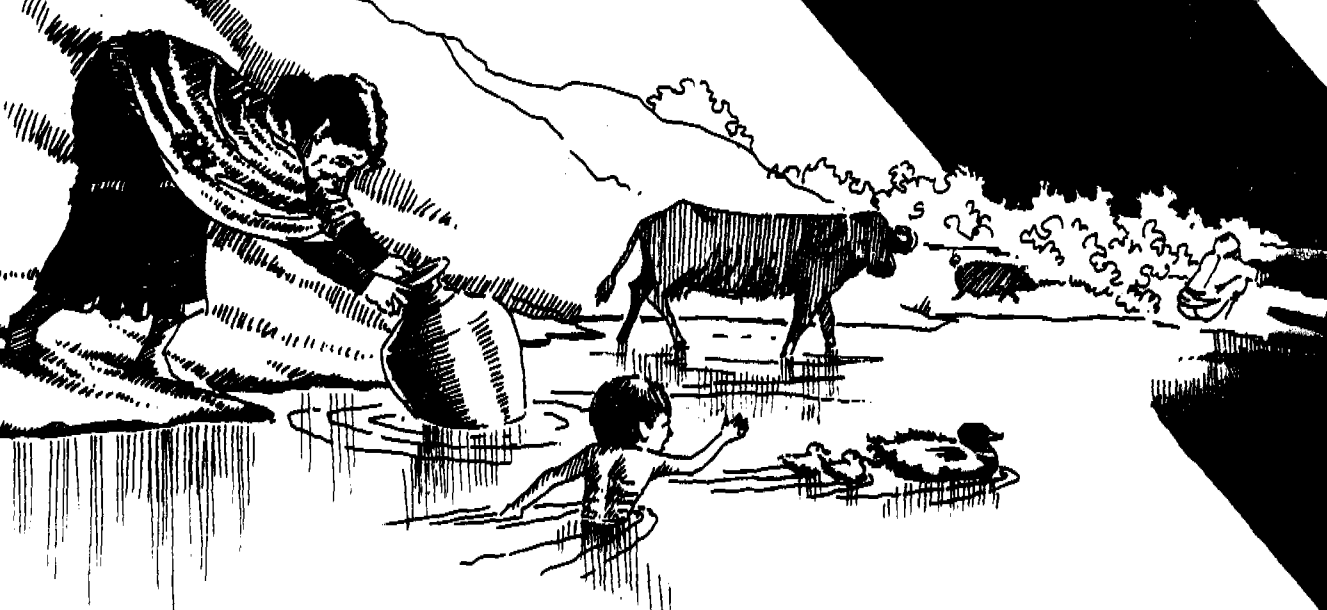


# Drinking Water and Sanitation Workshop

19th & 20th November, 1979

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## I N T R O D U C T I O N

### COMMUNICATIONS IS ESSENTIAL FOR DEVELOPMENT THEREFORE THIS DRINKING WATER AND SANITATION WORKSHOP WAS HELD

We meet problems everywhere, no matter what we do and how we try to achieve our objectives. Sometimes we leave these problems unsolved, without discussing them to find solutions, and the same mistakes are often repeated.

In Nepal, various agencies are involved in improving the living conditions of Nepalese people. Most of these agencies produce Communications and Educational materials for different audiences, but are not aware that other agencies are involved in similar activities.

In the course of UNICEF's Pre-test training courses of 1979, it was discovered that many agencies were producing Communications and Educational materials related to Drinking Water and Sanitation. However, there was little co-ordination between such agencies.

Hence, the Local Development Department, Central Panchayat Training Centre and UNICEF felt the need to organize an exhibit of education materials for drinking water and sanitation and to invite concerned agencies to join in a workshop.

The "Drinking Water and Sanitation Workshop" was held at Central Panchayat Training Centre on the 19th and 20th of November 1979, under the chairmanship of Mr. Shanta Bahadur Rai (Director General of the Local Development Department).

The workshop began with the active involvement by each of the different agencies in setting up a display of their own communication materials related to drinking water and sanitation. Then the participants briefly described their activities, their difficulties as well as achievements producing the communication materials displayed.

Officials from 20 different agencies participated in this workshop in order to discuss the problems of Drinking Water, Sanitation and Communications in Nepal. Participants were divided in three groups and the following guidelines were specially proposed for group discussions:

1. What are the problems related to water supply and sanitation in rural areas?
2. How can communications be used to solve those problems? This includes an educational campaign with training needed, resources at the local level, and time table.
3. How can the various agencies represented here co-ordinate in order to solve those problems?

Finally a reporter from each group presented the problems and recommendations to the rest of the participants.

This report was compiled from the notes of group reporters in the hope that the ideas presented will be useful to the agencies which are involved in improving the drinking water and sanitary conditions of Nepal.

INTRODUCTORY STATEMENTS

Mr. Karna Dhwoj Adhikari, Secretary, Home Panchayat Ministry

Basic drinking water and sanitation facilities are increasingly recognized as important to the economic development of our country.

The rural people are spending many hours every day fetching water. This time is an economic loss to the country. The recovery of this time and the creation of a sanitary environment would certainly help our national economic growth. The various agencies, working together, should try to find the financial help and human resources required to solve the water and sanitation problems of the population as a whole.

Based on numbers of requests for government assistance, we find that the rural people have the following order of priorities: (1) water supply systems, (2) suspension bridges, and (3) materials for schools and school improvements. Such demands are increasing every year, and HMG has as its goal to serve the entire population of the country with water by the year 2,000\*.

It has often been said that the living habits and public health practices of the rural people should be improved. But Kathmandu itself, as a metropolitan city of Nepal, also needs to be improved in this regard. We, the "advanced" people of the urban areas of Kathmandu valley, do not set a good example as far as maintaining a sanitary environment goes.

The main purpose of this seminar is to discuss the problems of the on-going Drinking Water and Sanitation Programme and to list recommendations which will be useful to the programme in the future.

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\* Through the combined material and manpower resources of the Local Development Department (LDD), the Department of Water Supply & Sewerage (DWSS) and the Water Supply and Sewerage Board (WSSB), HMG plans to extend water supplies from 83% to 100% of the urban population and from 6.6% to 66% of the rural population by the year 2000. Reference "International Drinking Water Supply & Sanitation Decade, 1981-1990, Rapid Assessment Report, 31 August 1978.

