERS IS REQUIRED.

- STAKEHOLDERS INVOLVEMENT WOULD PRIMARILY REQUIRE
  - IN IDENTIFYING LOCAL NEEDS, PREFERENCES, & PRIORITIES
  - IN IDENTIFYING ALL IMPACTS OF ALTERNATIVES & RECOMMENDED PROGRESS
  - PROMOTING UNDERSTANDING AND SUPPORT FOR THE IDENTIFIED OBJECTIVE AND SOLUTION PROPOSED
- PROVIDING OPPORTUNITY FOR THOSE AFFECTED BY WATER RESOURCES DEVELOPMENT TO INFLUENCE DECISIONS REGARDING ITS DEVELOPMENT.

- NEED FOR GREATER COORDINATION & COLLABORATION WITH KEY STAKE HOLDERS.
- THEY SHOULD HAVE ACCESS TO INFORMATION AND PLATFORM FOR DECISION MAKING.

GUIDING QUESTIONS

1. WHO ARE THE STAKE HOLDERS? ARE THEY INVOLVED?
2. WHAT PLATFORM/FORUM EXISTS FOR COLLABORATION.
3. IS FAIR DECISION MAKING POSSIBLE? IF YES ON WHAT BASIS?.
4. WHAT CONFLICT OCCURR? HOW ARE THEY ADDRESSED?.

P. 6. NON-HOMOGENEOUS USERS.

- GENDER
- ECONOMIC SITUATION
- CULTURAL BACKGROUND
  (CLASS, RELIGION, ETHNICITY)

DIFFERENCES IN

- USE
- OPERATION
- MANAGEMENT.
- INTEREST.

GENDER.

- COOKING
- WATER FETCHING
- CHILD CARE.
- LAUNDRY.

EXAMPLES: - "RIGHT OF DRINK"

- SOCIAL MEETING POINT.

Q:

1. PERCEIVED NEEDS BETWEEN MEN-WOMEN, RICH-POOR.
2. DEGREE OF PARTICIPATION / INFLUENCE / PAYMENT.
3. DO APPROACHES PROMOTE EQUAL PARTICIPATION / ACCESS ?

P.7. CAPACITY BUILDING.

REQUIRED : - AN ENABLING ENVIRONMENT
- CONSCIOUS ACTORS
- COMPETENT FACTORS.

HOW TO REACH : - EDUCATION
- SKILLS DEVELOPMENT
- CAPACITY BUILDING

- APPROPRIATE POLICY / LEGAL FRAMEWORK
- INSTITUTIONAL DEVELOPMENT (COMMUNITY PARTICIPATION)
- HUMAN RESOURCES DEVELOPMENT: (FOR MANAGEMENT).

LEADING QUESTIONS

1. ENABLING ENVIRONMENT FOR CAPACITY BUILDING | IN PLACE ?
2. WHO'S CAPACITY IS BEING BUILT ?
3. WHAT TRAINING TECHNIQUES / PHILOSOPHY USED ?
4. WHAT WRM TASKS ARE IMPLEMENTED.

Principle 8:

Water is treated as having an economic and social value (ie basic human right)

1. Water is indesoensible for life and for human well-being (basic human need)

2. Water is also crucial (non-substitutable) in virtually all activities in society and the environment
(water is a resource; generates economic value)

3. To meet basic needs and demand water has to be developed and supplied and treated
⇒ investments (technology & institutions)

⇒ Financial problems: budget problems

⇒ who and what activities should get water what opportunities should be selected)

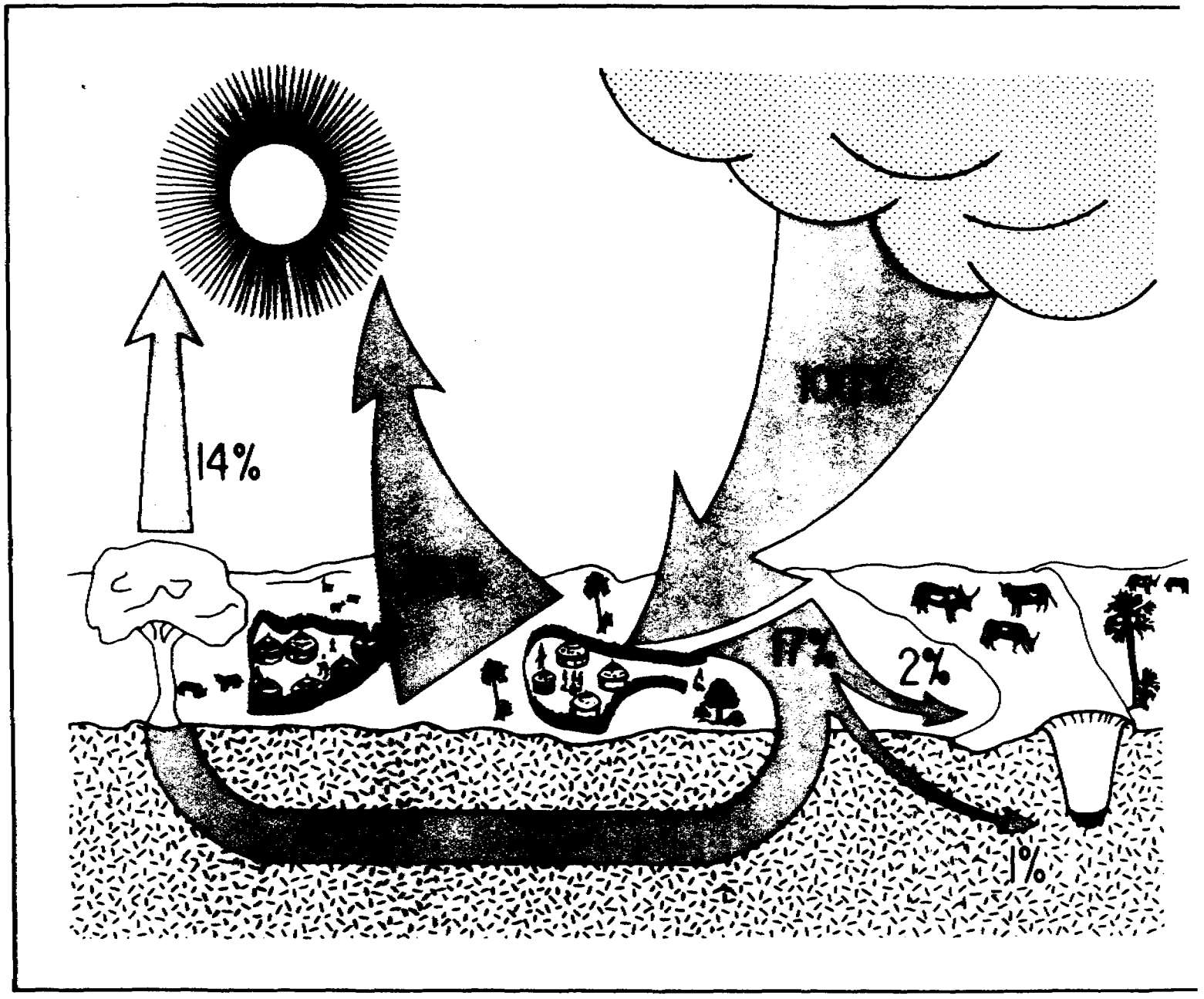
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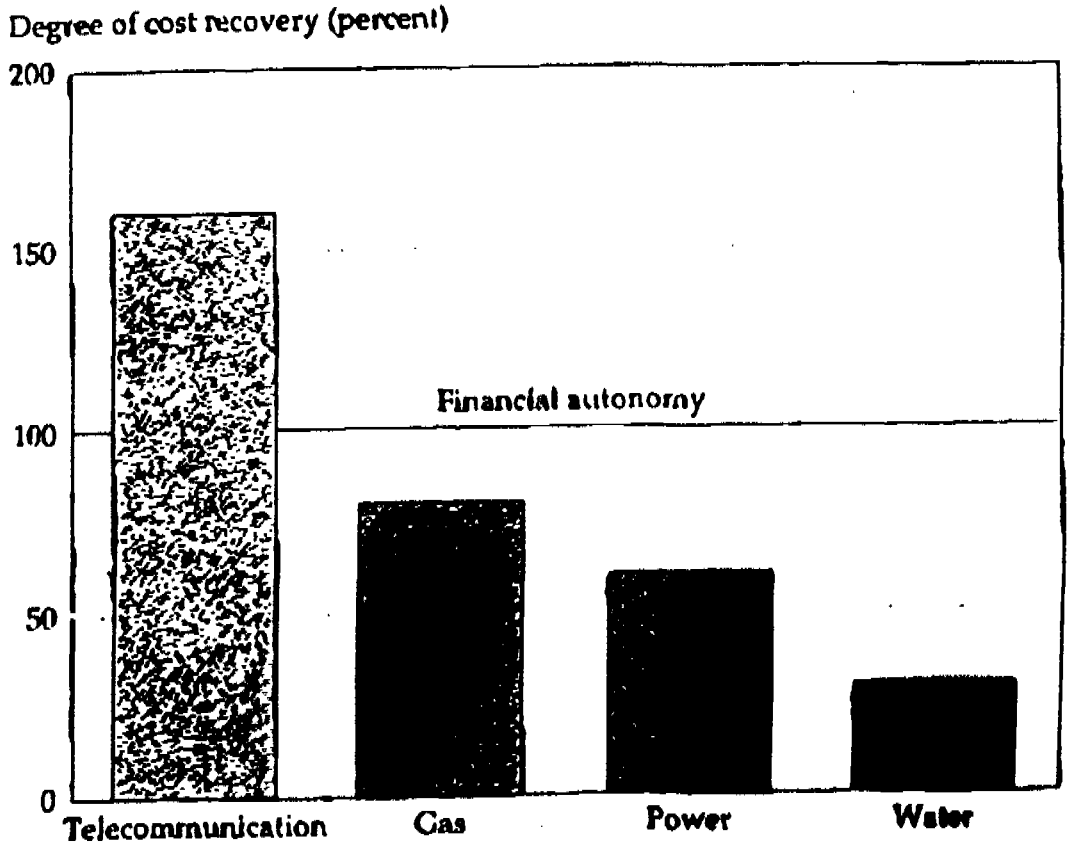
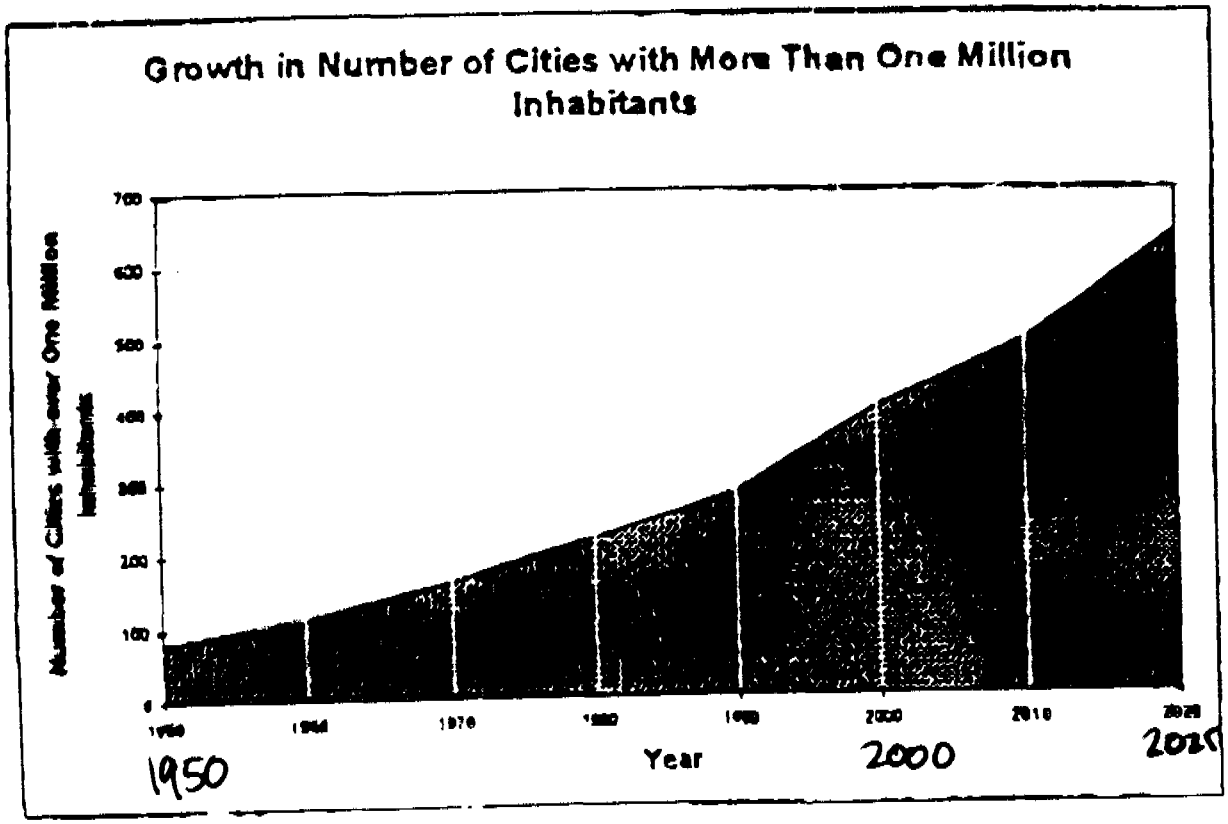
Figure 4. Degree of Cost Recovery in Infrastructure Sectors in Developing Countries



Source: World Bank 1994.



Vattenbehov:

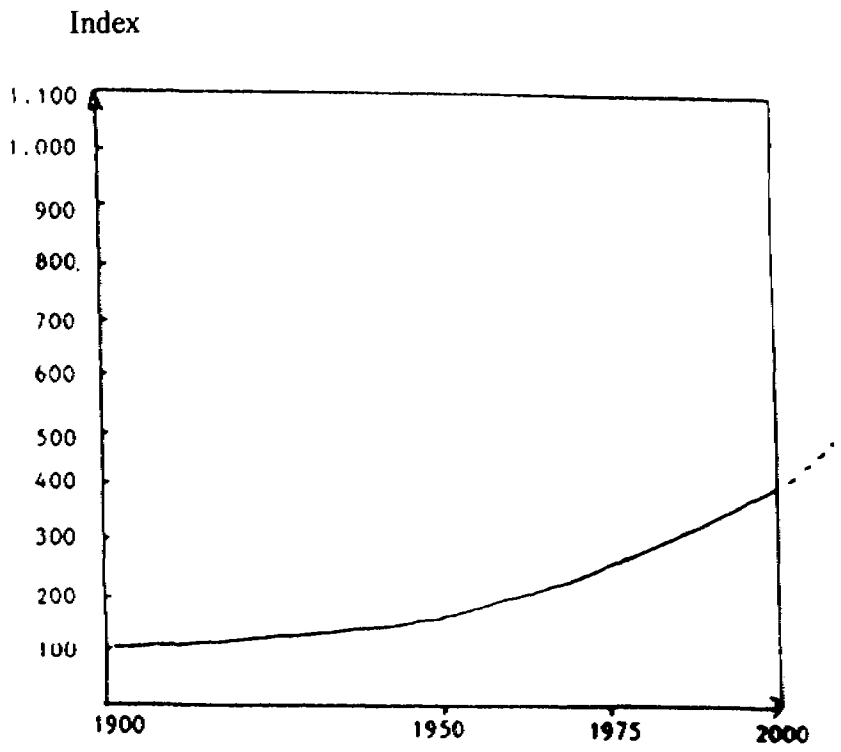
- Dricksvatten: 2-5 liter/person.dag
- Hushållsvatten: 25-100 liter/-"-

} • varje dag • hög kvalité • där folk bor

Mat ∝ biomassa: 1-6 ton/-"-

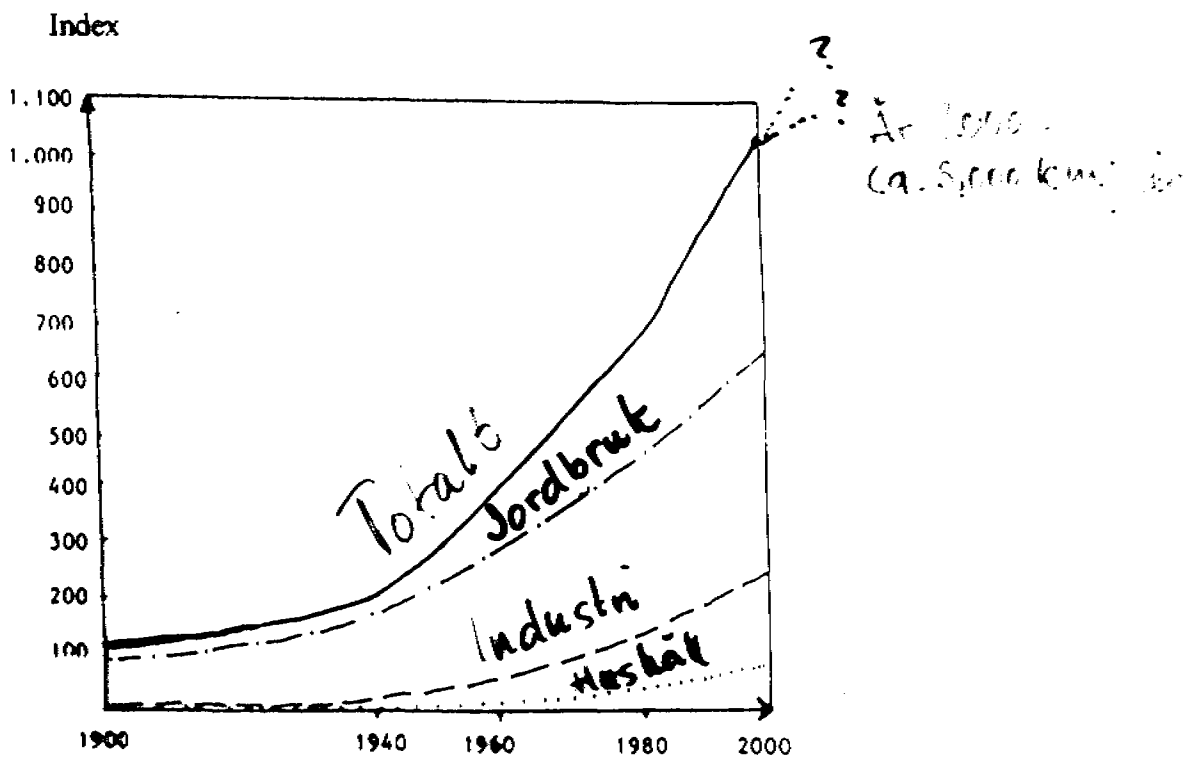
} • säsong • (kvalité) • där produktionen sker

Befolkningsutveckling
(globalt)



100 = 1.6 miljarder

Vattenuttag
(globalt)



100 = 500 kubik km

Framework: Main principles, leading questions, indicators, relevant participatory methods and tools

Principle 1 **Water source and catchment protection are essential**	Principle 2 **Adequate water allocation needs to be agreed upon between stakeholders within a national framework**	Principle 3 **Efficient water use is esential and often an important water source**	Principle 4 **Management needs to be taken care of at the lowest appropriate levels**
leading questions 1. Why and how was water source and catchment protection identified as a need 2. What activities are undertaken, effects, participants, legal framework 3. What are current (endangering) developments?	**leading questions** 1. Is water allocation a problem, perceived by whom? 2. What are allocation mechanisms, who is involved, decides? 3. What is legal framework and traditional practices?	**leading questions** 1. Who perceives water use efficiency as a problem? 2. What efficiency measures are taken? Effect, involvement, decision making? 3. Are stakeholders satisfied?	**leading questions** 1. Who manages water resources? Lowest appropriate level, legal arrangements? 2. What is management about? Who perceives problem, who addresses it?
Indicators • change in source capacity, quality, deforestation	**Indicators** • changes in (re)distribution of source capacity among stakeholders; • share of stakeholders and their (dis)satisfaction with share	**Indicators** • changes in water use efficiency: leakage percentage in total supply, comparison to national / regional standards	**Indicators** • changes in management: responsibilities, indicators (are they used?)
Relevant methods & tools 1. Sanitary inspection 2. Transect walks 3. Observation	**Relevant methods & tools** 1. Venn diagramm 2. Participation analysis and roles 3. Women and men focus group discussions 4. Resources & needs mapping	**Relevant methods & tools** 1. Pocket chart 2. Matrix of use & quantities 3. O & M reports	**Relevant methods & tools** 1. Case study, role play 2. Venn diagramm 3. Matrix showing roels of different actors

Principle 5 **Involvement of all stakeholders is required**	Principle 6 **Striking a gender balance is needed as activities relate to different roles of men and women**	Principle 7 **Skills development and capacity building are the key to sustainability**	Principle 8 **Water is treated as having an economic and social value**
leading questions 1. Who are stakeholders? Are they involved? 2. What platform / forum exists? 3. Is 'fair' decision making possible? What is basis? 4. What conflicts occurr? How are they addressed?	**leading questions** 1. Differences in perceived needs between man-woman and rich-poor? 2. Differences reflected in degree of participation and influence in decision making (can women obtain water rights?) 3. Do approaches promote equal participation / access	**leading questions** 1. Enabling environment for capacity building there? 2. Who's capacity is being built (ESA staff teaching or facilitating?) 3. What training techniques/philosophy is used? 4. What WRM tasks are implemented?	**leading questions** 1. Is water treated as economic commodity? 2. Is a 'fair' price asked from different user groups? 3. Relation between volume and price? 4. Differential tariffs to assist poorer sections (cross subsidy) 5. Is system transparant?
Indicators how are stakeholders involved: • % stakeholders involved in decision making • access and level of information for decision making • ratio conflicts vs. decisions/solutions	**Indicators** • Level of information to man-woman • Ratio trained man-woman in same functions (?) • % of women in water management committee functions	**Indicators** • % of different stakeholders trained • degree of take over of tasks by national staff / stakeholders	**Indicators** • 'cost' recovery % for O&M and construction cost • changes in subsidy levels to support poorer sections • tariffs established with users participation and based on consumption level (metering?)
Relevant methods & tools 1. Participation analysis, roles 2. Venn diagramm 3. Role play (participation)	**Relevant methods & tools** 1. Case study / role play 2. Gender analysis (Harvard Analytical Framework) 3. Rich & poor matrix (see 'demandas campesinos')	**Relevant methods & tools** 1. Historical line (including traditional management practises) 2. Gender matrix on access to resources 3. Observation of training and other learning activities 4. Observation of existing practises for accouting, O & M, monitoring, etc.	**Relevant methods & tools** 1. discussion groups (discussion based on examples from participants) 2. Problem analysis techniques 3. Observation tariff system present 4. Use cost recovery calculations (ask FB)

IRC
International Water and Sanitation Centre

PROJECT "WATER RESOURCES MANAGEMENT APPROACHES IN THE DRINKING WATER SUPPLY AND SANITATION SECTOR"

The Proposed Framework
November 1996

1. Introduction

Mismanagement of water and land resources is putting human health and sustainable social and economical development at risk. Explosive growth of urban centres, unsustainable exploitation of natural resources, uncontrolled industrialisation, increasing water demand for food production, and expanding populations lacking proper environmental sanitation have led to progressive depletion and degradation of freshwater resources. Many of the problems in the drinking water supply and sanitation sector (DWSS Sector) are related to the improper management of water resources. To safeguard the sustainable supply of safe drinking water and entire watersheds, concerted action is needed on all fronts, including agriculture, forestry, industry, transport, urban and spatial planning, population planning, and electricity generation. To prevent further depletion and degradation of freshwater resources, a more holistic approach is being promoted, which is known as integrated water resources management (WRM).

Back in Mar del Plata, 1977, water resources management was globally discussed for the first time, but it was not until the early nineties that it was really put on the international agenda. A number of significant meetings was held, such as the 1990, New Delhi meeting, the 1991 Nordic Freshwater Initiative in Copenhagen, the 1992 Dublin meeting and the 1992 UNCED meeting in Rio de Janeiro, the 1994 Ministerial Conference in Noordwijk and the 1994 OECD/DAC Meeting in Paris. These meetings challenged existing sector-oriented management practices of water resources as being unsustainable from an economic and environmental perspective, and have set out a number of principles and recommendations for integrated water resources management.

In an attempt to give guidelines for the implementation of Chapter 18 from Agenda 21 (the action programme of the Rio de Janeiro Conference), the Noordwijk Ministerial Conference summarises key issues in integrated WRM on which international agreement has been reached, and gives an overview of the main WRM principles for the DWSS sector. The meeting among others concluded that "access to adequate water and sanitation is a basic need and the long-term objective in the DWSS sector therefore continues to be 'safe drinking water supply and sanitation for all'. However, access to water needs to be accompanied by an obligation to use water efficiently and to dispose wastes in an environmentally sound manner for the benefit of future generations. This is a precondition for substantial progress towards the common targets of health for all, poverty alleviation, environmental conservation and economic and human development. To achieve these goals, water and environmental sanitation programmes need to be tailored to the ability of the local environmental to support them, to the local socio-economic and cultural conditions and needs of men, women and children, and to the availability of resources." (Ministerial Conference on Drinking Water and Environmental Sanitation, 1994)

2. Objective and definition of integrated WRM

The objective of integrated water resources development and management as defined in Box 1, is to ensure optimal and sustainable use of water resources for economic and social development, while protecting and improving the ecological value of the environment to the maximum possible extent (revised from DANIDA, 1991). Sustainability has been added because not only current interests should be taken into account, but also those of future generations.

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 is essential to optimise water conservation and protection. (UNDP, 1991).

Definition of Integrated Water Resources Development and Management

Water resources means water in the broad sense as available for use and susceptible to human interventions. *Water* can be surface or groundwater, and is characterised by both quantity and quality.

Development and management cover all phases of resources planning, development, use and protection, i.e. assessment, planning, implementation, operation & maintenance, and monitoring & control. It includes both *combined resource and supply management* and *demand management.*

Integrated means development and management of water resources as regards both their use and protection, and considering all sectors and institutions which use and affect water resources (cross-sectoral integration).

Nordic Freshwater Initiative (DANIDA,1991).

3. Project purpose and approach

The aim of the UNDP/IRC project on promising WRM approaches is to clarify how internationally recognised WRM principles and recommendations can be implemented in the DWSS sector. This will be done by reviewing and documenting how DWSS projects have been able to integrate and apply these WRM principles, and what pitfalls they have had to overcome or changes they have had to make to them. Eight principles have been selected for the IRC/UNDP project on the basis of common thinking as reflected in important international meetings.

To achieve the objective, staff of 12 to 15 projects with a WSS focus will assess through a participatory approach the way in which they apply part or all of the selected key WRM principles in their project. In this review staff may also involve external facilitors and perhaps even persons to do the reporting.

Subsequently a joint review of the 12 to 15 project reports will be made in a meeting of the participants from the different projects in The Hague. This meeting will help to draw general

conclusions about the applicability of these principles, will bring out important problem areas and bottlenecks, and will enable the identification of the most promising practices and experiences.

4. WRM principles selected for review

In the following sections the pre-selected WRM principles which have emerged at the international level are presented. The basic idea is that staff of each of the participating projects will review their project's experience on each of the principles concerned. In this sense these principles together form the framework of analysis for the IRC/UNDP project. Some of the principles have been narrowed somewhat to facilitate comparison. For each principle guiding questions have been included to focuss the review, and example indicators have been presented. These are at this stage suggestions which will be reviewed in the project preparation workshop and may be accepted, adapted or rejected. In describing and reviewing the experience it is very important to focus on the process, the pitfalls encountered and the keys to success. Projects may not have applied all principles, which is very interesting as this may imply that they did not consider them important, or did not have the resources and the conditions to implement them. It may also imply that not all principles are required at the same time or may not be equally valid.

Of course projects may have what they see as valuable experience which falls outside the pre-selected principles. This may be further discussed at the project preparation meeting where together we may decide to add other principles. But even if the principles are not expanded projects can write up this 'additional' experience in their report.

Principle 1: Water source and catchment conservation and protection are essential

Environmental degradation of water resources may have an immediate and severe impact on the water supply situation of the users. It may result in inadequate performance of water supply systems because of pollution and siltage problems, or systems being abandonned because water sources drying up. This may have an effect on the health of the users but also may involve considerable economic losses. In Poland, for example, three-quarters of the river water is too contaminated even for industrial use. Agricultural output and productivity also decline because of environmental degradation resulting from poor drainage and irrigation practices. On the other hand there are people with marginal livelihoods who have very little option beyond 'unstainable' practises. Water source and catchment conservation and protection includes amongst others, soil and water conservation strategies, pollution control measures, and sound land use practises.

<u>Guiding questions and example indicators for the review</u>

* What specific acitivities have been undertaken to protect watersheds and/or water sources, and to what effect? Who has been involved, who took the decisionsDo any current developments endanger the protection? Will greater protection harm vulnerable groups?

* Example indicators to assess changes that have occured in the source/catchment area: capacity of the source (l/s); water quality eg turbidity/colour; rate of deforestation; depletion of groundwater table; instrusion of saline water.

Principle 2: Adequate water allocation needs to be agreed upon between stakeholders within a national framework

Water management is fragmented among sectors and institutions, with little regard to conflicts or complementary needs and benefits among social, economic and environmental objectives. There are multiple agencies for different water uses, for example irrigation, municipal water supply, rural water supply, energy production and transportation. Interactions between these different 'sectors' and water uses, although all forming part of the same system, are usually ignored. Furthermore in many countries where individual states and provinces have jurisdiction over water in their territory, the same water source will be developed without considering the impact on other states. Integrated WRM calls for holistic management of fresh water and integration of sectoral water plans and programmes within the framework of national economic and social policy (Serageldin, 1995b).

Domestic, industrial and agricultural supplies are often already competing for the same water resources and this tendency will increase in future. Thus better mechanisms are needed for an adequate and equitable allocation of water, taking into account economic as well as social concerns.

Guiding questions and example indicators for the review

* Is water allocation a problem or likely to become so? Who perceived or perceives water allocation as a problem? What specific mechanisms have been established (including traditaional) to allocate or reallocate water resources? How do they work, who has been involved, and who takes decisions? Does (re)allocation fit within the national legal framework and traditional practices? Does a structured hierarchy of forums exist where stakeholders can be represented? Do problems emerge from legal pluralism? Where can would-be users and stakeholders present their case? Is there over-allocation of water at catchment level?

* Example indicators to assess what changes in water allocation have occurred: (re)distribution of available source capacity (l/s) amongst stakeholders; stakeholders are satisfied and receive a fair share in comparison with national standards; amount and nature of complaints from stakeholders; service terminations; legal cases of stakeholders.

Principle 3: Efficient water use is essential and often an important water source

Domestic water supply and irrigation systems often face major water losses. Leakage percentages may be over 50 percent in community water supply and over 70 percent in irrigation. Efficiency of water use should be optimal, minimising water losses during transport, storage and use. Reducing water loss involves aspects related to design, construction and operation and maintenance of systems, as well as users behaviour such as leaving taps open or not repairing them. Enhancing efficient water use may also include reuse and water saving measures such as growing of less water demanding crops, use of fees and charges to curb wasteful water use, and the use of cross-subsidies. Efficient water use can be regarded at system level but also at catchment level.

Guiding questions and example indicators for the review

* What specific measures have been established to enhance water use efficiency? To what effect? Who have been involved and who have taken the decision? Are stakeholders satisfied with the measures and results?

* Example indicators to assess what changes in water use efficiency have occurred: leakage in percentage of per capita water supply (per hectare irrigation supply) and how does this compare to national standards; change in amount of water used.

Principle 4: Management needs to be taken care of at at the lowest appropriate levels

In many countries there is a heavy dependence on centralised administration to develop, operate and maintain water systems. However, centralised (top down) approaches to water resources development and management have often proved inadequate to address local water management problems. While recognising the need for a central mechanism capable of protecting national economic and social interests, the role of central governments needs to change, to enable users, local institutions and the formal and informal private sectors to play a more direct role. The government needs to become a facilitator instead of a provider. The current trend towards decentralisation in many countries, although with a wide range of meanings, proves promising in this respect and may help to bring management of water resources to a lower level.

The most appropriate level of water resources management may range from the household level to the level of international river basin committees, depending on the issue at hand. The important point is that consultation, planning, decisions and actions concerning water resources management should be taken as close to the root of the problem as possible, i.e. at the lowest appropriate level, and that higher levels primarily should provide an enabling environment for decentralised and integrated management (DANIDA, 1991).

Guiding questions and example indicators for the review

* Who actually manages the water resources that are used by the project? Is this the lowest appropriate level? Is it legally sanctionned? In what consists this management? Who perceived the problem and established the solution? What changes in local management have really taken place? What training and support has been given to user groups, and what has made this effective?

* Example indicators to assess management at the lowest appropriate levels: formal management responsabilities allocated before and at present; monitoring indicators available before and at present and are they used; training and support activities given to users groups that add to the success of the project.

Principle 5: Involvement of all stakeholders is required

To ensure that water resources are developed and managed properly, it is important to involve all stakeholders as much as possible and desired, being the parties with a vested interest. This involves coordination and collaboration between different users groups (eg. the domestic users, the irrigation

farmers, industry, recreationists, and persons who represent the environment which cannot speak for its own). These stakeholders should have a platform for decision making were they can voice their concerns and ideas, and can discuss and vote about measures to be taken and activities to be developed to manage the resource. The above implies that it is important that stakeholders have access to information and can play a true role in decision making, and if required are helped to make their case. In the WSS sector we see already a positive trend in which the idea of community participation, often still implying provision of physical labour, food and shelter, is changing towards community management, empowering communities to take things in hand and claim their role in decision making.

Guiding questions and example indicators for the review

* Who are the stakeholders? In what way(s) are they involved in water management issues? Are they informed about relevant issues for decision making? Does a platform or forum exist in which decisions are taken? Is fair decision making possible? Are stakeholders satisfied with the decision making process? Have important conflicts arisen? Are stakeholders being held accountable? Have stakeholders been excluded by project development, and how do they gain a voice?

* Example indicators to assess whether stakeholders are involved in decisions making: percentage of stakeholders represented in decision making; access to and level of information, number of important conflicts over decisions.

Principle 6: Striking a gender balance is needed as activities relate to different roles of men and women

Communities, organisations and groups involved in and/or benefiting from a project are not homogeneous and do not have the same interrests. They differ in gender, economic and cultural background (e.g. religion, ethnicity, class), and these differences often imply different needs and perspectives, among others related to the use of water. This often has implications not only for the use of water supply facilities, but also for operation, maintenance and management. Particularly the tasks, responsibilities and therefore needs and interests between men and women can differ considerably, and projects have to take special measures, often particularly to involve women. In many traditional water resources management systems, women are managing water resources, which is often ignored by projects.

Guiding questions and example indicators for the review

* What are tasks, responsibilities and interests related to water of men and women? Are the differences between men and women reflected in their participation and influence in the project? Can women obtain waterrights? Are approaches established that encourage equal participation of men and women? To which water resources do men and women have access to, and over which water resources do they have control? Does project have gender sensitive objectives and/or activities?

* Example indicator to assess whether a balanced approach is achieved: level of information provided to men and to women; the division between the number of trained men and women

for the same functions; the actual percentage of women in management/water committee functions; the hierarchical position of men and women in water organisations.

Principle 7: Capacity building is the key to sustainability

Effective integrated water resources management requires an enabling environment and conscious and competent actors. Education, skills development and capacity building are essential to promote this. Capacity building of the organisations involved in WRM is crucial both for the proper implementation of a project and for its subsequent sustainability. It consists of three basic elements, namely 1) creating an enabling environment with appropriate policy and legal framework, 2) institutional development including community participation, and 3) human resources development and strengthening of managerial systems (Alaerts et al., 1991).

Institutional capacity for water resources management should be developed when there is a clear demand. Institutional response will therefore vary from time to time and place to place (DANIDA, 1991).

Guiding questions and example indicators for the review

* Is capacity building part of project activities: Who's capacity is being built? Are the ESA staff teachers or facilitators? What training techniques and philosophy are being used? What WRM related tasks are being implemented?

* Example indicators to review whether stakeholders and agency staff are able to apply their skills independently: percentages of different stakeholders trained, take over of tasks by national staff in course of project.

Principle 8: Water is treated as having an economic and social value

Water is recognised to have both a social and economic value. On one hand, water is considered a social necessity and therefore a basic right for all. Everybody requires access to sufficient and safe water for drinking and other essential activities. On the other hand water also has an economic value. The supply of suitable water and the disposal of sewage has a cost, and systems can only be maintained when this cost is covered, either through donations, subsidies or by users contributions. When treating water as an economic commodity, optimum use should be made of market-based instruments, like the "user pays and the polluter pays" principles. The charging mechanisms that will be adopted must be appropriate and reflect local socio-cultural and economic conditions (DANIDA, 1991).

Making the concept of water as an economic commodity operational includes shifting emphasis from supply to demand management principles when dealing with water resources. However next to the economic efficiency dimension, water must also be considered as a social commodity to ensure that the basic needs for the poor segments of the populations of the developing world are satisfied.

Guiding questions and example indicators for the review

* Is water being treated as an economic commodity? Is a fair price being asked from different user groups? Is a relation established between the volume and the prices? Are differential tarriffs being applied to assist the poorer sections in the community? Is the system transparant?

* Example indicators if the tariff reflects the true cost and safeguards and is a social commodity: 'cost' recovery percentage both for O&M and construction cost; changes in subsidy levels to better support the poorer sections; tariffs established with the community and based on consumption levels.

Other principles suggested

- Management accountability and 'service' orientation;
- Coordinated action in funding, planning and development;
- Meaningful and accessible information on water resources;
- Sound technical design;
- Incorporating drinking water (and other water uses) into the income generation equation.

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Styles of reporting

There are many ways in which results can be presented. For this WRM workshop, we would like to ask the participants to present brief daily reports on what has happened the previous day. Each day, three participants will be asked to prepare this presentation session, using a technique that has not been used by other participants in earlier daily reporting sessions. The objective of changing techniques is to stimulate creative thinking on different reporting techniques. The following are a few suggestions on how to present results, but of course every group is open to use any other method they like.

Writing

Aid memoire	For a specific time period (day, week, etc.), write down in chronological order the main activities and other important things that have happened, e.g. decisions taken, problems identified, persons interviewed, results of an activity.
Bullet presentation	Write down as concise as possible and in order of importance all points of importance dealt with during a certain time, giving every point a separate bullet mark.
Newspaper Poster	Present key information concerning the days activities in columns on a wall poster - utilising cartoons or pictures to emphasise issues.

Visual methods

Pictures & photos	Of each important event or result achieved, make a picture of photograph, and give a short description.
Slides or video	Very useful for various types of presentations that will remain interesting for some time. Disadvantages are expertise and equipment needed to make a presentation (and to show it).

Visual and text

Poster presentation	Of a certain event, activity or project, make a poster using pictures, graphs and text highlighting the main issues you want to address.
Participatory presentation	Ask participants to provide feedback and information on the previous days activities, this can be listed on a flipchart or written on cards which may then be clustered according to the points raised. A brief discussion should highlight key points not included, and address any bias within the feedback.

Oral

Show or performance	Especially suited to bring specific messages and information across when the audience is illiterate. But also very stimulating as a change during a maybe sometimes boring workshop.
Radio broadcast	Simulate a radio broadcast on the latest news or developments.

How to carry out assessment?

- **What is assessment about? (Goal)**
  1. Check goal we formulated.
  2. Is it clear?
- **How do we reach our goal? (Outputs)**
  3. Outputs = Objectives = How do we adhere to 8 principles
  4. Assess experiences in participatory way
  5. Describe assessment process
  6. Decide which principles can be addressed realistically for your project / organisation
- **What main activities do we need to undertake?**
  7. To get answers to leading questions (than can be realistically answered in your case)
  8. Document participatory assessment exercise
- **How do we answer the leading questions?**
  9. Formulate clear indicators and means of verification
- **Who is involved in activities / answering questions?**
  10. Identify stakeholders at relevant levels through participation analysis

p.t.o.

11. Identify which questions / indicators need to be answered in a participatory way and with whom

- **What methods do we want to use?**

12. Identify suitable participatory assessment methods

- **What conditions have to be met do carry out assessment successfully?**

13. Are there factors that make proposed assessment and method difficult, describe them (= assumptions)
14. What are possible types of constraints?

- **Now we have a basic logframe for the assessment exercise, what else do we need to do?**

15. Prepare a plan of action

- **What are key elements of plan of action?**

16. Activities
17. Timetable (Gantt chart)
18. Responsibilities
19. Other involved partners
20. Inputs required

Get approval and resources for assessment exercise

Assessment of experiences made with water resources management

Overall Goal

To document the experiences made with water resources management

Objectives

1. Get answers to the question 'to what extend are the 8 formulated principles adhered to?'
2. Overview of processes of change taking place with regard to water resources management. Include among other things:
   - perceived necessity for water resources management by different stakeholders at various levels
3. Overview of lessons learned:
   - successes experienced so far
   - failures identified so far
   - open issues still to be addressed
4. Documentation on how assessment was conducted:
   - who was involved
   - planning
   - implementation

Activities (1)

1. Select case study (ideally 2 cases: one good and one bad)
2. Identify stakeholders at the various levels to be involved in the assessment (= participation analysis)
3. Select principles that can be assessed in your case(s) (2)
4. Check and reformulate if necessary leading questions for selected principles (3)
5. Adapt indictors accordingly (3)
6. Select appropriate participatory assessment tools
7. Adjust your draft plan of action with other stakeholders participating in assessment
8. Seek support, resources and approval for assessment exercise
9. Conduct assessment
10. Prepare draft assessment document and send for comments to IRC and Advisory Group contact
11. Finalise assessment document (...and other documentation, e.g. foto's, maps, illustrations, video's)
12. Presentation of outcomes at WRM synthesis workshop

Notes

1) The activities are not necessarily in chronological order.
2) An explanation should be given if a principlea has not been included in the assessment.
3) Leading questions and indicators may be reformulated to meet local situation, but should remain comparable with the jointly formulated questions and indicators.

Stakeholder analysis

Why a stakeholder analysis:

- One of the principles we agreed on is to involve stakeholders in water resources management
- Therefore the assessment should also be done involving stakeholders
- At various levels (national, regional, local) various stakeholders are involved
- It is important to identify the relevant stakeholders at the various levels
- Identify most relevant stakeholders to be involved in the assessment of problems and experiences in dealing with water resources management, with focus on the drinking water supply and sanitation sector

Procedure of a stakeholder analysis: identify all parties involved

- write down all persons, groups and institutions affected by or active in water resources management
- categorize them, e.g., interest groups, individuals, organisations, authorities, etc... by level, e.g., national, regional, local
- discuss whose interests and views are to be given priority when analysing problems and experiences
- specify gender, e.g. what roles do women and men play at various levels

More detailed analysis of stakeholders:

- take a closer look at some of the groups
- select the most important groups
- make a more detailed analysis of these groups in terms of:
    - problems: main problems affecting or facing the group (economic, ecological, cultural, etc.)
    - interests: the main needs and interests as seen from that group
    - potential linkages or involvement: the strengths and weaknesses of the group. Main conflicts of interests, patterns of cooperation or dependency with other groups.

Stakeholder analysis format:

Stakeholder	Level / Role	Problems	Interests	Potential Linkages	How to involve

Exercise: practise preliminary selection of stakeholders. Three groups (by level) identify typical stakeholders. This exercise will be refined for each case in individual assignments.

PARTICIPATION ANALYSIS (exercise)
IDENTIFICATION OF STAKEHOLDERS THAT CAN/SHOULD BE INVOLVED IN ASSESSMENT OF EXPERIENCES IN WRM

This table lists potential stakeholders. For every case study a specific identification of stakeholders (participation analysis) needs to be carried out.

Level	Stakeholder (in order of priority)	Role /Interest	Problems (with WRM or playing role)	How to be involved in assessment
LOCAL	Water user groups • village Panchayat/committ. • village dev. committee • women groups(clubs) • Farmer association • Youth group	• user fee collection • minimise Wastage	• poor reliability of supply • indifference to payment • breakage of source/pipes • lack of transparancy • community organisation	• participation in the assessment as follows • planning /designing • providing /collecting information • sharing information and experiences
	• care taker • Conservation group • Trader group(small)	• Operation & Maintanance • Provision of Spare Parts	• limited skills, resources, system • shortage & poor quality of spare parts	• sharing information and experiences
	• small enterpreneurs • NGO's • Local authority local institutions like school, hospital, day care centre etc....	*not identified*	*not identified*	*not identified*
REGIONAL	• Agriculture authority • Environmental Authority	• Role to support agricultural development • Interest to receive adequate quantity of water of suitable quality • Potential polluters	• not enough / too much water • water allocation conflicts • contamination of water source	• meet unions: province authority representatives • design + disseminate questionnaire
	• Health Authority (Prov/Distr)	• Role: plan coordinate health and sanitation activities	• lack of awareness	• In assessment body; assessment process
	• Regional Irrigation Authority (Prov/Distr)	• people have safe drinking water /sanitation facilities • water born / related deseases		• seek info from them • seek info through them
	• Industrial authority • Planning and development committee(Prov/Distr/Vill) • Drinking Water Authority(P/D/Catchment) • Urban Development Authority	*not identified*	*not identified*	*not identified*

Level	Stakeholder (in order of priority)	Role /Interest	Problems (with WRM or playing role)	How to be involved in assessment
NATIONAL	• National Government	• Policies • Finance Allocation • Priorities • Conflict Resolution	• Resource constraints • Politival • Coordination	• Lobby groups
	• Ministry Water Supply & Sanitation	• Policy + guidelines • Budget • Infrastructure • Monitoring	• Resources constraints • Conflicts + allocations • Natural disasters horizontal coord. • Vertical coordination	• 'Buy in' at highest level
	• External Support Agencies	• Funding • Policy influence • M&E • Technical + capacity building	• Political changes • Policy differences	• Viable project workshop • Follow up on highest level
	• Ministry for Irrigation • Min. of Agriculture • Min. of Industry • Min. of Rural Devel. • Min. of Local Gov. • Min. of Urban Dev. • Ministry Public Health • Ministry Natural Resources Environmental Affairs • Non Gov.Organisations • State Government • Provincial Government	*not identified*	*not identified*	*not identified*

Guidelines / steps for individual assignments: planning of the assessment exercise

Wednesday evening/Thursday:

preparation of draft individual assessment plan

Objective:

to have a draft assessment plan ready for presentation on Friday in plenary and a basis for planning with other involved stakeholders back in your home country

Framework: basis for the assessment plan are:

- agreed principles, leading questions and indicators
- goal / objectives of the assessment
- agreed outline / structure of assessment document
- agreed timeline for assessment exercise

Elements of the assessment plan:

1. Tentative list of principles, questions, indicators you wil address;
2. Tentative selection of case(s) [ideally one good one bad case];
3. Tentative list of stakeholders (level, type of involvement) you will involve in the assessment by question;
4. Tentative choice of participatory assessment tool by question;
5. Work plan indicating main steps / activities to be undertaken to plan and implement the assessment (see format on next page);
6. Tentative overview of required / available resources to carry out the assessment.

