

## PROMISING APPROACHES IN WATER RESOURCES MANAGEMENT (Final Draft)



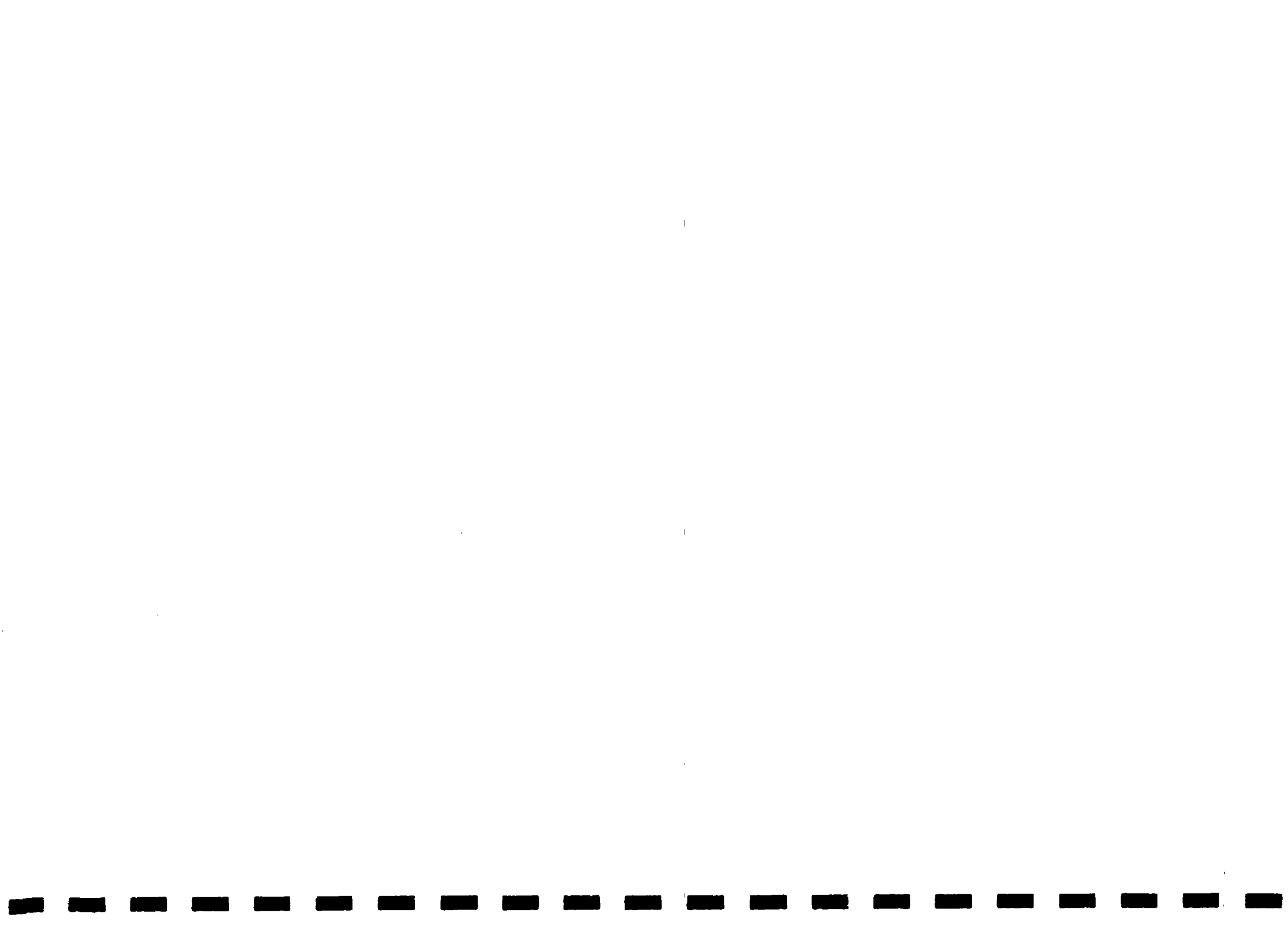
### Case Studies in:

- I. Kharjyang Village Development Committee, Gulmi district
- II. Banganga Village Development Committee, Kapilvastu district

August, 1997

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Rural Water Supply & Sanitation Project  
Lumbini Zone, Nepal



**List of Acronyms :**

CDO	=	Chief District Officer
DDC	=	District Development Committee
DDP	=	District Development Plan
DFO	=	District Forest Office
DHM	=	Department of Hydrology and Meteorology
DIO	=	District Irrigation Office
DOI	=	Department of Irrigation
DSCO	=	District Soil Conservation Office
DWSO	=	District Water Supply Office
FCHV	=	Female Community Health Volunteer
FINNIDA	=	Finnish International Development Agency
HES	=	Health Education and Sanitation
HMG/N	=	His Majesty's Government of Nepal
IRC	=	International Water Resources Sanitation Center
LDO	=	Local Development Officer
MEP	=	Ministry of Environment and Population
MHPP	=	Ministry of Housing and Physical Planning
MLD	=	Ministry of Local Development
MoWR	=	Ministry of Water Resources
ENA	=	Nepal Electricity Authority
NGO	=	Non Governmental Organization
NPC	=	National Planning Commission
NRS	=	Nepali Rupees
O&M	=	Operation & Maintenance
PRA	=	Participatory Rural Appraisal
RWSSP	=	Rural Water Supply & Sanitation Project
SO	=	Support Organization
TBA	=	Traditional Birth Attendance
UC	=	User Committee
VDC	=	Village Development Committee
WRM	=	Water Resources Management
WSSC	=	Water Supply and Sewerage Corporation
WUC	=	Water User Committee



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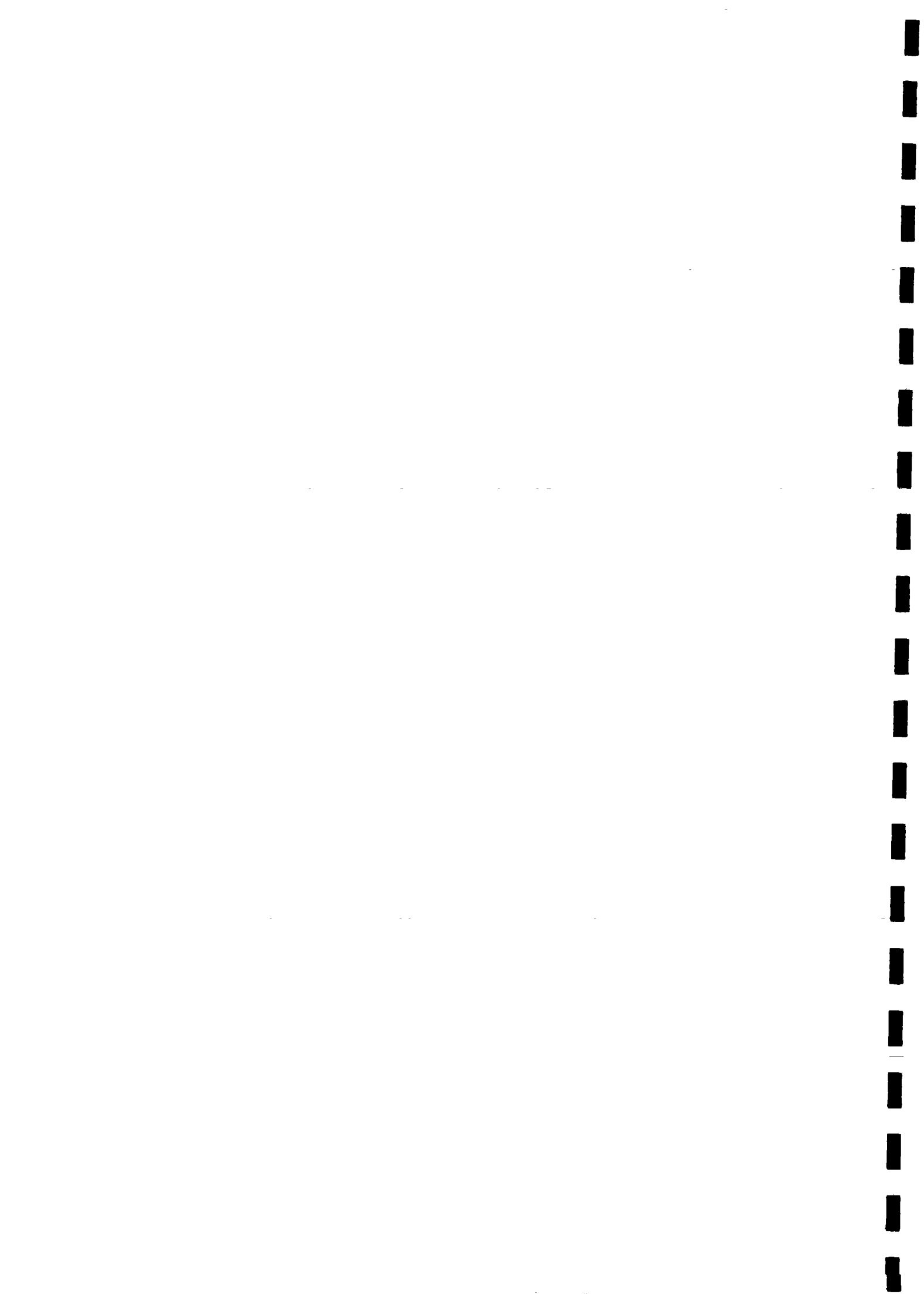
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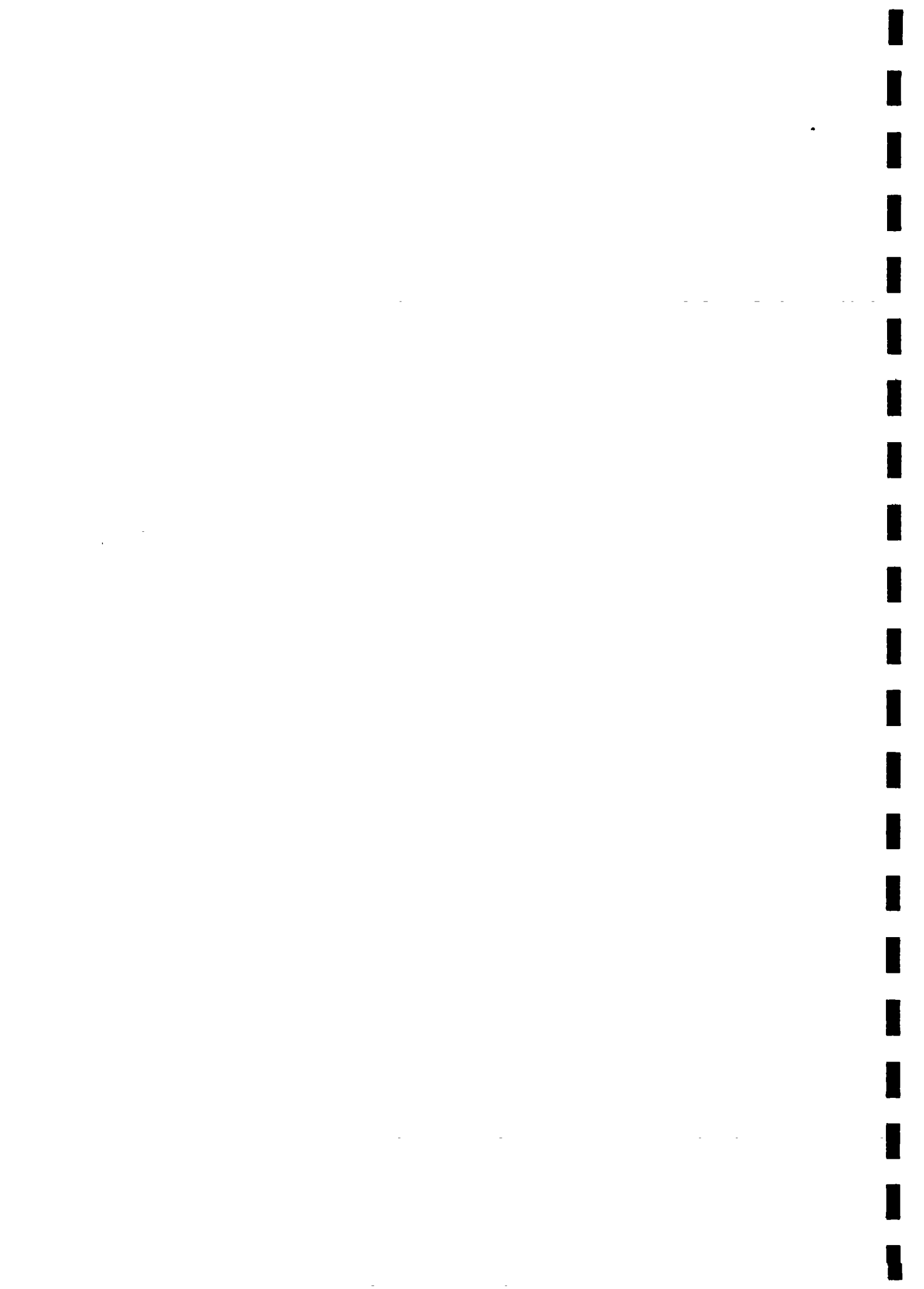
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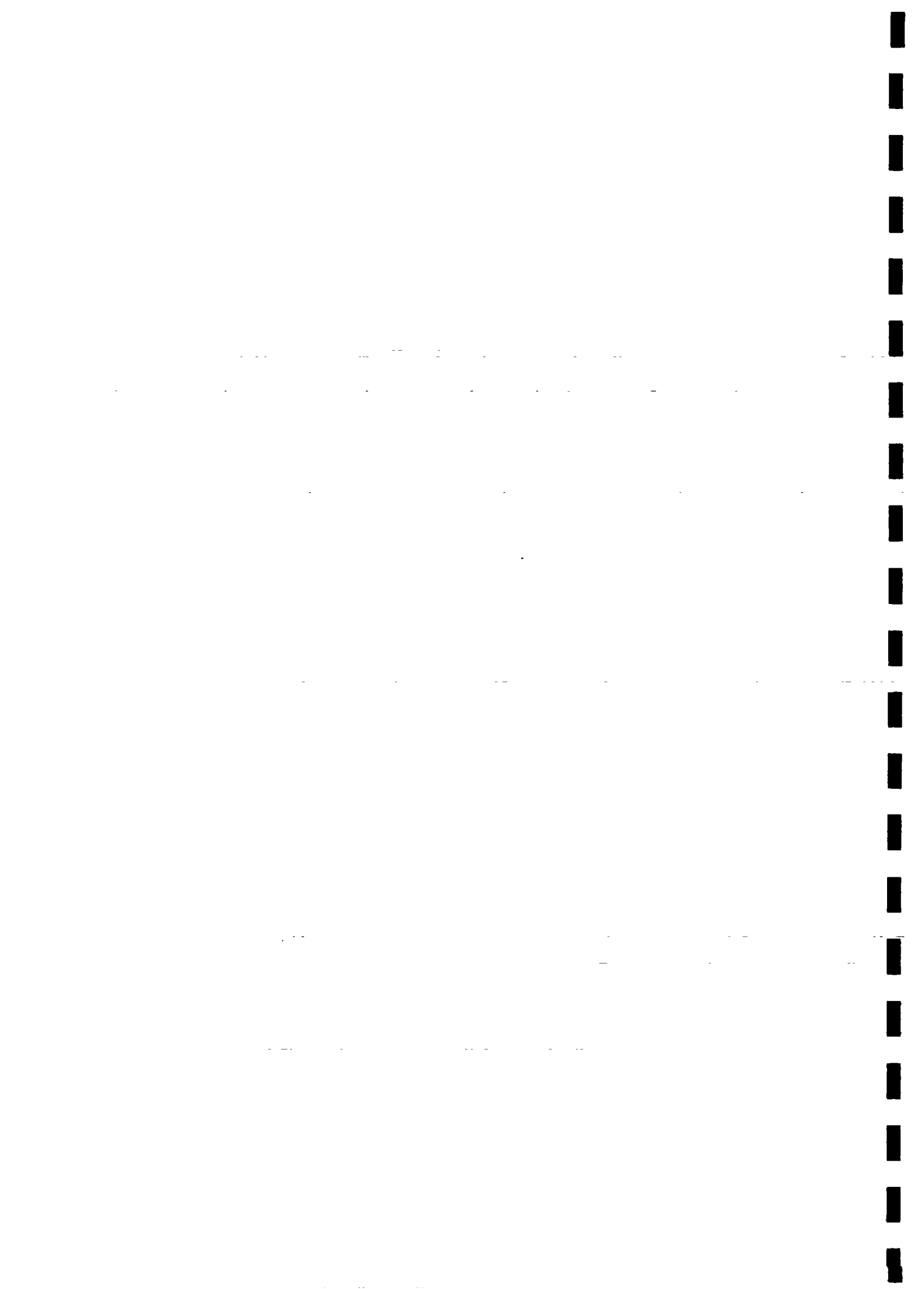
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**Water Resource Management, An Assessment Study**  
**In Kharjyang VDC of Gulmi District & Banganga VDC of Kapilvastu District**

**Lumbini Zone, Nepal**

**Executive Summary**

**Introduction**

The IRC International Water and Sanitation Centre, together with the United Nations Development Programme (UNDP), initiated the project 'Promising Water Resources Management Approaches in the Drinking Water Supply and Sanitation sector'. The main objective of this project is to "Assess, Document and Disseminate project experiences with the principles agreed in different international seminars and forums including Dublin, related to water resources management". The underlying aim of the project is to contribute to improve WRM practices. Based on the agreed framework for the assessment in the preparatory workshop, which was held in The Netherlands from 20 to 29 November 1996, field work has been carried out in two different scheme areas of the FINNIDA assisted Rural Water Supply and Sanitation Project in Lumbini Zone, Nepal. Rural Water Supply and Sanitation project has been working since 1990 in this zone. The outcome of the study is based on the rural context of Lumbini zone, Nepal.

**A. Study Area:**

The case selection for study purpose was done keeping in view mainly; the following factors:

- Geographical feature ( study area should represent both hill and terai.)
- Social settings should represent ethnic groups to a large .....
- It focused on one promising project in Drinking Water Supply and Sanitation and one promising project in Irrigation. However general information regarding WRM have been collected for both programmes in both the study areas.

Based on above mentioned criteria following schemes were selected for the study.

1. Kharjyang Village Development Committee in Gulmi District (Hill Area).
2. Banganga Village Development Committee in Kapilvastu District (Terai Area)

Both the study area Village Development Committees were the project scheme areas in the first phase (1990-1996) of RWSSP. There are established water user's committees basically looking after the operation and maintenance part of drinking water schemes and irrigation systems. People in both these areas are very much aware of the participatory methods in community development works. They have been doing the operation and maintenance of their water supply schemes and of the canal system as well as implementing small new systems in a participatory method.

Social setting in both the study areas is more or less similar. In Banganga area literacy rate is slightly more than that of Kharjyang VDC. Most of the people in Banganga area are immigrants from the hills. Therefore ethnic composition of these people is Brahmin, Chhetri, Magars, Kami, Sarki, etc which in case of the Kharjyang is also the similar.

The study has been done putting equal weightage on the drinking water and the irrigation sector management by the community. As stated earlier these are the two main different water uses sectors in rural communities of Nepal and only uses in the study areas which have a changing priority from place to place and case to case. Similarly in the study areas, drinking water has more priority and considered as a felt need in case of Kharjyang VDC whereas irrigation system has the top priority in case of the Banganga area. Therefore, drinking water system and the irrigation systems of Kharjyang and Banganga respectively were given more focus during the study.

**B. Methodology Used:**

To carry out the study in each district an assessment group was formed, which comprises members representing from the concerned DDC, Chair person of Village Development Committee, chair person of water user committee, 2 persons from the project support unit and one from the district support unit of RWSSP. To address all guiding questions under each principles, it was found essential to organize





the workshops at different levels. As per the initial plan, there were four levels at which the workshops were thought to be held on. They were:

- |                    |          |
|--------------------|----------|
| 1. Community level | 2 events |
| 2. District level  | 2 events |
| 3. Zonal level     | 1 event  |
| 4. National level  | 1 event  |

Later on, based on the discussion and decision made by assessment group, it was planned to be three different levels, where the Zonal level workshop was merged into the National level. With introduction of theory of decentralization, district level is given all kinds of authorities as a local government who is fully responsible for micro planning and the national level is functioning as a policy making and macro planning ministry level. The concepts of regional level functionaries is seen to be very useful and essential from the coordination point of view but the zonal concept has been somehow out dated and disappearing in practice. This was the main reason to merge the zonal level workshop into the National level

#### **Community Level Workshop:**

This was considered as the lowest appropriate level to make an assessment study in relation to WRM practices. People are managing their water systems; like drinking water schemes, irrigation schemes, water mills, small hydel power projects etc. in their own traditional ways from decades and are being benefited fully or partly from these facilities. Various sectoral agencies are involved in such programmes nowadays, but still the share of the private level is quite a big in water sector. In the irrigation sector there are some community level management examples in Nepal, for right from construction stage to the operation and maintenance which can be considered as an excellent example. People have developed the necessary ideas/technologies and skills at their own and with that skill they have been able to solve the problems in the process of making systems. We can sight an example of few big tunnels (made for irrigation canals) in Nepal which were constructed long before (even 10s of decade before) with the help of simple ordinary tools. Some of such canal systems have a culturable command area of thousands of hectares which run fully in the management of small care taker groups without any external supports.

Assessment group members, Village Development Committee members, User's Committee members and community people were the participants in these workshop.

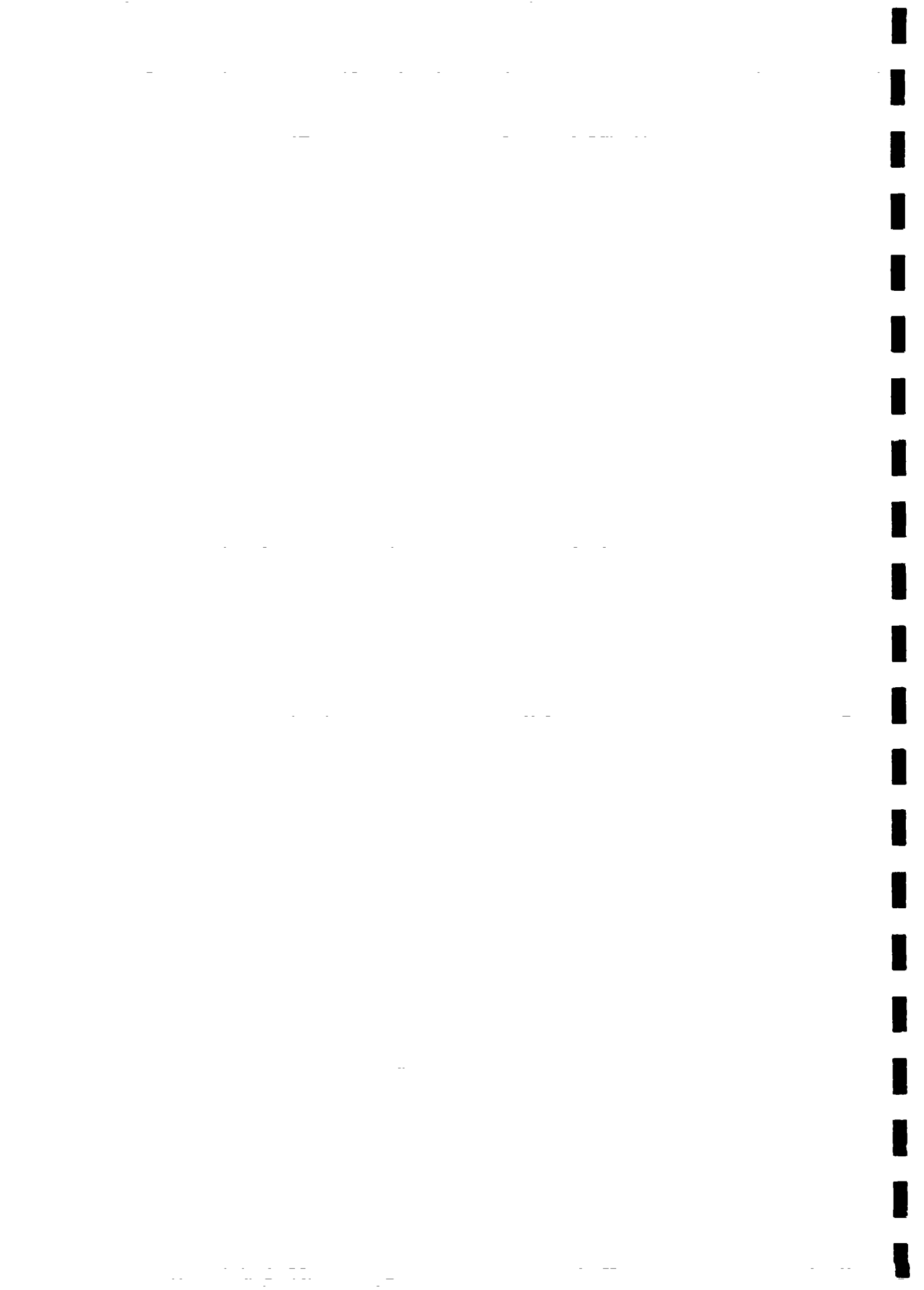
#### **District Level Workshops:**

To get information on several guiding questions under WRM principles, the district level workshops were found essential to be organized. DDC, a responsible district level elected authority, concerned water sector governmental line agencies and other non governmental agencies have their several activities following several approaches in the district. District level planning process, program prioritization, implementation process and involvement of beneficiaries and sustainability aspects of the water related programs were the key issues to be discussed in this seminar. In addition, steps taken in direction for better management of water resources in the districts were also the major agendas of the workshops. New policies/acts related to the WRM being formulated at the central level have to be checked for their validity at the district level and all kinds of problems coming up from the communities are to be listened and solved at this level.

Assessment group members, District Development Committee members, concerned Village Development Committee members and district level Line Agencies chiefs were the participants in these workshop.

#### **National Level Workshop:**

To have all detail information and a thorough idea for some of the guiding questions under some principles, it was found necessary to organize a national level seminar. Various aspect like, policy matters, stakeholders role/involvement, gender perspective in decision, water revenue collection etc. in water resources management are the major issues to be discussed and findout the actual situation prevailing in the country

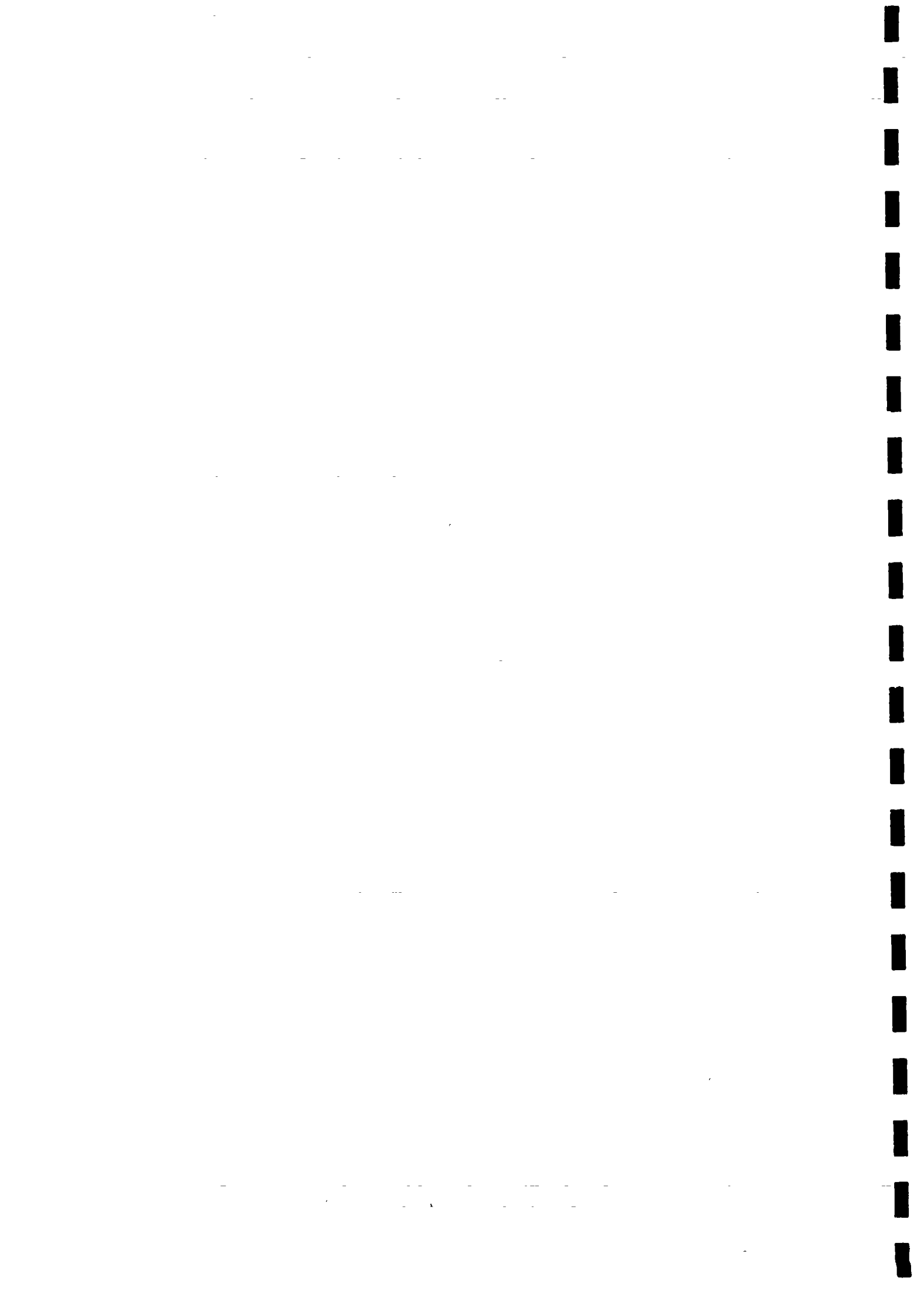


Assessment study at each levels were carried out by using different Participatory Rural Appraisal (PRA) tools and methods. Followings are the steps which were followed in the district and community level WRM assessment workshops;

- I. Organized a half day meeting with the project staff about objectives of the study and activities to be done, expected role of the person and their time as a team members etc. Discussed with Team Leader and included the assessment study in the project workplan.
- II. Organized a short meeting with district level planner/leaders of concerned districts and formed a WRM assessment group in both the districts.
- III. The final work plan for assessment study purpose has been prepared by the assessment group
- IV. To generate the information, followed activities in the workshops are listed below;
  - a) Explanation about .
    - objectives of the WRM assessment workshop
    - activities to be done during workshop
    - expected role of all participants
  - b) Village mapping
  - c) Discussion on each principles; questionnaire were prepared in Nepali
  - d) Group work; to identify the problems/solutions/recommendation
  - e) Pocket charts
  - f) Observation visit to the sources and to the systems
  - g) Interview with key persons
- V Visited district level line agency offices and water users committees to get supportive information eg; District Development Committee, District Water Supply Office, District Forestry Office and so on.

#### C. Results :

- I Helped to identify the existing water sources in the study area, their uses for different purposes, management at community and district level, government's policy and people's expectation to improve the situation etc.
- II. Although people are aware about the gradual depletion of the source yield in most of the water sources, efforts made so far for conserving the potentials are quite minimum.
- III There is not a clear national policy/act for WRM, in absence of which it is felt a great difficulty to manage water sources properly on community and district levels.
- IV In some cases it was seen that community/users are managing water resources for different uses (different sectors) very efficiently from decades before, but still they feel some external support necessary especially on policy and technology matters. Irrigation project in Banganga Village Development Committee is the most excellent example which is running for more than 70 years in this area and fully managed by the community without any external support. Its irrigated command area is about 4000 hectares, quite significant.
- V Regarding gender balance; women's involvement is lacking (negligible) in decision making body process. People are not negative for their involvement but they have not internalized the importance of their role since both (men/women) have not experienced any "major" problems in the systems. From all level expression is that women's involvement should be encouraged so that they will come forward and participate gradually in the development activities.



#### **D. Lessons Learned:**

##### **Successes :**

##### **Main basis of successes of the study are due to:**

- I. Excellent participation in the workshop at all level.
- II The experienced communities (on their own basis) in regard to the WRM.
- III. Very much appropriate and timely study in the context of Nepal. Due to lack of proper management of water sources, lot of disputes in water use and water rights are coming up day by day.

##### **Weakness in the study :**

- I. Least participation and quite low interest was found in the workshop at both community and district level, on principle no. 6 and 8. It is because these principles have not been internalized till now by the communities in Nepal.

##### **Open Issues :**

- I. Gender issues/balance in water supply and sanitation.
- II. Tariff system to be initiated and its importance/urgency is important but where and how much? in rural context: How?
- III. Government's support at what level and how?
- IV. Types/kind of plants to be planted around the catchment area.
- V Control of settlement around the catchment area.
- VI Definition of catchment area?
- VII. In case of some source used by different people for different purpose, how to define the stakeholder and their role?

#### **E. Conclusion/Recommendation :**

- I Launching awareness programs regarding the 8 principles of WRM would be better in the community and district level to a larger scale. People are found interested to know and get more ideas for water sources preservation and their efficient use.
- II Traditional methods being followed in the communities for WRM are to be taken into consideration seriously during planning and implementation of water system.
- III Conservation of water sources is presently, a prime need felt by all corner in the society but yet to be emphasized on the planning desk. Appropriate measures for water source conservation to be identified and programs are to be planned to practice them.
- IV. Government should bring water right policy as soon possible. It is urgent to pay attention in WRM from national level as well.
- V Community should be given the responsibility and should be supported financially and technically as and when necessary in regard to the WRM activities.
- VI A permanent institution(s) should be developed or responsibility should be given to the existing agencies to build the capacity at local level.
- VII. WRM activities are to be included in the programmes like construction of water supply, irrigation and roads as an integral part.
- VIII. Plants species which are friendly to water source are to be grown and distributed to the communities.
- IX. Alternative options for fuel like bio-gas plants should be introduced. In the same manner alternative fodder plants could also be introduced
- X Water Supply and Irrigation systems should be technically sound enough to prevent losses of water and to prevent the losses of natural wealth. For instance, in Banganga Irrigation system, due to lack of intake structure there is a loss of thousands of trees every year for making temporary diversion dams.



## **Preface:**

To carryout the assessment study, two assessment groups were formed in two different districts which comprises 8 members in Gulmi and 7 members in Kapilvastu district. These assessment groups were represented by the Project staffs, Village Development Committee members, District Development Committee members and User's Committee members. There was a slight modification by the assessment group in the original planning by changing the study area in Gulmi district. The study area were

1. Simichaur VDC Gulmi district, (hill area) which later on was replaced by the Kharjyang VDC in the same district.
2. Banganga VDC, Kapilbastu district ( terai area).

First of all I extend my sincere thanks to Mr. Dinesh Chandra Pyakurel, Director General of the Department of Water Supply & Sewerage for his professional guidance to me in organization of the National level workshop and in preparation of this report.

Mr. Kari Leminen, Team Leader of RWSSP, is most thankful, for showing great enthusiasm and positiveness towards this WRM study program. Further he made this assessment study very easy by incorporating it, in the project workplan .

I must acknowledge Mr. Hans Van Kampen, Deputy Team Leader of RWSSP, for his great support to me in completion of this report.

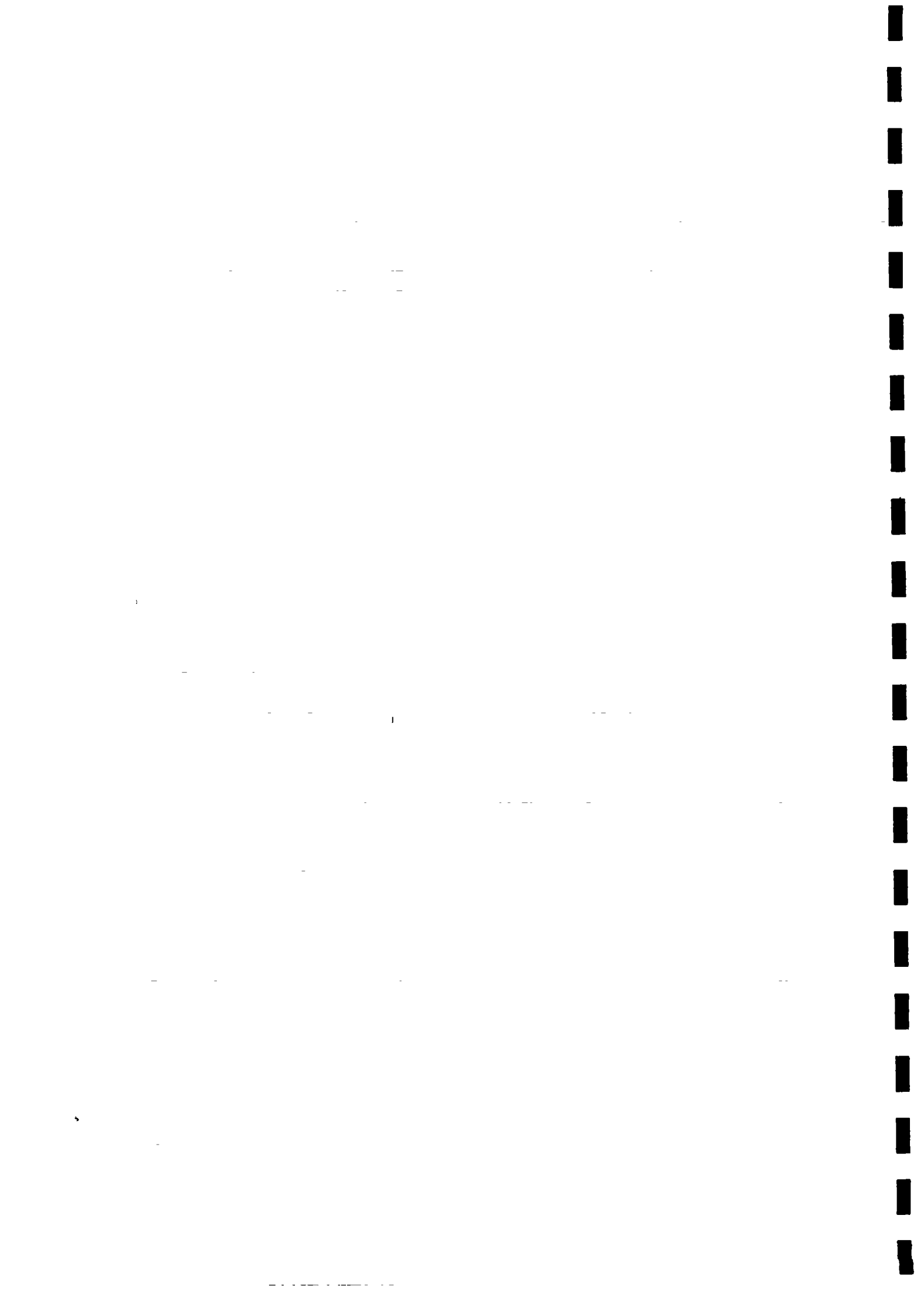
Ms. Kalawati Pandey, Health and Sanitation Advisor of RWSSP deserves especial thanks for her great contribution in all workshop events at Community, District and at the National level and for her great contribution for preparing the report.

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**Ramesh Chandra Bohara**  
**District Development Planning Advisor**  
**RWSSP**





## Introduction:

### Chapter 1: Background (Study Zone):

The IRC International Water Resources and Sanitation Centre, together with the United Nations Development Programme (UNDP), initiated the project 'Promising Water Resources Management (WRM) Approaches in the Drinking Water Supply and Sanitation sector'. The main objective of this project is to assess, document and disseminate project experiences with the principles agreed in Dublin related to water resources management. The underlying aim of the project is to contribute to improve WRM practices. Based on the agreed framework for the assessment in the preparatory workshop, which was held in The Netherlands from 20 to 29 November 1996, field work has been carried out in two different scheme areas of the Rural Water Supply and Sanitation Project in Lumbini Zone, Nepal.

The Lumbini Zone, working area of RWSSP, has two distinct geographical features. Its three district namely Arghakhanchi, Gulmi and Palpa are in the hills, whereas Kapilbastu, Rupandehi and Nawalparasi districts are in the Terai area. Zonal map showing a division between hill and terai is presented in the figure B Settlement pattern, cultural setups, literacy, economic status, languages spoken, social norms and values, gender perspective in and among ethnic groups etc. varies widely from one to another place of the project area.

Lumbini Zone is located in the Western Development Region of Nepal. It consist of 6 districts covering an area of 9161 sq.km. with a total of 408 VDC's and 4 municipalities. Fifty percent of the clusters have less than 21 house holds per settlement. The rural population in the zone consists of 2,117,486 with 326,768 households as of the field survey conducted by Rural Water Supply and Sanitation Project, Lumbini Zone (Funded by FINNIDA/HMG) during 1992-93. It consists of 11,653 village like settlements - clusters

### Drinking Water Supply Situation:

The distribution of population as per their primary source for drinking water shows that about 39% get their water from shallow tube wells (ground water resource) and 95% of the people have access to perennial source. Of the total population less than one fourth (24%) of the population are served by piped water supply schemes constructed by HMG, DONOR, NGO/INGO's or Private. About 60% of the population can fetch (go, fill the vessel and come back) their water within 15 minutes and the rest have to spend more than 15 minutes.

Based on the field survey, the coverage of water supply has been broadly categorized into four service levels by RWSSP, which are further based on the criteria of Quality, Quantity, Accessibility, Continuity and the Reliability. This follows in Lumbini Zone as:

- |                                |        |
|--------------------------------|--------|
| • Service Level 1 (Good)       | 14.67% |
| • Service Level 2 (Acceptable) | 41.48% |
| • Service Level 3 (Poor)       | 26.68% |
| • Service Level 4 (Very Poor)  | 17.17% |

In the terai area of the Lumbini Zone, private sector investment has a major role in the development of water supply. The result of the survey reveals that the main source of water for terai has been seen to be ground water resource to the extend of about 70% of the total population.

Of the total population served by the improved water supply schemes, about 61% are being served by improved water supply implemented through private sector investment. Of the total nearly 54000 number hand pumps about 49,000 handpumps have been found installed by the private sector. About 45,000 of them are the Local No. 4.

Distribution of population as per their primary sources for drinking water supply in Lumbini Zone:

Shallow Tube Well	38.61%
Gravity	23.89%
Open Well (Dug Well)	10.97%
Kuwa (Traditional Spring)	9.64%
Unprotected Spring	7.27%
Stream	4.10%
Protected Spring	1.33%
Artesian well	1.28%
Pumping	1.00%



Canal (Kulo)	0.85%
Pit	0.56%
Rower Pump	0.17%
Lift tube well	0.33%

Water, an essential commodity for life has two major uses in rural communities of Nepal, domestic use and use to irrigate the agricultural land.

It is also true that water resources management is such a task from the perspective of the community that it goes more efficiently together with the sector where it is most needed. In case of the hill, drinking water has the top priority among all water uses, because people in some cases have to spend a couple of hours to fetch water. Irrigation is the second priority of hill people in the water sector, which may be due to less cultivable land and the rugged terrain above the water sources. At the same time terai people have more priority on the irrigation rather than the drinking water. It is because they have abundant sources in the form of ground water which they can draw for domestic use within an affordable range. This is not always viable in case of irrigation to draw the ground water. Other uses of water has less priority especially in the study area since there are no established industries which run by the water.

#### **Main selection criteria of study areas were:**

- Study area representing from both hill and terai area.
- It should cover different ethnic groups and different social settings.
- Focus on one promising project in Drinking Water Supply and Sanitation and one promising project in Irrigation. However general information regarding WRM has been collected for both programmes in the study areas.

Based on above mentioned criteria Kharyyang VDC from Gulmi district and Banganga VDC from Kapilvastu district, representing from hill and terai respectively were selected for the study purpose.

#### **Chapter 2: Overall Assessment Method:**

Assessment study at each level were carried out by using different PRA tools and methods. Followings steps were followed in the district and community level WRM assessment workshops:

- I. Organized a half day meeting with the project staff about objectives of the study, activities to be done, expected role of the person and their time as a team member etc.
- II Organized a short meeting with district level planners/leaders of concerned districts and formed a WRM assessment group in both districts.
- III. The final work plan for assessment study has been prepared by the assessment group.
- IV To generate information, followed activities in the workshops at various levels are:
  - a) Explanation.
    - objectives of the WRM assessment workshop
    - activities to be done during workshops
    - expected role of all participants
  - b) Village mapping
  - c) Discussion on each principles( questionnaires was prepared in Nepali).
  - d) Group work to identify the problems/solutions/ recommendation
  - e) Pocket charts
  - f) Observation visit to the sources and to the systems
  - g) Interview with key persons
- V Visited district level line agency offices and water users committees to get supportive information e.g. District Development Committee, District Water Supply Office, District Forestry Office and so on.