However, we should give first priority to the rural areas in improving water and sanitary conditions. In doing so, HMG cannot provide the services free of costs. The users, or recipients, will have to contribute also.

The LDD will be responsible for the construction of all the water supply systems in the hills and midlands which have a population range of 300 to 1,500, and for shallow tubewells numbering 16,500 in the terai region of the Eastern and Western Development Regions.

"It is the policy of HMG that community participation shall form an essential component in all rural development projects and the local authorities shall also be responsible for the operation and maintenance of the facilities", according to our planning document. In order to encourage community participation, DWSS and LDD will need strong support from the health and education sectors.

Mr. Shanta Bahadur Rai, Director General, Local Development Department

In Nepal, many different agencies are separately involved in developing the villages of Nepal with very little inter-agency co-ordination.

In this workshop, we will try to find out what strategies are being used now to communicate messages related to water and sanitation. We will discuss the behavioral and practical aspects of communications considering the locally available resources.

Let us try to find out which types of strategies should we follow; how to improve our educational materials making them more appropriate to communication needs in Nepali villages; how to expand water and sanitation programmes in rural areas; how to solve the problems related to drinking water and sanitation in our country.

Let us find methods of co-ordinating with other agencies so that we can work together effectively as a Task Force Committee to implement our programmes in rural areas.

Prabinja Man Singh Pradhan, Dept. of Water Supply & Sewerage (DWSS)

During the coming ten years, "the Drinking Water and Sanitation Decade", the DWSS will be responsible for the construction of all medium size water supply systems (populations over 1,500) in the hills and midlands. DWSS will also be responsible for shallow tubewells numbering 18,500 in the terai region of the Central and far Western Development Regions.

ORAL PRESENTATION SUMMARIES

Ms. Veronica Eichenberger, Non-Formal Education, Integrated Hill Development Project, HMG/Swiss Association for Technical Assistance

IHDP has several components including agriculture, water, sanitation, cottage industries, forestry, health, formal and non-formal education, Each sector co-ordinates with the other sectors.

Non-formal education includes many components, e.g. agriculture, health, water and sanitation. In this case it tries to create a literate environment for villagers by introducing reading and writing courses which contain information essential to the villagers in the project area along the Lamusangu-Jiri road.

Of all possible means of communication, the local newsletter has proven to be exceptionally effective in advertising messages relevant to the hill population, e.g. how to use waste water, how to build and use a latrine, how to make weaning food.

Mr. David Walker, Consultant, Integrated Non-Formal Education Programme Centre for Educational Research, Innovation and Development, Ministry of Education

This pilot project develops educational materials which encourage discussion. It also provides training for village "facilitators" in selected villages of four areas: Kapilwastu, Rasuwa, Baitadi and Bhojpur.

Flexible, flannelboard figures help village facilitators to communicate with illiterate villagers. The topics for discussion and the selection of materials are chosen by the villagers, and the village facilitators do not give answers to the villagers' problems. Instead, they help the villagers to visualize their own goals and the steps which might help them reach those goals.

Ms. Janaki Shrestha, Nepal Malaria Eradication Organization,  
Department of Health

Malaria Eradication efforts succeeded with its first programmes, and malaria cases gradually decreased until 1970. Since 1971, however, malaria has been on the increase. There are four kinds of malaria-causing mosquitoes in Nepal. (1) A-Minimus (2) A-Fluvialtilis (3) A-Maculatus (4) A-Annularis. One type, A-Annularis, has developed resistance to DDT.

The most severe problem of NMED has been the lack of people's participation in eradication campaigns. At first, extension workers communicated to villagers only verbally because they were not aware of the different communication media and their effectiveness.

Lately, the NMEO has been producing pamphlets, posters and bulletins with the help of the Health Education Section, Department of Health. Future plans include better co-operation with fisheries and forestry in activities such as larvivorous fish raising and tree planting where there is stagnant water.

Mr. Ukesh Raj Bhujju, Integrated Watershed Management Department  
of Soil and Water Conservation, Ministry of Forestry

For IWM, the education of villagers starts with an explanation of the water cycle: sea water evaporates and becomes clouds. The clouds cause rain. The rain water percolates through the ground, finally emerging again as spring water and seepage.

Rain water does not percolate in deforested areas. Rather, it runs on the surface, causing soil erosion and land-slides. Many water sources have dried up because the rural people have been cutting trees for many years without planting new ones.

The IWM uses different media to reach the following target groups: policy makers; professionals in soil and water conservation; land users (local leaders, farmers women); literate people (teachers, students); urban people; news media people; westerners.

Mr. Bhupendra Raj Pande, Training Materials Production Centre, and  
Bhuwan Bhadra, Women's Affairs Training Centre, Home Panchayat  
Ministry

These two organizations, TMPC and WATC, work together: one producing materials, the other using them for extension work.

The WATC carries out functional literacy courses, nutrition and sanitation projects in Bungmati, Chapagaun, Nalin Choka, Dadhikot and Man Maiju. Village women are trained for a year to become volunteer workers for their own communities. Their purpose is to motivate rural women to participate in different development activities, financed through income-generating projects.



Mr. Mohan Shrestha, Health Education Section, Department of Health

Most of the visual materials originally produced by HES were poorly understood by villagers. Since HES started pre-testing materials, the health messages they are trying to communicate are reaching more illiterate people.

HES, like many agencies, is suffering from the following difficulties: inadequate printing facilities, deficient transport and structure for materials distribution, insufficient manpower.

HES is using radio (spot announcements and Radio Doctor Series) to reach villagers and plans to produce a radio drama next year.

Mr. B.K. Sharma, World Neighbours

In Nepal, World Neighbours is helping to sponsor a Nepal Family Planning Association Project at Sindhu Palchowk district covering 35 Panchayats at present. Activities so far carried out by the project are: establishment of FPAN clinics; establishing nurseries for the introduction of fodder trees and grasses by importing improved varieties; introducing bull, buffaloes and rams of good breed to upgrade animals; distributing vegetable seeds; constructing smokeless chulos and pit latrines; installing piped water systems.

Another Project, Women's Skill Development, is functioning under the Nepal Women's Organization in Kathmandu. This Project is training women in sewing, knitting and weaving. Approximately 500 women have so far been trained by this project, which helps manufacture women's crafts and to export them to foreign countries. World Neighbours from its own resources, is trying to build up educational programmes with the help of film strips, including sound tracks, for extension use in the areas of Nepal.