Keep in mind:

1. Your assessment should stay within the agreed framework;
2. Your assessment plan is a tentative one, which you should discuss with stakeholders that will be involved in the assessment to ensure a participatory approach;
3. You should probably plan for a preparatory workshop to explain and agree on the assessment with relevant stakeholders;
4. Your assessment plan should be realistic (i.e. taking into account available time and resources);

Presentation:

- Prepare a visualised summary presentation for Friday (10 minutes each)
- Put your draft assessment plan on computer (or ask IRC assistance if you are not conversant with computers)

Assessment of experiences with water resources management

Work Plan (Gannt chart)

#	Activity	December				January				February				March				April				May				June		Responsibility	Involved actors	Resources required
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2			

Notes:
1. Indicate milestones / deadlines to be met
2. Indicate who has responsibility for each activity
3. Indicate who will be involved in carrying out each activity
4. Indicate resources (finances, transport, etc..) required for each activity

How to prepare a poster

Project Presentation on posters

Why posters

Around twelve projects with experience in water resources management related activities will participate in the November 1996 workshop at IRC. The participants are requested to present their projects. In order to avoid lengthy and at times boring verbal presentations of project description papers during the workshops, we propose that each project prepares a POSTER presentation. The project poster(s) will not replace the project description papers, which are a very useful reference and tool to exchange information and experiences among participants and course staff.
The posters will be displayed in an exhibition area where other relevant project information (like reports, manuals, project related literature, etc.) can be displayed as well.

The presentation on (a) poster(s) has following advantages:

- Posters can be exhibited and seen throughout the workshop, project information is easily accessible to anybody interested to visit the exhibition area;
- Posters allow a more lively, visualised and interactive presentation by project representatives to other participants while walking from one poster to the next;
- Overall the presentation of all 12 (or more) participants will take a shorter time and will be more interesting than traditional verbal presentations.

How to prepare posters

- Use large flipchart or ZOPP/VIPP brown paper sheets (not more than two per project);
- Make sure you fix your information well on the sheets (glue, tape);
- Write or type clear headings for each type of information (use markers or large size fonts on a word processor);
- Use various ways to visualise your project (brief summary text, graphs, charts, maps, drawings, photo's, etc.);
- Don't over burden the sheets with information. Use key words and avoid long sentences (you can always refer to project description papers);
- Refer to documentation and other material you may have brought along for display;
- Use your imagination, making a poster is not difficult!

When to prepare the poster

You may either prepare the poster(s) **[not more than two of size up to 120cm x 180cm]** before coming to The Netherlands, or bring all 'ingredients' and finalise your poster(s) at the end of day one of the workshop.

Content of the poster

The main purpose is to get a quick overview on your project, its objectives, main activities, main outcomes, involved parties and linkages, geographical location, overview of experiences with water resources management issues:

- present project, objectives, activities, partners, target groups, etc.
- present activities related to WRM, strengths and weaknesses

To make the posters attractive and to better illustrate things you may use maps, charts, drawings, photos, etc.

Presentation of posters: *the exhibition*

The first day's afternoon will be spend on producing the posters and preparing the exhibition. The exhibition includes the posters and any other interesting materials you may have brought along to show others. Once the exhibition is ready, the whole group will make a guided tour through the exhibition. At each poster the author of the poster will give a brief explanation on the content. Group members are allowed to ask questions of understanding only, lengthy explanations and discussions should be deferred to later occasions. Each poster visit should not take longer than 10 minutes.

On the following page a rough outline of a poster is given. But other ways of organising your poster are possible, there is not one formula, it is up to you!

- see sample sheet attached -

Possible ingredients of an informative and attractive poster

Implementing/executing agency

External support agency

Name of the project

Country name + Flag

Overall goal: xxxxxxxxx xxxxxxxxxxxxxx

Project purpose xxxxxxx xxxxxxxxxxxxx

Objectives: xxxxxxx

1. xxxxxxxxxx
2. xxxxxxxx
3. xxxxxxxxxxxx

Project location area map

illustrations, photo's, etc...

Project activities and results
(add relevant illustrations · charts, graphs, organogrammes, etc...)

Project actors and partners / targetgroups
(add relevant illustrations ...)

Examples of activities related to water resources management

Potentials and constraints related to promote water resources management issues

add interesting visual info...

list of other documentation available during workshop at exhibition tables

Visual Presentation

By David Mason and Kati Autere, ILO/ASIST Nairobi

Some of you will have attended seminars or workshops where you were encouraged to participate in the action, and where the results were colourfully displayed on pinboards. If you enjoyed this experience, or if you just want to know how it's done, this pullout centrefold is designed for you.

Why use a visual presentation system for learning and working?

Scientific experiments have shown that

- people retain 20 per cent of information acquired by hearing
- people retain 30 per cent of information acquired by seeing
- people retain 50 per cent of information acquired by both seeing and hearing
- by a combination of seeing, hearing and personal participation, people retain 90 per cent of the information received.

The visual presentation system is a successful and innovative method for interactive work with and within groups. Those taking part do not just listen, but actively participate by each making a contribution to the visualisation of the subject matter.

No visualisation can mean a boring and ineffective meeting

When can you use the visual presentation system ?

The visual presentation system can be used for all types of group work: seminars, workshops, training, meetings and conferences

How to get started ?

No need to struggle to be heard–just pin it on the board. The visual presentation system guarantees that nobody in your training session or meeting is left out in the cold.

With the visual presentation system, you can make sure that whatever is said in your meeting is recorded immediately; all the ideas and opinions are written on cards. When they are also pinned on the pinboard, they will be remembered.

Everybody has a chance to give their opinion; when you see everybody else pinning their ideas on the board, you won't stay in your seat either.

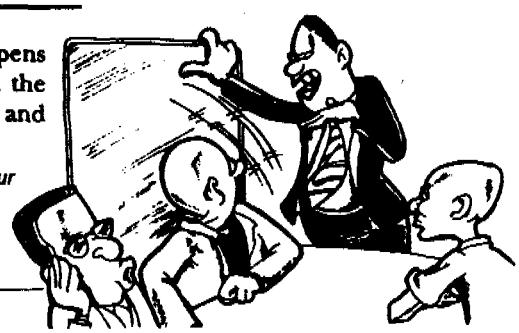
It is very easy to develop ideas; you just need to group the cards in a different way on the board and everybody understands what is going on.

You don't have to assign one person to keep records; with the cards, the recording almost takes care of itself.

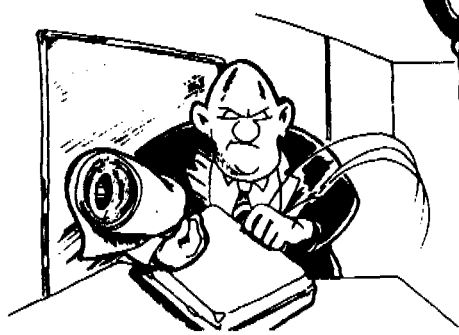
However, you as facilitator have to make sure that everybody knows how the system works. It is also your responsibility that the discussion remains within the topic and that it develops to conclusions.

Get yourself a pinboard or two, big brown paper sheets, coloured cards, marker pens and pins. Pin the brown paper on the pinboard so that it covers the board and you are ready to go.

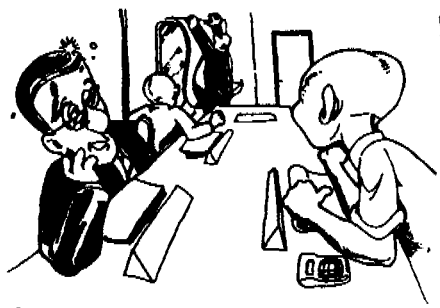
Detailed instructions on how to create your "tool kit" are on pages 13 and 14.



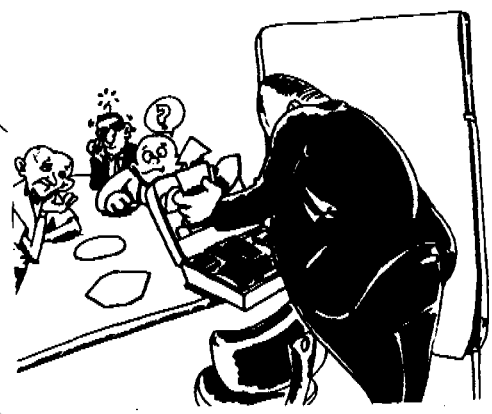
1. bring in the pinboard



2. get brown paper and a toolkit



3. pin the brown paper on the pin board



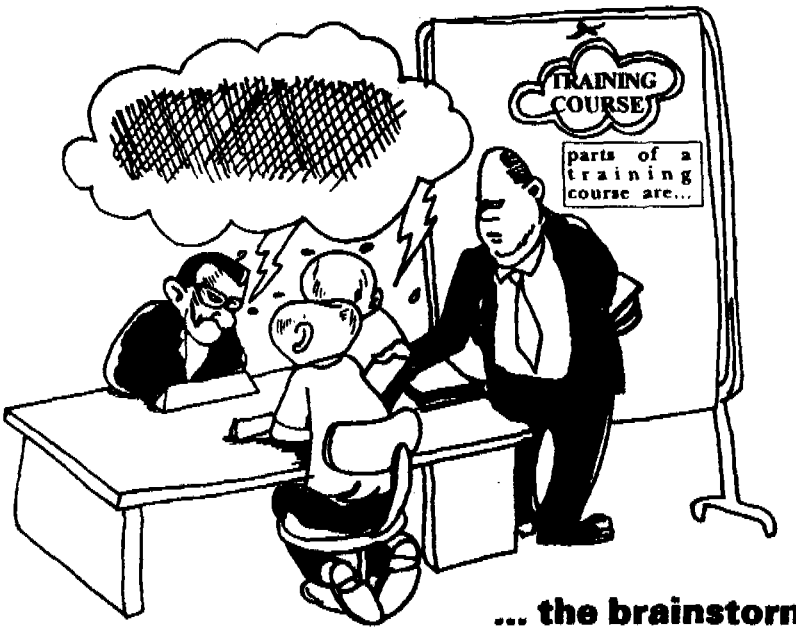
4.by the time you open your toolbox even the last sleepy participant is wide awake

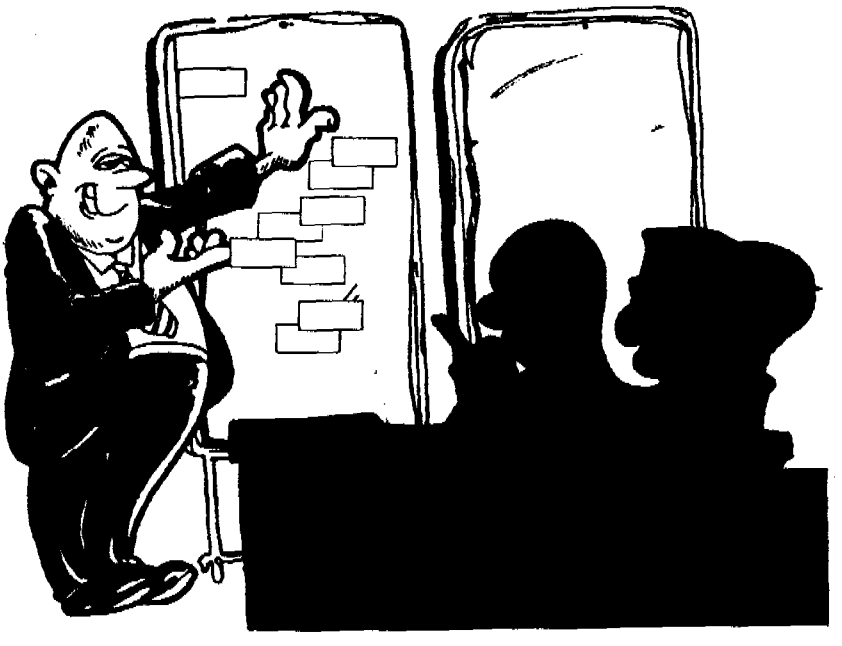
The key question and...

Pin the topic of your meeting on the board and arrange the participants in such a way that they can see both the pinboard and each other; it will make the discussion easier.

Give every participant a pile of cards of assorted colours, preferably of the same shapes, and two marker pens of different colours. Write a stimulating question (the key question of the meeting) on a card and pin it on the board.

Instruct the participants that the ideas they come up with as an answer to the key question, have to be written down on cards – one idea per card, described in two or three words. Keep it simple, as it will be discussed in detail later.





... the brainstorming session

Now you can give their intellects free rein – that is, you can start brainstorming. Though not a must, this is a very good way to start any planning session. With brainstorming, you quickly get the participants' minds into gear, producing ideas, experiences and opinions.

Ask the participants to pin their cards on the board as soon as they are ready with their ideas. You can do it for them yourself if you so wish, but it is usually a good idea to give the participants some physical exercise – to keep the blood circulating to their brains!

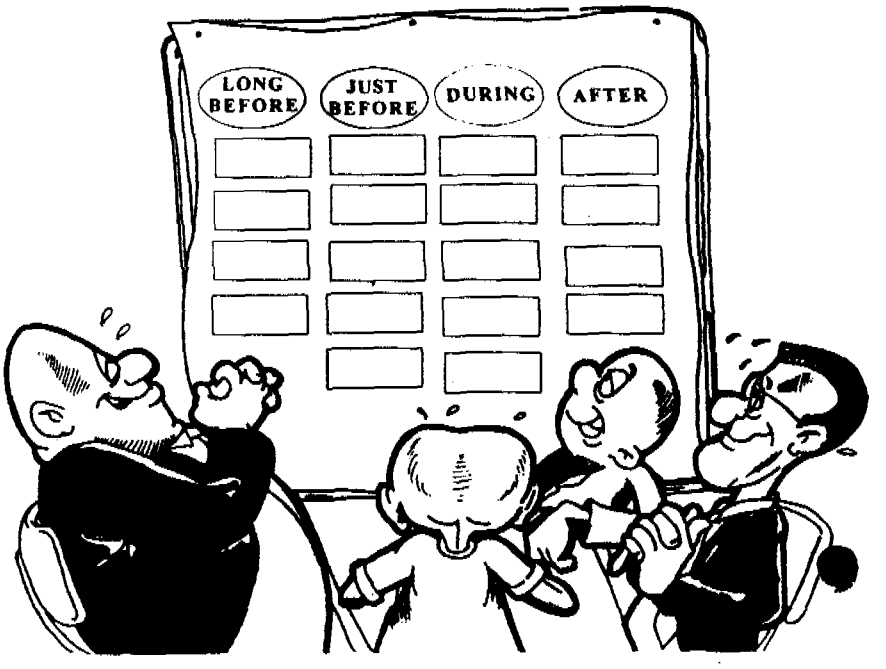
To begin with, it doesn't matter in what order the idea-cards are pinned on the board. The next step is to start organising the cards.

Organising the cards

Now, you have to agree with the participants how to organise the cards. Using two pinboards is the easiest; you can have the results of the brainstorm on one and organise them under agreed headings on the other, preferably using a new colour and/or shape for the cards bearing the headings.

A common way to organise ideas is to ask questions: why, when, who etc. Sometimes, for example in the planning of a training course, it is useful to have time-spans and deadlines for doing different things.

At this stage, you can look critically at the ideas - some may not be relevant to your subject, but could be worth keeping in mind for another time.



Who is responsible?

Your planning or training should also bring results. The next thing to do is to go one step further and make sure each task or idea has a suggested action and/or person responsible.

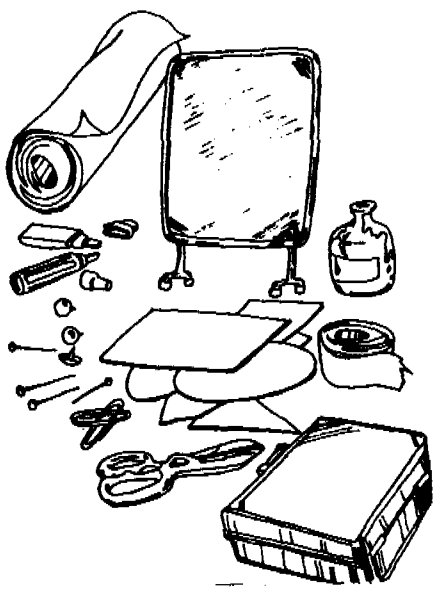
You can also organise the cards so that everybody sees their individual work plan directly.

What about recording?

After the meeting has agreed on what has been pinned on the board, you can glue the cards on the brown paper. This is the document and presentation of results.

If you need a more formal document, you can ask somebody to write the information down. Another, and much quicker, option is to photograph the sheet. Tape the sheet on the wall and take the picture.

Now you have both a big record sheet which you can even show in other meetings, and you have also recorded everything on film.



If you want to buy this equipment, contact:
Neuland AG
Blegistrasse 23
6342 Baar, Switzerland
tel: +41-42-310414
fax: +41-42-313044

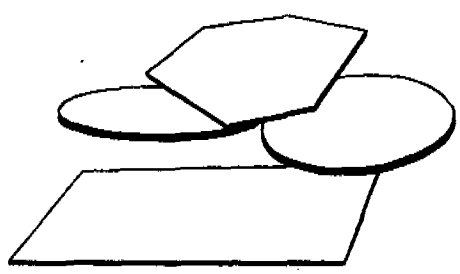
What is needed?

Material and equipment required

- Pinboards measuring 1.5m by 1.2m mounted on stands
- Rolls of brown paper with a width of 1.2m, or sheets cut to the size of the pinboard
- coloured cards in different shapes and sizes
- map pins with round heads 20 mm long. You will need hundreds of these. A pin cushion to hold these pins is very useful, but not essential
- chisel tip marker pens. You should have various colours but mainly black, with some red and blue. The number required depends upon the size of the group you are going to work with.
- A roll of masking tape
- A supply of glue sticks
- A pair of scissors
- A stout box to keep everything in.

How to make your cards?

- obtain sheets of thin cardboard (150 gms weight) of different colours
- cut them up with a paper cutter (fast!) or with scissors (slow!) into the sizes and shapes you want
- suggested shapes and sizes are: many rectangles 205 mm by 95 mm; a few ovals 190 mm long and 110 mm wide; a few circles of various radii (95 mm, 140 mm, 195 mm). You could also try hexagons 165 mm wide, and rectangles with their ends cut to from rhombus shapes.



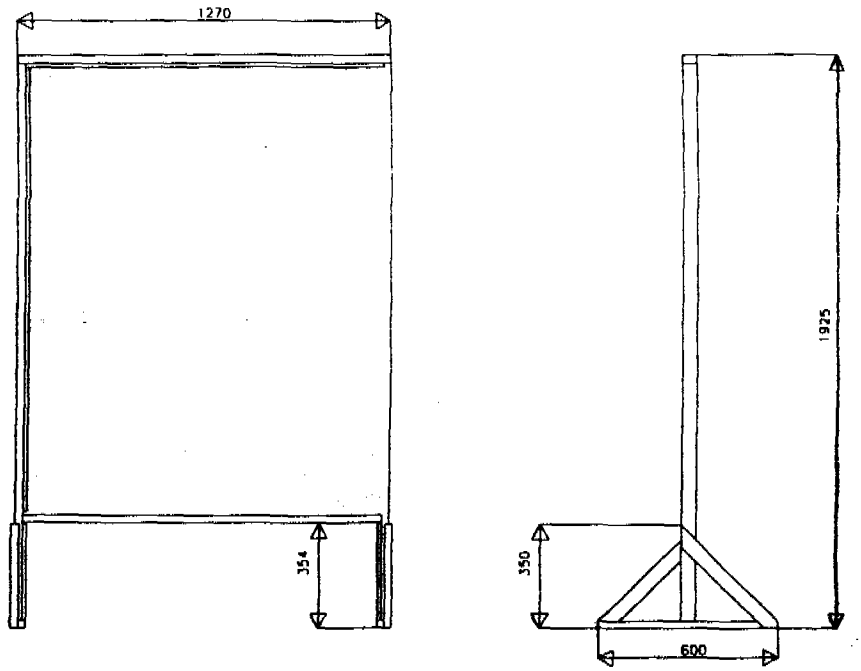
Pinboard construction

How to make your pinboards

(give the job to your carpenter)

You will need (for each pinboard)

- a sheet of fibre board (ceiling board) 152 cm (5 feet) long by 122 cm (4 feet) wide and about 16 mm (5/8 inches) thick
- pieces of planed timber 50mm (2in) wide by 25mm (1in) thick: two 190cm (6ft 3in) long (A), one 127cm (4ft 2in) long (B), one 122cm (4ft) long (C), two 60cm long (D), and four 50cm long (E)
- pieces of planed timber 12mm square: four 149.5cm (4ft 11in) long (F), and four 122cm (4ft) long (G)
- screws, nails and wood glue
- paint

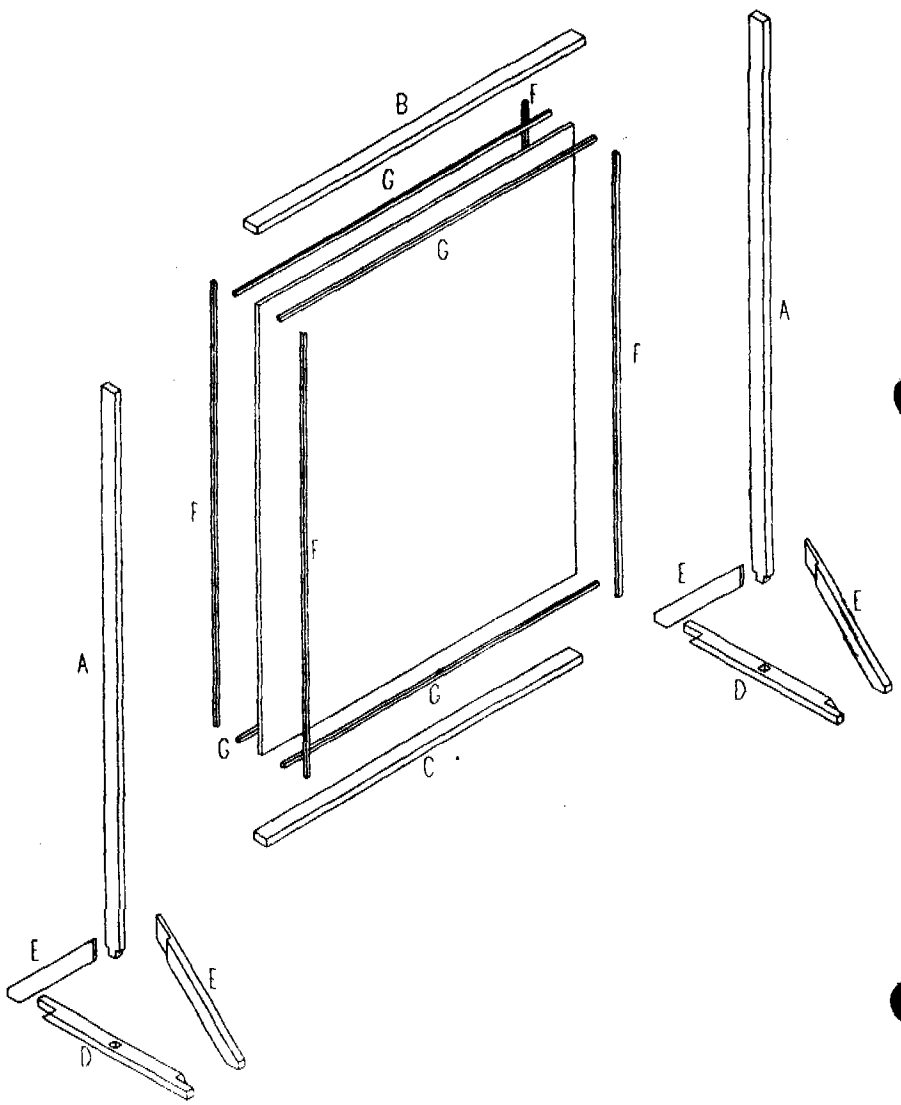


Dimensions in millimeters

Assembling your pinboard

(see the diagram opposite)

1 Cut the fibre board to size
2 Cut the timber to length
3 Cut a tenon at one end of each of the A pieces
4 Fit the two A pieces and the B and C pieces together to form the frame for the fibre board. Screw and glue the four joints
5 Nail two of the F pieces and two of the G pieces around the inside of the frame
6 Place the fibre board inside the frame, and retain it in place by nailing the remaining F and G pieces around the edge
7 Cut a mortice into the centre of each of the D pieces. These form the bases for the two uprights (A) of the frame
8 Cut the ends of the E pieces at an 45 degree angle to form the bracing legs
9 Cut a 12mm rebate at each end of the D pieces to take the E pieces
10 Cut a 12mm rebate at the top end of each of the E pieces to fit around the A pieces
11 Fit and glue the uprights (A) into the bases (D) and screw and glue on the braces (E)
12 Paint the frame and the fibre board.



Using cards to encourage all participants to participate in workshop

Rules for involving participants

- Every participant is a resource
- Everyone helps everyone
- Every facilitator is a participant
- Every idea counts
- Use a 'yellow' card to stop the talkative
- Deal with uncomfortable feelings quickly

Rules for card writing

Do's	Dont's
write one idea per card	build handdug wells; improve latrines
write only 3 lines per card	don't write more than 3 lines as it becomes hard to read
use key words not sentences	sentences can get very long and lose their meaning....
write clearly	*write clearly and not like this...*
write large enough for others to read	writing like this can not be read from a distance

Agreed Assessment Document Structure

Title Page

Contents

Contents list
List of tables, figures

Executive Summary

Summary of whole document

Preface

Acknowledgements to colleagues and partners

Introduction

Chapter 1 Background

Overview of existing socio-economic, and physical setting including an overview of water resources in the region, the environmental setting, water problems faced.

Chapter 2 Overall Assessment Method

Description of the technique used for the whole assessment, how it was planned, who was involved, how it was implemented, over what period etc... Clearly discuss ant assumptions made and limitations or constraints.

Chapter 3 Water Resource Management Principles Addressed

1. Principle 1

1.1 Background

General backround to aspects relating to these issues. For example how is this principle addressed in the project? Describe the process of change within the project where this issue is relevant.

1.2 Methodology used

Describe the methods and tools used to assess the different questions relating to this principle, who specifically was involved and what role did they play. How it was planned and applied.

1.3 Results

Present the results / outcomes of the assessment, or answers to the questions. Ensure that results discuss related matters and are not just brief or cursory responses.

1.4 Lessons learned

From the results and context of the project or programme discuss the conclusions that can be drawn or lessons learned. Issues raised through examining this principle will highlight the importance or lack of it in your situation. What significance do your findings have to others or yourselves? How can we learn from your results?

1.4.1 successes

1.4.2 mistakes and weaknesses

1.4.3 open issues

2. Principle 2

If you do not feel it is possible in your circumstances to address this principle please explain why not.

2.1 Background

Describe the reasons why this principle is not relevant in the context of your project. If unsure how to progress discuss the issues raised by the questions and why in your circumstances they are of no relevance.

to .....

8. Principle 8

Chapter 4 Conclusions

If you make any recommendations in light of the assessment lessons please include them here.

Annexes

Include statistics, supporting information, large numbers of maps, and other very relevant referal material in annexes, remember in the text to refer readers to the annexes for appropriate information.

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References

Documentation Techniques

- Be innovative
- Within the agreed structure anything clear and concise goes !
- photographs
- Graphs (make them clear)
- Cartoons
- Use drawings / maps / results from participatory sessions

present information in numerous ways:

- ♥ newspaper articles
- ♥ as mini posters
- ♥ slide shows
- ♥ video
- ♥ interactive power point show on computer

Use evey cunning approach you know to make it interesting to read

Styles of reporting

There are many ways in which results can be presented. For this WRM workshop, we would like to ask the participants to present brief daily reports on what has happened the previous day. Each day, three participants will be asked to prepare this presentation session, using a technique that has not been used by other participants in earlier daily reporting sessions. The objective of changing techniques is to stimulate creative thinking on different reporting techniques. The following are a few suggestions on how to present results, but of course every group is open to use any other method they like.

Writing

Aid memoire	For a specific time period (day, week, etc.), write down in chronological order the main activities and other important things that have happened, e.g. decisions taken, problems identified, persons interviewed, results of an activity.
Bullet presentation	Write down as concise as possible and in order of importance all points of importance dealt with during a certain time, giving every point a separate bullet mark.
Newspaper Poster	Present key information concerning the days activities in columns on a wall poster - utilising cartoons or pictures to emphasise issues.

Visual methods

Pictures & photos	Of each important event or result achieved, make a picture of photograph, and give a short description.
Slides or video	Very useful for various types of presentations that will remain interesting for some time. Disadvantages are expertise and equipment needed to make a presentation (and to show it).

Visual and text

Poster presentation	Of a certain event, activity or project, make a poster using pictures, graphs and text highlighting the main issues you want to address.
Participatory presentation	Ask participants to provide feedback and information on the previous days activities, this can be listed on a flipchart or written on cards which may then be clustered according to the points raised. A brief discussion should highlight key points not included, and address any bias within the feedback.

Oral

Show or performance	Especially suited to bring specific messages and information across when the audience is illiterate. But also very stimulating as a change during a maybe sometimes boring workshop.
Radio broadcast	Simulate a radio broadcast on the latest news or developments.

Monday, 11-11-96.

FIELD INSIGHT

In order to focus attention explicitly on the special role that women play in relation to water, sanitation and health, the facilitators designed a multi-faceted activity in which a distinct task was assigned to each of three groups. By consolidating the findings of the three groups, participants were able to:

- identify problems that affect rural Zimbabwe communities and rural women in particular;
- examine how women's educational, socio-cultural, economic and health problems influence women's role in water, sanitation and health;
- suggest ways that the community at large or Ministry of Health personnel might help to resolve the most pressing problems affecting women's role in water and sanitation.

The plenary discussion not only contributed to a synthesis on the above items but also provided an opportunity to share the mechanisms or techniques which they had used to arrive at their respective conclusions.

Zimbabwe

the logic and potency of this common sense conclusion. Women have often been regarded primarily as beneficiaries: in exchange for the gift of a pump which would reduce their water hauling workload, they are expected to provide free labour for construction, and to perform routine tasks on a voluntary basis such as attending to the cleanliness of the pump apron and its surroundings.

However, recent field experience of projects assisted by PROWWESS and other donors is demonstrating that rural women, with modest training combined with encouragement and technical support, can make a highly significant contribution to the sector. They have shown themselves capable of fulfilling intelligent and responsible roles in community level planning and management, including needs assessment, site selection, pump maintenance and fund-raising and have exercised intelligence and initiative to increase project effectiveness and to widen support at the local level.

Thus the concept of community participation in the WSS programme is not complete unless rural women, along with their families, play a responsible role in both its planning and management.

When is "Participation" Real Community Participation?

There have been many efforts at community participation. Some work. Some do not. The following cases from the WSS sector illustrate that community participation may be more complex than we think.

The "Cheap Labour" Concept of Participation

In some WSS projects, the community is considered to have participated when it provides free, unskilled labour for construction and donates raw materials "in the spirit of self-help".

The role assigned to villagers is to carry pipes, dig trenches, and perform other unskilled construction tasks. The thinking part (surveying, planning, designing, etc.) is done entirely by engineers and other technically trained personnel. The one benefit derived from this arrangement is obviously the lowering of costs.

Some believe that labour contributions increase the people's identification with the system being built. The assumption is that if they have built a system with their own unpaid labour, they will take pride in it and want to maintain it in good order.

Others contest this assumption. They point out that pride of ownership depends also on what the people's other priorities might be. If the construction project is not a priority for the average community member, labour may be contributed under duress, not voluntarily. If so, then interest in using and sustaining the facility may die after a while.

The "Cost-Sharing" Concept of Participation

In the eyes of other project managers, the key issue is not just cost reduction but cost recovery. They advocate at least token contributions by community members in cash or in kind towards maintenance. People's willingness to invest a part of their meagre resources in maintaining the system (e.g. to pay the local mechanic) is taken as an indication that they value the service and are therefore committed to keeping it in good working order.

Others believe that agreements to maintain a system may not in themselves be a reliable indicator of local commitment. For example, if average community members and, in particular, women have not been involved in decisions concerning the system, they may revert to their old water sources when the pump breaks down rather than contribute towards the cost of repair.

The "Contractual Obligation" Concept of Participation

From another standpoint, neither of the above concepts of community participation is considered adequate to prevent large-scale project neglect, misuse or abuse of installed water supply systems.

Instead of focusing primarily on the cost factor, attempts are made to establish at least a minimal local infrastructure to manage and maintain the system. On the assumption that this infrastructure will be able to generate and sustain local support, project designers have concentrated on three of its elements: local leadership, local committees and locally recruited maintenance volunteers. The assumptions are these:

- Winning over local leaders will help legitimise the project.
- Water committees will be able to promote, manage and monitor local contributions and water usage.
- Through training of volunteer mechanics, pump minders or other local aides, technology can be transferred to the community.

To make these requirements more formal and binding, a contract is often drawn up. The contract spells out in detail what roles and responsibilities apply to each partner in the project (e.g. the government and the community). The community has the option to either accept or reject the terms of the contract or it may even negotiate some changes through the formal power structure of the village.

Sufficient time may be allowed for people to review the terms of the contract among themselves. It is assumed that by assigning management roles to local water committees and by training local mechanics there is greater assurance that the terms of the contract will be fulfilled.

Others, however, question whether this approach sufficiently involves the average villager. They feel that contracts that have been negotiated primarily with village leadership and presented at large village meetings may not be fully understood by the mass community. Therefore, after a while, contributions in labour, cash or in-kind may decline.

Setting up local committees immediately following the first village meeting also runs the risk that the best or the most representative people may not be nominated. Similarly pump caretakers who have been hastily selected may drop out for lack of commitment and accountability to the community at large.

The "Community Decision-Making" Concept of Participation

In the light of the malfunctioning, disuse or abuse of numerous water systems installed in rural communities in recent years, some project managers have come to

believe that a substantially different approach than the above is needed to create a strong sense of local responsibility for using the improved resources well, and for sustaining them in good order.

They do not minimise the importance of cost-cutting and cost-recovery measures nor dispute the need for local institutional mechanisms. However, they contend that genuine commitment and widespread support by the community as a whole will only come about if these other measures have been preceded (and continue to be accompanied) by a process of participatory community education and by involving a broad base of the community in decision-making right from the start.

Thus the decision-making requirements apply not only to the male leadership but also—and perhaps particularly—to village women. They point out that women's lack of schooling and literacy skills should not prevent them from making valuable contributions to community decision-making.

There are others who doubt that such an approach can be applied on a large scale. They feel that field staff are not equipped to involve people in this manner and that their training would take too long, be too difficult and cost too much. But, supporters note that participatory training need not be either excessively difficult or costly and contend that, in any case, the long-term benefits would justify the investment.

Questions for Everyone in a Community Participation Project

- Should one rely on local prestige leaders alone to mobilise local support for project activities? What are the pros and cons?
- What approach will assure that the community at large voluntarily comes with ideas and solutions, e.g. on how best to constitute work groups or committees, how to pay for services, and so on?
- Will the experience of working together in physical labour for construction (e.g. digging trenches, carrying loads) suffice to make people identify the programme as their own?
- If women and other disadvantaged groups do not actively participate in community level discussions, what if anything can or should be done about it and by whom?
- How soon after a village-wide meeting to introduce the project should a committee be constituted (or identified) to take responsibility for monitoring and supporting local usage and maintenance of the facilities provided?
- How can technical (hardware) and social (software) inputs best be co-ordinated and integrated so as to encourage and permit full and effective involvement of the people?
- What are some reliable indicators that community participation in project activities is effective?
- What educational process should accompany this effort?
- Which local attitudes, beliefs, or behaviours, stand in the way of full community collaboration in the project?
- What kind of training do staff need to fulfil this role? Who should be trained and where and when?

Participatory Assessment Techniques Applicable for WRM
IRC Water and Sanitation Centre, November 1996

Christine van Wijk and Esther de Lange

This hand out describes in detail the use of a number of participatory techniques which can be used to assess WRM activities and projects. The following techniques are being described:

1. Mapping of the catchment, water sources and land uses.
2. Venn diagram
3. Matrix with ranking
4. Pocket chart

The tools in this hand out are described in sequence, one building on the results of the other. However this does not mean that the tools can not be mentioned seperately, or in sequence with other tools.

1. Mapping of the catchment, water sources and land uses.

Purpose: to increase awareness and insights among participants regarding the different uses of land and water in a catchment area, and the impact of the various land and water use activities on the water resource(s).

Needed materials: large sheets of paper, felt pens in different colours, rectangular cards, adhesive tape, small stickers in two colours.

Steps:

1. The facilitator explains the objective and method of the exercise, and divides the group of participants into smaller groups (e.g. according to gender, age, class, completely mixed).
2. The groups draw the chosen water system with felt pens on the large brown sheet.
3. Each participant writes cards with the various uses of the water system and the surrounding land that affect the water source system, e.g. irrigation of cash crops, irrigation of food crops, supply of drinking water, disposal of human or industrial waste, use of chemicals, forestry, mining.
4. The cards are reviewed by the group and selected cards inserted into the drawing at the appropriate spots.
5. The participants indicate with a different coloured sticker on each fixed card whether the use has an impact on water quality, quantity or both.
6. The facilitator reflects upon and analysis the results together with the group.
7. The process and results are being documented.

2. *Venn diagramm*

Having identified for what uses the water resource system is used and whether this affects quantity, quality or both, the participants will analyse what stakeholders are involved in each use and how much influence they have.

Purpose: to identify different stakeholders with an interest in a specific water source/system, and indicate their level of involvement in the management of that source.

Needed materials: large sheet of paper, felt pens in different colours, circular cards (diameter about 10 centimetres), adhesive tape.

Preparation: the facilitator draws a circle (diameter about 10 centimetres) in the centre of a large sheet of paper. In the circle, (s)he writes "management of the water source".

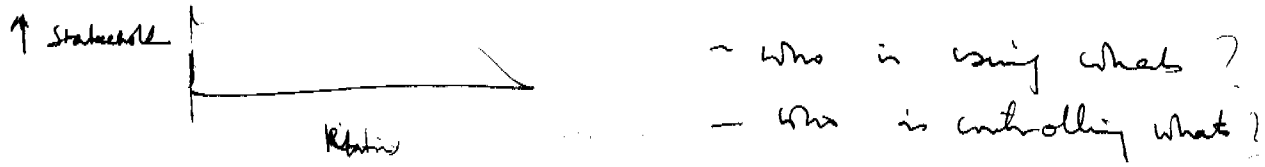
Steps:

1. The facilitator explains the objective and method of the exercise, and divides the group of participants into smaller groups (e.g. according to gender, age, class, completely mixed).
2. The participants write down the different users and other stakeholders on a new set of circular cards, based on the inventory of water uses made in the first exercise. At user level, it is important to distinguish between different socio-economic, class, religious and gender groups if this influences water use and interest.
3. The participants are asked to stick the different cards representing the stakeholders at the large paper sheet. Thereby the distance to the inner circle mentioning "management of the water source" should reflect the level of involvement of each specific stakeholder in managing the water source.
4. The result is briefly presented, and the facilitator makes sure that all items are understood.
5. The participants discuss which stakeholders have contacts with each other or even co-operation on water resource management.
6. The facilitator reflects upon and analyses the results together with the group.
7. The process and results are being documented.

3. *Matrix with ranking*

After identifying the level of involvement of the various stakeholders in the management of a water source system through a Venn Diagramm, the participants will characterise the nature of involvement of the different stakeholders through a matrix exercise.

Purpose: to increase awareness and insights among participants regarding differences among stakeholders in accessing and using the water source(s), and managing and controlling it.



Needed materials: a large sheet of paper, felt pens (in different colours), rectangular cards, adhesive tape, small stickers in various colours.

Steps:

1. The facilitator explains the objective and method of the exercise, and divides the group of participants into smaller groups (e.g. according to gender, age, class, completely mixed).
2. The participants write the water uses identified during the mapping on a new set of rectangular cards. These are placed along the left hand side of a brown paper sheet (column).
3. The identified stakeholders are written on another set of cards, reflecting national, regional and local levels. Think of segregating local levels for class and sex and other important socio-economic and cultural distinctions.
4. The cards are compared and the agreed categories of stakeholders are fixed in a horizontal row at the top of the paper, so that a matrix is formed.
5. Using small stickers with two different colours, participants are asked to indicate which stakeholder(s) are accessing or using the identified water sources/uses (e.g. green colour), and which stakeholder(s) are involved in decision making and managing the water source for each of the water uses (e.g. red stickers).
6. The facilitator reflects upon and analyses the results together with the group.
7. The process and results are being documented.

4. Pocket chart

Purpose: to create insight and understanding on the division between men and women of tasks and responsibilities regarding water, and access to and control over water.

Needed materials: large sheet of paper, felt pens of different colours, rectangular cards, adhesive tape.

Steps:

1. The facilitator explains the objective and method of the exercise, and divides the group of participants into smaller groups (e.g. according to gender, age, class, completely mixed).
2. Ask participants to write down on rectangular cards for what different activities the water resource(s) are used by adult men, adult women, male and female children (NB: In some cultures, a further distinction in adult men/women and male/female elders may need to be made. Here we will not do so). For example, irrigated cash crops forestry, grazing, fish ponds, on the productive side and on the reproductive side: water collection, waste/excreta disposal, laundry, irrigated food crops, gathering traditional medicines, etc.
3. Group the cards in a horizontal row on the upper side of a large paper, putting unproductive activities at the left, and productive activities at the right hand side (the

facilitator might have to explain the differences in productive and unproductive activities).

4. The 4 gender/age cards are fixed in a vertical column at the left side of the paper. In this way a matrix is formed.
5. Then each participant is asked to place black marks in the matrix indicating which persons have *access to and use* water for the activities stipulated in the horizontal row. At the same time, they are asked to place red marks indicating which persons have *control over* the water used in the different activities.
6. The facilitator reflects upon and analyses the results together with the group.
7. The process and results are being documented.

Final remarks

Documentation. The process of a participatory tool should be documented, e.g. in the form of drawings, photographs or on video. The end products are copied on paper (drawing and matrix).

Use of the tools. The tools are described to be used with staff and officials at higher (national or regional) level, to give common insights into the problems of water resource use, the need for integrated water resource management, the range of interest groups (stakeholders) and their relative involvement or exclusion. They form one of the bases for subsequent problem analysis and planning of problem solving actions. They are also tools for helping setting up a monitoring system, by making clear on what aspects hard baseline and monitoring data need to be collected.

Adjustment to community level. To use these tools at community level, have a local artist make small cards with coloured drawings of the locally occurring uses of water and land in the local water resource system, and the various stakeholders (gender-specific if relevant. The community assembly makes the drawing of the water system and places these cards into the drawing to illustrate uses. Take care to include also traditional uses of the water source and catchment area, such as gathering firewood, food and medicinal herbs, doing laundry, etc. They then discuss what impact these uses have on water quality and quantity, who are the actors, and who are negatively affected by these actions.

For the analysis of access and control, use drawings of local decision-makers (male leaders, female leaders, wealthy men, wealthy women, poor men, poor women, etc.) to indicate stakeholders. You can fix the pictures of decision makers on a wall with envelopes underneath and ask each man and women in the area to vote, with a small slip of paper, or a bean or other locally suitable item, on who makes the decisions for a particular use of the water source and its surrounding land. Segregation of the results by sex is possible by giving men and women different colour cards or beans. Instead of written cards also use drawings to illustrate different types of uses (irrigation, water supply, waste disposal, et.).

Participatory Tools

Compiled for the WRM workshop, November 1996

General remarks

Participatory tools must be in accordance with the age, experience, language and education level of the participants. A higher education level does not necessarily mean more knowledge, as knowledge may depend more on life experience, but more highly educated people will be more familiar with words and graphics.

Characteristics of participatory methods are collaboration, problem-solving orientation, generating knowledge, releasing creativity, using multiple methods, and involving experts as facilitators (Narayan, pp. 9-19).

Dealing with very formal people who receive their authority out of status and knowledge, and not out of their attitude and congenial relationships with others, may be a very difficult challenge. It should be explained carefully that participatory tools are based on democracy, involving everybody in the generation of useful and applicable knowledge.

In the UNICEF manual, for each tool it is explained for what kind of occasion the tool is most useful, e.g. to stimulate people's concentration just before a difficult session, to relief tension through physical activity, etc.

Participatory tools to assess indicators

Essential general tools

1. Semi-structured interviews	Discussions with individuals or (small) groups focusing on a certain issue. Asking clear and neutral questions is very important (Schönhuth pp.77; Case pp. 104-106).
2. Focused group discussion	To give and receive information, to discuss issues of relevance, to make agreements, to identify problems and solutions, to plan activities, to negotiate conflicts, to validate evaluation results, and to formulate recommendations (Case pp. 90-92).
3. Use of cards	Purpose is to quickly gather ideas of participants like a collective mirror, visualised and structured on a board. Can be used for any group exercise where an overview of different issues is needed (problem analysis, objective tree, planning, monitoring and evaluation, etc.). The use of cards of different colours enlarges insight in overview and structure of mentioned issues. Some basic rules are

and structure of mentioned issues. Some basic rules are 1 idea per card; not more than 3 lines on one card (UNICEF pp. 69, 79-82; Case pp. 97-98).

Participatory diagramming, mapping and modelling (Schönhuth pp. 82-96)

4. Participatory mapping	Can be socio-economic, ethnic, health, or resources related (Srinivasan 1990 pp. 99-100; Schönhuth pp. 89-92; Narayan 1993 pp. 40, 49; Narayan 1994 pp. 24-25; Case pp. 103; Case pp. 122-123; Srinivasan 1994 pp. 69-72).
4A. Mapping of water resources	Drawing an overview of all available water resources in a certain area, indicating for both men and women: use (access), labour, responsibility of O&M, and control (Srinivasan 1990 pp. 99).
4B. Gender analysis on access to resources	To collect information, raise awareness and understand how access to and control of household and community resources vary according to gender. Use three large drawings of a man, woman and a couple, and at least 15 cards depicting different resources and possessions owned by local community members. Place the large drawings on a row, and ask participants to sort the small cards. Facilitate discussion, and be sure to include everybody (you can also separate men and women, and compare results in plenary session). (Srinivasan 1990 pp. 106-109; Narayan 1994 pp. 28-29).
5. Transect walk	The area under study is systematically traversed together with informants. Everything encountered is discussed and recorded. Transects distinguish different ecozones, land uses and problem areas. Historical transects also possible (Schönhuth pp. 83-85).
6. Time marking	Identify with participants all activities they (men and women) carry out during a day, week or season, and ask them to allocate time in hours, parts of the day, or another appropriate measure. Depending on the participants this can be done by using cards or drawings (Srinivasan 1990 pp. 139-141; Narayan 1994 pp. 34-35).
6A. Daily activity chart	Women are asked to make a (pie) chart that depicts their activities during a typical day and another chart to describe those of a man's workday. Men are asked the same. After finishing the charts, a discussion takes place on the differences that appear. You can also use three

	big drawings of a man, woman and a couple, and a lot of small cards with different activities on it. Ask participants to sort the small cards and facilitate discussion (Narayan 1993 pp. 108; Narayan 1994 pp. 30-31).
6B. Seasonal calendar	Are compiled on the basis of interviews and group discussions. Relatively complex interconnections and relationships between natural seasonal cycles and their impacts on human activities (and e.g. economic consequences) are jointly depicted (Schönhuth pp. 85-87).
7. Chapati or Venn diagram	Ask participants to write down the names of all organisations involved in a certain situation or problem on different circular pieces of paper, and to stick them on a board locating each in such a way that it reflects to distance or collaboration felt by the participants (Schönhuth pp. 93-94).
8. Understanding decision-making processes	To encourage and stimulate people to understand and *and evaluate the decision-making process* and their participation in it. Use cards showing project actors (gender sensitive), and cards depicting key decision points or factors such as site selection, planning, technology choices, etc. Ask participants to sort the cards and facilitate the discussion. This can also be done for men and women of a community related to the community's resources (ask participants to indicate where they feel decision-making power lies for each resource, for men, women, or somewhere between), (Narayan 1993 pp. 43-46, 57; Narayan pp. 50-51).