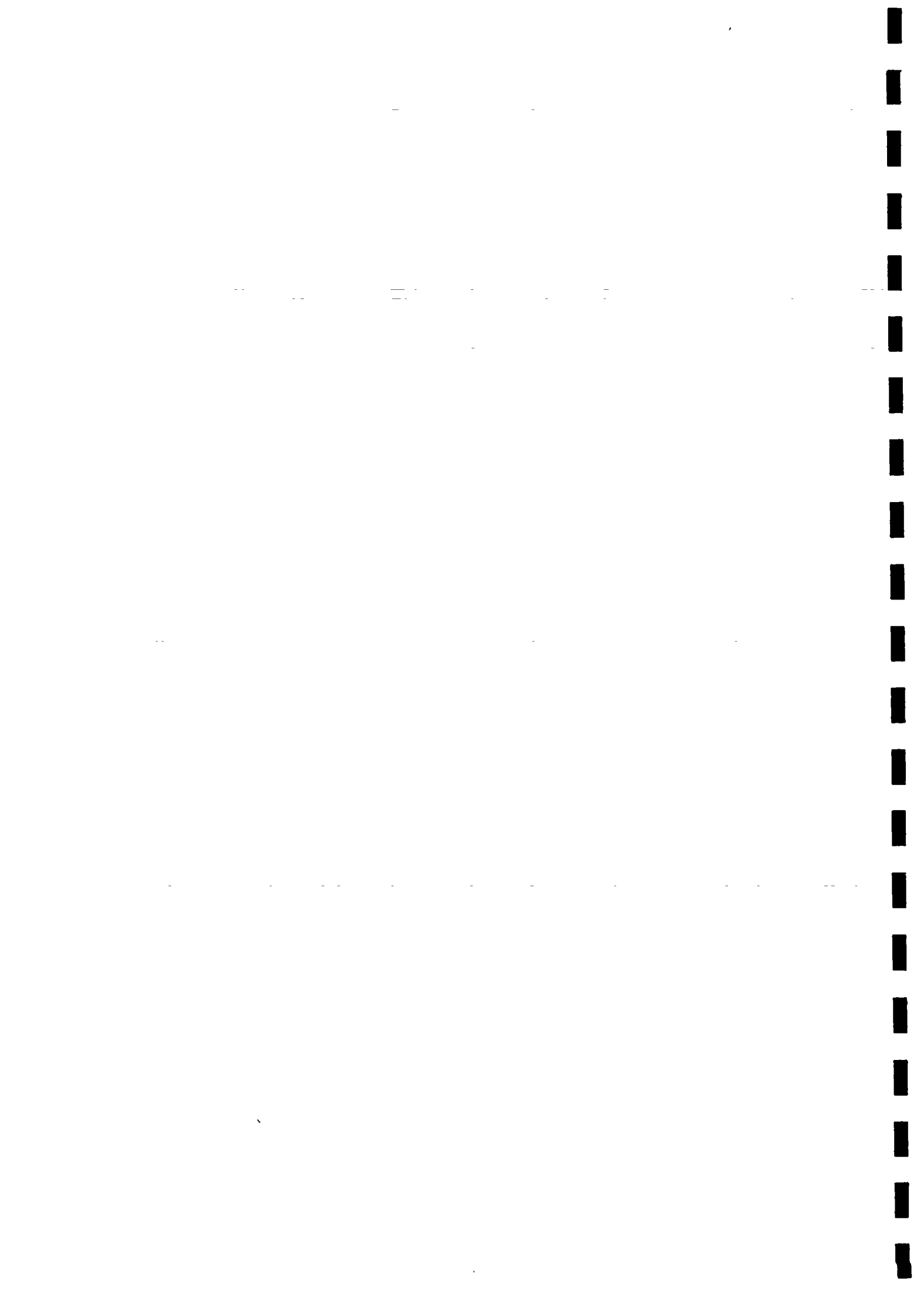


FIGURE A  
NEPAL



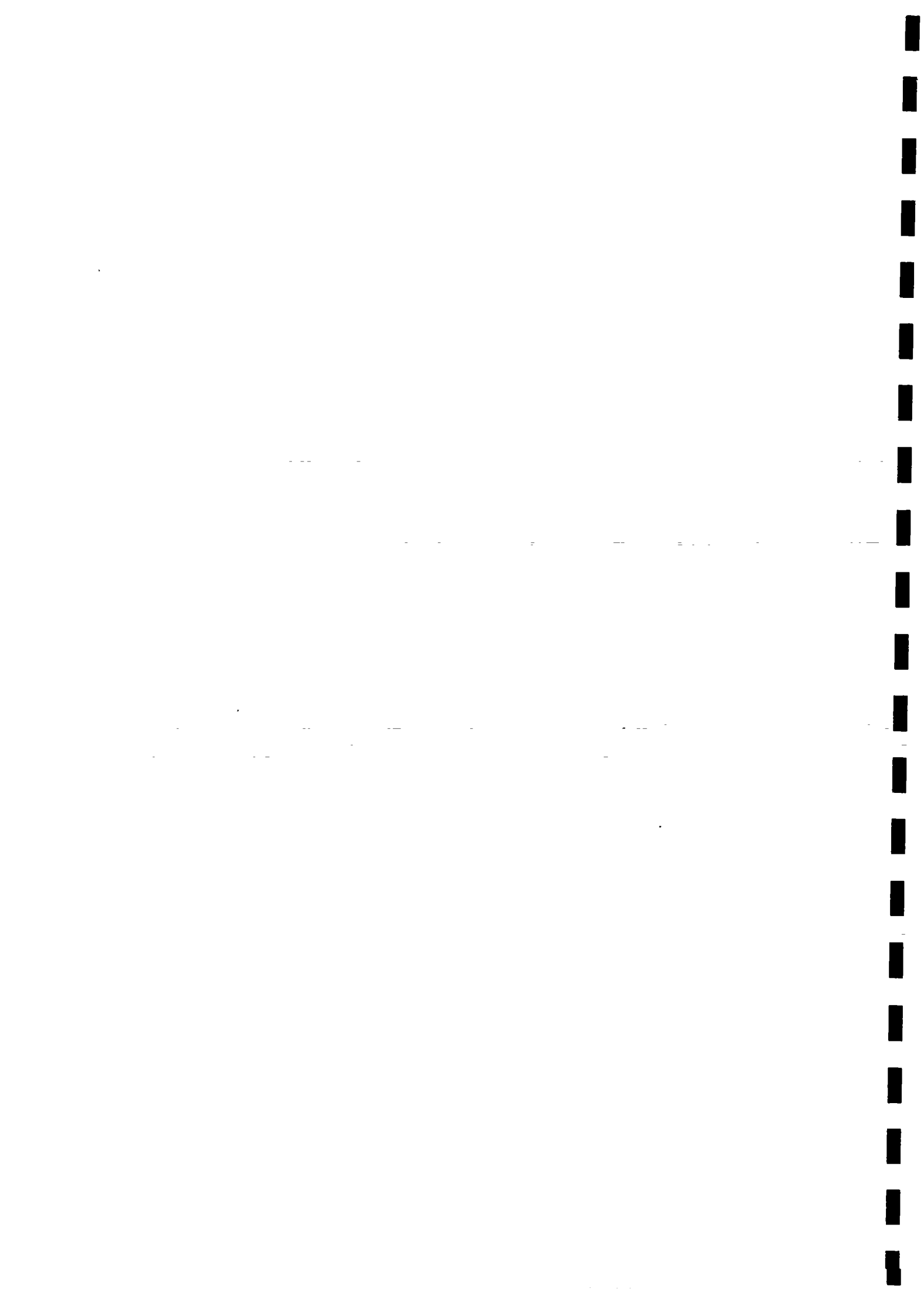
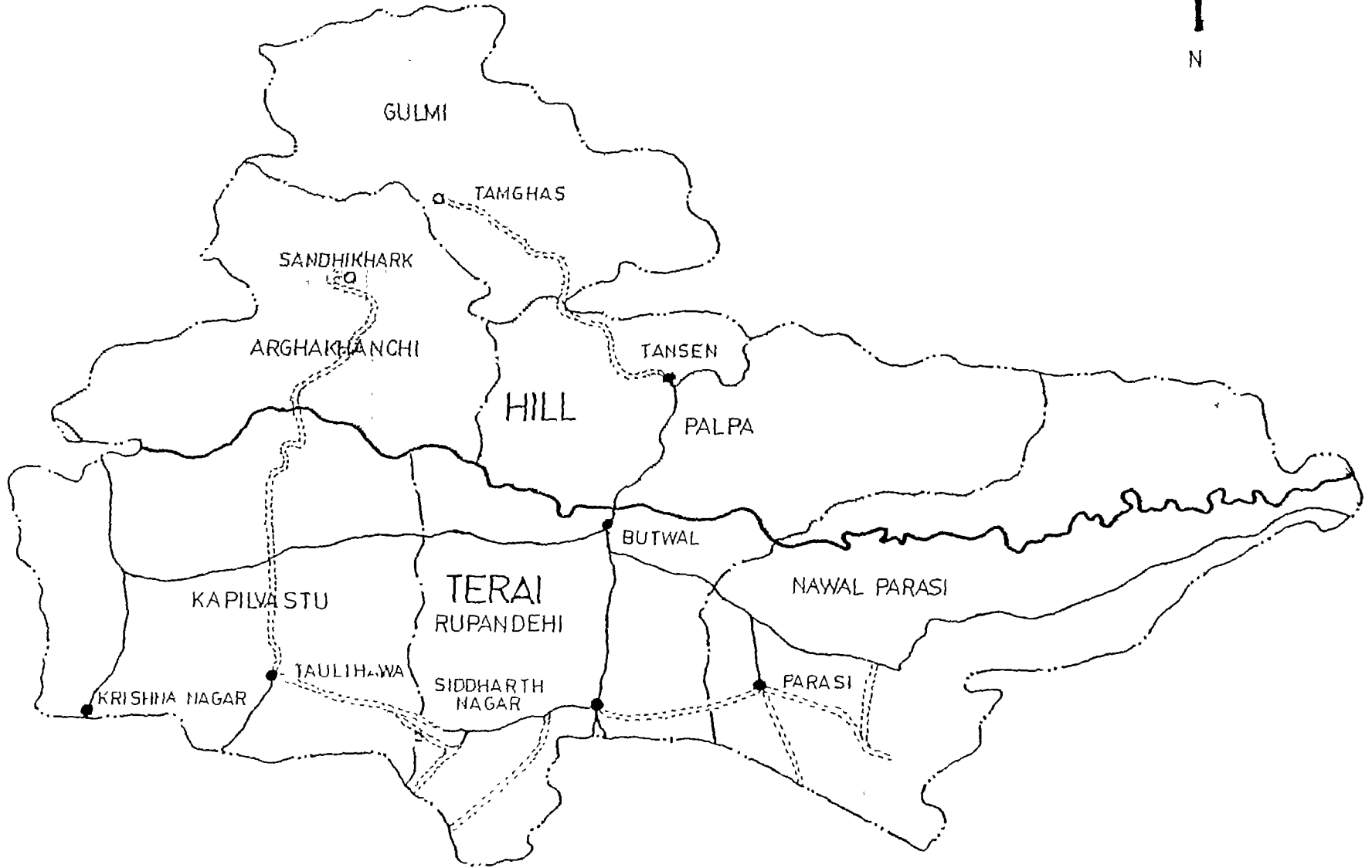
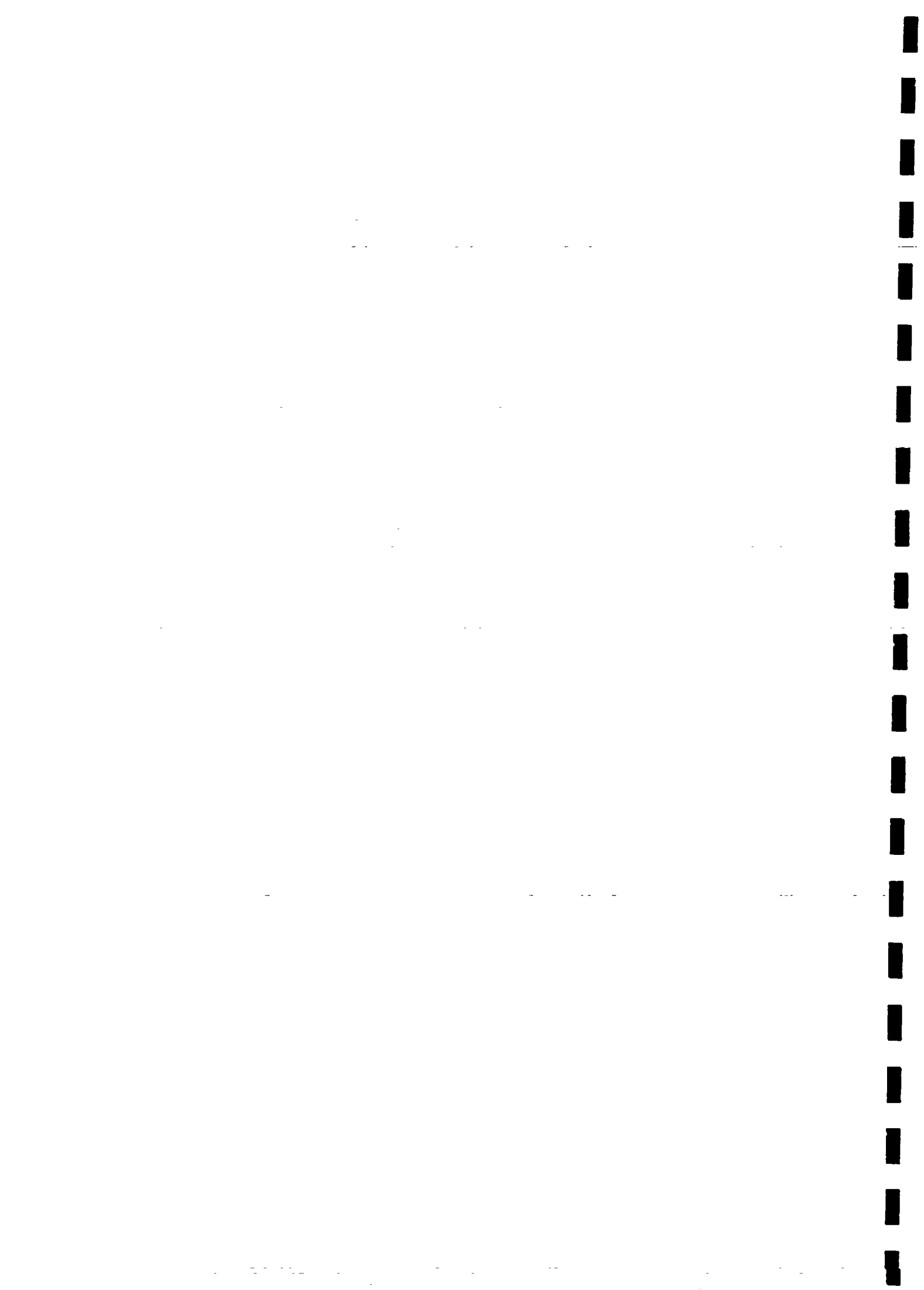


FIGURE B

LUMBINI ZONE







## Chapter 3: Water Resource Management Principles Addressed in Kharjyang (Hill area)

### 3.1. Background of study areas:

#### Gulmi District:

Administratively, the district is divided into 13 ilakas and 79 village development committees. The district administration is headed by the Chief District Officer (CDO), and the Local Development Officer (LDO) is in charge of the general development activities of the district. The administration personnel is mainly stationed in Tamghas, except for the VDC secretaries, who work at the VDC headquarters.

The District Development Committee is the elected body which plays the key role in planning, monitoring and evaluation, co-ordination among sectoral partners (including water supply and sanitation development) This is the decision making body for all kinds of development activities in the district.

#### Physical Features:

This district is located at the altitude varying from 497 to 2663 meter from the sea level, the district covers 1250 sq. km. Of the total area, about 28% is classified as forest land, 55% is cultivated land and the remaining 17% grass land, barren land and water bodies. Due to population pressure, the forest land have been taken for agricultural use during the last ten years considerably.

#### People:

Households	: 51,508
Population	: 342,040
Average Pop./HH	: 6.64
Population Density	: 321 people/km <sup>2</sup>
Total no. of potential sources	: 1300 (1992)

#### Ethnic Composition:

• Brahmin, Chhetri, Thakuri, Kunwar	53%
• Magar, Gurung, Gharti	21%
• Sarki, Damai, Kami, Sunar, Nepali, Chudar	17%
• Gaire, Kumar, Jogi, Rokaha	6%
• Newar	2%
• Others	1%

#### Socio Economic:

The agricultural land is divided in small and fragmented plots. The distribution of land holding sizes of the farming families is presented below:

• Landless labourers	1%
• < 5 ropani ( 5467 sq.ft.)	20%
• 6 to 10 ropani	18%
• 11 to 20 ropani	27%
• > 20 ropani	34%

The main crops are rice, wheat, maize and millet. Livestock is an important part of agriculture. Based on the results of the field survey of the RWSSP, the present (1992) numbers of domestic animals can be estimated as follows.

• cows	94,591
• buffaloes	114,229
• horses	355
• sheep/goats	83,466
• pigs	4,029

The agricultural products exported from the district are ghee, honey, fruits and jute. The quantities of these exports are however, small.

Reliable statistics on the income level in the district do not exist but it can be assumed to be near the average of the hill districts, which was estimate at NRS 1,125 per household per month in 1988 (NRS 457 cash and NRS 668 kind, pre household as a result of Household Budget Survey, Nepal Rastra Bank in 1988) An important source of cash income are the remittances of the family members, normally male, working outside the district, many of them in India and particularly in the Indian Army.



### **Water Resources:**

The average annual rainfall in Gulmi district varies between 1500 mm and 2000 mm. Most of the rainfall comes during the 5 monsoon months, the rest of the year being almost dry.

The groundwater recharge of the district has been estimated to be around 100 million m<sup>3</sup>/year.

All recharged groundwater is naturally not available for consumption. The spring density is the highest in the southern and western parts of the district (2-3 springs/km<sup>2</sup>) and the lowest in the eastern part of the district (0.35-1 spring/km<sup>2</sup>). The majority of the springs have a dry season yield of less than 1 liter/s.

The district is drained through one major river, Kali Gandaki river, whose main tributaries in the district are Badi Gad, Panah Gad, Chaldi Khola and Ridi Khola. Human activity has polluted many rivers and fluctuations in flow are enormous due to the steep slopes in the catchment area.

With regards to water supplies, spring form the most feasible source because of their good water quality, steady flow, and location often near the consumers at relatively high elevations.

### **Environment:**

The Gulmi District consist of mountains where erosion is the most common environmental problem. Landslides are also common in steep slopes of the food hills and along the fault lines in the district. Both erosion and land slides are more intense during the monsoon season. The removal of vegetation has accelerated the erosion. Ecologically unfeasible lands, in the slopes greater than 30°, have in many areas of the district been taken under cultivation.

### **Kharjyang VDC, Gulmi:**

#### **General:**

Kharjyang VDC is located in the southern part of the district. It takes two hours drive and another two hours walk from the district head quarter, Tamghas, to reach this place. Some features of the VDC are listed below.

Area	: 12.83 sq.km.
Household	: 787
Population	: 4568 ( Male : 2,321 Female . 2,247)
Average Population/Household	: 5.8 people
Population Density	: 321 people/km <sup>2</sup>

#### **Ethnic Composition:**

Brahmin, Chhetri, Thakuri	45.0%
Magar	12.5%
Kumal	10.7%
Newar	3.40%
Damai, Kami, Sarki	14.4%

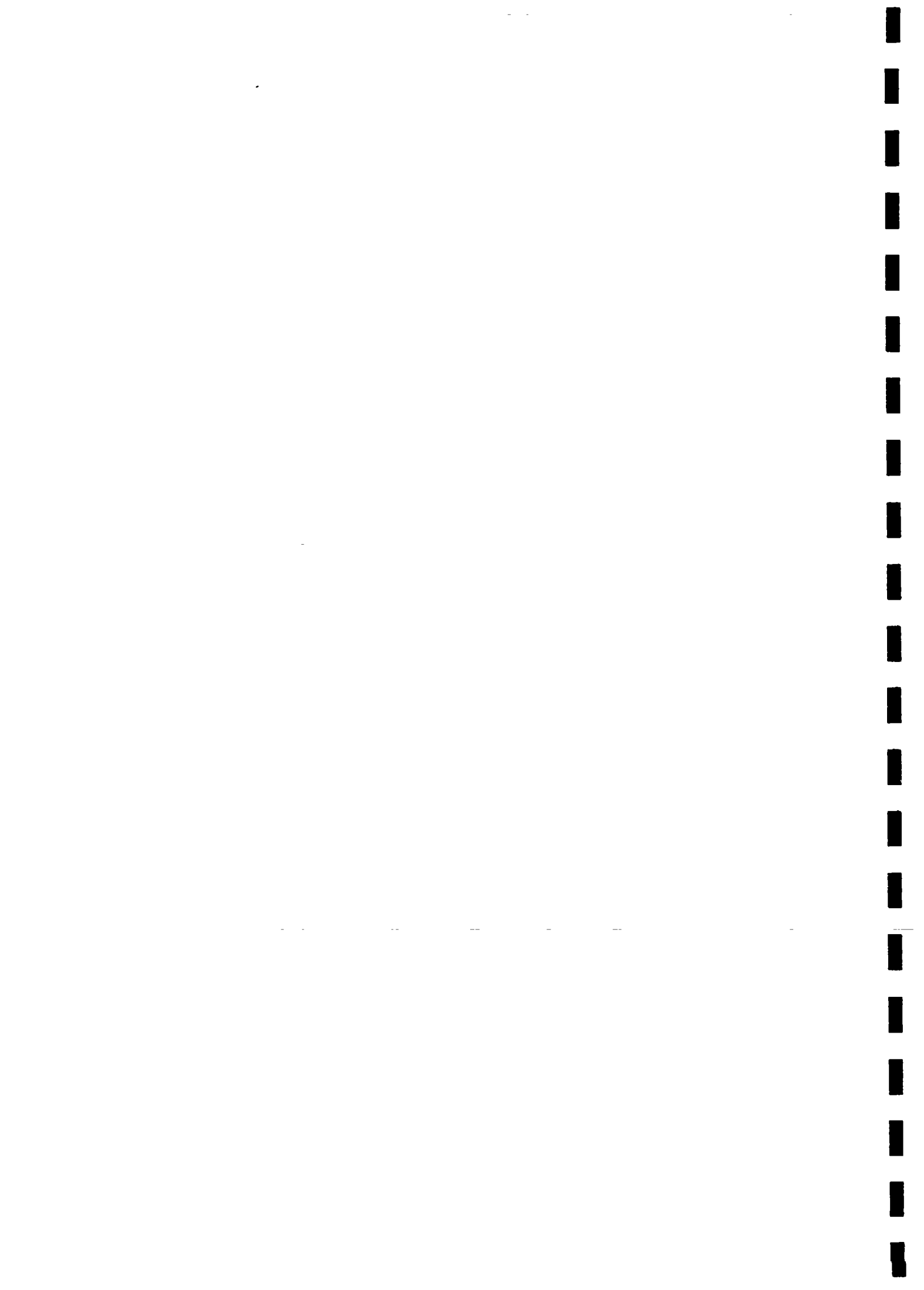
#### **Socio Economic:**

The socio economic status of the people is similar to the district. The economy is based on agriculture, mostly subsistence farming. The adults generally go outside of the village for education and service. There is 1 high school and 6 primary schools. The education status seems better than other areas.

#### **Water Resources:**

- i) Rivers: 4 nos.
- Kharjyang Khola
  - Ridi Khola
  - Budhi Khola
  - Hardi Khola

Kharjyang Khola and Hardi Khola are being used for irrigation purpose, where as people take sand from Ridi Khola for different construction works



ii) Streams .

- Man khola
- Khurseli khola
- Ladaha khola
- Kunwar khola
- Rangbas khola

These streams are being used for irrigation purpose at the moment.

iii) Springs: 47 nos.

- Point sources( Traditional Kuwa) - 41 nos.
- Potential sources for water scheme - 6 nos.

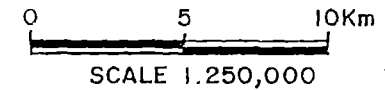
**Environment:**

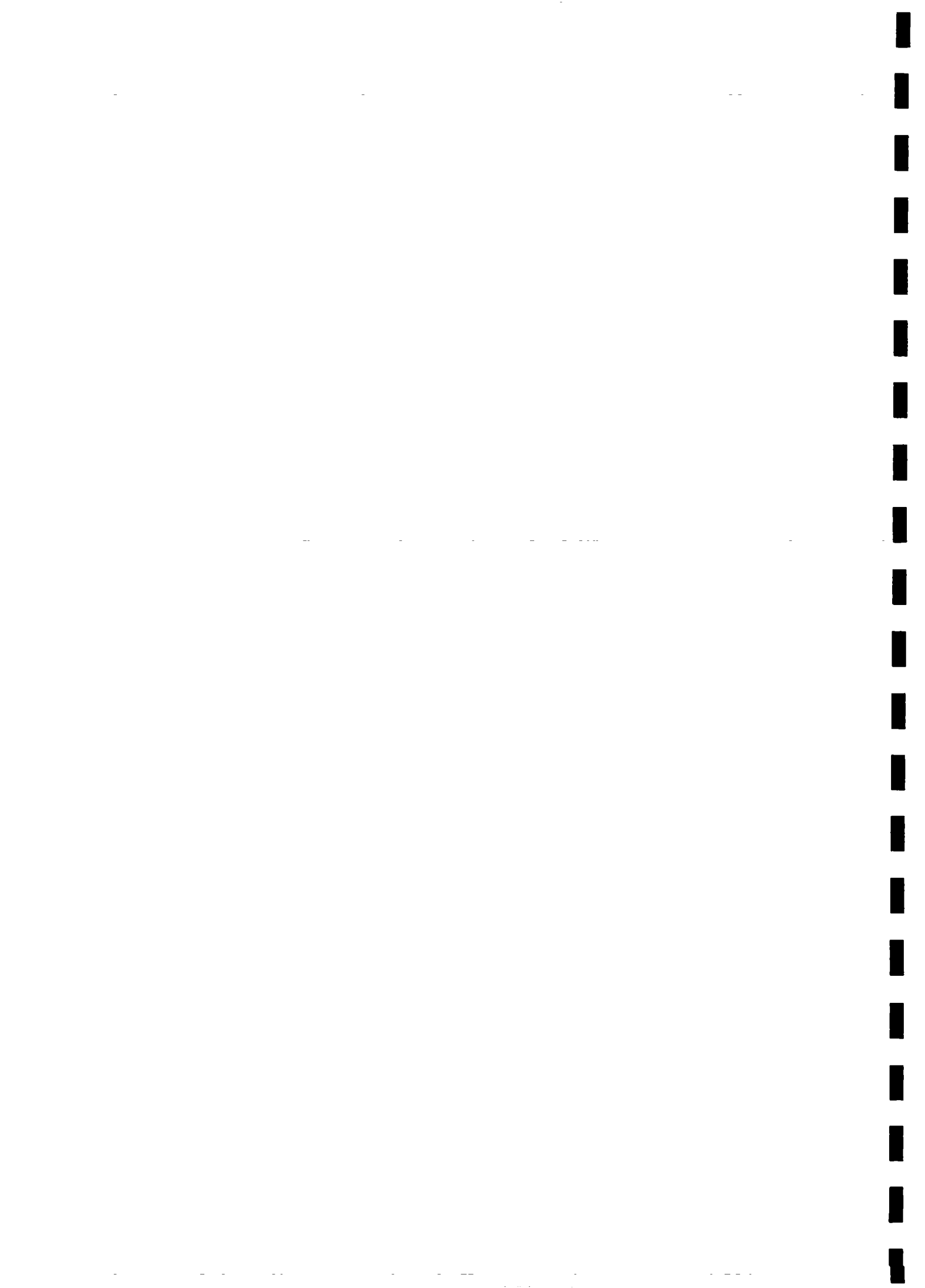
Landslides and erosion are common problems during the monsoon season (Mid June to Mid October) Due to newly built motorable road, many landslides occur in the areas from where it passes. Cutting trees for fire wood and for other reasons is also one of the major environmental problem seen in this VDC. Open defecation is common practice which ultimately pollutes the quality of water.



GULMI

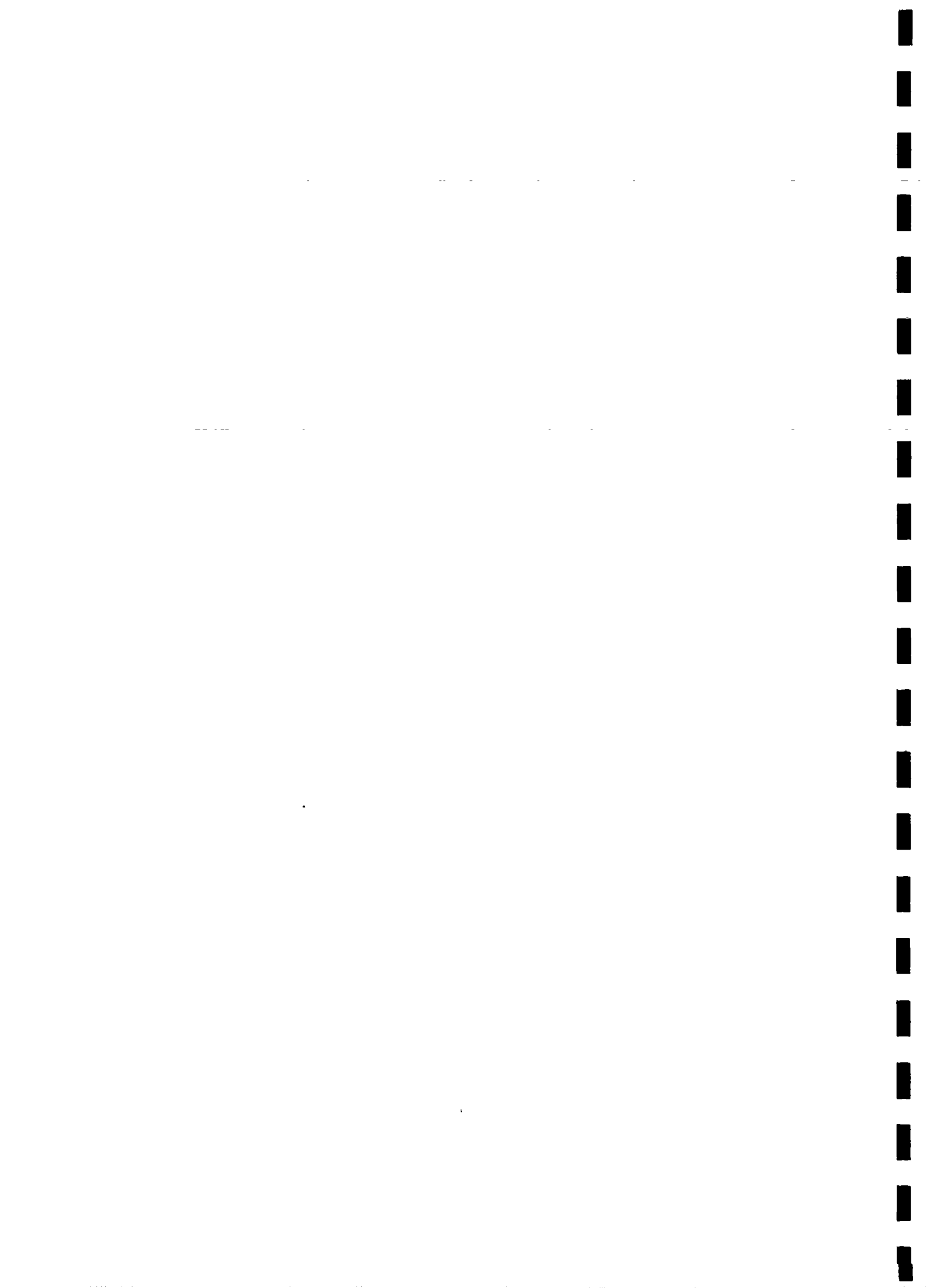
Figure C











### 3.2. Principle no. 1: "Water sources and catchment protection are essential"

#### 3.2.1. Background:

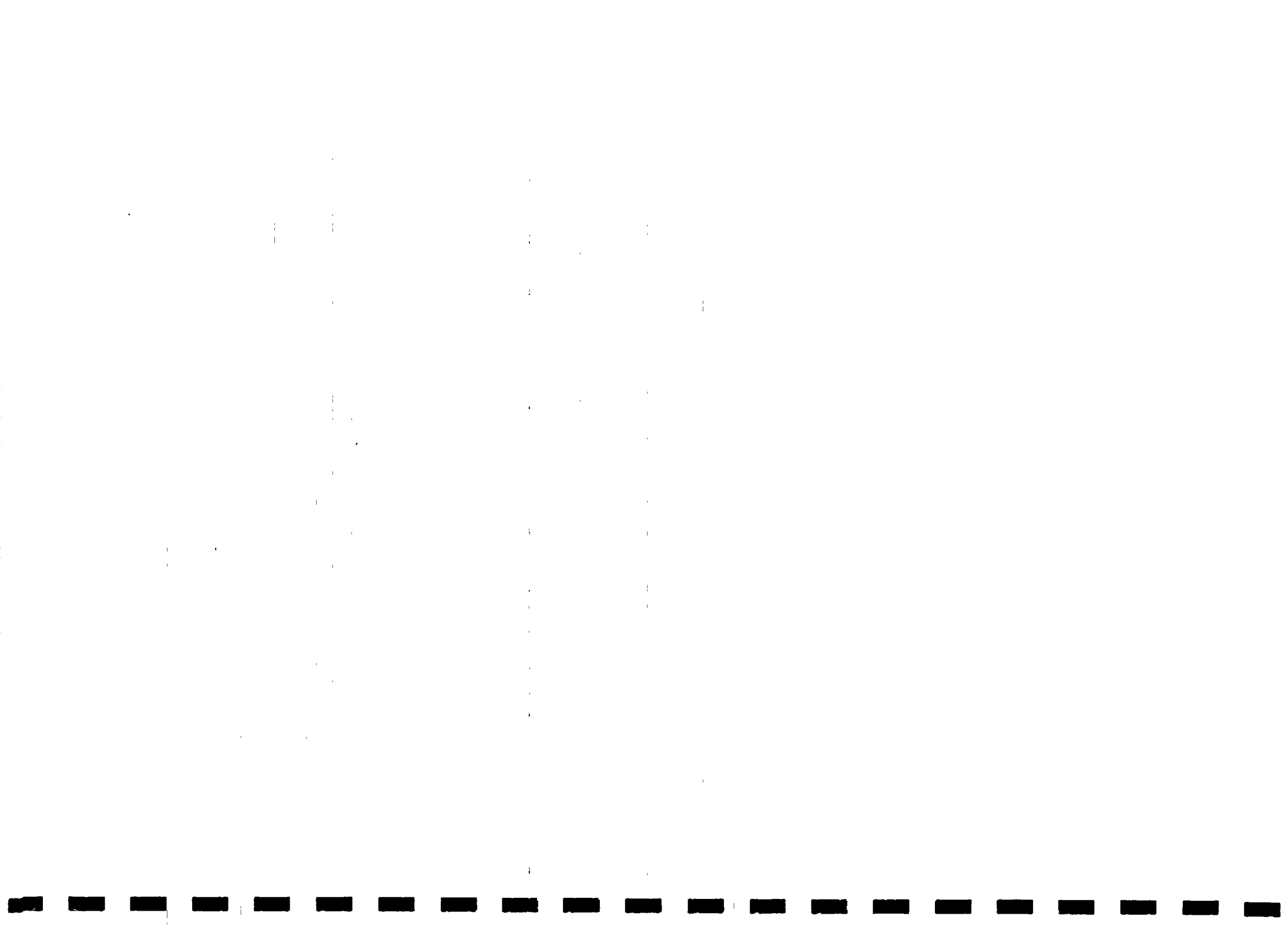
In the study area, people have two types of water sources which are springs and the river or stream. In general springs are being used for domestic purposes whereas river/stream are being used for irrigation. If the river / stream / canal /Kulo are near by the residence, people prefer these sources for washing and bathing purpose.

People are aware of some activities which deteriorates the natural environment around the water sources. Deforestation, road construction in an unscientific way may cause reduction of water quantity at the source. Such activities augmented with some unhygienic behaviours brings the water quality down to the normal. Depletion of water in the sources is visualized as a major problem but no effective measures to control the situation have been initiated so far either at the community or at district level. Efforts of the community in WRM aspect is limited to maintain and operate the water systems rather than to look at the whole scenario of management.

The water sources which exist in private land are in landowner's control. Some owners do not allow to apply control activities around the sources.

#### 3.2.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khajyang):</u>	<u>District Level (Gulmi):</u>
1. Explanation:	Explained about the importance of 8 principles, objectives of the workshop, activities to be done during workshop and expected role of the participants	Same as community level
2. Community Mapping:	To identify the existing water sources in use, potential sources, forest areas, cultivated land, roads, water points etc. The <u>community map</u> was prepared by the villagers (annex 4). Three participants (selected by the group) took the lead role and other observed and added information where needed. There was active participation from all participants.	Not Applicable
3. Discussion:	A questionnaire was developed in Nepali. Each question was asked to the group and discussed. The conclusion/ facts which was agreed by the groups (more than 90%) and individual's ideas were noted down. Mainly it was done to identify the activities initiated, problems met, probable solutions and future recommendations.	In general discussion was in the same manner as community level. Few issues regarding the programs and policy matter were discussed with individual chiefs & DDC members.
4. Observation:	Team visited the sources to get the information about management and efforts made as protection of sources.	NA
5. Interview:	Interview was done with WUC members separately to identify the specific problems, their probable solutions and the recommendations.	NA



6. Group Work:	NA	To identify the problems, solution and recommendation group work was carried out, which was quite impressive and active exercise by the participants. Formate/guideline papers were provided to each group.
7. Visit:	visited and observed at different water taps to get the information about operation and maintenance.	Visited District Development Committee, District Line Agency Offices i.e. DWSO, District Irrigation Office, District Forestry Office and District Soil Conservation Office at Tamghas, Gulmi to get supportive information.

### 3.2.3. Results:

**Question No. 1: What are the existing water sources in the whole VDC and for what purposes they have been used?**

**Participants replies at Community Level (Kharjyang):**

i. Rivers: 4 nos.

- Kharjyang Khola
- Ridi Khola
- Budhi Khola
- Hardi Khola

Kharjyang Khola and Hardi Khola are being used for irrigation purpose where as people take sand from Ridi Khola for different construction works.

ii. Streams:

- Man khola
- Khurseli khola
- Ladaha khola
- Kunwar khola
- Rangbas khola

These all streams are being used for irrigation purpose at the moment.

iii. Springs: 47 nos.

- Point sources( Traditional Kuwa) - 41 nos.
- Potential sources for water scheme - 6 nos.

These springs sources are being used for domestic water use

iv Ponds.

- Altogether there are 16 seasonal ponds in this VDC which serve as an alternative source for livestock demand during the rainy season.

**Participants replies at District Level, Gulmi:**

Rivers.

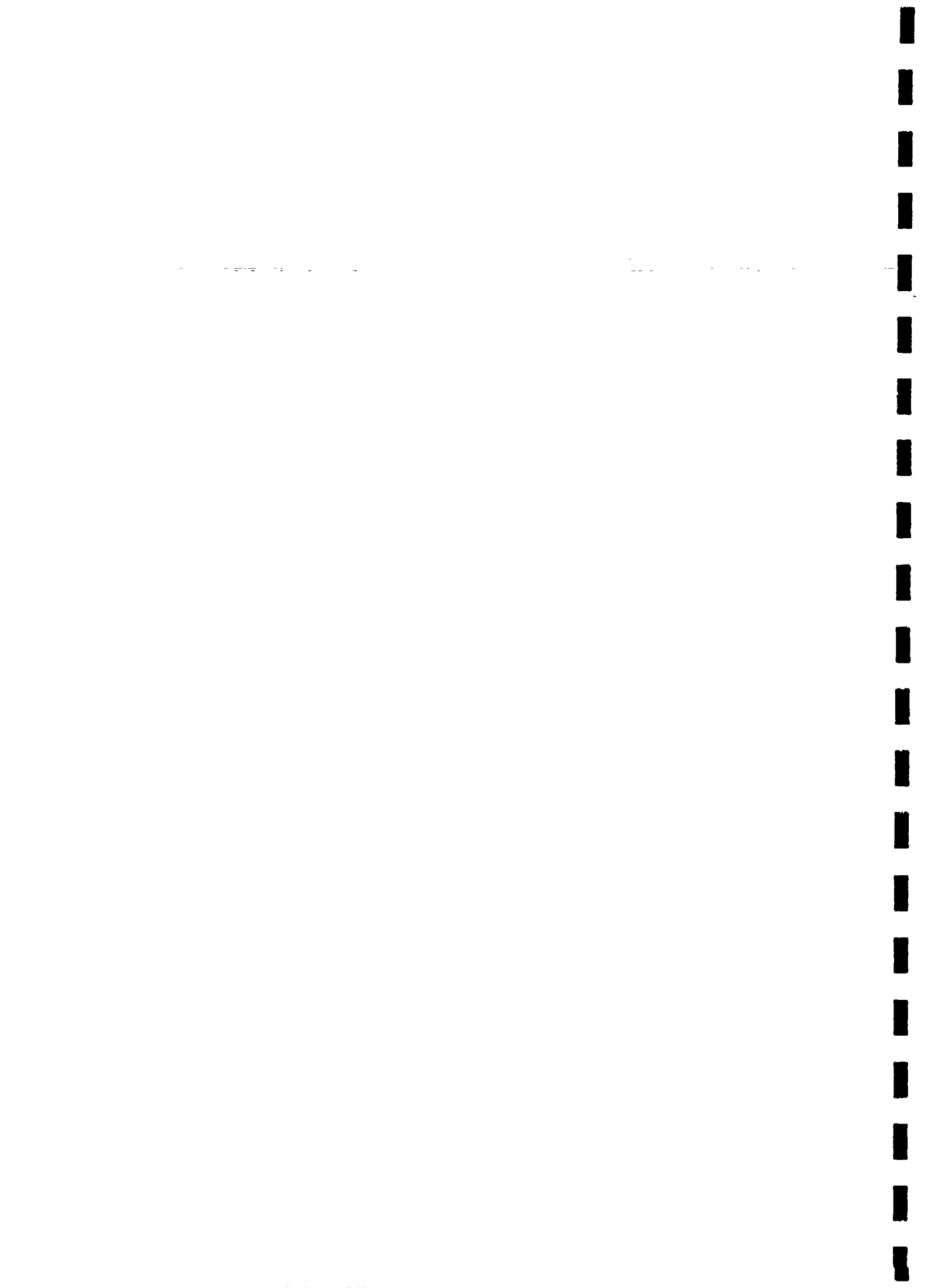
Panaha Gad, Badi Gad, Chhaldi Khola, Ridi Khola, Kali Gandaki, Nisti Khola and Kharjyang Khola. These are the main seven rivers of Gulmi district. These all rivers have only one outlet through Kali Gandaki to Palpa district.

These rivers are being used mainly for irrigation systems. Other uses of these rivers are water mills, small scale hydro power, fishing and in Kali Gandaki there is a fashion of water recreation through raftings.

Springs:

In total 1847 springs were identified during the field survey made by RWSSP/DDP in 1992. The average spring density is 1.7 / sq. km. varying in the different areas from 0.35/ sq. km. to 2.95/ sq. km.

Most of these springs are being used for the domestic water demand purpose and in case where there is more yield in the springs people use it for small scale irrigation purpose as well.



**Question No. 2: Has water source and catchment protection been identified as a need presently or in the longer term?**

**Participants replies (conclusion) at the community level:**

- i. People in the community have started realising the need for water sources conservation and their protection as a result of gradual depletion of water yield in the sources which may further be the result of deforestation, gradual increase in land slides by making unscientific roads, soil erosion etc. This observation by the villagers is being made since last five years.
- ii. Due to increase in population and livestock the water demand is also being increased whereas at the same time there is adverse situation for water quantity in the sources. Therefore people feel that all sources are to be conserved.

**Participants replies at District Level, Gulmi:**

- i. The water quality is being affected seriously and the source yield is being lowered gradually due to various activities like deforestation, improper road construction and increase in unplanned /illegal settlement. Therefore it is a felt necessity at the district level by the district decision makers and line agencies to launch the program of water sources conservation and their protection.

**Question No. 3: Are catchment /source area negatively influenced by any activities?**

**Participants replies at Community Level (Khariyang):**

- i. Depletion of source yield in springs is quite significant. This is the major change observed within last few years
- ii. Although at present there are few water schemes implemented in this area but whenever there is some problem in those schemes people have to go to the traditional kuwas. They have a bitter experience that previous primary source alone is not enough to fulfill their demand so they look for some secondary sources in such case.