Dr. Damodar Upadhaya, Integrated Family Planning and Parasite Control Project

There is a population explosion in Nepal, yet the family planning project of this country have fallen short of their goals. To remedy this, family planning was integrated with MCH activities. But FP/MCH still has not yet been able to curb population growth.

With the assistance of the Japanese government, an integrated family planning and parasite control project has been started. In Bhaktapur, IFP/PCP finds that 88% of the population are suffering from worms (hook, round and trichuras). Eradication of these worms is not possible by medicine alone. Prevention is the only feasible way through encouraging better personal hygiene habits and creating a sanitary environment.

The project seeks to first encourage community participation through parasite treatments which people can benefit from immediately and dramatically, and then introduce family planning concepts.

Ms. Cynthia Reader and Mr. Datta Tray Roy, UNICEF

UNICEF supports Nepal's Rural Water Supply and Sanitation programme primarily because adequate supplies of safe drinking water in villages can help bring down Nepal's alarming child mortality rate: 40% die before the age of five, many from diarrhoeal diseases.

UNICEF supports the communication effort in Nepal's Rural Water Supply and Sanitation programme by collaborating with various projects and Ministries in the design production of training manuals, report forms and teaching aids for extension workers.

UNICEF's communication unit trains government project staff in pre-testing visuals and texts which are intended for village audiences. Pre-testing means basically to ask people in the target audience what they see in visuals and audio-visuals in order to find out whether or not they understand the message the way the artist intended it to be understood. Pre-testing is done before the visual or audio-visual is produced in the final stage, i.e. before a poster is printed or before a radio programme is broadcast.

Pre-testing can be done with, for example, posters, pamphlets, flipcharts, flashcards and radio programmes.

Ms. Uma Shrestha and Nawang Tenzing Sherpa Community Health Programme (CHP), Shanta Bhawan Hospital

The Community Health Programme of Shanta Bhawan encourages the villagers of Lalitpur district to build latrines by providing them with slabs and adequate instructions of building latrines. The size of the concrete slab is 90cm.x80cm. and its thickness is 5cm. only.

Initially, the slabs were distributed in different villages of Lalitpur district. The villagers have built latrines and they prefer using slabs. However, some villagers misused the slabs for threshing rice. Considering this problem, CHP decided to distribute the slabs to the villagers through the chief of village panchayat (Pradhan Panch).

CHP is involved in building drinking water systems in five different panchayats:

|                     |         |
|---------------------|---------|
| 1. Asrang Panchayat | 9 wards |
| 2. Gimdi "          | 3 "     |
| 3. Ikudol "         | 7 "     |
| 4. Pyutar "         | 5 "     |
| 5. Thulaa Durlung " | 5 "     |

After the approval of a drinking water system by the district panchayat, an inspector visits the concerned village panchayat to survey the system and to establish a water committee. The inspector motivates the village water committee to collect a fund for the maintenance of the water system. The water committee is advised to deposit the maintenance fund in the saving account of a nearest bank.

The following priorities have been given by the villagers of Lalitpur district for the basic needs of water for:

1. Animals
2. People and their health
3. Farming

The reason for giving highest priority to water for the animals is that many buffaloes have died due to lack of water in Durlung, Asrang and Ikudole panchayats.

### WATER AND SANITATION PROBLEMS

In Nepal, particularly in rural villages, water is scarce and the available water sources are polluted by people and animals. Even though they may have to go miles to fetch water, even though they suffer from diarrhoea all their lives, villagers often do not realize their own capacity to change their situation. They seem reluctant to shoulder the responsibility of building their own water system.

Many political leaders try to influence the authorities to build water supply projects in their villages in order to acquire votes during election. Later, a conflict between elected and non-elected members of a panchayat may arise which results in serious damage to the water system or, because of a dispute, the system may be simply left incompleated.

Frequently, technical plans are made without consulting the village group leaders and without considering the needs and problems of the villagers. This creates a conflict between technical maps drawn by surveyers and conceptual maps drawn by the villagers. Thus, even more problems arise during the construction of water systems such as how to resolve disputes related to water rights; how to convince the villagers to volunteer their labour; how to ask for the villagers' participation; how to obtain more construction materials, where to build the water taps, and how to tackle the selfish motives of the villagers.

Sometimes villagers are frustrated and confused by the number of development activities taking place in the same panchayat or a village at the same time. Feeling exploited, they may balk at providing free labour for so many projects. The villagers may feel frustrated and exploited. In some cases, engineers and overseers have submitted false bills of wages while forcing the poor labourers to work freely.

It is particularly difficult to get villagers to volunteer their labour;

- a. if a system is constructed by voluntary village labour fails, breaks down and needs to be redesigned or rebuilt
- b. if villagers feel that the local leaders are going to be benefitted more than voluntary labourers.

Maintenance of water systems is very poor in Nepal. After the completion of a water system, the responsibility for maintaining the systems is not well understood by the villagers or panchayat leaders. Children break the water taps; farmers break the pipeline and try to irrigate their fields; villagers and children waste the water by leaving the water taps open; mosquitoes breed in pools of waste water.

Many water supply schemes that have already been installed in villages at considerable cost in time, funds, materials and effort are now not working because of lack of maintenance. Creating the conditions through which proper maintenance will be done over many years is the most important part of improving a rural water supply system.

Maintenance is not basically a technical problem. It is very much a problem of responsibility, understanding, communication and motivation. If these four things are present in high enough levels, any technical problems will be overcome. But solving the technical problems of maintenance without solving the problems of understanding and motivation etc. usually has little effect.

Motivation to improve a water supply system is usually highest before the work begins, and gradually declines as the work is in the middle of progress or as the project gets nearer to completion.

The villagers are not aware that they should drink safe water in order to live free from water borne diseases. Water sources are contaminated by people defecating near and above them. Villagers do not try to establish a sanitary environment in their homes. They are usually isolated and illiterate. They do not necessarily know that they have water and sanitary problems. They may have no idea about personal hygiene and the different types of parasites which cause illness and fatigue. The villagers use dirty water for drinking. They do not cut their nails and wash their hands properly before they eat. They wash their cooking utensils with dirty water. They defecate in the open fields. They keep their cattle inside their houses. They do not bathe and wash their clothes very often. All the filth is scattered around their houses. They do not understand the fact that a dirty surrounding is the best breeding place for flies, mosquitoes, bed bugs, lice etc, which eventually cause illness to a person. Even many school teachers also neglect to practice good sanitary habits which would influence the children.