Ranking, rating, scoring, sorting techniques (Schönhuth pp. 96-105; Case pp. 107-111)

9. Pocket chart	Allows for participatory data collection and analysis by asking participants to vote for a certain situation expressed on a figure. Consists of a horizontal row of pockets with pictures attached above, possibly accompanied with a similar vertical row. People are asked to drop something in a small number of pockets, responding to a question like for what purpose do you use water (can be combined with the type of source), what are conceived problems, etc. (Srinivasan 1990 pp. 93-97; Narayan 1993 pp. 47; Narayan 1994 pp. 26-27).

10. Community en'tal assessment	To gather information in order to analyse the environmental effect of planned and/or completed activities, by using a matrix framework (Case pp. 112-115.
11. Sorting pictures	Give participants a number of pictures and ask them to categorise these in piles reflecting good, bad and in-between practise in relation to WSS problems. After that participants can add any picture of a problem identified in their situation. This exercise develops participant's self-confidence in analysing their own problems at local level (Srinivasan 1990 pp. 101-103).
12. Multi-dot question	This involves selecting the most important issues felt by the participants and making a choice between different alternatives, by giving each participant a few dot stickers and ask them to mark issues of their major concern. Very good for priority ranking (UNICEF pp. 86).

Various

13. Pictures and photographs	Pictures and/or photographs can be used to recall the history of e.g. a certain village, or the use of land or water resources. Presenting two pictures of the same place but in different conditions (one in good and one in bad shape) can stimulate people to focus on causes and effects of certain activities or happenings. You can also make three pictures of one situation/location visualising the past, present and future (good exercise to begin a situation analysis, UNICEF pp. 109; Srinivasan 1990 pp. 89-92; Narayan 1994 pp. 20-21; Case pp. 93-96).
14. Role play	Role plays can be used to let people tell a story, to show people a story (often including learning lessons), to analyse a theme based on real-life situations, to deepen understanding of a topic, to synthesise and present results, or to improve people's insight in interests and motives of different actors in a certain situation (UNICEF pp. 113-116).
15. Story with a gap	Show participants two pictures of a certain situation, one reflecting before (problem situation) and the other after (problem solved). Ask them to fill in the gap of the story, explaining how to go from before to after. This exercise is often use to engage community members as a group in planning activities (Srinivasan 1990 pp. 118-119; Narayan 1993 pp. 71, 108; Narayan 1994 pp. 42-43).

16. Women's needs assessment	To collect information, raise awareness, and understand the priority needs of women based on their different tasks, concerns and responsibilities, with the use of cards depicting women performing various daily tasks (including blanks). Ask women to sort cards according to "difficult to perform", "easiest", "most time-consuming". Facilitate discussion and ask participants which problems they can solve with the resources available in community (Narayan 1994 pp. 32-33).
17. SWOL analysis	Analysis of strengths, weaknesses, opportunities and limitations for different topics by using pieces of large paper (group discussion), (Case pp. 129-131).
18. Visualised discussion	During an open discussion, one facilitator chairs the discussion and one writes all main discussion points on cards, pinning them down on a board, thereby capturing and visualising the key points of the discussion (UNICEF pp. 83).
19. Buzz groups	Buzz groups are groups of 2 or 3 persons who discuss a topic without breaking up the plenary, to quickly get selected reactions, e.g. on drawing questions on a topic, conclusions on a discussion point, etc. (UNICEF pp. 120).
20. Use of flexi flans	Flexi figures can be used in innumerable ways to express ideas, feelings, events, hopes and concerns (Srinivasan 1990 pp. 83-87; Narayan 1993 pp. 84; Narayan 1994 pp. 22-23; Srinivasan 1994 pp. 73-77).

Tools for follow-up planning

Impertinent PERT Chart	Listing of all steps needed to achieve an objective in a given period of time. PERT stands for Programme Evaluation and Review Technique (Srinivasan pp. 51-54 and 125).

Tools for (rapid) monitoring and evaluation

(See also Srinivasan pp. 45-50)

Monitoring forms	Development of monitoring forms together with participants (Narayan 1993 pp. 29; Narayan 1994 pp. 56-57).

Use of cards	At the end of a day or exercise, ask everybody to write down one (or more) positive and one negative aspect. This can also be formulated as something they have learned, or otherwise.
Moodmeter	For daily, subjective measurement of the mood and atmosphere by using symbols, not directly related to content issues (UNICEF pp. 129).
Flash	Obtaining a quick impression of the opinion or mood of the group by asking short individual statements or responses to a particular question, which are than written down on cards (UNICEF pp. 130).
Evaluation committee	At the beginning of every day, 2. or 3 persons are asked to evaluate the day's events in a participatory way, presenting findings next morning. The committee can rotate daily (UNICEF pp. 131).
Rapid part. evaluation	Involve participants in determination of factors to be evaluated, write them down on a flip chart with a rating, and ask everybody to mark a dot (UNCEF pp. 134).

Tools to become familiar with each other

Cobweb	All participants stand in a circle and through around a ball of string, asking each participant who catches the ball to answer a question, like: name and country, what are you expectations of this workshop, etc. (UNICEF pp. 99).
Hopes and fears	Sharing expectations, hopes and fears about the workshop that can be monitored during the workshop, either through cards or otherwise (Srinivasan pp. 73).
Mutual interview	Two persons chat for about 5 to 10 minutes with each other, writing information on chart paper, and drawing a symbol for the other person. Everybody is asked to present themselves as being the person they have talked with before the group (UNICEF pp. 101).
Name cards	Ask everybody to write the name they want to be addressed with on a small card, and make one pile of cards. Ask one person to select a name card and look for the corresponding person.

Newspaper hit	Everybody stands in a circle, one person in the centre with a rolled newspaper in her hand. Somebody from the circle calls the name of a fellow participant, after which the person with the paper has to hit the mentioned person before she names somebody else.

Ice breakers

The purpose of ice breakers is to animate participants, to motivate them for the next session, to reach a higher level of concentration for the next activity, or for changing from a purely intellectual activity to one where more senses become involved.

Mail	Sit in a circle of chairs with one person standing in the centre. When the person in the middle says I have a letter for ... and names a characteristic (like colour of shoes, country of origin, etc.), everybody who meets the description has to stand up and find another chair. The person who doesn't find one has to stand in the centre next (UNICEF pp. 93).
Animal game	Make a circle, and give everybody a signal that reflects a specific animal. One person starts to make her own signal, followed by the signal of somebody else. Once your signal is made, you respond with it and add another animal. When you miss you have to move to the end of the line.
Human web	Participants form a circle, close their eyes, stretch their arms forward and move slowly inward until they feel two other hands they can grab. Everybody opens their eyes and have to try to untangle the web (UNICEF pp. 91).
Assassin	One participant is told to be the assassin, and has to kill everybody by winking with one eye. People form circles and have to unmask the assassin, and may accuse anybody from the group. Once winked you have to drop dead, even as when you made the wrong guess (UNICEF pp. 94).
The bridge	Two groups of participants stand on a row of chairs, with the last chair empty. They have to reach a goal line as fast as possible by moving the last chair upfront. If somebody falls from a chair, he/she is removed from the game (UNICEF pp. 94).

Follow the leader	One person stands in the middle of the circle of participants and gives verbal commands (e.g. touch your nose, ears, etc.) while demonstrating the same in actions. The person in the middle has to fool the rest, and when the verbal direction differs from the physical one, and people follow the physical direction, they are out of the game (UNICEF pp. 97).

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3e.
WATER RESOURCES NEED CAREFUL HANDLING

How are you going to do it?

Assess the roles of women and men in water resources handling and plan for improvement of the watershed area.

Careful handling of water resources is becoming increasingly important. Water quantity and quality need to be preserved if we want to fully benefit from water supply facilities. However, watershed areas are usually not only areas where we find our water resources. They are often used for different purposes, like firewood and fodder collection and animal grazing. We therefore need to get a good view of practices within the watershed area. In many cases these practices appear to differ between women and men. Any alternatives for those practices that have a negative impact need to be suitable for the group involved. We may also look into strengthening practices having a positive impact.

What do you want to achieve?

a. Understanding with community members about the impact of certain practices on water resources.
b. A jointly prepared plan for improved use of the watershed area.
c. Project staff who are sensitized about the gender aspects involved.

What steps are you going to take?

1. In preparation of the actual visit to the watershed area, discuss the water cycle and the various water resources with community members. Do this as much as possible with the use of visual aids and by asking questions related to the area.
2. Discuss the various water resources used by the community members, and what these resources are used for, and identify the watershed area. Also discuss whether over the years any changes have been noticed regarding water use, availability and quality. Make sure you get information from both women and men.
3. If changes have occurred, ask the community members about possible reasons. The reasons may include practices and physical circumstances. Make an inventory of the opinions and discuss them in depth.
4. Explain that, after having heard all this, it will be useful to visit the watershed area. A visit enables us to check if what we thought is indeed true and to get ideas for improvement of the situation.
5. Draw up a checklist for observation.

6. Visit the area with the group; observe; discuss the practices observed, possible alternatives for these practices and above all their implications (eg. on workload) for women and men.
7. Identify for which of the proposed alternatives rules and regulations need to be established.
8. Arrange for a community delegation to undertake the necessary steps. Provide support when needed.
9. Arrange for village meetings to discuss the activities and rules and regulations, their implementation and the necessity of sanctions.
10. Draw up a plan of action with the community members.

What materials and how much time do you need?

* Paper and feltpens.
* Posters showing the water cycle and water resources.

Depending on the size of and the distance to the watershed it may take one or two days.

Environmental changes may lead to source depletion

Other important information

For this type of activity it is useful to have an artist come along with you who can make drawings of what is being said. Visualization of what is being discussed is a very strong tool.
It may also be helpful if you are accompanied by staff from the forestry and veterinary offices, since their activities also have a large impact on water resources. You may even want to prepare the whole visit with them.
When working on improvements make sure you get a good idea of possible land disputes and landownership patterns. They may counter any proposed improvements.

Environmental assessment (tool 2d) could replace step 1-5.

Possible things to note when observing the condition of the watershed area

1. *Presence of cattle and cattle dung.*
2. *Type of vegetation.*
3. *Deforestation; are trees completely cut or trimmed.*
4. *Erosion and small landslides.*
5. *Settlements, including latrines.*
6. *Agricultural activities and use of fertilizers and pesticides.*
7. *Activities around the source.*

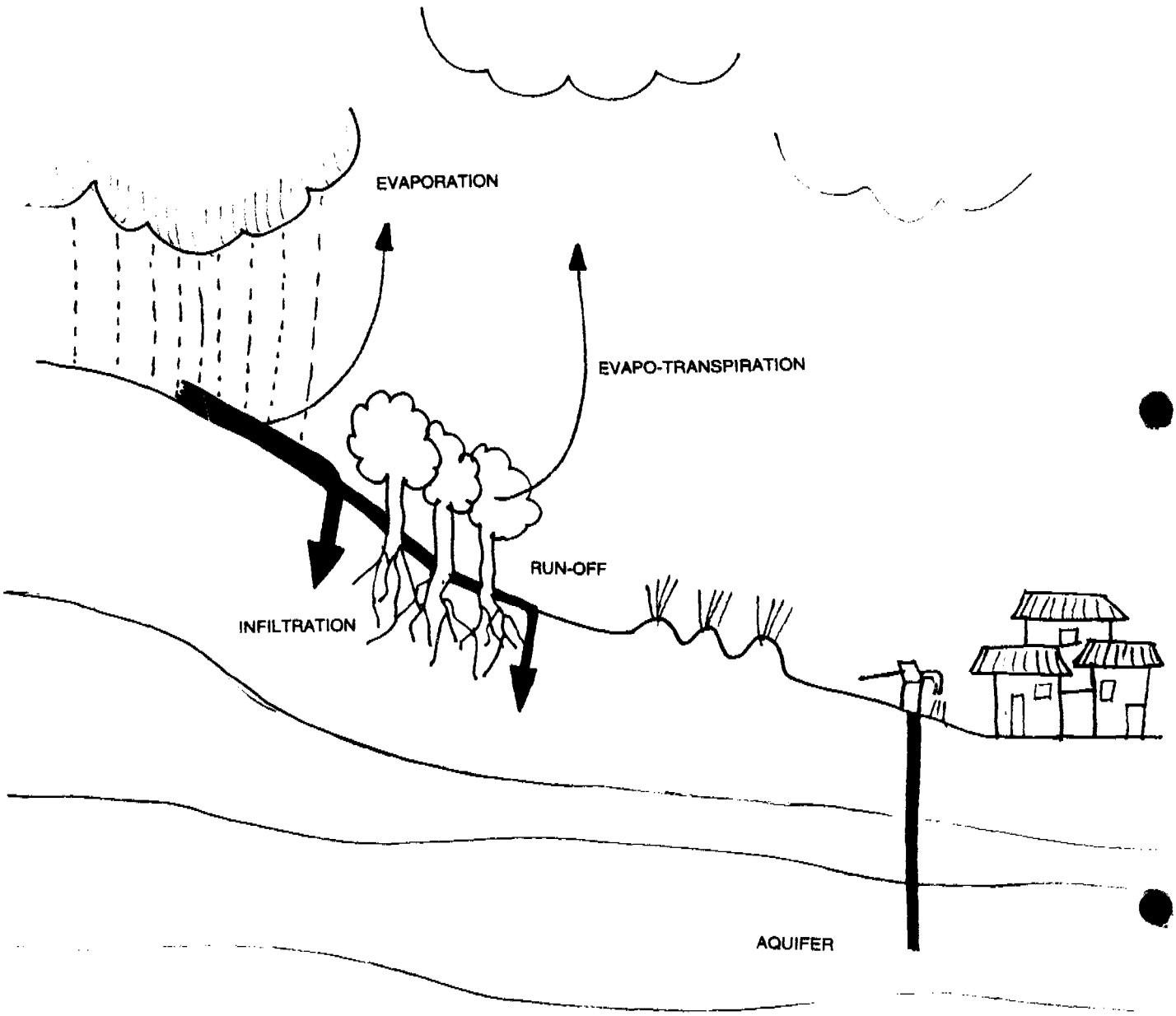
Water sources are "developed" - but not for women

"A project wanted to use the water from a good source for catchment for a water supply systems. However, this source was being used by women for bathing and washing clothes. The project staff promised the women that they would be provided with an alternative source close to their homes, next to the water source which they originally used for washing and bathing. Later it was found that the washing and bathing facilities were completely forgotten."

Case by Anberiya Hanifa, from Sri Lanka.

"Quat grows in different parts of Yemen and needs a lot of care (fertilizer) and water to grow. During the Gulf-war, many Yemeni men came back from Saudi Arabia, where they worked, and they started growing quat as a source of income. They made their own boreholes and bought their own pumps for quat irrigation. Due to this the fossil groundwater level goes down very quickly, in some places at a rate of over 20 meters per year. Due to the present overuse of water Yemen will face very serious water problems for the next generation. Rainfall alone is not sufficient to replenish the water table and serve the need of the people."

Case by Annette Kuipers, from Yemen.



Rainwater infiltrates soil and feeds aquifer when run-off is tapped by vegetation or man-made bunds. The groundwater may be pumped up or tapped otherwise for use as drinking water

IRC
International Water and Sanitation Centre
WHO Collaborating Centre

WOMAN-CHILD IMPACT

Save the Children

ADVANCING WOMEN'S STATUS & CHILDREN'S WELL-BEING

GENDER RELATIONS ANALYSIS:

A Guide for Trainers

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Itziar Lozano
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Save the Children

INTRODUCTION

This section of the Guide contains descriptions of key concepts which the trainer must understand before conducting the training proposed in Section II. It also introduces the overall framework within which this training was developed and provides background on other frameworks in gender training used most often.

The practical application of gender in international development projects began with the work of the Harvard Women In Development team in the U.S., and the Development Planning Unit team at University College in the U.K. Each team provided an analytic framework for use in development projects. Since then, a number of methods have evolved using the principles from these two frameworks.

At the same time, the women in development (WID) focus, representing a diversity of approaches which treated women as a group by gathering data on women's needs and designing programs that addressed those needs, had emerged, and was evolving into the gender and development (GAD) approach, articulated primarily in the U.K., and shifting the focus from women as a group to the relations between men and women.

Gender

The word ***"gender"*** differentiates the sociologically attributed aspects of individuals' identities from the physiological characteristics of men and women. Gender has to do with how we think, how we feel and what we believe we can and cannot do because of socially defined concepts of masculinity and femininity. Gender relates to the position of women and men in relation to each other.

Sex and Gender[1]

The word *gender* is used to describe socially determined characteristics; *sex* describes those which are biologically determined. Gender therefore refers not to women or men but to the relationship between them, their society or community, and the way it is socially constructed. A function based on sex is men's ability to impregnate and women's ability to give birth. By contrast, child-rearing is a gender role, since either women or men may assume the related duties.

[1] Caren Levy, Training materials, Development Planning Unit, University College (London, 1990).

Gender Relations Analysis

Gender Relations Analysis (GRA) is a systematic approach for assessing/understanding the different impacts of development on women and men because of their different gender roles. Gender roles influence division of labor, which reinforces existing-power relations and access to resources, benefits, information and decision-making.

As gender roles are defined in all aspects of living, effective gender relations analysis will cut across different gender interests within and outside the household, and different program emphases, such as health, economic development, education and humanitarian assistance. Additionally, as gender differences define individual identity from the earliest stages of life, gender relations analysis must be applied to and is relevant to all ages.

Key Components of Gender Relations Analysis

Following are the five key components of gender relations analysis. Further elaboration of each of the key components is also provided.

1. ***Gender Roles*** arise from socially perceived differences between men and women that define how men and women should think, act and feel. Gender roles are constantly changing, and can vary between and within cultures.

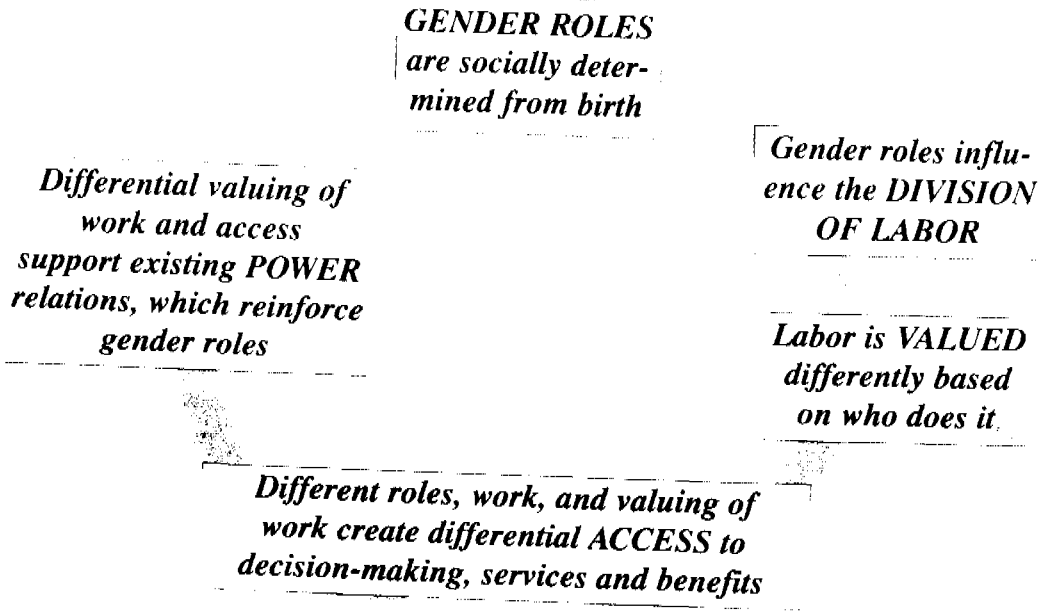
2. ***Gender Division of Labor*** relates to the different work that men and women do as a consequence of their socialization and accepted patterns of work within a given context. The multiple roles framework is used to understand and analyze the gender division of labor.

3. ***Access*** (to resources, benefits, information, decision-making for example) is influenced by acceptable gender roles and the established gender division of labor.

4. ***Power Relations*** have to do with the capacity of individuals and groups to initiate action and determine outcomes which change existing social, political and economic systems and norms, to equalize gender relations.

5. ***Gender Needs*** arise from the four components cited above. Since men and women have different gender roles, do different types of work, have different degrees of access to services and resources, and experience unequal relations, the needs of men and women are different. The *practical and strategic gender needs* concepts are used to identify and address gender needs.

The following chart describes the linkages between the five components.



Thus, the cycle reinforces itself unless development interventions affect the systems that establish gender roles and the valuing of work.

1. Gender Roles

The socialization of individuals from the earliest stages of life through identification with specific characteristics associated with being male or female, occurs in all cultures. Gender roles are reflected in activities ascribed to men and women on the basis of perceived differences, and reinforced through the gender division of labor. Gender roles may be categorized into four types of activities: reproductive, productive, community managing and constituency politics.[2] The nature and extent of individuals' involvement in each activity reflects the gender division of labor in a particular place at a particular time. Gender roles change over time and with circumstances, and often vary within cultures.

Gender roles are an integral part of social identity and belonging. The roles of being a mother or father, for instance, incorporate the right and obligation to care for children and to provide a living for the family. Both roles are associated with particular sets of behaviors and social values. If the related behaviors are not observed, society withdraws its approval. If a mother does not care for her children or if a man does not provide for the family, depending on the seriousness of the deviation from acceptable roles, the individuals may be sanctioned or even ostracized by the community. Thus an understanding of acceptable gender roles is critical to program planning.

As gender roles can vary even within communities and change over time, these have to be reassessed

[2] Development Planning Unit (DPU) Gender Planning Team. Training materials for training in gender planning 1992-93.

and reconsidered on a regular basis. Gender roles determine our aspirations for ourselves and others, what we are able to do, when and with what resources. Remaining within established gender roles provides a sense of belonging and acceptance by a broader social group.

Roles may also vary considerably within a sex, and further within the same community. Thus, additional variables such as ethnicity, health level, income level and political disenfranchisement may all be factors that affect gender roles and would be suitable for disaggregation.

To ensure that data about the multiple roles of women and relevant sub-groups are adequately picked up in data collection processes, a conscious effort is required to eliminate or minimize traditional biases in data collection. Common biases, including literacy level, geographic and seasonal biases, can result in the exclusion of women from baseline studies. Gender disaggregation permits clearer identification of the opportunities and constraints faced by groups carrying out different gender roles, and therefore a more responsive program design.

2. Gender Division of Labor

One principal manifestation of gender is the different social allocation of work for women and men. While some attribute the division of labor to "natural" and biological traits, evidence shows that it is different across cultures and changes over time. Therefore, it is not a biological phenomenon. Society has allocated different roles, responsibilities and activities to women and men that define what is appropriate. This is called the sexual division of labor. However, as those roles vary within and between sexes, a more relevant concept for analysis is the gender division of labor (GDOL). Since the gender division of labor is to a large degree socially determined, sound programming requires data about what work women and men do in each socio-economic or other relevant group.

As women are more likely to take on multiple and changing roles, it is impossible to assess the potential for women's involvement as pro-active agents for development without an understanding of how they balance these different roles. To capture women's multiple roles, information is needed on women's activities both within and outside the particular project focus. A number of tools have been developed to facilitate the classification of the types of activities and responsibilities taken on by women. Moser and Levy identified the concept of women's Triple Roles (reproductive, productive and community managing)[3] which has evolved into women's and men's roles (reproductive, productive, community managing and constituency politics).[4] Oppong and Abu have catalogued seven roles (workers, employees, wives, mothers, housekeepers, kin, community roles),[5] and Duncan has articulated three roles (market, non-market and child-bearing).[6] Finally, Overholt et. al. have identified the productive, reproductive and maintenance roles.[7]

[3] Caroline O. N. Moser and Caren Levy, *A Theory and Methodology of Gender Planning: Meeting Women's Practical and Strategic Needs*, Development Planning Unit Working Paper No. 11, University College (London 1986).

[4] DPU Gender Planning Team, *op. cit.*; ODA, "Guide to the Participation of Women in Development Projects."

[5] Christine Oppong and Katherine Abu, *Seven Roles of Women: Impact of Education, Migration and Employment on Ghanaian Mothers*, ILO (1987).

[6] A. Duncan, *A Framework for Analyzing Women's Issues*, The World Bank (Unpublished 1988).

[7] Catherine Overholt, Mary B. Anderson, Kathleen Cloud, and James E. Austin, *Gender Roles in Development Projects: A Case Book*, Kumarian Press (Hartford, CT 1985).

While the gender division of labor represents a social division, Young has noted that it also represents a mutual interdependence which takes place in a system of exchange and cooperation that is relatively structured or unstructured.[8] One of the critical areas where one may focus the analysis of gender is the terms under which men and women cooperate, and the specific institutions (e.g., marriage) through which this cooperation is structured.

A second aspect of GDOL is the differential valuation of men's and women's work. Gender-based differences exist within each type of work. Generally, men's work tends to be work that is more socially prestigious or pays a higher cash income. Women's work tends to be in the domestic sphere, seasonal, part-time, time intensive, unpaid or low paying. In addition, the product of women's work is often consumed (food is eaten, fuel burned) and therefore, less likely to be recognized in national accounting systems. As a result, the value of women's labor is often assumed to be very low.

An additional distinction with regard to the gender division of labor can be made between the "inside" and the "outside." This distinction reflects the fact that many societies define women's priorities and primary responsibilities as lying within the household, in contrast to men's responsibilities which lie in the more visible political and economic arena.

While the generalized differences identified above provide a rationale for analyzing the gender division of labor, the specific allocation of tasks varies considerably even within cultures and should be examined in each context.

Intra-household Division of Labor

Studies have shown that for some purposes the household is not the most useful unit of analysis because different household members have different socially determined powers and obligations which can lead to conflicting interests and priorities regarding the use of resources.[9] Differing interests are based in part on the relative bargaining positions of men and women in the household, which in turn are influenced by the gender division of labor and the value placed on the work of men and women. Since low income households depend more heavily on women's earnings for their economic survival, women tend to have greater bargaining power in poor households.

Women's ability to influence the distribution of benefits within the household can affect the extent to which they will participate in a project (Blumberg 1989).[10] Projects which reduce women's household labor burden may have a positive effect on women's ability to participate on the "outside," in the market economy. Conversely, projects which increase women's household workload may have negative effects by restricting women's activities in the paid economy.

3. Access

Regardless of whether a task is carried out by a particular gender, all activities require resources. The access to resources, their cost and the ability to decide on their ultimate use are determinant factors for successful accomplishment of the task. One consequence of gender roles is differential access to

[8] Kate Young, *Gender and Development: A Relational Approach* (Unpublished paper 1988).

[9] Amartya Sen, "Gender and Cooperative Conflicts" in I. Tinker (ed.), *Persistent Inequalities*, Oxford University Press (1990).

[10] Women's participation has been shown to be a critical determinant of project success also in Narayan-Parker 1992 (water and sanitation); Molnar 1989 (forestry); Feldstein and Poats 1987 (agriculture).

resources and benefits. Access can determine whether and how people will participate in the development process. When women do not have access to the resources they need to participate, they are not likely to be active agents in development. When women cannot control their output, they may not be willing to contribute their resources.

One resource that has been identified as particularly scarce for women is time. Women's work is different from men's work in that it tends to include time-intensive activities such as food preparation or fuel collection. Many of women's responsibilities such as child care or caring for the sick are not viewed as work. So, even though women may be working very long days, the perception remains that they have spare time. If development activities increase women's labor without taking their existing time constraints into consideration, the additional workload is often passed on to female children.

Differential access may be measured through a simple tool called "Differential Impact Analysis" or "Adverse Impact Analysis." This tool is discussed in some detail in Section II, Day 3, Session 18.

4. Power Relations

In previous frameworks, access was always accompanied by "control" over resources and benefits. In this model, we have separated the "control" component to ensure emphasis on both "access" and "control" elements in analysis. The aim of "power relations" is to achieve the power to "negotiate on equal terms" with men in order to influence equally the establishment of acceptable norms for decision-making in all spheres of life.

This component analyzes the capacity of disadvantaged groups to change decision-making processes that establish and reinforce existing social, political and economic systems and norms. Unequal gender relations place certain groups in a position of disadvantage so that they tend to have neither access to existing systems and structures of power, nor are they able to create alternative systems for decision-making. Often women have access (for instance, the ability to receive credit) but they do not have the capacity to initiate processes (for instance, to negotiate the terms of credit) that determine the nature of access or participation.

Power relations extend beyond access to a continuum of power where gender relations are balanced and each gender is able to negotiate for its interests on equal terms with the other.

Policy approaches since the 1950s have swung back and forth from an emphasis on subordination to an emphasis on money as an indicator of power. Although the equity approach did emphasize subordination and the need for equity with men, it did not recognize that subordination differs with class, ethnicity, caste, age and religion. Relations of domination are multiple and inter-related. For instance, women in powerful positions may undermine and exploit working class women and men.

The Canadian International Development Agency (CIDA) has put forth a classification of power that is helpful in thinking about domination from a gender perspective. The four categories of power are power over, power to, power with and power within.[11]

[11] Canadian Council for International Co-operation (CCIC), MATCH International Centre, and Association quebecoise des organismes de co-operation internationale (AQOC), *Two Halves Make A Whole*, Ottawa, Canada (August 1991).

Power over

Most attempts to increase women's power assume that power is a limited quantity. Thus, when one individual or group gets more, the others get less. "Power over" is perceived in terms of simple duality.

Power to

This type of power refers to the individual aspect of empowerment. It enables the individual to control or manage a situation to her/his benefit.

Power with

Collective power is represented in "power with" and is experienced when a group tackles problems together and creates energy that is greater than the sum of its parts.

Power within

This type of power resides within the individual and represents internal strength. It is based on self acceptance and self respect, which in turn extends to respect for others and acceptance of others as equals.

For the purposes of the training proposed here, individual power is defined as "the ability to articulate personal goals and influence others to achieve those goals. It is the ability to get what we want, to hold on to what we get, and to shape events the way we want to shape them." At the collective level, power is "the ability to combine different sources of power to collectively bring about desired change that benefits groups rather than individuals."

As the predominant view of power is "power over" the need to transform our understanding of power and resist "power over" is highlighted. However, the emphasis is not so much on definitions of power as on the ability to recognize power when we and others use it, to be able to identify sources of power in our lives, to understand how power is used to achieve both individual and collective interests.

5. Gender Needs

Gender needs are distinct from needs in general because they arise from gender roles, the gender division of labor, and the consequent implications with regard to restricted access to resources and unequal power relations. Because they have different roles in society, women and men have different needs. It is useful to distinguish between two types of needs: *practical gender needs* and *strategic gender needs.*[12]

Practical Gender Needs

Practical gender needs (PGNs) are needs women and men have which arise from their gender roles. PGNs have to do with immediate perceived needs which are easy to identify, such as health care.

[12] DPU Gender Planning Team, op. cit.; Caroline Moser, "Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs," *World Development*, Vol. 17, No. 11 (1989).

employment, water, food. Addressing PGNs makes it possible for men and women to carry out existing gender roles more easily or effectively without challenging the roles. PGNs tend to be short-term, easy to identify, felt needs, and are more material than ideological.

Strategic Gender Needs

Strategic Gender Needs (SGNs) are needs women and men identify because of unequal relations and therefore, imply change in relationships of power and control between women and men. SGNs which women identify arise from their recognition of and challenge to their subordinate position in relation to men in their society. For example, equal access to employment, equal pay and equal legal rights. SGNs which men identify arise from men's recognition and challenge to their exclusion from domains which customary male roles impose and which contribute to the perpetuation of women's subordination. For example, sharing child care. SGNs are context-specific and less visible than PGNs. Addressing SGNs is a long-term endeavor because it involves changes in attitudes, ideology, behavior and power structures.

PRACTICAL AND STRATEGIC GENDER NEEDS

Practical Gender Needs (PGNs)	*Strategic Gender Needs (SGNS)*
* Represent what people require to get or to have in order to carry out their gender roles more easily and effectively.	* Represent what women or men require in order to equalize their position or status with regard to each other.
* Do not require a change in gender roles, only coherence between roles and cultural patterns. For example, in order to fulfill the role of a good mother, a woman has the PGN to have access to the resources (food, shelter) that will allow her to take care of her children.	* Tend to refer to social relations between women and men.
* Tend to be easy to identify because of the direct demand of society that women and men live by their gender roles. For example, men, communities, and children themselves demand that women fulfill their role of being good mothers. Thus PGN's are felt with urgency.	* Satisfaction of these needs means that women and men are able and free to define their own roles and responsibilities; that each one's gender is recognized as holding values and rights, both social and legal; that one person is not subject to another because of her/his gender.
* Addressing PGNs does not ensure that other needs will be met, nor that access to meeting those needs will be sustained.	* SGNs are less visible and obvious than PGNs.
	* Addressing SGNs requires action over the long term because it demands changes in attitudes, behavior and power structures.
	* Addressing SGNs is conducive to greater satisfaction of practical needs.
	* Raising these needs or addressing them might bring about resistance from me and women.

In her original presentation of this classification, Molyneux[13] observes that as women's practical gender needs are addressed, their ability to articulate their strategic gender interests increases. This framework uses an adapted version of these concepts that assumes both PGNs and SGNs co-exist, relate to both women and men and are identifiable by both.

[13] Maxine Molyneux, "Mobilization without emancipation? Women's interests, state and revolution in Nicaragua," *Feminist Studies* Vol. II, No. 2 (1985).

Analysis of Opportunities and Constraints

Although it is not a key component of gender relations analysis, the identification of opportunities and constraints is a tool for transforming information gathered in analysis into practical action steps. A "genderized" version of the force field analysis is provided for this purpose.

The force field analysis is a strategic planning tool used to achieve defined goals by analyzing sources of support and barriers to achieving those goals. Actions are then identified that strengthen the sources of support, and weaken the barriers or constraints. From a gender perspective, the choice of actions that strengthen sources of support tend to fall within practical gender needs. As strategic gender needs are much more difficult to identify and address, it is also difficult to identify sources of support. Thus, goals associated with strategic gender needs, or components of goals that address strategic gender needs are omitted from the final action steps. The version of force field analysis provided here adjusts for that deficiency.

Thus, the analysis of opportunities and constraints begins with the articulation of goals and objectives based on existing gender roles, gender division of labor, access factors and power relations. Goals and objectives are then reviewed to ensure that they address both practical gender needs and strategic gender needs. More detail on how to develop a plan of action from gender relations analysis is provided in Section II, Day Five, Sessions 30 and 31.

Women in Development "WID" and Gender and Development "GAD"

About half the population of the world is female. One would expect that half the benefits of development would go to women and half to men. The reality is different.

Women in Development (WID)

The 1970s represented a period when significant attention was drawn to women through the *U.N. First World Conference on Women* and the *Declaration of Women's Year* (1975). In addition, publications like Ester Boserup's *Woman's Role in Economic Development* (1970)[14] and a growing feminist movement highlighted the exclusion of women in international development. Subsequently, Women in Development (WID) was adopted by the United Nations as a guiding principle.

The WID approaches most accepted by governments and development agencies were grounded in modernization theory. Modernization held that the experience of achieving economic development through industrialization could be generalized to all societies as they become modernized. This approach has been criticized for viewing women in isolation and ignoring their relative position to men. The emphasis on women's productive capacity, which emerged during this time, was also criticized for failing to recognize women's reproductive responsibilities, and the subsequent miscalculations about the elasticity of women's time and labor.

[14] Ester Boserup, *Women's Role in Economic Development*, St. Martins Press (New York 1990).

Over time, WID approaches have represented many perspectives as governments and organizations institutionalized the focus on women through WID offices. Nevertheless, they continue to be questioned for the following reasons:

- Women were often treated as a homogeneous group. Class, ethnicity and intra-household gender differences were not taken into account.
- Women's situations tended to be analyzed and activities developed exclusively for them without planning to engage men in understanding the needs of women and without allowing them to take part in plans and activities to meet those needs.
- Women's disadvantage was perceived mainly as a consequence of exclusion from development.

Gender and Development (GAD)[15]

The Gender and Development (GAD) approach provides an alternative to modernization theory which was the foundation of the WID approaches. GAD recognizes that women are a diverse group with interests which vary by sex and other factors such as class, age and ethnicity. Its holistic perspective, which includes men and women, recognizes men's contributions as well as women's subordination. GAD allows consideration of economic and political relations, and emphasizes empowerment which is based on satisfaction of all human needs: social, psychological and material. The GAD approach emerged in the 1980s and emphasizes the relations between women and men. GAD considers "the totality of social organization." The GAD analysis addresses unequal gender power by seeking to transform unequal relations.

Central to the GAD analysis is the gender division of labor (GDOL), which is based on a set of ideas about the capacities and abilities of men and women, and what is appropriate for them to do. As women and men are assigned different responsibilities, GDOL becomes the mechanism that defines their relations, not only as a social division but also as a form of social connection through interdependence. An additional feature of the GAD analysis is the differential value placed on women's tasks relative to those of men. GDOL not only defines masculinity and femininity and creates interdependence, it also reinforces the system of differential evaluation of masculinity and femininity.

The GAD strategy does not rely on the belief that economic dependence on men is the only cause of women's subordination. While evidence of the correlation between economic gains and greater bargaining power in the home and community is recognized, some argue that individual gains alone will not translate into the overall betterment of women as a gender. They note further that since the market depends on inequality to function efficiently the betterment of women as a whole would imply changes in the market system.

[15] Eva M. Rathgeber, "WID, WAD, GAD: Trends in Research and practice," *The Journal of Developing Areas*, Vol. 24 (July 1990) pp. 489-502; Young, op. cit.

GAD approaches recognize the need to satisfy practical gender needs (PGNs) and strategic gender needs (SGNs). In addition, there is an emphasis on collective community action and the mobilization of group power. Women and men are actively engaged in defining and promoting their interests on the basis of their own understanding of their present situation. Because women often begin from a position of relative disadvantage, GAD approaches recognize the need for special measures for women or other disadvantaged groups to participate and benefit fully.

A very simplified chart comparing WID and GAD has emerged from the development literature and is provided below.[16] It is important to note that there is a diversity of approaches under the umbrellas of WID and GAD.

	Women In Development "WID"	**Gender and Development "GAD"**
Focus	Women	Gender Relations
Problem	* The exclusion of women (half the world's adult resources from the development process	* Unequal gender relations that prevent equitable development and women's full participation
Goal	* Efficiency by integrating women into development * Emphasis on women's productive capacity	* Equitable, sustainable development * Mainstreaming gender issues and not marginalizing them * Sustainable reshaping of the power variables in order to: • introduce a greater power balance between men and women, while • giving both a stake in participation and in the benefits of the process so, • women and men share in decision - making
Solution	* Integrate women into the existing development process	* Empower women and other disadvantaged groups by transforming unequal relations
Strategies	* Increase women's productivity and income * Improve women's ability to manage households * Integrated projects * Women's "participation" in projects (all-women or men-women) without explicitly increasing empowerment * Improving health, income or resources without increasing empowerment	* Strategies are multi-dimensional * Combine activities that address practical gender needs and strategic gender needs * Projects that increase women's and men's knowledge of and capacity to negotiate their rights (whether all women, or men-women) * Increase women's capacity and skills to introduce themselves in non-traditional employment * Increasing women's capacity to control their own body, time and movement
Critique	* Women's multiple roles not considered * Miscalculation of elasticity of women's time and labor * Not sustainable in the long term	* Not easy to implement: implies long term commitment * Allows for sustainability of the result, and is also efficient but only in the long run and needs to be tested

[16] Adapted from CCIC, MATCH, and AQOC, op. cit.

In this Guide, it is emphasized that complex and multidimensional frames of reference are needed to integrate different approaches that seek to address gender relations in development programming. WID programs do not automatically evolve into GAD programs, although they may be turned into broader, more effective programs by changing the focus from addressing women and practical gender needs to including gender relations and strategic gender needs.

Policy Approaches[17]

One of the indications of the vast diversity of development approaches which address women's condition and position is reflected in the following policy approaches. The first three, welfare, equity and anti-poverty were categorized by Buvinic (1983). Later, Moser added two more approaches, efficiency and empowerment (1989).

Welfare

Used from the 1950s to the 1970s, this approach assumed women's primary role was as a mother. Thus, programs aimed to assist women to become better mothers. The women themselves were passive beneficiaries. However, some Practical Gender Needs (PGNs) connected to women's reproductive roles, such as nutrition and family planning, were met through this approach.

Equity

This approach arose from the 1970s when a great deal of attention was given to women. However, it was unpopular with governments and was labeled "Western Feminism." Its aim was to gain equity for women through their active participation in the development process. It identified the subordinate position of women with legal equality and aimed to reduce the inequality between men and women by changing legal systems. Yet, women found that legal equality does not guarantee equal benefits.

The story of a fox and a stork illustrates this point.[18] A fox and a stork may be given equal opportunity to eat from a dish, but which gets the most depends on whether the dish is wide and shallow, to suit the fox, or deep and narrow, to suit the stork. For equitable impact, each would have to eat a share of food from its own dish.

Anti-Poverty

Another approach emerged in the 1970s, representing a more economic and less controversial perspective to the equity approach. Here, women's poverty is viewed as a problem of development not one of subordination. Thus, the aim was to increase women's productivity. Activities tended to focus on women's capacity to earn an income, especially through small-scale income generating activities. Often these activities provided small increases in income and demanded substantial time to imple-

[17] Caroline Moser, *Gender Planning and Development: Theory, Practice and Training*, Routledge (1993).
[18] CCIC, MATCH, and AQOC, op. cit.

ment. Women's work burden was increased without any reduction in their other responsibilities. This approach is criticized for isolating poor women in marginal economic projects and recognizing only their productive role.

Efficiency

Currently the most popular with major donors, this is the predominant approach today. Economic stabilization and structural adjustment policies rely on women's economic contribution to development. As a result, there is increased pressure on women to produce more in the context of declining social services, without relief from their multiple roles and increasing work burden. At the same time, the promotion of women's income generation projects, as emphasized in the anti-poverty approach, continues to be popular from an efficiency perspective. One major consequence of these policies is the global trend toward the feminization of poverty.

Empowerment

This approach grew from writings of Southern feminists and out of a failure of the equity approach. Unequal gender relations that subordinate women are seen not only as a problem in their relations with men, but also a consequence of colonialist and neo-colonialist oppression. The emphasis is on self-reliance translated into skills-building and action on all needs and aspects of life.

The following is a slightly adapted operational definition of empowerment programming developed from the experience of the Bangladesh Rural Advancement Committee (BRAC).[19]

Programming for women's empowerment goals would encompass three broad strands.

- *increasing women's ability to be economically self-sufficient (i.e., earn an income, own assets, and manage own finances);*
- *increasing women's confidence and ability to know and to negotiate for their rights in the household, in work settings, and in the community; and*
- *increasing women's control over their bodies, their time and their movement including freedom from violence.*

This approach is increasingly popular with local women's non-governmental organizations (NGOs) and is receiving increasing interest from international NGOs.

[19] Aruna Rao and David Kelleher, *Engendering Organizational Change: BRAC case*, Unpublished paper (Bangladesh 1995).

Frameworks

A variety of gender training frameworks and associated language have been developed over the last twenty years. Some of the most commonly used are presented below.

Harvard Framework[20]

The Harvard approach was developed for use by planners when the World Bank became interested in the analysis of gender and commissioned a team to develop a methodology for analyzing gender. The team used the Harvard Business School case study method for its analytic framework which is often referred to as the "Harvard Framework." In many circles the expression "gender analysis" is specifically identified with this approach rather than a generic analysis of gender. The Harvard Framework uses four inter-related tools: activity profile, access and control profile, analysis of influencing factors, and project cycle analysis.

- The *activity profile* divides work into two parts: (1) productive, and (2) reproductive and community maintenance activities. In each case, both men's and women's work are included and delineated by sex. This profile shows who does what. For the reproductive and maintenance activities, the authors recommend three additional classifications: sex and age; time allocation; and place where the activity is being performed.

- The *access and control profile* is also divided into two parts: resources and benefits. It is important to differentiate between access to resources and benefits, and control over those resources and benefits.

- *Influencing factors* refer to those factors which determine who will have access to and control over resources and benefits. Influencing factors could be legal, economic, social, institutional, educational, demographic, etc. Project design may be changed by the ways in which these factors will affect the accomplishment of project objectives.

- The last step, *project cycle analysis*, integrates the information from the first three steps into the project cycle. This analysis is intended "to guide project identification by revealing where women are and what they are doing...." and to "assist project design by highlighting the problem areas and their causes" (Overholt, et. al. p10).

Over time, the Harvard Framework evolved from the use of large and complex case studies to more manageable cases that highlighted the differential impact of projects on women and men. The work of this group spread to a number of bilateral and multi-lateral agencies. Over time, the Harvard team trained people at numerous donor agencies including the United States Agency for International Development, Canadian International Development Agency, and the United Nations Development Program.

[20] Overholt, et. al., op. cit.; Aruna Rao, Mary B. Anderson, and Catherine Overholt, eds., *Gender Analysis in Development Planning*, Kumarian Press (Hartford, CT 1991).

Gender Planning[21]

This framework was developed as a means to raise the consciousness of prospective planning officials about gender needs and to consider those needs in planning.

Gender-aware planning is based on the premise that traditional planning methods do not take into consideration the different needs and interests of women and men arising from their different socially ascribed roles and responsibilities in society. This approach questions the traditional structure of the household by challenging the concept of the nuclear family and the notion that all members within a household have the same interests, reflecting equal power between men and women in household decision-making.

Central to this framework are the concepts of practical and strategic gender needs, which exist because men and women have different roles in society. In recognition of women's and men's multiple roles, Moser and Levy[22] have categorized four roles: productive, reproductive, community managing and constituency politics.