**Participants replies District Level, Gulmi:**

- i. Depletion of source yield in springs is quite significant. Many springs have been dried up at different places of the district during last five years. Resunga hill can be taken as an example where there are nearly five hundred sources which are in a order of decreasing yield every year and many of these have already been dried up.
- ii. Due to increasing volume of land slides and taken away by the floods, lot of culturable land is being damaged every year but looking at the frequency of flood occurrence it is not much varying than before.

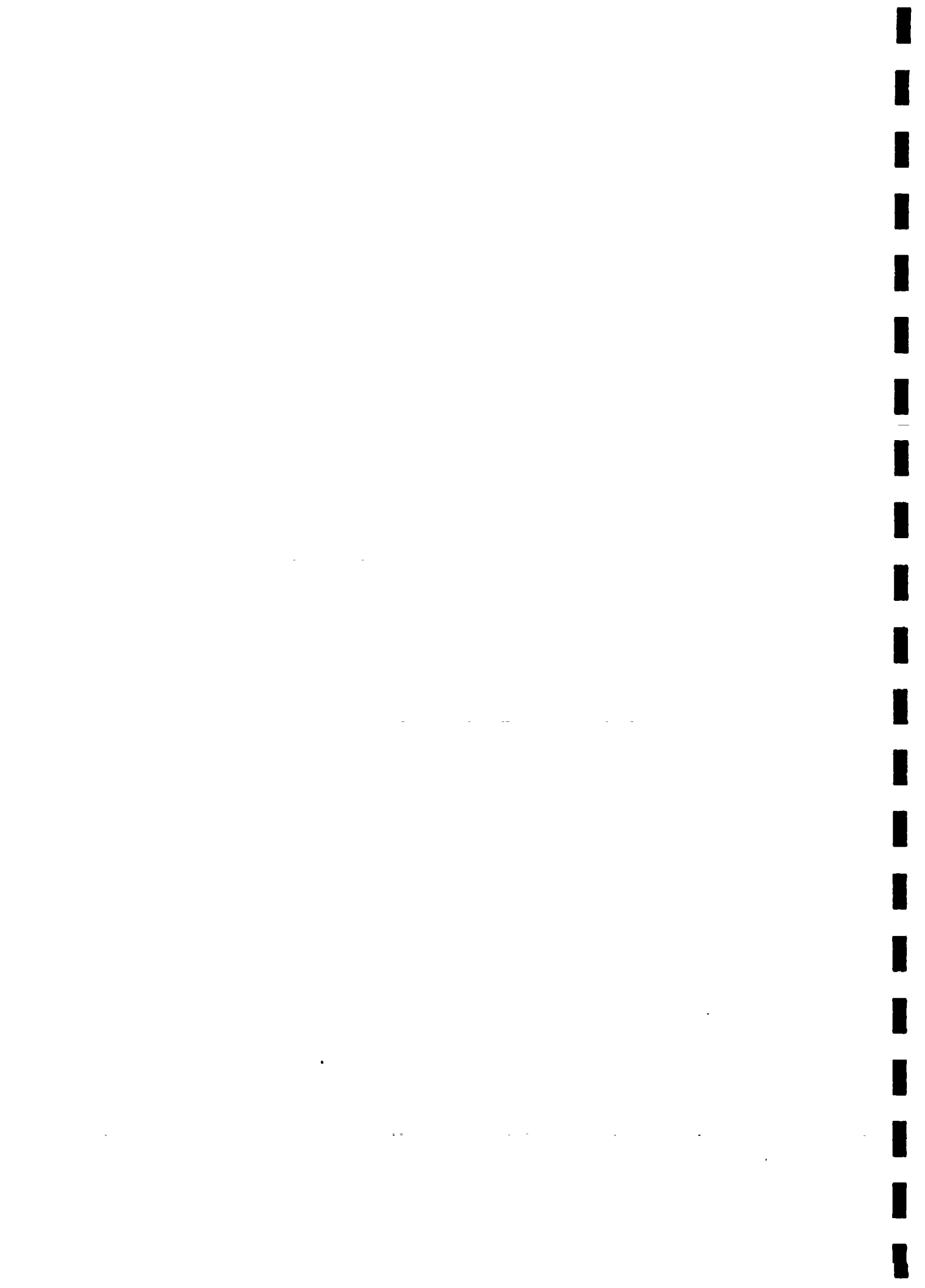
**Question No. 4: What are the activities/behaviours that are affecting water source for its depletion and quality deterioration?**

**Participants replies at Community Level (Khariyang):**

- i. Deforestation: This is the prime cause which is increasing day by day. It is due to,
  - Wood theft
  - Fire wood collection from the forest
  - Wood used for different construction works
  - Fodder plants cutting
  - Open grazing
- ii. Road construction: Motorable road construction by the villagers cutting the rocks and the soil heparzardly in the VDC area which has affected the water sources in different ways like deforestation, soil erosion, and slides and filling up the bed level of streams and rivers by the cut materials.
- iii. Open defecation is a common practice in the VDC which ultimately deteriorates the quality of the water.
- iv. Fishing practice of using explosives and poisonous materials also deteriorates the quality of water.

**Participants replies at District Level, Gulmi:**

- i. Deforestation
- ii. Road construction in unscientific/unfriendly to the environment.
- iii. Plantation of unsuitable plants which have adverse effect on the water source.
- iv. Land slide and soil erosion.





**Question No. 5: What measures have been adopted to control the worsening situation related to conservation of water sources?**

**Participants respond at Community Level (Khariyang):**

- i. Plantation in public land has been initiated in ward no. 6 and 7 of the VDC . About 6000 plants were planted in these wards but these could not grow properly. In addition there is one nursery in ward no. 5 of the VDC.
- ii. Plantation in private land is also encouraged from the VDC. Each households has to plant a minimum of 40 to 50 trees in their private land of which a minimum of 10 should be of the fodder species.
- iii. Open grazing is prohibited in community forest areas and around the improved/protected sources which have been tapped for water supply schemes.
- iv. People have to collect only the dry branches of trees for fire wood and in case of building new houses they have to get permission from the district forest office with recommendation of the VDC. Therefore community people have also developed some internal understanding that cutting of trees for fire wood and other purposes is punishable.
- v. Need for household latrine has been internalized and the construction is in progress in the VDC so as to ensure the quality of water.

**Participants respond at District Level, Gulmi:**

- i. Community forestry programs have been started and is spreading all around the district.
- ii. Awareness creating programmes for source protection by plantation are being launched in various VDCs of the district by district forest office.

**3.2.4. Lessons Learned**

**3.2.4.1. Successes:**

- To ensure better quality of drinking water, integration of health education and sanitation program with water supply have been found very much effective.
- Existing hardship and problems faced for water by the people stimulated them to initiate some effective programs like plantation around the sources, nursery and gradual growth in community forests

**3.2.4.2 Weaknesses:**

- Lack of knowledge of UC/VDC members and beneficiaries in planning and execution of source conservation activities.
- The sources which are in private land do have more problems of protection. UC/VDC can not force the land owner to protect that particular source without his/her willingness.
- Roads construction are not environmental friendly, which has resulted increase in soil erosion and land slides phenomenon tremendously .
- People do not have sufficient idea about different species of plants which are suitable to conserve water sources..

**3.2.4.3. Open Issues:**

- People want to know about the catchment. Protection of catchment comes only after its jurisdiction.
- Integration of source/catchment protection activities in road construction and other development program seems to be of higher importance.
- Ownership of a water source in private land and its protection.

**3.2.4.4. Recommendations:**

- Extensive development in community forestry is needed.
- Kinds/varieties/species of plants which are environmental and source friendly are to be identified and growing them are essential.
- Extensive awareness creative activities are to be launched.
- Rural roads should be made using LES (low cost and environmental sound) approach.



### 3.3. Principle No. 2: "Adequate water allocation needs to be agreed upon between stakeholders within a national framework".

#### 3.3.1. Background:

Allocation of water in different sectors and within the sector itself are being managed in the communities in various traditional methods. People have a common practice of using river and stream water for irrigation and the spring and kuwas are being used for household uses.

In general, VDC is the deciding body for scheme selection and water source allocation for different uses in different clusters. Ward level VDC members place their demand, which is made by the villagers for a certain water system to be made/improved in the village assembly, which decides such programs based on the hardship.

Theoretically the drinking water sector should get priority over other uses of water. In practice people raise several kind of disputes in its implementation.

Disputes are solved among users. If there is any major dispute, they call district level leaders and concerned chief of line agencies and settle the case. The District water resources management committee is supposed to take the lead role to settle issues related to WRM.

#### 3.3.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khaiyang):</u>	<u>District Level (Gulmi):</u>
1. Discussion:	Questions were asked to the group and discussed.	Separate questionnaires were prepared and asked the questions and noted the answers which agreed by majority 90%.
2. Interview:	Separate interview was done with a women groups to identify the household demand.	NA
3. Observation:	Observed a tap stand at morning time (which is peak hour to collect water), to get the idea about the quantity of water and other activities/practices at the tap post?	NA
4. Group Work:	NA	It was done to identify existing practices of water allocation, problems being encountered and to get the solution and recommendations

#### 3.3.3. Results:

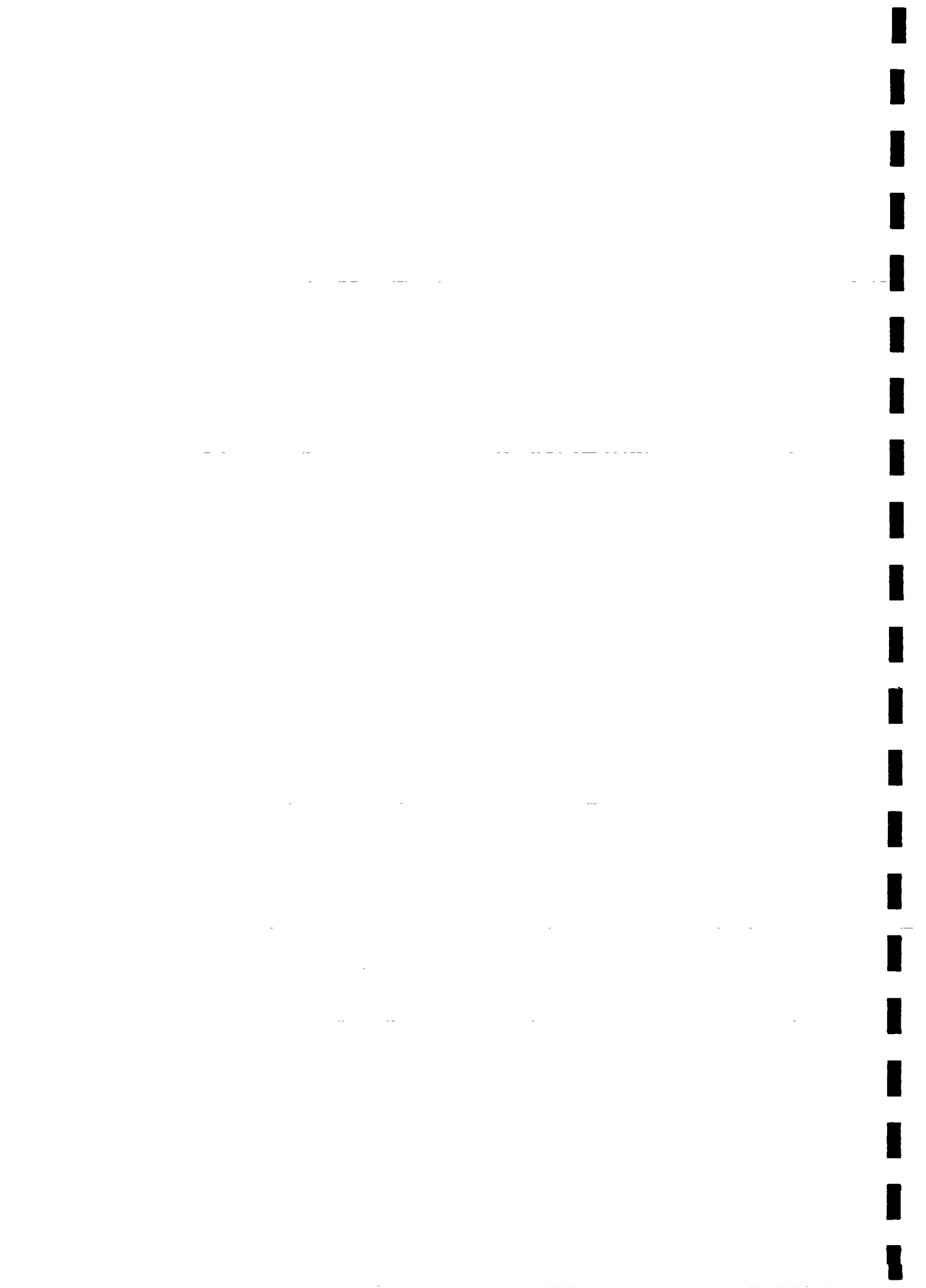
**Question No, 1: Is sufficient water of required quality available to meet the demand of all water users?**

**Participants replies at Community Level (Kharjyang):**

i. 100% participants replied that, there is no adequate water supply in drinking and irrigation as well.

For drinking:

They are using 30 pathi (150 ltrs.) for 6 family member and i.e. 150 ltrs/day/family in average. It means total domestic water demand in the VDC based on present level of consumption is  $787 \times 150 = 118,050$  ltrs./day = 43,088 cum/annum.



For irrigation:

Nearly 11% of the total area ie. 1.41 sq. km is estimated as irrigated land. Further estimation of water use in this area shows that people use nearly 3 ltr./sec of water for 10 minutes to irrigate the land for one time per Ropani (5467 sq. ft area), which is 35.29 cum. of water per hectare for one time. They use this quantity of water for 25 times a year for all crops.

It means total water demand for irrigation purpose per annum = 35.29 cum/hect. \* 141 hect \* 25 times  
= 124,397 cum /annum  
Total water demand per annum = 167,485 cum.  
Percentage of water use in drinking water sector = 25.72  
Percentage of water use in irrigation sector = 74.28

ii In the drinking water sector, water through the piped system is considered as of good quality, where as it is not in point sources and streams. In irrigation system they do not perceive the quality as a problem. It is only the quantity factor which is of a great importance.

**Participants replies at District Level, Gulmi:**

100% participant replied that water supply is not adequate for drinking and irrigation.

**Question No. 2: What water allocation mechanisms exist ? Who is consulted and who makes decisions?**

**Participants replies at Community Level (Kharjyang):**

Water allocation among different sectors i.e. drinking water and irrigation is not a problem in this case. People have their sources in the form of springs for drinking water and rivers and streams for irrigation purposes.

For drinking:

In general, VDC is the deciding body for scheme selection and water source allocation for different clusters. Ward level VDC members place their demand, which is made by the villagers, for certain water systems to be made/improved in the village assembly, which decides such programs based on the hardship.

In case of existing systems, the water users committee decides and controls the system. They use supplied water, supported by RWSSP and VDC in the study area. There is a 24 hours flow system and first come first is the general practice to collect and use the water e.g. washing, bathing.

For irrigation.

There are 14 nos. of small canals run by the villagers which irrigate nearly 141 hectare of land. The owners, whose land is near the tail race of the canal have to take a lead role for operation of the system and its repair.

Water resources data are not available because this program has not been given any emphasis so far. Required data are to be collected in consultation with the local people based on their perception and knowledge of their own area.

**Participants replies at District Level, Gulmi:**

- i. Drinking water sector gets priority over other uses of water theoretically. In practice people raise several kind of disputes in its implementation.
- ii District water resources management committee exists and is responsible to solve the problems related to WRM



**Question No. 3: What legal framework and traditional practices for water resources allocation exists? Is it effective?**

**Participants replies at Community Level (Kharjyang):**

People are not much aware of legal aspects regarding water rights and its allocation in the community.

Allocation of water source for schemes, is done by the VDC. There are no any other formal forums which could take such decisions. In case of the studied VDC, there is a water users committee, who is taking the lead role on influencing the VDC in water related issues and their decisions. The advises of the water users committee are being taken always in the positive way by the VDC. Thus the role of the WUC is found as a effective one.

Few influential/key person in the society have also a vital role in the decision making process regarding the WRM. Their voices are heard strongly and considered as an effective one.

**Participants replies at District Level, Gulmi:**

There is a district level Water Resources Management Committee in each district, which has a role of advisory group for water related decisions. The DDC is a decision making body in the district. The WRM committee, although has a lot to do in this respect, seems to be inactive in this relation.

**3.3.4. Lesson Learned**

**3.3.4.1. Successes:**

- Beneficiaries are the "good manager" if schemes are built based on their felt need and with their involvement in all steps of the program.
- The traditional methods of water allocation and water management at community level have developed a sense of collective work in their level.

**3.3.4.2. Weaknesses:**

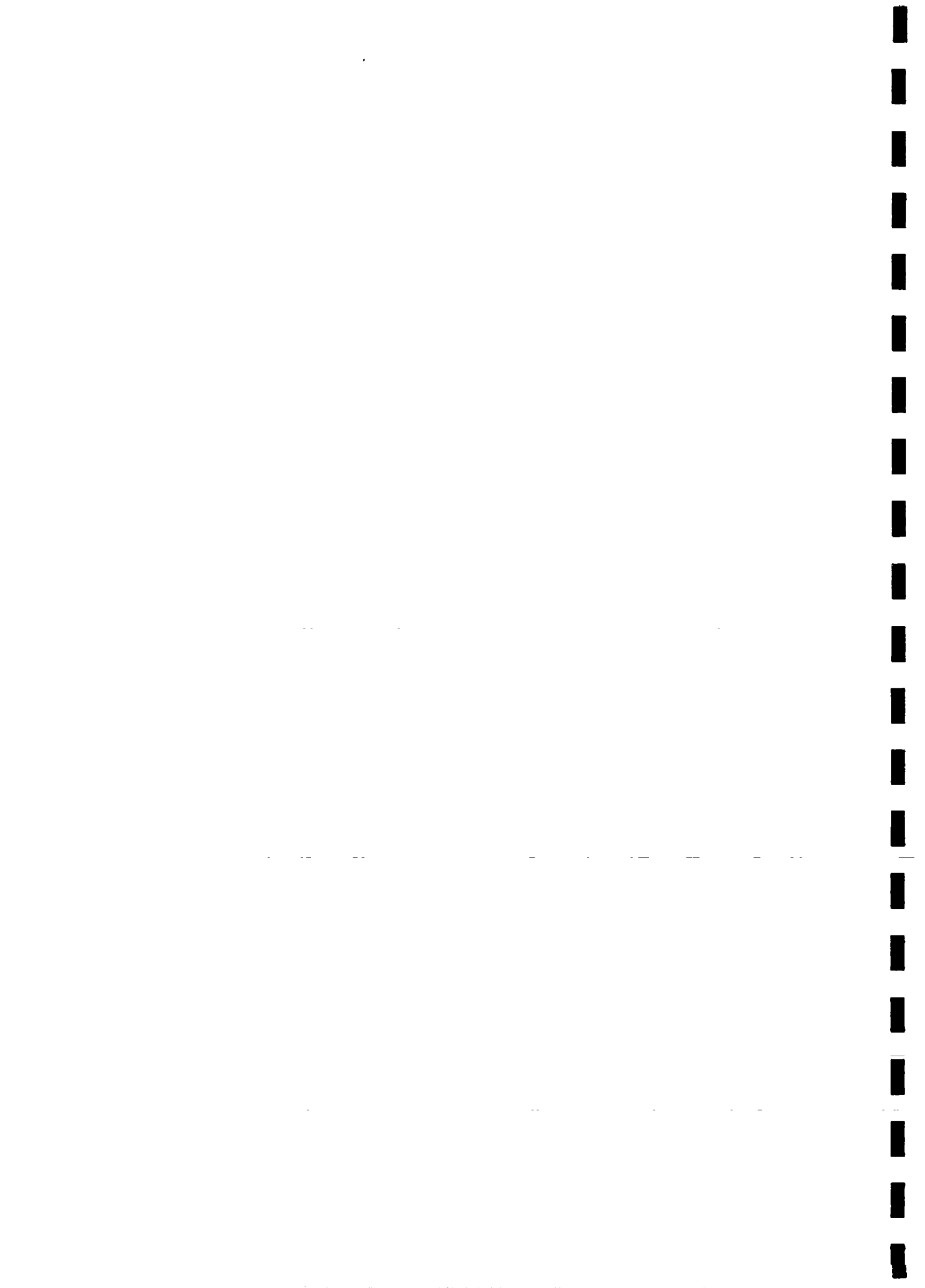
- There is no clear policy or guideline concerning water rights which could be followed.
- Lack of knowledge and experiences of Users Committee in management aspects
- One particular source may be a potential for different sectors or for different communities within the sector which might result in creating of long disputes among the communities. This is frequently occurring in the district.

**3.3.4.3. Open Issues:**

- Water right policy.
- Registration of UC.

**3.3.4.4. Recommendations:**

- Water rights policy is to be formulated.
- Responsibility should be given to UC and Community for the management of the water sources.
- Traditional methods should be considered while making new policies and guidelines.





### 3.4. Principle No 3: “Efficient water use is essential and often an important water source”.

#### 3.4.1. Background :

The efficient use of water is very much associated with the knowledge, attitude and practices of an individual. It is not always the quantity of water which is a constraint to fulfill the demand of different sectors, but it is also due to the poor management in its operation that people face scarcity of water. Water losses are quite significant during its transportation and during its use. Open taps in the public tapstands, pipe cutting in the line in drinking water systems and water loss due to seepage/leakage in the canals and excess quantity of water uses in the fields in irrigation systems are big problems occurring nearly in all systems. Sometime some people use drinking water for irrigation purpose also. These behaviour and practices always lead to the water scarce situation

Water User's Committees presently are taking all kinds of managerial responsibility to make local rules and norms for efficient use of water. This was felt very necessary in the past, to have some kinds of understandings among the users to minimize different losses of water. It is of utmost importance that each individual should take initiatives towards better utilization and should understand the importance of this mere and valuable resource. People should be guided and supported by the UC to fulfill their role on operational and maintenance aspects of the water systems so that quantity of water losses could be decreased thus ensuring the efficient use of water

#### 3.4.2. Methodology:

<u>Methodology:</u>	<u>Community Level (Khaiyang):</u>	<u>District Level (Gulmi):</u>
1. Discussion:	Information related to problems, solutions and practices were collected during discussions based on the developed questionnaire.	Discussions were done according to questionnaire, mainly focused to identify the problem and solution and future plan at district level,
2. Interview:	Separate interview was taken with WUC and irrigation committee about their specific managerial activities and problems.	NA
3. Group work:	NA	It was done to identify existing practices of water allocation, problems being encountered and to get the solutions and recommendations.

#### 3.4.3. Results:

**Question No. 1: Is insufficiency in water use identified as a problem? If yes, who perceives it as a problem and why?**

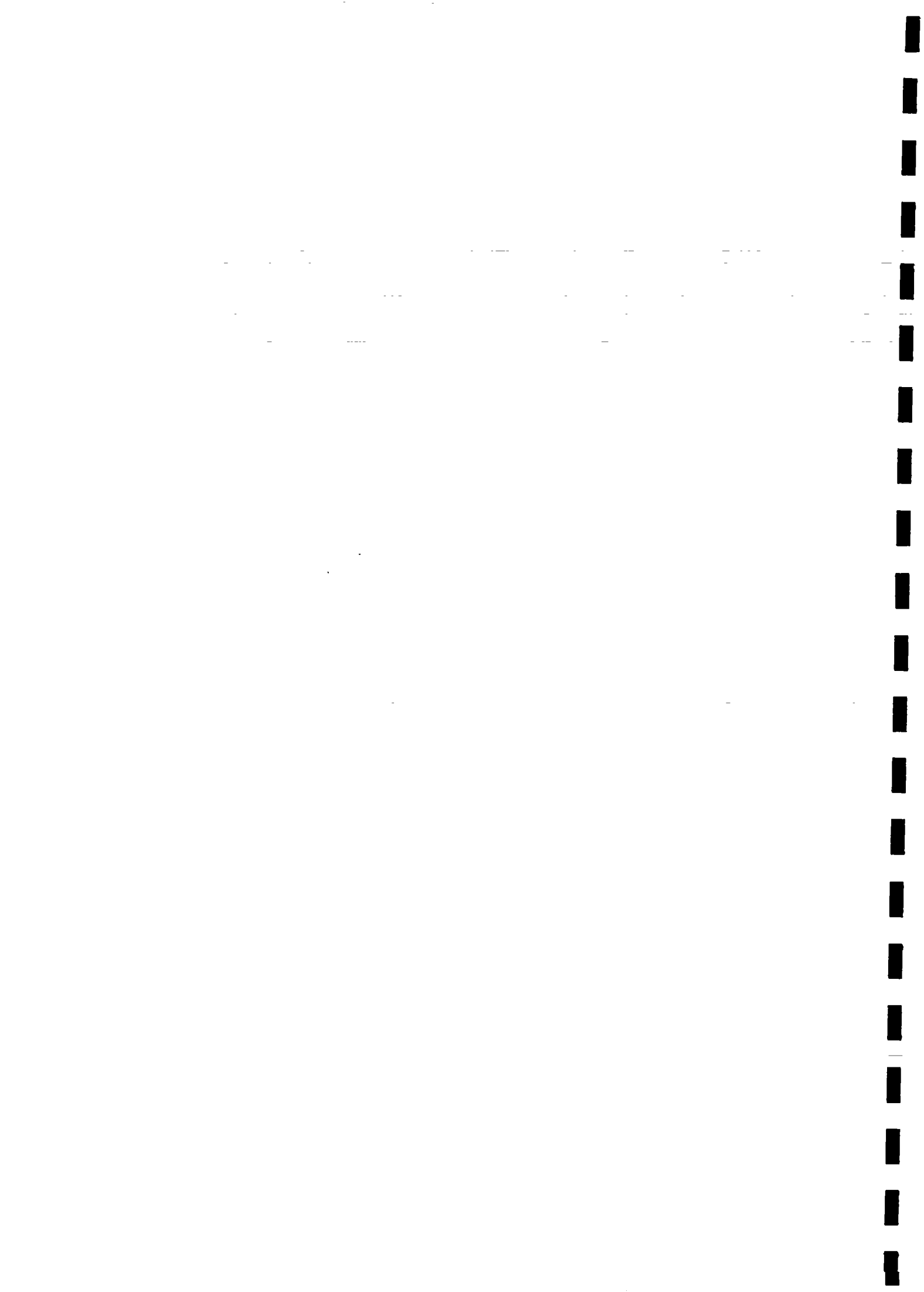
##### Participants replies at Community Level (Kharjyang):

##### Drinking water sector:

Although there are many small problems in the water systems, people do not perceive them as a major one. It may be due to the reason of all water schemes constructed newly in full participation of community.

##### Irrigation sector :

In irrigation systems people have more frequent problems of water availability. Especially people who own their land in the tail race of the canal, face this as a very big one. According to them it is due to high quantity of water wastage during transportation and traditional methods of water uses like field flooding. This problem of water scarce due to different reasons is a fact realized and identified by the different stakeholders like, Users Committee, VDC body, Water users, district level agencies and the DDC. In this case all users (100%) and stakeholders perceive it as a problem.



**Participants replies at District Level, Gulmi :**

**Drinking water sector:**

At this level, people refer some worse examples of inefficient water use in the drinking sector. In case of Gulmi district, Jubhung water supply scheme, Musikot water scheme, Gaudakot water scheme and so on are some example where inefficient use of water has been identified at both community and district level. It is not only due to less water quantity in those schemes, but also due to improper management in operation.

**Irrigation sector:**

In the district there are some irrigation schemes made by the government line agency but in the most cases the local people have done it by their own. It is found that all these canals are to be repaired every year to operate them. In both cases loss of water is quite significant, which may be from various reasons as stated earlier. This problem of water loss in the irrigation canals in hill areas of Nepal, where the soil is of gravel mixed type, is a serious one and is identified by all stakeholders. As a remedy of this irrigation office in some places are making lined canals to save the quantity of water.

**Question No. 2: What inefficiencies have been identified?**

**Participants replies at Community Level (Kharjyang):**

- i. People say that taps which are located at the road side have more water loss. It is because children and some other persons passing drink water and leave the tap open. Sometimes taps are also found missing or stolen. Such water points which have a high chance of getting water losses by open taps are estimated 14 numbers out of total 71 in the VDC.
- ii. Some time children use excessive water/they play with water.
- iii. In irrigation systems water is lost heavily due to leakage from the canals, seepage through soil during transportation.
- iv. People irrigate their fields by flooding method which helps in the loss of quite a significant amount of water (100% farmers use this method).

**Participants replies at District Level, Gulmi:**

- i. Pipe cutting, breaking is significant. All participants agree on this version.
- ii. In irrigation more leakage are due to improper construction of canal, while transporting the water gets lost.
- iii. Due to lack of knowledge people irrigate fields by flooding method. This practice is every where in the district.
- iv. In existing old drinking water schemes where water users committee have not been formed or not very active, water is being lost for irrigation purpose.

**Question No. 3: What are the measures taken to avoid the misuse of water?**

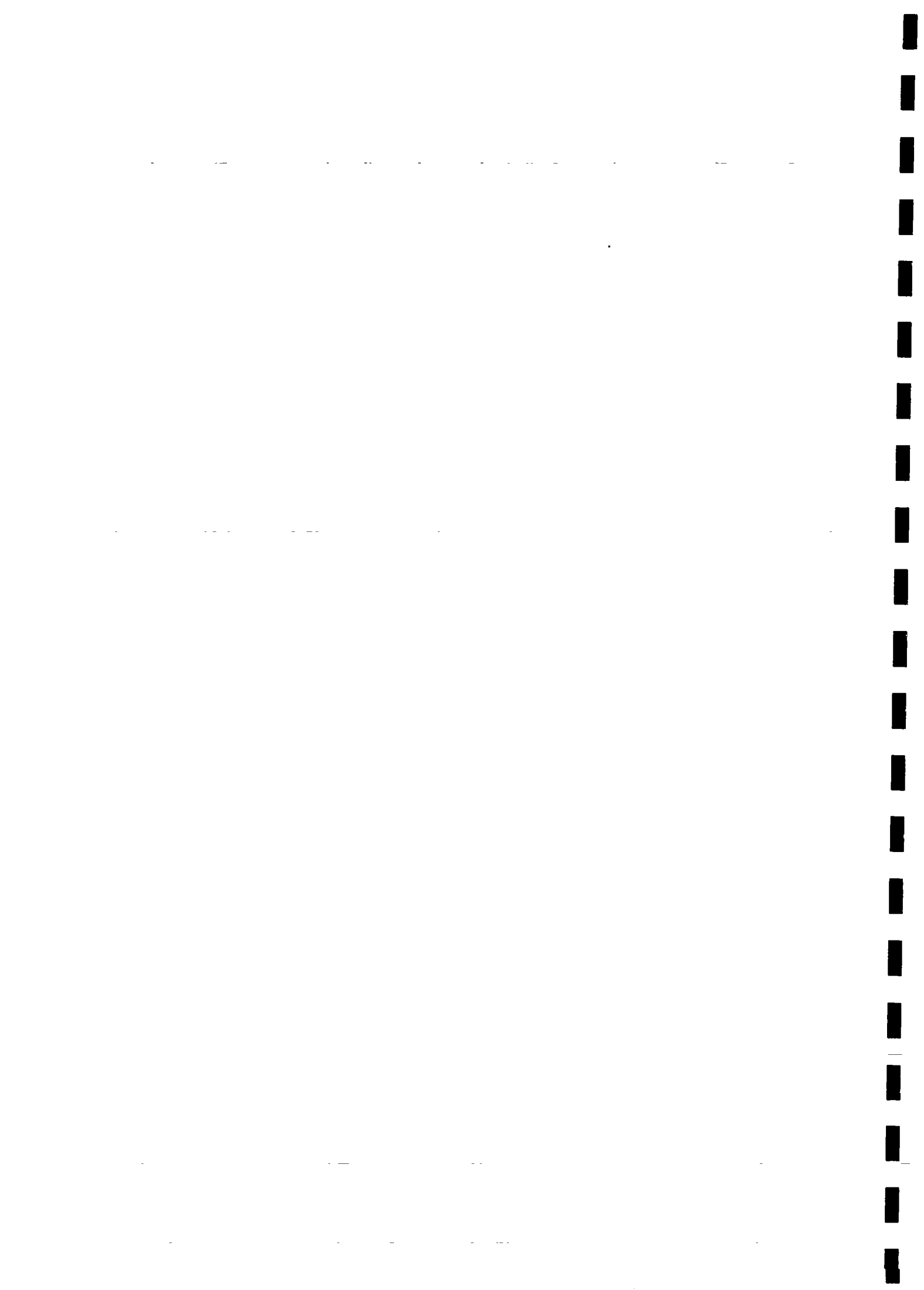
**Participants replies at Community Level (Kharjyang):**

**For drinking water supply :**

- i. In drinking water supply systems extra or illegal connection of pipes are not allowed (by WUC).
- ii. In some places auto stop taps are used and the nipples are tied with barbed wire so that children could not hang on it.
- iii. WUC have some internal penalty systems like punishment against any misuse of water. They have fixed a rate of Rs. 50 to Rs. 1,000 depending upon the number of misuse attempts.
- iv. 6 VMWs are trained to look after the maintenance activities of water supply schemes in this VDC. At present only two VMWs are working on full time basis. They are being paid Rs. 500 each/month by the user's committee. They are given the responsibility to check, control and report to WUC about any misuse, breakage etc.
- v. Operation and maintenance fund is raised and is deposited to the bank amounting Rs. 71,000.

**For irrigation:**

- i. Water is used on rotation basis by the various users.
- ii. There is one person "Kule Bhai" (canal brother/care taker) to check the system operation, report to the users and manage the necessary requirements to run the system efficiently.



**Participants replies at District Level, Gulmi:**

For drinking water supply.

- i. There is no direct control from the district level. The whole responsibility goes to the community.
- ii. Line agencies have different kinds of awareness creating programs/trainings for efficient use of water for the users group.

**Question No. 4: What are those measures which are found effective but not applied?**

**Participants replies at Community Level (Khariyang):**

- i. Plant species which consume less water are to be identified and to be planted.
- ii. Reuse and waste water use are found very effective but sometime people hesitate to use such water in the kitchen garden due to different types of detergent/chemicals.

**Participants replies at District Level, Gulmi:**

- i. Water right policy should be developed.
- ii. UC should be registered and given more authority to deal with legal aspects and will get more recognition.
- iii. The Operation & Maintenance aspect is lacking from the district level. For old and big schemes, which are suffering from the point of maintenance, there is no budget. This is a major issue, which contributes to an inefficient use of water.

**3.4.4. Lesson Learned**

**3.4.4.1. Successes:**

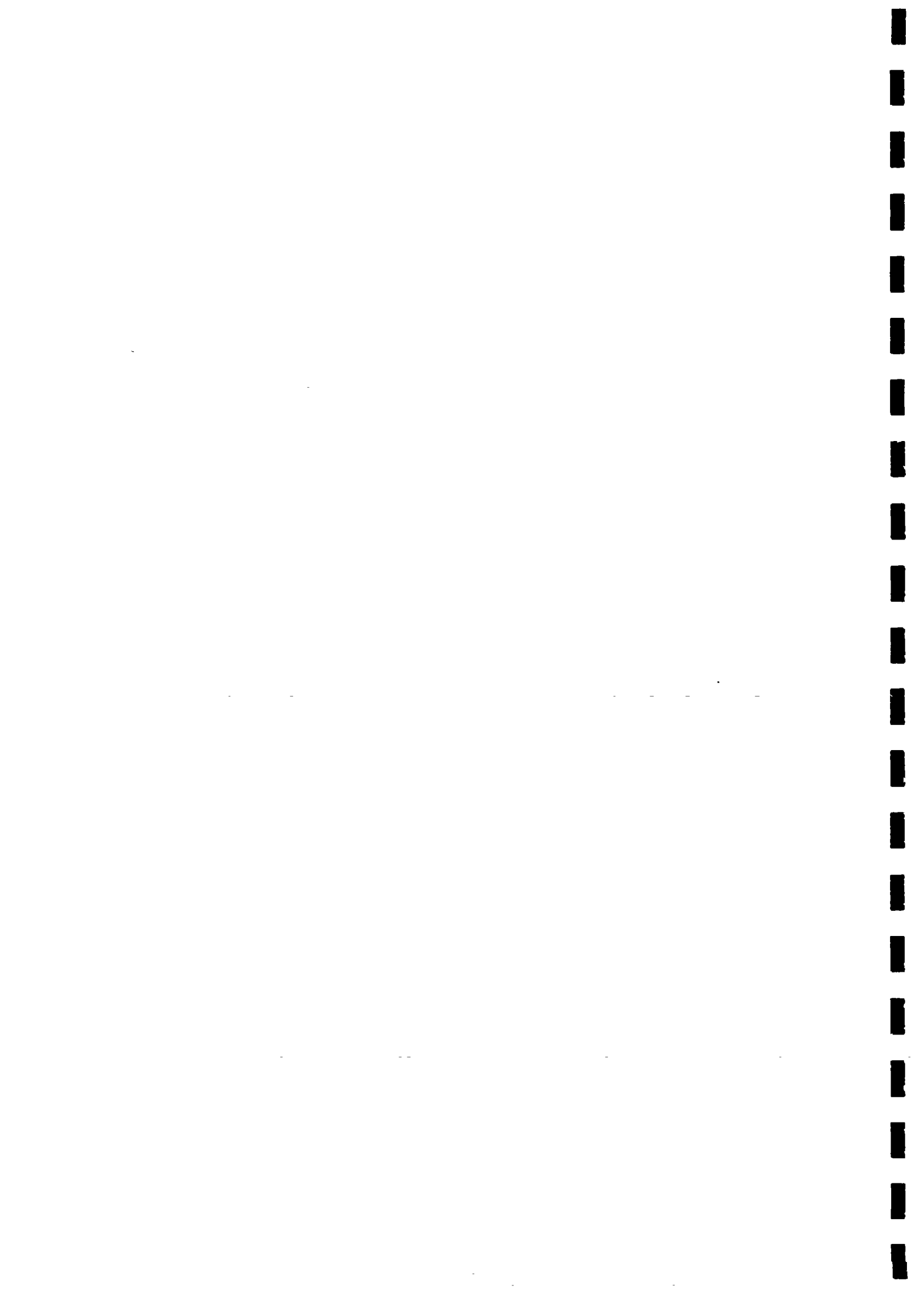
- Due to operational and maintaining responsibility of water schemes to the users in assistance of the WUC have improved the behaviour of users to large extent inline of efficient water uses.
- Schemes build based on beneficiaries request and on their full participation in all steps has made them aware for efficient use of water.
- Capacity building programs have great impact on efficient use of water.

**3.4.4.2. Weaknesses:**

- No clear policy or guideline exists, which are to be followed by the UC and VDC, regarding the use of water and water rights.
- Users committees are not registered thus lack legal recognition to handle money matters and other legal aspects.

**3.4.4.3. Recommendations:**

- Modern technology should be applied to construct the systems/schemes to prevent the loss of water.
- Water Users Committees are to be registered to have a legal recognition.
- Better understanding memorandum, regarding the efficient use of water, are to be developed time to time by the local people.



### 3.5. Principle No. 4: "Management needs to be taken care at the lowest appropriate level"

#### 3.5.1. Background:

Water resources, in general are being managed by the beneficiaries at the community level. They follow various traditional methods, which were developed based on the needs of a particular society. The local norms for water management may vary place to place and they are being modified by the community whenever and however needed. A large percentage of the population (nearly 90%) belong to the agriculture profession in Nepal depend on the substantial farming. Therefore in addition to drinking water, the need for irrigation water is also a quite a significant. There are very less such areas where people have received the facility for irrigation form either government level or any other external supports. In general people are managing their water sources in such a way that their demand could be fulfilled. In case where there is scarcity of water, people have been practicing the priority setting over different uses of limited sources. To maintain the equity distribution among the users they have been using some locally made, wooden or stone scales in case of limited source.

The study area Kharjyang VDC has basically two types of sources. Spring sources are being used for drinking water purpose (presently they get water from the taps of a scheme made by RWSSP) whilst the river and streams are diverted to the canals, which feed the agricultural fields. This VDC, before the RWSSP program, was on the third hardship rank out of 79 VDCs in Gulmi district which respect to the drinking water situation. There were only 47 small water points called kuwas for the whole VDC on which a population of 4568 has to depend. They had/have time arrangements for upper caste and lower caste people to fetch water from these sources and in addition a que system was developed within the same caste because of quantity problem. Conservation of those water sources was one of the most essential duties for them

Irrigating fields with the help of small channels named as "kulo" is a traditional irrigation method in this study area like in other areas. Due to high rugged slopping terraces and higher level location of the VDC, there is only about 20 % to 25 % of the area which is estimated as feasible for irrigation purpose. Out of this percentage a net of nearly 10% is in the command area of irrigation system presently.

For drinking and irrigation water uses, people have formed water users committee to look after all kinds of managerial aspects. The committees, basically are responsible for operation of the system and its maintenance aspect. They make some understanding memorandums from the users group and apply those to carry out the tasks.

#### 3.5.2. Methodology used:

Followings methods were used to generate information for guiding questions under this principle. Both community and district level workshops were conducted as per below listed methods.

<u>Methodology:</u>	<u>Community Level (Kharjyang):</u>	<u>District Level (Gulmi):</u>
<b>1. Explanation:</b>	Objectives of the principle activities to be done during workshop expected role of all participants	Objectives of the principle activities to be done during workshop expected role of all participants
<b>2. Discussion:</b>	A questionnaire was developed in Nepali. Each question are asked to the group and discussed.	Discussion on principle; questionnaire were prepared in Nepali.
<b>3. Group Work:</b>	NA	To identify the problems/solutions/ recommendation
<b>4. Observation:</b>	Visit to the sources and to the systems	visited DDC and district line agency offices i.e. District Water Supply Office, District Irrigation Office, Gulmi to get supportive information on this issue.
<b>5. Interview:</b>	Interview with User's Committee members	





### 3.5.3. Results:

#### **Question No. 1: Who manages water supply and irrigation systems and from when?**

##### **Participants replies at Community Level (Kharjyang):**

- i. Traditional water points "Kuwa" were managed/are being managed since many generation in the community by the users . There were no UC formally established but all kinds of understandings were made among the users related to water use, their protection and operation and maintenance.
- ii There are 7 new drinking schemes of which 6 have been built by the VDC and one big scheme have been facilitated by the RWSSP for implementation. All these schemes have water users committees established that look after management aspects. The UC comprise of for 9-11 members.
- iii Schemes are; Juke Pandhero ward no. 8, Mukeni, Chimchime ward no. 2, Khaire Gaira (Pipal Gaira), Kalimati, Kunwandi, Andehn Gaira. All these schemes are functioning well since the time of their implementation.
- iv. O&M fund is raised @ Rs 1000/tap making the total amount of Rs. 71,000.
- v 6 VMWs have been trained in this VDC to look after O&M aspects water schemes. At present only 2 are involved full time and are being paid @ Rs. 500/month by the users committee.
- vi There are altogether 14 of irrigation schemes canals in the VDC. These all are made by the users themselves based on their need. They do not have a properly established committee but one "Kule Bhai" has been appointed and he looks after all kind of operational and maintenance aspects of the canal, so that it could run efficiently. In this manner irrigation canals have been serving the community from a long before. The management part seems quite sound and effective one.

##### **Participants replies at District Level, Gulmi:**

###### Drinking water

- i DWSO is the lead agency in the drinking water sector in the districts who has to assume the role of designing, monitoring and supervision and the evaluation of different water schemes being implemented in the districts. As per the new guidelines, schemes below 500 population are supposed to be implemented through the external supports of NGOs to the communities directly.
- ii DDC is responsible for planning, coordination, and monitoring and evaluation of the water schemes being implemented in the district.

###### Irrigation

- i. Similar to the drinking water there is a district irrigation office to look after the irrigation activities in the district.