Many water sources have dried up because the people have cut the trees. The villagers do not undertake to plant new trees to protect the water sources.

Perhaps the problems which we see as the villagers' problems, they do not see at all.

### Recommendations

1. Project planning should be made with the consultation of different men and women leaders of the village where the project will be implemented. Projects should serve the needs of the villagers, not only the needs of the political leaders.
2. Peoples' awareness of the need for a good drinking water system and sanitation should be raised through the use of pictures, posters, demonstrations, slide shows, radio programmes, group discussion and door to door visits by the field workers.
3. Demonstration can be a very effective method to convince rural people. If someone in the village starts keeping his surrounding clean, he can serve as an example by which people will be motivated to take up the activity. Similarly, someone growing vegetables can show to other people how it is done.
4. Education should not be confined to the classroom. It should extend into the community, to rural adults outside schools. In other words, the local teachers should teach and undertake activities that would raise peoples' awareness.

Trainers should create a literate environment in the villages integrating (i) water and sanitation (ii) nutrition and health (iii) agriculture and reforestation. Two different phases of non-formal education should include: A. Basic course of Adult Literacy and B. Advance Literacy course which should include a local newsletter relevant to the villagers' problems, arithmetic and construction works for small scale cottage industries involving women also.

5. Field workers should motivate the elected and non-elected members of a village to form a committee in order to deal with the problems of water and sanitation.

The technical supervisor should take advantage of the high motivation of the early stages to set-up the maintenance system then. Also, he should give basic training to the motivated villagers, who are interested in maintaining the system.

After the completion of a system, the panchayat or village water and sanitation committee should impose a tax on the water consumers, and the committee should punish the villagers who break the system or rules and regulations. LDD should install water meters in the village drinking water systems, if possible.

6. LDD should co-ordinate with all extension workers in order to achieve water and sanitary goals in the country as a whole by giving information and guidelines on how to get water and sanitary facilities. Many villagers do not know the official procedures to get those facilities, and knowledgeable technical personnel and/or reference materials should be made available to those people who are already interested in improving their surroundings, but don't know how to go about it.

At the same time all village panchayats should be made aware of the legal provision of the Gram Panchayat Act (1962), which defines the power and duties of the panchayat in relation to provision of water supply, sewerage and other sanitation facilities and collection of revenues.

7. All educational institutions should include water and sanitation as components of their curricula. The trainers and the school teachers should act as models to teach the trainees and the students effectively. School development committees should ask all schools to build and maintain their toilets as well as to keep their surroundings clean. School children should be taught how to improve water and sanitary conditions in their homes. School teachers should involve the parents of the students when they discuss community water and sanitary problems.
8. It is not possible to change bad habits by a single method of communication. Different media for different target audiences are needed, and even the best educational materials are worthless unless they are combined with good person to person communication. The following groups should be carefully considered as "change agents" in a communications and education campaign for drinking water and sanitation.
  - i. Water Supply overseers
  - ii. Women Social workers
  - iii. Extension workers
  - iv. Successful farmers or tradesmen
  - v. Panchayat Training Officers
  - vi. Panchayat Training Assistants
  - vii. Ex-Gorkha soldiers
  - viii. Foreign volunteers
  - ix. Literate men and women

### SPECIFIC COMMUNICATION PROBLEMS

The problems relating to the production of educational materials and the application of those materials in the rural areas were also discussed.

Some agencies have a budget for the production of educational materials. However, many do not have artists, script writers, pre-testers and necessary equipment. Some agencies have no budget at all to produce educational materials.

Many agencies have produced different types of materials, but they do not know which media are most effective. Some agencies have wasted a lot of money by producing materials which are difficult to understand, and even after pre-testing has shown that villagers do not understand these materials, the same materials are often reproduced without revision.

It takes 2 to 3 months to publish the educational materials. The commercial printers in Kathmandu are very expensive, slow, and make many mistakes. Most of the agencies do not have their own printing facilities. Scripts are not easily understood by the rural people because the scripts are in language which is too sophisticated.

Many agencies do not share their problems nor do they cooperate in materials production or make copies available to others. Too often, agencies work in isolation.

Because of the transport difficulties in Nepal and the lack of trained logistics people, the distribution of educational materials is inadequate. In many cases where the materials have been distributed, they have not been used properly.

### RECOMMENDATIONS FOR THE DESIGN OF A COMMUNICATIONS AND EDUCATIONAL CAMPAIGN

1. Economics may not be very important when a programme is conducted as an experimental project confined to a few places. However, once we try to implement a programme on a national scale,



the cost of producing educational materials and running the programme become a serious concern. In order to cut the cost of producing educational materials, cheaper methods should be used such as duplicating machines. The different agencies should co-ordinate and work together to produce materials which they all need.

2. The pictures, posters, puppets etc., that are applicable to a particular situation and place, may not be appropriate for another. If these materials fail to depict the local situation where they are being used, then they should not be considered for use in that situation unless they are modified to accurately reflect the local customs and traditions.
3. It may not be possible to have entirely different sets of materials for each and every village of Nepal, but perhaps we could produce 3 different sets of materials for the mountain, hill and terai populations.
4. Local dialect should be used for village audiences.
5. The message we are communicating to villagers should be based on the community's real needs and conditions. For example smokeless ovens were found to be inappropriate for houses situated at low altitudes, because the smoke from open cooking fires serves as a fumigant ridding the woodwork of the houses of worms. However, smokeless chulos are used successfully in colder, higher altitudes where worms do not attack the woodwork.
6. A heavy emphasis should be placed on using locally available materials and on training local people to improve educational materials. Video-tapes, film shows and slide shows should also be encouraged when and where that is affordable.
7. Artists and producers working in Kathmandu should be sent to the field so that they can have a clearer understanding of the people and places they serve. It was also expressed that in recent years an increase in attention to pre-testing has led to an improvement in the pictures and posters produced now over those of the past. However, there should still be more emphasis on quality rather than on quantity.
8. Adult villagers are not accustomed to looking at complex pictures and posters. Visuals should include only figures and objects which are familiar to villagers. However, illiterate boys and girls may understand pictures better than the illiterate adults do.
9. Inexpensive flip charts can be very useful when they are given to village adults, who may create formal or informal learning situations.