Reproductive roles have to do with responsibilities and domestics tasks usually done by women. In some societies men may have domestic tasks such as house building for one's own family.

Productive roles relate to work done by both women and men for pay in cash or in kind. It includes both market production and subsistence/home production with use or exchange value.

Community managing role relates to activities undertaken mostly by women, but also by men, at the community level as an extension of the reproductive roles. Examples are voluntary unpaid work such as coordinating a festival or ensuring the maintenance of a resource such as a well.

Constituency politics role has to do with political activities undertaken at community, local, national and/or international levels on behalf of constituencies.

The introduction of practical and strategic gender needs, and the emphasis on gender roles combined with access to and control over resources are major contributions of this framework.

Social/Gender Analysis — Participation[23]

The experience of the Canadian International Development Agency (CIDA) is particularly interesting. As stated earlier, CIDA invited the Harvard team to train its staff. Gender issues and gender analysis training for all staff, headquarters and regional offices, was institutionalized by mandate. Job descriptions were required to have WID objectives and annual performance appraisals included the level of

[21] Moser and Levy, op. cit.; Caroline O. N. Moser, *Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs*, London School of Economics and Political Science (1989); DPU Gender Training Team, op. cit.

[22] DPU Training team, op. cit.

[23] CIDA, *Social/Gender Analysis: Exercise Workbook and Facilitator's Guide*, Training and Development Section (no date); Coady International Institute, *A Handbook for Social/Gender Analysis*, CIDA (no date); CCIC, MATCH, and AQOC, op. cit.

effort and success in incorporating WID and gender issues. Drawing on both the Harvard Framework and concepts from the Gender Planning school, CIDA evolved its own methodology called social/gender analysis which links gender to participation described as

the participatory process of:

1. *Identifying groups affected by a problem in a given population;*
2. *Distinguishing within and among these groups, those who are relatively advantaged or disadvantaged by the problem;*
3. *Analyzing what distinguishable factors maintain the disadvantage and how this is experienced by different groups;*
4. *Determining what related resources, institutional changes and strategies are required or available for resolving the problem and decreasing the disadvantage.*

In addition to sex, CIDA requires disaggregation by class, and depending on the project, further disaggregation by other relevant variables such as ethnicity, age, etc. CIDA uses an input/output framework where the inputs to the project include labor (skill, health, time and entrepreneurship), capital, credit, technology, raw material and land. The inputs are then transformed through work, disaggregated into productive and reproductive work, and into outputs (goods and services). At the input stage key questions relate to which groups have access to and control over input resources. At the work stage, key questions are, what work is done? and, how is work divided among various groups? At the output stage the questions are, who is affected by the outputs? and, which groups have access to and control over distribution and consumption of benefits?

Gender Relations Analysis for Sustainable Development

Save the Children seeks a framework that supports sustainable development in the context of a world that is changing constantly and at ever greater rates. Increased access to information has reduced isolation so that national and international policies and politics are affecting household incomes and decision-making. Social and gender relations are also changing, and affecting decision-making from household to transnational levels. In many parts of the world, these changes and the fast pace of change are contributing to social disintegration, ever more common political conflict, environmental degradation and increasing economic disparities.

In this changing external environment, organizations appear to be relatively stable entities. Development organizations like Save the Children recognize these changes, and attempt to adapt programs accordingly. We are able to demonstrate positive changes at both impact and output levels in specific programs over pre-defined time periods. However, the ability to sustain those results requires broader social changes—particularly in gender relations—at a scale that creates a critical mass of people who will have incorporated those changes as part of their daily lives.

The following framework proposes that sustainable development requires three levels of organizational change that correspond to external changes. The hypothesis is that when all three levels are addressed, the organization is sufficiently fluid to change along with its external environment and is more likely to respond appropriately to development needs.

Framework

The three levels required by the framework are: Personal, Institutional and Methodological. At each level, both programmatic and structural aspects need to be addressed. Each level is addressed below in greater detail.

The ***personal level*** refers to the ability of individuals in the organization to recognize and address changing gender roles and relations. At the workplace, the *programmatic* aspect would foster personal understanding, attitudes and relationships which reflect gender aware lifestyles. At the household level, programs would address division of labor, decision-making patterns and relations including domestic violence. The *structural* aspect relates to how the organization addresses the ability of individuals to accept and respect women and minority groups as individuals and leaders. It includes access to gender awareness training and leads to gender balance in leadership.

The ***institutional level*** relates to structures that establish social norms (e.g., gender roles) and control economic and political spheres of society. The *programmatic* aspect involves institutionalization of relevant human and financial resources and the technical expertise in order to achieve gender balance in programs. The *structural* aspect of this level entails the establishment of policies in support of gender-sensitive hiring practices and the necessary systems that enforce those policies and practices.

Finally, the ***methodological level*** addresses access to and creation of tools to achieve sustainable development. Examples of the *program* aspects are training and use of gender perspective in program planning and assessment, systematic conduct of gender relations analysis and collection of appropriate data. Examples of *structural* aspects are financial and personal support for the establishment and use of appropriate methods in programming and the development and widespread dissemination of those methods.

The hypothesis is that all six elements (personal-programmatic, personal-structural, institutional-programmatic, institutional-structural, methodological-programmatic, methodological-structural) must be addressed together. While these are not the only elements required, they are essential.

An analogy may be made to a combination lock. Little change is seen when the first and second correct numbers are applied. However, when the last number is in place, the lock clicks open. With only some correct numbers, the lock remains closed. Similarly, when all three levels and their respective aspects exist, the organization becomes aligned with the changing external environment.

From the perspective of the trainer, it is important to note that this training represents one piece of the personal and methodological components only. Gender issues are not addressed by conducting this type of training alone.

General Note on Methodology

Categories and classifications assist in the development of tools and in understanding issues. Dominant social modes recognize and value specialization and analysis. However, a growing school in the physical and computer sciences, led by the Santa Fe Institute, is recognizing the value of integrative perspectives to understanding human evolution and its relation to our environment.

In development work also, while specialized interventions have generated significant changes, many of the factors of interest to practitioners and that are critical to sustainable development (such as the elimination of violence against women) have not been addressed in an integrated fashion and persist to the detriment of development. An integrated perspective permits addressing questions such as why the GDOL persists in undervaluing women's work across cultures, and why violence is mostly directed against women. With its history of integrated development alongside the development of sectoral expertise, Save the Children is uniquely positioned to address integrative questions across regions and cultures. The following training curriculum supports that process with Save the Children staff.

Harvard Analytical Framework

ACTIVITY PROFILE (DGIS, 1994)		
	Women/girls	Men/boys
1 Productive Activities Agriculture: activity 1 activity 2, etc Livestock: activity 1 activity 2, etc Income Generating/Employment: activity 1 activity 2, etc Other:		
2 Reproductive Activities Water related: Fuel related: Food preparation: Child care: Health related: Cleaning and repair: Other:		
3 Community Activities Ceremonies and celebrations: Community meetings: Collective agricultural activities: Other:		

ACCESS AND CONTROL PROFILE				
	Access		Control	
	Women	Men	Women	Men
1 Resources Land Capital Labour Equipment Knowledge and skills Employment opportunities Health and fertility Nutrition Other				
2 Benefits Income in cash Income in kind Assets ownership Other				

Water

SOCIO-POLITICAL PROFILE OF WOMEN'S POSITION			
Women's socio-political position compared to men's	Lower (worse)	about equal	higher (better)
1 **Women's participation in decisionmaking:** in the household at community level society at large			
2 **(Self)image:** Selfimage of women Image of women in society			
3 **Organizational capacity:**			
4 Other:			

INFLUENCING FACTORS				
	Description	Impact?	Opportunities?	Constraints?
Socio-cultural Economic Demographic Political Legal Ecological Other				

12 Basic VIPP techniques

The following techniques are at the heart of VIPP and should be learned so well by facilitators that they become automatic, but not over-used.

The art of the question

In any kind of group task the results will hinge on the question. In the box below there is some advice that can be kept in mind while formulating questions.

GOOD QUESTIONS:	BAD QUESTIONS:
Induce curiosity/motivate spontaneous replies.	Are leading or rhetorical questions which demand obvious or yes/no answers.
Stimulate further discussion.	Are vague, general statements.
Create group understanding and do not single out individuals.	Can only be answered by absent specialists, experts, an authority or require evidence which is not available.
Touch on matters of common interest.	Threaten to invade/attack an individual's privacy or culture.
Have a strategic function in advancing the group process.	Merely set up self-presentations.
Bring out the good qualities of the group and its achievements.	Demonstrate someone's incompetence or are paternalistic.
Reveal aims, signify wishes, or include an explanation of intentions and actions.	Serve only as vindication or retribution.
Conclude with a new question.	

Adapted from The Metaplan-Method: Communication tools for planning & learning groups. Metaplan Series No.7

Almost all of the exercises which follow involve a question or series of questions. Questions should be visualized in large, legible letters, either on a card or on flip chart paper. The facilitator should also ask the participants if clarification is needed and may have to rewrite the question if it is not fully understood or if participants disagree with the wording.

Box 2-2. Start, Stumble, Self-Correct, Share

Participatory Rapid Appraisal (PRA) is one among a family of approaches for reversing centralization, standardization, and top-down development. PRA enables and empowers the poor to do more of their own analysis, to take command of their lives and resources and to improve their well-being as they define it.

The core of good PRA is our own behavior and attitudes. It involves:

- being self-aware and self-critical
- embracing error
- handing over the stick
- sitting, listening and learning
- improvising, inventing, adapting
- using our own best judgment at all times.

So we can ask who lectures, who holds the stick, whose finger wags? Whose knowledge, analysis and priorities count?

Ours? Theirs, as we assume them to be? Or theirs as they freely express them?

Good PRA is empowering, not extractive.

Good PRA makes mistakes, learns from them, and so is self-improving.

Good PRA spreads and improves on its own.

So start. Do not wait. Get on with it. Relax. Try things. Learn by doing. Experiment. Ask: what went well?; what went badly?; what can we learn?; how can we do better?; how can we help others to do better?

PRA is what we make of it. It is a potential, not a panacea. If you do not like it, leave it. No one will mind. It is not for everyone. But if you like it, and use it, share and help others to share. Have a go. Why not?

Source: *Condensed from Robert Chambers, 1992.*

Source: Narayan (1993).

	water/district authority	village water committee	men	children	women	big farmers	village headman	locally elected authority	small farmers	cattle owners
Drinking (inc. bathing)	**	*	#	#	# **		**	**		
Cooking	**	*			# **			**		
Irrigation	**	*	# **			# **	**	**	# *	
Cattle	**	*	# **				**	**		# **
Washing clothes	**	*			# **		**	**		
Gardening	**	*			# **			**		
Small industry	**	*			# **			**		

Table identifying stakeholders for different water uses on community level, indicating whether they use and/or control the water used (matrix approach, WRM workshop November 1996).

** Managing, deciding
# Using

IRRIGATION	DOMESTIC USE	INDUSTRIAL USE	FISHING	RECREATION	OTHER
farmers (commercial)	**water supply dept.**	*mining*	*fishermen*	*boating clubs*	*hotel industries*
co-operatives and unions	**dept. of health**	*power generation*	*fishing companies*	**tourism dept.**	*City parks and gardens*
irrigation dept.	**water supply care takers**	*heavy industry*	**Dept. of environment and conservation**	*tourism industries*	*environment*
agriculture dept.	*Private sector*	*small and medium enterprises*	**Dept. of fisheries**	*local residents*	
financial institutions *	**Dept. of environment**	**Dept. of industry**	*fish farming*		
central and regional government	**regional and local government**	**Dept. of water resources**			
	urban residents				
	rural residents				

Table identifying all stakeholders for different water uses on regional level (matrix, WRM workshop November 1996).

Bold Controller
Italic User
* Facilitator

PROJECT DESCRIPTION

Project Title: ***Water Source of Peace***

Implementing Agencies: Secretariat of Hydraulic Resources (SHR), the National Foundation for Peace (FONAPAZ), Ministry of Public Health and Social Assistance, United Nations Children's Fund (UNICEF).

Summary

The programme, Water Source of Peace, was conceived at the end of 1992 as a means to supply the increasing demand of water, sanitation and sanitary education necessities especially in those departments of the rural area most affected by poverty and internal conflict. This programme was established in order to support communitarian and municipal efforts in an agile manner within the political framework of decentralization.

Water Source of Peace is made up of an interinstitutional group integrated by the Secretariat of Hydraulic Resources, the National Foundation for Peace (FONAPAZ for its initials in Spanish), the Ministry of Public Health and Social Assistance and the United Nations Children's Fund -UNICEF-. Non-Governmental Organizations, those communities which are benefitted and municipalities also participate in its planning, organization and execution.

The Programme promotes and executes adequate water supply services, training, and promotional sanitary education and environmental sanitation programmes for Guatemala's poorest rural areas. The programme also presents an innovative work methodology based on the integration of projects using low cost alternatives and the active involvement of the community members.

The programme's work is destined for those who inhabit the areas of highest poverty indicators in the country, especially those in the rural areas of the departments of Huehuetenango, El Quiché, Alta Verapaz, Baja Verapaz and Totonicapán.

Setting

Guatemala is a country of dramatic contrasts, of extreme wealthand overwhelming poverty, of incredible natural beautyand limited infrastructure and development. Within this society of 10.3 million people, dramatic social disparities and inequities predominate and the greatest victims are the rural indigenous populations who havetraditionally shown thegreatest deficits regarding basic needs satisfaction. Some 60% of the population is formed of 22 Mayan groups, each with its own language and customs.

Service delevery deficiencies are particularly evident in rural areas and in marginal urban sectors of the capital city. At the rural level, 49% of the population has access to water and 60% to sanitation facilities (1995). The situation is especially critical in the northern, western and north-western regions of the country where these deprivations are the root of enormous amounts of diarrhea, which is the main cause of child mortality in Guatemala.

The Region

The identified geographical regions where the project has been implemented are the departments of Baja Verapaz, Alta Verapaz, Quiché, Huehuetenango and Totonicapán. Future plans for the years 1997 through 2001 include adding San Marcos and Jalapa and marginal urban areas in Guatemala City, as regions where the Programme may and should be implemented. All of these are the areas most affected by the internal armed conflict and which have the highest indigenous population.

The decision to coordinate work efforts in this area is congruent with the Guatemalan Government's policies and with the opportunities provided by the signing of the Peace Agreement. The average water supply and sanitation coverage in this region are below the average at a national level.

The Community

According to a 1994 survey there are approximately 611,775 houses in these 7 departments of which 81.89% were occupied and the rest unoccupied which shows the effects of population displacement due to the internal armed conflict.

The Programme foresees directly benefitting 176,000 people of the rural area. The population in these departments for 1994 was approximately 2,885,752 people of which nearly 15% live in the urban area and the rest in the rural area. Additionally, 71.74% of the population in these departments is indigenous and the average age of the population is approximately 22 years of age.

Background:

UNICEF began supporting Water Supply and Sanitation in 1979 through the Division of Environmental Sanitation of the Ministry of Public Health whose responsibility extends to rural communities with populations of less than 500 people. The joint work carried out by the community, the Ministry of Public Health and UNICEF to December, 1989 lead to: the building of 926 gravitational water systems and the installation of 934 manual pumps which benefitted 1,866 communities an approximately 430,000 people. The Programme also promoted communitarian organization through water supply committees that participated in planning, executing, managing, operating and preserving the projects and promoting communitarian development by implementing other projects.

In order to maximize actions in the field of Water Supply and Sanitation, UNICEF searched for institutional and interinstitutional coordination. In September of 1989, the development of transfer of technology began through the contribution of the UNDP/World Bank Water and Sanitation section and the Government of Sweden cooperated in financing this project from 1989 through 1991. This new initiative served as an opportunity to analyze the Central American subregion to determine the possibility of using the manual pump made in Guatemala in the other countries. In this period, a total of 41 gravity-fed water supply systems were constructed and 174 wells equipped with hand pumps, benefiting 30,110 persons in 123 rural communities. Additionally, 6,811 sanitary latrines were built under the sanitation project in the rural areas benefiting 100,800 persons.

In December of 1992, the efforts made until that point between the community, UNICEF and other institutions lead to the creation of the Water Sourcen of Peace Programme which has now been working in the most needy regions of Guatemala for 4 years and continues counting on the Government of Sweden´s financial cooperation. From 1992 to 1995 the Programme has finished building 299 gravity-fed water supply systems for 337 communities and has installed 313 excavated wells with manual pumps in 131 communities. Additionally, 13,673 latrines have been installed and promotional environmental sanitary activities including the instalation of 346 latrines of different types in 57 communties have been developed. It is necessary to point out that 6,059 people have been trained both at institutional and communitary levels.

Objectives:

- Contribute in improving the well-being and health of the inhabitants of the rural communities, especially those departments of Huehuetenango, El Quiché, Alta Verapaz, Baja Verapaz and Totonicapán, through the supply of drinking water, adequate sanitation services and improved knowledge and practices related to health.
- Increase the water supply and sanitation coverage in the departments of Huehuetenango, El Quiché, Alta Verapaz, Baja Verapaz and Totonicapán and promote actions in health education and water preservation.
- Promote the responsibility and capacity of the communities and municipalities in the execution, operation and maintenance of the projects and guarantee their sustainability.
- Alleviate the work load of women and children as water carriers and providers for the family and, in this way, promote time and space so that they may generate other benefits for themselves, their families and communities.

Methodology:

a) All demands for water supply and sanitation support must begin, grow and be strengthened in the community

b) The community must then present the demand at municipal level.
c) The problem is studied at the municipal level where the steps to follow are then determined.
d) The health district is asked to verify the technical and social factibility of the project.
e) If communitary organization does not exist, it is promoted at municipal level or strengthened when it does exist. From this moment on, all work must be done jointly with representatives from the community.
f) The technicians along with the community representatives open a basic file (they certify the property where the source is found, rights of way, and others)
g) If the project is viable a topographical movement is carried out with the support of the health district, private enterprise, the Rural Acqueduct Implementing Unit -UNEPAR- and other organizations.
h) Once the basic file has been completed it is given to the corresponding health area so that it may find the necessary financing resources for the project.
i) Once the finance has been found, the health area asks professionals in the region for price quotes.
j) The proffessionals present there technical and economical offers for the project formulation. The health area forms a reception and offer qualifying committee.
k) Once the offers are qualifyed, the winner is informed and a contract is entered into.
l) The professionals formulate and deliver the project documents (3 minimum)
m) The health area names a study reception committee to make sure that the respective contract is carried out.
n) Once the projects have been accepted they are sent to the "Water Source of Peace" Technical Commitee for their evaluation and to search for finance.
o) UNEPAR is incharge of establishing the facitiblity of the elaborated projects and may accept the project as it is or they may modify it.
p) Once the projects are evaluated and accepted, the "Water Source of Peace" Technical Committee ask for the intervention of the High Level Committee in determining the financing of the project.
q) Once the Hight Level Committee has decided and negociated the manner of financing, it then signs an addendum to the original agreement where the party´s engagements are established.
r) When the "Water Source of Peace" Technical Committee has been informed of the financial approval, it in turn informs and asks the operating entity to begin the Programme´s "soft elements".
s) The operating entity elaorates a requisition of materials and determines the way in which they will deliver.
t) Meanwhile, community training in the areas of health education, sanitation and other related aspects must begin.
u) With the materials at hand, UNEPAR, FONAPAZ, SRH AND MSPyAS begin an intensive supervision of the project execution.
v) During the execution period, the technical direction is shared between the

health area and UNEPAR. SRH, UNICEF and the Programme coordinator will monitor and evaluate the process so as to use these experiences in future interventions.
w) One the systems have been finished, they should be put to work and will be observed by the recpetion and delivery commission made up of UNICEF, FONAPAZ, SRH and UNEPAR.
x) The system will be officially delivered to the neighbor's committee so that they will be in charge of the management, operation and maintenance services.
y) One year later, UNEPAR re-evaluates the impact so as to make sure the foreseen objectives are being met. If necessary, recomendations will be made to improve the project's situation.
z) The last step is to define who will be incharge of providing technical assistance and permanent advice for the Committees so as to garranty the benefitts of the project.

Activities:

- Supplying drinking water
- Promoting environmental sanitation, sanitary education and environmental education.
- Supervising the development of alternative technology
- Implementing Social Mobilization at all levels
- Monitoring
- Evaluating

Relationships:

The programmes activities begin by identifying an already established committee in each community. Generally, these committees have been previously organized by the Ministry of Rural and Urban Development, the Ministry of Education, the Ministry of Health or another NGO. The Commission of Urban and Rural Development will organize committees in those communities where there are none.

The community members are informed by the committee about the project; they are oriented so as to be able to recognize the need of improving water supply and sanitary services in relation to health; and they are stimulated to discuss the projects feasibility.

If the community decides to participate in the project, it then presents a formal requisition to the Ministry of Public Health who then sends a health inspector to carry out a study of the community. Various alternatives are studied always taking into account the water source and the environment. The results of the study are calculated by the DSM and used so as to determine the priority of the communities in the execution of the project and the type of system to be built.

A Water and Sanitation Committee made up of four or five members is established in those communities selected for the execution of the project. The members are elected by community leaders according to their local customs. The committee is responsible for organizing community participation, facilitating their support for the construction and obtaining legal rights of the water source and permission to pass piping in private property. The health areas of the Ministry of Public Health train the community in building techniques, operation and maintenance systems and health education. One of health area technicians supervises the building activities. Once the construction is completed, the community is responsible for the operation and maintenance of the system. The health area is in charge of major repairs and of any argument that was not able to be accorded at community level.

The Water and Sanitation Committee is trained in regularly organized workshops and they are in turn responsible for transferring this information to the rest of the community members. These workshops provide the opportunity of sharing experiences and providing support between committee members of different communities since they participate in the workshops together.

The water supply services to be installed in the rural areas consist of both deep and superficial wells equipped with manual pumps or gravity systems. Manual pumps will be installed in the areas where the hydrological conditions obstruct the construction of gravity systems. These pumps will be used in hand excavated and perforated wells which will be supported with adequate digging equipment during a three year period. The gravity system will captivate spring water and transfer it by gravity to the communities through the distribution of strategically situated faucets.

The health areas of the Ministry of Public Health will support the wells equipped with manual pumps with a maintenance system made up of the community committee, a mechanical volunteer from the community and DSM´s installation and maintenance team. The community will be responsible for the system´s administration, operation and maintenance along with the support of the health personnel of the corresponding area.

The programme´s actions are coordinated with other agencies, especially those in the municipalities in the region.

Water use in the project region:

Water is used in this region in the for the following purposes:

- For drinking and cooking
- For washing clothes and dishes
- For cleaning the house
- For washing hands, taking a bath and brushing teeth

Project Achievements:

a) During the programmes existence, drinking water interventions have increased in the identification, formulation and execution phases. This demonstrates that coverage can increase significantly with alliance of institutions.

b) Based on evaluations, the projects built are of good quality and they comply to with that expected by the community and the beneficiaries.

c) According to surveys, the beneficiaries consider that the greatest impact perceived in the implementation of the projects is, first of all, the decrease in children´s and mortality rates and secondly, being able to avoid wasting the families time and efforts in being able to provide water.

d) The community´s participation in providing unqualified lablabourd local materials was almost fully accomplished and this demonstrates the community´s sense of responsibility.

e) Municipal participation is evident. This means that the decentralization efforts will have positive results.

f) A work methodology was implemented which proved to be efficient in the majority of projects that were built.

g) The participation of other sectors such as municipalities, private enterprises and the community was strengthened.

h) The project execution time decrease significantly due to the interest and active participation of the community members as true executers of the projects.

Planned activities:

- Promote interinstitutional coordination at operational level since the growth of the Programme has made it necessary to widen institutional training of the organizations who participate in the execution of the projects.

- Improve the project´s technical supervision by strengthening the organizational structure.

- Define and implement a divulgation strategy to enable all the beneficiaries to be informed as to the benefits of the project as a whole.

- Continue the consciousness process of the beneficiaries about concepts of the importance of water conservation and its true value.

SURVEILLANCE AND CONTROL FOR THE IMPROVEMENT OF A WATER SUPPLY AND SANITATION SYSTEM IN THE POST-DISASTER AREA OF ARMERO, COLOMBIA

Historical background

On November 13, 1985, the Nevado del Ruiz volcano in Tolima began to erupt which caused an avalanche of melting ice, water and mud which ran through the basin of the Lagunilla river and devastated the city of Armero (Colombia), leaving 20,000 people dead and 5,000 homeless. Another 18 neighbouring communities were also affected and approximately 3,000 hectares of the most fertile land in Colombia were buried under the mud.

This disaster also affected the existing sanitary infrastructure and brought about the migration of the survivors to the adjacent villages, especially to Guayaba and Lérida. This migration caused a very delicate sanitary situation as existing sanitary services were not sufficient for the increased population. This brought about an international campaign, which resulted in emergency measures such as provision of temporary shelters and more structural measures such as the improvement of water supply and sanitation systems including waste stabilisation ponds to treat the sewage of Guayabal and Lerida.

Setting

The Tolima region is located in the central zone of Colombia. It is crossed by the Magdalena river, which is one of the biggest water streams in the country. There are 46 municipalities in this region of which 70% is located in the Magdalena Valley (flat topography) and the rest in the hills.

The Regional Health Service of Armero covers the northern area of the Tolima Department and includes the zone that suffered most from the Armero disaster.

Project justification

It was clear that the serious sanitary and health problems caused by the disaster, would not be solved by only providing sanitary infrastructure, but also required capacity building in the institutions in charge of the implementation and management of the systems in the area. Furthermore these institutions had lost part of their credibility with the population because they were not able to quickly meet the necessities that had been created by the disaster. This was also the result of the limited participation of the communities in problem identification and solving partly because of the vast amount of economic resources from support institutions that usually were not active in the area.

With support of the British Red Cross, the programme decided to develop a Water Surveillance and Control Project for the improvement of environmental health. They also counted with the counselling of the Robens Institute of England and of CINARA, Instituto de Investigación y Desarrollo en Agua Potable, Saneamiento Básico y Conservación del Recurso Hídrico de la Universidad del Valle, Colombia.

PROJECT PHASES

First phase

Training

At the beginning of the project, training workshops were organised for sanitation promoters and community technical staff, to introduce water surveillance and evaluation. These workshops included:

- Discussions on integrated management of water supplies systems and drainage
- Training on the use of simplified field equipment for water quality analysis, based on critical parameters
- Visits to water treatment systems
- Field practices, registration of information, and reporting.

A seminar was also organised for the management staff of the Ministry of Health, to promote the project and to inform them of the results.

Use of field equipment for the analysis of water quality

The portable Del Agua water quality test kit that was donated by the British Red Cross enabled the technicians in charge of surveillance to carry out analysis of critical water quality parameters directly in the field or in the catchment areas, and to obtain reliable results in a limited period of time, as no samples had to be send to the laboratory in Ibagué, which is several hours away from Armero.

Field work and supervision

The field work was carried out by the Regional's health promoters, and was co-ordinated from their offices in Lérida. They received guidance from CINARA during the execution of the work, which also resulted in modifications to the surveillance programme. In February 1990, an evaluation workshop of these activities was organised in Lérida, which focused on the revision and improvement of the methodology used, and on the strengthening of the health promoter's work and his/her relation with the community and with the sector's institutions.

Dissemination

The results of the project were summarised in a bulletin CINARA *Informa*, which was published with support from the Robens Institute, the Regional Health Service of Tolima, and the British Red Cross. The publication contains an abstract of the project's objective, and general information on the towns that are grouped within the Regional Health Service; an estimate of the coverage of these water supply systems and of the bacteriological quality of the water produced. It also contains information on the operation, maintenance and management of the systems; as well as observations and general recommendations to overcome the problems that were encountered.

Second phase

Once the main causes of the problems were identified, the project was extended both in physical coverage as in activities. This next phase included the implementation of a demonstration project of water supply with non conventional treatment, and the development of specific activities for the adequate use of the existing infrastructure in the area and for surveillance activities.

Demonstration project of water supply

The situation in eight rural communities in the region was reviewed together with the agencies and the communities. Only one of these had a water treatment plant which was not functioning properly and was producing water with a high sanitary risk. Making use of the opportunity that a technology transfer project on slow sand filtration was initiated in Colombia, one of these communities, San Felipe, was selected to implement an integrated demonstration project on drinking water treatment, on the basis of the following criteria which took into account the technical, economic and social viability of the project:

* the community is representative for communities in the area
* it has active community leaders in search of solutions to their various problems
* the community, knowing of the poor water quality, was in agreement with the measures to improve the system
* public sector agencies interested in the experiences to promote its replicability in other regions, were present in the areas and willing to participate.
  the community and the treatment plant are easily accessible and have suitable facilities for training and dissemination.

The demonstration project included the construction of a filtration plant comprising: a dynamic roughing filter which contains a shallow layer of fine gravel on top of a layer of coarser gravel. This is a downflow filter which acts as a kind of safety valve, as it will quickly clog when high loads in suspended solids are present in the water. Then it needs to be cleaned which is a very simple operations which does not require much time. The second unit consist of an upflow roughing filter which is a gravel filter which retains a large part of the suspended solids. This unit comprises a drainage system which is used to drain the deposited material from the filter. The third unit is a slow sand filter followed by a desinfection unit.

This combination which is now called multi-stage filtration is an appropriate alternative for drinking water treatment for small and medium communities and especially in rural areas where the existing infrastructure is not very well developed. This system is very efficient for the removal of faecal contamination and so is very important to counter the spread of water borne disease. The project was developed together with Tolima's Regional Health Service and the community. The treatment system is managed by the community and has now been operating for five years.

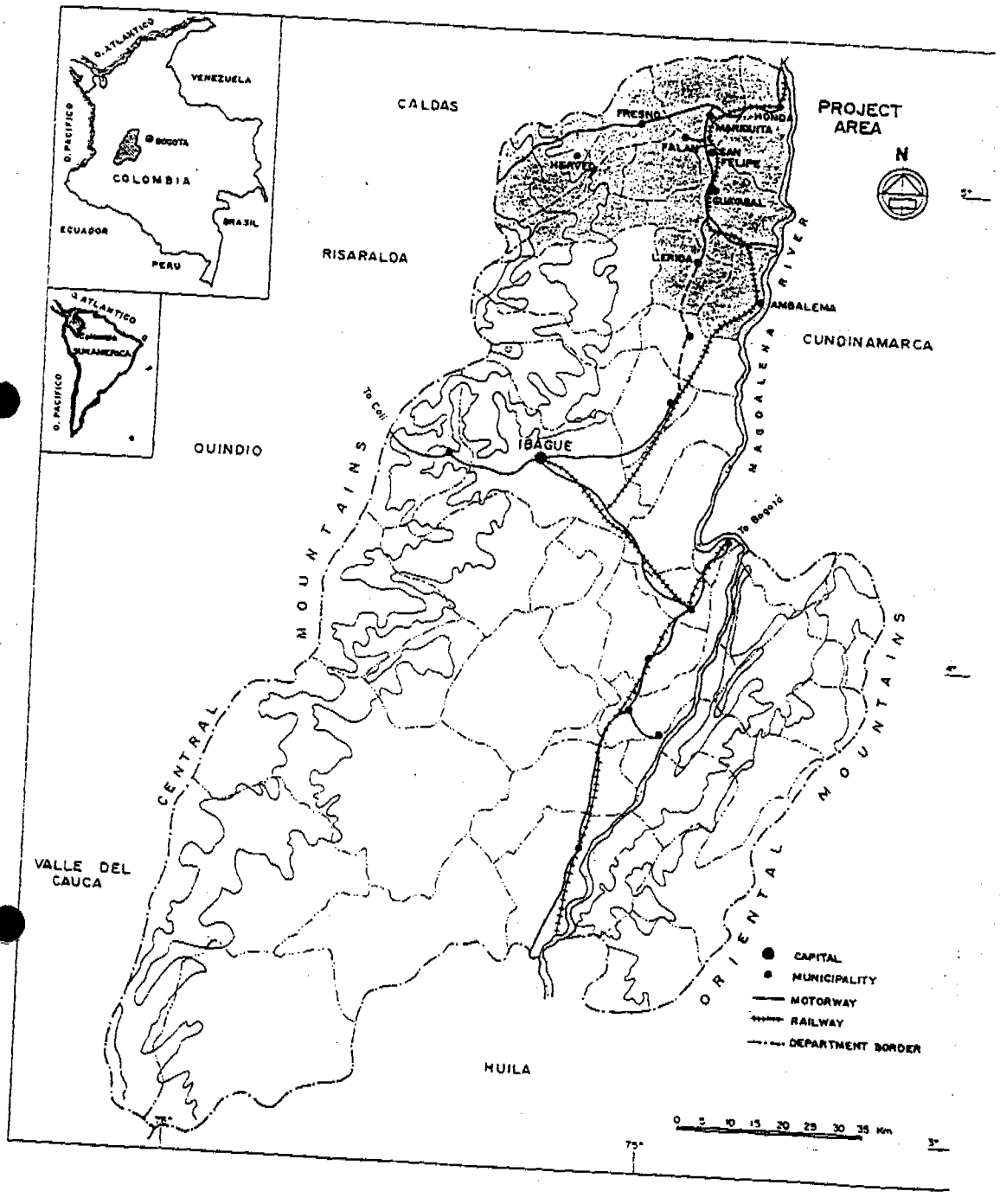


FIGURE 4.1 Project Area. Tolima Department.

The Mgeni Catchment Management Plan - A Framework for Integrated Water Management for the Mgeni Catchment

J R Howard, Umgeni Water, P O Box 9, Pietermaritzburg, 3200 R S Africa

Background to the Project

Located in the province of KwaZulu-Natal, South Africa, the Mgeni River Catchment provides potable water resources to over 3.5 million people, in an area of approximately 4400 km^2. The river system is well developed and impounded, but increasing population pressures in the catchment are placing greater demands on this critical water resource with serious consequences:-

- people are getting sick and dying from using contaminated water;
- costly infrastructure has to be developed to import water from neighbouring catchments;
- the costs of treating water are increasing, due to pollution; and
- the ecological health and resource quality of the catchment is deteriorating.

Water resources management in South Africa has traditionally functioned on a political three tier system where local and provincial boundaries have defined water management responsibilities. Shortcomings experienced with this system include:-

- Overlapping and fragmented water service responsibilities compounded by poor communication, the lack of focused research and poor information transfer between authorities and sectors;

- The severe lack of physical resources, manpower and finance and knowledge to manage the water resources effectively and proactively.

Umgeni Water, a statutory water utility, and the Department of Water Affairs and Forestry as the National water custodian, are developing an affordable and practically implementable plan to

manage the water quality of the Mgeni catchment on an integrated basis. The objectives of the plan are :

- to mitigate existing problems;
- prevent further deterioration in the catchment;
- enable the water resources to be sustainably managed ;
- to provide sufficient water of adequate quality to meet basic needs while supporting economic development ; and
- maintaining the ecological integrity of the natural environment.

Public Consultation

In order to make the plan successful, it was recognised that communities living and working in the Mgeni catchment should be involved in determining the quality and quantity of their water resources and should have a say in how catchments are managed . In the early stages of the project, a wide range of user groups in various parts of the catchment were informed about the project, their concerns about water resource management issues were discussed, and their roles and responsibilities for managing the problems clarified.

Urgent Management Needs

The study identified that the following issues require urgent management:-

- faecal contamination from urban areas and peri-urban settlements, which are expanding;
- excessive algal growth in Nagle and Inanda dams caused by increasing nutrient loads;
- reduced water availability due to alien vegetation, afforestation and irrigation use;
- increasing water demands to supply a growing population with inefficient water use;
- flood damage and deaths in Pietermaritzburg and Durban, exacerbated by uncontrolled urbanisation;
- soil loss and sedimentation from commercial crop lands and informal rural settlements;
- degraded river health due to bank destabilisation, decreased river flows and pollution associated with urbanisation and agricultural production.

Managing the Catchment

Unless these problems are managed throughout the Mgeni catchment, they will worsen with the increasing population growth (2% per annum) and urbanisation and more intensive industrial and agricultural production (2.2% increase per year) predicted in the catchment over the next 30 years. To assist with implementing the plan, the Mgeni catchment has been divided into six sub-catchment based Management Units based on the dominant types of problems, water use and sub-catchment characteristics. Preliminary objectives were developed for the critical problems for each of these Units to indicate the desired goals for management. Potential management strategies, with probable responsibility and acceptability, were identified to achieve these objectives. This formed the basis of the Catchment Management Plan.

Implementing the Plan

The management strategies provide the framework within which individual actions should be developed by responsible parties. The combination of these actions will be developed into an Action Plan for Implementation. The work has culminated in a "user friendly" document summarising the management plan. While this contains proposed strategies, no attempt was made to prioritise the strategies which may be appropriate in the management units or to develop action plans, as it is critical that the stakeholders in the Management Units are fully involved in this first phase of implementation.

The next step will be to establish a Steering Committee, representing government and private sector stakeholders, which it is proposed should be responsible for the implementation of the Catchment Management Plan. It is envisaged that the Committee will consist of representatives of the Department of Water Affairs and Forestry, Umgeni Water, the KwaZulu-Natal Provincial Administration and stakeholders in each management unit. Stakeholder Fora should be established in each of the management units. These groups should be supported by adequate human and financial resources.

It was decided that it was not practical to try to introduce the water quality management plan simultaneously in all six management units because of the energy required to involve stakeholders in meaningful participation.

After careful consideration, the Midmar Management Unit and the Pietermaritzburg Management Unit were identified as those most appropriate for the implementation of the Catchment Plan. An encouraging recent development is the formation of the Midmar Development Forum. This initiative which was led by Province, has resulted in a forum where the Province, Umgeni Water, the Department of Water Affairs and other stakeholders have met to identify objectives for the Midmar Management Unit. The objective which has been agreed is that the catchment should be managed to protect its valuable water resources which culminate in Midmar Dam, a key component of the water supply system of the Mgeni catchment.

Ongoing Initiatives to Support the Plan

Widespread support was received for the plan from all the community and user groups contacted. Existing institutions and organisations within the Mgeni catchment have also pledged their support and co-operation.

It has become apparent from meetings with rural communities that the provision of potable water is a top priority and that the need for sanitation and the importance of water resource management issues were only of minor interest. Umgeni Water is addressing the need for water education and demand driven sanitation by several initiatives which will interface closely with the plan:-

- A Community Life Project which uses cartoons and interaction to illustrate problems concerning sanitation and health to rural informal and urban communities. Pilot studies have shown that this approach is extremely effective.

- A roadshow programme dealing with education on sanitation and the water cycle. This will target women's groups and will show advertisements at rural trading stores;

- Umgeni Water has an External Education Services section which promotes water awareness through liaising closely with schools and communities. A wide range of educational material and simple inexpensive water-testing kits form the focus of this programme.

- Case studies addressing the impact of inadequate sanitation on health and looking at management strategies for tacking soil erosion are underway and are already providing interesting information. For example, recent calculations indicate that the societal cost of waterborne disease to the South African economy is approximately R15 Billion or 3% of the South African Gross Domestic Product.

The Way Forward

Clearly, integrated approaches which gain the support of people and organisations within catchments, allocate clear responsibilities, improve communication and assist with prioritising problems and focusing effort can play a important role in managing South Africa's scarce water resources efficiently and effectively. Integrated catchment management is a guiding principle of the Water Law review process which is currently underway in South Africa, and there is currently much debate surrounding the necessary institutional arrangements and resourcing mechanisms to facilitate the process. It is hoped that the successful implementation of the Mgeni catchment management plan will provide valuable practical assistance and guidance in this regard.

IRISH WATER PROJECT

NORTHERN PROVINCE DEVELOPMENT PROGRAMME

OUTLINE OF WATER PROJECT

1. VILLAGE SELECTION

The Irish Water Project does not select villages to have wells.

This rsponsibility is left entirely to the following categories of people.

(a) Chiefs

(b) Headmen

(c) Councillors

(d) Health Workers

A form specially designed for identification of village for possible selection is given to the above mentioned groups of people. The forgoing then submit their lists to the local authority for approval.

(a) When the lists from all wards concerned reach the council, then are scrutinized and a final list is produced.

(b) The final list released by the council will then be forwarded to the project for surveys and community education.

2. VILLAGE SURVEYS AND COMMUNITY EDUCATION

After the release of the final list from the council to the project, a technical survey team is sent out following the approved list of villages. The team comprises of the:

(i) Water Engineering staff

(ii) Health Technical Staff

(iii) District Officials

(a) SURVEY

The survey includes the following information:

- Knowing the length of the village
- Knowing the number of house-holds in the village
- Knowing population of the village
- Knowing the type of water source they have
- How far is the water source
- The quality of water
- Existance of pit latrines and refuse pits

(b) COMMUNITY EDUCATION

Community education takes places before, during and after construction of wells. Initial discussions are done at survey time and results are presented to the village community. It is at this first meeting when the project policy is explained to community i.e

(i) The programme is self-help:

(i) - Where the digging is done by the community down to water level. The project completes the well.

(ii) Formation of Village Water committees:

- Comprises of 3 men and 3 women
- The committee takes the resposnibility of organising the community when digging.

(iii) The role of V.C.W:

- Take overal responsibility of administration before, during and after construction of well.

- Educate community how to handle the well carefully.
- Carry out maitenance repairs together with the well users.
- Educate community/users enviromental and personal hygiene.
- Fund-raising towards maintenance of the well
- Purchase of spares for the well. Before digging of the well and continue on thereafter.

(iv) Deposit for Spares:

- Community is informed to contribute a certain amount of money for a spare chain and bucket before construction starts, so that upon completion of the well the community will have 2 chains and 2 buckets. This instills a sense of responsibility.

(v) Role of Project:

- The project provides building materials, transport and skilled man-power. The project works together with the community from the beginning to the end if it is a cylinder well being constructed. When consting an open well, the project comes in at water level and continue to work with the community till the completion.

3. SITE SELECTION

During surveys and Community Education stage we assume that community understand the explanation on the physical construction and hygiene aspects of the well, and may make it easier to answer the following questions.

(a) WHO SELECTS THE SITE?

Site selection remains a responsibility of the community after community education phase.

(b) WHERE IS THE WELL SITED?

Being a community responsibility, they would rather site it centrally so that all the people in the village may have access to the facility and may be easily safe guarded.

(c) HOW IS THE WELL SITED?

Through community and hygiene education the beneficiaries will be able to know that a well must be sited at a reasonable distance from pit latrines.

4. IMPLEMENTATION

During community mobilization and self-help sensetization phase Village Water Committees (V.W.C) are formed and must be able to fund-raise adequately for a spare chain and bucket before construction starts. When this condition is met then tools will be delivered .

- a bucket
- a rope
- a working windlass
- a pick and
- a shovel

Community digs to water level and then the project sends a 3 - 4 man team to deepen to a reasonable depth of water of about 5 - 6 metres and then the well lined.

In case of a cylinder well, a 3 man team with a mechanical drilling rig is sent to work with the community through the V.W.C's organized and complete the well.

5. HAND-OVER CEREMONY

Handing over of a well is done after a successful completion of a well. a few questions may be posed as to:

(a) WHO HANDS OVER THE WELL?

As it is clearly seen that the community and project played their roles, but the latter provided more than the former in terms of financial contribution. Therefore the project, after the completion of the well must hand over the community.

An appointment is given to the community for hand over. all the beneficiaries will gather and the project staff will officially open the well with a word of thanks for the co-operation of the community that led to a successful completion of the well.

- Keeping the well surrounding clean would be mentioned.
- Fund raising for sustainability would be stressed.
- maintenance of shaky poles, cracks, windlass, cage and buying of spare chain, bucket and valves would be the theme of the hand-over.
- Proper handling of the well would be worthwhile to mention.

WHO RECEIVES THE OFFER?

The community will receive the offer charging the whole responsibility over the administration of the village water committee. The Headman or Chairman of the committee may give a vote of thanks.

Water as Regenerative Input

Banaskantha Women's Rural Development Project

Self Employed Women's Association

Promising Water Resources Management Approaches in the Drinking Water Supply and Sanitation Sector

November 1996

Self Employed Women's Association
SEWA Reception Centre
Opp. Lok Manya Tilak Baug
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Phone No. : 0091-79-5506477, 5506444
Fax No. : 0091-79-5506444

Summary :

Self Employed Women's Association (SEWA), is a trade union of 2,05,270 members working for poor and self employed women in urban and rural areas. SEWA strives to provide a worker-producer status to self employed women through a joint struggle of union and co-operatives. In 1988 SEWA launched a regional development programme which now covers 60 villages of Radhanpur and Santalpur taluka of Banaskantha district. The Government of Gujarat, under the Indo-Dutch bilateral programme, launched the Santalpur Regional Water Supply Scheme (SRWSS). The programme aims at providing assured water supply, health, sanitation, and income to the local communities through their active participation in its implementation; thereby improving the living and working conditions of the communities.

The project is in a desert region. The hostile climatic conditions and frequent droughts have reduced the communities from subsistence to survival level, often compelling them to migrate to other areas. Women and children are the worst sufferers of this forced and involuntary migration.

SEWA was invited to get involved in the socio-economic development programme under the SRWSS. The programme, Banaskantha Women's Rural Development Project, is outcome of the initial action-research of the Foundation for Public Interest (FPI). The project aims to provide full employment to women, i.e. assured work and income which would ensure better nutrition, shelter and social security, and thereby stem the forced migration of the communities.

To acheive this, SEWA has initiated income-generation activities based on available local skills and assets, for women who live below the poverty line, or marginally above the poverty line. Around 43,500 women from 82 villages are receiving sustained work as well as employment opportunities.

Setting :

Banaskantha district, in the North of Gujarat is the most resource poor, under developed district of Gujarat. The project area Santalpur and Radhanpur talukas in the West of Banaskantha are desert areas, having an area of 1945.88 sq. kms and total population of 1,81,065 in total of 110 villages.

The area is a desert region, having extreme climatic conditions. It has an average annual rainfall of 20 inches. Experiences frequent droughts, with severe sand storms. The soil and water are saline. Total Dissolved Soilds in ground water exceeding 3000 ppm. The ground water table sinking at the rate of 2 mts. per year.

The major occupation of the communities is agriculture, which is completely rainfed. The second major occupation is cattle breeding. The two major occupation being land based and cattle based, often have set back, due to extreme soil and water conditions, failure of rains and drought. The communities are therefore, forced to migrate in search of work and livelihood.

This has reduced the communities from subsistance to survival level. Women and Children are the worst sufferers of this forced migration leading to further desertification.

The Community :

The major communities in the area are traditional Hindu communities mainly comprising of Aahirs, Rabaris, Thakores, Harijans.

The Aahirs are traditionally followers of Lord Krishna, supposed to have migrated from Northern India and settled here. Their major occupation is cattle breeding and agriculture.

The Rabaris are the traditional shepherd community native of this region. They are cattle breeders - mainly breed sheep and goats.

The Thakores is a dominant trading community.

The Harijans are mainly cobblers and Weavers.

The main occupation of the communities is agriculture and cattle breeding. The hostile climatic conditions, degraded saline soil and water, frequent droughts, have turned agriculture into a disaster. The cropping pattern has changed, which further exploits ground water, leading to further desertification, non-availability of fodder, food and work.