#### **Question No. 2: What is the decision making and problems solving process?**

##### **Participants replies at Community Level (Kharjyang):**

- i. In drinking water supply WUC calls the meeting and decide and solve the problems. If needed they a meeting of all users.
- ii A group of users and elder people sit together according to the need and make decisions but there is no UC

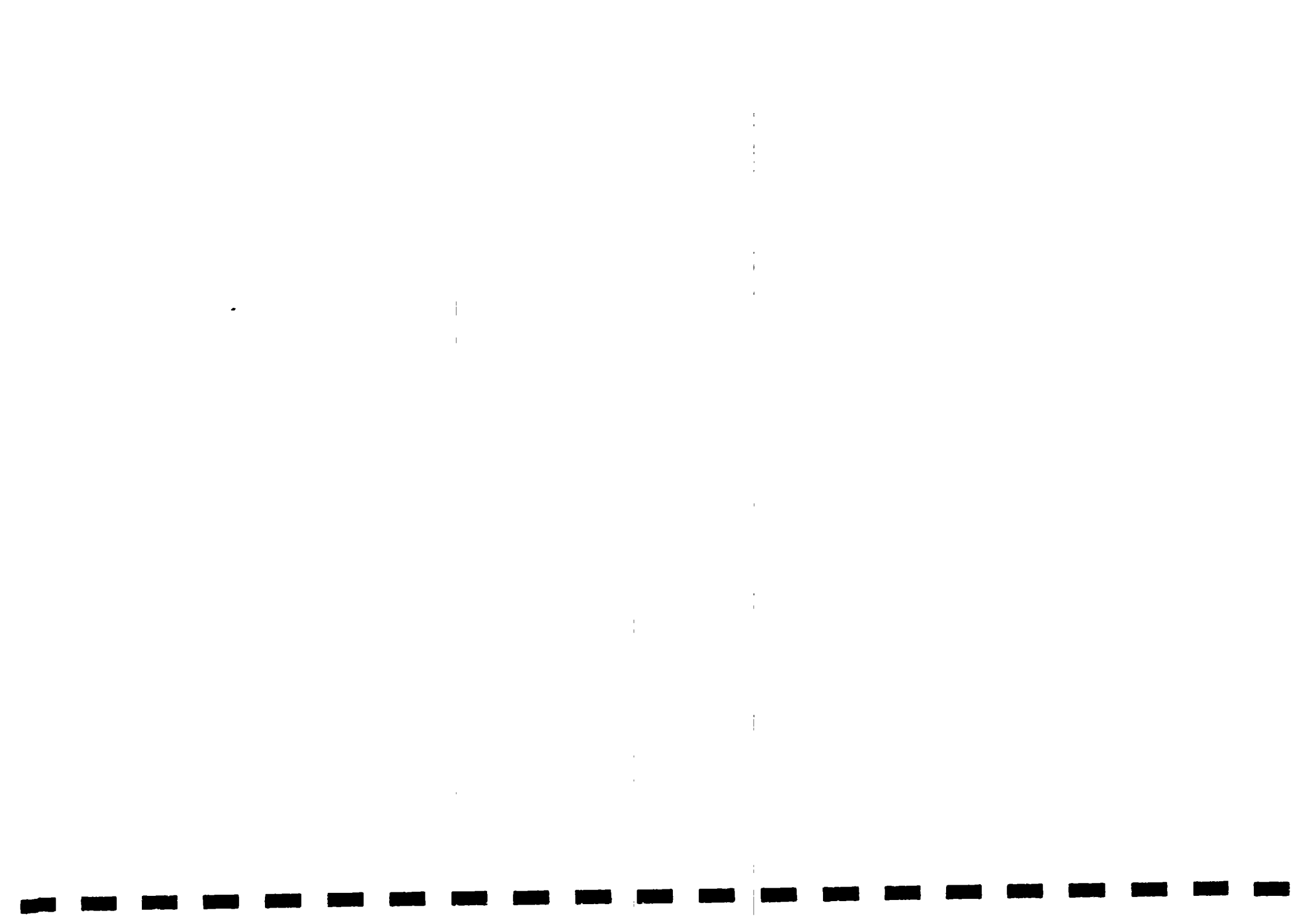
##### **Participants replies at District Level, Gulmi:**

- i. Decisions are made by the co-ordination committee, DDC council then a team is formed and send to the site
- ii. Organizing a meeting with concerned people i.e. community, political leaders and line agency's chiefs.

#### **Question No. 3: What are the common problems of management?**

##### **Participants replies at Community Level (Kharjyang):**

- i. Social disputes on water allocation and scheme allocation.
- ii Pipes/Taps in water scheme are stolen/missing in some cases.
- iii People use excessive water and do not closed the tap.
- iv. UC do not have enough knowledge/skills in financial management, which is an utter most important thing to maintain the transparency.
- v Lack of water policy and guidelines to make the decision.
- vi Lack of formal recognition from the beneficiaries committees.



#### **Participants replies at District Level, Gulmi:**

- i. O&M part is lacking in most of the schemes in both, irrigation and drinking water supply system. People report when they get problems to get the service. Mainly such problems are observed in big schemes and constructed by contractors (without people's participation).

#### **Question No. 4: Is management taking place at the lowest appropriate/possible level?**

##### **Participants replies at Community Level (Khariyang):**

- i. Water source management activities nowadays are given to the community. All water schemes newly being implemented have the water users committees. These WUCs need some managerial skill developing training which in all cases is not happening. With this experience of community level management of water, it is found that this is the most appropriate level.

##### Drinking water sector:

- i. As described, users committees are to be trained on different aspects. Although there are minimum of 9 members, only a few have to take care for every thing. In case of the study area, only a few users committee members out of 13 have the clear idea about their role and responsibility as a member.
- ii. People seem to be satisfied with the prevailing management situation.
- iii. No record of any higher level reference for some kind of supports on the problems.

##### Irrigation sector:

- i. In the study area irrigation system also have some how similar situation with that of the drinking water with respect to the management. In this case there is no users committees formed and all the canal systems are running in a traditional manner. People are used to it and are happy with this system. For maintenance they have to do it in a collective way and they have to do a lot of labour contribution every now and then.

##### **Participants replies at District Level, Gulmi:**

District level people are also in favour of giving all kinds of management authority to the community. Therefore all line agencies have the training programs nowadays for WUC to make them capable to absorb the given responsibility.

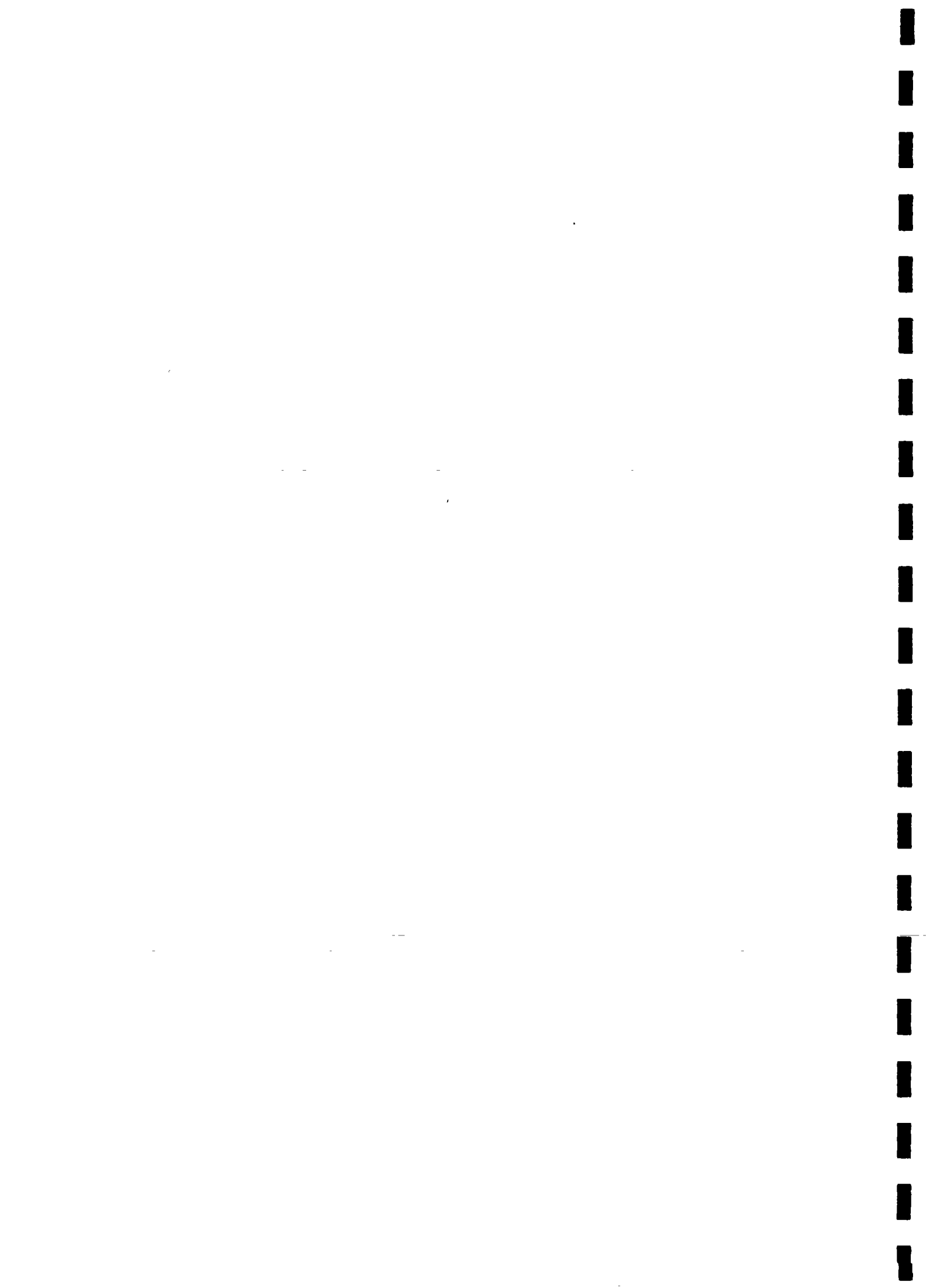
#### **3.5.4. Lessons Learned**

##### **3.5.4.1. Successes:**

- Community people get opportunity in building their management capacity.
- It was found very much cost effective and sustainable, if the management part is given to the community to look after.
- A concept of team work gets developed, where all kinds of decisions are taken based on the local needs and the capacity limits.
- Disputes related to water use rights are being settled at the community level.
- Distribution of water and quantity allocation arrangements functioning effectively.
- Source conservation activities.

##### **3.5.4.2. Weaknesses:**

- Various communities in the rural area have such a low literacy rate, that it is a very big problem to find people who can read and write easily, so that they can be involved in the organizing committees as a member. This is the reason that user's committees always need external support for all kinds of work.
- People need to be trained in basic concepts and steps of management. They do not have ideas about it in the community level. For instance they need trainings on book keeping for cash and banking, transactions materials in and out record keeping, labour attendance and their payment process etc.
- Disputes related to the water use rights are found not solved all times in the community and then send to the upper level, because they do not have clear ideas/methods to deal with different disputed situations.
- Problem solving mechanisms in the district level are not in the satisfactory level.



#### **3.5.4.3. Open Issues:**

Few important issues remained open/unclear at community and at the district level during workshop like:

- What would be done if there exists some controversies in the traditional methods which are being followed from long before and the water related laws. Few examples can be taken.
- Drinking water sector should get priority over other use. This is not easy to apply since there are many such cases where people object water to be tapped for drinking purpose saying that it is going to be used in the field for irrigation.
- Ownership feeling of an individual(s) over a particular water source and objection for community use.
- Control over the water sources/resources, either of Government or of the private sector whatsoever has to be clearly mentioned in black and white and it has to be made clear to the people
- In absence of guidelines for maintenance and revenue collection people think that it is a natural commodity to the human beings. Such norms and guidelines are to be formulated looking at the affordability limits of rural people.

#### **3.5.4.4. Recommendations:**

- Training to the Water User's Committee regarding the management and refresher trainings on different issues are of great use.
- Water rights policy and guidelines are essential to be formulated.
- User's Committee has to be registered



### 3.6. Principle No. 5: “The involvement of all stakeholders is required”.

#### 3.6.1. Background:

Stakeholders ownership feeling and willingness to participate in the WRM related activities is quite limited at all levels. Identification of the stakeholders, their role and responsibility are still a matter of orientation not only in the community but in the district as well. Although community people get together for planning a particular scheme, discuss and make decisions together for implementation and for operation and maintenance part, but in question of water resources management they feel very less responsible from their part.

Decisions regarding allocation of water sources for different sectors and within the sector, is done by the VDC. There are no any other formal forums represented by different stakeholders for planning and decision making regarding WRM. The advises of water users committee are being taken always in the positive way by the VDC, thus the role of the WUC is found as a effective one. Few influential or key persons in the society have also a vital role in the decision making process Their voices are heard strongly and considered as an important one.

The traditional water management systems were the demand driven ones. To fulfill the demand for people have to find some management ways and practice them. The concept of stakeholder’s involvement in water related activities can be seen from long back but limited to the needy group. They have been managing their water sources and water systems in the past in such a traditional manner.

#### 3.6.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khajyang):</u>	<u>District Level (Gulmi):</u>
1. Discussion:	According to questionnaire discussed was done in the same manner as mentioned earlier. All the information related to problems, solutions and practices were collected during discussion.	Discussion was done according to questionnaire, main discussion was focused to identify the problem and solution at district level.
2. Interview:	Separate interviews were taken with WUC and irrigation committee about their specific managerial activities and problems.	Answers were asked in the cards and categorized according to the answers given by the participants.

#### 3.6.3. Results:

##### Question No. 1: Who are the stakeholder? Do they perceive themselves as stakeholders and as being actively involve?

##### Participants replies at Community Level (Kharjyang):

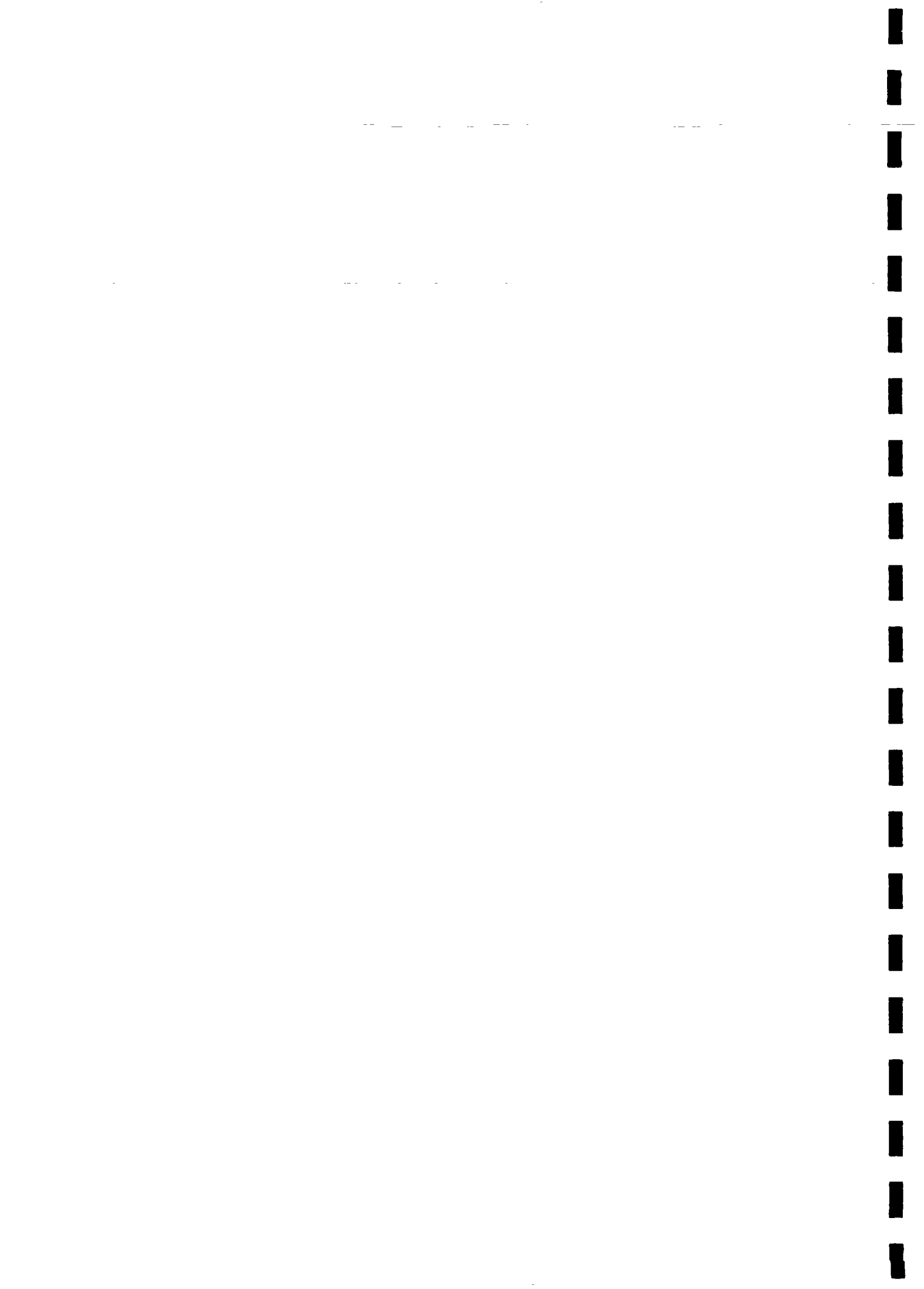
The community response on this issue is that they perceive the VDC, WUC and the users as the stakeholders. Among these who also VDC counts itself as a decision making body. WUC and users agree on that argument

In the community, stakeholders users, UC members, VDC members take part in the WRM activities actively. They consider other stakeholders as an outside supporter and as an advisor. Also outside level stakeholders limit themselves in this periphery and in this sense is not taking part in decision making actively. This case applies both in the community and district level.

##### Participants replies at District Level, Gulmi:

Stakeholders for water resources are Drnking Water Supply Office, Forest Office, Irrigation Office, Environment and Soil Conservation Office small scale water industries, District water resources management committee, and the users.

At the district level the role of stakeholder is found not clear to the different partners. DDC assumes the seat of decision maker, whereas line agencies and other organizations want to support only in specific programs that have been planned for the year. Identification of the stakeholders, their role and responsibility are still a matter of orientation in the district.





**Question No. 2: Who owns the water resources/sources (at various level)?**

**Participants replies at Community Level (Khariyang):**

In the community level discussion it was found that the ownership of water sources/resources lies with the different stakeholders in the following manner:

- i. People who are using the source(s) for any use in the past are the owner of that particular source irrespective of the administration boundaries.
- ii. Those sources which are not in use fall under the ownership of the community level stakeholders within the VDC
- iii. There is a common feeling of ownership customarily attached to the land owner on such sources which are located in private land although great dilemma is there in this statement.
- iv. Out of total 7 drinking water schemes one is under construction and 6 have been handed over to the water users committees after their completion. In case of the irrigation system although there is not a properly established UC, all the operational related activities are being done in a cooperative way.

**Participants replies at District Level, Gulmi:**

Stakeholders feeling is quite a little with all level. Although community people get together for implementation of a particular water scheme, discuss and make decisions for its operation and maintenance part together, but in question of water resources management they feel very less responsible themselves. It is same with other stakeholders as well.

**Question No. 3: What platform/forum exist for decision making? Do they work effectively? Who takes the decisions?**

**Participants replies at Community Level (Khariyang):**

The allocation of a water source for schemes is done by the VDC. There are no other formal forums represented by different stakeholders which could take such decisions. In case of the study area VDC, there is a water users committee, that is taking the lead role on influencing the VDC in water related issues and their decisions. The advises of water users committee are being taken always in a positive way by the VDC, thus the role of the WUC is found as a effective one.

Few influential/key person in the society have a vital role in the decision making process regarding the WRM. Their voices are heard strongly and considered as a effective one.

**Participants replies at District Level, Gulmi:**

There is a district level Water Resources Management Committee in each district which has a role of advisory group for water related decisions. The DDC is a decision making body in the district. The WRM committee, although has a lot to do in this respect, seems to be inactive in this relation.

**Question No. 4: What conflict management mechanisms are applied?**

**Participants replies at Community Level (Khariyang):**

In the study area they do not have any conflict so far related to the water. But they still have some rules developed for such situations if there happen some conflicts.

First of all the Water Users Committee is informed by the users about the disputes in writing or verbally. Then it is discussed in the UC meeting and if necessary they call a mass meeting of all users and discuss on the matter.

WUC make necessary recommendations to the VDC and together with the VDC they make relevant decision on it. They believe that this process is enough to solve the local problems and if not solved then they will forward it to the DDC for necessary action. Such decisions either in the community or at the district level are made in writing so that its repetition could be discouraged.

**Participants replies at District Level, Gulmi:**

An usual process of dispute management in the district level is explained here. DDC together with the District WRM Committee form a team for observation of the disputed source and the locality. They visit the site, gather information and organize mass meetings to solve the situation. If the situation is not improved or the dispute is not solved the DDC recommends the district administration office to take legal action on the situation.



This whole process was followed in one of the RWSSP scheme VDC namely "Bhurtung-B" where few people raised a source dispute at the stage of scheme construction. After following above steps the conflicts were settled in the scheme area. It took two years to settle the issue. Many such examples could be sighted in the district.

#### **3.6.4. Lessons learned**

##### **3.6.4.1. Successes:**

- Beneficiaries have strong feeling of ownership for the water sources in their community. They are managing drinking water and irrigation systems at the community level with a great feeling of ownership.
- District level decision makers and other concerned organizations take part in the process of decision making and problems solving.

##### **3.6.4.2. Weaknesses:**

- Stakeholders ownership feeling is a matter of orientation presently at the district and at upper levels. Stakeholders at different levels do not perceive themselves as a stakeholder thus do not feel as an integral part in the decision making process.
- Lack of co-ordination and co-operation exists among stakeholders.

##### **3.6.4.3. Open issues:**

- Concept of the stakeholders decision making forum should be clear.
- Role and responsibility of different stakeholders should be made clear.

##### **3.6.4.4. Recommendations:**

- Bye laws and policies regarding the involvement of stakeholders are to be formulated.
- Programs concerning stakeholders co-ordination and co-operation should be initiated.
- Registration of UC for different sectors may help the community level organizations to identify themselves, which raises their feeling of ownership.



### 3.7. Principle No. 6: “Striking a gender balance is needed as activities related to different roles of men & women”.

#### 3.7.1. Background:

Participation of both men and women in community development activities, especially in the management of water resources in planning, decision making and other activities related to its development, were the major issues focused in the study.

Theoretically information channels in the community are the same for men and women, but in practice women do not know as much as men about what is going on in the village. Women think that men deliberately do not want to inform women about all things. This in their view is due to the reason that men work outside and women work inside the house, therefore men can't think of why to inform women.

In case of participation, mostly women do not take part in the planning and decision making process of the proposed program, but they are heavily involved in doing physical labours.

Similarly involvement of women in the User's Committee is also a discouraging matter. Even though people say that they have been told by the supporting organization to involve female members in the committee in practice it has been rare. There is a feeling that women hesitate to talk in public hence their ideas/feelings come in the committee's discussion during decision making process through their husband and other family members.

However in the community it has been noted that people are positive in women's involvement not only in the labour contribution part, but in all steps of the program.

#### 3.7.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khajyang):</u>	<u>District Level (Gulmi):</u>
<b>Voting:</b>	Use pocket chart; participant asked to <u>vote</u> whether women's participation / involvement is essential in WRM ?	Asked to group to raise their hands in favour of women's involvement
<b>Discussion:</b>	Discussion was done, based on the questionnaire to identify the present situation, problems and recommendation/solution in relation to gender and women's participation.	Same as community level.
<b>Interview:</b>	Separate interviews were carried out with a women group to get their views in their involvement, problem and recommendations.	NA
<b>Group Work:</b>	NA	To identify the problem, solution and to get recommendations, group work was done.

#### 3.7.3. Result:

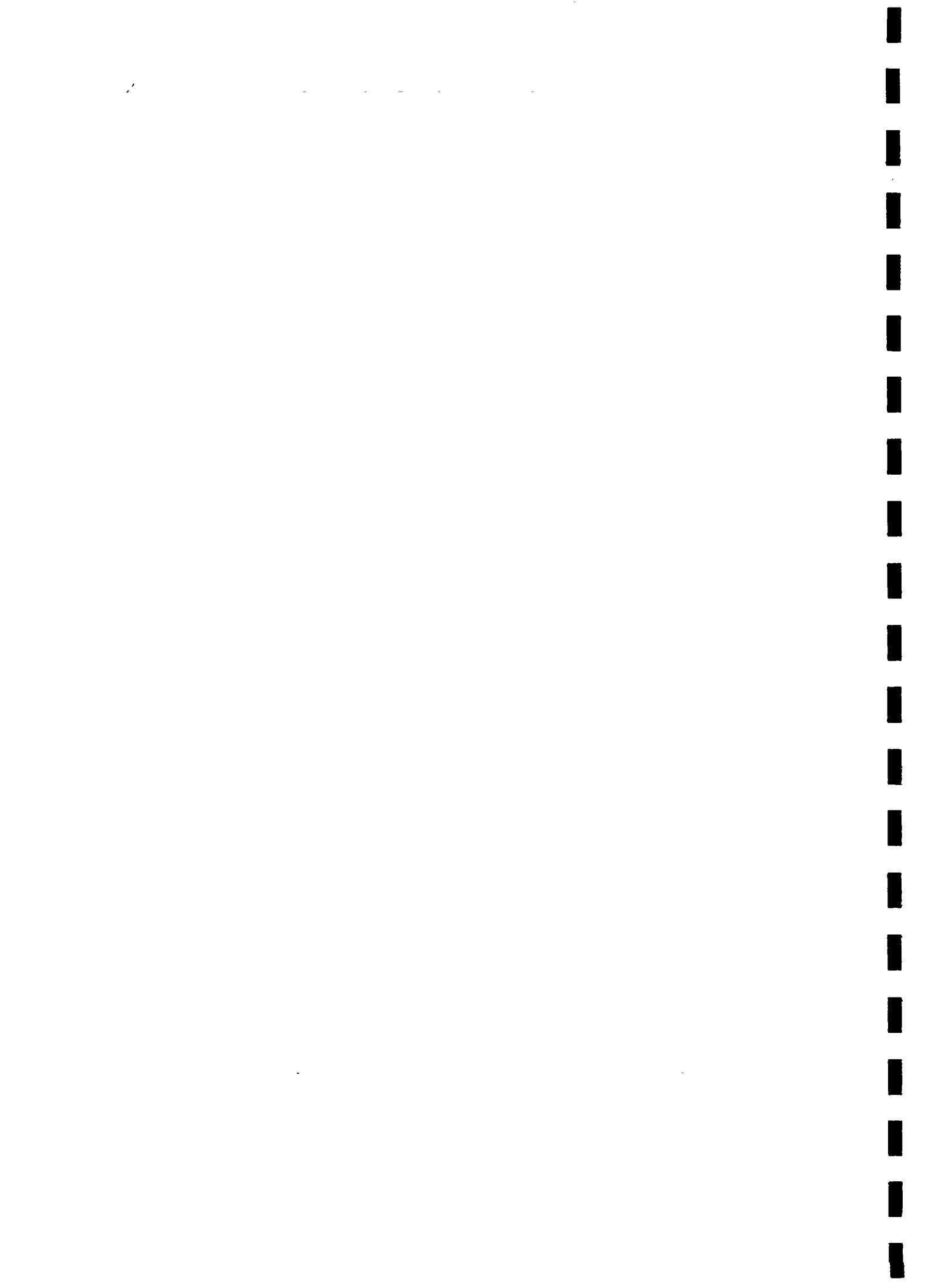
##### Question No. 1: Is there any gender imbalance in WRM?

##### Participants replies at Community Level (Khajyang):

In the planning and decision making process women's role is not emphasized. All kinds of decisions in the society including WRM issues are made by the men. Women have to follow the terms and conditions of decisions made by the men. For instance in water supply schemes women are not asked to put their opinion during source selection and during the layout of a system but they are searched during material transportation and pipe line digging. This fact in the workshop was accepted by 100% of participants in the study area.

##### Participants replies at District Level, Gulmi:

The situation is quite similar as stated above in the district level. 100% participants agree on it.



**Question No. 2: Do you think women should come forward in all the steps of WRM activities?**

**Participants replies at Community Level (Khariyang):**

Response on this question from the participants is,  
Men = 100% (yes). A total of 36 men were present in the meeting.  
Women = 100% (yes). A total of 3 women were present in the meeting.

**Participants replies at District Level, Gulmi:**

Yes = 100%. A total of 22 persons including 3 women were present in the meeting.

**Question No. 3: Is there ownership feeling in the schemes by both men and women?**

**Participants replies at Community Level (Khariyang):**

Yes

**Participants replies at District Level, Gulmi:**

Yes

**Question No. 4: Are women in the access of the service schemes?**

**Participants replies at Community Level (Khariyang):**

Yes

**Participants replies at District Level, Gulmi:**

Yes

**Question No. 5: What are the efforts that have been made which supports for women's involvement in WRM?**

**Participants replies at Community Level (Khariyang):**

- i. Training to Female Community Health Volunteer in the community level towards water management issues. There are 9 FCHVs in the VDC
- ii. Training to the mother group members.
- iii. Provision for 2 women in each UCs of water schemes.
- iv. Conduction of female literacy classes (Non formal education). In the study area RWSSP has supported for this program to teach 240 females.

**Participants replies at District Level, Gulmi:**

- i. To increase women's participation in development programs at the community and district level, Govt. line agencies have initiated several activities.
- ii. Awareness creating and capability building activities are incorporated in water supply schemes especially for women.

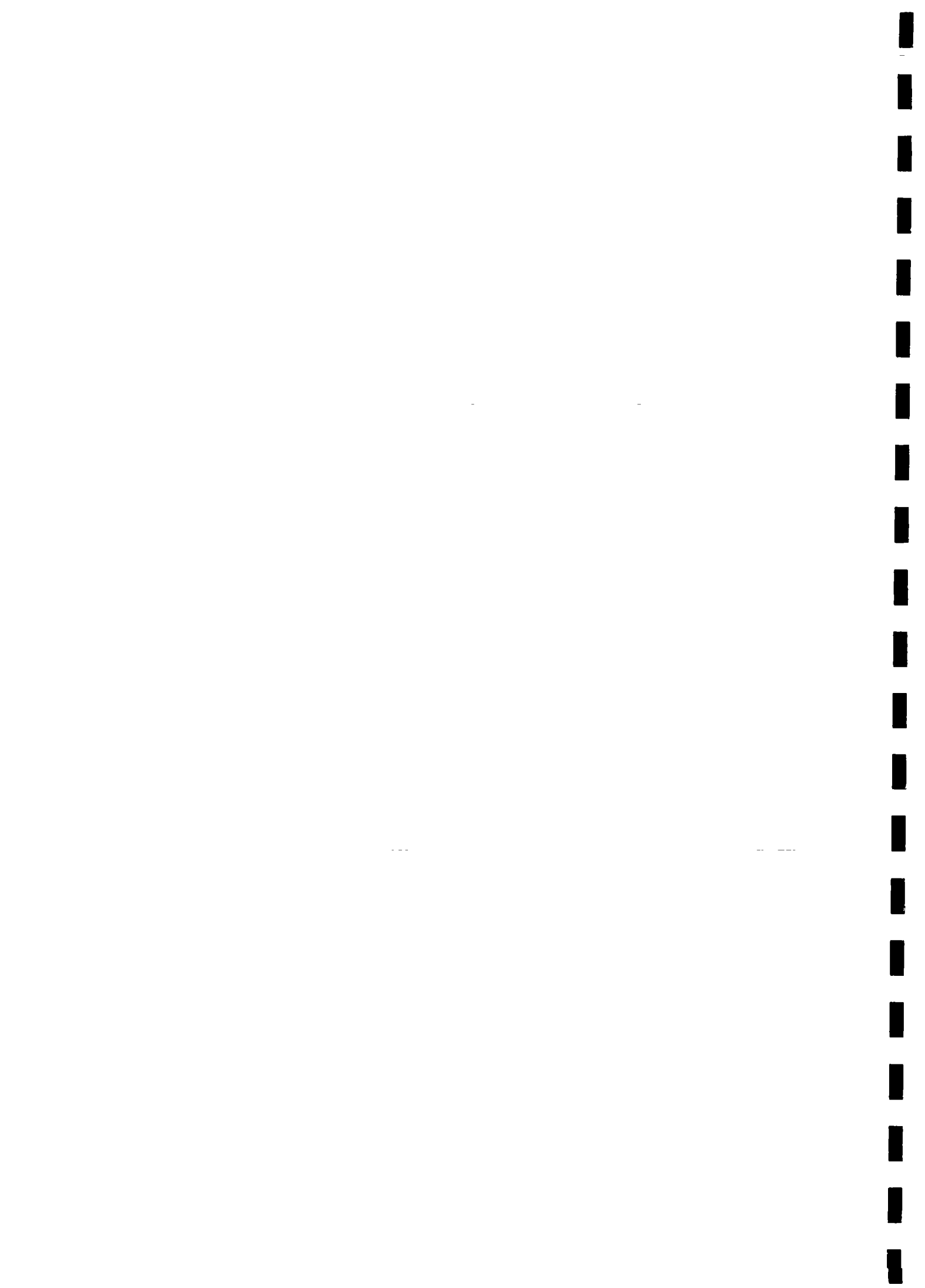
**Question No. 6: How many women members are in UCs of drinking water, irrigation, forestry?**

**Participants replies at Community Level (Khariyang):**

In drinking water committee : None  
In Forestry 3 nos.  
In Irrigation : None

**Participants replies at District Level, Gulmi:**

- i. There is no women member in WRM committees at district level. Only women development offices are representing everywhere.
- ii. There is a provision of minimum 2 women member in the UC.
- iii. District Water Supply Office has been following the same principle of minimum 2 female members in the UC of water schemes.
- iv. In the political field now (from this year) one women candidate from each ward is compulsory. It may raise the women's number in the district level communities.





**Question No. 7: What are the problems for women's involvement?**

**Participants replies at Community Level (Kharayang):**

- i. Most of the women are illiterate in the rural community like wise is the case in study VDC. In addition women do not have sufficient opportunity for exposures. So they have less confidence in their performance regarding community activities.
- ii There is cultural hesitation; women feel discomfort to involve with their elders in decision making activities as a result of cultural background. They are basically responsible for household chores and in case of female headed household, they have to look after the outside works also.

**Participants replies at District Level, Gulmi:**

- i Less opportunity for women to be in the position for taking part in the planning and decision making process.

**3.7.4. Lessons Learned**

**3.7.4.1. Successes:**

- No major problem felt by the women though only men have made the decisions so far.
- People are in favour of women's involvement in community development activities. The degree of visualization/realization about the importance of women's involvement in a decision making forum is increasing day by day.
- Capacity building training e.g. non formal education classes, FCHV, TBA, mother's group trainings are being launched in the community especially for the women.
- Women's participation in mass meetings is getting increased gradually than before.

**3.7.4.2. Weaknesses:**

- Women have higher illiteracy rate. They have less opportunity of exposure outside.
- Culturally and Socially their main responsibility is considered to look after the household activities.
- Lack of knowledge in the society about the importance of women's involvement as a decision maker and planner.
- Insufficient empowering trainings for women in the community.
- Social harassment to come forward has resulted in less confidence with women.
- Lack of women staff in the project.
- Women are less informed about meetings and not organized as per women's convenience.

**3.7.4.3. Open Issues:**

- How to increase women's involvement in the prevailing situation?

**3.7.4.4. Recommendations:**

- Literacy and awareness creating programmes are to be launched for the women to enhance their skills and capabilities.
- Concept of men's and women's group separately for planning and decision making would be quite helpful to increase women's participation.
- Female members in User's Committees could be proposed as 50% to raise the level of women's participation in decision making process.



### 3.8. Principle No. 7: "Skill Development and Capacity Building are the key to sustainability".

#### 3.8.1. Background:

Capacity building related to development works, including WRM at all levels is important but at community level it is rather urgent. It is the key factor which increases the confidence within the individual in the community. In the traditional management system, to maintain the water schemes, people have developed several ways for empowering skills based on practical methods. Local mistries, Kule Bhai and Bdaghar in irrigation system and maintenance workers and care takers in drinking water schemes were being trained on the job during scheme implementation.

Government at VDC level has also emphasized the program of human resources development, thus allocating the annual budget of NRS. 125,000 for its development. This amount is supposed to be spend on the specific HRD programme only.

#### 3.8.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khaiyang):</u>	<u>District Level (Gulmi):</u>
1. Discussion:	To identify the existing HRD activities in the community, and number of trained persons, discussion was done .	Same as community level
2. Interview:	WUC & VMWs were interviewed separately to know their views about role of VMWs, their payment system and recommendation.	To identify the problem, solution and to get recommendations, group work was done.
3. Group work:	NA	

#### 3.8.3. Results:

##### Question No. 1: Is it possible/practical to develop capacity in all sectors related to water?

##### Participants replies at Community Level (Khaiyang):

Yes, (answer from 100% participants).

##### Participants replies at District Level, Gulmi:

Yes, (answer from 100% participants).

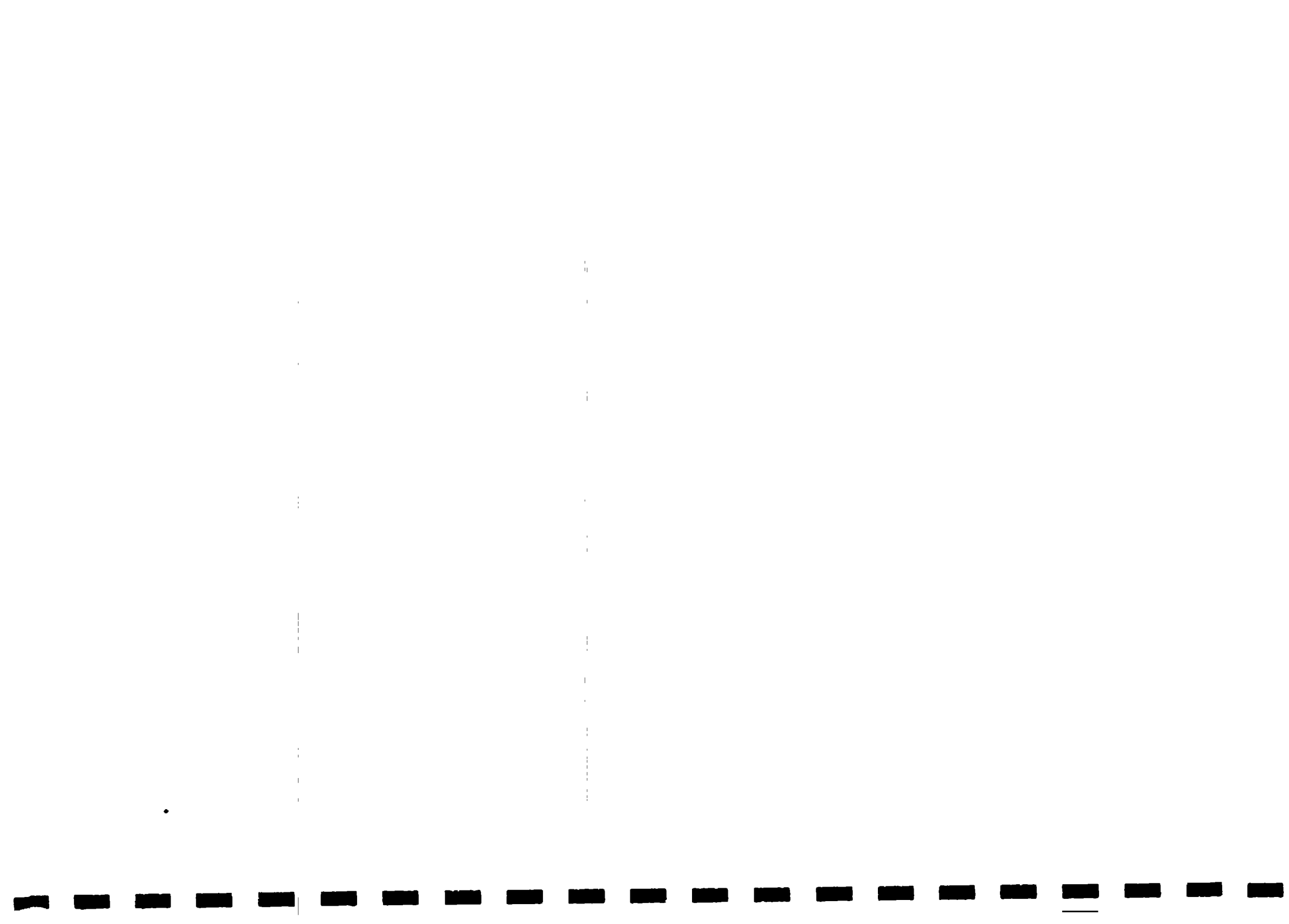
##### Question No. 2: How many persons are trained in the study area related to water sector(s)?

##### Participants replies at Community Level (Khaiyang):

##### Drinking water sector:

In the study area implementation of drinking water system was supported by the RWSSP in its first phase. Human resources development program is one of the major components of the project, that organizes training/seminar events in several steps, from preparatory stage to the implementation, of a scheme. In this manner some important trainings to different catalysts from the VDC are as follows:

- i. Water User's Committee training for scheme management.(personnel management, store management, financial dealing) ..... 11 members of WUC.
- ii. Water User's Committee training on planning process of water schemes ..... 3 members of WUC.
- iii. Water User's Committee exposure tour to different parts of the country ..... 2 members of WUC.
- iv. Village maintenance workers training to do O&M for the schemes ..... 6 persons trained(all male)
- v. Local latrine builders training to build household latrines ..... 4 persons trained (all male)
- vi. On the job trainings for WUC members and other local people.
- vii. Female literacy program. .... 240 female.
- viii. Village Health Worker's/Parameds training on health data collection and analysis .... 3 persons.
- ix. Teacher's training in HES ..... 11 persons



### Irrigation sector

There is no such a formal training received by the care takers? or any body so far in irrigation. It is because the canals are made by the local people and they are managing themselves.

### Participants replies at District Level, Gulmi:

#### Drinking water sector:

District Water Supply Office in the district conducts training activities to different catalysts for skill development in their scheme areas. Main training which DWSO carries out are.

- i. Water User's Committee trainings on scheme management. — total WUC in the district,
- ii. Female group training in HES. — 2 events (sanitation motivator and sanitation volunteer)
- iii. Village maintenance worker's training.
- iv. Operation and maintenance training to WUC.
- v. Primary school teacher training in HES.

#### Forest sector:

- i. Forest management trainings to User's group.
- ii. Nursery management training to User's group.
- iii. Community forestry net working training to User's group.

#### Irrigation sector:

In irrigation sector there are 13 Water User's committee (in 13 irrigation schemes implemented by the Government Line Agency) established in the district. These User's Committees are being trained by the district irrigation office in scheme management.

In addition, the district soil conservation office has trained one group of 20 women in soil conservation techniques.

Other non government and private sector organizations are also implementing training programs in the district to develop the capacity. For instance RWSSP, GARDP, Red Cross and so on.

In case of the RWSSP district level trainings are:

- i. DDP training for planning of water schemes. .... 179 nos (To all 79 VDCs, DDC and line agencies)
- ii. Water Supply and Sanitation Technician's training .... 15 nos.( from different 15 VDCs)
- iii. Local mistri training in Rain Water Jar construction .... 8 nos. (from hardship VDC)
- iv. Local Latrine Builders training .... 10 nos( from different VDCC)

### **Question No. 3: Can capacity be developed at all levels? If not what are the constraints and reasons (legal, institutional, lack of resources etc.)?**

#### **Participants replies at Community Level (Khariyang):**

The response of this question community level is that capacity building programs can be developed at all levels. Especially due to illiteracy in the community it is sometimes difficult to make success such trainings. Out of total trained persons in different chapters of water management in the VDC, numbers mentioned below are presently working as a full or as part timer.