10. Village communicators should be selected for training. People have confidence in someone they have chosen from their own community and the villager who has been trained has a better rapport with community members than someone from the outside.
11. A rural theatre group, moving from one place to another, may also educate people by acting out village problems. Also, if villagers make up their own plays, they will be directly involved in the activity instead of merely listening.
12. To ensure that the materials address the needs and realities of village life, they should all be pre-tested.

CO-ORDINATION OF THE VARIOUS AGENCIES

Due to lack of inter-agency co-ordination, villagers are led to believe that the government sends different people with different messages one after another without making any significant contribution to the village.

The main focus of the discussion was on finding ways to establish co-ordination between the various developing agencies in Nepal so that development plans can be implemented effectively. To accomplish this difficult task, the workshop participants felt that the best start would be to establish a co-ordination at the central level comprised of one from each of the following ministries concerned with drinking water and sanitation:

- i. Water and Power Ministry
- ii. Forest Ministry
- iii. Home Panchayat Ministry
- iv. Education Ministry
- v. Agriculture Ministry
- vi. Health Department

This co-ordinating committee should design a nation wide communications campaign to support the drinking water and sanitation programme. Co-ordination at the top should be reflected at all levels of the administrative structure with a two-way exchange of ideas through panchayats and districts.

To further increase co-operation between agencies, the participants suggested that follow-up workshops be held. This first workshop gave a very good opportunity to exchange ideas about common problems. It is hoped that the recommendations provide some useful ideas for the design and institutionalization of an educational campaign for rural water supply and sanitation.

SPECIFIC EXAMPLES OF INTERESTING PROBLEMS ASSOCIATED  
WITH THE CONSTRUCTION OF VILLAGE DRINKING WATER PRO-  
JECTS IN NEPAL

1. District: Gorkha                      Village: Thatipokhari

The construction of a drinking water system for a rural village in Nepal is often beset with many problems which prolong, frustrate, or even cancel the project altogether. And even when these initial problems are successfully circumvented, and the project is completed, the water system may soon be broken down due to neglect, abuse, or unforeseen circumstances.

The technical problems encountered in construction of a water system are things such as difficult terrain for laying the pipeline, landslides and erosion which threaten to sweep away tanks, water sources which unexpectedly yield less water than planned for (or even dry up totally!), etc.

These are problems which are often clear and easily comprehended by the overseer in charge of construction, who can usually make a decision about how to cope with them.

Less obvious problems, however, arise from the "human factor". Because such projects are community efforts, often the project is unavoidably embroiled in local disputes, arguments, politics, and economics. Here, the problems that arise are rarely clearly defined or easily solved. Water rights of the source(s), location of tapstands, and division of labor are most often major problems, and until they are solved (if ever!) the future of the water system, even if it is eventually completed, is dim.

Human problems that plague water systems are things such as neglect (zero or inadequate maintenance attention), abuse (from children and curious adults), and deliberate sabotage (discontented villagers determined to punish the rest, or selfish ones who cut open a pipeline to irrigate their fields). These are all very real, and very common problems that have effectively destroyed many water systems.

The technical problems can be grasped, and dealt with by the overseer in charge of construction, who is trained to recognize and solve these problems. The human problems, however must be recognized and solved by the entire community, which is often the far more difficult task.

A specific case example of a project that faced considerable human problems is the village of Thathipokhari, in the Gorkha district.

Located on the flat lands near the Marsyangdi River, at the foot of a small range of hills, the village has always had a chronic shortage of water. The village is built around the crossroads of two important trails (one of which is the Pokhara-Kathmandu trail) and is the closest town to the Palungtar airfield. Thus, in the past decade the town has experienced a tremendous growth and is now a major bazaar along the trail. The majority of the population (which was approximately 500 persons) were Chettri and Newars, mostly shopowners who had merely established businesses in that town and were not truly local villagers in a permanent sense. Water sources for the village were a few scattered seepage springs (kuwaas) of poor quality and low yield.

A few years ago, the Indian Gurkha Pension Camp financed the construction of several piped drinking water systems for Thatipokhari and a few nearby villages, using sources located in the nearby range of hills. Unfortunately (according to village reports) the Indian technician in charge of constructing these projects was not personally committed to the efforts, made token appearances at the construction sites, offered poor guidance and assistance to the villagers, who ended up essentially doing the work to the best of their ability without any trained advice. The resulting systems were poorly designed, poorly constructed, never worked properly at all, and soon were partially or totally broken down. In the case of Thatipokhari, a very substantial labor effort was completely wasted, for no part of the system can be salvaged for a reconstruction project. As a result, the villagers are now understandably disinterested in rebuilding that system, even though it is the only possible system which can completely solve their water needs.

In the winter of 1979, they did agree to work on another system which was much smaller, and would only partially alleviate their water shortage. The sources in this new system were to be two springs located about one kilometer from the town.

The technical problems of the new system were serious. The combined flow of the two sources was still very low, and the vertical elevation difference between the lower spring and the town was just a few meters, which meant a large reservoir tank would be needed, located as close to the lower source as possible. The upper source was quite a bit higher than the lower source, but this added elevation was useless since the reservoir must be located lower than its sources.

There was no ready-made reservoir tank site, so one had to be created by excavating a terrace into the face of a low cliff. This was a major labor effort, and was greatly prolonged due to a small labor force. Although the village leaders were intelligent men and able to foresee the need for this system, the majority of the villagers, being businessmen only "temporarily" residing in Thatipokhari could not, or would not, see the need or advantages of the project. Thus the labor force was always small, and on many occasions failed to turn up at all, despite the constant urgings of the pradhan pancha and a few others.

In addition to the motivation problem, there was also a difficult water rights problem. In the early stages of the project planning, the pradhan made assurances that the water rights problem was taken care of, so long as a tapstand was built near the sources. Excavation of the reservoir tank site was finished, and the tank walls already well underway when the turmoil over the water rights again rose, and the resulting decision was that only the upper source would be used for the system, and the lower source left as was for the local farmers.