The communities have no means of livelihoods, women and children are malnourished. This forces the communities to migrate in search of work and livelihood. As a result the district has the highest infant mortality rate in the state - Very low literacy rate - just 25%.

The region faces acute shortage of potable drinking water.

Background :

The programme was initiated by SEWA under the Indo-dutch bilateral programme - Water sector in October 1988. The Santalpur Regional Water Supply Scheme is an integrated programme that aims at providing assured water supply, health, sanitation and income to the local communities. The programme has a budgetary allocation of US $ 58150 per year.

Objectives :

The major programme objectives of the Banaskantha Women's Rural Development Project are :

(1) to enhance, on a sustainable basis, the economic position and social status of women in the region served by the water supply scheme and thereby at the same time raise their abilities to pay for water (O&M); and

(2) to strengthen the integration between on the one hand piped water supply and on the other hand community-based management, operation and maintenance of village facilities, health and hygiene, and cost recovery.

The availability of piped water decreases the amount of time women spend on collecting water. Furthermore, it improves their health and that of their households. Women will nearly always invest freed time and energy in income-generating activities or in development activities such as community work. Some of these income-generating activities are dependent on piped water. The BWRDP programme offers women opportunities to generate an income and to benefit from special services and facilities offered through this programme.

Methodology :

The Banaskantha Women's Rural Development Project tries to identify and satisfy the needs of the local communities by strategically linking up the project activities with the existing Government programmes and schemes to enhance chances of sustainability.

The project area is arid, desert region, experiencing frequent droughts. The hostile climatic conditions, saline soil and water, severe heat and sandstorms has reduced the communities from subsistance to survival level. Agriculture is the major occupation, which is rainfed, very often fails due to drought. This forces the communities to migrate in search of water, work and livelihood.

Thus the immediate need of the communities was for work. SEWA has initiated income - generating activities based on the (a) available local skill base (b) available local asset (economic, social, physical and human) base and (c) available local resources.

Today the programme provides direct work and employment to about 14,500 households through their collectives, and, indirect benefit to around 43,500 women SEWA members from 70 villages in the taluka.

The Banaskantha Women's Rural Development Project works on the following main principles :

1. NEED BASED/DEMAND DRIVEN PROGRAMMES :

   All the project activities are need based or demand driven. Whenever or whereever there is a felt need for work of the community, communicated to SEWA through members, SEWA then, based on the available local skill or asset or resources facilitates members in initiating an income generating activity to satisfy the need or demand. Therefore the project activities, automatically, are identified, designed and implemented by the local communities themselves, ensuring increasing "COMMUNITY PARTICIPATION".

2. CONTRIBUTORY SYSTEMS :

   Under the Banaskantha Women's Rural Development Project all the activities are contributory. That is, the local community users contribute towards some of the costs of the activity. This results into mutual accountability. This inculcates the culture of cost monitoring, sharing, and effectiveness for any programme.

3. MOBILIZING LOCAL GOVERNMENT RESOURCES :

   The needs or demands of the local communities are satisfied by identifying the income generating activity and linking it up with the existing Government schemes. Thus, the users get local Government recognition and support. No parallel structures or programmes are initiated, the project funds are used for critical

interventions, or gaps, fillings in the existing Government schemes, to make programme more effective and result oriented. Thus least resources cause most impact.

4. LOCAL ORGANIZATION BUILDING :

All the programme activities lead to local organization building at the village level, block level and district level to ensure sustainability of the programme. Thus under Banaskantha Women's Rural Development Project about 70 local women's groups have been formed under UNICEF and Government's Development of Women and Children in Rural Areas (DWCRA) programme. These groups have been federated into district level federation. The district level federation will be the local organization responsible for programme implementation and sustainability. The local organization identifies the needs of the individual groups and provides them the needed inputs such as technical, financial, marketing, space etc. This also means that the women own, directly control, their organizations.

5. CAPACITY BUILDING OF THE LOCAL ORGANIZATION :

SEWA also aims at capacity building of the local women's organization in order to strengthen it to implement and sustain the programme. SEWA then, gradually withdraws at the end of the project period. Under the Banaskantha Women's Rural Development Project following need based trainings are provided both, in class room, and on the job, for capacity building.

- leadership trainings
- activity management trainings
- group management trainings
- marketing management trainings
- accounts and book keeping trainings
- financial management trainings
- reporting and project formulation trainings

6. LOCAL USERS, MANAGERS AND OWNERS :

The Banaskantha Women's Rural Development Project ensures that the local women and the community are the users, managers and owners of the programme. This is very important. Women are customers, managers, and owners. Therefore, most of the village level activities are identified, planned, designed, implement, and monitored by the local village committee of the women users, managers, and owners who are SEWA members.

This brings transparency in the whole programme. The users also own the programme.

The organisors to facilitate the village committees and groups are also recruited locally : local use of local human capital.

Activities :

SEWA based on the above methodology has initiated the Water as Regenerative Programme as one the major programme.

Water as Regenerative Input :

Water conservation and water harvesting activities call for immediate attention for the eco-regeneration of the desert region. SEWA has mobilised local communities and local resources for water harvesting activities including pond lining to harvest rain water; cleaning of wells and canals; and constructing minor irrigation structures.

So far, the local Village Water Committees were assisted by SEWA in constructing agrifilm lined ponds in 2 villages (Gokhantar and Datrana). The village water committee, mobilised local resources (20% of the total cost) and the rain water harvesting strcutures were construced by local planning, local execution and local management.

The local communities, under women's leadership, are involved in following programme activities :

1. Water resources inventory :

A local team of women and youth are trained to conduct a survey of all the existing water resources traditional and recent. To build inventory of all the water resources, that could be revived or augumented.

2. **Activising the Pani Samitis** :

SEWA is involved in constituting and capacity building of the village Pani Samitis (Water Committees to taker over the operation and maintainence and cost recovery of the SRWSS, in co-ordination wiht the Gujarat Water Supply Sewerage Board.

3. **Rain Water Harvesting** :

The local communities, under women's leadership take up Rain Water Harvesting programmes such as augmenting the village ponds, with plastic lining. Ground water recharging by diverting the surface run off water into wells.

Roof rain water harvesting, by harvesting the roof run off water, for domestic use.

All the above activities are planned, designed and executed by the local communities, with local contribution. These activities back-up the RWSS, reduce the pressure on the piped water supply.

4. **Water Campaign** :

SEWA mobilised the local communities from the villages covered under the SRWSS, in reviving, augmenting, water sources. Co-ordinating with the local Government agencie for assured supply of water to the villages. As a result around 43,000 local women joined the campaign.

Water use in

Project region :

The Project area is a dry, desert region with high salinity ingress. The soil and ground water are saline. Salinity exceeding 3500 ppm. The surface water also turns saline on storage for more than four months. The river and traditional water sources such as ponds, wells have dried, turned saline and neglected. Thus the area faces acute shortage of water. Even availability of potable drinking water through traditional sources is not gauranted.

Water for irrigation is not available. The ground water table is falling at the rate of 2 mt. per year. Further exploitation of ground water, adds to salinity ingress. Creating Borewells is not advisable, as ground water is available at the depth of 900 ft.

As a result the communities migrate to better areas. The only source of potable drinking water is the Santalpur Regional Water Supply Scheme. The water is pumped from 6 tubewells dug in the riverbed. This water is transported through pipelines over a distance of 110 kms, by gravity. The water in the villages is supplied through sandpost, 45 lts per head per day.

SEWA is involving the local communities in Water harvesting and recharging, by taking up constructing of small farm ponds, lining of village ponds, recharging of wells, watershed development programmes.

Relationships :

The project is being implemented in close co-ordination with the Gujarat Water Supply Sewerage Board. The project also has established close relationships with the Government bodies such as District Rural Development Agency, Minor Irrigation department, District Health Department.

The project also works closely with the local authorities such as the Taluka Panchayats, Village Panchayat. Local Non Government Organisation.

The Project activities are linked with these agencies, under Governments developmental schemes. Thus gets financial assistance.

The activities are planned in collection with the local authorities, to gain their support.

The activities invoves the local authorities, village groups in implementation.

Project Achievements :

In the following three ways the SRWSS is strengthened by the BWRDP.

First, a substantial decrease in migration rates can be observed among families involved in the BWRDP. Due to the generation of higher and sustainable incomes by female family members, the number of families having to migrate as a matter of survival has decreased. Data (collected in 60 villages) show that 332 families migrated in 1994, whereas 1524 families migrated in 1989. This is an almost 80% decrease in the number of BWRDP related families migrating. Naturally, these data are influenced by geographical factors such as good years or drought years, but the decrease in migration rates remains significant.

Decreasing the migration rates of families within the Banaskantha district increases the effectiveness of the SRWSS. Migration negatively influences the development potentials of an area (e.g. it weakens the community bonds and the operation and maintenance of village facilities, increases the administrative neglect and adds to rapid desertification.

Second, through the BWRDP more than 15,000 women in the Santalpur region have been able to enhance, on a sustainable basis, their economic position and social status. This has generally improved the resource position of their households and thus increased the abilities of these households to pay for water.

Third, the BWRDP enhances the autonomy of women through economic, social and political empowerment. Full employment (i.e. employment through which the female workers and producers are assured income, food and social security) and self-reliance (i.e. being self-reliant individually and collectively, economically and in terms of making decisions) are the key goals. Enhancing the autonomy of women will improve their position to assume a leading role in community-based management, operation and maintenance of village facilities, health and hygiene and cost recovery. Active participation of women in all aspects of the development process is a precondition in order to improve the living and working conditions of the communities in the Santalpur region. Furthermore, active participation of women in decision making processes on water issues is crucial since they are the main users of water.

Other Information :

There were two external evaluations in 1993 and 1996.

Annnexure 1

Secondary activities undertaken by the project :

Women Artisans Support Programme :

Women in Banaskantha have a rich heritage of crafts; the Aahirs are known for their fine embroidery, the Rabari women for beautiful mirror work, the Mochis make attractive leather items and the Harijans do patch work and bead work.

A craft development centre was set up at Radhanpur, which provides skill training, design documentation, product development, supply of raw materials and marketing.

About 3000 women artisans have organised into local groups under a government programme called Development of Women and Children in Rural Areas (DWCRA). Out of 42 women-managed DWCRA groups, 22 have achieved self sufficiency.

Eco-Regeneration Programme (Nursery and Plantation) :

The women of this region are being introduced to antidesertification activities. Around 300 landless women are engaged in raising 10 lakh fruit and non-fruit saplings annually. Training and technical input is provided by the Gujarat Agriculture University (GAU). SEWA trains them in plant grafting which provides additional income. Some 350 acres of panchayat wastelands have been afforested under an agro-forestry and silvipasture programme.

Dairying and Fodder Security System :

SEWA in co-ordination with Local Dairy, has revived 75 defunct primary milk co-operatives. Today, the daily collection of milk is around 8,000 liters.

SEWA is now concentrating on involving women to form women's co-operatives in villages in the area.

A detailed study by FPI resulted in the launching of the Fodder Security System (FSS). Fodder (dry stacks of Jowar and Bajara), is purchased and stored during the harvesting season and distributed to members of the co-operatives during the lean summer months. With the assistance of SEWA, a committee of representatives of local communities manage the purchase, storage, distribution and financial activities.

Salt Farming :

Salt farming is another activity in the area involving around 10,000 people. Based on a study conducted by SEWA and FPI, SEWA has launched two major programmes for salt workers.

1. Co-operativisation of Salt Workers

2. Salt Worker's Welfare Programme

Savings and Credit :

About 70 local savings and credit groups of 2500 women are formed with a monthly saving of Rs. 10 each. Their total savings is Rs. 3,50,000/-

About 300 women have been given credit worth Rs. 1,36000/- mainly for agriculture activities such as purchase of seeds, manure or land development, for house repair and purchase of cattle. This will directly increase the income of the family and improve the living conditions.

Minor Forest Produce Collection :

A desert tree, Proscopis Juliflora, popularly known as Ganda Baval, is a source of resin gum. SEWA has organised 1500 women gum collectors into eight DWCRA groups. These groups are licensed for gum collection by the Gujarat State Forest Development Corporation (GSFDC), the sole purchasing agency owned by the state for all forest produce. SEWA is now negotiating with the government for a fairer price.

Social Security Schemes :

SEWA has launched various social security schemes for its members which include

Health Care :

Some 1,000 women artisans were examined for eye ailments. Some 876 women were provided spectacles.

Some 4,000 members were insured under a social security package which covers a compensation of Rs. 10,000 in case of accidental death; Rs. 1,000 as mediclaim in case of illness; and Rs. 5,000 towards damage to house or goods due to floods and riots. More than 6,000 members have life insurance.

Food Security :

Most of the villages under this projects are in remote areas with no approach road. Food supply through the Public Distribution Systems (PDS) and Fair Price Shops (FPS) is irregular and inadequate.

TONGA WATER SUPPLY PROJECT

THE MVULA TRUST & DEPARTMENT OF WATER SUPPLIES AND FORESTRY

SUMMARY

This project aims to improve the water supply to eleven communities which are in close proximity along the *Nkomazi basin* in the Mpumalanga Province of South Africa. This will be done by upgrading and expanding an existing bulk water supply scheme in Tonga. The existing water supply to nine of these communities does not meet the *RDP* minimum requirement of 25 litres per person at a walking distance of no more than 200 metres.

A non-statutory *Water Board* has been established with democratically elected representatives from individual *Water Committees* from each of the communities . In addition, the Board has secured funding from The Mvula Trust as well as the Department of Water Affairs and Forestry to develop the project. A portion of the funding allocated will be used to develop the capacity of the board members and train and equip them with the necessary capacity to successfully run a scheme of this magnitude in a sustainable fashion.

Part of the challenge facing the successful development of the project the limited amount of water available for extraction from a river which is already exploited virtually to maximum through various irrigation projects supported upstream such as citrus farming and timber farming. A number of big thermal power stations rely on the river further upstream as well, while sufficient water has to be left available for use further downstream in Mozambique (the Nkomazi flows through South Africa Swaziland and Mozambique before discharging into the Indian Ocean.

SETTING

The Tonga project is situated in an area known as Eastern Nkomazi which stretches from the South African/Mozambique border on the East, between the Mlomati/Nkomazi river in the North and the Swaziland border in the South. There are an estimated 120 000 people in the project area.

The former Kangwane Government was responsible for the development of the original water supply scheme, and through observation and discussions with communities of the area, it was clear that the system had failed to deliver the service for which it was designed. Reasons for failure are many including:

- one of the short term objective is to meter and repair the existing bulk and distribution systems thereby improving the supply and connecting two other external communities to the scheme
- constitutional development of the communities by way of training, capacity-building, institutionalism, etc, to promote self sufficiency with respect to water supply services
- to optimise secondary benefits to the communities that may be derived from the project, ie, job creation, training and capacity building by using labour intensive methods of construction and local emerging contractors
- to provide a long-term sustainable water scheme which is demand-driven and based on fair payment on fair payment for services rendered

METHODOLOGY

The Mvula Trust's is a partnership approach which aims to bring the community in from what may seem a minority partner (at project onset) to project completion conditions where the community is now at the project driving seat, and fully aware of their newly found responsibilities in holding the destinies of the project in terms of sustainability.

This is achieved through an empowerment process, where-by, project costs are deposited in instalments into a community owned bank account. Parallel, to this, the Trust facilitates the employment of a consulting engineer (implementing agent) as well as a training agent who assist the community develop its scheme together with the necessary institutional structures.

There are a number of controls, procedures and documentation built into the process which not only account for project expenditure, but also ensure that the water committee is forced to understand what goes on in their project.

Examples of such documentation include a project planning report, cashflow budget at project start, bank reconciliation forms prior to each disbursement, updated cash registers, etc. All of the above documentation are the responsibility of the water committee with the assistance of the implementing agent.

WATER USE IN THE REGION

A General Description of the Nkomazi River Basin

The Nkomazi river rises in South Africa on the escarpment near Carolina where it supplies the Nooitgedagt Dam. It then flows via the small Vygeboom Dam near Badplaas, through northern Swaziland and back into Mpumalanga before joining

the Crocodile River at the Komatipoort and flowing into Mozambique. The major tributary of the Nkomazi, the Mlomati, rises in the hills between Piggs Peak and Barberton, flowing through Swaziland into South Africa where it joins the Nkomazi. The catchment area upstream of komatipoort is known as the Nkomazi River Basin.

Development of the water resources of the Nkomazi River Basin has been the subject of extensive studies commissioned in the early 1980s by the Joint Permanent Technical Committee (JPTC), set up by the Governments of Swaziland (GOS) and the Republic of South Africa (RSA), which has been the forum for discussions between South Africa and Swaziland on matters of mutual interest. Outline plans for developing the basin were prepared in some detail for the JPTC and a draft agreement for water sharing was drawn up between the two countries as early as 1986. The Government of Mozambique also has a legitimate in the water resources of the Nkomazi river, which combines with the Crocodile and other major rivers to the North to form the Incomati River in Mozambique. Outline development plans have been discussed in the forum of the Tripartite Technical Committee (TPTC) and are currently the subject of a joint study between the governments of South Africa, Swaziland and Mozambique.

A number of studies have been commissioned by all three governments as well as certain non-government organisations on the water resources of the Nkomazi River Basin. The World Bank as well as the UNDP have also been involved through a Panel of Experts to monitor and review the progress some of the studies. The following is a summary of some of the general findings;

- Water is the main limiting natural resource to the development of the Nkomazi River Basin
- The largest potential competing consumers of water from the Nkomazi river Basin are the rapidly increasing population, afforestation, thermal power stations in the RSA and irrigation
- In addition to the Kingdom of Swaziland and the RSA, Mozambique is also entitled to a reasonable and equitable share of water from the Nkomazi River Basin
- That a provisional long-term plan be adopted for the development of the water resources of the Basin. This plan includes new dams at Boukenhoutrand, Maguga, Silingane and Tonga on the Nkomazi River and at Ngonini, Driekoppies and Vlakbult on the Lomati River to improve storage
- Additional water is required immediately to improve the assurance of supply to the existing irrigators, which has already been reduced by additional afforestation, to provide for the increase in primary (mostly domestic) demands and to allow for modest increases in irrigation of about 7 400 ha and 7 150 ha in the Kingdom of Swaziland and the RSA, respectively.

- The long-term plan can be implemented in phases, of which the first phase comprises both the Driekoppies and Maguga Dams with gross storage capacities of 251 million m^3 and 332 million m^3, respectively. These two dams will supply water to meet the short- to medium-term requirement where it is needed at the least cost.
- An economically viable 15MW hydroelectric power station can be built at Maguga Dam to utilise the energy that would otherwise be wasted.

Existing Land and Water Use in the Project Region

The former homeland government of Kangwane installed a water supply scheme which did not cover all the villages in the region, with the bulk pipeline passing a few villages only a few kilometres away. Through a number of reasons such;

- as poor governance
- a culture of non-payment for services (with political influence)

the scheme fell into a critical state of disrepair.

A number of other features characterise the existing water supply;

- a substantial number of the population have made private unmetered connections. Coupled to this, there are significant losses of water which are unaccounted for
- a large component of the population still do not have ready access to water, and have to walk long distances to fetch water.
- some borehole installations exist which are in various stages of repair. Some of these are private, while a number were installed by government in previous drought relief interventions

RELATIONSHIPS

The project was initiated by the collective water committees after they had been democratically elected to represent their communities. Once funding had been secured through the Mvula Trust and the Department of Water Affairs and Forestry, a *Steering Committee* was established which is representative of all the project stakeholders. The project is now being implemented through the direction of this steering committee.

The Steering Committee has the following membership;

- Water Committee members representing the community
- Department of Water Affairs and Forestry

- The Mvula Trust
- The project Implementing Agent
- The Community Training Agent
- The Local Chief
- The Local Government Structures
- and other interested parties

Although there are other users of the water (in other sectors such as agriculture), these are not represented in this committee.

PROJECT ACHIEVEMENTS AND FUTURE WORK

This project was scheduled to take 8 - 12 months to complete, with the initial phase being devoted to training and the initial capacity building. Most of the initial training has been carried out by now. Construction has also begun. The initial construction work aims to repair the existing infrastructure. Additional pipelines to cover villages which were previous un-reticulated will be installed in later phases of the project.

Committee members from the eleven individual water committees were nominated into a higher water committee which enjoys recognition from the DWAF and is currently seeking statutory registration as a water board.

- Due to a history of not charging for water supplied, there is no incentive to save, resulting in wastage and inequitable supply
- Maintenance of the system appears to be run on an ad-hoc and emergency repair basis
- Informal (unauthorised or illegal) connections are prevalent, resulting in uncontrolled leakages through inferior workmanship and materials
- Primary water is used for irrigation purposes through informal connections or from standpipes
- No formal system of customer management exists
- The bulk supply system is not supplying sufficient water to meet the demand
- Water tankers are used on a continuous basis to deliver water to four of the communities which receive an inadequate supply from the existing water works. The service from these is increasingly unreliable.

Due to the current poor service of supply, together with a high influx of refugees from Mozambique, and the fact that the area has experienced drought for the last five years, the need for an organised approach to water provision has become critical.

Vast discrepancies exist in the supply of water, with the more needy families having to pay tariffs as high as R25/200l drum of water compared to about R2/kl in more affluent municipal settings. Water derived from tanker deliveries is also expensive in direct financial costs as well as the time spent in carrying the water from the available sources to homesteads.

BACKGROUND

As a result of the pressing need for reliable clean water supplies in this area, the Tonga community started organising itself into informal water committees derived from each distinct settlement. In January 1994, the leaders from the various committees got together to address their common water problem. This grouping later evolved in February of the same year to be called the Mpumalanga Water Board.

An important early milestone was to achieve the recognition and support of the chief of the area, Chief Ngomane. Traditionally, the chiefs are responsible to ensure an adequate and fair distribution of water for their areas. The active support of the chief and his tribal structures was, therefore, crucial to the success of the activities of the Mpumalanga Water Board (Mpuwabo). Subsequently, the Mpumalanga Provincial Reconstruction and Development Programme (RDP) Office became directly involved with the developments through invitation and participation in Mpuwabo meetings.

The Mpuwabo eventually produced a statement of intent in November 1994 which called for "...the provision adequate, sustainable potable water for all inhabitants of the initial eleven towns and villages falling under the proposed Mpumalanga Water Board".

The policy was formulated after much debate, with the payment of services a recognised requirement. In addition, the approach to job creation for the community, and the need to ensure professional management and operation and expansion of the system were identified.

Despite a number of local political power struggles, all of which were successfully overcome, Mpuwabo was eventually recognised as representative by the Ministry of Water Affairs and Forestry. This recognition was later embodied in a letter from the minister, proposing Mpuwabo establish itself as a statutory Local Water Committee and thus ensure government funding as they move towards full water board status.

Parallel to these developments, Mpuwabo appointed a consulting engineering firm, van den Berg and Partners to help compile a feasibility report/business plan for the development of the water supply scheme. Another firm, Water and Sanitation Services South Africa (WSSA) were also requested to set up a management, operation, maintenance and customer management system for the water supply scheme in order to ensure a sustainable water service. The subsequent study by WSSA indicated the viability to implement a sustainable service in the area based on R2.50-3.00 per kilolitre of water. This was favourably received by Mpuwabo and Tonga residents.

Further developments included the securing of funding for the project through grant funds from The Mvula Trust and The Department of Water Supply and Forestry for a total of ±R4 million rands. A significant component of the funding R200 000 will go towards payment for capacity building for the Mpuwabo members.

The project began construction in July 1996.

OBJECTIVES

The objectives of the project are;

- to provide a minimum of water to all residents of the communities in accordance with the RDP and White Paper requirements of 25l/cap/day at a distance not exceeding 200 metres from each dwelling place. The supply must be reliable, sustainable and allow for future upgrading to individual household connections on a demand driven basis.

:: **PROJECT DESCRIPTION** ::

PROJECT TITLE:

TITLE OF THE PROJECT IS INTEGRATED WATERSHED DEVELOPMENT PROGRAMME IN JHABUA DISTRICT. The programme is being implemented under Rajiv Gandhi Watershed mission with Collector, Jhabua as the Mission Leader.The main implementing agencies for Integrated Watershed Development Programme in Jhabua consist of 13 government agencies and 6 Non governmental organisations.

SUMMARY:-

The project is being implemented in over 1.00 lac hectares of land in Jhabua district of State of Madhya Pradesh in India is approximately 16% of the total geographical area of the district. The project aims at improving the economic conditon of people directly or indirectly dependent on the watershed through optimal utilisation of natural resources with full community participation. The areas chosen in the watershed develoment programme are the ones which have large proportion of wasteland or/and acute drinking water probem or/and with large proportion of tribals and people living below the poverty line etc. in the rural areas. The duration of the project is four years.

Setting:

District Jhabua is located in the south western part of the State of Madhya Pradesh in India. Its bordering States are Gujarat, Rajasthan and Maharashtra. The district is divided in 12 blocks and comprises of 1356 villages. With 87% of population consisting of tribals, it is the most tribal majority district of the country. It ranks lowest in social, economical and ecological indices in the human development report of Madhya Pradesh. It has the lowest literacy level at 13.65 per cent with

female literacy percent as low as 6.65 %. The population decadal growth rate at 42.65 was amongst the highest in the State. The tribals are superstitious and ingnorant. Alcoholism has been widespread and the crime rate is the highest in the State. The district is also confronted with the problem of heavy seasonal migration of over 50% in lean agricultural season in search of employment which has primarily resulted from the ecological degradation of the environment in the district.

The entire district has been declared as drought prone district by the Government of India. Because of extremely undulating terrain with slope averaging around 30%,lack of vegetative cover and lack of water and soil conserving agricultural practices, the run off of water has been exceedingly fast and the district has faced the paucity of water. It is a separate agro-climatic zone and is geographically classified as 'Jhabua Hills.' The mainstay of the population is agricuture which in itself is very poor because of poor soil quality, lack of water and inappropriate agricultural practices. The village industries or the heavy industries are practically non-existent.

Nearly 23% of the area is notified as forest land but only 8% of land has forest cover. The severely ecologically degraded natural resources have resulted in marginalisation of human existence. Eco-system services like fuel, fodder, timber and NTFP are very poor.The district with an area of 6782 Sq Kms is divided into 12 development Blocks and consists of 1356 villages.

Background:

The project was initiated under the policy guidelines of the Government of India and the State of Madhya Pradesh. The Goverment of India has formulated the guidelines for the Integrated Watershed Development Programme in October, 1994.

Almost simultaneously, the Government of Madhya Pradesh started it as a Mission for the State after the name of late Prime Minister of India, Shri Rajiv Gandhi. Thus it is called "Rajiv Gandhi Mission on Watershed Development " in the State of Madhya Pradesh.

The financing for the Rajiv Gandhi Mission on Watershed Development is done jointly by the Governmet of India and the State Government on 80:20 basis. The project's total budget is 400 million rupees or 11 million US dollars for a duration of four years.

Objectives:

The objectives of the project are:

1. To promote the economic development of the village community which is directly or indirectly dependent on watershed through

(a) optimal utilisation of watershed's natural resources like land, water, vegetation etc.

(b) employment generation and develoment of human and other economic resources of the village.

2. To encourage restoration of ecological balance in the watershed through:

(a) consistent community action for the operation and maintenance of assets created and development of potential of the natural resources.

(b) simple, easy and affordable technological solutions.

3. Special emphasis to improve the socio economic conditions of the resource-poor and disadvantaged sections of the watershed community through

(a) equitable distribution of benefits of watershed development,

(b) greater access to income generating activities and focus on their human resource development.

Methodology:-

Primarily the approach is to promote optimal utilisation of natural resources and to encourage restorattion of ecological balance in the micro watershed area through consistent community action utilising simple,easy and affordable technological solutions. After the PRA activities,the community is organised into various self help groups and user groups and watershed committee is constituted by the watershed association members,which carries out the formulation of action plan,its implementation and subseqently,its maintenance.The role of project implementing agency is to provide technical guidance and facilitate formulation of action plans,promote community organisation,and facilitate sustained community action.The government through District Rural Development Agency provides the full cost for the development works,but 10 to 15 per cent of the project cost is contributed by the villagers in the form of voluntary labour or materials.This contribution is saved for the formation of watershed development fund which will be utilised for operation and maintenance of the assets created.Per hectare cost approved for watershed projects is Rs. 4000/- or $ 110.The release of funds is 25% for Ist year,40% for 2nd year,25% for 3rd year and 10% for the fourth year.

Activities:

All the development blocks which are covered under the Employment Assurance Scheme (EAS), Drought Prone Areas Programme (DPAP) and Integrated Wasteland Development Programme(IWDP) of the Government of India are to be covered under Integrated Watershed Development Programme. Main activities carried out by the project are :-

(1) Selection of villages for watershed develoment:

Selection of villages is primarily determined by the preparedness of the people to participate in the sustained watershed development programme. Also the watershed chosen is such which has acute shortage of drinking water, preponderance of wasteland or common land and large population of scheduled castes and scheduled tribes.

(2) Selection of project implementing agencies:

To help prepare development plans for each watershed, to provide technical guidance and supervise the implementation of watershed development projects in group of selected villages, the project implementing agencies are selected by the Watershed Development Advisory Committee which has Collector as its ex-officio chairman.

(3) Constitution of Watershed Development Teams by each project implementing Agency:

Each watershed development team consists of atleast 4 members, one each from the disciplines of plant sciences, animal husbandry sciences, civil/agricultural engineering and social sciences.

(4) Training of watershed development team for a period of one month in 2 to 4 modules.

(5) Participatory Rural Appraisal excercises.

(6) Basic survey/collection of baseline data:

The information collected from the PRA excercises is verified and supplemented by data about the village from government records,land literacy with field to field transact, meteorological data, satellite imagery of the watershed.

(7)Community Organisation:

All adult members of the community which are directly or indirectly dependent on watershed are organised into a watershed association. Project implementing agency facilitates formation of various self help groups and user groups from among the members and organises their training. Self help group consists of people who are basically homogeneous and share a common interest. User groups consist of people who are to share the fruits of assets created through the watershed development. More than 50% of the members of watershed association are grouped into various self help groups and user groups. Exposure visits and literacy and social welfare programmes are also taken up. Suitable village volunteers and secretary for watershed committees are selected after the PRA excercises.

(8)Constitution of watershed committee:-

Watershed committee consists of 10-12 members from the members of users groups and self help groups and 2 members of Gram Panchayat and 1 member of WDT.They oversee the day to day implementation of watershed development plan.

(9)Preparation of watershed development plan:-

The watershed development plan is prepared by user groups in consultation with and under the guidance of watershed development team .Watershed development committee integrates the individual action plans of the users groups.It also decides approach to common property resources,comprehensive treatment plan,water harvesting system etc.

(10)Comprehensive tretment of watershed:-

The ridge portion is treated with staggered or continuous contour trenches and contour stone bunds fortified by vegetation

and grass-bed etc.The drainage lines are treated with gully plugs and other vegetative and engineering structures.The transition zone is treated with contour bunds,continuous/staggered trenches,Gabion structures,boulder or vegetative check dams,percolation tanks etc.The valley portion or the discharge zone is treated with check dams,dykes,nalla bunds,field bunds and contour boulder walls with vegetative reinforcement and water harvesting ponds.

(11)Monitoring and Review:-

The project implementation agencies are required to submit progress reports in the specified format on the basis of success criteria given in the policy guidelines. It is also used to share and exchange innovative approaches, technical innovations etc.

(12) Evaluation and process documentation:

The Ministry of Rural Development, Government of India and the State Government are to appoint independent institutions to carry out concurrent as well as postproject evaluation of watershed development projects. So far this process has not started. However internal evaluation mainly through participation of community such as measuring water level in wells,increase in biomass production,increase in agricultural production observing silt load in water and measuring silt deposition etc.are regularly being carried out which has shown extremely satisfying results.

Water use in the Project Region:-

The primary water sources in the region are tanks,wells,tubewells,stopdams etc.The water had been extremely scarce, due to exceedingly fast run-off and thin vegetative cover

and lack of appropriate water harvesting structures.However in the last 10 years nearly 800 tanks and 1200 stop dams have been constructed which have improved the ground water level situation,as well, improved the availability of surface water. Water is primarily used for drinking and irrigation purposes. On a very limited scale, it is used by the industries. Tanks are also being used for pisiculture. The main users of water are primarily the farmers. The responsibility for ensuring distribution and allocation of water amongst users rests primarily with the water utilisation committee at the district level headed by the Collector. After providing for adequate allocation of water for drinking purposes, the rest of the water is allowed to be used for irrigation activities. Besides the formal arrangement at the district level there is an informal arrangement of the users at the village level also to discuss and decide sharing of water.

Relationships:

The project primarily deals with various governmental and non-governmental project implementing agencies, watershed committees and the Panchayats which are the elected administrative units at the local level.

Project Achievements:

The project has laregly been able to meet its desired results. The socio-economic conditon of the people has improved for the better.The treatment and development of drainage lines,arable and non-arable lands particularly in the recharge and transition zone has been completed with active community participation.The rain water has largely been harvested with ground water table rising. Double cropped area has improved significantly and productivity has gone up.

There has been significant regeneration of forest and fodder production in the project area has registered an increase of 50,000 tonnes.Grass productivity has risen from 0.5 ton to 4.00 tonnes per hectare.

The community has been mobilised and organised. They are being trained to come up as empowered communities capable of executing and managing the project. Nearly 370 women groups have been organised as thrift and credit groups or women banks. Over 500 user groups have been costituted of which 344 are village forest committees.These are commited to sustainability of the treatment in the project area. There has been perceptible improvement in literacy, primary education, health services etc. with active participation of the community.

ANNEXTURE

Secondary Activities:

(a) Formation of 344 user groups called village forest committees to restore and upgrade the degraded forest lands.

(b) Formation of Thrift and Credit Groups of Rural Women: 370 such groups called "BAIRA NI KULADI" have been formed.

(c) Women self help groups are engaged in nursery raising, village industry, dairy development etc.

(d) With increase in availability of fodder dairy activities are being promoted intensively through artificial insemination, improved cattle induction programme and marketing support.

(e) Agro forestry crops such as bamboo, eucalyptus and horticulture crops particularly Ber(Zizyphus) and Amla(Emblica offinalis) are being promoted intensively.

(f) Afforestation - gap planting and block planting.

(g) Pasture development.

(h) Social service sector like literacy, community based hamlet classes, community based ICDS centres etc.have come up in a big way.

(i) Family Planning activities and energy saving devices, water saving devices are also being promoted.

(j) Fisheries development.

CARERE
Area Development Programme

CAMBODIA

Background paper prepared for the UNDP/IRC Project: "Promising Water Resources Management Approaches in the Drinking Water Supply and Sanitation Sector", The Netherlands and Cambodia, 1996 and 1997.

Programme Title: CARERE/WATSAN
(CARERE* Supported Drinking Water and Sanitation).

Initiator: UNDP
(United Nations Development Programme).

Implementor: UNOPS
(United Nations Office for Project Services).

Principal current sources of funds:

- The Government of the Netherlands.
- The Government of Sweden.
- The Government of Norway.
- The European Union.
- La Caisse Française de Développement.
- UNCDF (UN Capital Development Fund).
- UNDP.

(* CARERE: Cambodia Area Rehabilitation and Regeneration)

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Summary

The CARERE/WATSAN Project was initiated in 1992 as one of several CARERE-assisted projects aimed at providing basic services to returnees from the Thai/Cambodian border camps. Activities at the time were designed in such a way that they could be quickly implemented to meet an immediate need.

After the formation of the new government in 1993 CARERE's priorities gradually began to shift away from emergency relief to longer term, development related activities. There were fewer directly implemented projects, and more activities planned and implemented through the government.

In 1996 a second CARERE project, with a duration of four years and a proposed budget of approximately US $ 40 million, in five provinces, was approved. The mandate of the new CARERE2 is to build the capacity of government institutions to decentralize their activities, in support of bottom-up planning that begins at the village level.

In this spirit, CARERE assistance to the WATSAN Sector stresses the need to develop the government's capacity to assist villages in identifying and solving their own WATSAN-related problems. As much as US $ 1.5 million of CARERE funds could be made available to the sector during each of the project's four years, provided that well planned projects are produced and that the sector has the capacity to absorb the available funds.

Setting

Cambodia is classified by the UN as a least developed country, and the five CARERE-assisted provinces are among the poorest of the country's 23 provinces. As is the case for all CARERE support, the CARERE-assisted WATSAN Programme concentrates on rural areas of the four provinces of Bantey Meanchey, Battambang, Pursat, and Siem Reap in the Northwest, and Ratanakiri in the Northeast. Some support is also given to national-level activities.

The rural inhabitants of the Northwest are predominantly ethnic Khmer who observe the Buddhist religion, and who make a living from farming. Although there are mountainous areas, these are largely forested, prone to security problems that stem from the activities of the Khmer Rouge rebels, and are generally uninhabited. The majority of the population live in plains-like areas, and in the area which surrounds the *Tonle Sap*, a large inland lake.

The rural inhabitants of Ratanakiri Province are from a number of ethnic minorities, each of which tends to have its own language and religious persuasion, frequently animist, and sometimes Buddhist. Many of the minority groups in the area are nomadic and live off hunting and slash-and-burn agriculture.

For Cambodians in general, the village is the most complex social unit in which they participate. It is seen as a fluid aggregate of families whose interaction changes to suit the occasion but whose affairs are variously overseen by village elders, temple laymen, monks and, of late, designated village heads.

In the Northwest poverty can largely be associated with the intense security problems the area has experienced over the past 25 years, while Ratanakiri suffers from its geographical isolation from the rest of the country. Those who survived the horrors of the Khmer Rouge rule from 1975 to 1979 had all along to deal with the death and injury of family and friends, and the loss of their property and capital on a scale that is difficult to imagine. One of the consequences was the country's loss of a large proportion of the skilled workforce which would later have been required to rebuild it.

Hostilities of a military nature between the Khmer Rouge and the Viet Nam-supported Cambodian army resulted in large numbers of inhabitants fleeing to Thailand in 1979 and in lesser numbers during subsequent years. The refugees settled temporarily in camps along the Thai/Cambodian border. Meanwhile, within Cambodia, over the 1979 to 1989 period when there continued to be a strong Vietnamese presence, development aid was largely limited to sources in the former East Block countries, India, and a number of INGO's. Whatever little assistance did enter the country was channelled through the central government, and was in general directed at emergency needs. Contact with rural communities was very limited because of exhaustive travel restrictions.

As a result of the Paris Peace Accords of 1992, approximately 360,000 refugees were officially repatriated in an operation carried out by UNHCR. In addition, there was an undetermined number of refugees who returned "spontaneously" and outside the UNHCR umbrella. Approximately a third of the returnees settled in Battambang Province, with a slightly smaller number choosing Bantey Meanchey Province. The provinces of Pursat and Siem Reap also received a large proportion of the returnees, with the remainder distributed throughout the rest of the country.

In the North-western Provinces the returnees increased the total population by as much as 25%, putting a strain on an infrastructure system already made frail by decades of turmoil and war. Poor security due to the presence of landmines and other factors, lack of means to increase agricultural production, lack of a system of primary roads in rural areas to increase access to markets, and health problems associated with an inadequate water supply, all were constraints to the successful resettling of returnees

Background

To help address the problem, UNDP initiated CARERE1 in mid-1992 to provide basic, quick impact services, such as improved drinking water, rural roads, schools, clinics, small-scale agriculture, demining and rural credit. Altogether, CARERE1 delivered projects worth U.S. $ 13.5 million, and technical assistance worth U.S. $ 12.0 million, or a total of U.S. $ 25.5 million. UNDP, and UNHCR through its QIP's (Quick Impact Projects) budget, were the main funding agencies for CARERE1. Approximately 20% of this amount was allocated to WATSAN projects.

Today the emergency resettlement work has largely been completed, and development priorities have evolved. The UN-sponsored elections held in 1993 ushered in the first democratically

elected and internationally recognized government in over 20 years. One of the results is that longer-term planning and development are increasingly becoming possible.

To assist the new government in this task CARERE shifted from emergency-type projects and direct implementation, to activities that build the capacity of government and community groups to manage and implement development plans and projects. Decentralization and participation are prominent features of the government's strategy, which includes the establishing of a network of development committees at the village, commune, district and province levels. It is expected that this new structure will facilitate a bottom-up planning process that begins with villagers identifying the problems and constraints they themselves face, proposing solutions, and obtaining the resources required to solve the problems they have identified. Local level plans are to be progressively consolidated upwards into provincial and national level development plans.

Over the 1996 to 1999 four year period, CARERE2 will continue building on the foundations laid by CARERE1 in assisting the government with its bottom-up planning process, and with the implementation of the mandates developed at the World Summit for Social Development. It was anticipated at the planning stage that CARERE2 would require a budget of some US $ 40 million, approximately half of which would be allocated to projects, while the other half would cover administrative costs and technical assistance. The current indicative planning figure for projects for 1997 is US $ 7.5 million of which approximately US $ 1.5 million will be allocated to WATSAN.

Objectives

The evolution that has taken place within CARERE since it was established in 1992 has simultaneously led to a change in its objectives.

The CARERE1 WATSAN development objective was access to safe drinking water by returnees from the border camps.

The CARERE2 WATSAN development objective is villages in selected areas of five provinces of Cambodia that are able to identify and solve WATSAN-related problems.

Methodology

In general CARERE1-assisted WATSAN activities were either directly or INGO-implemented. This was justified by the fact that stress was on meeting an immediate need, and in recognition of the fact that there was no official government in the early stages of the CARERE presence. In at least one of the CARERE-assisted provinces, however, efforts to involve the new government at all administrative levels, from national to village, began soon after the government was formed in mid-1993.

The involvement of government continued to evolve until this approach--to encourage the government to take overall responsibility for WATSAN Sector planning-- was officially adopted by CARERE2. Partly as a result of this new emphasis, the government is currently in the process

of developing a comprehensive policy for the sector which, once adopted, will apply in all 23 provinces of the country. The following are the main points of the new strategy.

Summary.

The government will continue to contribute to the reduction of mortality and morbidity rates in rural and peri-urban areas by supporting efforts to achieve universal access to safe water supply and sanitation services, as a basic right, and by promoting the behavioural changes essential to realize the full benefits from such services. It will encourage the expansion of services to the poor, improve the reliability of those services, design strategies and approaches for improved hygiene and sanitation, support policy development, and assist emergencies. In addition, the evolving situation suggests some new emphases in programme activities. These include:

- greater attention to sanitation and hygiene promotion, as well as to operation and maintenance in water supply.
- emphasizing communication methods, and behavioural and attitudinal change, with sanitation and hygiene education in schools as a key channel.
- greater focus on the utilization and sustainability of services, not merely on coverage.
- greater focus on cost-sharing, cost-recovery, and financing mechanisms for equity and sustainability.
- increased attention to health impact on populations and geographic areas with high prevalence of WATSAN-related disease.
- greater attention to environmentally vulnerable areas, including the poor in peri-urban areas and slums.
- attention to sustainable community based water resources management that link to national and sub-national programmes where appropriate.
- pilot research and development projects on cost-effective approaches, community participation and management, and inter-sectoral linkages, with continuous learning and dissemination of learning experiences.
- standardizing the definition of "coverage", and improving monitoring systems to include impact and process indicators, as well as coverage figures.

The WATSAN Sector has now reached a transitional point where the lessons and sound experiences of the past need to be more widely applied. **Water and Sanitation are no longer to be considered as vertical programmes for the delivery of physical services.** Greater emphasis needs to be placed on health and socio-economic benefits. Greater stress also needs to be placed on providing the knowledge, skills, tools and techniques required to generate motivation, and to develop supportive systems that enable communities and people to take decisions and make choices to help themselves.

Guiding Principles for WATSAN Strategies.

The following principles will be used to guide WATSAN strategy formulation:

- **Advocacy:** highlighting the needs and rights of the poor, and building political and public commitment to the adoption of appropriate policies and accelerated action.

- **Basic services:** managed by the community, they provide catalytic support to the expansion of cost-effective services by using appropriate technologies, by paying particular attention to sanitation, and by taking account of the potential for the upgrading of services by the communities themselves.

- **Capacity building:** adopting programme approaches that build capacity at all levels and in all segments of society, to ensure sustainable sector development.

- **Community cost sharing:** of capital and recurrent costs of basic levels of service, where and if possible, with recovery of full capital and recurrent costs of higher levels of services. This will generate additional resources that will extend basic services and ensure their sustainability.

- **Community management of the "water environment":** including water conservation, water quality protection, and solid and liquid waste management.

- **Gender balanced approaches:** recognizing women as key players and agents of change, and not solely as primary beneficiaries, in the context of overall efforts to empower women.

- **Intersectoral linkages:** with nutrition, the environment, and other programmes which support integrated rural development.

- **National and local goals:** defined and set in collaboration with appropriate partners at different levels and pursued through effective monitoring systems.

- **Participatory approaches:** to empowering communities and promoting their role in planning, implementing, managing, and monitoring services.

- **Partnerships:** formed and strengthened with government at all levels and with civil society, NGOs, the private sector, external support agencies, and others, ensuring co-operation and complementarity.

Implications for the Government.

Limited resources and the increased scope and complexity of problems demanding attention require an improved capacity for programme planning and evaluation processes. Situation and policy analyses of the WATSAN Sector are needed to assess interventions in terms of equity in access to essential WATSAN services. Such analyses need to highlight the link to other related sectors, such as nutrition and the environment, as well as to key epidemiological factors. The identification of vulnerable populations is required, and data and information management needs to be strengthened to advocate on their behalf. New capacities are needed for designing projects aimed at changing behaviour. Related activities will include training in planning, and implementation and management of WATSAN projects within the context of this new strategy.

Activities

The sector strategy outlined earlier makes it clear that in order to reach the stated objective of selected villages identifying and solving their WATSAN-related problems, support is required at all administrative levels, from national to village. It is for this reason that CARERE-supported activities take place at all levels, as is indicated in the following summary.

1. Largely as a result of CARERE advocacy, a Technical Advisory Group (TAG) for the WATSAN Sector was established at the national level. At the moment only the Ministry of Rural Development is represented, but other interested ministries may eventually participate. The major support agencies, such as UNICEF, LWS, AICF/USA, and CARERE are members. The main role of the TAG is to support the development of a policy and strategy for the sector.

2. With the support of CARERE and other agencies, a set of sector guidelines was developed and finalized. These are now serving as a basis for the development of policy for the sector.

3. CARERE has over the past four years regularly participated in various sector co-ordination activities at both the national and provincial levels. An example is the monthly co-ordination meeting which is attended by representatives of government bodies and ESA's that are active in the sector. One of the CARERE WATSAN staff has for the past three years served as interpreter at the monthly meetings, which sometimes have as many as 50 participants.

4. At the provincial level, a WATSAN Co-ordination Committee was formed in 1994 within the Battambang Provincial Government, to plan and co-ordinate activities.