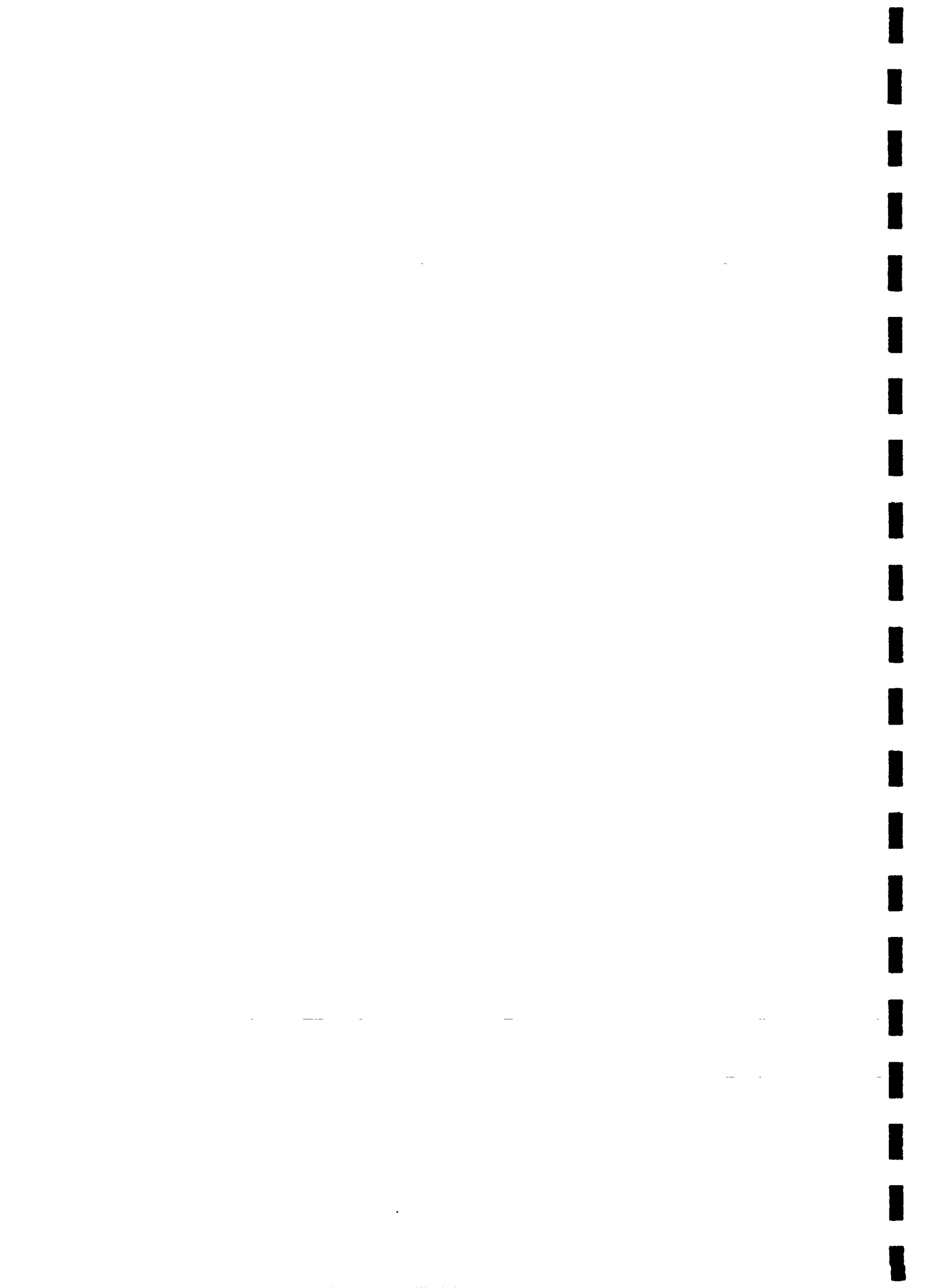
- i. WUC members working presently for the management of scheme ——— 11 members of WUC.
- ii. Village maintenance workers presently working ——— 2 full timer and 4 part timer.
- iii. Local latrine builders working ——— 4 nos. full time basis.

Besides these other trained catalysts are also giving a helping hand to the scheme management work as and when needed.

#### **Participants replies at District Level, Gulmi:**

District level people also think that skills development programs should be widened and should cover many sectors. They believe that this is the only way to reach at the stage of sustainable development.

- i. Government Line Agencies representatives say that people are maintaining their water schemes in a proper way, which is a result of such trainings
- ii. DDC members express the need for further similar trainings.



**Question No. 4: Which techniques and philosophy is being used for capacity building?**

**Participants replies at Community Level (Kharjyang):**

In RWSSP programme, techniques used to carry out the training were:

- i. Using Participatory Rural Appraisal method.
- ii. On the job trainings.
- iii. Follow up and reviews

**Participants replies at District Level, Gulmi:**

In most of the training commonly used techniques are the participatory ones. Different PRA tools are used to make things much clearer while conducting trainings.

**3.8.4. Lessons learned**

**3.8.4.1. Successes:**

- People are being trained in several technical and managerial aspects of the water schemes  
Local (among beneficiaries) people are trained, so they are as permanent resource and the community can get as and when needed. Local people get the opportunity learning and earning.
- Allocation of annual budget at the VDC level for capacity building.

**3.8.4.2. Weaknesses:**

- Lack of permanent institution to manage and to train people, according to communities need.
- Lack of initiation/inputs in this regard from the projects.

**3.8.4.3. Open Issues:**

- Which organization could take what responsibilities?

**3.8.4.4. Recommendations:**

- Permanent institutions or private sector organizations at the district level are needed to train the people according to the needs.
- Existing Government Line Agencies are to be strengthen to provide related trainings to the local people.





### 3.9. Principle No. 8: "Water is treated as having an economic and social value".

#### 3.9.1. Background:

People believe that water is nature's gift and a natural commodity. It has been observed and realized that this mere natural resource should be given special attention to preserve it, but paying revenue on a tariff basis is very new and big change to the community people. People seems motivated and agree on contribution in cash or kind to maintain their drinking or irrigation system(s), but collecting revenue on tariff basis for the time being is a theoretical assumption. To obtain this result people are to be awarded a lot, UCs should be registered properly and trained in financial management, supervision and a water right policy should be developed.

#### 3.9.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Khariyang):</u>	<u>District Level (Gulmi):</u>
1. Discussion:	A questionnaire was developed in Nepali. Each question asked to the group and discussed.	Discussion were made based on the questionnaires prepared in Nepali.
2. Group Work:	NA	To identify the problems/solutions/ recommendation.

#### 3.9.3. Results:

**Question No. 1: Do all water users pay for water used?**

**Participants replies at Community Level (Khariyang):**

Water Supply sector:

- People do not pay for water in the rural communities on the basis of a monthly tariff.
- To operate and maintain the system properly they have a newly introduced practice of collecting O&M fund. In case of the study area VDC, O&M fund was collected based on Rs 1000.00 per tap and deposited in the bank account. In this manner they have so far collected an amount of Rs. 71,000 00 for this purpose.

In irrigation sector:

In the irrigation sector also people do not collect water charge for use but it is a traditional custom that to repair the canal, to maintain them and to operate them nicely, they contribute labour both in cash and kind.

**Participants replies at District Level, Gulmi:**

People perceive water as a natural commodity and feel that it is a free gift to them by the nature. Therefore they do not have any water tariff systems in drinking water and irrigation schemes or others. But still the practice of collecting O&M fund for water supply scheme (amount per tap varies from agency to agency depended on who is supporting) and contribution for O&M of irrigation system is considered as the prime responsibility of the community.

**Question No. 2: Is a tariff system in the water sector essential?**

**Participants replies at Community Level (Khariyang):**

All the participant have positive feeling on this issue, but there are several open issues regarding this matter like how to start?, when to start?, rate per unit amount of consumption etc.

**Participants replies at district level, Gulmi:**

All participants expressed that a tariff system should be applied in water sectors. But water policy is essential and need awareness creating activities at all level in this regard.

**Question No. 3: Is the financial system transparency? If so, how is it transparent?**

**Participants replies at Community Level (Khariyang):**

The water users committee for drinking water is responsible to collect the O&M fund and keep records of all transactions made. In the study area the WUC has a balance of 71,000 Rs. at the moment and they have maintained the ledgers for all income and expenses made till now. They do meetings for financial clarity within the UC in a certain interval of time. In this way the system of finance handling could be said as being transparent.



**Participants replies at District Level, Gulmi:**

At district level annual budgets for different sectors including water are discussed in the district assembly. Based on this the national planning commission allocates the budget for annual implementation of programs. This is a common practice for all kinds of activities to be undertaken in the district. In this way the system is a transparent one. But if we confine the matter only to water tariff, which does not exist in the district it may not be a relevant issue at present context.

**3.9.4. Lessons Learned****3.9.4.1. Successes:**

- Schemes are constructed with people's participation and their contribution in labour.
- O&M cost collection from the community has been initiated, it is a new practice in rural community(ies). Gradually people will understand the importance.

**3.9.4.2. Weaknesses:**

- People believe water is natural commodity. Difficult to change within short time span.
- Lack of policy, guideline and attention from all levels in this regard.

**3.9.4.3. Open Issues:**

- How to initiate collecting revenue in rural areas?

**3.9.4.4. Recommendations:**

- Policies and guidelines are to be formulated for tariff system.
- Awareness to people on the economic value of water is essential.(Awareness should be done before implementation (it could be made a criteria).



## Chapter 4: Water Resource Management Principles Addressed in Banganga (Terai area)

### 4.1. Background of study areas.

#### Kapilvastu District:

Kapilvastu District is located in Lumbini Zone, Western Region. Its 15 Ilakas consist of a total of 77 VDCs and 1 Nagarpalika (Municipality). The location of the district is shown in Annexure 1.

The district administration is headed by the Chief District Officer (CDO) and the Local Development Officer (LDO) is in charge of the general development activities of the district. The administration personnel is mainly stationed in Taulhawa, except for the VDC secretaries who work at the VDC headquarters.

The District Development Committee (DDC) is the elected body which plays the key role in planning, monitoring and evaluation and co-ordination among sectoral partners (including water supply and sanitation development). It is the decision making body for all kinds of development activities in the district.

#### Physical Features:

The total area of the district is 1738 km<sup>2</sup>. It is nearly entirely located in terai plains with only a narrow belt along the Northern boundary belonging to the lower hill reaches. The altitude varies from 90m to 824m above sea level.

The area is part of the Gangetic alluvial plain characterized by gently sloping cultivated land interspersed by large tracts of subtropical or dry jungle. About 42% (733 km<sup>2</sup>) of the district is classified as forest land, 52% (904 km<sup>2</sup>) is cultivated land and the remaining 6% (101 km<sup>2</sup>) grass land, barren land and water bodies. Due to the population pressure considerable parts of the forest land has been taken for agriculture use during the last ten years.

#### People:

Total household	=	58,986
Total population	=	384,586
Average Family size	=	6.52

93% of the population was found to be rural and 7% urban. The field survey of the RWSSP was under taken only in rural areas

The average density was thus 206 persons/km<sup>2</sup>, varying from 55 peoples/km<sup>2</sup> in Gugauli VDC to 532 peoples/km<sup>2</sup> in Phulika VDC

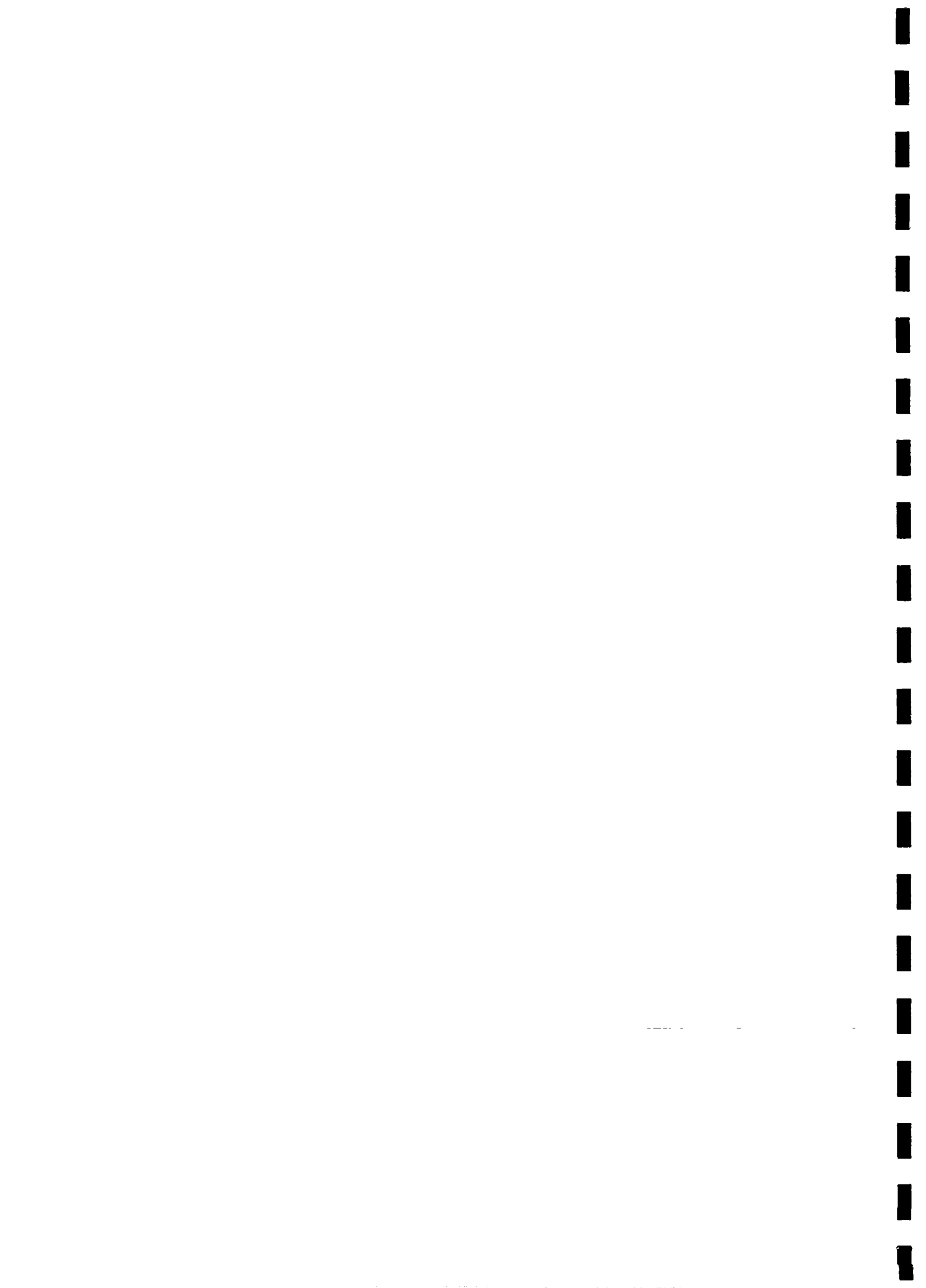
• Ethnic Composition	
• Brahmin, Chhetri, Thakuri	18.61%
• Tharu	12.29%
• Gurung, Magar, Rai, Limbu, Lama, Sherpa	2.64%
• Sarki, Kami, Damai, Badi, Dhobi, Nepali	9.45%
• Newars	0.27%
• Muslims	14.49%
• Others	42.24%

#### Socio Economic:

The economy of the district is based mainly on agriculture which is in general subsistence farming. In the industrial sector there are few small sugar factories, one pesticides factory, two distilleries and a number of small workshops, flourmills serving the local consumption. The commercial activities are limited to serving the local population only. In general, Kapilvastu district 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 district. However, with regards to food supplies the district is self-sufficient and even exports a small surplus to the neighbouring districts.

The main crops are rice, wheat, oilseeds, maize beans and sugarcane. Keeping livestock is a part of agriculture. Based on the results of the field survey in 1992 the number of domestic animals can be estimated as follows:

• cows	147,773
• buffaloes	60,447
• horses	743
• sheeps/goats	88,084
• pigs	2,503



The agricultural products exported from the districts are rice, wheat and sugarcane. The quantities of these exports are, however small.

#### **Water Resources and Water Demand in the district:**

The population of Kapilvastu district was 384,586 (according to the field survey by RWSSP 1992). The annual growth between 1981 and 1991 was, as calculated from the national census figures, for Kapilvastu 3.2%, which is above the national average of 2.07% for rural areas.

Most of the households in the district have domestic animals, cows, buffaloes, sheeps, goats, poultry etc. and they use water either from a water supply system or a natural water courses.

In addition to the domestic use of water other users which need to be considered are schools, health posts, commercial premises, workshops and other small scale industries. The possible future major industrial plants will have their own water supply systems and are not included in the water demand estimates of this study. The domestic water demand for water supplies in the rural areas is estimated at 45 litres /capita/day (lcd). The consumption includes losses and wastage of 20%. As the main water supply option in the rural areas Kapilvastu is and will be the handpump or well, this daily per capita requirement will easily be met. In bazaars and town areas the unit water demand is estimated as 60 liters/capita/day. The water demand estimates of the urban water supplies are indicative only and are based on the consumption figure of 100 liters/capita/day

The primary source of drinking water supply system in Kapilvastu district is ground water and for irrigation they use river source. The total handpump and wells/artesian are as follows in the district:

shallow tube wells	12,943
drilled tube wells	48
artesian wells	118

The distribution of people as per their primary source:

open well	40%
STW, artesian	55%
pumping	4%
gravity	1%

#### **Rivers:**

Arahi River  
Belu River  
Banganga River  
Kothi River  
Kundre River

#### **Environment:**

In Kapilvastu district, erosion is the most common environmental problem caused by regrading and deforestation. Erosion is more intense during the monsoon season when also the torrential rivers add to the effect by changing their courses and washing away large portions of land and soil.

Although there are no major cities in the district and therefore no large sewerage systems, the two main towns and the industrial plants, together with the fairly dense population cause considerable but localized pollution in the rivers, particularly during the period of low flow.

#### **Banganga VDC:**

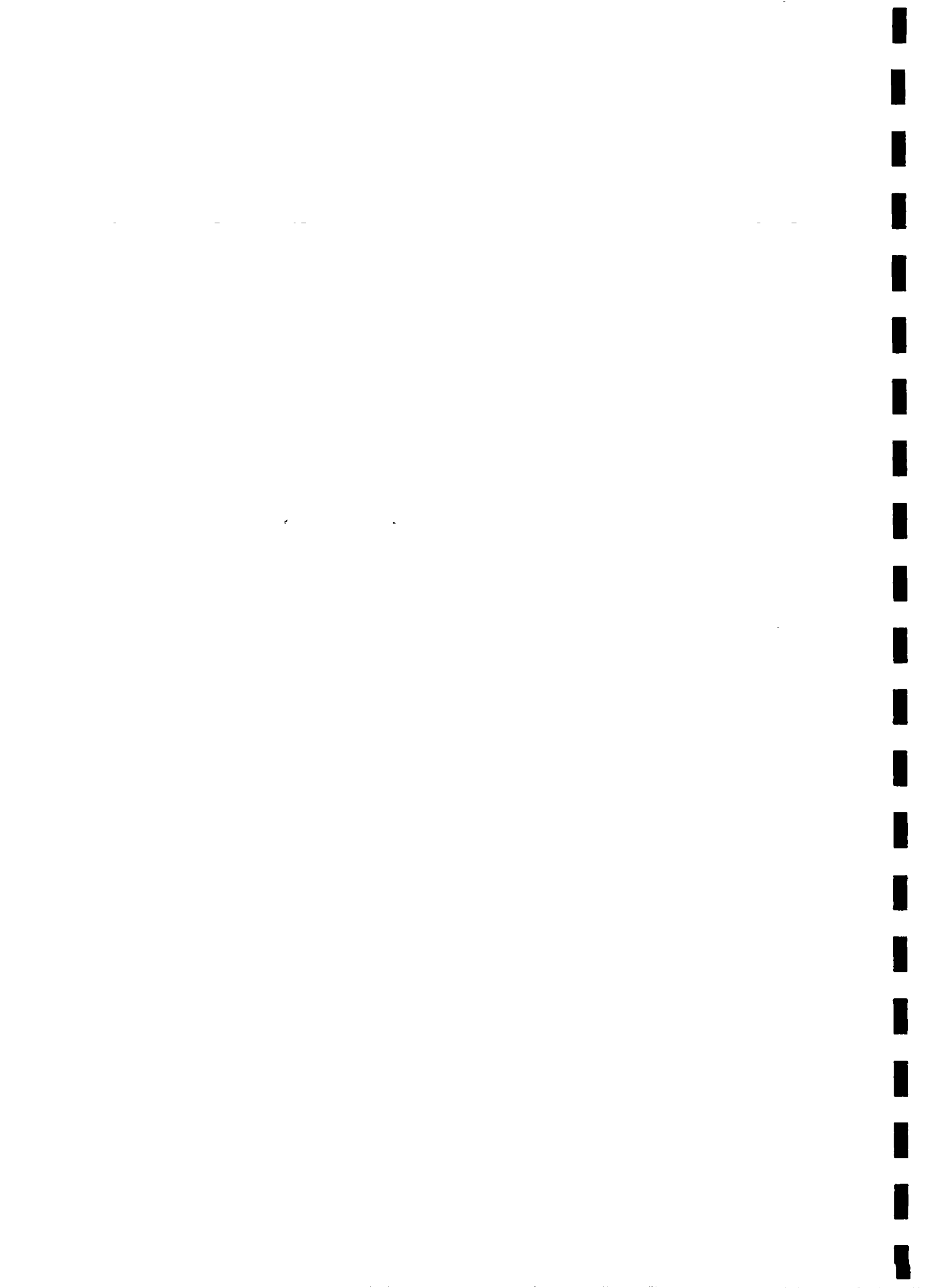
##### **General:**

Total Households	1254 nos.
Total population	7867 nos.
Average household size	6.27

##### **Ethnicity:**

Brahmin, Chhetri, Thakur	49%
Tharu	26%
Magar, Gurung	15%
Damai, Kami, Sarki	5.4%
Newar	2%
Others	2.6%

Water resources: It is presented in the findings chapter.





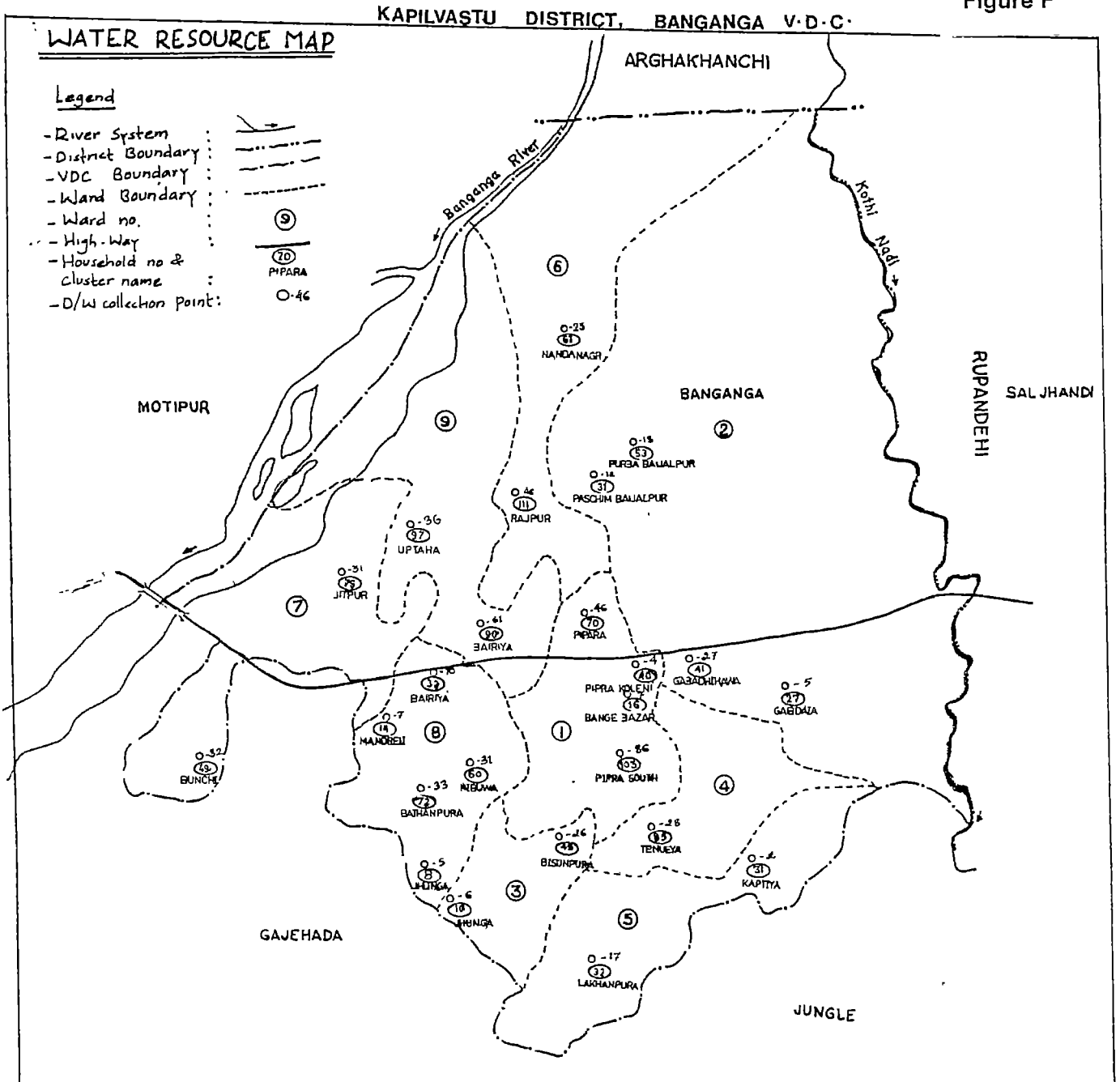
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Figure E





Figure F





## 4.2. Principle No. 1: “ Water resources and catchment protection are essential”

### 4.2.1 Background:

In the study area, there are two types of sources in use by the people. They are rivers and ground water sources. Ground water sources are being used for drinking water and other domestic purposes. People install tube wells and make open wells to get water from the underground reservoirs. In the study area there are shallow and deep tube wells at household and at community level. Shallow tube wells made by the local people dry up nearly three months a year due to lowering below suction head in water table in the area. Therefore RWSSP has supported to install few deep tube wells in this area to minimize the dry season hardship.

River sources are used for irrigation purposes. Banganga and Kothi are the main rivers in the study area. People have made a network of canals from the Banganga river. The system is more than 70 years old (respondents could not say exactly when it was constructed). There are 11 canals that irrigate about 4000 hectares of land in four different VDCs, fully managed by the community without any external support. In addition to this there is a tube well irrigation system from underground source in ward no. 8 of the VDC.

The catchment area protection is given very less weightage. Unplanned settlement, cutting trees from the forest for fire wood and other purposes is a common phenomenon in this VDC. Open defecation near the water points and washing, bathing activities in the river deteriorating the quality of water.

It was observed that people at community and district level are well aware the problems regarding the source protection. Effective measures are not taken so far to prevent and solve the problems, mainly due to lack of financial support at VDC/community level, lack of technical know how, lack of reinforcement from district level, etc.

### 4.2.2 Methodology used:

<u>Methodology:</u>	<u>Community Level (Banganga):</u>
1. Explanation:	Explained about the importance of 8 principles, objectives of the workshop, activities to be done during workshop and expected role of the participants
2. Community Mapping:	To identify the existing water sources in use, potential sources, forest areas, cultivated land, roads, water points and the households etc. the community map was prepared. Two participants (selected by the group) took the lead role to finalize and other observed and added information where needed. There was active participation from all participants.
3. Discussion:	A questionnaire was developed in Nepali. Each question was asked in the group and discussed. The conclusion/facts which was agreed by the groups ( 90%) and individual's ideas were noted on poster paper. Mainly it was done to identify the existing problems, solution and recommendations.
4. Observation/Visit:	The team visited the sources and the systems to get the information about management activities and efforts made to protect the sources. The team observed intakes, canals, distribution lines and a water allocation management system. Similarly hand pumps were also observed.
5. Interview:	Interviews were made with the WUC members, Badghars (care takers for the system and water managers in the villages), key persons and local elders, to identify the specific problems in relation to their role and responsibilities, problems encountered their recommendations to maintain the systems properly.  Also at the district level the concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.



#### 4.2.3. Results:

##### **Question No. 1: What are the existing water resources in the VDC and their present uses?**

- Total water collection points in the VDC	.....	600 nos.
- Open/dug wells (private)	.....	95 nos.
- Shallow tube wells (private)	.....	386 nos.
- Shallow tube wells (public-supported by RWSSP)	.....	80 nos.
- Lift/deep tube wells (public-supported by RWSSP)	.....	39 nos.
- Rivers Banganga river and Kothi river.	.....	2 nos.

Ground water sources are being used for drinking water, where as Banganga river is being used for irrigation. There are 11 canals which irrigate about 4,000 hector of the land area in 4 VDCs. The command VDCs are Banganga (study area), Motipur, Gajeda and Kopuwa. Altogether 32 villages fall under the service area of this irrigation system. The Kothi river is used mainly for animals and fishing. From the Banganga river sand and boulders are taken by different sectors for different purposes, especially construction activities.

##### **Question No. 2: Are catchment areas negatively influenced by any activities?**

###### **Responses at Community and at the District Level:**

- 1 Depletion of the yield in the wells is a major problem identified and observed by the local people during last 10 years time.
- 2 Deforestation activities are being increased mainly due to:
  - i. New settlement around the river sources.
  - ii. Cutting of trees for different purposes for example:
    - Firewood purpose in the village
    - To construct houses and other household uses
    - Thousands of trees are needed to be cut every year to maintain the intakes of the canal system. There are altogether 11 temporary canal intakes made in the Banganga river which are to be repaired several times in a year during rainy season to operate them.
3. River sources and their surroundings are being polluted due to open defecation and other activities by the near by villagers
- 4 People take boulders, gravel and sand in huge quantities from the river Banganga which increases the bank erosion, land slides and so on.
- 5 People use different kinds of poisonous plants for fishing in the rivers which pollutes the water Also they use explosives for fishing which sometimes breaks the bed strata thereby loosing the water in a big quantity.
- 6 Durng dry season, a common problem of getting fire in the forest occurs almost every year, which ultimately affects the water sources adversely.

##### **Question No. 3: What protection measures have been adopted so far and by whom?**

###### **Responses at Community and at the District Level:**

1. There are two nurseries developed in the VDC to grow different kinds of species to plant in their area.
2. The Banganga Kulapani Samitee (irrigation committee) has made several memorandums of understanding with the DDC and within themselves regarding the excavation and carrying out the boulders, gravels and sand from the river bed nearby the intakes. It has been agreed that no such materials will be collected and carried out from a reach of 100 metres in either side i.e. upstream and down stream of the intake sites.





#### **4.2.4. Lessons Learned**

##### **4.2.4.1. Successes:**

- Responsibility given to the community makes scheme system effective and assures its sustainability.
- The Kulapani Samitee (Irrigation Committee) has made several memorandums of understandings in direction of the source conservation.

##### **4.2.4.2. Weaknesses:**

- Lack of co-ordination among different stakeholders and consideration of people's voice, for instance there is another irrigation system just down stream of this one built by the Government due to which both systems are being affected.
- Lack of awareness about the relation between water and health e.g. open defecation, use of poisonous things for fishing, etc.
- Lack of technical and financial support to construct permanent intake(s), which could have minimized the deforestation activity around the source.

##### **4.2.4.3. Open Issues:**

- Low cost and appropriate technology is needed to conserve the source and the catchment area.
- Identification of different stakeholders their roles and responsibilities, where same source is used for different purpose by different sectors.
- Lack of knowledge about the catchment area to be protected and the species of plants to be planted

##### **4.2.4.4. Recommendation:**

- Training to users committees to strengthen their capability, specially in management of the systems.
- Technical and financial support should be provided to the community to construct intakes and canals systems.
- Users's Committee should be supported by the district to protect the source catchment area.



**4.3. Principle No. 2: “Adequate water allocation needs to be agreed upon between stakeholders within a national framework”.**

**4.3.1. Background:**

Water allocation for different sectors within the community is discussed and agreed among the villagers based on their needs. Drinking water systems are mostly build in the terai by using the ground water sources which is abundant in Terai area of Nepal. This source in case of study area is also being used in irrigation to some extent.

The irrigation sector has a higher priority than the drinking water in Terai area. Generally the river sources are used for this purpose. In the study area, the irrigation system is fully managed by the community. The irrigation source has always scarce of water in Terai area due to easy possibility of extension of command area. Therefore, in the study area they have developed and are using traditional methods of water distribution. For example, there are wooden/masonry scales installed at branching points of canal to distribute water in the required percentage. Some emergency feeder canals are also constructed to feed those canals which does not get sufficient water during the dry season.

The system is operating since 70 years and people have not experienced any major disputes in its operation.

**4.3.2. Methodology used:**

<u>Methodology:</u>	<u>Community Level (Banganga):</u>
1. Discussion:	Questions were asked to the group and discussed.
2. Interview:	Interviews were made with the WUC members, Badghars (care takers for the system and water managers in the villages), key persons to identify the specific problems in relation to their role and responsibilities, problems encountered their recommendations to maintain the systems properly.  Also at the district level concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.
3. Observation:	The team observed intakes, canals, distribution lines and water allocation management system. Similarly hand pumps were also observed.

**4.3.3. Result:**

**Question No. 1: Is sufficient water of required quality available to meet the demands of all water users?**

**Responses at Community and at the District level:**

Drinking Water Sector:

There are altogether 600 water collection points for 1254 households in the VDC for drinking water purpose. Out of these 229 shallow tube wells in the bhawar zone (foot hills) dry up for nearly 2 months during dry season. This makes the situation worse with respect to the quantity of water. Nearly 40% of the population (based on the villagers perception) face a high hardship for drinking water during this period.

Regarding quality of water, people say that in the first layer there is more iron concentration and in some places they say that fine red worms come through handpumps.

Irrigation Sector:

Due to a small quantity of water in Banganga river during peak season (dry season) and significant losses in transportation, people are not able to cover the total culturable land. Only 75% of the area (villagers saying) is under its command.



In one of the canals namely Tinaiya Kulo, which irrigates the land of three villages namely Nanda nagar, Belhaniya and Tinaiya, there was a big water allocation problem in BS 2027 (AD 1971). People from other areas tried to block the water flow in this canal saying that it covers very less command area. The situation was much worse and finally users from those villages filed a case in the district administration office, Kapilvastu. The Chief District Officer made a decision, by stating not to disturb the Tinaiya Kulo in flowing of water.

There is another irrigation system constructed by the Government downstream of this system in the same river. This irrigation system is known as Banganga Irrigation system covering the downstream area of the former mentioned one. Quantity problem in the second system during the dry season occurs oftenly.

**Question No. 2: What water allocation mechanism exists, who is consulted and who makes decision?**

**Responses at Community and at the District Level:**

In irrigation

There is one Kulapani Samitee (Irrigation Committee) to look after the whole technical and managerial aspect of the system. There are 13 elected members from 4 VDCs. This main committee looks after the whole 11 canals system covering 32 villages in 4 VDCs. Further there are 32 village level units where Badghar an elected person is supposed to be unit chief. These 32 village level units together with the main Kulapani Samitee make all kinds of rules for water allocation and for operation of the existing system.

In drinking water supply:

Ground water, being the main source for domestic uses of water, there is not a big problem in allocation of water quantity for this sector. There is one main UC who looks after the management aspect of the existing community wells. This WUC is also responsible for other drinking water related activities in the VDC. In case of private handpumps the concerned households take all responsibility for O&M

**Question No. 3: What legal framework and traditional practices for water resources allocation exist? is it effective?**

**Participants respond at Community Level:**

In irrigation system:

The community has been following the traditional system of water allocation which is quite effective and well accepted by all users. The water allocation (quantity) system is based on land area to be irrigated. They count the total quantity of water as 16 Ana ( Ana is a currency unit used in the past. 16 Ana =1 Rs./ local unit). Then they calculate the total area under its command as equivalent to 16 Ana water. Based on this calculation they have made the canals bigger or smaller as needed. Further, from main canal to distributories and up to the tertiary they need to maintain this water distribution calculation (quantity calculation) perfectly. To maintain it, they have developed an idea to install the scales in each branching points which allows only the calculated quantity flow in the particular canal. In the initial stage they made these scales from timber which now a days are being replaced by the masonry ones. There is one emergency canal to feed the needy canals from the surplus water in the system.

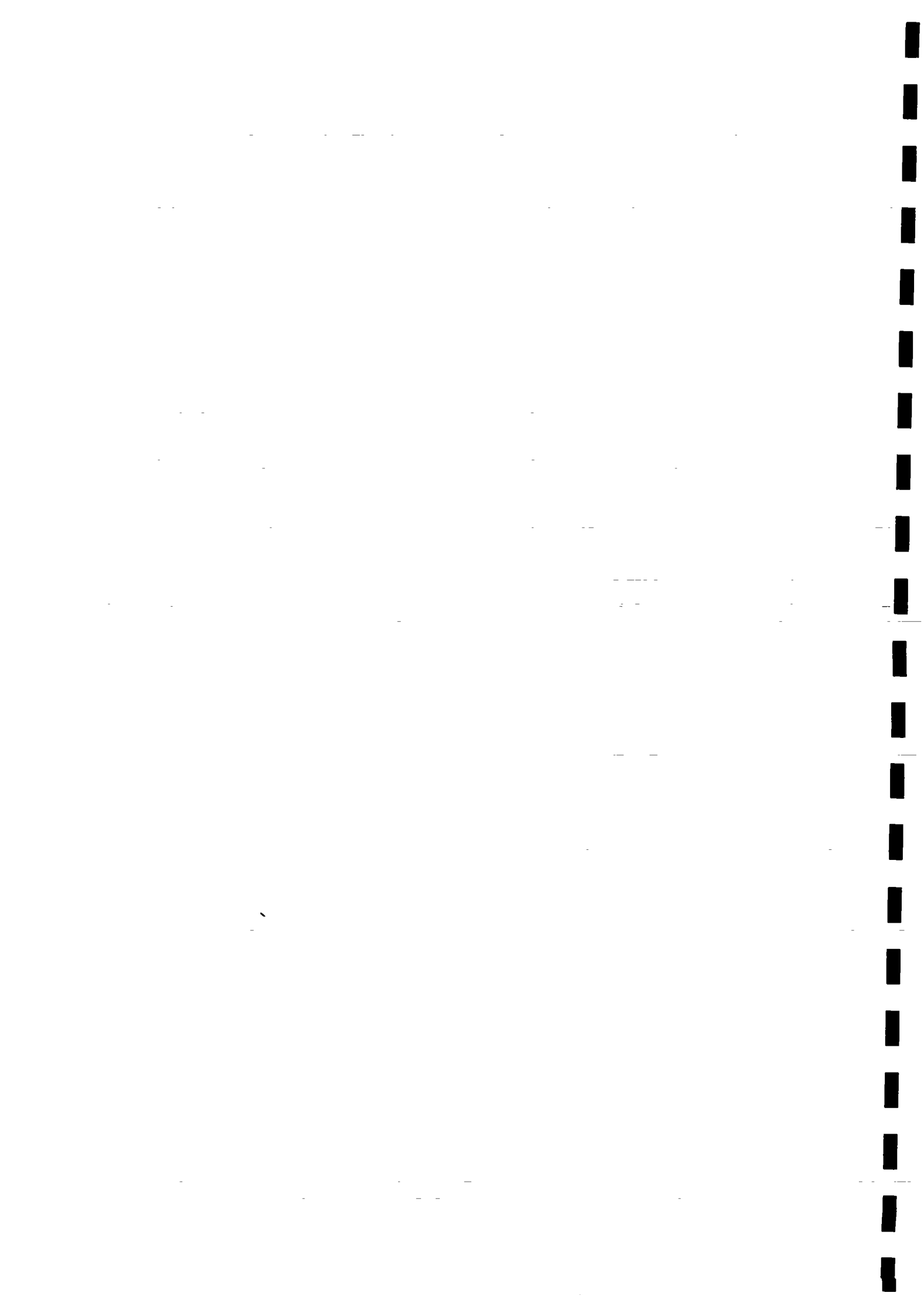
In drinking water supply:

Being the ground water as the main source for drinking water there is not much problem with the quantity of water to be allocated. People have privately owned tube wells in most cases and in case of the community tube wells which are installed generally among 8-10 households have 24 hours supply and located in the easy and near by area.

#### **4.3.4. Lesson Learned**

##### **4.3.4.1. Successes:**

- Beneficiaries could be a good manager if the systems are built as per their need and with their involvement at all steps of the program.
- The traditional method of water management at community level has very good concept of collective work which mobilizes people effectively and is well accepted by all.



#### 4.3.4.2. Weaknesses:

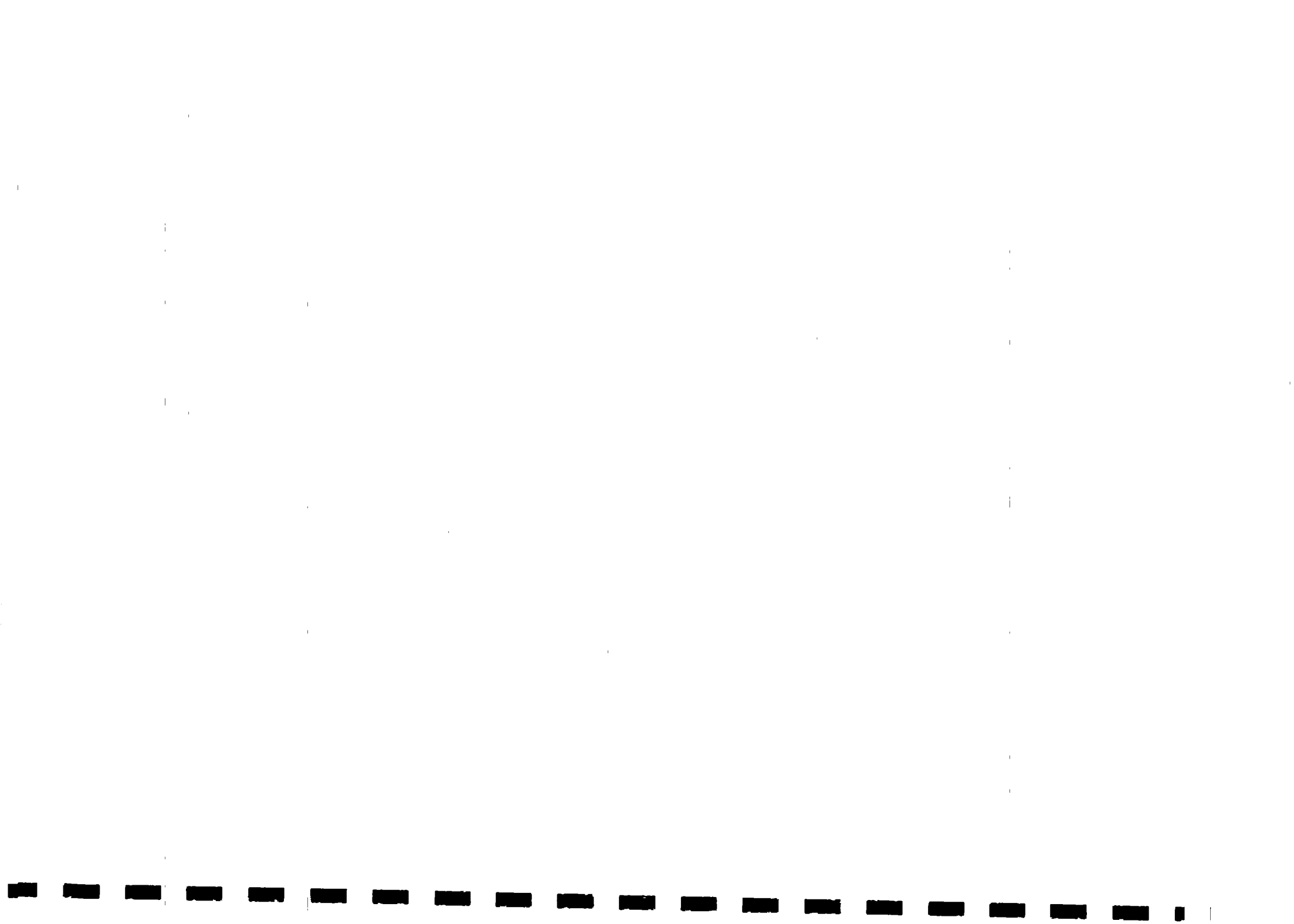
- Lack of knowledge on management and planning principles which sometime may result in disputes
- Lack of knowledge regarding national policy and guideline.
- Same source may be potential for different sectors and common for many people within the same sector are oftenly found creating long disputes among the communities and difficult to manage.

#### 4.3.4.3. Open Issues:

- Water right policy is very much essential to be formulated.
- Registration of UC water committees legally seems of quite importance.

#### 4.3.4.4. Recommendations:

- The responsibility of water allocation and management should be given to the community
- Coordination and co-operation from all sectors is essential to protect the source and for effective management.
- The system should be built in a technically sound manner to prevent the extra loses of water and to provide the required amount to the beneficiaries.





#### 4.4. Principle No 3: “Efficient water use is essential and often an important water source?”.

##### 4.4.1. Background:

At community level, beneficiaries and users committee have started putting emphasis widely to address this principle. In Banganga irrigation system the water allocation mechanism (use of locally made water scales), appointment of watchmen (Assistant Badghar) indicates towards the control and encourages people for efficient use of water. Although, during transportation there is a heavy percentage of water loss in the canal.

In drinking water systems, the users committee takes the lead role to maintain the efficient use of water. In this respect village maintenance workers, care takers and the beneficiaries themselves assist the committee based on the developed norms. Ofcourse it is a matter of individual's attitude and behaviour Each individual should take the responsibility and should understand the importance of this mere and valuable resource

##### 4.4.2. Methodology used:

<u>Methodology:</u>	<u>Community Level (Banganga):</u>
1. Discussion:	According to questionnaire discussion was done in the same manner as mentioned earlier. All the information related to problems, solutions and recommendations were collected during discussion.
2. Interview:	Interviews were made with the WUC members, Badghars (present and retired Badghars of ward no. 6 in Banganga VDC ), key persons and elders.  Also at the district level concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.
3. Observation:	The team observed intakes, canals, distribution lines and water allocation management system.