Although this was an equitable decision, it nevertheless ruined the effectiveness of the entire project. The system had been designed specifically for use of both sources, and the reservoir tank located accordingly. Without the lower source, there was not enough water to meet the village needs, and even if, at some future time, the villagers laid a new pipeline from another source much further away and piped that water into the reservoir tank, it still would be of no greater use since the tank was located too low to carry the additional water to the village. If it had been known from the beginning that the upper source only was going to be used, then the reservoir could have been built substantially higher, at a site where relatively little excavation would have been needed, and so that a new source could have been added in the future that would allow greater amount of water to flow down into the village.

Thus, even though this system was perfectly constructed and solidly built, it is still technically flawed due to the inability of the villagers to have quickly resolved their problems. Once again, a considerable labor effort had yielded nil results.

The prime objectives of the training programme was to build a water supply system integrating sanitation and health programmes. However, the villagers had thought that the trainers and trainees had come only to build a water supply system. The engineer and overseer trainees surveyed and designed the system. The village men, women and children carried the construction materials.

Additionally the trainers demonstrated how to build a pit latrine and a smokeless chulo, which confused some of the villagers about overseers' role. Were they building water systems, or were they building latrines and chulos?

## 2. Hyanja, 1/2 hour walk from Pokhara

Originally promised a 6-tap system, the Hyanja water system was extended to 9, then 13 taps. It took 1½ years to build the 9-tap system approved by LDD. Many villagers worked on the system. Men dug the trenches and more than 50% of the workers were women.

The system was completed 5 months ago. The system is working well and there are good supporting structures at each of the tapstands.

A 38 year old village mason named Rudra was chosen by the village to be the village maintenance worker. He was trained by LDD and received a complete set of repair tools. He is highly motivated. He cleans the tapstands every 15 days. He has found a small leak in the system which he will repair now that monsoon is over. The water committee originally said they would pay him 175 rupees per month, but they have changed their minds. They plan to raise 50 paisas per head, per year, but they have told Rudra he will have to collect the money himself. Rudra has gone 10 times to collect money, but hasn't succeeded in collecting any yet. Rudra would like to improve the water tap near his home to make a pond for cattle with wastewater and a place nearby to wash clothes.

Rudra and the school teacher, Damar, cannot manage to keep the children from playing with the watertaps. One tap was broken by children playing.

Both Rudra and Damar have charpis behind their houses, but they are not covered or lined so they are not sanitary. Both Rudra and Damar learned how to build pit latrines with slate platforms from an agriculture extension worker who stayed 9 years in the village about 20 years ago.

Other villagers made pit latrines 2 years ago when an NDS student spent the year in Hyanja. Most of the village children are still infested with worms.

In school, Damar teaches about germs and the importance of keeping flies off food and drinking from clean water sources. Rudra's oldest son Krishna is 10 years old and has learned about sanitation in school. His father can read a little because when he was 21 years old the agriculture worker taught him how to read using a functional literacy course prepared by the Institute of Education. That's when he learned how to make compost, plant fruit trees over old charpis and how to raise pigs and chickens.

Besides how to pay Rudra's salary, children damaging taps, and worm infestation there is another problem with the water system in Hyanja: the villagers insist on extending the system beyond the 9 taps. LDD recently cut the pipe, because the technicians say the source cannot provide enough water to keep extending the system. The Pradhan Pancha is angry.

- a. What are the good things that can be learned from the Hyanja experience?
- b. How could community participation be improved?

3. Thonche, Manang District

5 days walk from Dunre. LDD assisted the village to build a water system which consisted of 3 taps over a 3-4 kilometer distance. The water is coming now, but the pipe needs to be fitted to the rock for 100' and the pipestands are not secured. There is also no drainage for waste water.

The LDD water technician is leaving the village now. There is a water committee but the people are not willing to help finish the work. The people feel that the water project is finished. If it breaks down next winter, they will probably choose a maintenance technician to be trained by LDD.

4. District: Baglung                      Village: Ratnechaur

- a. A group of Peace Corps trainers and trainees arrived here Ratnechaur Village to construct a drinking water supply system. As they were entering the village, they saw the piles of HDP pipes stored on the open field. Some of the trainers and trainees checked the piped and found out that the pipes were in wretched condition (e.g. crooked and bent in several places).
- b. Later when the construction work started, 15 villagers were expected to come to carry the rocks for an intake tank and to dig a trench line. But only 5 villagers came to work because it was harvest time.

5. District: Nuwakot                      Village: Phalante

After the completion of a water supply system

Construction of an intake tank was completed and the tank was covered with plastic roofs to protect the purity of the water source. Reservoir tank was made on the upper part of the village and the water taps were distributed in different locations from upper part to the lower part of that village.

After a year a group of observers went to see and check the condition of the system.

- a. The plastic roof of that intake tank was broken.
- b. Some of the villagers were taking out the water from the reservoir tank using their buckets tied with ropes and some of them were washing their hands and feet by the reservoir tank. The water in the tank was polluted.
- c. The villagers from the upper part of the village were complaining about inadequate supply of water. On the other hand the villagers from down hill were satisfied because they had enough water to irrigate their nearby fields.



EXHIBITS OF COMMUNICATIONS & EDUCATIONAL  
MATERIALS

1. Central Material Production Centre  
Nepal Women's Training Centre

- a. Posters and flannelgraphs on village sanitation.
- b. Puppets for creating plays on nutrition, cleanliness and health, contaminated fruits.
- c. Photographs of village cleanliness campaigns.
- d. Booklets - sanitation, protecting foods from the flies, cleanliness and boiled water.

2. IHDP Materials exhibited concerning water and sanitation.

- a. Pictures and related reading texts from the integrated functional literacy course.

Basic course includes pictures and reading lessons on:

- Diarrhoea
- Drinking water
- Kitchen hygiene
- Water taps
- Latrines
- Dirty finger nails

- b. Monthly newsletter "Saghan paailaa".
- c. Picture story with commentary on how to make a latrine from the 1st. Functional Adult Literacy course (Advanced course) and one, how to make "ausadhi paani".
- d. Word Part game for literacy.
- e. Flannel board with Nepali word parts on cardboard.

3. Integrated Watershed Management, Department Soil/Water Conservation.

- a. Posters on: Forest Wealth; Methods of fodder cutting; Green vegetation is conservation; Grazing Firewood saving; Plantation by a family; Methods of tree planting. Forest of Nepal; Brushwood check dam; Terrace; Forest ecology; Water cycle; Forest conservation by fencing and Drinking Water etc.
- b. Display cases with models of soil erosion, brushwood, check dam, and land uses.