5. Logical Framework Analysis was introduced as a planning tool in 1994. CARERE-supported WATSAN projects now follow the Logframe approach. A simple model is being introduced at the village level to encourage due consideration of all aspects of projects that are planned by the villagers themselves.

6. Since early 1994 certain activities, such as the construction of latrines and rainwater storage reservoirs at schools, are being sub-contracted to the private sector, to encourage their involvement with the WATSAN Sector.

7. A considerable amount of effort has gone into the designing and building of rainwater storage reservoirs, particularly at schools. The largest of the tanks have a capacity of 30 cubic metres.

8. Water use and hygiene education is recognized as an essential component of a successful WATSAN Programme. Various related educational materials have been produced, and a national level WUHE workshop will be held in Phnom Penh in the first week of December 1996.

9. A country-wide groundwater database has been under preparation since 1994. In support, CARERE is providing technical assistance, and arranged to procure the related software that was developed by the Danish Geological Survey.

10. Security problems periodically result in large numbers of persons being displaced from their homes, sometimes for lengthy periods. For example some of the IDP's in Battambang Province have been away from their villages since December 1992. As necessary, special arrangements are made to provide water and sanitation to them. This is particularly important in the early stages when the IDP's have not yet had time to adjust to their new situation.

Water Use in the Project Region

In rural areas of the four North-western provinces water for drinking and household use is typically obtained from surface sources. Many families dig ponds that serve to store rainwater. Others live close to a river or lake, which serve as their source of domestic water. Typically wells are drilled or dug when surface sources are inadequate, and even then the taste of well water is generally not appreciated. Although well water is widely used for all other purposes, villagers will tend to seek surface or rainwater for drinking. Water availability varies widely from rainy to dry season. During the wet period of the year (June to November) surface water can be plentiful though often unsafe unless treated. During the dry season villagers are often forced to collect water at considerable distances from home.

The geography of the North-eastern province of Ratanakiri is generally hilly, and domestic water is normally obtained from surface sources as well: springs, streams or rainwater. Here, also, there is considerable variation in water availability from one season to another.

Villages throughout Cambodia do not normally have committees or groups that specifically address water availability problems. Each family tends to look after its own needs.

Relationships

A large number of government bodies, local NGO's, private sector groups, and INGO's are involved with the WATSAN programme in their efforts to assist target villages in identifying and solving WATSAN-related problems. The project's main counterpart at the national level is the Ministry of Rural Development, although other ministries, such as Health, also have a very important role to play. At the provincial level at least six departments, including Rural

Development, Health, and Education, are closely associated with the programme. Private entrepreneurs often serve as sub-contractors to the provincial government for CARERE-funded projects.

The most important relationship, however, is between the various interested government bodies and the village. Villagers are encouraged to attempt to identify and solve, to the extent possible, their own WATSAN-related problems. The programme can assist. When the required resources, whether technical, material or financial, are not available within the village the programme can also assist with meeting the need. In the end, however, the responsibility for success or failure of a project within a village rests with the villagers themselves.

Project Achievements

- Safe drinking water provided to large numbers of returnees.
- The development of sectoral guidelines and strategies that will eventually lead to the definition of a policy for the sector.
- The introduction of new planning techniques, such as the Logical Framework, which makes it easier to define what is possible within the sector, and to develop clear workplans.
- Successful co-ordination of the various bodies and agencies that are active in the WATSAN Sector.
- The involvement of the private sector in WATSAN project implementation.
- The development of a national-level groundwater database which will serve as an important source of reference for project planners, monitors, and well installers.
- The introduction of new approaches to sanitation for institutions such as schools and clinics.
- The introduction of new rainwater harvesting techniques, particularly at the same institutions.
- Successfully providing IDP's with adequate quantities of drinking water.
- The installation of dug wells and handpump-equipped drilled wells.

Annex 1

The following are activities receive a significant amount of support, but which were not included in this paper's Activity section.

1. The introduction and standardization of handpumps that are relatively easy to maintain at the village level is an important activity. One of the results of a VLOM workshop held in Phnom Penh in 1994 was that three standard pumps were recommended for use in Cambodia: the "Afridev" for deep wells, the "Tara" for medium range wells, and the "Number Six" for shallow wells. The possibility of conducting a second VLOM workshop to discuss the addition or removal of pumps from the original list is under discussion.

2. The introduction of rainwater harvesting at the institutional level is being encouraged. Cambodians traditionally collect and store rainwater, typically in jars, but institutions such as schools and clinics normally do not. Battambang Province, for example, receives approximately 1.2 metres of rain a year: storing this water eliminates some of the need for wells and other water sources.

3. The project supports well drilling and handpump installation as an important technique for providing drinking water in rural areas. A number of drilling rigs, such as the large "Eureka" rig and the small "PAT" rig, have been supplied. At the same time drillers receive on the job upgrading training.

4. For the same reason, well digging projects are also supported, and well diggers are given appropriate training as required.

5. A Khmer/English/Khmer list of approximately 700 technical words and terms that are commonly used in the WATSAN Sector has been produced as an aid to interpreters and translators.

6. The project regularly supports INGO's that are active in the sector. In some cases equipment, such as drilling rigs and accessories, has been lent. In numerous instances INGO's have implemented CARERE-funded projects. The following are the agencies with which CARERE has had the most contact: SAWA, PRASAC, ANS, OXFAM, IFRC, CARE, CONCERN, and AICF/France.

CAMBODIA


LAOS
THAILAND
BANTEAY MEAN CHEY
SIEM REAP
PREAH VIHEAR
STUNG TRENG
RATANAKIRI
KOMPONG THOM
KRATIE
MONDULKIRI
KOMPONG CHHNANG
KOMPONG CHAM
Kompong Cham
KOMPONG SPEU
KANDAL
PREY VENG
KOH KONG
VIETNAM
SVAY RIENG
TAKEO
KAMPOT
Kampot
Kompong Som
CARERE ASSISTED PROVINCES

Project Title: ***Maharashtra Rural Water Supply and Sanitation Project with ODA assistance***

Summary

The Project originally sought to cover 209 villages and 1 town in 3 districts (Nashik, Jalgaon, and Dhule) of northern Maharashtra. The villages were to be provided water through 4 large regional piped water supply schemes. With one of the sources running dry, the Project had to be limited to 3 schemes covering a total of 187 villages and 1 town in the 3 districts. The project is expected to cover a projected population (2006 A.D) of 397,252.

The Project focuses on water supply, and provides for a pilot sanitation programme in selected villages. Water is transported from surface water sources (rivers/dams) over long distances to the villages. The sanitation component adopts a "total sanitation" approach providing for construction of toilets, sullage drains, soak pits, cattle troughs, and kitchen gardens.

A special feature of the Project is the emphasis on integration of water supply and sanitation with health education and community participation. The community development activities are implemented with the help of an external facilitator, and are aimed at improving the sustainability of the Project. To this end, the programme includes empowerment of women, training of grassroot level functionaries, and preparing the communities to manage and maintain the completed schemes.

The Project was initiated in 1990, and envisaged project funding upto March 1995. Funding was further extended until September 1996, and the Project is being assessed for extension upto March 1998.

Setting

The State of Maharashtra in western India is one of the most progressive states in the country. It is certainly the most industrialised State in India. However, the industries are concentrated in the major towns of Mumbai (formerly Bombay), Pune, Nagpur, Aurangabad, and Nasik to some extent.

Rice, jowar, sugarcane and cotton are some of the major crops of the State. The total irrigable area of the state is about 35%.

Socio-economic indicators for Maharashtra compare very well with national averages, except in respect of access to rural sanitation. There is however considerable variation within the State, and within districts. While Bhusawal taluka of Jalgaon district is relatively well-off, Amalner taluka of the same district is economically and socially backward. One of the determinants of backwardness is the lack of natural resources, chief among them being water for drinking purposes and for irrigation.

Geologically, 80% of the area of Maharashtra is covered by Deccan Trap. The climate is tropical, and the State receives its seasonal rainfall during the monsoons between the months of June and September. The three districts covered by the Project fall in the rainshadow zone of the Western Ghats and are therefore prone to acute scarcity of drinking water in the dry season.

Social, cultural, and geographical factors, combined with traditional beliefs and practices, have contributed to low awareness for good sanitary practices.

Background

The Project was initiated jointly by the Government of Maharashtra and the Overseas Development Administration (ODA) of the Government of U.K, with the intervention of the Government of India. Initial discussions commenced in 1989, and the agreement was signed in September 1991.

The Programme is financed by the ODA on a 100% grant basis to the Government of India. Of an initial total cost of 14.127 million, an amount of L 3.10 million is to be met by the Government of Maharashtra towards local capital costs. The Project includes a budget of L 2.33 million for technical co-operation programmes.

Objectives

The objective of the Project is three-fold:

to provide community-based equitable, adequate, potable and sustainable water supply services;

to provide a demand based approach to sanitation, and

to ensure that facilities are used in a hygienic manner, with proper disposal of water.

While initially the Project focused on water supply, gradually environmental sanitation and health education have come to be regarded to be of equal if not greater importance.

Key issues in the Project include institutional arrangements for proper operation and maintenance of the water supply schemes, and mechanisms for ensuring operational cost recovery. It is hoped that this Project would provide a replicable model for the entire State.

Methodology

Foremost, the Project recognises the relationship between water, sanitation and health. Water supply programmes can no longer be seen in isolation as technical programmes. It has been the experience the world over that communities have to be involved in all stages of implementation if proper maintenance of the assets is to be ensured.

Thus, awareness regarding health and hygiene will be raised through intensive and extensive health education and community development activities. This will result in proper storage and use of water, and improved sanitary practices including demand for latrines.

Community development activities will also aim at capacity building of the village institutions to operate and maintain the water supply schemes, including the institution of better financial management and mechanism for cost recovery.

The key institution under the Project at the village level is the Village Water and Sanitation Committee (VWSC), presided by the Sarpanch or the head of the Gram Panchayat (village council). Community Development consultants facilitate the empowerment of this committee to fulfil a role that combines that of being a watchdog, a supervisor, and a manager. The VWSC is guided in making decisions like location of public standposts, tariffs to be levied for water, and collection of dues.

The Project also believes in the long-term benefits of human resources development programmes. Training plans have been prepared for the stakeholders, including government personnel. This will provide for a gradual

transfer of the facilitation function from the consultant to the local administrative bodies.

Activities

Water supply engineering - Construction of water supply works (3 large regional piped water supply schemes).

Community Development - support activities intended to promote sustainability of the schemes. Includes training of VWSC, government functionaries, and democratically elected representatives.

Health education - aimed at creating better hygiene and sanitation for individuals and for the communities.

Water Quality Monitoring - to ensure potability of water

Sanitation - demand generation, surveys, and construction of toilets, drains, and soakpits.

Training - a multi-layer training in all aspects including engineering, health, management, finance, and trainers' training.

Relationships

Project activities are within the administrative control of the Water Supply and Sanitation Department at the State level. The Project Planning and Monitoring Unit (PPMU) established within the Department is responsible for overall administrative supervision of the various activities. District Planning and Monitoring Units (DPMUs) have been instituted for this function at the District level.

Engineering works on the Project, chiefly piped water supply, are executed by the Maharashtra Water Supply and Sewerage Board (MWSSB). Where necessary, they are assisted by the Ground Water Survey Agency (GSDA) in drilling of borewells and taking up water recharge measures.

The Tata Institute of Social Sciences (TISS) act as facilitators for Community Development programmes. The health education activities are primarily carried out by the Public Health Department, and are strongly supported by the Community Development consultants, TISS.

Actual construction of sanitary facilities are undertaken by the Zilla Parishad (District Council) or the Gram Panchayat, but technical surveys and designs are being made by Sanitation Consultants in consultation with the Zilla Parishad and the village communities.

In addition, consultants are appointed on the Project from time to time. MIS consultants assist the PPMU in compiling data, analysing progress and providing feedback. Water Quality Monitoring Consultants had also been appointed for reviewing existing strategies and approaches in Government.

Water use in Project Area

The entire Project area falls in the rainshadow zone of the Western Ghats, and therefore receives scanty rainfall during the year. The area is prone to acute scarcity of drinking water.

Typical sources of drinking water in the area include rivers, dams, borewells, and open wells. Ground water table is very low, and borewells have to be oftentimes dug more than 80m deep. Rainfall has been below average during the past few years. The hitherto perennial Tapi River ran dry during the summer of 1993, thus suspending all Project work based on the river as a water source. It is feared that dams constructed upstream on the river have also contributed to reduced flows in the Project area. In addition, the river water all along is being lifted - both legally and illegally - to irrigate cash crops, thus affecting the availability of water. Water shortage is felt acutely between February and June, until the advent of the monsoons.

Water requirement in the region is primarily for drinking purposes. State policies dictate that 15% of all water stored in dams are reserved for use as drinking water. The majority of water is however used for agriculture. Project designs take into account the requirement of water for households, cattle, commercial establishments, construction works, and shifting population.

Village Water and Sanitation Committees (VWSC) have been constituted in each of the Project villages. This Committee is headed by the Sarpanch, and at least 30% of the members are women. Due representation is given to each of the zones

within the village, with particular attention being paid to lower castes and the poor. Village-level functionaries such as teachers, nurses, and anganwadi (crèche) workers are co-opted into the Committee. This committee has a legal but not a statutary sanction.

At present, the village panchayat is responsible for ensuring distribution and allocation of water among users. Until recently, private connections to households was discouraged in order to keep the water requirements to a minimum. The Project however allows for a minimum of 30% household connections, with a view on enhanced financial sustainability.

All capital costs for construction of rural piped water supply schemes have been borne by the State Government. Similarly, all emergency supplies (at times of floods, drought) are ensured by the Government/ Zilla Parishad through various means such as augmentation of schemes, construction of mini-water supply schemes, and even supply of water through tankers. In case of scarcity, the village panchayat makes a demand to the Zilla Parishad for emergency supplies.

Project achievements

The engineering works, as already mentioned, consist of three large regional water supply schemes, serving 80, 56, and 51 villages respectively. The first two are almost complete, and trial runs have commenced in the first scheme. Results are very satisfactory.

A Water Management Unit (WMU) has been instituted in Jalgaon District in preparation of the transfer of the scheme to the Zilla Parishad for operation and maintenance. The WMU has prepared an action plan for executing its larger role in financial and operations management.

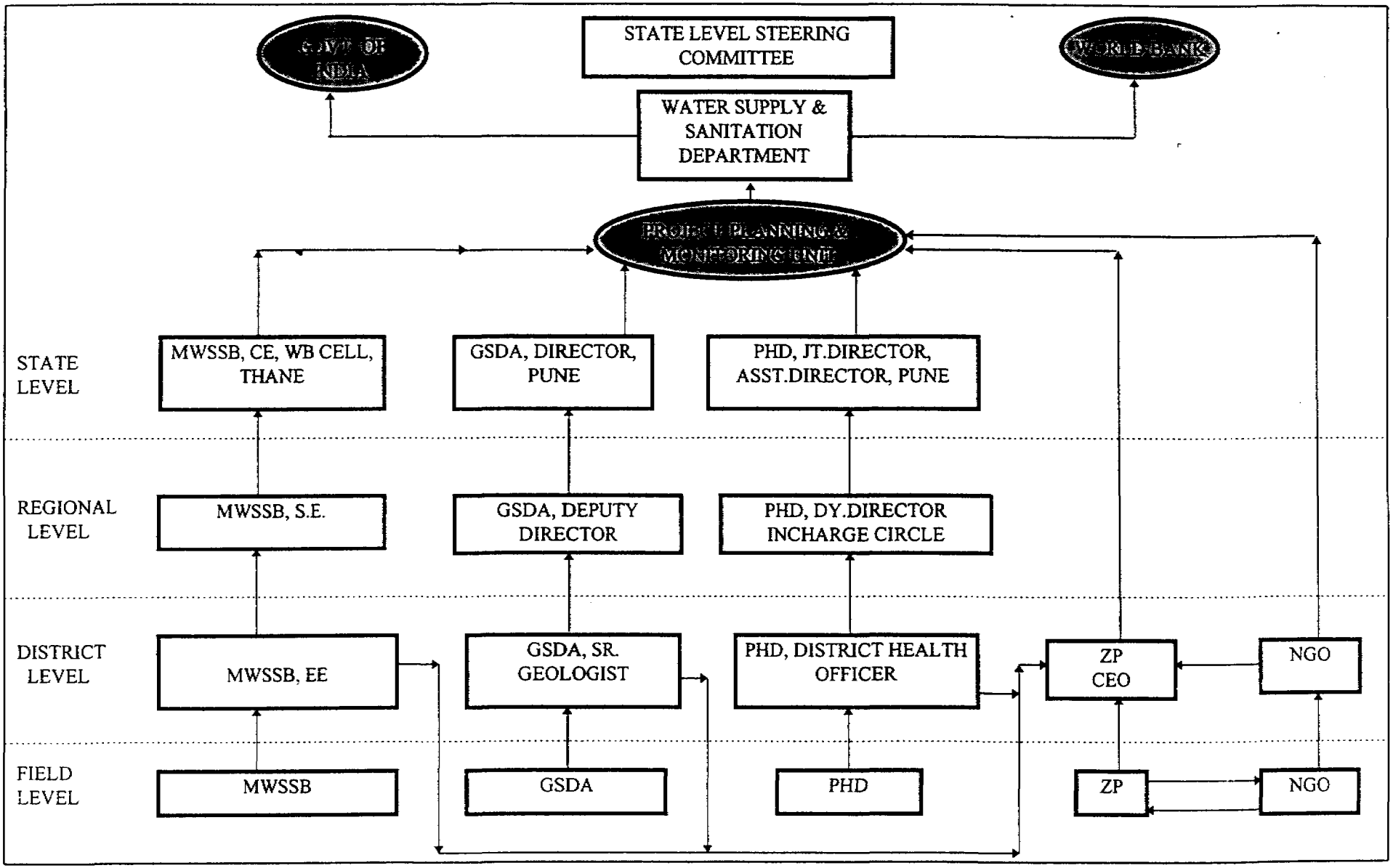
The 80-village scheme has been divided into 2 phases, and community development activities have been successfully completed in the first phase of 38 villages. The VWSCs are able to make decisions on their own. They have finalised location of standposts, water tariffs to be charged, and the financial management systems to be put in place. Significantly, women have been playing an extremely positive role, and have even been employed by village panchayats as village water persons (in charge of distributing water to the village) in some instances.

The VWSC members have promoted demand for sanitary facilities including toilets and soakpits, as evidenced by the applications to Zilla Parishads for toilet construction assistance.

At a macro-level, the Project has influenced the Government of Maharashtra in its new Sector policies. These relate chiefly to norms of supply, cost recovery, community participation, and integration of sanitation and health education with water supply programmes.

The Project has also created trained personnel within Government to manage water supply and sanitation schemes. The trained manpower is both sensitive to the needs of the communities as well as conscious of the need for a commercial and consumer-oriented approach to be adopted.

INFORMATION FLOW



Agencies involved in Project implementation	
Agency	**Role**
Ministry of Rural Affairs and Employment	National level policy making & monitoring
Water Supply and Sanitation Department	Overall administrative control of the Sector
PPMU	Administrative supervision of Project activities
MWSSB	Construction of water works
GSDA	Drilling of borewells, recharge methods
Public Health Department	Health education and Health promotion
Zilla Parishads	Operation and maintenance of completed schemes
	Construction of sanitation facilities
	Health campaigns
	Training
Gram Panchayats	Distribution and allocation of water
	Levying and collection of water tariffs

PROMISING WATER RESOURCES MANAGEMENT APPROACHES IN THE DRINKING WATER SUPPLY AND SANITATION SECTOR

PROJECT: SUPPORT FOR WATER, SANITATION AND HYGIENE EDUCATION PROJECTS IN DROUGHT AFFECTED AREAS OF SOUTHERN AND EASTERN PROVINCES OF ZAMBIA.

LUSAKA NOVEMBER

PROJECT TITLE: Support for Water, Sanitation and Hygiene Education Projects in Drought affected areas of Southern and Eastern Provinces of Zambia.

SUMMARY

The project was formulated to address the effects of drought on drinking water supply to the rural population in the severely drougt affected provinces of Eastern and Southern. In the short term the project was aimed at the construction of 625 water points to provide accesses to safe water supply for a population of 528000 people. In addition 6500 pit latrines were planned for construction to benefit 120,000 people.

The project is being implemented in Katete, Chipata and Petauke districts of Eastern Province and in the districts of Sinazongwe, Monze and Siavonga in Southern Province.

Implementation of this project is within the frame work of national WASHE (Water, Sanitation and Hygiene Education) strategy with emphasis on strengthening of capacities at district level to plan and co-ordinate district WASHE plans; the formation of community water point care takers and establish local capacities to operate and maintain water facilities. The scope of the project has been broadened to intergrate sanitation and hygiene action into community water supply interventions.

The project is being implemented by DWA, (Department of Water Affairs) co-operating NGOs (Africare, Care etc) the private sector (Drilling Contractors) with the technical support of CMMU (Community Management and Monitoring Unit) and UNICEF.

This project was started in September 1995 and was expected to end in March 1996. However, due to circumstances beyond control the project is still under implementation.

SETTING

The two provinces in which the projects are located are predomarantly rural and the mainstay of the economy is agriculture. In Sinazongwe and Siavonga the fishing industry is supplementing the agricultural activities in te area.

Agricultural activities suffered some set backs in time of drought which has been re-occuring over the years. In many parts of the project area crop failure due to the drought lead to famine. Water Supply was also adversely affected as most wells and boreholes either dried up or had the water levels lowered to unusable status thereby requiring deeping of the water points.

Water shortage and famine resulted in outbreaks and occurrence of water washed diseases and malnutrition respectively. In order to combat the two problems arising from te drought, Government imported relief food and embarked on operations to alleviate the water shortages through water deliveries and construction of emergency water points.

Other activities in the area are related to service organization in the formal sector. Institutions operating in the project areas are as follows:-

- Ministry of Agriculture Food and Fisheries, Department of Agriculture, Department of Veternnary Services
- Ministry of Energy and Water Development, Department of Water Affairs
- Ministry of Health
- Ministry of Education
- Ministry of Community Development and Social Services
- Local Authorities (District Councils)

The setting for the above listed institutions is based on the province, district and camp levels. The latter being in direct contact with the communities

BACKGROUND

Zambia among other southern Africa countries has suffered from continous drought over the last decade. The management all the droughts has been on adhoc basis and has been fragmented in approach until 1991/92 drought which has been considered as one of the worst ever experienced.

Having realised the weakness in disaster mitigation (drought in this case) government established an interesectoral working group to develop response plans to disasters (drought in this case). The group which has been working with the office of the Vice President comparises of line Ministries/Departments, donors, UN system Organisations and NGOs.

At its inception the working group sought to provide relief and rehabilitation assistance to a population of 2,000,000 people.

Issues addressed were as follows:-

- Prevention of an increase in malnutrition among vulnerable groups and children
- Prevention of an increase in drought related morbidity and mortatily especially among women and children.
- Prevention of ill health and animal losses due to inadequate water supply arising from drought.
- Assistance to drought affected households to resume production and establish household food security.
- Monitoring of the impact of drought response actions on affected populations.

Various programmes were formulated to achieve the affectives outlined above. In support to the drought relief UNICEF formulated a programme of support to the water supply and sanitation with the following entitled:-

SUPPORT FOR WATER, SANITATION AND HYGIENE EDUCATION PROJECTS IN DROUGHT AFFECTED AREAS OF EASTERN AND SOUTHERN PROVINCES OF ZAMBIA.

PROJECT AREA

The project is being executed in Katete, Chipata and Petauke districts of Eastern Province and in Monze, Sinazongwe, Siavonga districts in Southern Province and has since spread to Kalomo and Mazabuka districts in Southern Province and two other districts of Chadiza, Nyimba in Eastern Province.

PROJECT DURATION

It was envisaged that the project would last for six months starting in September, 1995 through March 1996.

PROJECT SCOPE

Construction of 625 water facilities and 6500 pit latrines.

BENEFICIARIES

It is estimated that 914,000 people would benefit from te project

OBJECTIVES

To respond to the drought situation by increasing access to potable water supply for drought affected populations and reduce risk of diseases due to inadequate water supply and poor sanitation and hygiene.

SPECIFIC OBJECTIVES

- To strengthern the capacities of six districts (i.e Monze, Sinazongwe, Siavonga, Katete, Chipata and Petauke) to plan and manage their district WASHE plans.
- To strengthern community capacities to plan, construct, operate maintain and manage their water supplies.
- To provide safe water for 528,000 people trough the construction of 625 water points
- To encourage the adoption of improved sanitation and hygiene practice.
- To develop district and community capacities for the construction of 6500 pit latrines.

ACTIVITIES

- To support and accelerate the on-going WASHE initiatives which support decentralization and promote the involvement and capacities of communities in the planning, management and maintenance of thie water supply and sanitation facilities.
- Establisment of District WASHE committees which have been planning, and monitoring needs at district level.
- Establishment of V.WASHE committees which have been oriented in management and maintenance of their water supply and sanitation facilities.
- Construction of 625 water points and 6500 pit latrines.

PRIORITIES AND NEEDS ASSESSMENT

The CMMU has over the past three years undertaken a national inventory of water points which provides information on the position of the water supply situation in the country. District maps are now available and are used by district and community leaders to identify vulnerable populations and to prepare priority listings of water facilities to be rehabilitated or developed. This project has been planned by the use of these maps and inventory.

CONSTRUCTION WORKS

Priority has been given to the reabilitation of existing water facilities through the provision of water buckets, windlasses and handpumps, deepening and upgrading og anddug wells and cleaning chocked boreholes. Where existing facilities become un reliable and rehabilitation inappropriate new water points have been constructed along side facilities for places without any water sources. In this project the works as listed below have been started and are in progress:-

- Repairs or replacement of hand-pumps over 175 boreholes.
- Improvements of 100 hand-dug wells.
- Construction of 375 new boreholes

METHODOLOGY

The Zambia National Water Policy calls for an intergrated water resources management and development with emphasis on community participation in the planning, maintenance and management of water facilities to ensure long term sustainability.

In order to achieve the objectives of the programme, UNICEF and co-operating partners embarked on the establishment of district WASHE committees who together with local authorities identified the places needing intervention. Further down the ladder village WASHE committees were established and oriented in the operation and maintenance of water facilities. Once the communities accepted ownership of the projects, work was started. Boreholes have been drilled by private contractors. Above groundworks (i.e construction of aprons, drainage channels, soakways, pits and laundry slabs) were carried out by the communities. Improvements to and dug wells and traditional sources were done by the local communities.

WATER USE IN THE PROJECT REGION

The project area lies in the Southern and Eastern parts of the Country and both areas have had declining rainfall over the last decade. In addition the areas receive list rainfall as compared to the rest of the country. Furthermore rain starts late in the season and ends up early in comparison to the rain belt parts of the country. On the average the rain season last about two and a half months in which period ground water acquifers are not fully recharged.

Another characteristic of the project area is that of hilly land scape with flashy streams which only flow for the duration of the rain season. This situation leaves out the possibilities of using surface water for most of the year by the communities. Communities rely on groundwater as the only reliable source of water supply. This is extracted mainly by handdug wells and boreholes.

Initially all the projects were planned, managed and maintained by central government. Communities were left out and had little or no concern over the status of the water facilities as a result numerous things happened to the water facilities (i.e abandonment, vandalisation etc). For this project and many others the approach has changed and beneficiaries are fully involved in the project.

Water use in the project area is basically domestic and livestock watering. However of late houseold irrigation for vegetable growing is being encouraged. This will promote a diversification of agriculture on a more sustainable localised level. In Sinazongwe and Siavonga the local communities are engaged in small scale fising on te lake Kariba.

RELATIONSHIPS

The project is being undertaken trough UNICEF on an intersectoral approach. Major co-operating partners are as follows:-

- Ministry of Energy and Water Development through Water Affairs Department
- Ministry of Health
- CMMU
- District Councils
- District-WASHE
- NGOs
- Private Sector
- Village WASHE

Functions/Activities of each of the institution listed above is at Annex I.

PROJECT ACHIEVEMENTS

- Establishment of district WASHE committees in 5 districts of Eastern and Southern Provinces respectively.
- Development of participatory hygiene education materials
- Production of D-WASHE training manuals
- Launching of the National WASHE at the National Water and Sanitation Fair
- Establisment of te National WASHE co-ordination and training team
- Improved access to safe and reliable water facilities by drilling boreholes and rehabilitation of existing water points.
- Capacity building at district and community level has taken place to improve planning and management of Rural Water Supply and Sanitation.

EVALUATION

The project has not been evaluated yet. However an intersectoral committee comprising of the following institutions reviewed the project progress at the mid-year meeting held in September 1996.

- UNICEF
- DWA
- CMMU
- MOH
- MLGH
- WSDG

OTHER INFORMATION

FUTURE WORK PLANS AND NEEDS

- Continued training of D-WASHE Committees
- Dissemination of D-WASHE guidelines and training packages
- Establishment of district database and updating mechanism for water point inventory developing an intergated hygiene education strategy to ensure demand creation for improved sanitation.
- Improve access to water supply through construction and repair/rehabilitation of establishment of district wide operation and maintenance systems.
- Continued skills building at community levels in low cost appropriate sanitation technologies.
- Capacity building at community level to improve the planning, maintenance and management of their water supply and sanitation facilities.

ANNEX I

FUNCTIONS OF C0-OPERATING PARTNERS IN THE PROJECT

DWA

- Provision of technical and professional advise in te course of implementing the project.
- Work hand in hand with co-operating partners in the dissemination of the WASHE concept.
- To monitor the implementation of D-WASHE plans and to report back to te national WASHE task force.
- To review the progress of the project at mid-year or mid-term mettings.

MOH

- Provision of Health Hygiene Education to the Communities
- Work hand in hand with co-operating partners to spear head the success of the WASHE concept
- Review project progress

CMMU

- Availing data on which the project has been formulated.
- Sensetization of communities in promoting the WASHE concept.
- Development of D-WASHE manuals and guidelines.
- Taking part in project review.

DC

- Overall district authority to spear head the implementation of D-WASHE and the sucess of the project.
- Review project progress

D-WASHE

- Undertake inter-sectoral planning to develop the project action plan by prioritising te needy villages.
- Assesing and prioritizing community plans.
- Identifying and equiping district to support communities in undertaking major repairs.
- Co-ordinate and monitor the project inconjunction wit other players.
- To identify NGOs and Government Personnel to elp build capacities at Community Level.
- Identifying borehole drilling contractors.

NGOs

- Establising Village -WASHE (V-WASHE)
- Work with V-WASHE in prioritizing project locations and allocations.
- Sensetise and train communities on collecting and managing user fees.
- Hygiene education demand creation for WASHE facilities and resource mobilization.
- Technical assistance to V-WASHE
- Training water facility minders on simple operation and maintenance.
- Provision of construction materials.

PRIVATE SECTOR

- Construction of new boreholes

V-WASHE

- Assisting the communities in achieving the outputs of the project through, training of beneficiaries.

ANNEX II

ACRONYMS AND ABREVIATIONS

CMMU	-	Community Management and Monitoring Unit
DWA	-	Department of Water Affairs
D-WASHE	-	District Water Sanitation Hygiene Education
MLGH	-	Ministry of Local Government and Housing
MOH	-	Ministry of Health
NGOs	-	Non-Governmental Organization
N-WASHE	-	National Water Sanitation Hygiene Education
UNICEF	-	United Nations International Children Education Fund
V-WASHE	-	Village Water Sanitation Hygiene Education
WSDG	-	Water Sector Development Group.

PROJECT DESCRIPTION

Project Title : **Rural Water Supply & Sanitation Project, Lumbini Zone, Nepal.**

Implementing Agencies :

-In Ist Phase :

His Majesty's Government/Ministry of Housing and Physical Planning/Department of Water Supply and Sewerage and district organizations.

-In IInd Phase :

Main executing agencies :

Ministry of Local Development/District Development Committees/Village Development Committees/Water Users' Committees.

Others : Service Organizations (NGOs), District Line Agencies.

-Development Assistance Services of FINNIDA, Ministry of Foreign Affair.

-Consultant Plancenter Limited

Summary :

The eight five year plan (1992-1997) of HMG states the sector development objectives as follows :

I. Provide safe drinking water facilities to 72% population by the end of the eight plan period, consistent with the long term objective of providing drinking water facilities to the entire population within the next 10 years (i.e. 2002)

II. Extend knowledge and services related to personal and domestic hygiene and environmental sanitation to the maximum number of people.

Since 1990 HMG & FINNIDA have been collaborating in six districts of Lumbini Zone to test a community based approach for water supply and sanitation.

The project (both in Ist and IInd phase) covers the Lumbini Zone in the western development region of Nepal, covering the six districts, Gulmi, Arghakhanchi, Nawalparasi, Palpa, Kapilvastu and Rupandehi. The present population of the zone is around 1.9 million of which, more than 96% live in scattered rural communities. The area includes terai plain and hill.

According to the original project document the span of phase Ist phase was from Ist Jan to 31st 1993. After this period project had been extended until the end of Dec. 1994 then till 15th July 1995 and 3rd extension had been until 31st December 1995. The RWSSP 2nd phase duration will be from 1996 to 1999.

Program mainly focused on development of institutional capacity to provide safe and sustainable WSS services in western province of Nepal through water services rehabilitation and extension, excreta disposal facility, health education, community participation and HRD within the framework of HMG national sector policies were the based program of the project in its Ist phase.

In 2nd Phase :, the project has its development objectives as :

I. "Assist HMG in achieving the national sector development objectives by supporting the decision makers and implementing agencies to assist the communities in their effort to improve their water supply and sanitation situation"

II. "Support the promotion development and use of safe sustainable water supplies and improved sanitation in accordance with the national policies and based on the needs expressed by the users."

Setting :

Nepal is divided into five development regions, 14 zones and into 75 districts. A district consists of a number of Village Development Committees (VDC) and may consist of one or more municipalities. A VDC is further divided into nine wards and are the smallest unit in the political and administrative structure of the country.

Lumbini Zone is located in the western development region comprised of six districts namely; Arghakhanchi, Gulmi, Kapilvastu, Nawalparasi, Palpa and Rupandehi. The zone consists of 408 VDC's and 4 municipalities. Total area of the Lumbini Zone is 9161 square kilometers. The altitude varies from 89m. to 2663 meters above the sea level and surrounded by Mahabharat range in the north, Siwalik in the middle and plains in the south. It is broadly divided into two distinct ecological belts namely hill and terai based on the topography of the zone.

The hill area includes :	Arghakhanchi, Gulmi and Palpa districts and 19 VDCs of Nawalparasi.
The terai area includes :	Kapilvastu, Rupandehi and 58 VDCs of Nawalparasi district.

Population :

Distribution of Rural Population by District :

District	Population	Households	Number of Persons/Households
Arghakhanchi	**216,908**	**35,216**	**6.16**
Gulmi	**322,106**	**50,443**	**6.39**
Kapilvastu	**358,786**	**55,028**	**6.52**
Nawalparasi	**486,992**	**74,609**	**6.53**
Palpa	**272,724**	**40,907**	**6.67**
Rupandehi	**459,970**	**70,565**	**6.52**

Distribution of Population by the hills and Terai

District	Population	Households	Number of Persons/Households
Hills	**890,115**	**137,692**	**6.46**
Terai	**1,227,371**	**189,076**	**6.49**

Social and Cultural Features (Project Area):

a. Hill Area

The main religion in the project area is Hindu (97%) with the minority formed mainly by Buddhists.

The women's situation in the Brahmin and Chhetri communities is bound to traditions, and they are mostly dependent on their husbands or male relatives. The women are the main responsible to take care of children, to manage water for the family and animals. Women are not, for example, allowed to travel alone. Magar and other hill ethnic women are somewhat more independent, in comparison with the Brahmin-chhetris.

Nepali language is widely spoken amongst all ethnic and caste groups. Tharus, Magars and Gurungs speak their own language as a mother tongue. Muslims mostly speak their hybrid language, a cross between Urdu and Nepali.

The literacy rate is 32% only and unevenly divided between the sex groups; male literacy 49% and female literacy 16%.

The communities were traditionally organized for communal works, like school construction, road improvement, building of temples, irrigation works etc. It is, however, possible, that the enforced community participation projects during the Panchayat practices are very much followed, like school construction and upkeep by the villagers themselves, where the government cannot provide this service.

b. Terai area :

The population can be roughly divided in to three major groups.

Tharu Settlements :

Tharus are the original inhabitants of the Terai. Tharu farmers are often sharecropping and the plot holding sizes are small. The villagers are densely populated, houses being very close to each other. There are lot of cattle within the village and the people's and cattle's housing is very close to each other.

The household size in the Tharu settlements has often been found high, varying from 10 up to 50 people. The system of extended family is still very common among the Tharus.

The social cohesion of the Tharu communities is strong and their traditional leaders powerful.

Tharu people have developed skillful wood carving, pottery and basket weaving crafts. They have especially appropriate and well made grain storage containers, made of mud, to store paddy and other foodstuffs.

Immigrant settlers from the hills

These communities are formed by the migrated population from the mid-hills. These people are mostly very recent settlers, migrated during the last 30 years.

These communities have a different settlement pattern from that of the Tharus. The villages look well planned, allowing enough land for each household and tracks are often spacious, leaving room for proper drainage.

Muslims villages in the southern part of the project area :

In the southern part of the project area, the communities are mostly formed by old settlers, who have inhabited this area for hundreds of years. Majority of these people are muslims. These settlements are dense, the plan resembling that of the Tharu villages. The architecture is, however, different, having characteristic brick buildings and tile roofs.

Economy :

The economy of the Lumbini Zone is based mainly on agriculture mostly subsistence farming. In the industrial sector there are few small sugar factories, pesticides factory, some distilleries and a mummer of small workshops, flour mills serving the local consumption in terai area. The commercial activities are limited to serving the local population only. In general, zone can be considered as a deficit area where consumption exceeds production. The balance is made up by government subsidies and remittances from people working outside the zone. The main crops are rice, wheat, oilseeds, maize, beans and sugarcane.

Reliable statistics on the income level in the zone do not exist but it can be assumed to be near the average of the terai districts, which was estimated at NRS 1287 per household per month in 1988 (NRS 504 cash and NRS 783 kind) in terai area and NRS 1125 (NRS 457 cash and NRS 668 kind) in hill area (Source: Multipurpose Household Budget Survey, Nepal Rastra Bank, 1988). Although the main occupation of the people in the zone is related to agriculture there is some wage employment through the local industries and commercial enterprises. An important source of cash income are the remittances of the family members, normally male, working outside the zone, many of them in India and particularly in the Indian Army.

Background :

In response to the international sanitation decade HMG/N has defined its development objectives during the 7th plan period 1985 to 1990 were to provide an addition 7 million rural population with safe water supply and same 2 million with satisfactory facilities for excreta disposal. Finnish assistance to HMG in this sector in first phase of the project was through sector program consisting of sub projects; which were;

a. District Water Supply and Sanitation Development Plan
b. Physical Improvement of Water Supplies.
c. Socio-economic studies, hygiene education and sanitation
d. Training and Human Resource Development.
e. Community Involvement.

After the successful phase I of RWSSP in Lumbini Zone the Government of Finland & His Majesty's Government of Nepal have agreed to continue cooperation in the water sector. It was decided to have the RWSSP phase II under the MLD. The change of line ministry was necessary to enable practical partnership between the project & six DDCs in Lumbini Zone & to adopt a decentralized funding mechanism which is at the direct disposal of DDCs.

As per the project document of 2nd phase the target of population coverage is 40,000 to 80,000 through DWSSF. Similarly the sanitation target is 10%.

Second Phase Sub projects are :

a. Support to DDCs
b. Support to Implementation
c. Completion of First Phase Activities.

Project Budget :

In First Phase :

Total	FIM 49.96 million
Recipient country	FIM 8.79 million
FINNIDA Grant	FIM 41.17 million

In Second Phase :

Total	FIM 22.16 million
Recipient country	FIM 4.83 million
FINNIDA Grant	FIM 17.33 million

Objectives :

In First Phase : The first project to be carried out within the proposed FINNIDA program in this sector in Nepal had been defined in terms of development objectives as follows :

> "The provision and promotion of use of safe, sustainable water supplies and improved sanitary facilities in accordance with national guidelines to 100,000 in habitants in Lumbini Zone of Western development region to meet the needs of local communities and the development of institutional and local capability to operate, manage extend, upgrade and maintain the water supply and sanitation systems activity in the project area"

This phase first population coverage target figure stated in the project document had been modified several times and finally the coverage population of Ist phase was raised to 236,662.

In Second Phase : the project has its development objectives as follows :

> "To strengthen the capacity of the district and villager development committees (VDC) level decision makers to plan, coordinate, monitor and evaluate the water supply and sanitation sector in their area"
>
> "To strengthen the capacity of the sector agencies the emphasis is being on the private sector, to assist the water users' groups in water supply and sanitation development"
>
> "To complete the Phase Ist activities"

Methodology :

In the first phase the main working partners were DWSS/DWSO. The operational responsibility was with Finnish Coordinator who worked with Nepali Project Manager.

Strong emphasis was given to O&M appropriate least cost technology and community's participation/involvement in all steps of the program. WUC was given whole responsibility for community mobilization and field level management of the schemes e.g. Coordination with project and DWSO; O&M fund collection (@Rs. 1,000.00/tap stand for Gravity Schemes in Hill Area and @Rs, 500.00/tube well in Terai Area), distribution of responsibilities to the users, transportation of materials and store management etc.

The Step-by-step procedure developed by RWSSP was the main guideline/tool to ensure the community's involvement towards sustainability of the program. The step-by-step procedure/approach also enhanced the importance of integration of water supply and sanitation. (See annexture 1 for detail). The maintenance fund for O&M was the pre requisite of the agreement.

The feasibility study included technical, Socio-economic and health/sanitation aspects. Community resource mapping was one of the important exercise with the community to get information of the scheme area.

In the second phase working approach is some how same at community level but certain changes has been made in funding mechanism and working partners. Cash contribution from users and Village Development Committee in scheme construction, NGO's/SO's role to facilitate the Water Users' Committee and projects role as a Support Agencies are the main changes. Further more WUC is given more responsibility for procurement of the materials and management of water schemes. Step-by-step approach will be continued in the same manner. Main focus is given to "institutional development and capacity building rather infrastructure building".

Activities :

Ist Phase :

- District Water Supply and Sanitation Development Plan; which includes; information generation, processing and dissemination to VDC level and utilization of information/data in the planning process of water supply and sanitation schemes.

- Physical Improvement to increase water supply facility. 237,495 population were served in Lumbini Zone through various gravity water systems in hill area and shallow tubewells and lift tubewells in terai area.

- Hygiene Education and Sanitation Program; which covers Socio-economic and other relevant studies; health behavior studies; sanitary situation of the scheme area etc.

- Human Resource Development Program; provided training to different level of staffs and community level catalysts e.g. Water supply and sanitation technicians (WSST), Village maintenance workers (VMW), Female Community Health Volunteer (FCHV), School teachers etc.

- Community Involvement; Step-by-step approach to ensure full participation of the beneficiaries.

II nd Phase :

Support to DDC :

Management and Coordination :

Establishment of District Water Supply and Sanitation Fund and Coordination Committee in each districts.

Planning :

District Water Supply and Sanitation Development Plan updated and used in the districts as a planning tools.

Monitoring & Evaluation and Financial Management:

Training of different level of staffs and elected members in the districts.

Support to Implementation :

Water Supply Scheme Construction; Target to cover 40,000 to 80,000 population.

Training to different level catalysts/staffs and ;

- Water supply and sanitation technicians
- Village maintenance workers.
- Female community health volunteer
- Mothers group
- Water users' committee
- Village development committee
- Support organizations

Household/Institutional latrine construction and promotion activities; household latrine construction with subsidy.

Studies :

- Health Impact Study
- Environment Impact Assessment
- Gender Issues Study
- Water quality study in Terai.

Water use in project area :

Field survey undertaken by RWSSP in preparation of District Water Supply and Sanitation Development Plan (DWSDP) 1992-1993 revealed the total rural population in Lumbini Zone to be 2,117,486 into 326,768 households with an average of 6.48 persons per household. The distribution of population by primary source is presented below :

Shallow Tubewells	39.00%
Piped schemes	24.00%
Open Wells	11.00%
Kuwa (Wells)	10.00%
Unprotected Springs	7.00%
Stream	4.00%
Protected Springs	1.00%
Pumping	1.00%
Kulo	1.00%
Artesian	1.00%
Pit/Rower Pump and Others	1.00%

Relationship :

In First phase main working partners were District Water Supply Offices (As implementing line agency) and users' group (Water Users Committee). For health education and sanitation District Health Offices and District Education Office were the coordinating line agencies.

In Second phase project is to work with District Development Committee/Village Development Committee as a executing agency and with Water Users Committee as an implementor. NGOs and private sector agencies will work as support organization (SO) and the projects role will be as a support agency (SA). For health and sanitation activities District Health Offices and District Education Offices will be coordinated in the same manner as Ist Phase.

Project Achievements :

Projects activities and achievements in the Ist phase in software aspects is presented in Annexture II. District wise population coverage in the Ist phase with water supply schemes is as follows :

District Name	Type of scheme	Covered Population
Arghakhanchi	Gravity	19,980
Gulmi	Gravity	23,299
Palpa	Gravity	21,232
Nawalparasi	Gravity	33,262
	Shallow tubewell	16,274
Rupandehi	Gravity	8,512
	Shallow tubewell	49,791
	Lift tubewell	8,111
Kapilvastu	Gravity	2,939
	Shallow tubewell	47,866
	Lift tubewell	6,229
	---	---
	Total	237,495

Project Evaluation :

- Mid term evaluation was done in December 1991 (External Agency).
- Final evaluation was done in 1994 (External Agency).