##### 4.4.3. Results:

**Question No. 1: What behaviours and activities in the community are identified as an inefficient water use behaviours?**

**Participants respond at Community Level:**

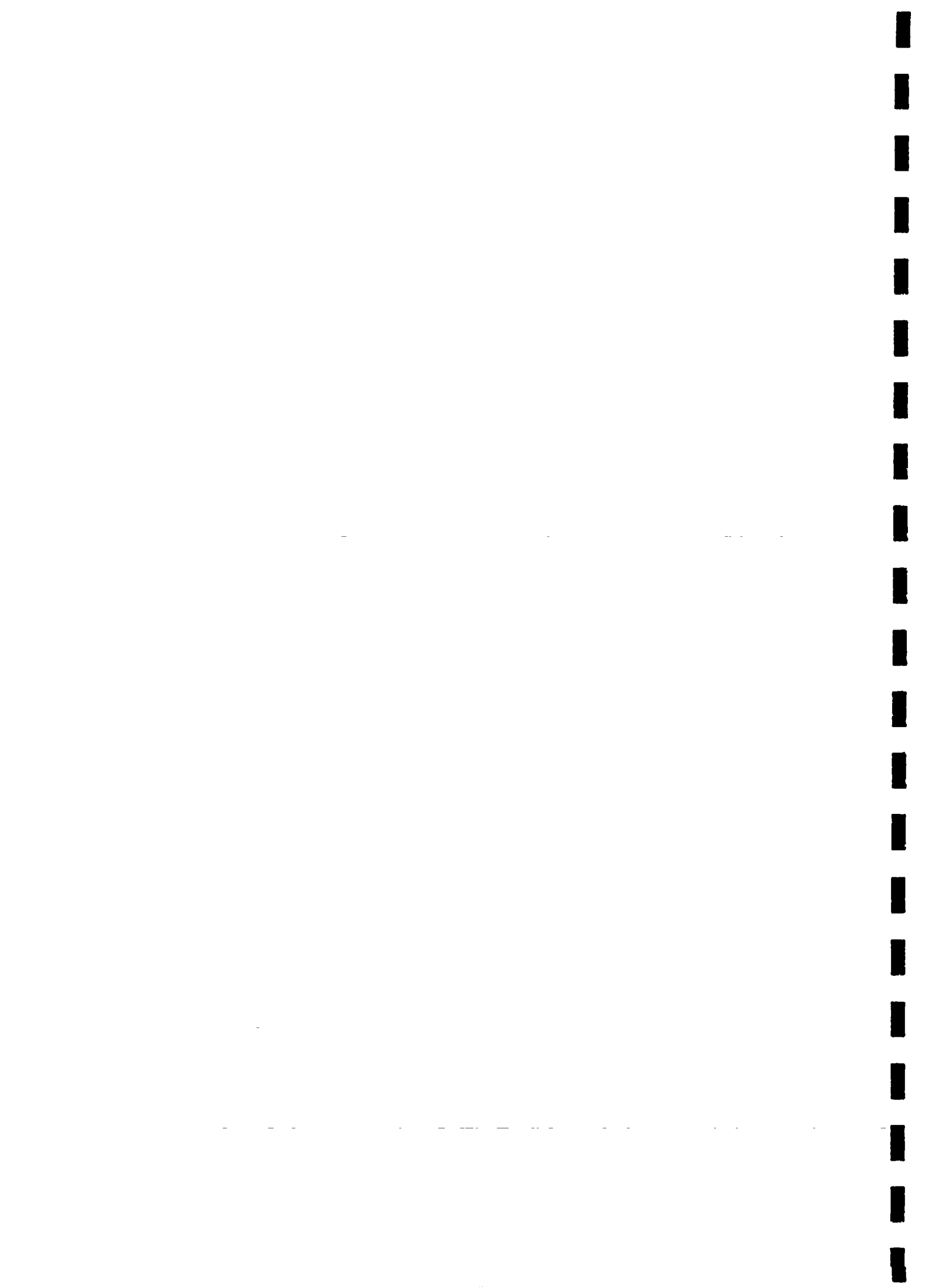
Not as major problems by the people but nearly 30% (4-5 Ana) of total flow in canal is lost during the dry season while transporting the water. It is because main canals pass through the boulder and gravel zone in their alignment.

In drinking water supply tube wells fulfills the need of the people. There is no any measurable loss identified by the people in this system. Waste water collected near by the water points in small ponds is used for animals. Usually people prefer to use canals and rivers for washing and bathing purposes which is observed as a improper use of water taking quality into consideration.

**Question No. 2: Does any misuse of water identified as a problem?**

**Participants respond at Community Level:**

No



**Question No. 3: What are the measures taken into action to control the misuse of water?**

**Participants respond at Community Level:**

In irrigation system

- i. Water distribution is being managed on a rotation system based on the land size. They call this system as Bighatti Kula which is as follows:
  - More than 2 bigha area (1.5 Bigha =1 hectare) ..... Water is allowed daily.
  - 1 Bigha to 2 Bigha area ..... Water is allowed alternate day
  - Upto 1 Bigha area ..... Water is allowed every third day.
- ii. To control the misuse of water, Kulapani Samitee has made some rules for punishments as well which are as follows:
  - Rs. 100 to Rs. 500 against the misuse of water from the main canal or intake site.
  - Rs. 50 to Rs. 100 against the misuse of water from the distributory and the tertiary canals.

This amount is named as Bhachana Rakam
- iii. Crop rotation is in practice in the study area. People plant two type of crops, paddy and wheat or mustered etc.

**4.4.4. Lesson Learned**

**4.4.4.1. Successes:**

- Efficient use of water is found possible if responsibility and authority to manage the system is given to the UCs and community.
- Institutional development at community level

**4.4.4.2. Weaknesses:**

- Inadequate training to UC.
- Canal systems technically inappropriate resulting in loss of huge amount of water.

**4.4.4.3. Recommendation:**

- Managerial skill development training activities to the committee members is needed.
- All kinds of norms and operational policies are to be formulated and to be endorsed by the users.
- To minimise the water losses, solution measures, like lining of canal, should be adopted.



#### 4.5. Principle No. 4: "Management needs to be taken care of at the lowest appropriate level"

##### 4.5.1. Background:

Water resources, in general are being managed by the beneficiaries at the community levels. They follow various traditional methods, which were developed time to time based on the needs of a particular society. The local norms for water management may vary place to place and they are being modified by the community whenever and whatever needed. A large percentage of population (nearly 90%) belong to the agriculture profession in Nepal, that depends on the subsistence farming. Therefore in addition to drinking water the need for irrigation water is also a significant. There are very few areas where people have received the facility for irrigation from either government level or any other external supports. In general people are managing their water sources in such a way that their demand could be fulfilled. In case where there is scarcity of water, people have been practicing the priority setting criteria over different uses of limited source. To maintain the equity distribution among the users they have been using some locally made, wooden or stone scales in case of limited source.

For both of the uses people have formed water users committee to look after all kind of managerial things. The committees, basically are responsible for operation of the system and its maintenance. They formulate some memorandums of understanding from the users group and apply those to carry out the tasks.

##### 4.5.2. Methodology used:

Following methods were used to generate information for guiding questions under this principle. Both community and district level workshops were conducted as per below listed methods.

<u>Methodology:</u>	<u>Community Level:</u>
1. Discussion:	Discussion on principle, questionnaire were prepared in Nepali
2. Observation:	The team visited to the source, intake and distribution sites to identify the existing management system to the sources and to the distribution line.
3. Interview:	Interview with User's Committee members, VDC person, Badghar, villagers to get the information about their view and role in management aspect.  Also at the district level concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.

##### 4.5.3. Results:

#### Question No. 1: Who manages the water supply and irrigation system and from when?

##### Participants respond at Community Level:

##### Drinking water sector:

1. Water User's Committee look after the managerial aspect of the drinking water scheme in the VDC. To maintain the system properly there are 28 trained village maintenance workers in the VDC. Pump groups are formed from the users in community handpumps. They have collected the maintenance fund of Rs. 60,700 for this scheme.
2. Formation of Water User's Committee in drinking water sector has been started formally from 1992 after the start of RWSSP program.

##### Irrigation sector:

- 1 As explained earlier there is a Kulai Samitee comprising of 13 elected members in it. This committee is renewed/reelected after every two years. The structure has been set in such a way that 11 members should represent all 11 canals plus two chairpersons and vice chairperson. This main Kulai Samitee is responsible to:
  - protect and keep up the intake sites in a proper manner.



- maintain all 11 main canals including their intakes and other structures.
  - look after all kinds of managerial things for the whole system, especially by assisting the village level committee whatever and whenever needed.
  - Call regular meetings with village level committee and make necessary decisions.
2. There are 32 villages under the coverage of the system therefore 32 village level committees have been established in the system. Badghar the head person of the sub committee and assistant Badghar the second person are elected people in the sub committee. They are also appointment for the duration of two years. In addition one Katuwal (watchman) is also in the sub committee working as a part time staff whenever needed. People in Banganga VDC consider Badghar as the most powerful person for management and distribution of water at village level.
- The village level committee is responsible to:
- maintain distribution and tertiary system of the canals and operate them properly.
  - call meetings at the community level and explain about the agreed decisions in the main Kular Samitee.
  - make people ready to implement the agreed decisions for repairs and maintenance of the system.
  - keep records for labour contribution from each household.
  - collect money from those who have not participated in the labour contribution and keep up the financial records.
  - look after the proper and efficient use of water as per the rules made and take actions against those who violates.

This irrigation system in this manner is running for more than 70 years. Nobody in the community could say the exact date when this was established. There is one retired Badghar who worked for 35 years in this system and then got retirement before 10 years due to his age factor.

**Question No. 2: What processes are in decision making and problem solving?**

**Participants respond at Community Level:**

Irrigation sector.

As stated earlier the Kulapani Samitee, in fulfilling its duties and responsibilities, act as follows:

- In protecting and up keeping the intake site in the river they have agreed and made an understanding with the DDC Kapilvastu for not disturbing the river bed within a reach of 100 metres either side of the intake area i.e. up stream side and the down stream side. For this they have employed one full time Chaukidar (watchman) to take care of this.

Further they have been able to charge the DDC, Kapilvastu, an annual amount of Rs 300,000 00 from this fiscal year (1997/98) for reimbursement of materials like boulders, gravel and the sand which are being taken away from the river even beyond the set distance limit of 100 m. This is on the logic that the system needs to be maintained as a result of losing the materials even beyond the set limits.

- In Kulapani Samitee meetings all members including 32 Badghars have to be compulsorily present. In case if Badghar is missing then he will be punished in two ways:
  - They have just to follow the decisions whatever has been made in the meeting. He cannot argue on the decisions.
  - He/She will have to pay Rs.100 as an absent fee.
- Discuss and make decisions on when and how to start the repair and maintenance works in the canal like disilting and reshaping works, intake repairing works etc.

The village level committee execute the task in the following manner:

- In doing the repair and maintenance work people have to contribute labour from each household based on the land size known as Bighatti Kulari. It takes nearly 46 days (total days) to complete the repair works. Each household has to come for work or to pay the charge for it to the Badghar based on the local rates which is known as Pankad in the local tongue.





- Badghar is responsible to call the village level meetings and allocate the task to different people. If some does not attend the meetings then they have to obey the decisions made in the meetings without any arguments and at the same time Badghar may fine that person up to Rs. 50.00 for being absent.
- Village level committee is responsible to operate the system properly. As a remuneration to:
  - \* Badghar, he/she is not asked for labour contribution in canal repairing works up to the contribution level of 4 Bigha area.
  - \* Assistant Badghar, in the same manner is not asked for labour contribution in canal repairing works up to the level of 2 Bigha area.
  - \* Katuwal, gets the paid grains: 4 pathi (nearly 16 Kg.) rice plus some wheat and other products in lump sum basis from each household yearly for part time work.

In this manner they have adopted and are practicing their own traditional way of management which is well accepted by all.

Drinking water sector:

In drinking water supply WUC calls the meeting and decide and solve the problems. If needed they call mass meeting of all users.

**4.5.4. Lessons Learned**

**4.5.4.1. Successes:**

- People get opportunity in building their management capacity.
- It was found very much cost effective and sustainable, when the management part is given to the community to look after.
- A concept of team work gets developed, where all kinds of decisions are taken based on the local needs and the capacity limits.
- Disputes related to water use/rights are being settled at the community level.
- Distribution of water and quantity allocation arrangements are in practice.
- Source conservation activities.

**4.5.4.2. Weaknesses:**

- Various communities in the rural area have such a low literacy rate, it is a very big problem to find people who can read and write easily, so that they can be involved in the organized committees as a member. This is the reason that user's committees always need external supports for all kinds of work.
- People need to be trained in basic concepts and steps of the management. They do not have ideas about it in the community level. For instance they need training on book keeping for cash and banking, materials in and out record keeping, labour attendance and their payment process etc.
- Disputes related to the water use rights are found not solved all times in the community and then send to the upper level because they do not have clear ideas/methods to deal with different disputed situations.
- In the districts, district decision makers are given authority for settling the problems and there exists some basic rules for water management, but these are found not very effective in all cases.



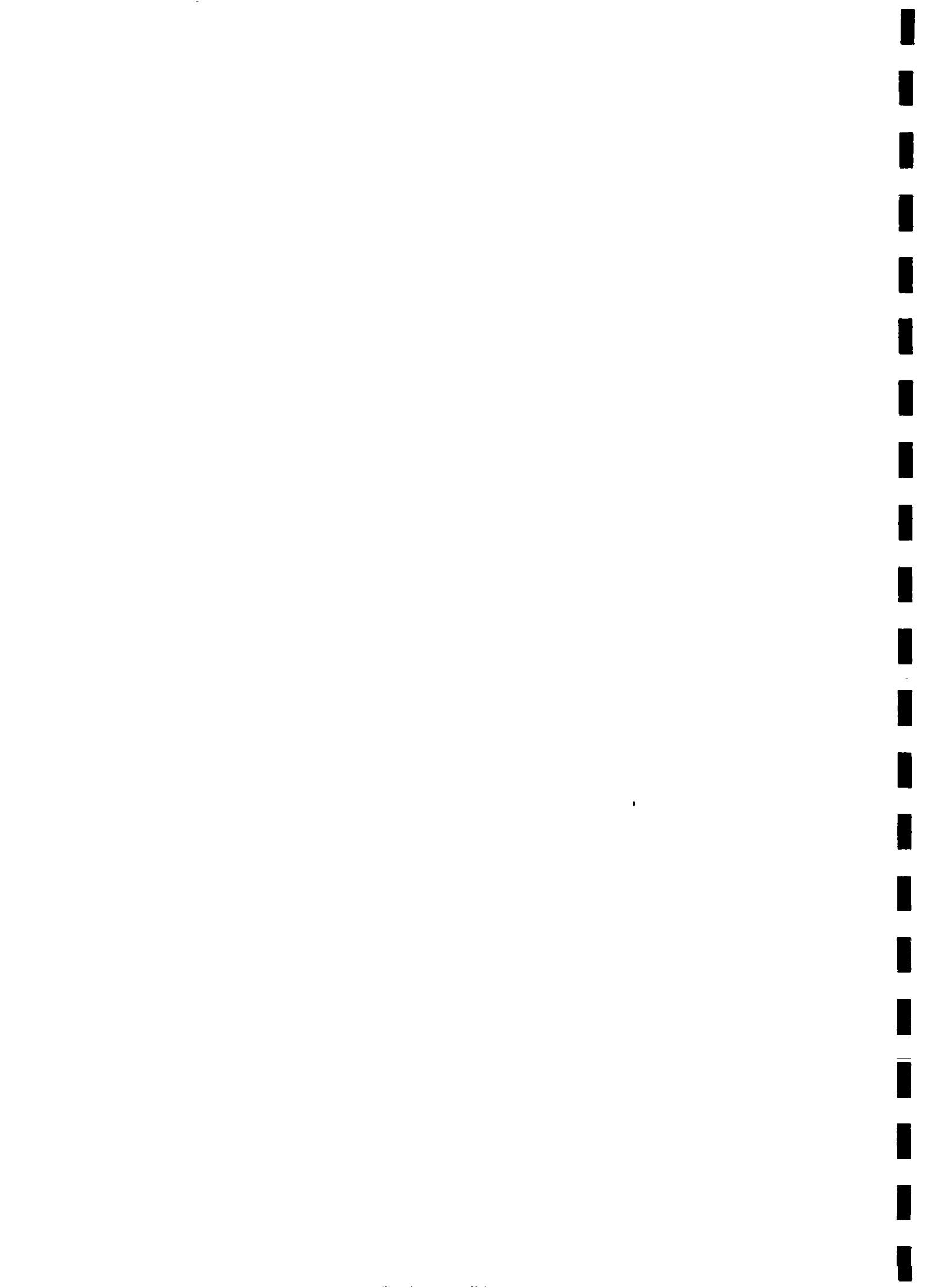
#### 4.5.4.3. Open Issues:

Few important issues remained open unclear at community and at the district level during workshop like:

- What would be done if there exists some controversies in the traditional methods which are being followed from long before and the water related laws. Few examples, drinking water sector should get priority over other uses. In case if yes, even it is not easy to apply since there are many such cases where people object water to be taped for drinking purpose saying that it is going to be used in the fields for irrigation.
- Control over the water sources/resources, either of Government or of the private sector whatsoever has to be clearly mentioned in black and white and it has to be made clear to the people.
- In absence of guidelines for maintenance and revenue collection, people think that it is a natural commodity to the human beings. Such norms and guidelines are to be formulated looking at the affordability limits of rural people.

#### 4.5.4.4. Recommendations:

- Water right policy guideline is essential.
- Training to UC in management aspect is essential.
- UC should be registered
- In management aspects the traditional system practice should be considered while making new policy guidelines.



#### 4.6. Principle No. 5: "The involvement of all stakeholders is required".

##### 4.6.1. Background:

Stakeholders ownership feeling and willingness to participate in the WRM related activities is found to be at a satisfactory level in the community where as it is quite limited at the district level. Identification of the stakeholders, their role and responsibility are still a matter of orientation not only in the community but in the district as well.

Decisions regarding allocation of water sources for different sectors and within the sector, is done by the Banganga Kulai Samitee. There are no other formal forums represented by different stakeholders for planning and decision making regarding WRM. Few influential and key persons in the society have also a vital role in the decision making process. Their voices are heard strongly and considered as an important one.

The traditional water management systems were the demand led ones. To fulfill the demand, people have to find some management ways and practice them. The concept of stakeholder's involvement in water related activities can be seen from long back but limited to the needy group. They have been managing their water sources and water systems in the past in such a traditional manner.

##### 4.6.2. Methodology used:

<u>Methodology:</u>	<u>Community Level:</u>
1. Discussion:	Discussion on principle, questionnaire were prepared in Nepali.
2. Observation:	The team visited to the source, intake and distribution sites to identify the existing management system to the sources and to the distribution line.
3. Interview:	Interview with User's Committee members, VDC person, Badghar, villagers to get the information about their view and role in management aspect.  Also at the district level, concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.

##### 4.6.3. Results:

###### **Question No. 1: Who are the stakeholders? Do they perceive themselves as stakeholders and as being actively involved?**

###### **Responses at Community and at the District Level:**

The community response on this issue is that they perceive Kulai Samitee, VDC, District Irrigation Office and the users as the stakeholders.

In the community, stakeholders i.e. users, UC members, VDC members, take part in the WRM activities actively. They consider other stakeholders as an outside supporter and as an advisor. Also outside level stakeholders limit themselves in this periphery and in this sense not taking part in decision making actively. This case applies both in the community and district level.

Other stakeholders for water resources are Drinking Water Supply Office, Forest Office, Irrigation Office, Environment and Soil Conservation Office small scale water industries, District water resources management committee, and the users are the stakeholders.

At the district level also the role of stakeholder is found not clear to the different partners. DDC assumes the seat of decision making whereas line agencies and other organizations want to support only in the specific programs what has been planned for the year. Identification of the stakeholders, their role and responsibility are still a matter of orientation in the district.

###### **Question No. 2: Who owns the water resources/sources(at various levels)?**

###### **Responses at Community and at the District Level:**

In the community level discussion it was found that the ownership of water sources/resources lies with the different stakeholders in the following manner:

- i. People who are using the (some) source(s) for any use since the past have the ownership of that particular source irrespective of the administration boundaries.



ii. Those sources which are not in use fall under the ownership of the community level stakeholders within the VDC.

**Question No. 3: What platform/forum exist for decision making ? Do they work effectively? Who takes the decisions?**

**Responses at Community and at the District Level:**

Allocation of water sources (rivers) for irrigation schemes, is done by Kulai Samitee in co-ordination with the VDC. There are no any other formal forums represented by different stakeholders which could take such decisions.

Few influential/key person in the society have also vital role in the decision making process regarding the WRM. Their voices are heard strongly and considered as a effective one.

There is a district level Water Resources Management Committee in each district which has a role of advisory group for water related decisions. The DDC is a decision making body in the district. The WRM committee although has a lot to do in this respect but it seems to be inactive in this relation.

**Question No. 4: What conflict management mechanisms are applied?**

**Responses at Community and at the District Level:**

In the study area, during 1971 they had some conflict on water allocation which took a worse shape and the case was lodged to the District Administrative Office. In the run of nearly 70 years in Banganga Irrigation system people remember only this disputed case.

First of all village level committees/Badghars are informed by the users or by the Katuwals about the disputes verbally. Then Badghar make necessary arrangements or take necessary actions to solve it based on the developed norms/rules.

An usual process of dispute management in the district level is explained here. DDC form a team for observation in the disputed source and the locality, which is represented by the district WRM committee, DDC members, concerned line agency, VDC and user groups. They visit the site, gather information organize mass meetings to solve the situation. If the situation is not improved or the dispute is not solved the DDC recommends district administration office to take legal action on the situation.

**4.6.4. Lessons Learned**

**4.6.4.1. Successes:**

- Beneficiaries have strong feeling of ownership for the water sources in their community. They are managing the irrigation and drinking water systems in the community level with a great feeling of ownership.
- District level decision makers and other concerned organizations take part in the process of decision making and problems solving.

**4.6.4.2. Weaknesses:**

- Stakeholders ownership feeling is a matter of orientation presently at the district and at upper levels. Stakeholders at different levels do not perceive themselves as a stakeholder thus do not feel as an integral part in the decision making process.
- Lack of co-ordination and co-operation exists among stakeholders.

**4.6.4.3. Open issues:**

- Concept of the stakeholders decision making forum should be clear.
- Role and responsibility of different stakeholders should be made clear.

**4.6.4.4. Recommendations:**

- By laws and policies regarding the involvement of stakeholders are to be formulated.
- Programs concerning stakeholders co-ordination and co-operation should be initiated.
- Registration of UC for different sectors may help the community level organizations to identify themselves which raise their feeling of ownership.





**4.7. Principle No. 6: "Striking a gender balance is needed as activities related to different roles of men & women".**

The responses on this principle at the community and the district level were found quite similar as that of hills. Please refer hill case.



**4.8. Principle No. 7: "Skill Development and Capacity Building are the key to sustainability".**

**4.8.1 Background:**

Capacity building related to development works including WRM at all levels is important, but at community level it is rather urgent. It is the key factor which increases the confidence within the individual in the community. In traditional management system to maintain the water schemes, people have developed several ways for empowering skills based on the practical methods. Local mistries, Kule Bhai and Badghar in irrigation system and maintenance worker and care takers in drinking water schemes were being trained during scheme implementation as on the job.

Government at VDC level has also emphasized the program of human resources development thus allocating the annual budget of NRS. 125,000 for its development. This amount is supposed to be spend on the specific HRD programme only.

**4.8.2. Methodology used:**

<u>Methodology:</u>	<u>Community Level:</u>
<b>1. Discussion:</b>	Discussion on principle, questionnaire were prepared in Nepali.
<b>2. Observation:</b>	The team visited the source, intake and distribution sites to identify the existing management system from the sources to the distribution line.
<b>3. Interview:</b>	Interview with User's Committee members, VDC person, Badghar, villagers to get the information about their view/role in management aspect.  Also at the district level concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.

**4.8.3. Results:**

**Question No. 1: Is it possible and practical to develop capacity in all sectors related to water?**

**Responses at the Community and at the District Level:**

Yes, 100%

**Question No. 2: How many persons are trained in WRM?**

**Responses at the Community and at the District Level:**

Drinking water sector:

In the study area Irrigation system has been made by the community themselves where as the implementation of drinking water system was supported by the RWSSP in its first phase. Catalysts trained by the RWSSP are listed below:

- i. Water User's Committee trainings for scheme management.(personnel management, store management, financial dealing) - 11 members of WUC.
- ii. Village maintenance workers training to take care for the schemes - 24 persons trained (all male)
- iii. On the job training of WUC members and other local people.
- iv. Teacher's training in Health Education Sanitation - 15 persons
- v. FCHV's Training in Health Education Sanitation - 14 persons

Irrigation sector:

There is no such a formal training received by the care takers or anybody so far in the study area. But the Banganga Kula Samitee has a long management experience of decades.



**Question No. 3: Can capacity be developed at all levels? If not what are the constraints/reasons (legal, institutional, lack of resources etc.)?**

**Responses at the Community and at the District Level:**

The response of this question in the community level is that capacity building programs can be developed at all levels and especially due to illiteracy in the community, it is sometimes difficult to launch such programs effectively. Out of total trained persons in different chapters of water management in the VDC numbers mentioned below are presently working as a full or as part timer:

- i. WUC members working presently for the management of scheme 11 members of WUC.
- ii Village maintenance workers presently working 24 all part timer volunteer

**Question No. 4: Which techniques are philosophy is being used for capacity building?**

**Responses at the Community and at the District Level:**

In RWSSP programme, techniques used to carry out the trainings were:

- i. Using PRA method
- ii. On the job trainings
- iii. Follow up and reviews.

In most of the trainings commonly used techniques are the participatory ones. Different PRA tools are used to make things much clearer while conducting trainings.

#### **4.8.4. Lessons Learned**

##### **4.8.4.1. Successes:**

- People are being trained in several technical and managerial aspects of the water schemes. Local (among beneficiaries) people are trained so that they are as a permanent resource and the community can get as and when needed. People get opportunity learning and earning.
- Allocation of annual budget at the VDC level for capacity building.

##### **4.8.4.2. Weaknesses:**

- Lack of permanent institution to manage and to train people, according to communities need.
- Lack of initiation/inputs in this regard from the projects.

##### **4.8.4.3. Open Issues:**

- Which organization could take such responsibilities ?

##### **4.8.4.4. Recommendations:**

- Permanent institution at the district level is needed to train the people according to the needs
- Existing Government Line Agencies and private sector organizations are to be strengthen to provide related trainings to the local people.



#### 4.9. Principle No. 8: "Water is treated as having an economic and social value".

##### 4.9.1. Background:

People believe that water is nature's gift and natural commodity. It has been observed and realized that this mere natural resource should be given special attention to preserve it but paying revenue on the tariff basis is very new and big change to the community people. People seems motivated and agree on contribution in cash or kind to maintain their drinking or irrigation system(s), but collecting revenue on tariff basis for the time being is a theoretical assumption.

##### 4.9.2. Methodology used:

<u>Methodology:</u>	<u>Community Level:</u>
1. Discussion:	Discussion on principle, questionnaire were prepared in Nepali
2. Observation:	The team visited the source, intake and distribution sites to identify the existing management system to the sources and to the distribution line.
3. Interview:	Interview with User's Committee members, VDC person, Badghar, villagers to get the information about their view/role in management aspect.  Also at the district level concerned authority and district level line agencies were contacted and interviews were done with them regarding the WRM principles.

##### 4.9.3. Results:

###### Question No. 1: Do all water users pay for water used?

###### Responses at the Community and at the District Level:

###### Water Supply sector:

- i. People do not pay for water in the rural communities on the basis of tariff.
- ii. To operate and maintain the system properly they have a newly introduced practice of collecting O&M fund. In case the study area VDC, O&M fund was collected based on Rs. 500.00 per handpump in case of shallow tube well and Rs. 1000.00 in case of lift tube wells. In this manner total collected money Rs. 60,700.00 which has been deposited in the bank account.

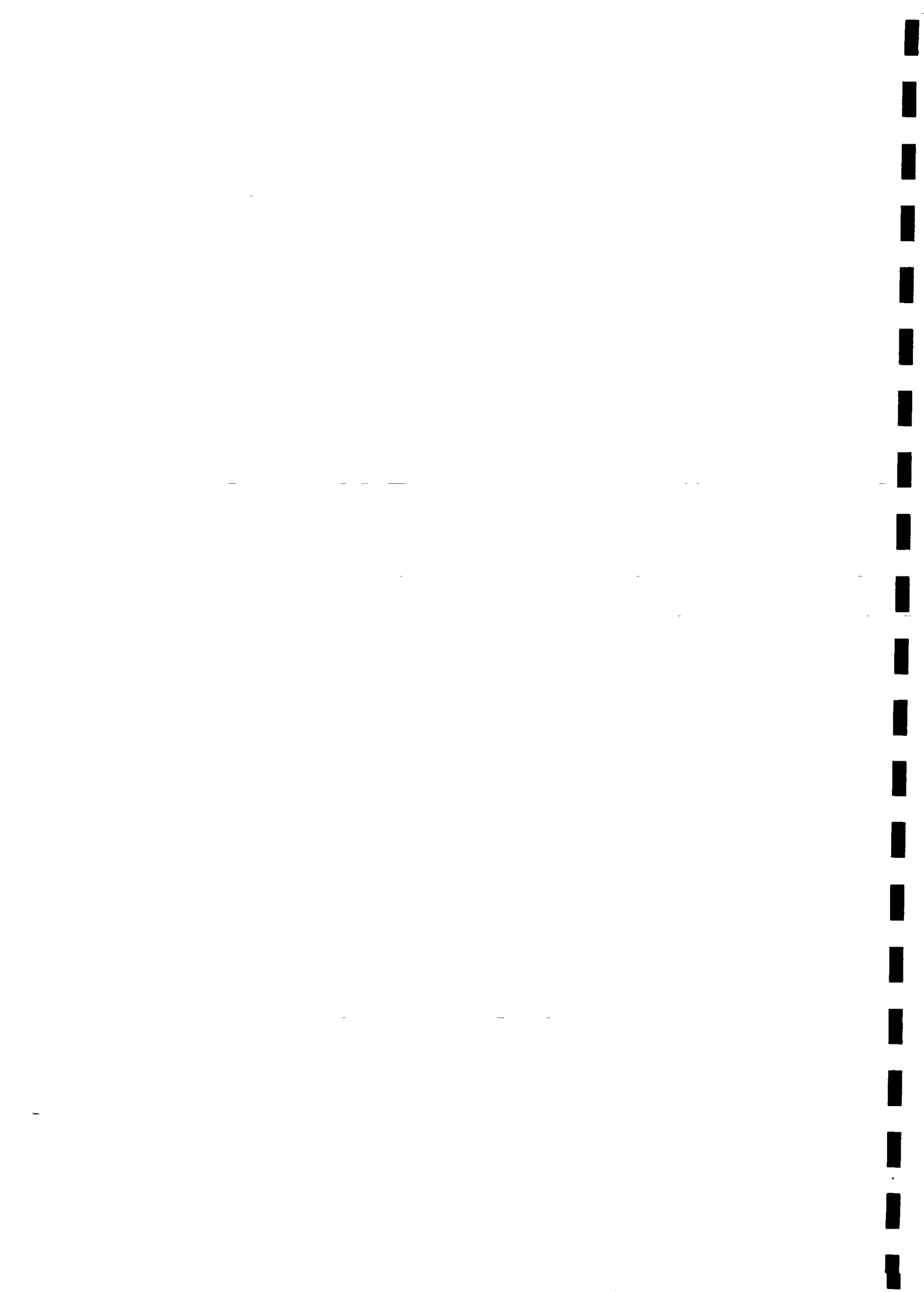
###### In irrigation sector:

In Banganga irrigation system, Kapilvastu DDC has started reimbursement of Rs. 300,000.00 to the Kulapani Samitee for taking materials like; boulders, gravels and sands from the intake sites in Banganga river

###### Question No. 2: Is tariff system in water sector essential?

###### Responses at the Community and at the District Level:

All the participant have positive feeling on this issue, but there are several open issues regarding this matter like how to start?, when to start?, rate per unit amount of consumption etc. All participants expressed that a tariff system should be applied in water sectors. A water policy is essential and need awareness creating activities at all level in this regard.





**Question No. 3: Is the financial system transparent? If so how is it transparent?**

**Responses at the Community and at the District Level:**

Water users committee for drinking water is responsible to collect the O&M fund and upkeep all transactions what so ever made. Similarly Kulapani Samitee and its village level committees are responsible to maintain the financial records properly. They use to present the list of total income and expenditure once a year in the mass meeting of users.

At district level annual budgets for different sectors including water are discussed in the district assembly and based on which national planning commission allocates the budget for annual implementation of programs. This is a common practice for all kinds of activities to be undertaken in the district. In this way the system is a transparent one.

**4.9.4. Lessons Learned**

**4.9.4.1. Successes:**

- Schemes are constructed with people's participation and their contribution in labour.
- O/M cost collection from the community has been initiated, it is also new practice in rural community (ies) Gradually people will understand the importance.

**4.9.4.2. Weaknesses:**

- People believe water is a natural commodity. This is difficult to change within short time span
- Lack of policy and guideline and attention from all level in this regard.

**4.9.4.3. Open Issues:**

- How to initiate collecting revenue in rural areas ?

**4.9.4.4. Recommendations:**

- Policies and guidelines are to be formulated for tariff system.
- Awareness of people on the economic value of water is essential.



Chapter 5: Outcome of the National level workshop on “Promising Approaches in Water Resources Management”.

Principle 1: “Water resource and catchment protection are essential”.

**Question No. 1 : Has water source and catchment protection been identified as a need presently or in the longer term ? (Why? By whom? When ? How?)**

There is a need identified by the different stakeholders for protection of the source and the catchment area.

Why?

- \* To maintain water balance.
- \* To prevent water pollution which is:
  - Due to increasing use of different types of fertilizers.
  - Due to ground water mining process.
- \* To prevent external contamination which is:
  - Due to direct and untreated sewerage connection to the rivers.
  - Due to open defecation and open drainage.
- \* To prevent the land degradation:
  - Due to deforestation
  - Due to various constructional activities

By Whom? When? How?

- \* Long term solution. Legal provision for conservation of water source and catchment area.
- \* Short term solution: Communities and the involved agencies of different sectors have to take initiation to find out the immediate problems and solutions in relation to the conservation activities and take initiation to integrate these to the parent program.

**Question No. 2: What are the threats to water source and catchment area protection? (Environment degradation)**

Water Source : There is a threat of quality and quantity in the water source.

Catchment Area : Acceptability of local community and individuals in catchment protection activities.



- Classification of Stakeholders  
 - into Primary / Secondary  
 - this stake with the decision making

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

**Question No. 1: What water allocation norms/practices exist based on the priority ranking, who is consulted and who makes decisions?**

The stakeholders can be classified into two groups which are:

\* Primary stakeholders

- Users, community groups, VDC and its officials, DDC, DWSO, DIO, DOI, CDO, DWRC, DSCO, DHM basin offices, Municipalities, NGO/INGOs

\* Secondary stakeholders

- Central Departments, Ministries, Business enterprises, Private sectors, Cabinet, Parliament, International banks, International agencies, Investors.

Water sectoral stakeholders are identified in the above manner but they have no representation in national level decision making.

*of their stake. And this priority - to not well represented.*

**Question No. 2: What legal framework and traditional practices for water resource allocation exists? It is effective? (do sectors/users get what has been agreed? How is this measured?)**

There exist some legal framework and traditional practices for allocation of water

\* Legal framework

- Water Resources Act (specifies priority)
- Muluki Ain (specifies right to first user)

\*\* Still need to be effectively implemented.

\*\* No functional institutional mechanism.

*2 up*

\*\* DWSS getting Water User's Act registered under WRA.

Regulation is by the state which need to be sensitive to social customs and practices.

\* Traditional Practices

- They vary depending upon context.

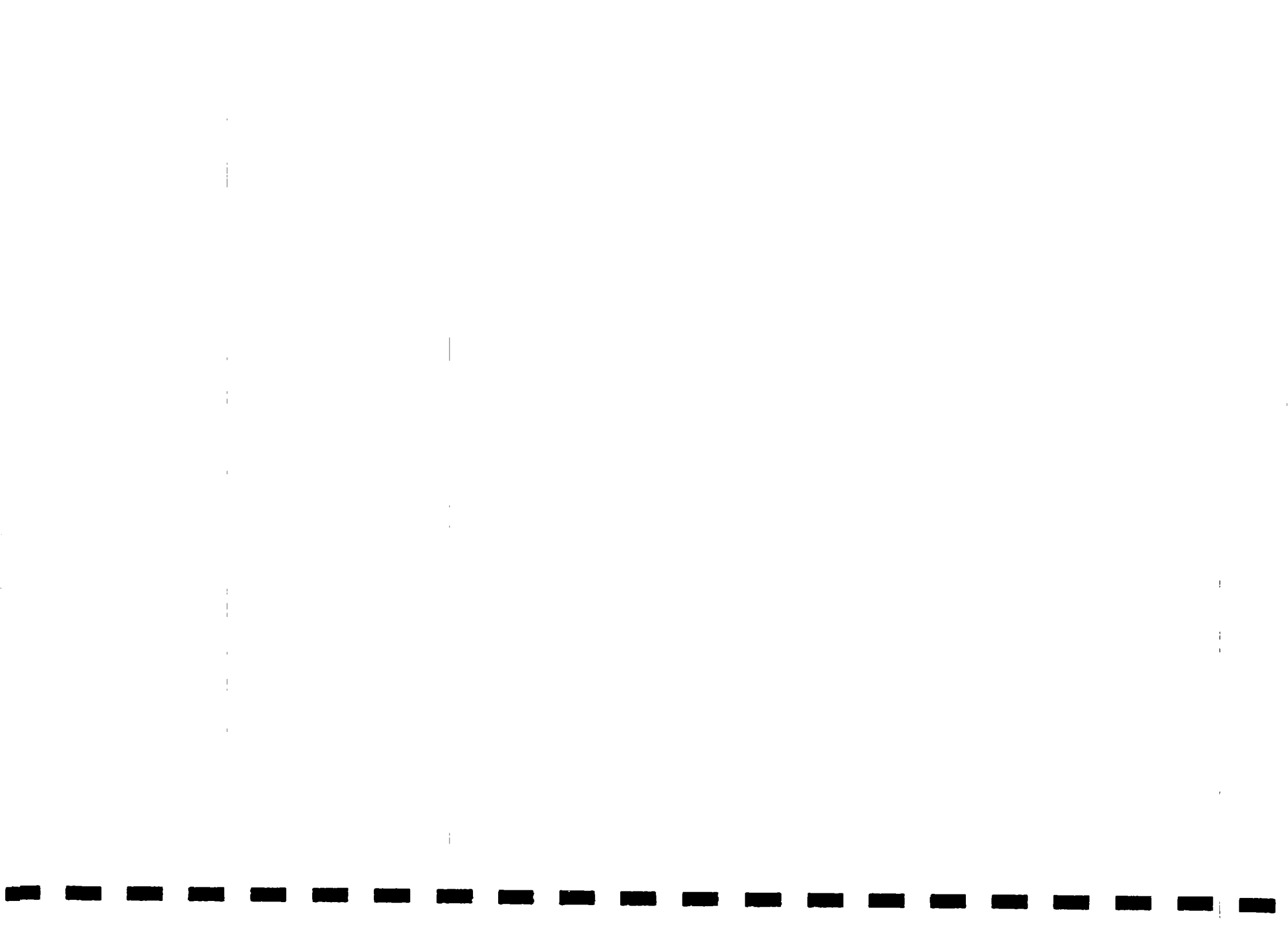
\* There is no allocation mechanism though priority has been set.

*institutions and mechanism of allocation to be developed in municipal level.*

Presently in Nepal watershed boundary and the administrative boundaries remains a dichotomy. There is a need to move towards the concept of river basin. River basin authority may be one option for effective allocation of water. It could be started on the pilot stage.

**Question No. 3: Is relevant information available? and is it accessible?**

- \* Data available on surface and ground water are poor.
- \* Demand and supply data are also poor
- \* Data collected by the DHM and data on irrigation systems, Hydropower (micro, small and large) exist but they are not adequate and the quality is also questionable.
- \* Accessibility of even the available information is limited. Lower level stakeholders have no access.
- \* Data/Information are available in English which is a problem.



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

**Question No. 1: Is inefficiency in water use identified as a problem? If yes, who perceives it as a problem and why?**

All stakeholders have realized that water is not being used efficiently because service delivery system is not satisfactory. This is a problem occurring in both rural and urban areas.

**Question No. 2: What measures are undertaken for the effective & efficient use of water? Who is involved and who decides?**

\* Pay for service: (Consumer Pays.)

In urban area users pay the amount based on the quantity of water used where as it is not practiced in the rural areas. Community raise the O&M fund to operate and maintain the system

\* Provision for penalty: (Polluter Pays)

This system should be strong enough.

\* Education to the users: (Awareness -

care of polluter  
care of being water to the community - M.

Through different media and ways public awareness creating activities have been initiated

**Question No. 3: Are there measures which have been considered but not implemented? If not why not?**

Although there are legal provision for allocation of water, dispute settling etc. but 90% of these are not implemented due to inefficient management, improper planning and lack of civic sense. For instance not using a float valve in the water tanks at household level.





Principle 4: "Management needs to be taken care of at the lowest appropriate level".

**Question No. 1: Who manages different water resources?**

Ground water:

- \* Operational:
  - Users for shallow tube wells
  - State agencies for deep tube well at present but there is a move towards users for its operation and maintenance.
- \* Strategies
  - Policy, legal and planning aspects are still a state domain, particularly the concerned Ministries.
  - Beginning to involve users in policy formulation.

*Decentralize to the institutional level  
shifting to local levels and*

Surface water:

- \* Operational:
  - Users are predominately involved in the process.
- \* Strategies
  - Still a state domain but users involvement has been started gradually.

**Question No. 2: Is management currently taking place at the lowest appropriate/possible level?**

Constraint at the lower level:

- \* Certain entrenched interest among the bureaucracy and users. It is difficult to change the "Institutional Culture"
- \* Tariffs are not consistent with use in price.
- \* Politicization of user groups.
- \* Contractors infiltrating into user groups.
- \* Lack of user friendly O&M manual in Nepali.

Task assignment of management committee:

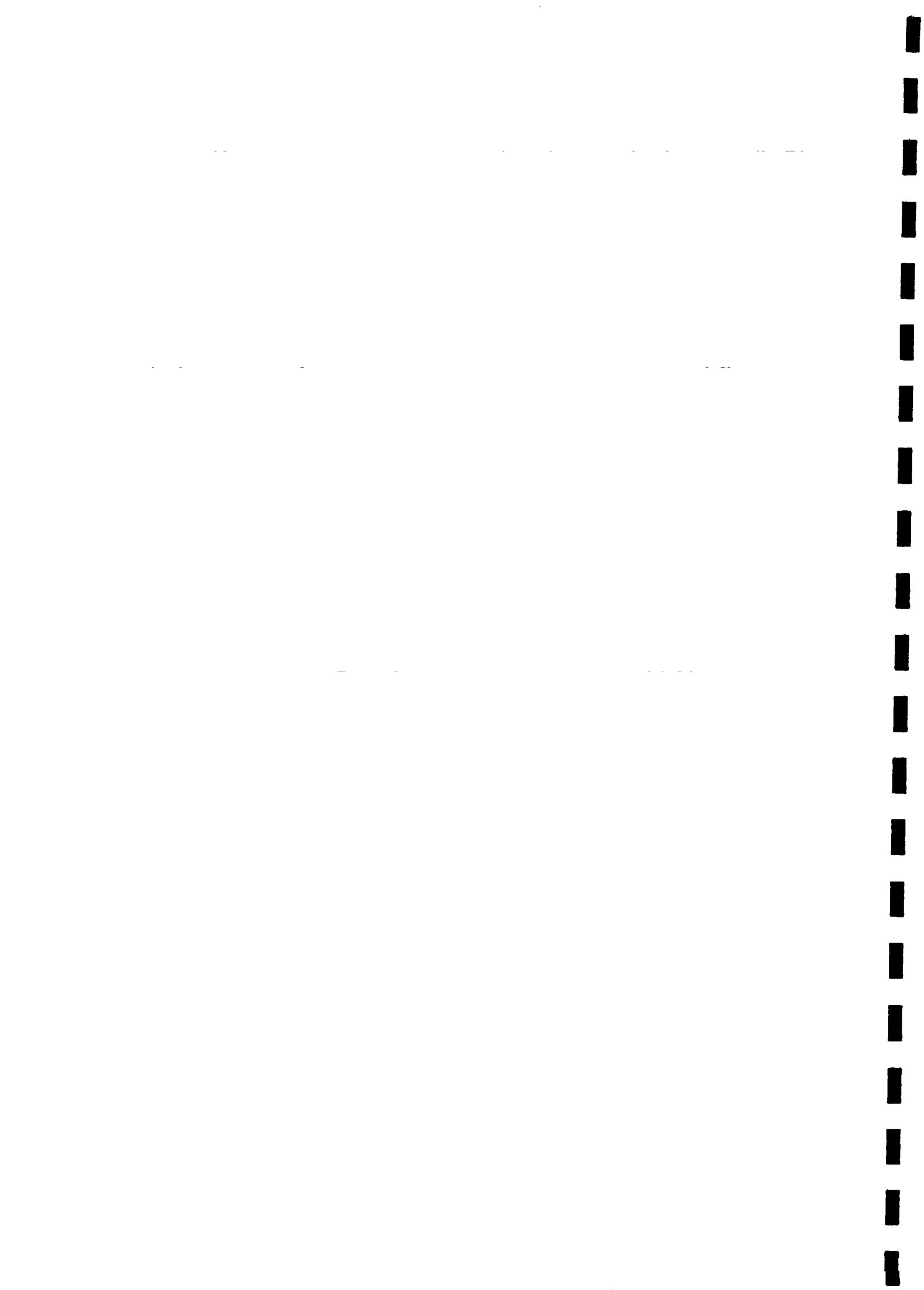
- \* Executive committee members have started understanding their role and responsibility but there is lack of transparency vis-a-vis ordinary users. - *General Muz awareness, education / Training*

Problems at the higher level

- \* There are acts and policies but they are weak in their implementation.
- \* There is a need for strengthening the mid level staff especially at the district level.
- \* Lack of clear cut working modalities. ✓

**Question No. 3: Does existing legislation facilitate this principle? If legislation effective? If not what other appropriate arrangement exist ?**

- \* It has not facilitated sufficiently. There is a legislative contradiction in WRA which defines state as owner and attempt to develop "feeling of ownership among the users". - *Contradictory!*
- \* Suitable refinements need to be made in the concern Acts, Regulations, Policies etc. ✓



**Principle 5: "The involvement of all stakeholders is required".**

**Question No. 1: Who are the stakeholders? Do they perceive themselves as stakeholders and as being actively involved?**

Drinking water stakeholders:

- \* Users, Users Committee, Support Organization, Village Development Committee, Donors, District Development Committee, District Water Supply Office, NGOs/INGOs, Department of Water Supply and Sewerage, Department of Soil Conservation, Ministry of Housing and Physical Planning, Ministry of Local Development, National Planning Commission.