4. Health Education Section, Ministry of Health

- a. Posters on disposal of garbage, caring for a child with diarrhoea, malaria, personal hygiene.
- b. Photos of health education workshops.
- c. Booklets on personal hygiene (washing hands, finger nails, flies).
- d. Videotape on how to bathe a baby.
- e. Flipchart on "Feeding Your Baby".

5. German Volunteer Service

Water Supply maintenance Handbook (draft).

6. World Neighbors

- a. Slide set stressing Family Planning by showing importance of Planting Fodder trees, Colloquial Nepali language sound track.

7. Shanta Bhawan Hospital (Community Health Programme)

- a. Photos - Water System
- b. Posters - Latrine construction

8. Integrated Non-formal Education Programme (CERID)

- a. "Flexiflans" - movable flannelboard figures.
- b. Flip chart on "How to build a pit latrine".
- c. Serialized posters to stimulate village discussions.
- d. Cardboard figures with exchangeable heads, each with a different facial expressions, for story telling.

9. UNICEF

- a. Technical manuals produced with LDD and SATA (five).
- b. Filmstrips on:
  - "Caring for a sick child at home".
  - "Caring for skin infections and sores" and "Feeding your Baby" reproduced with World Neighbors.
- b. RD-sol packets produced by Royal Drugs, Ltd. with UNICEF assistance.

- d. Rehydration fluid recipe for mothers.
- e. Flipchart on medicine water (home-made rehydration fluid).
- f. Poster on home-made rehydration fluid (with Ministry of Health).
- g. Booklets on how to build a latrine and how to improve your village water system (produced with NDS).
- h. Pre-test version of a reforestation story book for former Gurkha soldiers.
- i. Pre-test version of a village maintenance worker's checklist (produced with German Volunteer Service).

10. Integrated Family Planning and Parasite Control Project

Posters on worms and treatment (three).

11. Department of Water Supply and Sewerage (DWSS)

Poster on water wastage.

Chart of water systems and population in Nepal.

12. Nepal Malaria Eradication Organization

- a. Posters on DDT spraying.
- b. Posters on filling stagnant water.
- c. Poster on malaria and treatment.

Preparation of the Village for Installation and Optimum use of a new Water System

- Objective 1: To demonstrate the connection between dirty water and stomach trouble.
- Objective 2: To demonstrate the connection between clean environment and health.
- Objective 3: To help villagers choose an appropriate (clean and sufficient) water source.
- Objective 4: To encourage people to talk about tap locations.
- Central locations throughout the village
  - Location which is easily drained.
  - Location where you can make a vegetable garden (keeping in mind that pipe can be used to carry water to a pond or garden).
  - Location where you can build a pond for animals.
- Objective 5: To communicate to villagers their responsibilities in constructing and maintaining a water system.
- To form a committee to administer the Water Supply System during and after installation (importance and purpose of the committee, how it works, how it is formed. Perhaps one person from each tap chosen to serve as representative).
  - To carry supplies from roadhead to village.
  - To carry sand, digging and carrying stone, making gravel (women and men together).
  - To dig trench for pipe and to bury it (3' deep).
  - To help with the excavation work for different structures (dig holes for water tank and in-take structure).
  - To support maintenance programme by contributing to a fund.
  - Each villager is responsible to see that system is not destroyed by children.
  - Villagers should also be made aware that they can receive help (materials, advice) for major repair work.
- Objective 6: To communicate to members of the water committee its responsibilities.
- To receive materials and be sure they reach village and are properly stored.
  - To organize voluntary labour for water system installation consultation with overseer.
  - To choose a maintenance technician (some mechanical ability, willing and able to learn how to maintain the system).
  - To organize a maintenance programme (collect money from villagers, pay technician, buy materials, divide cost by house or by person).
  - To organize voluntary labour for maintenance of the system (dig up pipe to fix it, once a year to bury the pipe where water has washed it off, repair water destruction at the source).

LIST OF PARTICIPANTS

ANNEX - D

Ministry of Home Panchayat

|  |  |
|--|--|
| Mr. Karna Dhwoj Adhikari, Secretary                | Home Panchayat Ministry<br>Tele: 11765             |
| Mr. Shanta Bahadur Rai, Director<br>General        | Local Development Department                       |
| Mr. Lekhman Singh, Asst. Engineer                  | " " "  |
| Mr. Rabindra Man Singh, Asst. Engineer             | " " "<br>Tele: 21497                               |
| Ms. Bhuwan Bhadra, Instructor                      | Women's Affairs Training<br>Centre Tele: 21581     |
| Mr. Bhupendra Raj Pandey, Audio-<br>Visual Officer | Training Material Production<br>Centre Tele: 21521 |
| Mr. Kameshwar Jha, Panchayat<br>Instructor         | Central Panchayat Training<br>Centre               |
| Mr. Trilok Singh Thapa, Chief                      | Population Education<br>Programme Tele: 21051      |

Water, Power & Irrigation Ministry

|  |                                       |
|--|---------------------------------------|
| Mr. Prabinja Man Singh, Superin-<br>tendent Engineer | Dept. of Water Supply and<br>Sewerage |
| Mr. Dhruva B. Shrestha, Division<br>Engineer         | " " "<br>Tele: 14539, 13744           |

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| Mr. Bimal Chapagain, Training<br>Officer                        | Nepal FP/MCH Project, Ministry<br>Health Tele: 12733 Ext. 24                  |
| Miss. Janaki Shrestha, Senior<br>Health Educator                | Nepal Malaria Eradication<br>Organization Tele: 14981,<br>11182               |
| Mr. Govinda Man Shrestha, Senior<br>Sanitarian                  | Epidemiology Division, Dept.<br>of Health Tele: 15050                         |
| Mr. Rajendra Basnyat, Senior<br>Sanitarian                      | Environmental Health Epidemiology<br>Division, Dept. of Health<br>Tele: 15050 |

Ministry of Education

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| Mr. David Walker, Resident Advisor               | Integrated Non-Formal Education<br>Programme, CERID Tele:<br>16840 |
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Ministry of Forest

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| Mr. Ukesh Raj Bhujju, Conservation<br>Education Officer | Integrated Watershed Management,<br>Dept. of Soil & Water<br>Conservation Tele: 13757 |
| Mr. Hakan Sjöholm, Conservation<br>Education Specialist |   |