TRAINING ACTIVITIES RWSSP

Until 15 July 1996

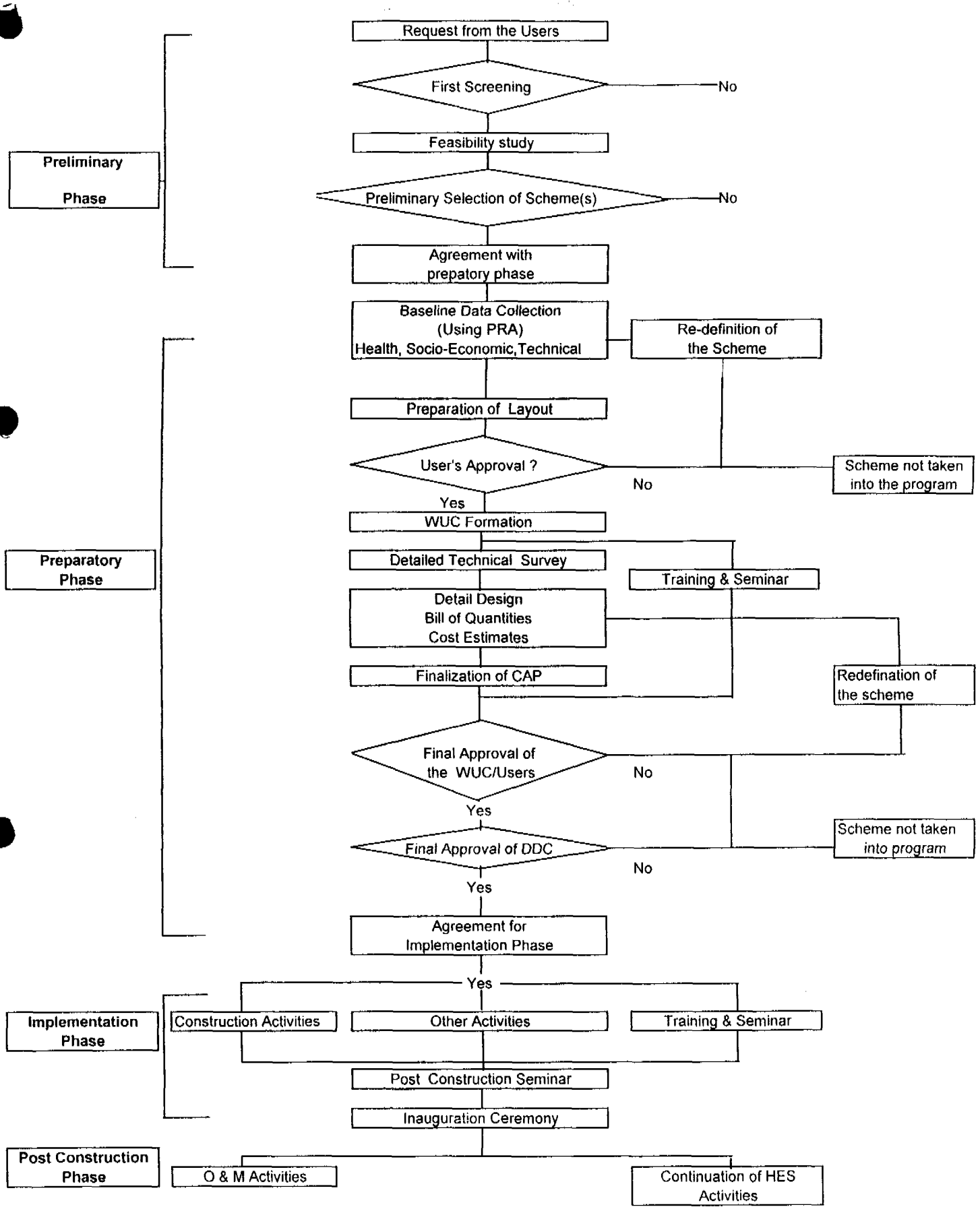
TRAINING ACTIVITIES	Participants	Duration Days	Project Target	IMPLEMENTED 1991	1992	1993	1994	1995	1996	Total	Remarks
CHEME RELATED TRAININGS											
Village Maintenance Worker Gravity	VMW	30	234		5	44	73	147	24	293	
Village Maintenance Worker Tubewell	VMW	2/7	544		98	50	187	224		559	
Community Health Volunteer	CHV	10	651		150	82	399			631	
School Teacher	Teachers	8	562		101	226	144	154		625	
During Construction Seminar	WUC	2	105		15	25	40	23	2	105	
Post Construction Seminar	WUC	2	110			9	19	67	13	108	2 remaining
Pre Construction Seminar	WUC	2	288	13	50	87	134			284	4 combined
. CHV Refresher Training	CHV	2						288		288	
ON SCHEME RELATED											
. Institutional Latrine Construction	WSST	30	101		52	24				76	
. VHW Data Collection Training	VHW	7	108		7	16	52			75	
. VHW Data Analysis	VHW	4-6	108			7	30	38		75	
. Community Participation Training	WSST	8	101	21	20	34				75	
. Basic foreman training Govt.	WSST	60	74	24	19	31		4		78	
. Survey & Design of Community W/S Refresher Training	OS	7	54	5	9	32				46	
. Upgrading foreman training (Govt.)	WSST	60	74	19	19	18				56	
. Final foreman training (Govt.)	WSST	60	53		19	16				35	
. Basic ground water training	WSST	30	41	10	16	15				41	
0. Non Formal Education	Villagers	180	54					54		54	
1. New design guideline training	OS	8	51			48				48	
2. DDP seminar	DDC	2	6		1	2	2	1		6	

TRAINING ACTIVITIES RWSSP

Until 15 July 1996

TRAINING ACTIVITIES	Participants	Duration Days	Project Target	IMPLEMENTED 1991	1992	1993	1994	1995	1996	Total	Remarks
PHASE II RELATED TRAININGS											
1. DDP training for VDC	Secr./Chairman	4	0					148		148	
2. DDP review meeting	Secr.	2	0					79		79	
3. DDP co-ordination	DDC	2	0					26		26	
4. O&M community W/S scheme	OS	45	16				16			16	
5. Community participation training of NGO staff	NGO	4	0				25			25	
6. DDP questionnaire	Secr.	2	0						79	79	
7. Local Latrine Builder	Mistries	15	0						17	17	
8. Basic Training for Community WSST	VDC/Techn.	48	0						15	15	
NON SCHEME RELATED"											
1. TOT of parameds for CHV training	DHO	6	255			264				264	
2. Preliminary survye and design	Eng + OS	15	34	14	20					34	
3. Basic ground water	OS	30	17	2	9	6				17	
4. Pre construction survey	Eng + OS	2	60			39				39	
5. Water quality and source assessment	OS	7	6								
6. Paramedics training on HES	Parameds	6	74			57				57	
EXPOSURE TOUR/STUDY											
1. Observation tour to India	OS + WSST	14	30		12	18				30	
2. Orientation trip Bangkok	OS	14	10		10					10	
3. Incountry tour for CHVs	CHV	8	34			16	18	105		139	
4. Orientation trip UK	Engineer	90	2		2					2	
5. School teacher observation visit	Teacher	7	39			20	19			39	
6. Observation visit/incountry VHW	VHW	7	13			13		20		33	
7. Incountry tour of WUC	WUC	7	0					122		122	

STEP-BY-STEP FLOW CHART



PROJECT DESCRIPTION

of

VOLTA RURAL WATER SUPPLY & SANITATION PROJECT GHANA

Prepared for the:

Preparatory Workshop on

Water Resources Management.
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The Hague, The Netherlands

By E. T. Nyavor.
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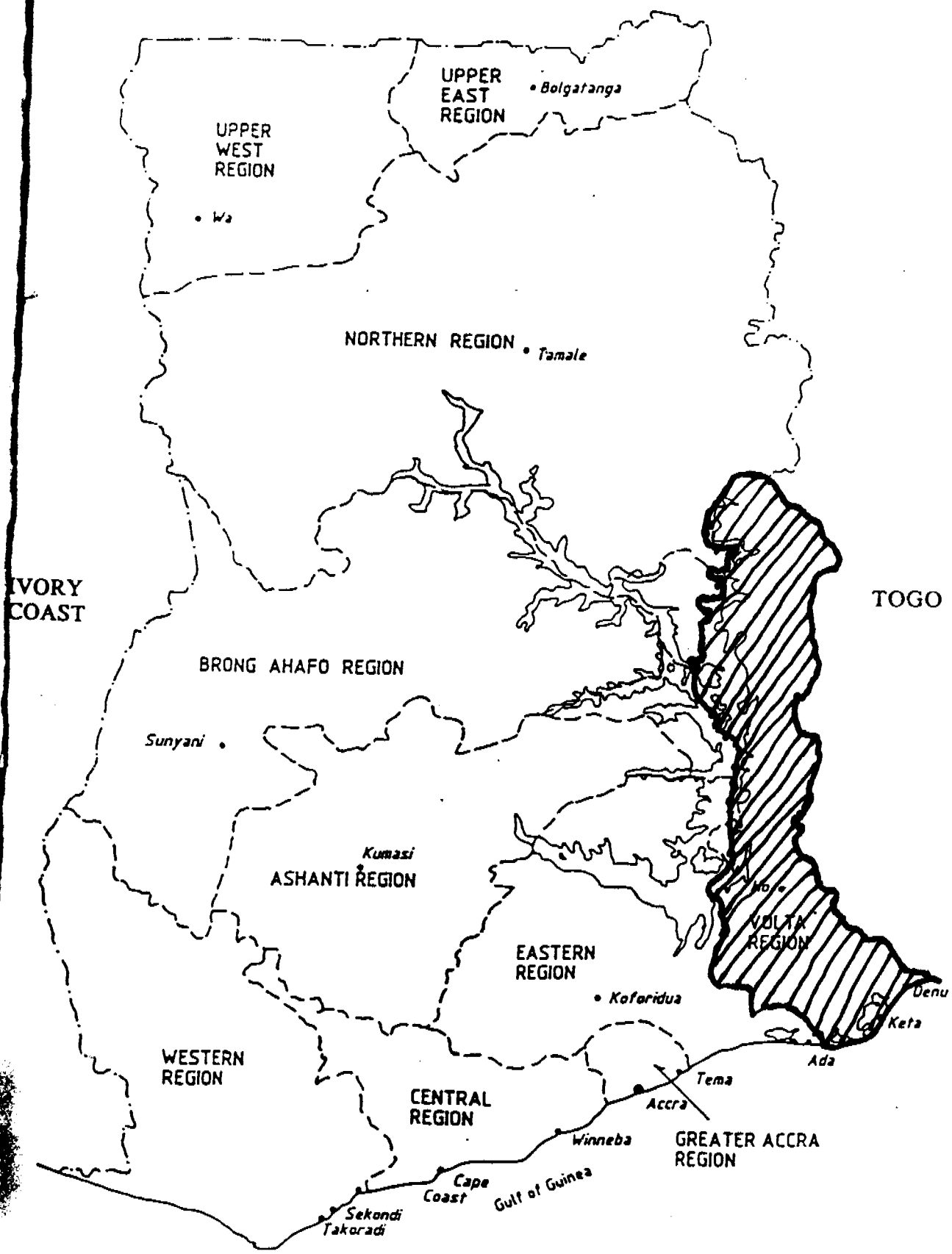
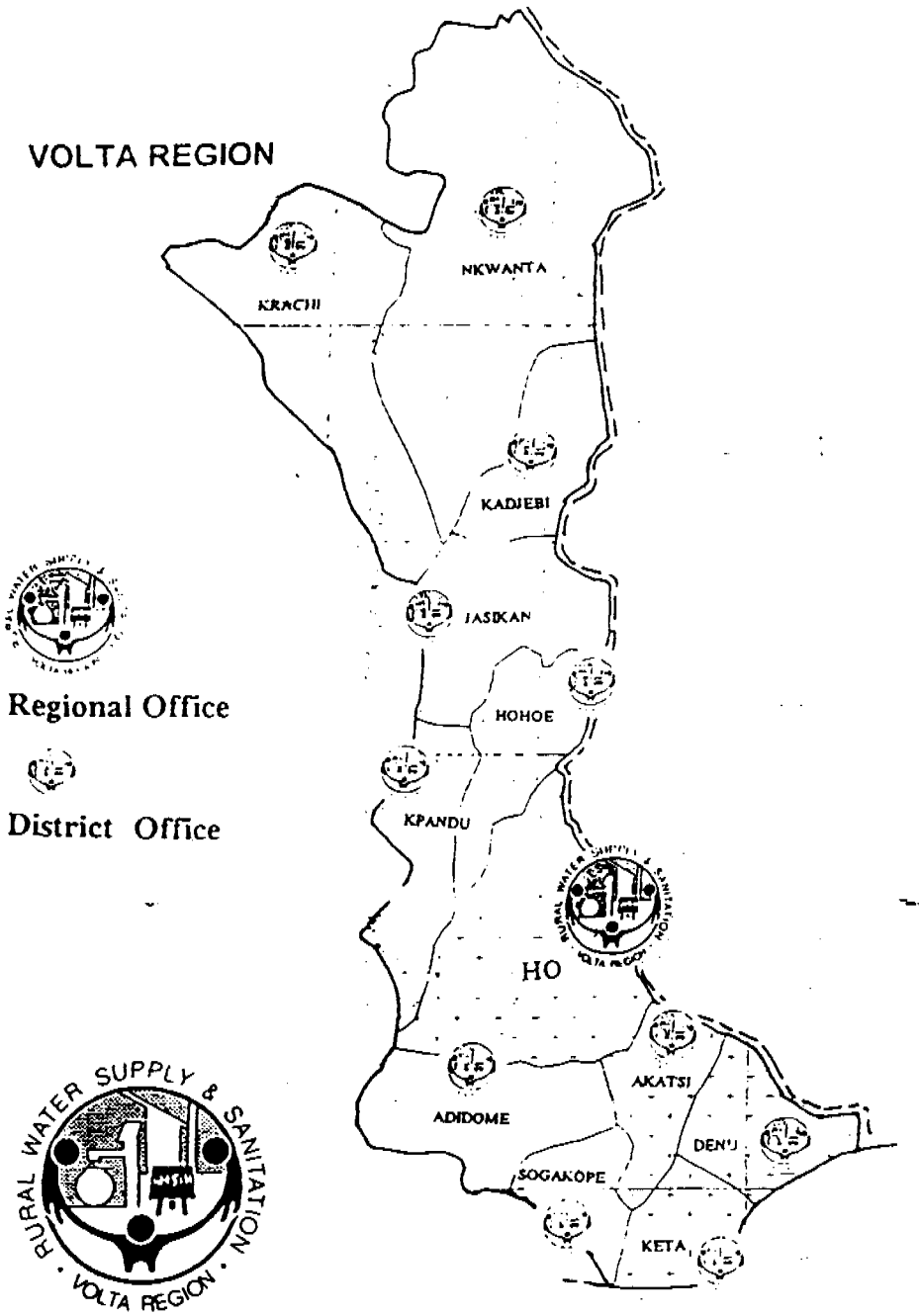


MAP OF GHANA WITH REGIONAL AND INTERNATIONAL BOUNDARIES



RURAL WATER SUPPLY & SANITATION · VOLTA REGION ·

PROJECT ORGANISATION

ABBREVIATIONS

CDS	:	Community Development Staff
CWSD	:	Community Water and Sanitation Division
DCD	:	Department of Community Development
DWST	:	District Water and Sanitation Team
EHA	:	Environmental Health Assistant
EHO	:	Environmental Health Officer
GWSC	:	Ghana Water and Sewerage Corporation
MLGRD	:	Ministry of Local Government and Rural Development
MOH	:	Ministry of Health Project
MOWH	:	Ministry of Works and Housing
NGO	:	Non – Governmental Organisation
PO	:	Partner Organisation
SBDU	:	Small Business Development Unit
SOH	:	School of Hygiene
TREND	:	Training, Research and Networking for Development
VRWSSP	:	Volta Rural Water Supply and Sanitation
WATSAN	:	Water and Sanitation Committee

1.0 **Project Title:** **Volta Rural Water Supply and Sanitation Project**

To be called in Phase 2 as **Volta Region Community Water and Sanitation Programme.**

2.0 **Summary**

The Project is part of a development co-operation between the Governments of Denmark (DANIDA) and the Government of Ghana. The project is implemented by the Community Water and Sanitation Division (CWSD) of Ghana Water and Sewerage Corporation (GWSC) and Kruger Consult (now COWI), a Danish consulting engineering firm.

The Project area is the Volta Region of Ghana with Ho as its capital, some 175 kilometres north-east of the Nation's capital, Accra. The Region is made up of 12 administrative districts,namely (North to South):-

1.	Krachi	District
2.	Nkwanta	"
3.	Kadjebi	"
4.	Jasikan	"
5.	Hohoe	"
6.	Kpandu	"
7.	Ho	"
8.	North Tongu	"
9.	South Tongu	"
10.	Akatsi	"
11.	Ketu	"
12.	Keta	"

2.1 **Area Occupied**

The Region occupies the eastern part of the country and has an area of 20,570 square kilometres.

2.2 Topography

The region is divided into three geographical belts namely the southern, middle and the northern belts. The middle and northern belts are mainly mountains, spotting the highest point in the country i.e. Mountain Afadzato. The South is relatively flat with marshy and sandy portions.

2.3 Population

The population of the region in 1994 was 1,473,222. It has an annual growth rate of 2.6%. Both settlement pattern and household sizes vary considerably between the north and the south of the region.

3.0 Setting

The population census of 1984 showed that 77% lived in villages with a population below 5,000.

The Regional House of Chiefs is the highest ruling body on chieftaincy affairs. The various traditional areas have paramountcy which are directly under the supervision of the Regional House of chiefs. The Paramount chiefs, preside over the Divisional chiefs. Family heads control activities of the individual families.

The main economic activities of the region is agricultural, consisting of farming, fishing and animal rearing. Major crops cultivated include maize, cassava, plantain, cocoyam, yam, rice, beans, groundnuts, vegetables etc. Cash crops produced include coffee, cocoa, cotton, sugarcane, pineapples and citrus fruits etc.

The Region is the country's leading producer of shallots grown in the Keta District in a depression along the Keta lagoon. Fishing is done along the coast and the Volta lake; cattle rearing in the savanna belts of the south and north.

There is no manufacturing industry located in the Region except one Textile Factory at Juapong in the North Tongu District. Kente cloth weaving, mats and bags weaving, wood and stone carvings etc are some of the indigenous industries. There are artisans of different grades mostly self employed as well as public servants.

There are many ethnic groups in the Region especially in the northern part, but most of the population understands and speaks Ewe or Twi. Christianity is the main form of religious practice in the region. Traditional African worship is quite common in the southern sector with a few muslims in the Northern sector.

Household structure is traditionally male-headed but a large number of female headed households exist.

However, household sizes of female-headed homes tend to be smaller than those of their male counterparts.

The Volta Region is considered as one of the poorest regions in Ghana. Cash surplus from agricultural activities is small compared to other regions and water borne and water related diseases adversely affect agricultural production and productivity. The coverage with reliable and safe water supply and hygienic sanitary facilities is modest.

4.0 **Background**

In September 1991, the Danish Embassy in Accra, through the Ghanaian Ministry of Finance and Economic Planning, received a request from the Ministry of Works and Housing for support to a rural water supply project in the Volta Region.

The Project was started in March 1993 based on a Project Document of January 1993, signed by the Ministry of Works and Housing in March 1993. The Project Document covers a 4 year period (Phase 1) of a proposed total project period of 10 years.

The Danish input is 60 Million USD. Phase 1 started in March 1993 and has subsequently been prolonged with six months up to the end of August 1997. Phase 2 of the Project will cover the period from September 1997 to September 2003.

It is assisting communities of population between 150-5000 in the construction of various water systems. These include hand dug wells with or without handpump, boreholes with handpump, piped water supplies from spring of river sources, electrical pumping systems or rainwater harvesting system.

District offices have been established in all the 12 districts and project activities is actively going on in 10 districts.

For Phase 1 the population served with drinking water supply is targeted at 194,600. However, this figure has been revised downwards to 165,000 for the extended Phase 1 period. Over the 10-year period, the target population is maintained at 530,000.

5.0 **Objectives**

5.1 ***Development Objectives***

The development objective of the VRWSSP is through a demand driven approach to contribute towards:

- Better living and health conditions of the target population in the project area.

Better conditions will be achieved by provision of reliable and easily accessible sources of safe drinking water which are managed and sustained by the communities.

The living conditions will be further improved by a reduction in water and excreta related diseases through health education and adoption of improved sanitary installations.

5.2 ***Immediate Objectives***

The immediate objectives are as follows:

- In the communities which have requested and received assistance from the project, reliable and sustainable safe drinking water supply installations and systems function through community management.

- Institutional structures operate at district level through the District Assemblies and at Regional level through the CWSD Regional Water and Sanitation Team. These institutions support the communities in their management of existing water supply and sanitation installations and facilitate the establishment of new schemes.

- Permanent partner organisations at the lowest appropriate level, capable of providing services to the water supply and sanitation sector have been strengthened.

- Improved sanitary installations are used and improved hygiene is practised in the communities and schools supported by the project.

6.0 Methodology

The strategy adopted by the project to guide its implementation activities includes the following:

a) **Demand driven approach:**

- Provision of water supply and sanitation facilities will be based upon demand from the target communities in the Region. The communities will express demand for assistance through registration with the District office and pay an initial registration fee equal to 500 cedis x total population into their WATSAN account.

- Selection of technology and service level by communities in accordance with their felt needs and their ability to meet the expected operation and maintenance costs and management requirements.

b) **Community Ownership and Management**

- Ownership and management of facilities by communities, including full responsibility for operation and maintenance costs.

- Active involvement of women in all aspects of decision-making and facilities management.

c) **Private sector involvement in implementation and maintenance.**

- Design of facilities, consultancy services, construction, spare parts supply and provision of repair and maintenance services by the private and NGO sectors.

d) **Integrated effort in water, sanitation and hygiene education.**

- Hygiene Education aimed at helping people identify problems and change their behaviour rather than simply transferring knowledge.

e) **Government sector involvement in planning and monitoring.**

Government personnel at Regional and District levels within the GWSC, MOH, and DCD will be actively involved in the project.

7.0 Activities

The main activities carried out by the project are given below. For each activity, the main actor(s) is given in brackets.

7.1 (a) **Information on project and Project Polices and activities.**

- District level project information (Project Staff/key opinion leaders in district).
- Community information and initial group formation (EHA/EHO).

7.2 (b) **Group formation and feasibility studies**

- Formation of WATSAN committees (Environmental Health Assistant(EHA)/Community).
- Baseline data collection - health and sanitation assessment (EHA/Community).
- School Sanitation and Hygiene Promotion (EHA).
- Socio-Economic Studies.
- Negotiation with community and elaboration of workplan and financial agreement (DWST/Community).
- Facilitation of the development of the Facility Management Plan (FMP) - (Partner Organisation (PO), Community Development Staff(CDS), EHA)

7.4 (c) **Implementation of water supply and sanitation facilities**

- Detailed design of water supply facilities (Water Supply/District Engineer, Consultants).
- Tender documents and tendering procedure (District Tender Board).
- Commissioning (District Assembly/Community).
- Design, manufacturing and promotion of sanitation facilities (Sanitation Engineer, DWST, WATSAN).

7.5 **Establishment of procedures for project implementation**

- Preparation of project handbook
- Establishment of project administration and preparation of administration manual
- Preparation of technology manual
- Preparation of guidelines for conducting feasibility studies
- Establishment of monitoring and evaluation systems
- Establishment of Management Information System and reporting schedules
- Planning and execution of general hydrological and hydrogeological studies
- Planning and execution of sanitation and health hazard identification study
- Planning and execution of general socio–economic study

7.6 **Capacity building/institutional development**

- Planning and implementation of training programmes for field extension staff
- Training need assessment of governmental and private sector actors
- Planning and arranging training programmes for governmental and private sector actors
- Planning and arranging training for Community Based Organisations like WATSAN committees and womens` groups.

7.7 Establishment of Operation and Maintenance Systems

- Training of village level operators (SBDU)
- Training of private sector mechanics (SBDU)
- Monitor the communities use of water and sanitation facilities (DWST)
- Private support in establishment of spare parts distribution outlets in the districts

8.0 Water use in project region

In the northern and central sectors of the Region are found rivers such as Oti, Asukawkaw, Danyi and Nemi all of which flow into the Volta Lake; while rivers Aklabo, Alabo and Todzie are found in the central and southern sectors of the Region.

At the time of project inception, there were 932 boreholes equipped with hand pumps in the region many of which are not operational. Some households and communities depend upon hand dug wells, a few have small dams and dugouts for drinking water; and some have gravity piped systems.

The majority of the population get their drinking water from rivers, streams, ponds, dug-outs etc.and these are often polluted. In the Project Region, water is primarily used for household purposes, for example:

Drinking
Cooking
Washing (clothes, bathing, dishes, vehicles, etc)
Animals (drinking, washing)
Agriculture (Watering crops)

8.1 Organisation of Main Water Users

Before the inception of the project, there was no organised structure for water users.There was unregulated usage of water and this sometimes brought about conflicts at water points. Water tarriffs were unpaid for years resulting in the locking up of boreholes by the Ghana Water and Sewerage Corporation. In addition, there were frequent breakdowns and the community normally were looking up to the Government or an outside agency for repairs.

With the inception of the project, each village or community forms a Water and Sanitation Committee (WATSAN Committee), which is an entity specially formed for the purpose of representing the community during the planning process. It also manages community inputs to the programme, facilitates hygiene education within the community, and is responsible for long term operation and maintenance of the improved facilities including revenue collection and cash management.

9.0 Relationships

The Project works with the following government bodies and organisations;

- **Ministry of Works and Housing**

The Ministry of Works and Housing is the lead ministry of the sector and oversees the implementation of the National Strategy as well as the larger sectoral concern of water resources planning, management and provision of communal water and sanitation infrastructure.

- **Ghana Water and Sewerage Corporation(GWSC)**

Ghana Water and Sewerage Corporation as a body corporate operates under the auspices of Ministry of Works and Housing with specific responsibility of planning and providing water and sewerage facilities in the country on commercial basis.

- **Community Water and Sanitation Division**(CWSD)

Community Water and Sanitation Division has been established to run the National Community Water and Sanitation Programme. The CWSD serves as a facilitator of the process of community ownership and management of water supply and sanitation services in the country.

- **Ministry of Local Government and Rural Development(MLGRD)**

The Ministry spearheads the decentralisation process in Ghana and is the main linkage between the districts and the central Government.

The main decentralised departments under the MLGRD which the Project works with are:

- **Department of Community Development**

  Its staff (Community Development Officers and Community Development Assistants) are the community mobilizers and coordinators of WATSAN training.

- **Environmental Health Division**

  This comprises of Environmental Health Officers and Environmental Health Assistants based at zonal levels within each District. The EHAs play a key role in project's extension work.

- **District Assemblies**

They are significant stakeholders in the National Strategy for rural water supply and

sanitation and crucial for ensuring sustainability of project outputs. Accountable to community members in the District and supervises the District Water and Sanitation Team(DWST) and maintains dialogue with Community Water and Sanitation Division(CWSD), and other agencies supporting water supply and sanitation in their district.

- **Community Level**

  - Unit Committees
  - Area Councils
  - Town/Village Development Committees
  - Assemblymen
  - Chiefs/Queenmothers
  - Religious Leaders
  - Water and Sanitation Committees
  - Community Based Organisations

- **Training Institutions**

  - Training, Research and Networking for Development (TREND) is an NGO formerly under the University of Science and Technology, Kumasi. It is concerned with the Human Resource Development aspects of the community water and sanitation sector, including development of curricula and training materials.

Other institutions are:

- **School of Hygiene (SOH)**: Training of Environmental Health Assistants (EHAs)

- **Ho Polytechnic**: Training of Technicians/Engineers from the District Assembly and the project employed Engineers

- **Institute of Adult Education, Tsito**: Training of Community Development Staff, District Management Committees and Partner Organisations

- **Ghana Education Service**: Training of school health coordinators

- **Small Business Development Unit (Private Business Partner)**: Training of artisans, contractors, area mechanics.

- **Local NGOs**: Strengthening community organisational capacity e.g. WATSAN training.

- **Research Institutions**

  - **Water Resources Research Institute(WRRI):** Low flow monitoring of springs and streams and environmental monitoring.

- **Private Companies**

- - **Contractors**
  Construct water and sanitation facilities. Undertake specialised services, such as hydrogeological investigations for borehole siting and piped system design.

  - **Consultants**
  Undertake feasibility studies and other special surveys and studies.

- - **Suppliers**
  Supplies spare parts, office equipments, stationery, furniture and materials.

  Mechanics
  Provide installations and repair services

- - **Latrine Artisans**
  Trained to build household latrines

Project Achievements:

Community Management

WATSAN Committees have been confirmed in 476 communities. Out of this 190 received the phase 1 training (ie pre – construction)

Handing over existing hand pumps to community have started in Kpando, Ho and Hohoe Districts.

Hygiene Education

Action plans for health and hygiene education have been drawn in 470 communities. 450 Schools have health communities. 209 Ghana Education Service personnel trained for the school Health Education programme

Sanitation

190 Communal or institutional latrines completed. 65 under construction, 600 household latrines started.

Water Supply

Water supply system completed for 23,000 people. Systems for 72,000 people on going.

Private sector Development

80 contractors have been trained in tendering planning and contract management. 86 latrine Artisans have been trained in household latrine construction. 19 Area mechanics have been trained in hand pump maintenance. NGOs and consulting companies are being trained and are gaining practical experience.

Project Review

There has been no internal or external evaluations since project inception. However, there was a review in March 1995 and an Appraisal for phase 2 of the project.

LIST OF APPENDIX

Volta Region Rural Water Supply and Sanitation Project

Project Organisation

Government/ Local Administration | Project | Private Sector

National Level

Ministry of Works and Housing
DANIDA

GWSC/CWSD Headoffice
Project Director
Danida, Senior Adviser

Regional Level

Regional Management Committee
Regional Administration
Regional Director Health
Regional Director Community Development
Regional Director GWSC
District Chief Executives
Project Director
Danida Senior Adviser
Project Management, Regional RWSS Office

Regional RWSS Office
Project Management
Project Administration
Software Group
Technology Group

Consultants, TNC, WRRI

Small Business Development Unit

Partner Organisations
Consultants
Suppliers
Manufacturers

District Level

District Management Committee
District Assembly Social Service Com.
District Assembly Works Committee
District Planning Officer
District Chief Executive/ Adm. Officer
District Env. Health Superintendent
District Community Dev. Officer
Representatives from Women Org.,
Queenmothers, Traditional Leaders, NGO's
District RWSS Office Representatives

District RWSS Office
District Engineer
Technician Engineers
Administrative Officer
Extension Supervisors
Env. Health Officers
Community Dev. Officer

Consultants
Contractors
Mechanics
Suppliers
Manufacturers

Zonal Level

Area Council
Council Representatives, Traditional Leaders,
DA Members, Local NGOs, Women Groups

Zonal Extension Staff
Environmental Health Assistant

Area Mechanics
Latrine Artisans

Community Level

Watsan Committees **Rural Communities** **Caretakers**

Volta Region Rural Water Supply and Sanitation Project

Community Activity Sequence

Action by District RWSS Organisation:

Action by Community:

Health Education Sequence (A250)

Information Collection and awareness raising

Planning Community based Health Education Activities

Implementation and Monitoring of Health Education Activities

Activity 1 (A130)
Project Information

Milestone A
Community Register plus Application Form

Activity 2 (A210)
Meeting with Community & Data Collection

Activity 3 (A210)
Processing of Application by DMC

Activity 4 (A210) Formation & Confirmation of Watsan Committee and Start of Health Education Planning

Milestone B Establishment of Watsan Committee and Payment of Initial Deposit into Watsan Account

Activity 5 (A220)
Feasibility Study

Activity 6 (A240) Planning of Design of Facilities with Community

Milestone C
Written agreement between Project & Community

Activity 7 (A410)
Training of Watsan Committees

Milestone D Collection of final deposit of Community's Contribution into Watsan Account

Activity 8 (A310)
Detailed Design of Water Supply and Sanitation

Activity 9 (A310) Meeting with Community for Approval of Design of Water & Sanitation Facilities

Milestone F
Collection of Funds Completed

Activity 10 (A320)
Tendering for Construction of Facilities

Activity 11 (A320) Meeting with community Presentation of Tender Result and Prep. of Workplan

Milestone E
Agreement between Contractor & Community

Activity 12 (A330, A340 or A360)
Construction of Water and Sanitation Facilities

Milestone F Final Payment of Community Contribution to Contractor

Activity 13 (A410)
Training of Caretakers during Construction

Milestone G Community Accepts Ownership and Management Responsibility

Activity 14 (A350)
Handing Over

Milestone H
End of Contractors Guarantee Period

Activity 15 (A370)
Monitoring of Operation and Maintenance of Facilities and Functioning of Watsan Committees

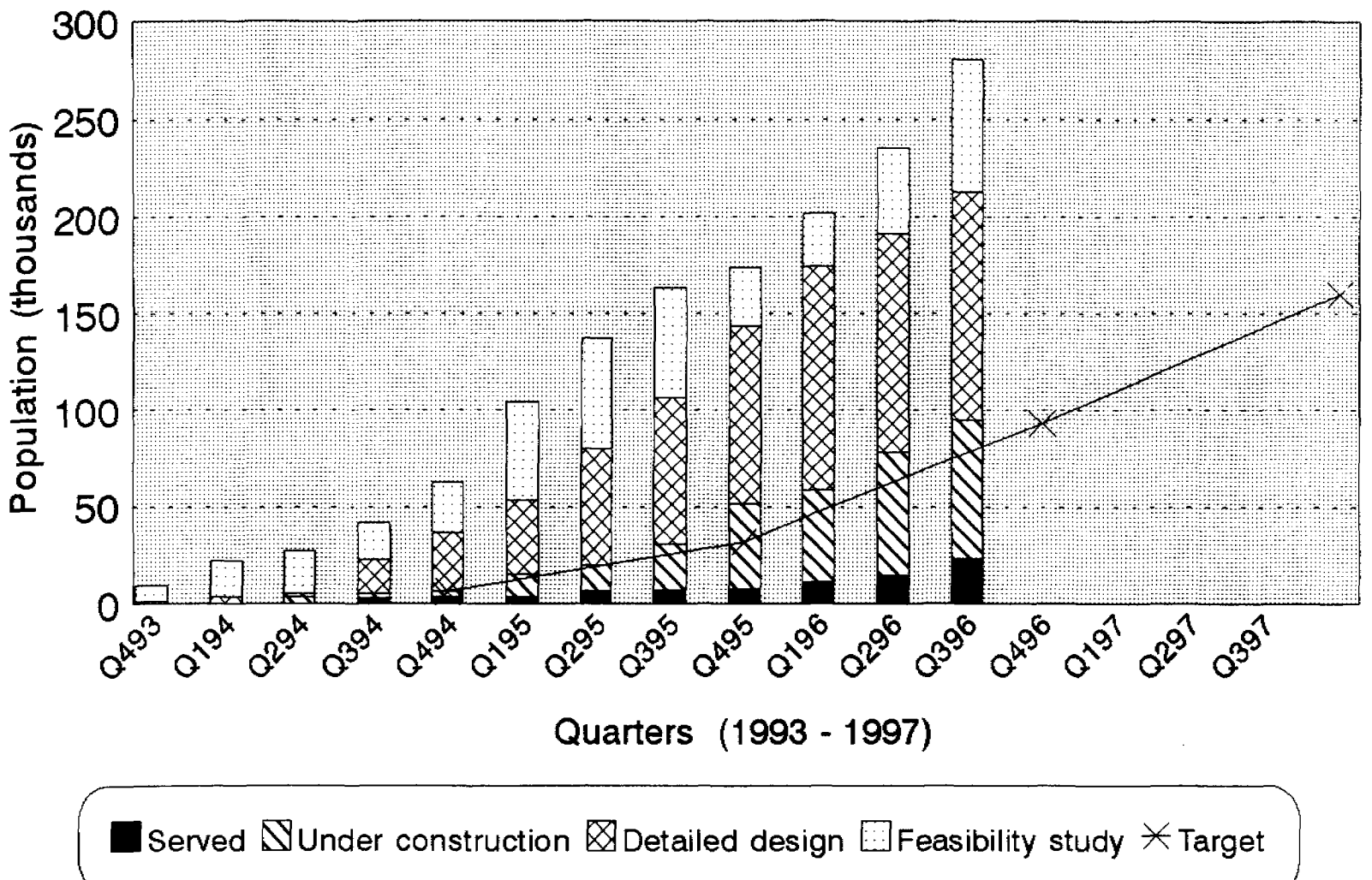
C:\DATA\PROJECT.HB\SOFTWARE.MNL\2-02\ACT-SEQ2.WP

(CWSD) Volta RWSS Project

Statistics of Project Implemen tation Status as at the end of September, 1996

ACTIVITY	HO	HOHOE	ADIDOME	KPANDO	AKATSI	SOGAKOPE	KETU	KETA	TOTAL
Promotion of Project Information	246	130	203	111	110	118	137	69	**1124**
Application for Project Assistance	207	86	139	74	108	112	60	40	**826**
Completed Community Profiles	157	125	73	49	87	78	107	32	**708**
Communities that paid Registration fees	109	54	–	–	–	–	–	–	**163**
Commitment Deposit into WATSAN A/c	41	28	62	28	57	45	24	20	**305**
Feasibility Studies / Agreements signed	56	40	42	20	35	28	–	–	**221**
No. of contracts awarded:									
Water	32	23	22	6	–	–	–	–	**83**
Sanitation	32	67	45	6	10	2	–	–	**162**
Completed Water Supply Systems:									
Hand-drilled Wells	–	–	8	–	–	–	–	–	**8**
Hand-dug Wells	12	–	–	–	–	–	–	–	**12**
Boreholes	22	–	–	–	–	–	–	–	**22**
Borehole Rehabilitation	–	–	–	–	–	–	–	–	–
Spring Protection	–	1	–	–	–	–	–	–	**1**
Pipe Gravity Systems	4	7	–	2	–	–	–	–	**13**
Solar Pumping Systems	–	–	–	1	–	–	–	–	**1**
Electric Pumping Systems	–	–	1	–	–	–	–	–	**1**
Roof Catchments	1	–	–	–	–	–	–	–	**1**
GWSC Pipeline Connections	1	1	–	–	–	–	–	–	**2**
On-going Water Supply Systems:									
Hand-drilled Wells	–	–	18	–	–	–	–	–	**18**
Hand-dug Wells	4	–	–	7	–	–	–	–	**11**
Boreholes	5	9	53	–	–	–	–	–	**67**
Borehole Rehabilitation	–	–	–	–	–	–	–	–	–
Spring Protection	1	–	–	–	–	–	–	–	**1**
Pipe Gravity Systems	3	5	–	–	–	–	–	–	**8**
Solar Pumping Systems	–	–	–	–	–	–	–	–	–
Electric Pumping Systems	–	2	–	1	–	–	–	–	**3**
Roof Catchments	1	–	–	–	1	–	–	–	**2**
GWSC Pipeline Connections	–	–	–	–	–	–	–	–	–
Completed Sanitation Schemes									**0**
Communal ITL	88	33	–	–	–	–	–	–	**121**
Institutional KVIP	7	22	35	–	1	2	–	1	**68**
Household Latrine	46	33	21	62	5	5	–	1	**173**
On-going Sanitation Schemes									
Communal ITL	–	–	–	–	–	–	–	–	–
Institutional KVIP	–	12	16	26	9	2	–	–	**65**
Household Latrine	36	80	34	259	5	14	–	–	**428**
WATSAN Committees confirmed	66	39	82	37	58	60	93	41	**476**
WATSAN Committees trained	49	39	33	30	25	10	–	–	**186**
Health & Sanitation Plans completed	84	75	54	109	29	39	47	29	**466**
School Health Committees formed	103	79	47	65	50	78	15	14	**451**

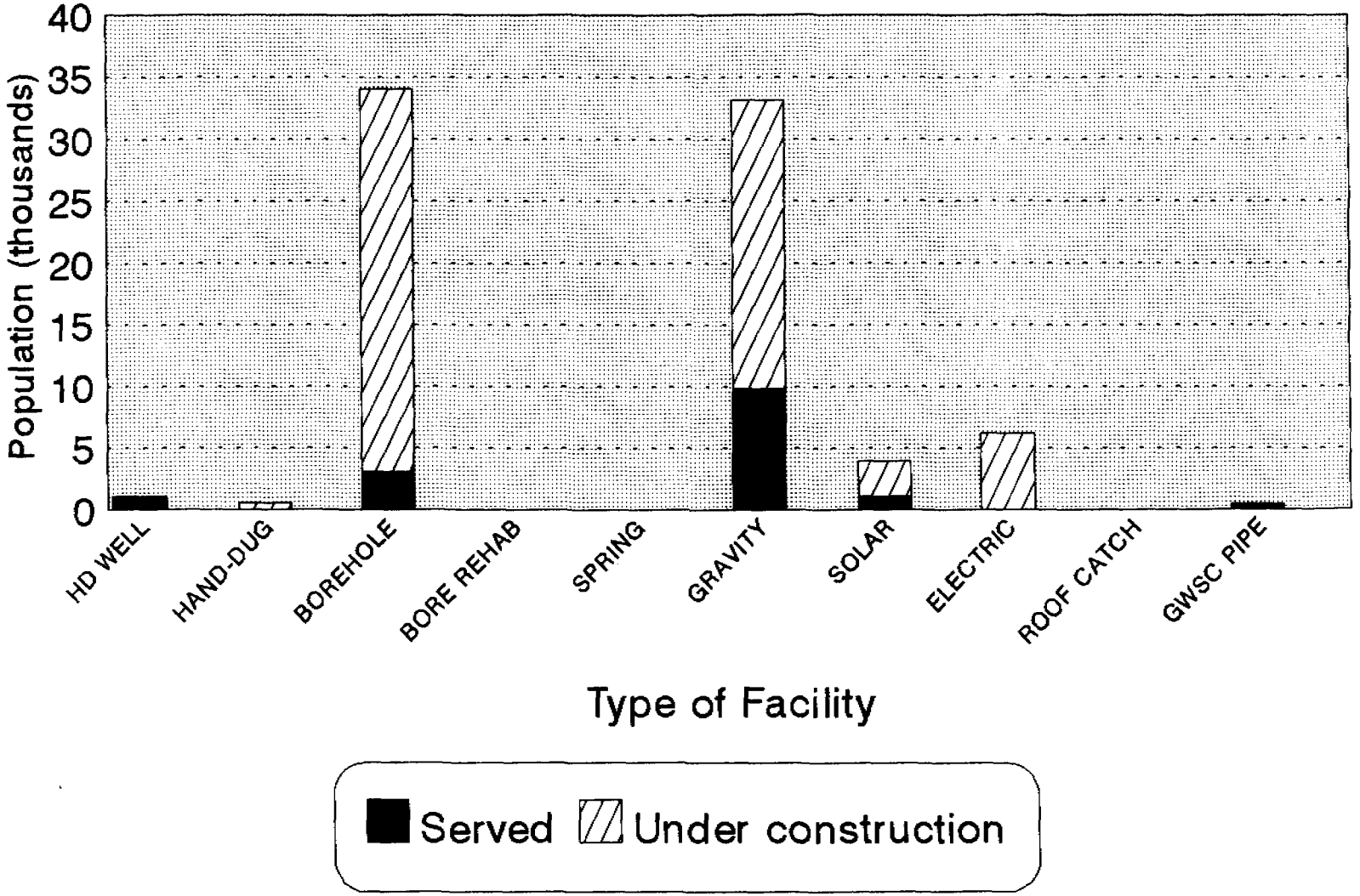
Volta RWSS Project
Water Coverage
Quarterly Progress