Irrigation stakeholders:

- \* Users, Users Committee, Support Organization, Village Development Committee, Donors, District Development Committee, District Irrigation Office, NGOs/INGOs, Department of Irrigation, Ministry of Water Resources, Ministry of Local Development, National Planning Commission.

Hydropower stakeholders:

- \* Users, Users Committee, Nepal Electricity Authority, Village Development Committee, Donors, Ministry of Water Resources, National Planning Commission.

Industries stakeholders:

- \* Industrialist, Water Supply and Sewerage Corporation, Village Development Committee, Groundwater agencies

Aquatic stakeholders:

- \* Fisherman, Department of Wild Life, Ministry of Population and Environment.

**Question No. 2: What platforms/forums exist for decision making? Do they work effectively? Who takes the decisions?**

Mainly the following platforms for decision making exists at various level.

- User groups/ Users committees
- Village Development Committee
- Implementing Agencies
- District Development Committee
- District Line Agency Offices ( water related)
- NGOs/INGOs
- Concerned Ministries and Departments

Sometimes decisions are made in a combined platforms of above agencies. Users level platform of decision making are found effective than others.

**Question No. 3: What conflict management mechanisms are applied?**

- \* Conflicts are managed through VDC, DDC, UC/Users and sometimes combined efforts of these all



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

**Question No. 1: How are gender differences? if any, perceived at:**

**\* Planning level?**

Enhancing women's participation is encouraged at the planning level with provision of mandatory involvement of women in water users group as specified by different sectoral policies and directives.

**\* Decision making level?**

Women's participation in decision making level is almost negligible though women's role has been emphasized. (diff. source only)

**\* User level?**

Women's role at the users level are of paramount importance. There is a difference in the perception of gender difference depending upon the ethnic characteristics. Mostly women suffer due to in adequacy of water supply.

**Question No. 2: What are the differences in the degree of participation and influence over decision making by men and women?**

The participation and influence over decision by women is negligible. The voice of the men always carries through. Even though some women participation do exists in theory, there actual contribution is negligible. Some ethnic communities, as special cases, do have considerable women's involvement,

**Question No. 3: What are the gender sensitization programs, if any at different levels?**

Training programs, water users group formation programs all do stress the gender issues and are encouraged to address this.



**Principle 7: "Skills development and capacity building are the key to sustainability".**

**Question No. 1: Can capacity be developed at all levels? If not what are the constraints/reason.**

Yes, capacity can be build up at all levels provided there should be adequate resources and incentive provisions

**Question No. 2: Which techniques are/philosophy is used for capacity building?**

In general practice commonly followed techniques are:

- ✓-Participafory
- ✓- Extension
- ✓-Exchange visits
- ✓-Training etc.





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

**Question No. 1: Do all water users pay for water used?**

- \* Water Supply Sector:
  - In urban substantial payment
  - In rural area people pay for O&M. *only.*
- \* Irrigation Sector:
  - Very very less (almost 5%) - *if user pays less*
- \* Industry Sector:
  - Most industries including hotels do not pay for their source as they directly obtain ground water. Some are even a burden on drinking water.

**Question No. 2: Does the tariff system (or cost recovery system) meet the:**

- \* Capital cost
  - There is an established tariff in the urban drinking water systems.
- \* O&M cost
  - All water supply systems apart from some specific ones there is a system of collecting O&M cost in the rural areas.
- \* Replacement cost
  - Replacement cost has been included in the tariff in urban drinking water systems.

In irrigation the tariff system is inadequate to recover even O&M cost. This is an undergoing change!

**Question No. 3: Is there any cross subsidy system to enable poorer communities to receive water supply? if so how does it work? what level of supply serves poorer communities?**

- \* Public tap stands and low volume users are subsidized in drinking water systems. *(Cross sub-sidy)*
- \* Provision of a progressive tariff is essential in Water Supply systems. ✓
- \* Free tapping of the ground water by the industrialists including hotels have to be regulated so that indiscriminate use of this valuable resource can be controlled and revenue generated. - *less to regulate method use*



## Chapter 6: Summary of Conclusions and Recommendations.

### Conclusions/Recommendations:

1. Extensive development in community forestry is needed.
2. Kinds/varieties/species of plants which are environmental and source friendly are to be identified and growing of such seeds and plantation are essential.
3. Extensive awareness creative activities in WRM are to be launched.
4. Rural roads should be made using LES ( low cost and environmental sound) approach.
5. Water right policy is to be formulated.
6. Responsibility should be given to UC & Community for the management of the water sources.
7. Traditional method should be considered while making new policies/guidelines.
8. Modern technology should be applied to construct the systems/schemes to prevent the loss of water.
9. Water Users Committees are to be registered to have a legal recognition.
10. Better understanding memorandum regarding the efficient use of water are to be developed time to time by the local people.
11. Training to the Water User's Committee regarding the management and refresher trainings on different issues are of great use.
12. By laws and policies regarding the involvement of stakeholders are to be formulated.
13. Programs concerning stakeholders co-ordination and co-operation should be initiated.
14. Literacy and awareness creating programmes are to be launched for the women to enhance their skills and capability.
15. Concept of men's and women's group separately for planning and decision making would be of quite helpful to increase women's participation.
16. Female members in User's Committees could be proposed as 50% to raise the level of women's participation in decision making process
17. Permanent institution at the district level is needed to train the people according to the needs.
18. Existing Government Line Agencies and the private sector organizations are to be strengthen to provide related trainings to the local people.



**References:**

- I. District Water Supply and Sanitation Development (DDP) Reports of Lumbini Zone, prepared by RWSSP (1994)
- II. Gender Analysis Report of Lumbini Zone, prepared by RWSSP (1997)
- III. Stakeholder's ownership Study Report, prepared by RWSSP (1996)
- IV. Environmental Impact Study Report, prepared by RWSSP (1997)
- V. Muluki Ain, Nepal
- VI. Water Resource Act, Nepal



**Name list of assessment group members for WRM study:**

**Gulmi District:**

Mr. Chandra Kant Aryal, DDC member, Gulmi

Mr. Tulsi Panth, VDC chairperson, Kharjyang VDC, Gulmi

Mr. Bodh Raj Gyanwali, WUC chairperson, Kharjyang water scheme, Gulmi

Mr. Rabi Gyanwali, WUC vice chairperson, Kharjyang water scheme, Gulmi

Mr. Krishna Gyanwali, chairperson, community forestry, Kharjyang, Gulmi

Mr. Ramesh Chandra Bohara, RWSSP, Butwal

Ms. Kalawati Pandey, RWSSP, Butwal

Mr. Indu Bhusan Gautam, RWSSP, Butwal

**Kapilvastu District:**

Mr. Narendra Raj Gyanwali, VDC chairperson, Banganga VDC, Kapilvastu

Mr. Tula Kant Pandey, chairperson, WUC, Banganga

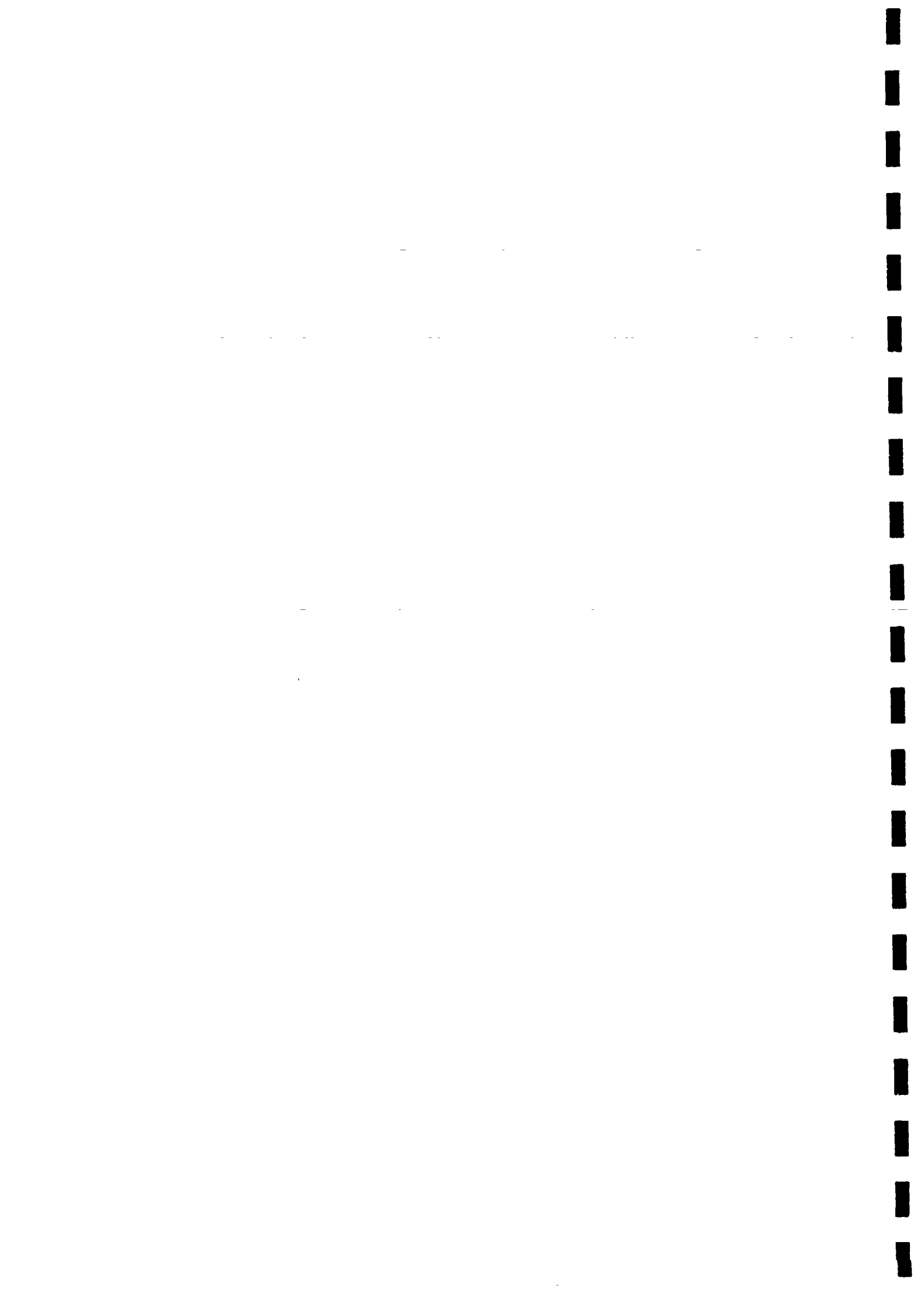
Mr. Khima Nanda Ghimere, Badhgar, Banganga Irrigation Committee

Mr. Krishna Gurung, Banganga VDC

Ms. Urmila Shrestha, RWSSP, Kapilvastu

Mr. Ramesh Chandra Bohara, RWSSP, Butwal

Ms. Kalawati Pandey, RWSSP, Butwal





Work Plan (Gantt 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							
1.	Brief presentation about the workshop to FINNIDA & RWSSP.	█																							OWN	FINNIDA desk officer and other staffs				
2.	Formation of Assessment group		█																						OWN	One of the project staff VDC, DDC and agencies and community representatives				
3.	Finalization of Workplan by the assessment group.			█																					Assessment Group	Assessment Group Members	"Resources required time to time to carry out this task shall be discussed with FINNIDA & RWSSP"			
4.	Development of questionnaires for various level workshops.				█																				Assessment Group	Assessment Group members				
5.	Acquire data readily available at different levels.					█																			Assessment Group	Assessment Group members				
6.	Workshops at Community Level.							█	█																Assessment group	Assessment group members and workshop participants. (as explained)				
7.	Workshops at District Level.									█															Assessment group	Assessment group members and workshop participants. (as explained)				
8.	Workshops at Zonal, National Level.										█														Assessment group	Assessment group members and workshop participants. (as explained)				
9.	Draft preparation and sending to IRC and to Advisors.													█	█										Assessment group	Assessment group members, IRC and Advisors.				
10.	Finalization of Report.																								Assessment group	Assessment group members.				
11.	Presentation of the report in Workshop.																								Assessment group	OWN				



To · IRC, The Netherlands.  
Fax · 31-(0)70- 3589964  
Attn. · Mr Peter J. Bury.  
From · Ramesh C. Bohara, RWSSP, Butwal, Nepal.  
Date · 19/1/1997

**Re. : Final plan for WRM assessment.**

Dear sir,

First of all thank you very much for sending me report of the preparatory workshop, which I received on 17th Jan 1997.

I would like to mention about the activities done so far, in regard to the WRM assessment based on the tentative work plan prepared by me during the workshop.

1 Presentation about the WRM program and about the preparatory workshop was done in FINNIDA and Plancenter Ltd. in Helsinki, Finland and RWSSP, Butwal, Nepal I have requested RWSSP to include this assessment program in the annual workplan of the project, so that resources could easily be available This is taken in a positive way by the team leader of RWSSP.

2 Assessment group has been formed in Gulmi district (Hill area), which is as follows,

- Mr Chandra Kant Aryal, DDC member, Gulmi.
- Mr. Tuli Panth, VDC chairperson, Kharjyang VDC, Gulmi.
- Mr Bodh Raj Gyawali, WUC chairperson, Kharjyang water scheme, Gulmi.
- Mr Rabi Gyawali, WUC vice chairperson, Kharjyang water scheme, Gulmi
- Mr Krishna Gyawali, chairperson, community forestry, Kharjyang, Gulmi.
- Mr Ramesh C. Bohara, RWSSP, Butwal.
- Ms. Kalawati Pandey, RWSSP, Butwal.
- Mr Indu B Gautam, RWSSP, Butwal.

- \* DDC. District Development Committee.
- \* VDC Village Development Committee
- \* WUC Water User's Committee.
- \* RWSSP Rural Water Supply & Sanitation Project.

**Changes in the initial plan**

1. Assessment Group has made slight change on the case selection I have proposed initially 'Simichaur Water Scheme' which is now replaced by 'Kharjyang Water Supply Scheme' in Gulmi district. It was done keeping in view the other project activities also, presently being done in the scheme area

2. Zonal or regional level workshop has been merged into the national level workshop and made it into one. It is because participants of regional level can be asked to participate in the national level seminar itself

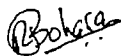
3 A final version of work plan is attached herewith for your kind information.

**Activities being implemented soon.**

1 Community level workshop is planned to be held from 24 to 26 Jan 1997 (3 days), in Kharjyang VDC Gulmi district. Necessary questions list is prepared and the methodologies to conduct the workshop have been discussed widely among the assessment group members

Thanking you,

Sincerely,



(Ramesh C Bohara)  
RWSSP, Butwal.



Work Plan

Sn	Activity	January				February				March				April				May				June				July		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			
1	Community Level workshop in Kharyang VDC, Gulmi.				■																							Assessment Group	Assessment group members & workshop participants (as explained)	**
2	District Level workshop in Gulmi district						■																					Assessment Group	Assessment group members & workshop participants (as explained)	
3	Formation of Assessment Group in Kapilvastu					■																						Own	Same like in Gulmi	
4	Continuity Level workshop in Banganga VDC, Kapilvastu								■																			Assessment Group	Assessment group members & workshop participants (as explained)	
5	District Level workshop in Kapilvastu District									■																		Assessment Group	Assessment group members & workshop participants. (as explained)	
6	National Level workshop										■																	Assessment Group	Assessment group members & workshop participants (as explained)	
7	Draft preparation and sending to IRC and to Advisors.					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Assessment Group	Assessment group members, IRC and Advisors	
8	Finalization of Report.																	■	■	■	■	■	■	■	■	■	Assessment Group	A group members		
9	Presentation of the report in workshop																									■	Assessment Group	Own		

\*\* "Resources needed will be made available by RWSSP".



जलश्रोत व्यवस्थापन अध्ययन  
(जिल्ला स्तरीय कार्यशाला, गोष्ठी)  
चैत्र ६, २०५३, गुल्मी.

प्रश्नवाली :

सिद्धान्त नं. १ : "जलश्रोत एवं जलाधार क्षेत्र संरक्षण कार्य आवश्यक छ ।"

क. वर्तमान प्रयोग भैरहेको मुख्य जलश्रोतहरू के के हुन् ? र कुन कुन उद्देश्यको लागि प्रयोग भैरहेका छन् ? (भावी कार्यक्रम) ?)

प्रयोग :

जलश्रोतहरू	<u>पिउनको</u> लागि	सिचाई	अन्य प्रयोग
खोला			
खोल्सा			
नहर/कुलो			
मुलहरू			

ख. के जलाधार क्षेत्रहरू कुनै क्रियाकलापहरूबाट प्रभावित भएका छन् ? कि छैनन् ?  
छन् [ ] छैनन् [ ]

छन् भने कुन क्रियाकलापहरू ?

ग. पानीका मुहान तथा जलाधार क्षेत्र संरक्षण गर्न आवश्यक छ भन्ने कुरा जिल्ला स्तरीय योजना तर्जुमा, निति निर्माण एवं कार्यान्वयन गर्ने निकायबाट महसूस गरिएको छ कि छैन ?  
छन् [ ] छैनन् [ ]

घ. यदि छ भने हाल सम्म के कति प्रयासहरू भइसकेका, भैरहेका र भविष्यमा हुने वाला छन् ?

हाल सम्म <u>भैसकेका</u> <u>क्रियाकलापहरू</u>	गर्ने निकाय
१: .....	.....
२: .....	.....

हाल <u>भैरहेका</u> प्रयासहरू/ <u>क्रियाकलापहरू</u>	गर्ने निकाय
१: .....	.....
२: .....	.....

<u>भविष्यमा</u> गरिने <u>क्रियाकलापहरू</u>	गर्ने निकाय
१: .....	.....
२: .....	.....





सिद्धान्त नं. २ : "पानीको समुचित बाण्डफाण्ड विभिन्न सम्बन्धित पक्षहरू बिच राष्ट्रिय निति अनुरूप स्वीकार्य हुनु पर्दछ ।"

प्रश्न नं. १ :

के उचित गुणको पानी उपभोक्ताहरूका सबै आवश्यकता पुरा गर्न पर्याप्त छ ?

विभिन्न क्षेत्रहरूमा अनुमानित पानीको खपतको ..... (%) क्षेत्रहरू अनुसार पानीको बाण्डफाण्डको मात्रा

प्रश्न नं. २ :

क्षेत्रहरू बिच पानीको बाण्डफाण्डको तरिकाहरू के के छन् ? कस्ताई सर्म्पक गरिन्छ र कस्ले निर्णय गर्छ ?

जिल्लामा उपलब्ध जलश्रोत सम्बन्धि तथ्याङ्क ।

उक्त तथ्याङ्कहरू स्वाभित्व भएका विभिन्न पक्षहरू को पहुचमा छन् वा छैनन् ?

प्रश्न नं. ३ :

पानीको श्रोतको बाण्डफाण्ड गर्ने कानुनी तरिकाहरू के हुन् र परम्परागत तरिकाहरू के कस्ता हुन् ? व्यवहारमा ती तरिकाहरू प्रभावकारी छन् वा छैनन् ?

प्रश्न नं. ४ :

के पानीको बाण्डफाण्डमा समानता छ ? छैन भने कुन कुरामा छैन ?

के त्यो व्यवहारमा भएको पानीको बाण्डफाण्ड तरिका प्रभावकारी छ ?

के सबै निकाय/उपभोक्ताहरू संग सहमति लिने गरिन्छ छ ?

यदि लिइन्छ भने कसरी ? (निर्णायक मत कसरी नापिन्छ ?)



सिद्धान्त नं. ३ : "पानीको समुचित प्रयोग आवश्यक छ, जुन कि अनसर एक महत्वपूर्ण जलश्रोतको रूपमा रहन्छ"

प्रश्न नं. १ :

के अनुचित पानीको प्रयोग एउटा समस्याको रूपमा पहिचान भएको छ ? यदि छ भने कस्ले यस कुरालाई समस्याको रूपमा पाएको छ ? र किन ?

समस्या के पाइएको छ ? ..... कसले ? ..... करुण

.....  
.....

प्रश्न नं. २ :

उक्त अनुचित प्रयोगहरू रोक्नको लागि जिल्ला स्तरबाट के कस्ता प्रयासहरू भएका छन् ?

प्रयासहरू ..... प्रभावकारीतामा समस्याहरू ..... सुझावहरू

१: .....

२: .....

प्रश्न नं. ३ :

जलश्रोतको उचित प्रयोगको प्रभावकारीताको लागि निर्णय कस्ले गर्छ ?

सुझाव :

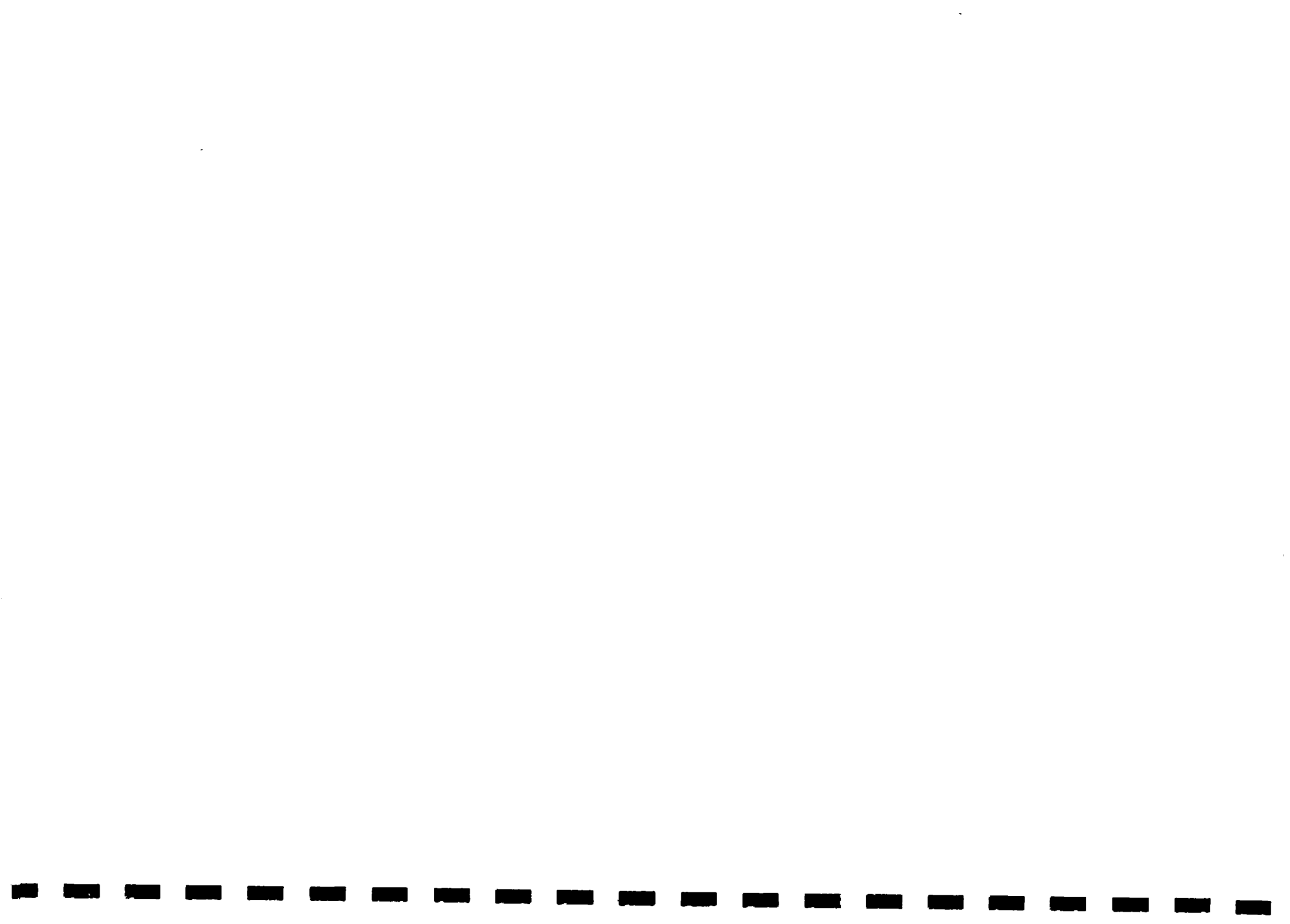
.....  
.....

प्रश्न नं. ४ :

कुनै त्यस्ता निर्णयहरू छन् जुन व्यवहारमा लागू भएका छैनन् ? यदि छैनन् भने कारण ?

१: .....

२: .....



सिद्धान्त नं. ४ : "जलश्रोत व्यवस्थापनको जिम्मेवारी सबै भन्दा तल्लो निकायमा हुनु पर्छ"

प्रश्न नं. १ :

पानीको श्रोतहरूको व्यवस्थापनमा जिल्ला स्तरमा के कस्ता नीतिहरू रहेका छन् ?

प्रश्न नं. २ :

हाल सम्म भैरहेको नीतिहरू प्रभावकारी तरिकाले व्यवहारमा ल्याउन के कस्तो सुधार गर्नु पर्ने देख्नु हुन्छ ?

१: .....  
२: .....

प्रश्न नं. ४ :

के तल्लो स्तरबाट पानीको श्रोतको व्यवस्था भै रहेको छ ?  
यदि भएको छ भने कसरी ? छैन भने किन नभएको ?

तल्लो निकाय/तह	व्यवस्थापनको कार्यहरू	सस्याहरू
१: .....	.....	.....
२: .....	.....	.....

व्यवस्थापन पक्षमा सहभागी समितिहरूको संख्या र प्रतिशत .....% र प्रष्ट कार्य प्रणाली

प्रश्न नं. ५ :

उपल्लो तहमा पठाइएका समस्याका% हर ?

मुख्य समस्याहरू	पठाइएका तह	सहयोग के भयो ?
१: .....	.....	.....
२: .....	.....	.....

उक्त व्यवस्थापनबाट कति % उपभोक्ताहरू एवं स्वाभित्व भएकाहरू सन्तुष्ट छन् ?



सिद्धान्त नं. ५ : "सम्पूर्ण स्वाभित्व हुने पक्षहरूको सहभागिता आवश्यक छ"

प्रश्न नं. १ :

जलश्रोतको स्वाभित्व भित्र को को पर्दछन् ?

- १: .....  
२: .....

ति स्वाभित्व हुनेहरूले आफु स्वाभित्व भित्र परेको बोध गरेका छन वा छैनन् ? र आफुलाई सक्रिय सहभागि हुनु तर्फ अग्रसर बनाएका छन किन छैनन् ?

(सक्रिय र बोध भएकाहरूको प्रतिशत%)

प्रश्न नं. २ :

के स्वाभित्व लिनेहरू जलश्रोतको व्यवस्थापन पक्षमा सहभागि हुन इच्छुक छन् ?

यदि छन् भने कति प्रतिशत ले सहभागि हुनको लागि अनुरोध गरेका छन् ?

प्रश्न नं. ३ :

पानीको स्वाभित्व सम्बन्धि कार्य अथवा समस्याहरू कस्ता छन् ? र ती समस्याहरू कसरी सुल्झाइन्छ ?

समस्याहरू/कार्यहरू निर्णय निर्णकर्ता/तह

- १: .....  
२: .....





**सिद्धान्त नं. ६ : "लैङ्गिक समानता आवश्यक छ"**

**प्रश्न नं. १ :**

योजना तर्जुमा गर्ने र निर्णय गर्ने क्रियाकलापहरूमा महिला + पुरुष को भिन्नताको महसूस गरिएको छ कि छैन ?

छन् [ ]                      छैनन् [ ]

जिल्ला स्तरिय निर्णायक समितिहरू	महिला	पुरुष
१: .....	.....	.....
२: .....	.....	.....

बिषमता केहि छ कि ?	छ%	छैन%
.....	.....	.....
.....	.....	.....

योजना तर्जुमा स्तरमा

निर्णायक

महिला सहभागितामा समस्याहरू के के छन् ?

लैङ्गिक बिषमता हटाउने तर्फ भैरहेको जिल्ला स्तरीय प्रयास/क्रियाकलापहरू

**सिद्धान्त नं. ७ : "क्षमतामा आभिवृद्धि दिगोपनको सांचो हो"**

**प्रश्न नं. १ :**

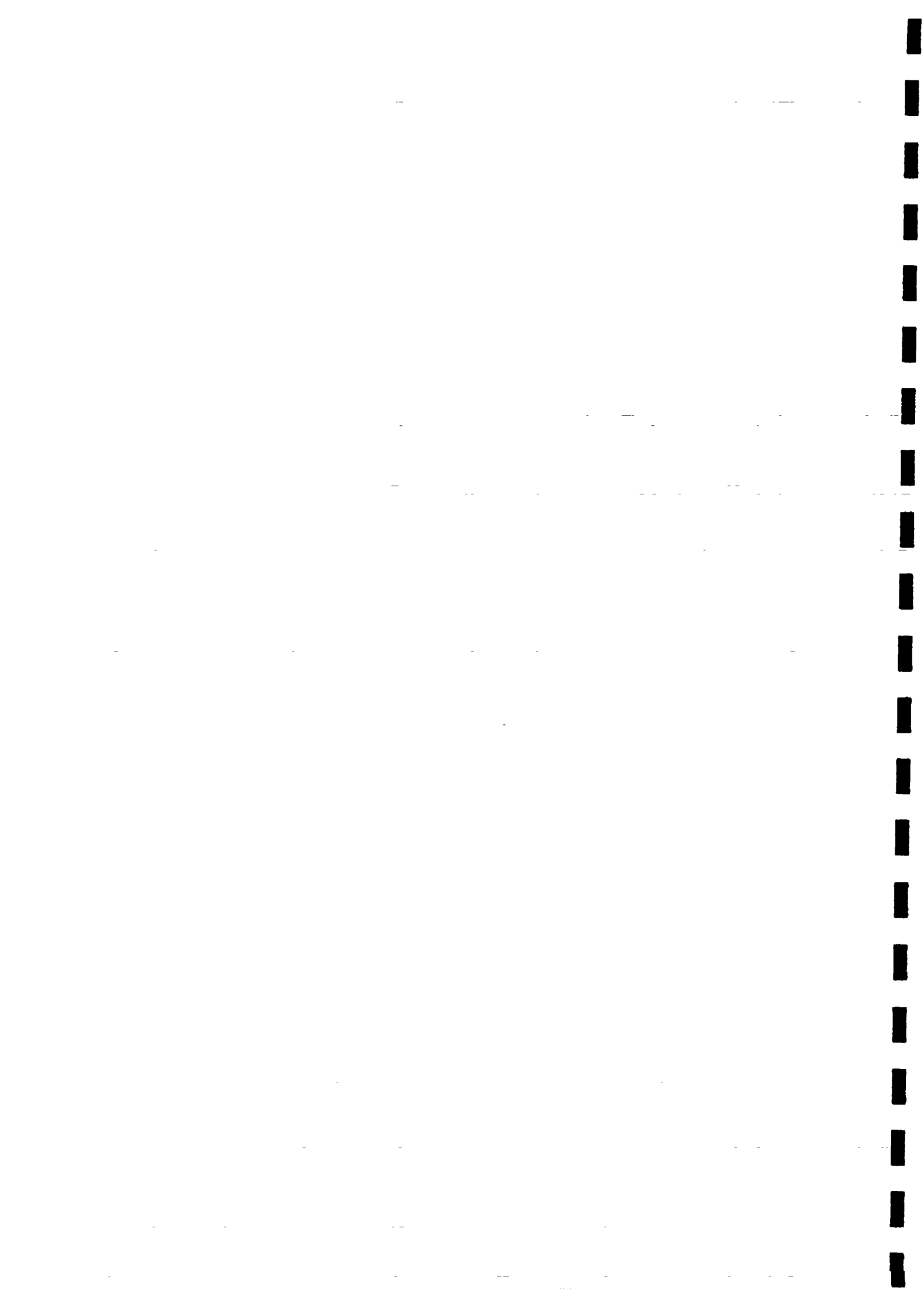
के जलश्रोत व्यवस्थापनको क्षेत्रमा सबै स्तरमा क्षमता बृद्धिको बिकास गर्न सकिन्छ ? यदि सकिदैन भने किन ?

तह	बृद्धि गर्ने क्षेत्र (बिषय)	समस्या
.....	.....	.....
.....	.....	.....

जलश्रोत क्षेत्रमा विभिन्न निकायहरूबाट तालिम प्राप्त व्यक्तिहरूको संख्या र प्रतिशत ।

तालिम प्राप्त व्यक्ति	कुन तहको लागि तालिम दिइएको हो	कुन कार्यक्रम अन्तरगत
.....	.....	.....
.....	.....	.....

**हाल विद्यमान समस्याहरू**



सिद्धान्त नं. ८ : "पानीको आर्थिक एवं सामाजिक मुल्य रहन्छ"

प्रश्न नं. १ :

पानीको महसूल उठाउने गरिन्छ ?

<u>जलश्रोत</u>	छ	दर	आय
<u>खानेपानी</u>	मर्मत/संभारमा निर्माणमा		
<u>सिंचाइ</u>			
<u>उद्योग</u>			
<u>अन्य</u>			

प्रश्न नं. २ :

पानीको महसूल उठाउनु पर्ने आवश्यकतालाई महसूस गरिएको छ कि छैन ?

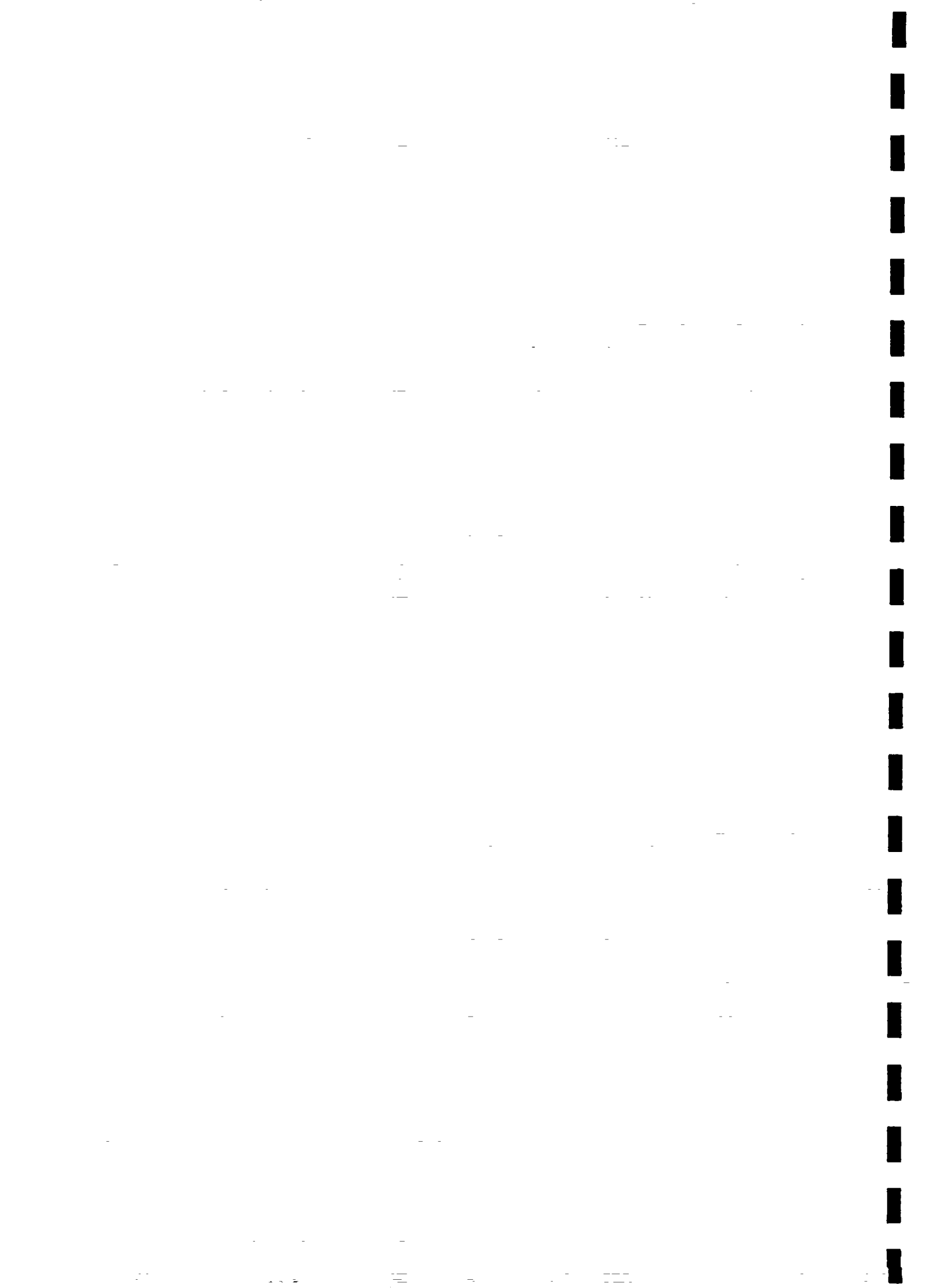
छ भने	प्रभावकारिता	समस्याहरू
प्रयासहरू के गरिएका छन् ?		

प्रश्न नं. ३ :

के गरिब/विपन्न जातीहरूको लागि छुट्टै व्यवस्था निति छ कि छैन यदि छ भने कसरी लागू गरिएको छ ?

कुन तह सम्म गरिब समुदायमा सहयोग/सेवा पुगेको छ ?

छैन भने भविष्यको सोचाई केहि छ कि ? र व्यवस्था नहुँदा विशेष समस्याहरू के के छन् ?



सिद्धान्त नं. ७ : "समतामा अमिबुद्धि, दिगोपनको सांचो हो"

प्रश्न नं. १ :

के जलश्रोत व्यवस्थापनको क्षेत्रमा सबै स्तरमा क्षमता बृद्धिको विकास गर्न सकिन्छ ? यदि सकिँदैन भने किन ?

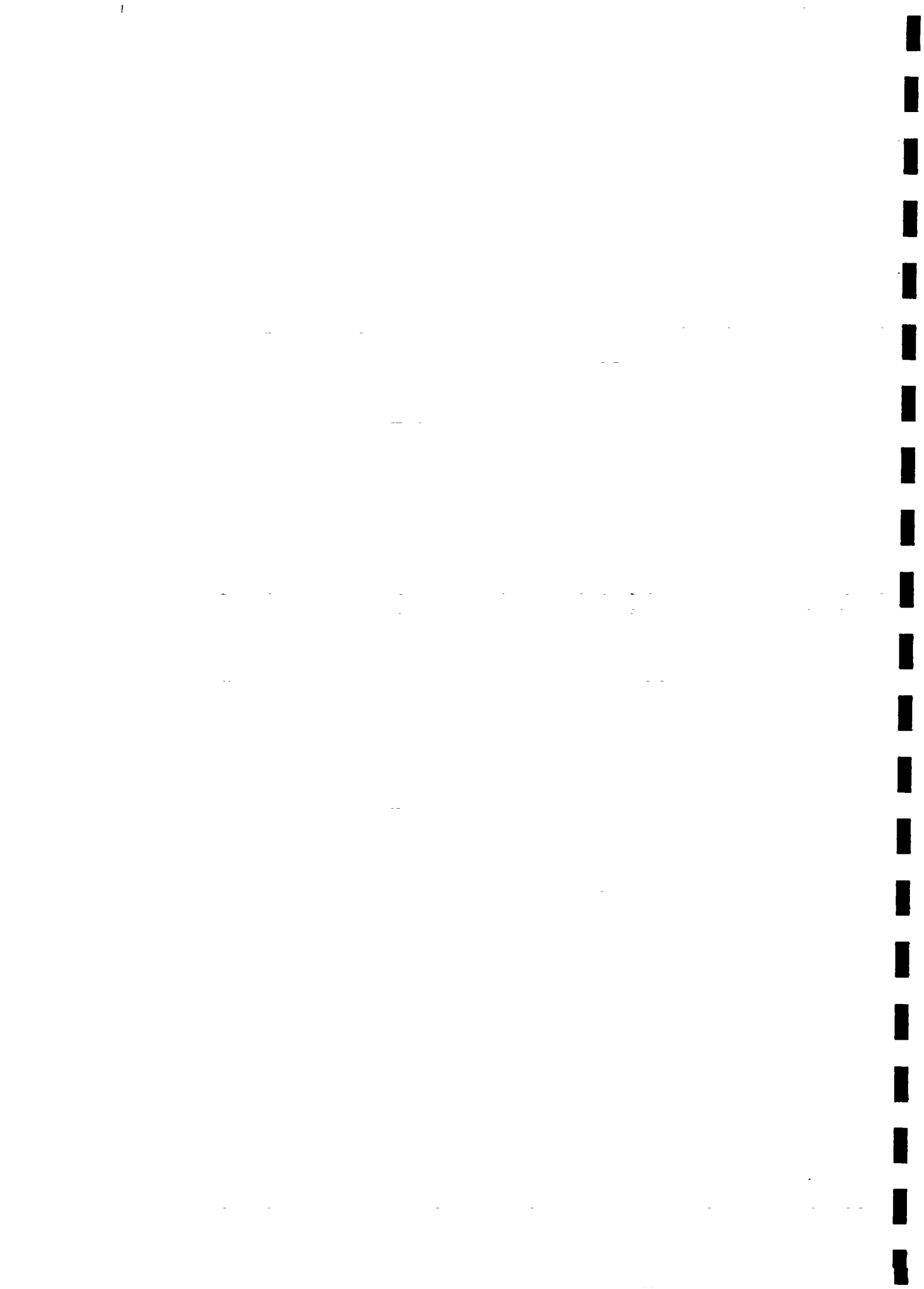
तह	बृद्धि गर्ने क्षेत्र (विषय)	समस्या
.....	.....	.....
.....	.....	.....
.....	.....	.....