Social Organizations

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| Mrs. Uma Shrestha, Health Educator<br>Mr. Nawang Tenzing Sherpa,<br>Overseer | Community Health Programme,<br>Shanta Bhawan Hospital,<br>Box 252 Tele: 21217                                       |
| Mr. Damodar Prasad Upadhaya,<br>Project Director                             | Integrated Family Planning<br>and Parasite Control<br>Project, Family Planning<br>Association Tele: 14789,<br>11403 |

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|  |   |
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| Mr. Everet Schouwerwou, Under<br>Ground Building Engineer  | German Volunteer Service<br>Tele: 15869                         |
| Mr. K. Khoshchashm, Sanitary<br>Engineer   | World Health Organization<br>Tele: 15232, 21437                 |
| Mr. B.K. Sharma, Training Officer  | World Neighbors Tele: 12789                                     |
| Mr. Leo Goulet, Project Officer  | United Nations Children's Fund                                  |
| Ms. Cynthia Reader, Information<br>& Communication Officer   | " " " "   |
| Mr. Datta Tray Roy, Pre-test<br>Co-ordinator   | " " " "   |
| Mr. Narendra Basnett, Artist   | " " " "<br>Tele: 14581/15124                                    |
| Ms. Veronika Eichenberger,<br>Formally In-charge, Non-formal<br>Education Section, (replaced by<br>Heidi Bachtold) | Integrated Hill Development<br>Project, HMG/SATA<br>Tele: 21428 |

COMMUNICATIONS NETWORK FOR DRINKING WATER & SANITATION

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Mr. Shanta Bahadur Rai, Joint Secretary  
Mr. Shankar Prasad Agrawal, Asst. Engineer  
Mr. Rabindra Man Singh, Asst. Engineer  
Mr. Arjun Rayamajhi, Asst. Engineer  
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Training Centre  
Tel. 21581

Ms. Chandani Joshi, Chief  
Mr. Bhupendra Raj Pande, Audio Visual  
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Training Material  
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Mr. Trilok Singh Thapa

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Ministry of Education

|  |  |
|--|--|
| Mr. Radha Raman Singh, Under Secretary       | Integrated Non-formal                                  |
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Dept. of Soil Conservation & Watershed Management

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| Mr. Manmohan Dhoj Joshi, Director General             | Babar Mahal. Tel. 15928                                   |
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Social Organisations

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| Dr. Rob Visser, Director                                | Dutch Volunteer Service S.N.Y., P.O. Box 1966, Kathmandu. Tel. 15869 |
| Mr. K. Khoshchasm, Sanitary Engineer                    | World Health Organisation Lazimpath. Tel. 15232, 21437               |
| Mr. Tom Arens, Chief                                    | World Neighbors, Hari Gaun. P.O. Box 916 Tel. 12789                  |
| Mr. Colin Glennie, Project Officer, WSS                 | UNICEF, Box 1187,  |
| Ms. Cynthia Reader, Information & Communication Officer | Kathmandu. Tel. 14581 15124  |
| Mr. Datta Tray Roy, Asst. PSC Officer                   | " "  |
| Mr. Narendra Basnett, Asst. PSC Officer                 | " "  |





अध्ययनबाट यो थाहा भएकोछ कि नेपालका ५० प्रतिशत ग्रामिण खाने पानी योजनाहरू पूर्णरूपले तयार नभएको वा ३ वर्षको अवधिमाने गम्भीर रूपले विप्रेको अवस्थामा पाइन्छ । श्री कर्ण ध्वज अधिकारीज्यूले (दायाँ तर्फ) राष्ट्रको आर्थिक विकासको लागि खाने पानी तथा स्वस्थ वातावरणको आवश्यकता माथि प्रकाश पार्नु भयो । श्री शान्त बहादुर राईज्यू (बहाँको दायाँ तर्फ) को अध्यक्षतामा खाने पानी तथा स्वस्थ वातावरण सम्बन्धी गोष्ठी (वर्कशप) को आयोजना गरिएको थियो ।

Studies have shown that almost 50% of rural water supply systems in Nepal break down seriously or are abandoned within 3 years after installation. Ms. K. D. Adhikari (above right) explained the importance of drinking water and sanitation for national economic development, Mr. S. B. Rai, on his right, was chairman of the workshop discussion.



विभिन्न कार्यालय वा संस्थाहरूको बीचमा प्रभावकारी समन्वय स्थापना होस भन्ने उद्देश्यले सामग्रीहरू तथा विचारहरूको आदान-प्रदान गर्नआएका सहभागीहरूले भने, 'यो गोष्ठी शुभारम्भ मात्र हो' ।

Better co-ordination and the free exchange of materials and information between agencies was called for by the participants who said, "This workshop is only a start".



खाने पानी तथा स्वस्थ वातावरण सम्बन्धी योजनाहरू तर्फ गाउँलेहरूलाई सामुहिक छलफलमा प्रोत्साहन दिनको लागि चित्रहरूको प्रयोग गर्न सकिन्छ ।

श्रव्य-दृश्य सामग्रीहरूको प्रदर्शन र उत्पादन सम्बन्धी व्याख्या गर्न आएका बीस जना सहभागीहरू मध्ये (१) श्रीमती भुवन भद्रा, नेपाल महिलाप्रशिक्षण (माथि बायाँतिर)

(२) श्री उकेश राज भुजु, एकिकृत जलाधार सहर नियन्त्रण तथा भू-उपयोगिता व्यवस्थापन (माथि दायाँतिर)

(३) श्री बेरोनिका आइकनबर्गर, सधनपहाडी क्षेत्र विकास योजना; (तल बायाँतिर)

(४) सुश्री जानकी श्रेष्ठ, नेपाल ओलो उन्मूलन संघ (तल दायाँतिर)

Pictures were used to stimulate group discussions in villages, encouraging people's participation in drinking water and sanitation projects. Among the twenty participants who displayed and described audio-visual aids from Nepal were Bhuwan Bhadra, Women's Affairs Training Centre (above left); Mr. Ukesh R. Bhujju, Integrated Watershed Management (above right); Veronica Eichenberger, Integrated Hill Development Project (below left) and Miss Janaki Shrestha, Malaria Irradication of Nepal. (below right).