Status as at September, 1996

Volta RWSS Project

Water Coverage
Technology Options

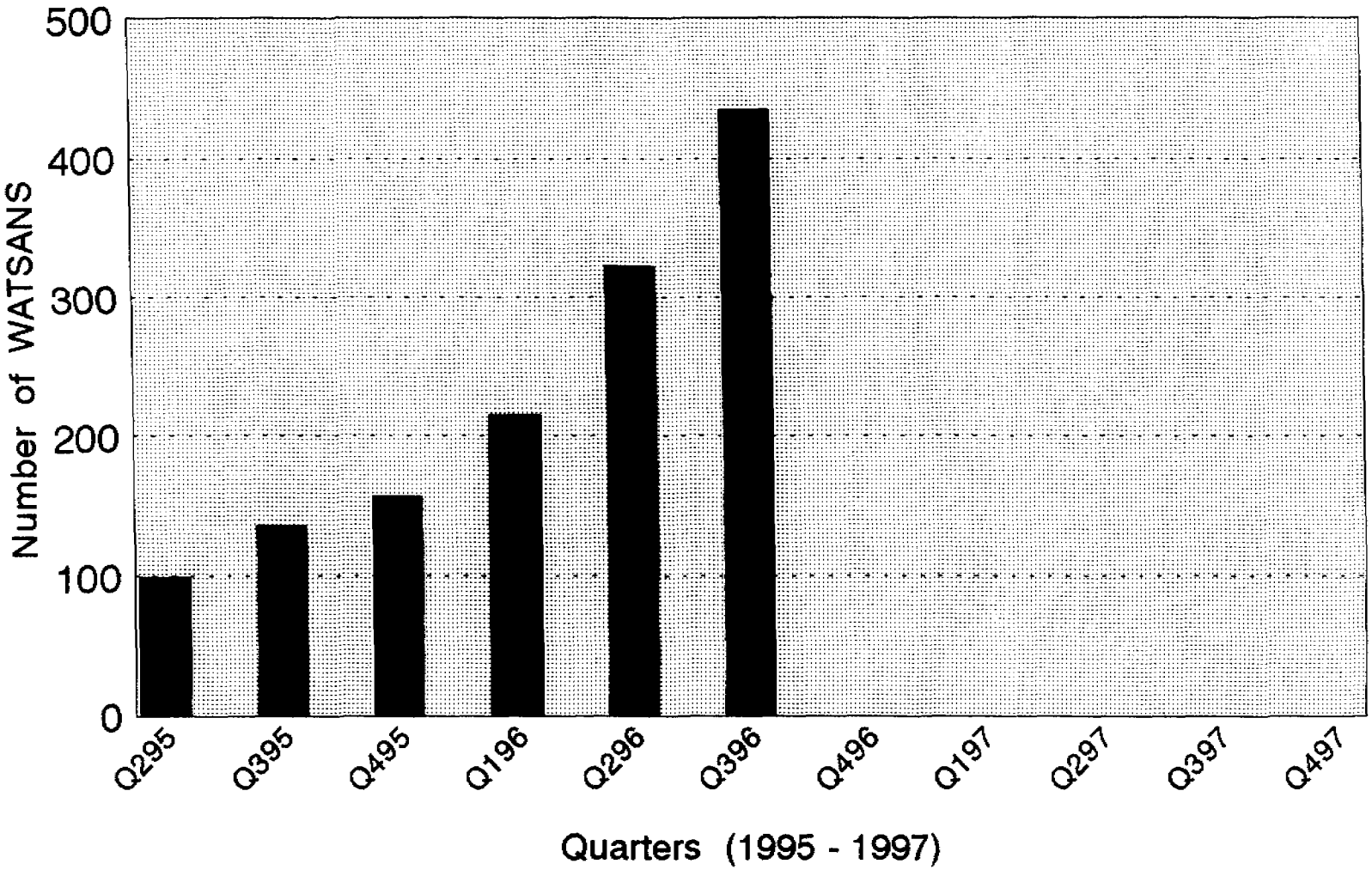


Status as September, 1996

Volta RWSS Project

Watsan Committees Confirmed

Quarterly Progress

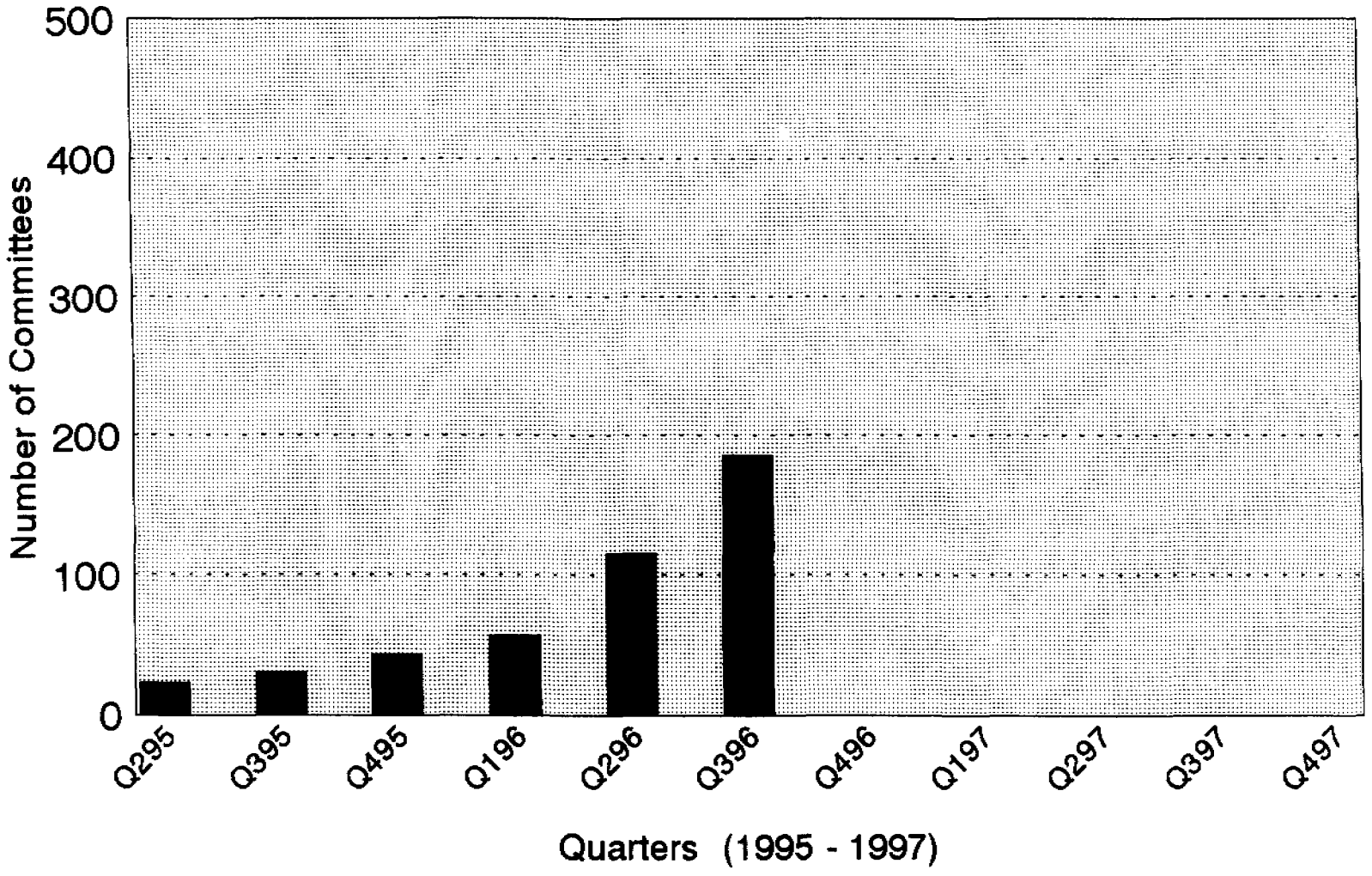


Status as at September, 1996

Volta RWSS Project

WATSAN Committees Trained

Quarterly Progress

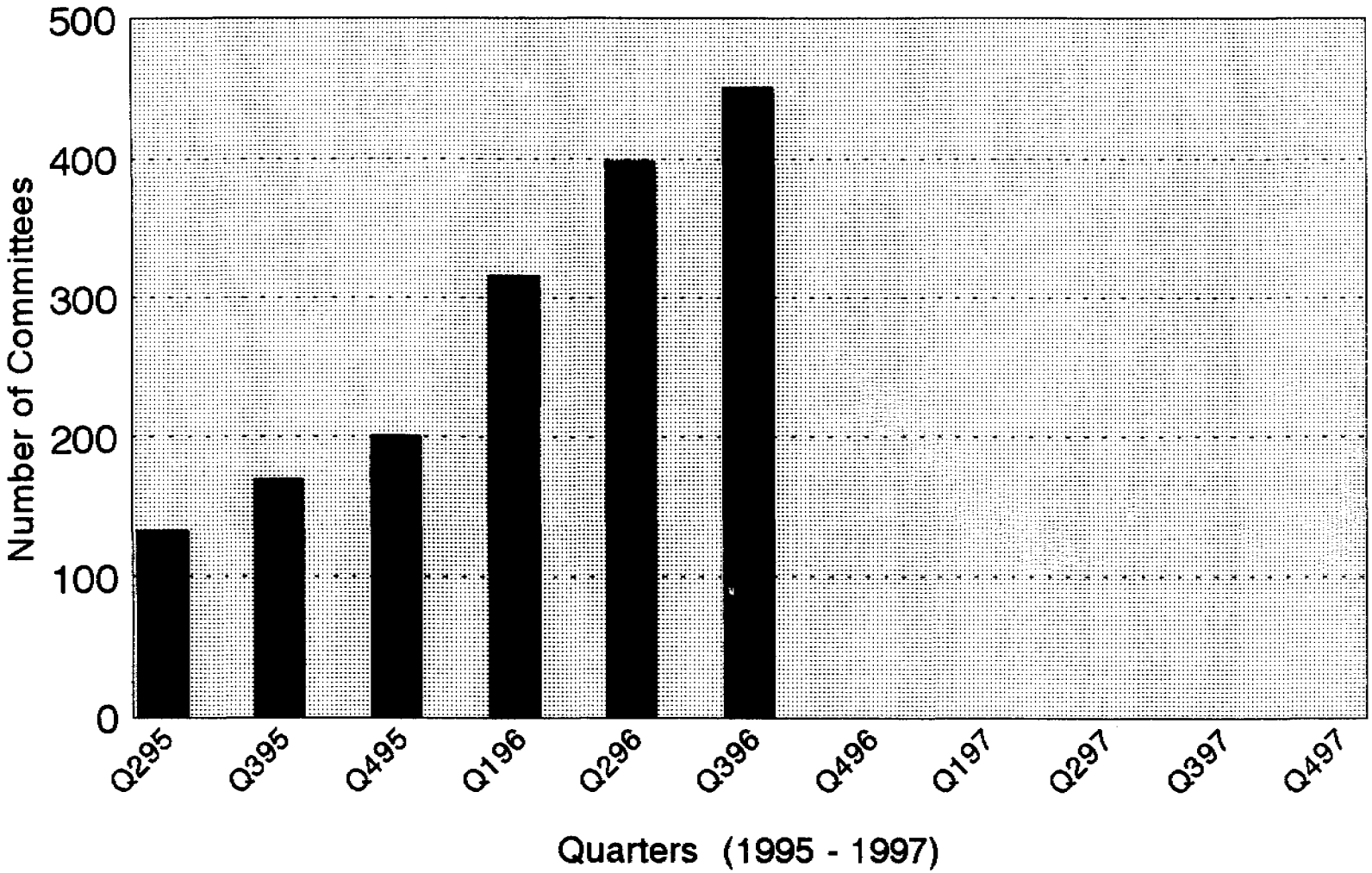


Status as at September, 1996

Volta RWSS Project

School Health Committees formed

Quarterly Progress



Status as at September, 1996

PROGRAMME DESCRIPTION

TITLE: NORTHERN PROVINCE DEVELOPMENT PROGRAMME

IRISH AID - ZAMBIA

Summary: This Programme focuses mainly in the sectors of Water Supply, Sanitation, Primary Education, Health and infrastructure Rehabilitation. This programme is predominantly rural, and most if its projects are underpinned by a very strong commitment to community participation in all its component parts.

The table below shows a breakdown of the programme activities:

SECTOR	PROJECT AREAS
Rural Water	Kasama, Mbala, Nakonde, Kaputa Nabwalya
Rural Sanitation	Kasama
Health	Mbala
Primary Education	Kasama
~~Information~~ INFRASTRUTURE Rehabilitation	Kasama, Mbala, Nakonde
Compound Upgrading	Kasama and Mbala

Setting: This programme is based in the Northern Province of Zambia, it is 57,000 square miles and divided into (10) ten districts. The population is estimated at 1.25 million people. The total area covered by programme activities is approximately 26,500 square miles. The offices at provincial level are based at the Provincial Capital, Kasama.

Northern Province is the largest of Zambia's (9) nine provinces with various tribal lineages, with a total rural population estimated at 846,000. The province is very poorly resourced, apart from the road linking Lusaka with Dar-es-salaam in Tanzania, there is only one other tarred road. The rest of the roads are dirt construction. All the urban centres in the province suffer from inadequate water supply and sanitation services, with poorly resourced health institutions.

Economic: Since 1972, there has been serious decline in the Zambia economy which inevitably resulted in poor services in the water and sanitaton sector.

Budget: In recent years the Department of Water Affairs has been receiving less than 3% of the National Budget for rural water, Sanitation in 1992 and 1993 the average funding averaged 0.55% of National Budget. This has resulted in a rural water supply coverage in the province of about 14% which is only half the National average.

Health: Northern Province has had outbreaks of water Borne diseases such as dysentry and Cholera for many years. Considerable time is spent each day on water collection, and is labour intensive. The water quality is very poor.

Rainfall: There has been less than normal rainfall in some districts of the province, while the greater part of the country has had severe droughts. This situation concerned both the quality and quantity of water supplies to rural communities.

Given below are some district details in the programme areas:

	Kasama	Mbala	Isoka/ Nakonde	Kaputa	*Mpika
Area sq.miles	8,028	7,230	5,409		
Population	189,360	136,091	121,871	49,993	115,125
No. Of Villages	740	510	650	89	815
No. of Schools	112	101	91	47	83
No. of RHC	24	15	14	7	15
No. of Hospitals	1	1	1	Nil	1

* The programme operates in a small area called Nabwalya Valley, with a population of 15,000, (3) three Primary Schools and (1) one RHC.

Background: The programme is as a result of a Bilateral Agreement between the Government of Ireland and Zambia. This is basically meant to meet the basic needs of the communities where irish Aid is involved.

The programme is funded by the Irish Government. It started in 1983 in Rural Water Supply in kasama District of the Northern Province of Zambia. After what was considered as a successful project, this was the initiation of Rural Sanitation and the Kasama Primary Education Projects in the Kasama District 1993. In 1994, the Infrastructure Rehabilitation and Training Project was added to the programme as well as the Compound Upgrading Project in Kasama and Mbala Districts.

RURAL WATER SUPPLY

Objectives: To provide sustainable sources of safe drinking water to the population, in areas of most need within designated district.

To develop the capacities with line ministries to better serve the needs of the Rural user committees for community managed water supply.

RURAL SANITATION

To mobilise communities to provide basic improved latrines at their schools and RHC for influencing positive sustained behaviour change seen in the hight of reduced morbidity and mortality rates in the community.

To conduct pre and post implementation surveys with the community so as to include the community not only in the implementation but also in planning and evaluation stages of the programme.

METHODOLOGY *(Project outline attached)*

The programme carries out its activities mainly through community participation.

Communities get involved actively right from the on set through stages such as:
- community selection, problem identification expressed as a need.
- Prioritisation of these needs.
- Formation of an implementation of the plan.
- The day to day implementation of the plan.
- Monitoring / evaluation of the programme.

Further community involvement is in provision of labour, largely unskilled and occasionally semi-skilled. Influential people in communities such as Village headmen, Councillors, Local politicians, Teachers etc. Take active roles in mobilising and organising communities to take active participatory roles.

ACTIVITIES

*Mobilizing the communities throughout all the stages of involvement;
*Carrying out Health and Hygiene Education seminars and workshops in committee.
*Construction of boreholes, wells and latrines.
*Capacity building to communities through in-situ training within the communities for instance training bricklayers and Health and Hygiene Education facilitators.
* Support to relevant government ministries
*The programme deliberately encourages women participation in decision making to try and break the limitations imposed by tradition.

WATER USE IN PROJECT AREA

Primarily water sources are rivers, dambos, springs hand ~~dry~~ shallow wells which are replenished by yearly rains, November to March. Most surface water reservoirs tend to dry up between July and December causing severe shortages in areas.

Ground water levels tend to vary from place to place. This results in some communities walking long distances in fetch for water.

Where it is possible to dig a well, most families prefer to have their own individual well which is usually shallow. Where the water is palatable, it is used for brick making and gardening apart from general domestic use. Fishing is yet another important use for most of the rivers and lakes. Lake Tanganyika is largely used as a means of communication between Zambia and Tanganyika, Burundi and Zaire.

Irish funded wells have village water committees (V.W.C) which takes care of the village communal well. Bucket and chain is removed at an agreeable time in the evening and taken back in the morning for fear of theft. The removal is rotational.

Replacement of worn out or stolen item is organised by the same V.W.C through cash contributions or in kind.

The same committee is responsible for spelling out the care of water during the drying period. eg no moulding of bricks with water from the well.

Well care takers are responsible for retrieving of items fallen in the water as well as mobilizing the well users for the regained maintenance work. The responsibility is voluntary.

ORGANISATION OF WATER USERS

See out line of water project attached.

RELATIONSHIPS

- The project work is closed relationship with
- District Council (line ministry)
- Ministry of Health (attached or secondment of staff)
- Ministry of Energy and Water Development (attached or secondment staff)
- Ministry of Education
- Chiefs
- Ward Councillor
- Other None Governmental Organisations (Red Cross and World Vision)

The staff from government ministries work out plan of action for each quarter.

- **They prioties the most needy areas (keenness of the community also influences)**
- **Chiefs, Ward Councillors play a great deal in mobilising their subjects for any particular project they want to embark on.**

PROJECTS ACHIEVEMENTS

Since the project was implemented these are the achievements:

DISTRICT	POPULATION	NO. OF WELLS	SPRINGS	SCHOOL REH.	COMMENT
KASAMA	230,000	355	5		
MBALA	146,910	105	2	-	Brick moulded for constructing school(pending)
ISOKA	123,000	22	-	-	No schools rehab.
Nakonde					No schools rehab.
Kaputa	50,000	34	2	-	No schools rehab.

The project has been subjected to both internal and external evaluation. The recent evaluation (Compound Upgrading) September, 1996.

ANNEX 1

SECONDARY ACTIVITIES SUPPORTED BY THE PROJECT

Listed below are some of the activities undertaken by the project.

* Carpentry working
* Provision of transport (Bicycles) to Education Health Technicians actively involved in project programmes
* Compound Upgrading
* Water sampling and analysis.
* Supports District Water, Sanitation and Health Education (D-WASHE) New concept.

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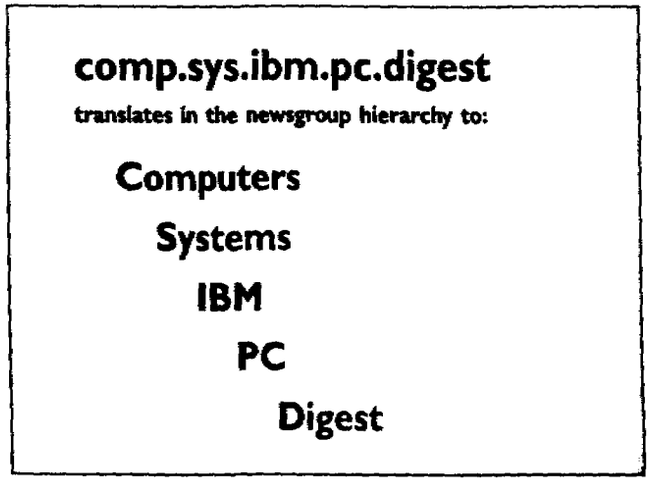
cross-pollinate one another). Each newsgroup article is received and stored on each participating USENET computer. Unlike e-mail, where the messages are actually sent to your computer and stored on your own hard drive, newsgroup articles are stored on a *news server*, at the site that services your account. The newsgroup articles you read are stored on the news server, not on your own computer.

The network news—or USENET—newsgroups are organized in a hierarchy. Each newsgroup has a name with periods in it similar to the Internet domain name system. The periods (read as "dots") separate the various hierarchical levels. For example, comp.sys.ibm.pc.digest is read as "comp-dot-sys-dot-ibm-dot-pc-dot-digest" or "comp-sys-ibm-pc-digest" and reflects the hierarchy shown in Figure 5-1.

Figure 5-1: Network news newsgroups hierarchy.



There are several top-level newsgroup categories in the hierarchy, as shown in Table 5-1.

Table 5-1: Network news newsgroups top-level categories.

Category	Topic Explanation
alt	Alternative discussions; not carried by all sites. The newsgroups found here range from the bizarre to the useful. The most useful "alt" newsgroups were created in this top-level hierarchy to avoid going through the bureaucratic hassle of forming a certified newsgroup.
bionet	Biology discussions.
bit	Discussions that originate from Bitnet Listserv mailing lists.
biz	Business discussions. Commercial articles are permitted only in this top-level hierarchy.
comp	Computer discussions.
misc	Miscellaneous discussions—topics that don't fit in any of the other top-level hierarchies.
news	Discussions related to network news and the software used to transmit, read and create articles.
rec	Recreation discussions and topics related to the arts.
sci	"Hard" science discussions.
soc	Discussions related to social issues.
talk	Argumentative discussions.

An Overview of Newsgroups

There are more than 4,000 active newsgroups covering virtually every conceivable topic. Some network-savvy observers in mainstream media hypothesize that the Internet will eventually replace most sources of news. It simply won't happen, at least not for another 10 years or so. Computer news and Grateful Dead concert dates travel faster on the Net than they do through other channels, but that's about it.

There was one case of "pseudo-news" on the Internet. In April 1992, an area developed on IRC (Internet Relay Chat—similar to a wide-open international conference call using keyboards instead of phones) carried news relays of the Los Angeles riots following the first Rodney King verdict. Of course, most of the information came from people who were simply relaying what they had received from local television coverage.

What Is Network News & What Are Newsgroups?

Think of network news as a worldwide collection of automatically updated electronic bulletin boards. Except these aren't bulletin boards like the single-line systems set up by thousands of hobbyists in small towns across America. Network news messages are seen by millions of people who generate as much as 40mb of network news information every day.

Electronic bulletin boards are like the cork bulletin boards you see at your local grocery store. You know, where you can find a great deal on a 1955 Buick or a litter of prize poodle puppies. Network news on the Internet is the same concept, only it's all electronic and much more extensive. Imagine the electronic equivalent of 4,000 different grocery store cork bulletin boards, and you've got a pretty good grasp of the thousands of newsgroups that make up network news.

If you've used CompuServe or America Online you're probably familiar with the concept of forums or bulletin boards. Each newsgroup is roughly equivalent to a message area on America Online or CompuServe, except that network news newsgroups are seen by many more people, and on the Internet, highly specialized newsgroups are available for just about any topic.

Freeware SLIP software.

The programmers at the University of Minnesota have created and released a freeware SLIP driver for MS-DOS computers. SLIP software allows you to login to the Internet (via a SLIP server) using a high-speed modem and ordinary telephone lines. It works quite well and is part of the UMSLIP distribution package. Windows users may find it useful because it can be configured to support Windows-specific Internet client software. The current version of the software is available by anonymous FTP at boombox.micro.umn.edu in the /pub/pc/slip/ directory.

You'll see everything from announcements for new software products to in-depth technical discussions to candid—and sometimes heated—conversations. These super-heated discussions are called *flame wars*; each individual message in a flame war is called a *flame*. Flames are considered to be in bad taste (except in newsgroups set up just for flames), and starting a flame war will win you lots of enemies with long memories. Each message within an individual newsgroup is called a *post* or an *article*. Articles can be cross-posted to several

newsgroups, but this practice is considered to be bad form unless the article is especially relevant to several newsgroups.

Articles within each newsgroup are arranged in *topics*. Topics within a newsgroup about laptop computers, for instance, may include battery conservation tips, problems with a specific model's keyboard, or comparisons between different available configurations. Initial queries or informational articles will likely generate several responses. This patchwork of queries and responses form a *message thread* within a specific topic. The software you use to read network news will automatically piece together the various queries and responses in logical order. The original article will appear first, followed by any available *followup* (response) articles in the message thread.

E-mail blind courtesy copies that aren't.

There is a troublesome fluke with most mail servers on the Internet that could prove to be embarrassing for you. If you send an e-mail message to a group of people, with each recipient sent a blind courtesy copy, make sure you also e-mail a copy to at least one address in the To: field. If you send an e-mail message with the To: field empty, most mail servers will insert "Apparently-To:" addresses, neatly listing every recipient of your blind courtesy copy.

Network news is actually not even part of the Internet—although, to the uninitiated, it is probably perceived as being the most easily recognizable part of the Internet. Network news is transmitted on USENET, a network of about 3 million people (mostly UNIX users). USENET is even more disjointed and anarchic than the Internet. Just about the only thing USENET sites have *in* common is that they communicate using the UNIX-to-UNIX Copy Protocol (UUCP). Some USENET sites have connections to the Internet, which is how network news—and other USENET traffic—gets to the Internet.

Internet sites that provide a network news server use the Network News Transfer Protocol (NNTP) to provide a database for local news clients and to transfer news between servers. In order to read network news on the Internet, you must use NNTP client software (like the kind we'll discuss in this chapter) or use the archaic UNIX commands for navigating and reading newsgroups.

Network news is divided into *newsgroups*. Each newsgroup is devoted to a single topic (at least hypothetically; most newsgroups sort of

CHAPTER 5

NETWORK NEWS & NEWSGROUPS

Broadsheets of the Broadband

As our tour through the Internet continues, it's easy to become overwhelmed with the size and scope of all that it offers. But one of the most important resources on the Net is easy to overlook: people. Network news and newsgroups are valuable because of the insights and information that people bring to them.

For instance, wouldn't it be great if you could poll all the most knowledgeable folks on the Internet for answers to technical questions, or advice on everything from buying the best VCR to cooking the perfect pot roast? While electronic mail is useful for communicating with another individual or small workgroup, you can't send e-mail to thousands of people you don't know, asking questions about topics that don't interest them. (Well, I suppose you *could*, but it probably wouldn't be very productive. And if you think it sounds like it might be a good idea, put this book down and go outside for a walk. A long walk.) But with network news, there's a better way.

Like the phone system and the Postal Service, e-mail isn't infallible. Occasionally, an e-mail message doesn't reach its intended destination. Any e-mail that does not reach its recipient is returned to the sender as undeliverable mail. This is called a *bounced* e-mail message. Reasons for bounced mail include (in order of likelihood):

- **User unknown** (incorrect address in the username portion of the address).
- **Host unknown** (incorrect address in the domain or top-domain portions of the address).
- **Network unreachable** (gateway limitations or problems with the network backbone).
- **Connection timed out** (software problem on the destination mail server).
- **Connection refused** (problem with the destination mail server).

The important point here is, if your e-mail message is undeliverable—for whatever reason—it will be bounced back to you. Many first-time e-mail users waste countless hours worrying if their messages are delivered, often following e-mail transmissions with faxes and phone calls to the effect of "Did you get my e-mail?" As a general rule, assume that your e-mail efforts are successful rather than figuring they don't work at all.

E-Mail Etiquette & Courtesy

Electronic mail eliminates a lot of subtle impediments to effective communication. Judgments based on appearance, voice or social position are impossible in electronic communications. E-mail's asynchronous nature—the ability to deal with a message when it's most convenient for all parties involved—is truly a boon to communications among individuals and groups.

One of the most amazing things about e-mail is the immediacy of its delivery. When you click that **Send** button, your message is delivered in seconds. This is a great advantage in most cases, but can work as a disadvantage if you have a short fuse. Unlike a letter, which may sit on a desk for hours or days before being mailed, electronic communications are usually dashed off as soon as they're completed. If you've been using e-mail for a while, you'll notice that a lot of the messages you receive (and perhaps a few you've written) shouldn't have been

sent. It pays to ponder the ramifications of an e-mail message before launching it into the electronic ether—once it's gone out, there's no way to get it back.

The price that you pay for e-mail's convenience and speed is a fairly high potential for misunderstanding. The best way to avoid e-mail misinterpretations and mixed signals is to follow three simple, common-sense rules of etiquette and courtesy.

1. *Don't send anything via e-mail that you wouldn't want to read in your hometown newspaper.* Invariably, that juicy e-mail message is read by the one person who was never meant to read it. There are lots of stories about the politics of e-mail, and until the law catches up with the technology, you're better off playing it safe. Assume your e-mail messages are available to anyone who wants to read them. Some companies even have a policy making e-mail the property of the company, not the individual correspondents. In early 1993, the Georgia Institute of Technology announced that it would no longer consider e-mail delivered to any of its systems on the Internet to be private. Already, landmark legal cases about trade secrets, corporate espionage and e-mail are filtering through the courts. E-mail *should* enjoy all the rights and securities of paper mail, but don't make the mistake of assuming that it *does*.
2. *Facial expressions and body language don't fit through the narrow bandwidth of e-mail.* Statements that you intend as pithy may come across as condescending or sarcastic. Some people approach e-mail as conversational; others don't. Some people never take e-mail personally, others always do. Unless you're close friends with an e-mail recipient, never expect that he or she will understand your sense of humor, wry wit or playful repartee.
3. *You can't control when your message will be delivered, so assume it will arrive at the worst possible time.* Be careful with your wording. What may seem funny or cute today may be inappropriate or rude when e-mail is read tomorrow. Just because e-mail is delivered at warp speed doesn't mean it's read at the same rate. Lots of people get more e-mail than they can keep up with; keep that in mind as you compose your missive. If you only read three e-mail messages a day, you'll probably remember them all for a few days. But people who receive dozens of messages need reminders (or forwarded messages) to help clue them in to the context of previous correspondence.

abbreviations, just to send a simple message. There are a host of powerful tools available for Windows that provide an easy-to-use interface for the Internet's electronic mail services. After all, electronic mail is only effective if you actually use it, and who wants to put up with a UNIX-based e-mail program with practically no features or options, when simple, Windows-specific alternatives are available?

E-mail is an incredibly powerful form of communication, and there are plenty of Internet users who do little on the Net besides send mail. Consequently, we'll be spending more time discussing e-mail than any other topic in the course of our tour. So before we get started, let's pull off to the side of the road and take a look at the map of what we'll be covering in this chapter:

- What Is E-Mail & How Does it Work?
- E-Mail Etiquette & Courtesy
- How to Send E-Mail Anywhere
- Quick Guide to Using Chameleon Mail (included on the companion disk)
- Quick Guide to Using Eudora
- Finding Addresses
- Electronic Mailing Lists
- E-Mail & Attached Files

We've got a long road ahead, so buckle up and let's get started!

What Is E-Mail & How Does it Work?

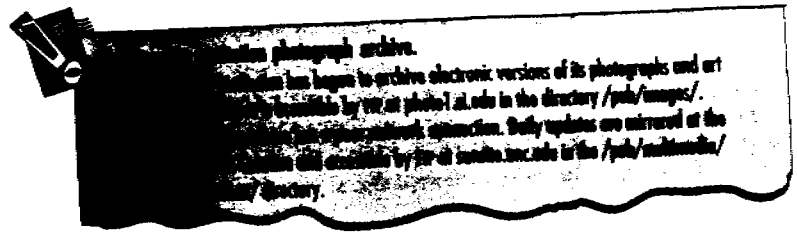
Most people who have never used e-mail have trouble understanding why it's touted over regular mail, fax or even phone conversations. It takes anywhere from a few seconds to a few minutes to deliver an e-mail message (complete with attached files) anywhere in the world. A postal delivery usually takes several days to reach its destination, and the telephone system is immediate, but both parties have to be on the phone at the same time. Fax was the rage in the '80s because it was fairly easy to use and didn't require a computer. But this chapter shows why so many people prefer e-mail to phone, fax or paper mail.

You can use e-mail to:

- **Send text-based messages to any other Internet user**. You can also send messages to users on commercial electronic mail and information services. Soon you'll be able to send messages that contain fully formatted text, pictures, sound and even video—*between different types of computers and operating systems.*

- **Attach computer files to text messages**. You can send binary files—complete software programs or fully formatted files—to any other Internet user and users on most of the commercial electronic mail and information services. (Why send a static, dead document via fax when you can work with a live one via e-mail?)
- **Send messages and files to multiple recipients**. Where telephones tend to be useful for one-to-one communications, e-mail is useful for both one-to-one and one-to-many communications.
- **Reply to or forward messages you receive**. You can quickly and easily dash off a reply to a message, or forward it to other users around the world.
- **Subscribe to electronic mailing lists**. You can add your name to any of thousands of mailing lists whose topics range from PC hardware and software to political debates and discussions.
- **Communicate with mail list servers**. By sending e-mail queries to special addresses, you can query list servers that automatically respond to special commands by returning to you specific information, documents or other files.

Electronic mail is different from other Internet services in one important way—the sending and the receiving computers need not be able to connect directly with each other. You create e-mail messages on your computer and send them to a *mail server*. The mail server determines the best route to reach the recipient and passes the e-mail to the next closest mail server. The e-mail is passed through any number of mail servers and is eventually delivered to the final recipient's mail server. This is called a *store-and-forward* service, and it happens much faster than it took you to read about the process.



- **Log off properly.** Make sure you leave all resources in the same condition and state in which you found them. If you log off improperly, you may leave certain tasks or processes running in the background of the host machine, causing problems for other users or worse, network administrators.

Keep in mind that nothing on the Internet is really free. Somebody is paying for it. And if everyone takes a "free ride" on the most popular and expensive Net resources, it won't be long before those same resources are protected, restricted or closed to public access.

You'll find more Internet etiquette advice in the chapters that deal with specific network services.

Moving On

Now you know how the Internet works and how computers and people are identified. You've also looked at how to best get along with your fellow Internet inhabitants. The next chapter guides you through the wonders of using electronic mail on the Internet. We'll cover how to use some of the most powerful tools available for sending, receiving, reading and sorting electronic mail, and how to communicate via e-mail with people who aren't even on the Internet.

ELECTRONIC MAIL

The Pony Express Goes Digital

Our tour bus has been making pretty good time, sticking to the back roads. But we've been rolling along for some time now, and some of you may want to send a message to your friends and family back home, just to let them know you're having a great time. So let's take a look at how to use electronic mail to communicate privately with individuals and small groups on the Internet.

With the exception of gestures, e-mail is arguably the most efficient means of communication yet devised by humans. Because it uses recycled phosphors on your computer screen, e-mail is ecological—nary a tree and very little energy is used to create, deliver and read e-mail messages. You can choose to read your e-mail whenever it's most convenient for you, not when it's convenient for someone else. You can scan an electronic inbox full of e-mail faster than you can open a single paper mail envelope. You can easily forward, store or reply to e-mail messages with the touch of a button. Sending messages to dozens of people is a snap with the multiple-addressing capabilities of e-mail. And there are a host of other features that make e-mail one of the most powerful and convenient ways to communicate.

But lots of people never get the most from their e-mail systems because they have to wrestle with arcane and obscure commands and

Acessing the Internet by E-mail, Doctor' Bob's Guide to Offline Internet Access

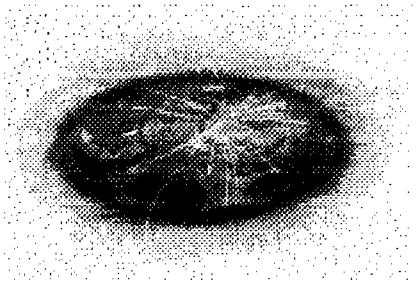
available through E-mail

for US+South America send fllowing message in Body:
send usenet/news.answers/internet-services/access-via-email
To: mail-server@rtfm.mit.edu

for Europe, Adia and Africa:

send lis-iis e-access-inet.txt
To: mailbase@mailbase.ac.uk

Provided by:
Dick de Jong
Public Information and Advocacy Manager
IRC
E-mail: jong@irc.nl



groundwater.com

Water-Geology-Environmental Mailing Lists

[redacted] 10/12/96

The following are lists that we have found in our travels on the 'net. We have not personally checked every listserv. If you have any corrections or additions please e-mail webmaster@groundwater.com and we will make the changes.

- **AFWATER**: Water policies, people and practices in Southern Africa
  mail the command "info afwater" to majordomo@aqua.ccwr.ac.za

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- **AI-GEOSTATS**
  http://java.ei.jrc.it/rem/gregoire/

- **ALIENS-L**: listserver of the Invasive Species Specialist Group (ISSG) of the IUCN Species Survival Commission
  send the message "info aliens-l" to the address:
  majordomo@ns.planet.gen.nz

- New!
  AQUA-L: Aquaculture List: discussions on the science, technologies and business of aquaculture.
  mail the command "info aqua-l" to LISTSERV@VM.UOGUELPH.CA

- **AQUIFER**: Pollution and ground water discharge
  mail the command"info Aquifer" to listserv@ibacsata.bitnet

- New!
  BAY-DELTA MODELING FORUM: Discussion of California water issues, especially those concerning the San Francisco Bay-Delta Estuary.
  mail the command "info" to
  BAY-DELTA-FORUM-REQUEST@SACTO.MP.USBR.GOV

- **BBW**: Blue Grass Water Watch
  mail command "info BBW" to listserv@ukcc.uky.edu

- **Bioremediation Discussion Group**
  For more information, send a message to rschaffner@gzea.com

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- **BUILT-ENVIRONMENT**: Issues within the built environment: including building, surveying
  mail the command "info Built-Environment" to mailbase@mailbase.ac.uk

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- **BURG-CEN**: J.M. Burgers Centre for Fluid Mechanics
  mail the command "info Burg-Cen" to listserv@nic.surfnet.nl

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- New!
  CA-WATER:Discussion of California water issues.
  mail the command "info ca-water" to MAJORDOMO@LIST.DCN.DAVIS.CA.US

- **CCSEA-L**: Canadian Coastnet List; Affiliated with the Canadian Coastal Science and Engineering Association
  mail the command "info ccsea-l" to MAJORDOMO@CCIW.CA

- **CEE-ENVIRONMENT**: Civil and Environmental Engr Grad Students
  mail the command "info Cee-environment" to listproc@ucdavis.edu

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- **CEE-GEOTECH**: Civil and Environmental Engr Grad Students Geotech
  mail the command "info Cee-Geotech" to listproc@ucdavis.edu

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- **CE-ENVIRO**: Central and East European Environmental List
  mail the command "info ce-enviro" to listproc@ucdavis.edu

- **CEE-WATER**: Civil and Environmental Engineering Grad Students Water
  mail the command "information cee-water" to listproc@ucdavis.edu

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- **CEWRE-SEMINARS**: Environmental & Water Resources Engineering Seminar Notices
  mail the command "information cewre-seminars" to listproc@ucdavis.edu

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- **CFD**: Computational Fluid Dynamics Group
  mail the command "info CFD" to listserv@ukcc.uky.edu

- **CFEPD-L**: Center for the Evironment Program Directors
  mail the command "info Cfepd-l" to listproc@cornell.edu

- **CIVIL-L**: Civil engineering research and education
  mail the command "info Civil-l" to listserv@unb.ca

- New!
  COMPUTING CENTER FOR WATER RESEARCH: Water research, South Africa.
  mail the command "info Computing Center for Water Research" to majordomo@aqua.ccwr.ac.za

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- **CNIE**: Committee for the National Institute for the Environment
  mail the command "info Cnie" to listproc@csf.colorado.edu

- New!
  COASTNET: Coastal Management Conference
  mail the command "info coastnet to LISTSERV@URIACC.URI.EDU

- **CUSN-L**: Canadian Unified Student Environmental Network
  mail the command "info Cusn-l" to listserv@qucdn.queensu.ca

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- **CWA-ENVIRONMENT**
  mail the command "information cwa-environment" to listproc@lists.Colorado.EDU

- **DEEPSEA**: Deep Sea and Hydrothermal Vent Biology.
  mail the command "info deepsea" to LISTSERV@UVVM.UVIC.CA

- **DIALOG-AGUA-L** : Discussion of Inter-American Water Resources Network (IWRN)
  mail the command "info Dialog-Agua" to mailserv@acc.fau.edu

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- **DLO-E-IN**: Info on Dutch research on agriculture, nature and environment
  mail the command "info Dlo-e-in" to listserv@hearn.nic.surfnet.nl

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- **DOWSING**: Discussions regarding dowsing, including water dowsing.
  mail the command "info Dowsing" to listserv@intuition.org

- **EENETS**: Electronic Networks for Environmental Education
  mail the command "info eents" to majordomo@igc.apc.org

- **EIA**: Environmental Impact Assesment
  mail the command "information eia" to listproc@cedar.univie.ac.at

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- ELAN: Environment in Latin America Network
  mail the command "info Elan" to listproc @ csf. colorado.edu

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- ENGINEERING-GEOTECH: Soil mechanics, hydrology and related fields
  mail the command "info Engineering-Geotech" to mailbase@mailbase.ac.uk

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- ENVBUS-L: Business and environment in central and eastern Europe
  mail the command "info Envbus-l" to listserv@rec.hu

- ENVCEE-L: Environmental issues in central and eastern Europe
  mail the command "info Envcee" to listserv@rec.hu

- ENVENG-L: Environmental engineering topics including water and wastewater
  mail the command "info Enveng-l" to listproc@pan.cedar.univie.ac.at

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- ENVHTH-L: Environmental Health Foundation of Canada
  mail the command " info Envhth-l" to listserv@qucdn.queensu.ca

- ENVIF-L: List for Environmental Information
  mail the command "info Envif-l" to listserv@hern.nic.surfnet.nl

- ENVIRONMENT-L: Center for the Environment, Cornell University
  mail the command "info Environment-l" to listproc@cornell.edu

- ENVENG: CEAE Env. and Water Faculty
  mail the command "information enveng" to listproc@lists.Colorado.edu

- ENVLAW-1: Ag. Econ 301 Enviromental Law Forum
  mail the command "info Envlaw-1" to listproc@lists. missouri.edu

- ENVST-L: Environmental Studies Discussion List
  mail the command "info Envst-l" to listserv@Brownvm. Brown.edu

- ENV-WAT: CEAE Env. and Water Faculty
  mail the command "information env-wat" to listproc@lists.Colorado.edu

- FELT-L: Finite element analysis discussion
  mail the command "info Felt-l" to listserv@mecheng.asme.org

- FYI: American Institute of Physics, Physics Information Networks
  mail the command "info Fyi" to listserv@aip.org

- GEOCHEM: Environmental geo-chemistry reading group
  mail the command" information geochem" to listproc@u.washington.edu

- GEO-COMPUTER-MODELS: Geoscience computer modelling
  mail the command "info Geo-Computer-Models" to mailbase@mailbase.ac.uk

- GEO-ENV: Geological Society Environment Group
  mail the command "info Geo-Env" to mailbase@mailbase.ac.uk

- GEO-GIG:Geological Information Group
  mail the command "info Geo-Gig" to mailbase@mailbase.ac.uk

- GEO-TECTONICS:Tectonics and structural geology
  mail the command "info Geo Tectonics" to mailbase@mailbase.ac.uk

- New!
  GLIN-ANNOUNCE: Great Lakes Information Network Announcements.
  mail the command "info glin-announce" to
  GLIN-MAJORDOMO@GREAT-LAKES.NET

- GLIN-EDUCATION: Great Lakes Education Forum
  mail the command "info glin-education" to
  GLIN-MAJORDOMO@GREAT-LAKES.NET

- GLIN-GIS
  : Geographic Information Systems Forum for Great Lakes.
  mail the command "info glin-gis" to GLIN-MAJORDOMO@GREAT-LAKES.NET

- GLIN-TALK
  : Great Lakes Discussion Forum.
  mail the command "info glin-talk" to GLIN-MAJORDOMO@GREAT-LAKES.NET

- GROUNDWATER: Global discussion of groundwater and related topics.
  mail the command "info Groundwater" to Majordomo@ias.champlain.edu

- GROUNDWATER MODELING: Discussion on all aspects of ground water modelling
  mail the command "info Groundwater Modeling" to majordomo@gwrp.cciw.ca

- GWCAN-L: Discussion of Canadian hydrogeology
  mail the command "info Gwcan-l" to majordomo@gwrp.cciw.ca

- HIX: Hazardous Waste Management Information Exchange
  mail the command "info Hix" to emailurl@flevel.demon.co.uk

- HUDSON-R: Hudson River planning, development, ecology, etc
  mail the command "info Hudson-r" to majordomo@matrix.newpaltz.edu

- HYDRO DIGEST: Hydrological and hydrogeological digest, (zine)
  mail the command "info Hydro Digest" to ezzedine@cig.ensmp.fr

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- HYDROLOGY: List for those interested in hydrology, Australian focus
  mail the command "info Hydrology" to Majordomo@eng.monash.edu.AU

- IAMSLIC: A discussion group of the International Association of Marine & Aquatic Science Libraries and Information Centers.
  mail the command "info iamslic" to LISTSERV@UCSD.EDU

- ICM-L:Integrated Catchment Management
  To join send the message below (in the body of the message NOT the header) to "majordomo@vicnet.net.au":
  subscribe icm-l@vicnet.net.au

- **INFOTERRA**: Global environmental topics
  mail the command "info Infoterra" to listproc@pan.cedar.univie.ac.at

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- INTERNETNB-L: Weekly EPA mailing re new internet resources for EPA staff and other professionals
  mail the command "info Internetnb-l" to listserv@unixmail.rtpnc.epa.gov

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- IRRIGATION-L: Irrigation issues
  mail the command "info Irrigation" to listserve@vm.gmd.de

- LAKES-L: International discussion regarding lakes
  mail the command "info Lakes" to majordomo@badger.state.wi.us

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- Land-And-Water-L: Food and Agriculture (FAO) of the United Nations electronic news letter
  mailthe command "info land-and-water-l" to mailserv@mailserv.fao.org

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- MARS_WATER: CNM Water Systems
  mail the command information mars_water to listproc@schoolnet.carleton.ca

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- MEH2O-L: Middle East water
  list-limnology,oceanography,aquaculture,conservation,ecology,etc.

mail the command "info Meh2o" to listserve@vm.tau.il

- MINAQUA new global discussion group on mineral water and related topics.
  To subscribe to MinAqua send e-mail to:
  ListManager@petra.fns.uniba.sk
  In the body of the e-mail type:
  join MinAqua

- NPSINFO: Non-Point Source Pollution control discussion group
  mail the command " info npsinfo" to listserv@unixmail.rtpnc.epa.gov

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- ORG-GEOCHEM: Organic Geochemistry
  mail the command "subscribe org-geochem" to:
  mailbase@mailbase.ac.uk

- PERF-WSO-L: Discussion list for PERF Water Shut-off Forum Members
  mail the command info PERF-WSO-L to LISTSERV@eva.dc.LSOFT.COM

- PONDS-L: Pond and lake managment, layperson focus
  mail the command "info Ponds-l" to listserv@execpc.com

- RIVERNET-INFO: Information for watershed activists
  mail the command "info rivernet" to majordomo@igc.apc.org

- RS-EARTH: Remote sensing discussion group
  mail the command "info Rs-Earth" to mailbase@mailbase.ac.uk

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- SCRIPT-L: IBM verses Waterloo SCRIPT discussion group
  mail the command " info SCRIPT-L" to listserv@uga.cc.uga.edu

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- SCRIPT-L: IBM verses Waterloo SCRIPT discussion group
  mail the command "info SCRIPT-L" to LISTSERV@VM.GMD.DE

- SCW-L: Supercritical Water Research and Applications
  mail the command "info SCW-L" to LISTSERV@MITVMA.MIT.EDU

- SEER-L: UNL Water Education Discussion Group
  mail the command "info SEER-L" to LISTSERV@UNLVM.UNL.EDU

- SOWACS: Soil Water Content sensor Discussion group
  mail command"info sowacs" to majordomo@aqua.ccwr.ac.za

- SWMGMT: UC-UCCE Soil and Water Managment Workgroup
  mail the command "information swmgmt" to listproc@ucdavis.edu

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- SWMM-USERS: Stormwater Management Modelling Software Users
  mail the command "information swmm-users" to listserv@uoguelph.ca

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- TDR-L : Time Domain Reflectrometry (sensing and monitoring equipment/process) Discussion group
  mail the command "info tdr-l " to listserv@listserv.acns.nwu.edu

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- TRICKLE-L: Trickle irrigation discussion list
  mail the command "info Trickle-l" to listserv@unl.edu

- TW-ENV: Taiwan environmental issues
  mail the command "info Tw-Env" to listserv@listserv.syr.edu

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New!

- WASTEWATER-MODELLING: Discussion on all aspects of wastewater modelling
  mail the command "info wastewater-modelling" to majordomo@hydromantis.com

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- WATER: World Bank Water Conflict Resolution Group
  mail the command "info Water" to listserv@umdd.umd.edu

- WATER: Water Sciences Network,
  mail the command "info Water" to listserv@gibbs.oit.unc.edu

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- WATER: CEAE Env. and Water Faculty
  mail the command "information water" to listproc@lists.Colorado.EDU

- WATER-AND-SANITATION-APPLIED-RESEARCH: Applied research in water &

sanitation
mail the command "info Water-and-Sanitation-Applied-Reseach" to mailbase@mailbase.ac.uk

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- WATER-DISTRIB-SYSTEMS: Discussion and information relating to water distribution systems
  mail the command "info Water-Distrib-Systems" to mailbase@mailbase.ac.uk

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- WATER-ED: Educational professionals conducting outdoor based aquatic science
  mail the command "info WATER-ED" to LISTSERV@UKCC.UKY.EDU

- WATER-ED
  mail the command " info WATER-ED" to listserv@uoguelph.ca

- WATER-L: Water quality discussion group
  mail the command "info Water-l" to listproc@listproc.wsu.edu

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- WATER-ON-LINE: Water related subjects,sources of information on the internet
  mail the command "info Water-On-Line" to listproc@ucdavis.edu

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- WATER_SEMINARS: Water Resources Seminar List
  mail the command "information water_seminars" to listproc@lists.Colorado.EDU

- WATERTALK: Texas Water Resources Institute news
  mail the command " info Watertalk" to watertalk-request@ageninfo.tamu.edu

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- WATERWISER: Waterwiser mailing list
  mail the command "info waterwiser-list" to listserv@listserv.rmii.com

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- WTeduc
  mail command "info Wteduc" to WTlists@uwin.siu.edu

- WTgis
  mail command "info Wtgis" to WTlists@uwin.siu.edu

- WTglobal

mail the command " info Wtglobal" to WTlists@uwin.siu.edu

- WTgwq
  mail the command " info WTgwq" to WTlists@uwin.siu.edu

- WThydrology
  mail the command "info Wthydrology" to WTlists@uwin.siu.edu

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- WTpolicy
  mail the command "info Wtpolicy" to WTlists@uwin.siu.edu

Kenneth E.Bannister
President - BANNISTER RESEARCH & CONSULTING
Owner - GROUNDWATER Mailing List
RR1 Box 292
Bridport, Vermont USA 05734
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