जलश्रोत क्षेत्रमा विभिन्न निकायहरुबाट तालिम प्राप्त व्यक्तिहरुको संख्या र प्रतिशत ।

तालिम प्राप्त व्यक्ति	कुन तहको लागि तालिम दिइएको हो	कुन कार्यक्रम अन्तर्गत
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

हाल विद्यमान समस्याहरु

W



समूहगत कार्य  
जिल्ला स्तरीय जोषी

समूह (घ)

सहभागीहरुको नाम :

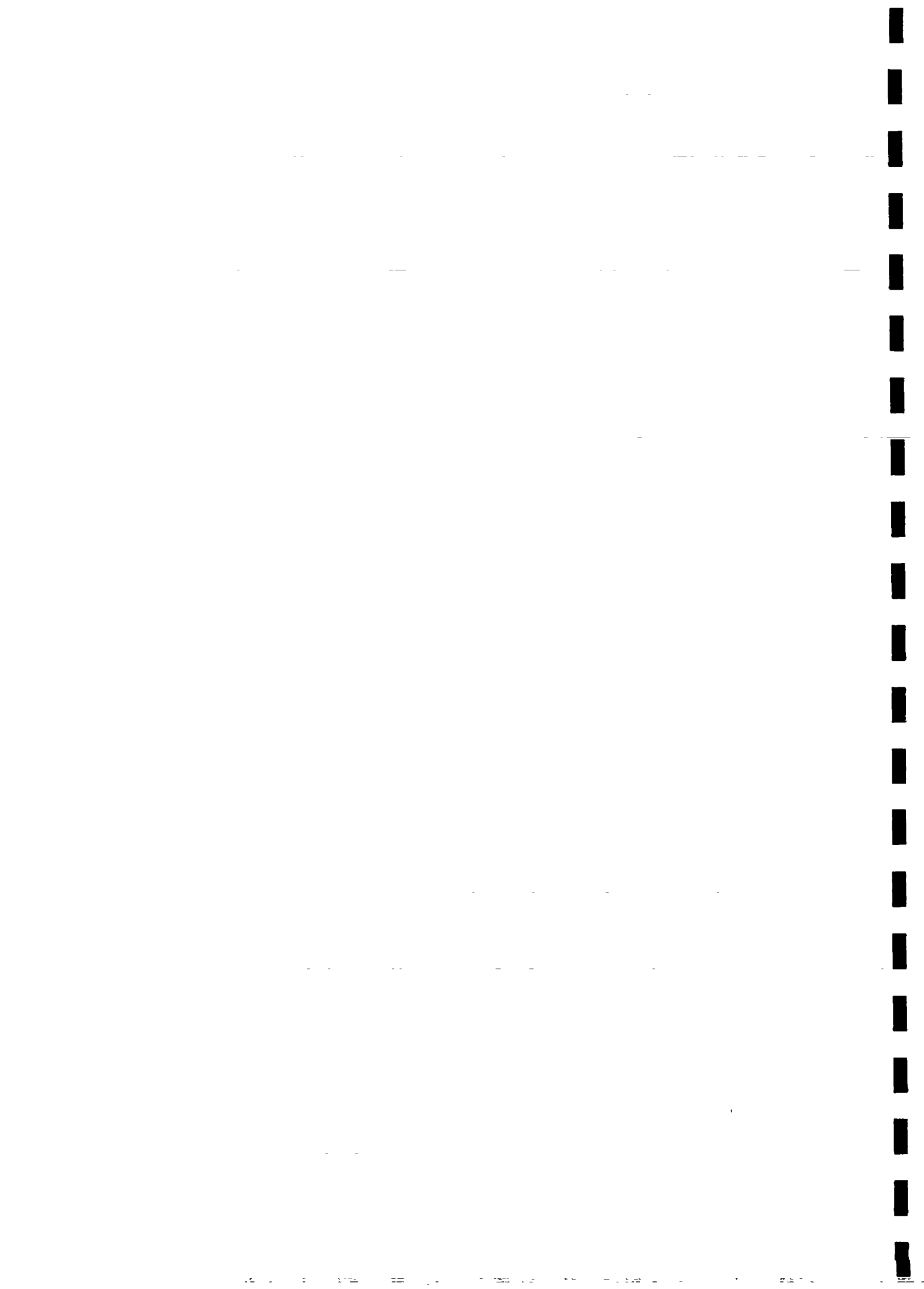
.....  
.....  
.....  
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.....  
.....

सिद्धान्त नं. ५ "क्षमतामा अभिवृद्धि, दिगोपनको सांचो हो ।"

सिद्धान्त नं. ८: "पानीको आर्थिक एवं सामाजिक मुल्य रहन्छ ।"

भैरहेको क्रियाकलापहरु	विद्यमान समस्याहरु	समस्या समाधानका प्रयासहरु	सुभावहरु
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लुम्बिनी अञ्चल ग्रामीण खानेपानी तथा सरसफाई मायोजना  
जलश्रोत व्यवस्थापन अध्ययन, कार्यशाला गोष्ठी  
(जिल्ला स्तरीय) तम्घास, गुल्मी

चैत्र ६, २०५३

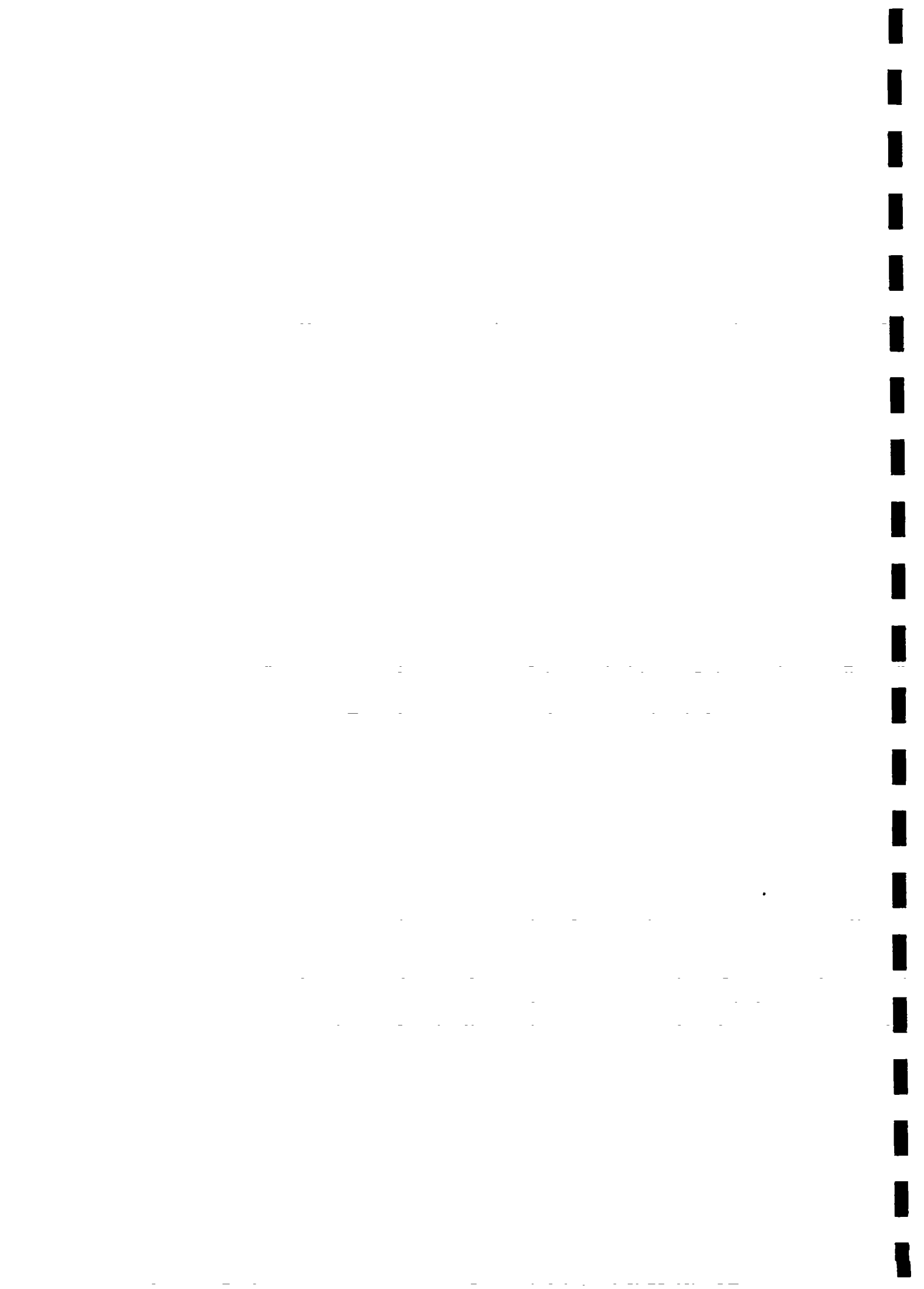
क. गोष्ठीको उद्देश्य :

जलश्रोत व्यवस्थापनको महत्त्व, अनिवार्यता एवं प्रचलनमा आइरहेका परम्परागत एवं अन्य प्रक्रियागत तौर तरिकाहरूको बारेमा अध्ययन गर्ने क्रममा जिल्ला स्थित सरकारी, गैर सरकारी सघ संस्थाहरू, जि.वि.स. एवं गा.वि.स. प्रतिनिधिहरू बिच छलफल तथा विचारहरूको आदान प्रदानको माध्यमबाट उक्त विषयमा जानकारी हासिल गर्ने ।

आई. आर. सि. नामक अन्तरराष्ट्रिय संस्थाले आयोजना गरेको जलश्रोत व्यवस्थापन सम्बन्धि अध्ययन गोष्ठीका सहभागि विभिन्न १३ वटा विकासोन्मुख राष्ट्रहरूमा गरिएको अध्ययनको आधारमा उपयुक्त व्यवस्थापन सम्बन्धि सिफारिस सहितको प्रतिवेदन तयार गर्ने कार्य गरिनेछ ।

ख. जलश्रोत व्यवस्थापनमा अन्तराष्ट्रिय स्तरमा प्रतिपादित गरिएका सिद्धान्तहरू :

- नं. १ : "जलश्रोत एवं जलाधार क्षेत्रको संरक्षण कार्य आवश्यक छ ।"
- नं. २ : "पानीको समुचित बाँडफाँद विभिन्न सम्बन्धित पक्षहरू बिच राष्ट्रिय निति अनुरूप स्वीकार्य हुनु पर्दछ ।"
- नं. ३ : "पानीको समुचित प्रयोग आवश्यक छ, जुन कि अक्सर एक महत्त्वपूर्ण जलश्रोतको रूपमा रहन्छ ।"
- नं. ४ : "जलश्रोत व्यवस्थापनको जिम्मेवारी सबैभन्दा तल्लो स्तरमा हुनु पर्दछ ।"
- नं. ५ : "सम्पूर्ण स्वामित्व हुने पक्षहरूको सहभागिता आवश्यक छ ।"
- नं. ६ : "लैंगिक समानता आवश्यक छ ।"
- नं. ७ : "क्षमतामा आभिवृद्धि, विमोषनको साँचो हो ।"
- नं. ८ : "पानीको आर्थिक एवं सामाजिक मुल्य रहन्छ"



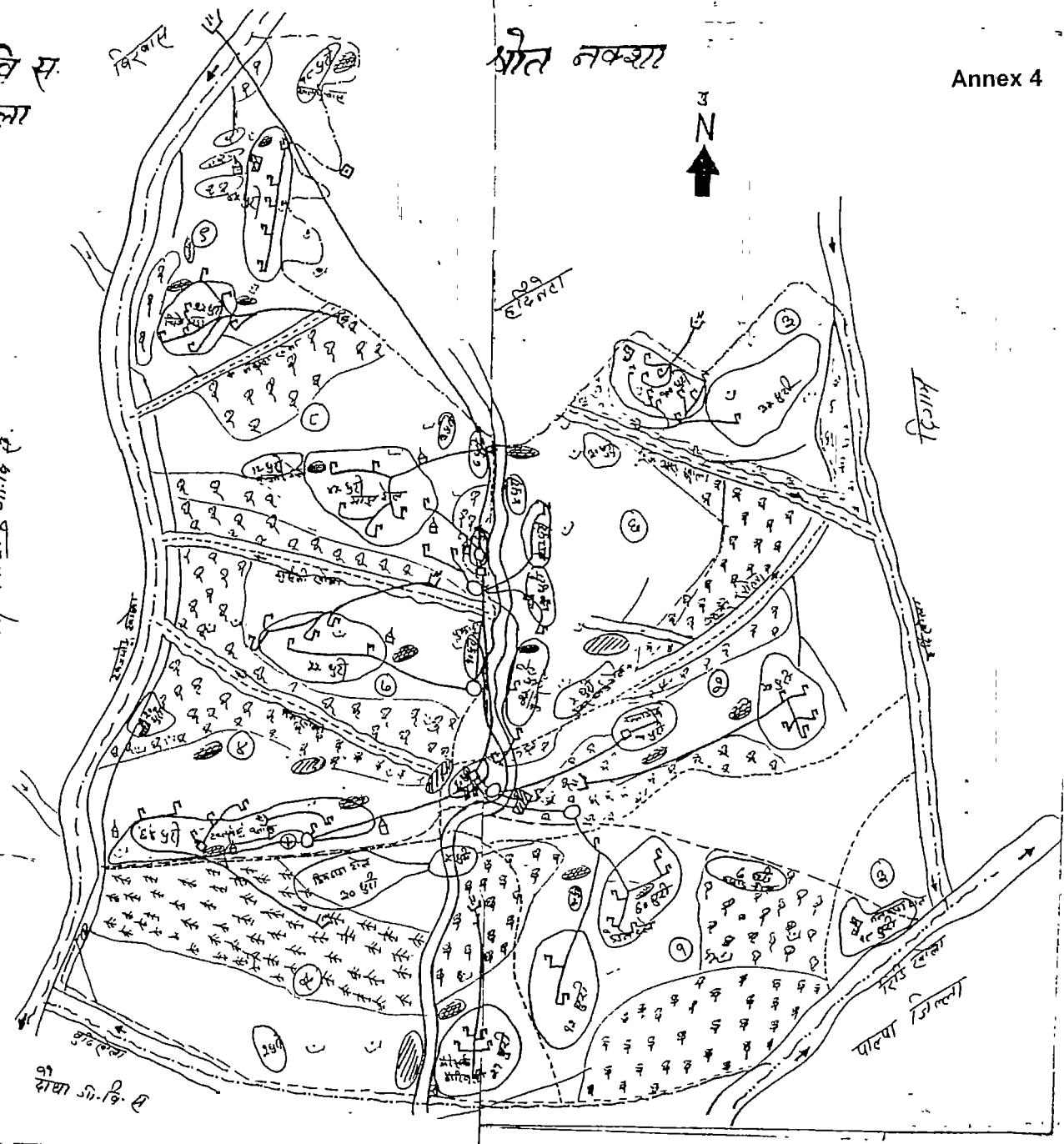
खज्याडु जा वि स  
गुल्मी जिल्ला

भौत नक्शा

Annex 4

- संकेत
- जिल्ला सिमाना -----
  - जा. वि स सिमाना - - - - -
  - वाडो सिमाना - - - - -
  - वाडो नं. (C)
  - नदी/खोला
  - पोखरी
  - पहिरो
  - खुल
  - मालुवा
  - वास्तुनाम र घर संख्या (घर संख्या)
  - डा. वि. पाठशाला
  - घारा
  - डा. वि. मूहात
  - डा. वि. इ. वि.
  - डा. वि. मूहात (मूहात)
  - सिन्धुद्वारा
  - सडक
  - आटा
  - नर्सरी क्षेत्र
  - बन जंगल
  - कुनाडा
  - हल्धोपास

उत्पादक क्षेत्र



डा. वि. मूहात

पाखा जिल्ला



# बाणजंगा गा.वि.स. कपिलवस्तु जिल्ला

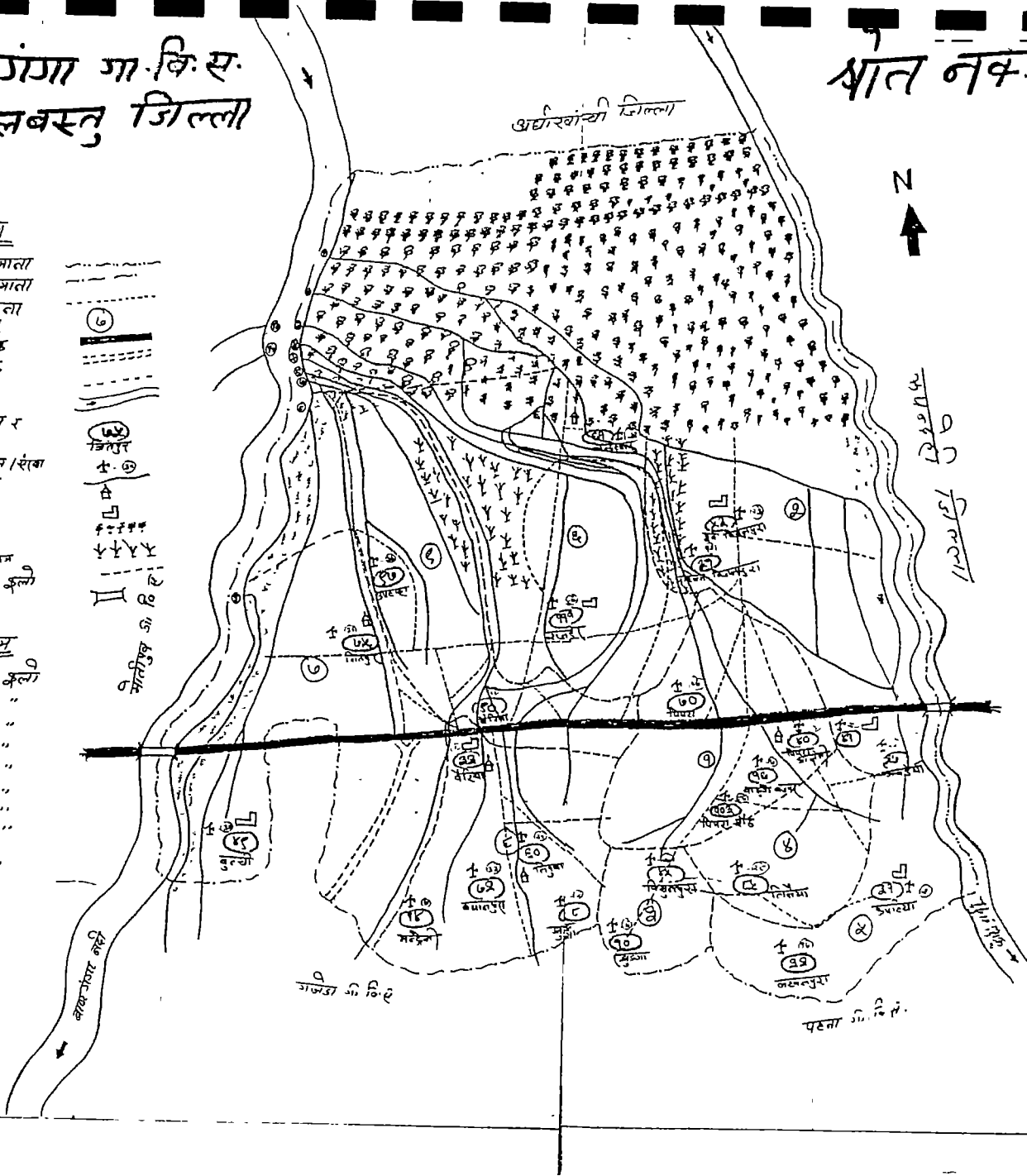
शत नक्शा

## संकेत

- जिल्ला सिमाता
- गा.वि.स. सिमाता
- काँडा सिमाता
- काँडा नगर
- पक्की सडक
- कच्ची सडक
- जोरेही बाँदी
- नादी
- बस्तीको नाम र चर संख्या
- सि.पा. क्षेत्र/संका
- सिचाई कला
- मार्ग
- मैदान
- जंगल
- नदीको नाम
- आपत प्रालित कला
- कुल

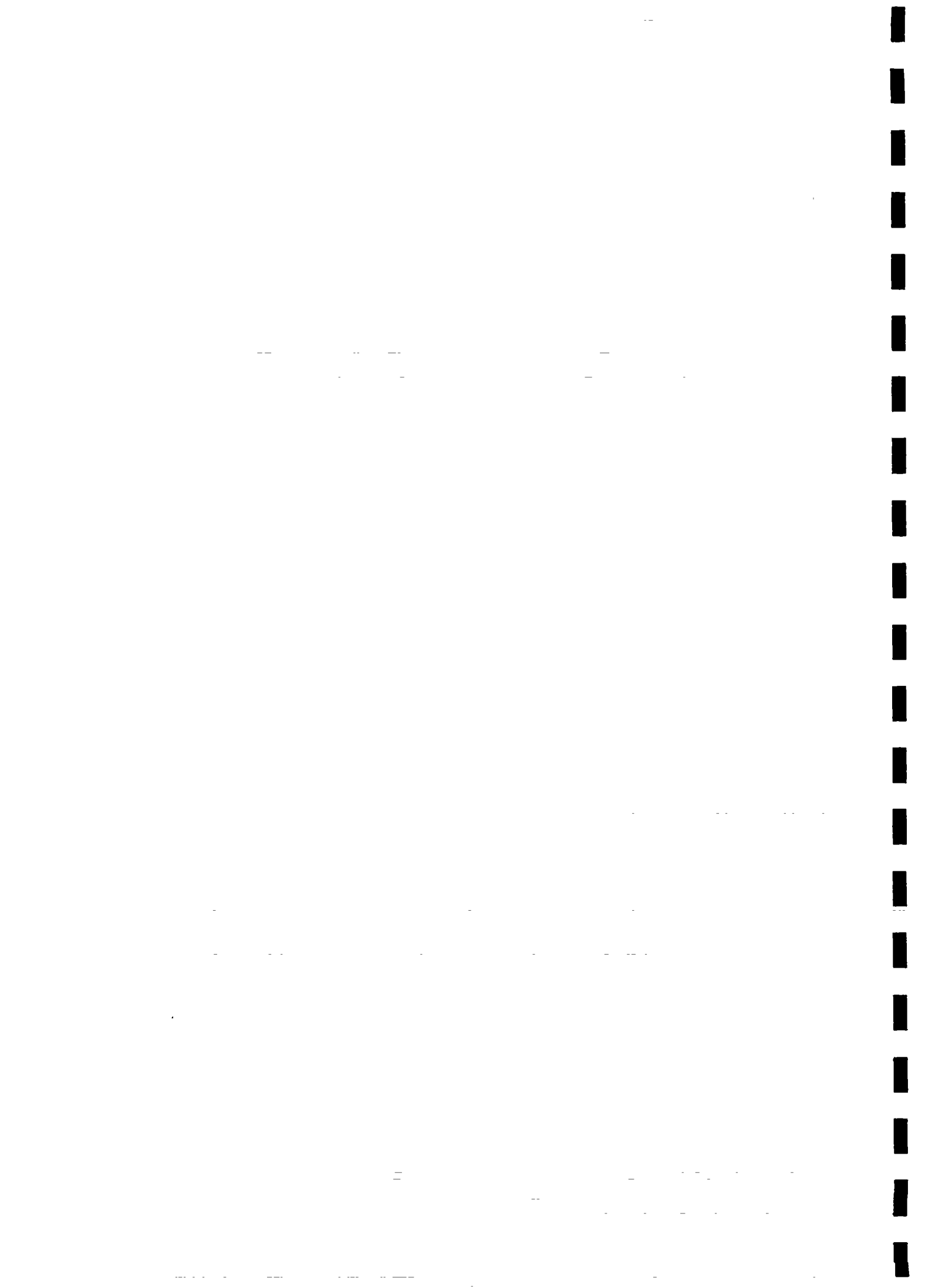
## सिचाई कलाको नाम

- ① किजलपुरा सिचाई कला
- ② लिनेया " "
- ③ पिपरा " "
- ④ राजपुर " "
- ⑤ बधातपुरा " "
- ⑥ जजडा " "
- ⑦ उपरासा " "
- ⑧ कुडा " "
- ⑨ जमिडा " "
- ⑩ सातगाउँ " "
- ⑪ मोतीपुर " "



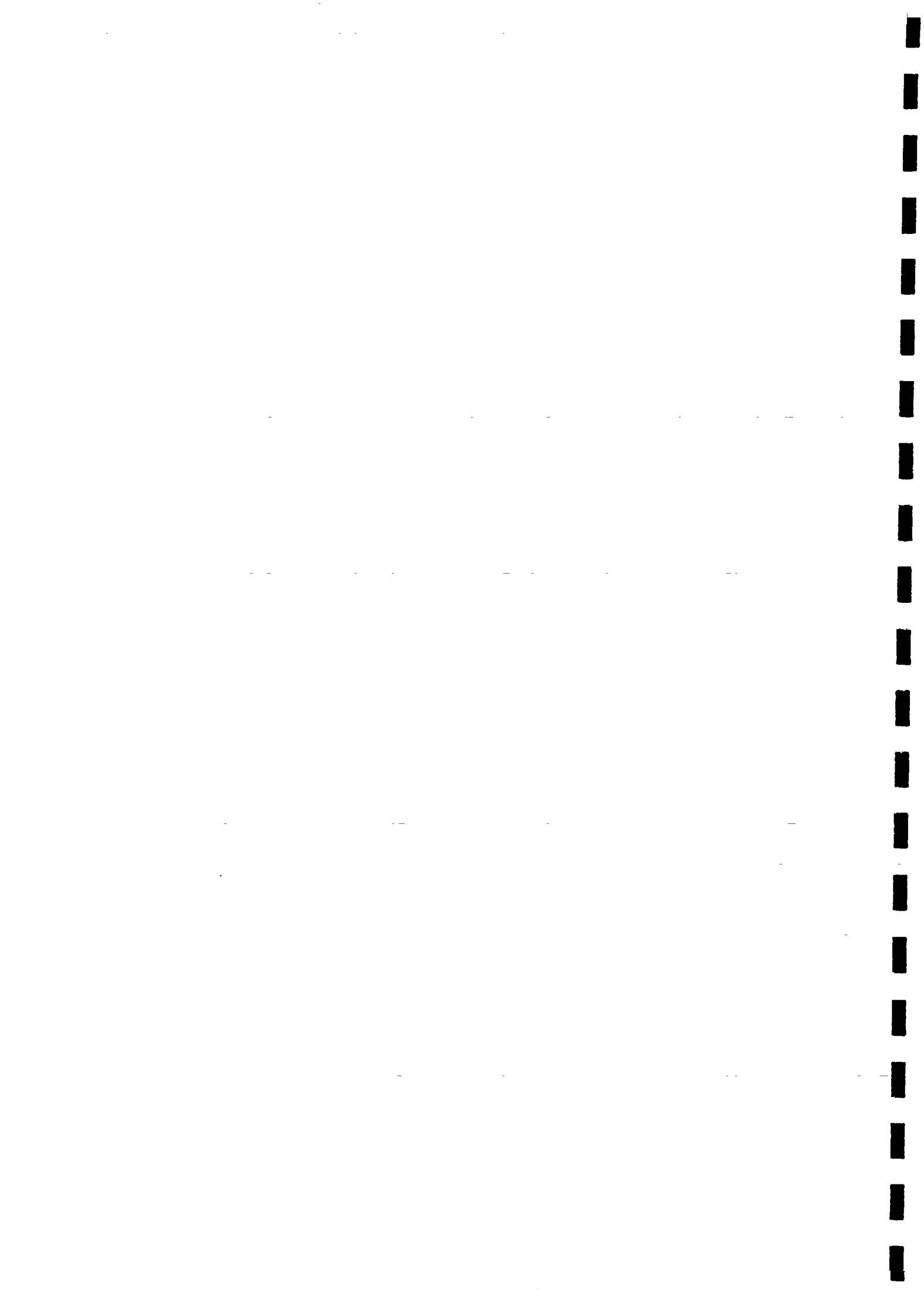
जिल्ला सिमाता  
गा.वि.स. सिमाता  
काँडा सिमाता  
काँडा नगर  
पक्की सडक  
कच्ची सडक  
जोरेही बाँदी  
नादी  
बस्तीको नाम र चर संख्या  
सि.पा. क्षेत्र/संका  
सिचाई कला  
मार्ग  
मैदान  
जंगल  
नदीको नाम  
आपत प्रालित कला  
कुल

- ① किजलपुरा सिचाई कला
- ② लिनेया " "
- ③ पिपरा " "
- ④ राजपुर " "
- ⑤ बधातपुरा " "
- ⑥ जजडा " "
- ⑦ उपरासा " "
- ⑧ कुडा " "
- ⑨ जमिडा " "
- ⑩ सातगाउँ " "
- ⑪ मोतीपुर " "



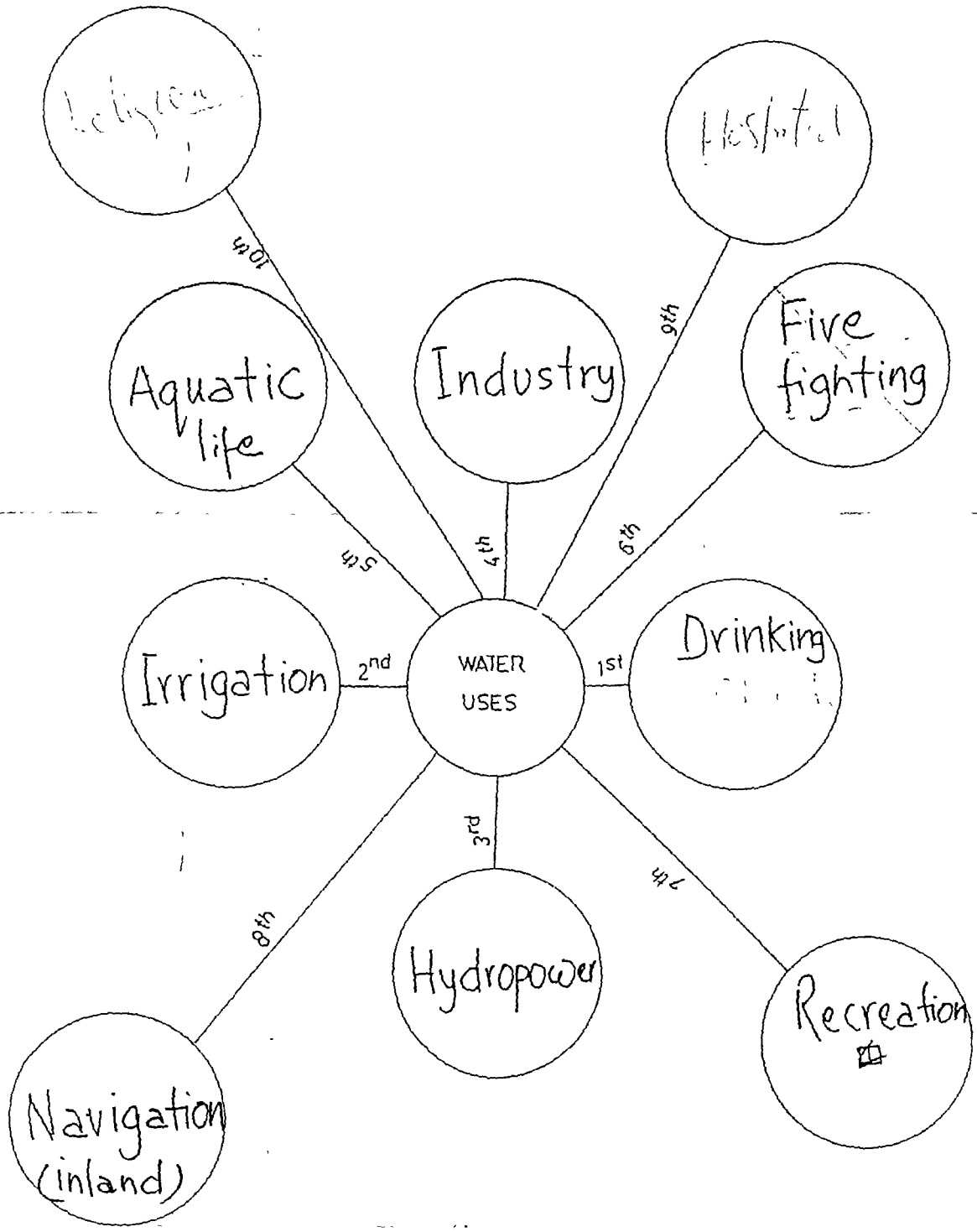
WHO MANAGES DIFFERENT WATER RESOURCES

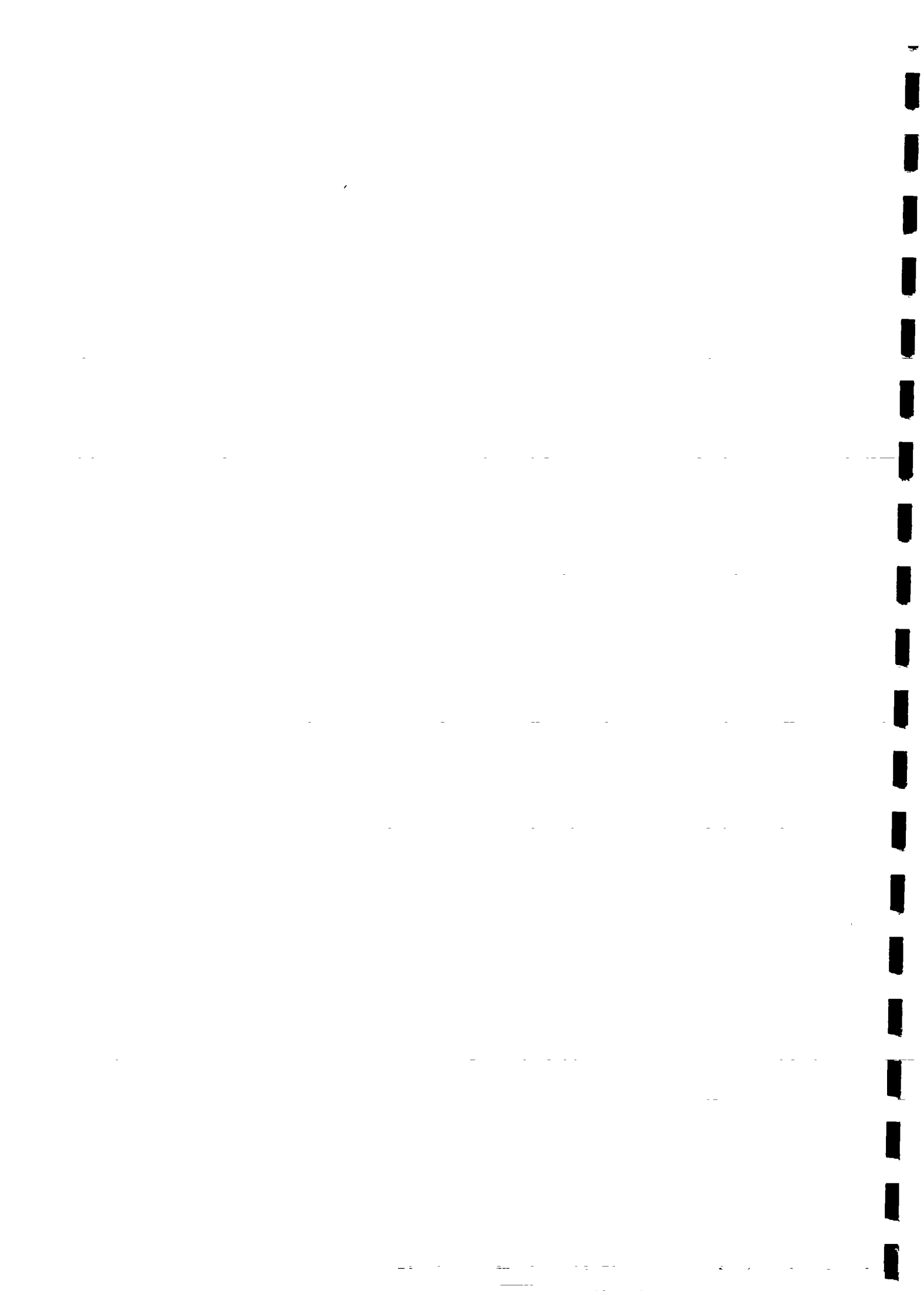
LEVEL RESOURCES/USES	OPERATIONAL	STRATEGIES
GROUND WATER	<ul style="list-style-type: none"> <li>* Users for shallow</li> <li>* State agencies for deep</li> <li>* Move towards users in the operation of deep tubewells.</li> </ul>	<ul style="list-style-type: none"> <li>* Policy, legal and planning → still a state domain, particularly the concerned Ministries.</li> <li>* Beginning to involve users in policy formulation</li> </ul>
SURFACE WATER	<ul style="list-style-type: none"> <li>* Users predominately involved</li> </ul>	<ul style="list-style-type: none"> <li>* Still a state domain but users involvement beginning</li> </ul>
DIFFERENT SECTORS - Drinking Water  - Irrigation Water	<ul style="list-style-type: none"> <li>* Users (WUC)</li> <li>* Users (WUA)</li> <li>- difference between FMIS and agency assisted systems.</li> </ul>	<ul style="list-style-type: none"> <li>* Institutional plurality</li> <li>- many agencies involved</li> <li>* clear delegation of responsibility between DWSS and other Ministries, INGO/NGOs</li> <li>* Water Resource Act</li> <li>Water Resource Regulation</li> <li>Irrigation Policy</li> <li>* DoI still a</li> </ul>





WATER USE IN PRIORITY ORDER





# STAKEHOLDERS IDENTIFICATION.

WATER USE STAKEHOLDERS	DRINKING WATER.	IRRIGATION.	HYDROpower	INDUSTRY	AQUATIC	FIRE FIGHTING	RECREATION NAVIGATION
	Users U. Committee S. Organization V. D. C Donors D. D. C DWISO DWISS MLD MHPP DSC NGO(I) NPC	Users U. Comm. S. Org. V. D. C D. D. C DIO DOI MOWR NGO(I) N. P. C. MLD Don.	Users U. Comm NEA EDC MOWR NPC Donors	Industrialist WSSC VDC Ground water	Fisherman D. of wild life MoEP		

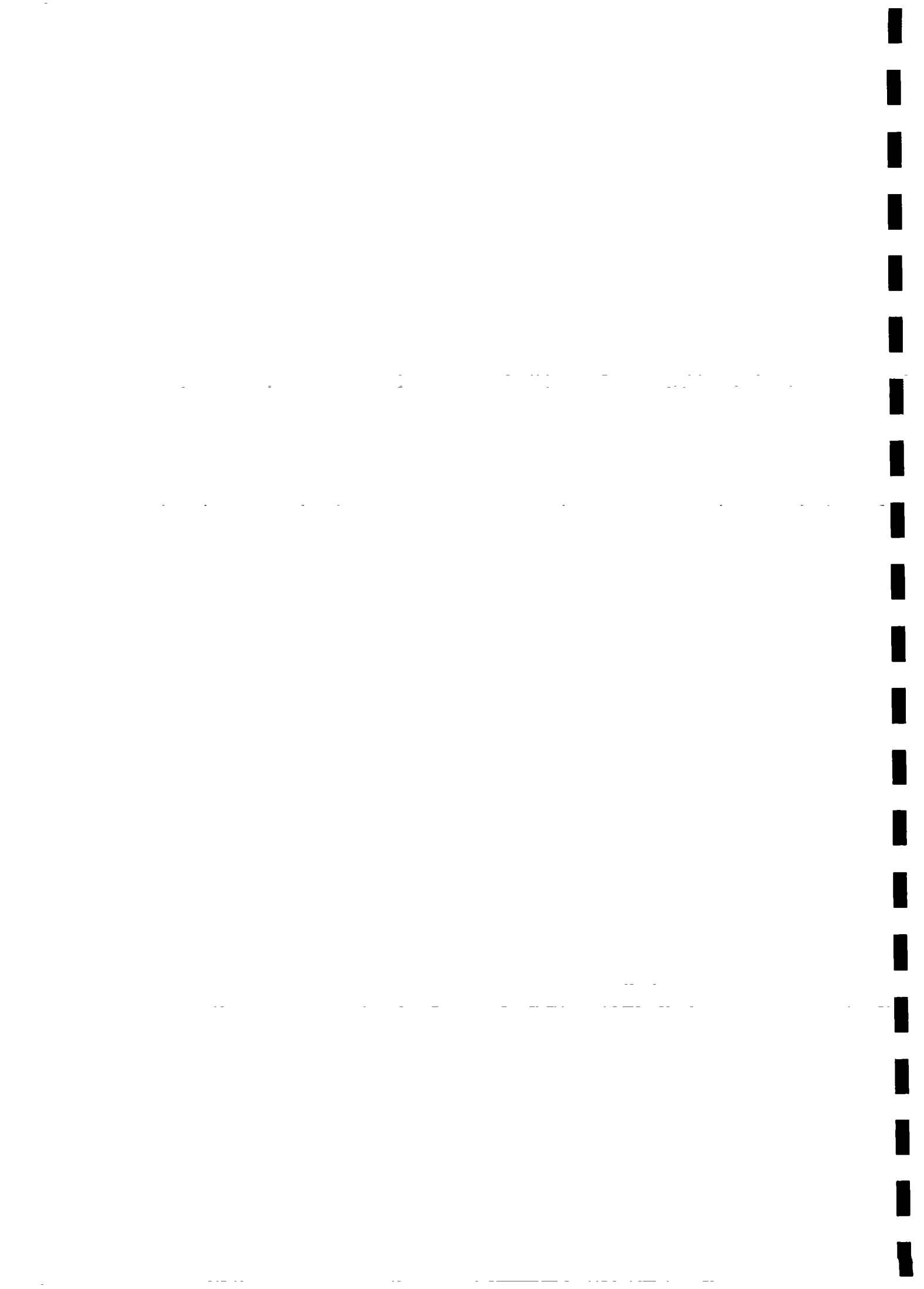




Study area (Hill): Kharjyang VDC, Gulmi, Nepal



Study area (Terai): Banganga VDC, Kapilvastu, Nepal

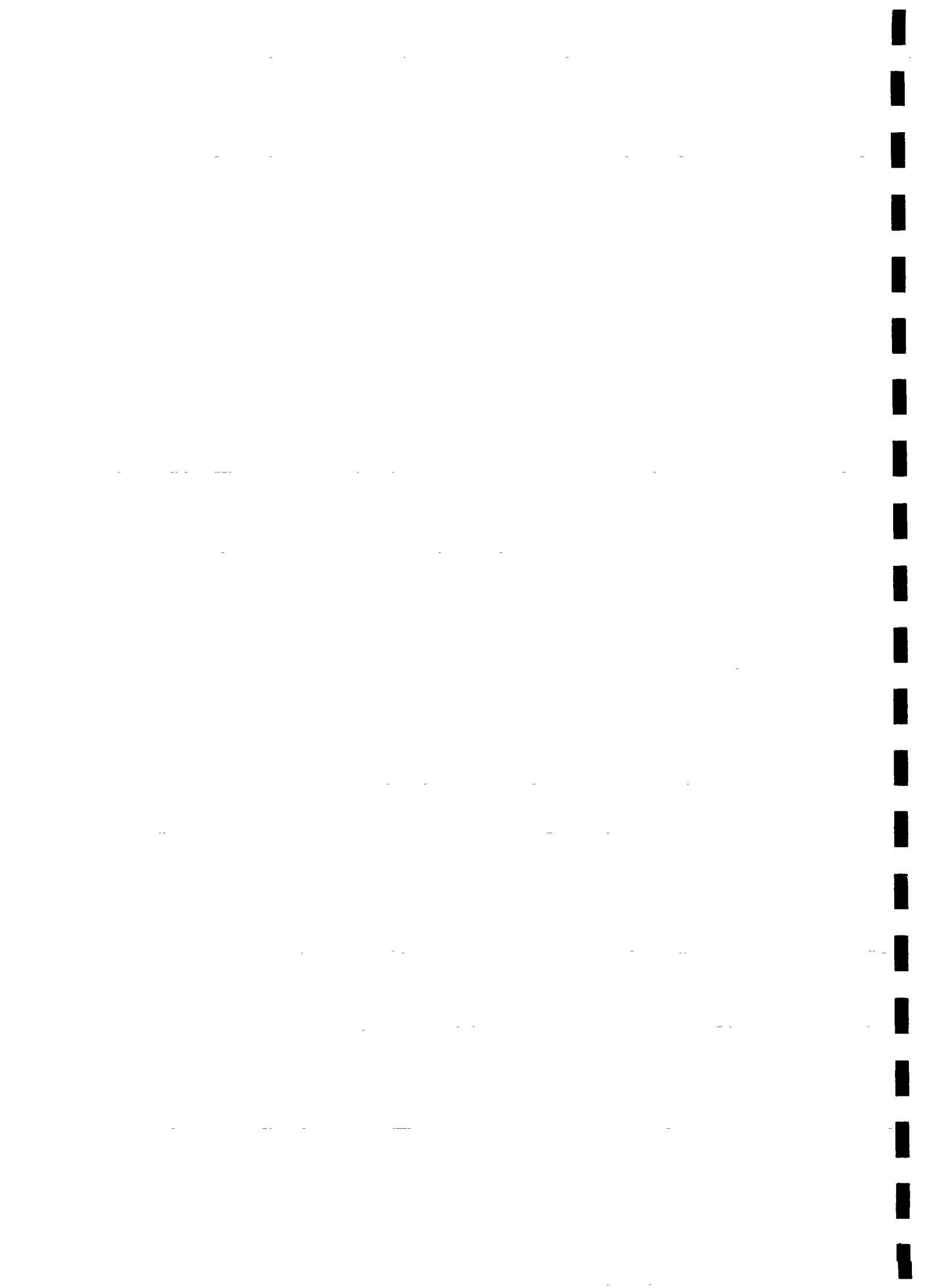


Mapping: Kharjyang VDC



Group work - community level: Kapilvastu







Water distribution: Banganga Irrigation



Water allocation. Banganga Irrigation



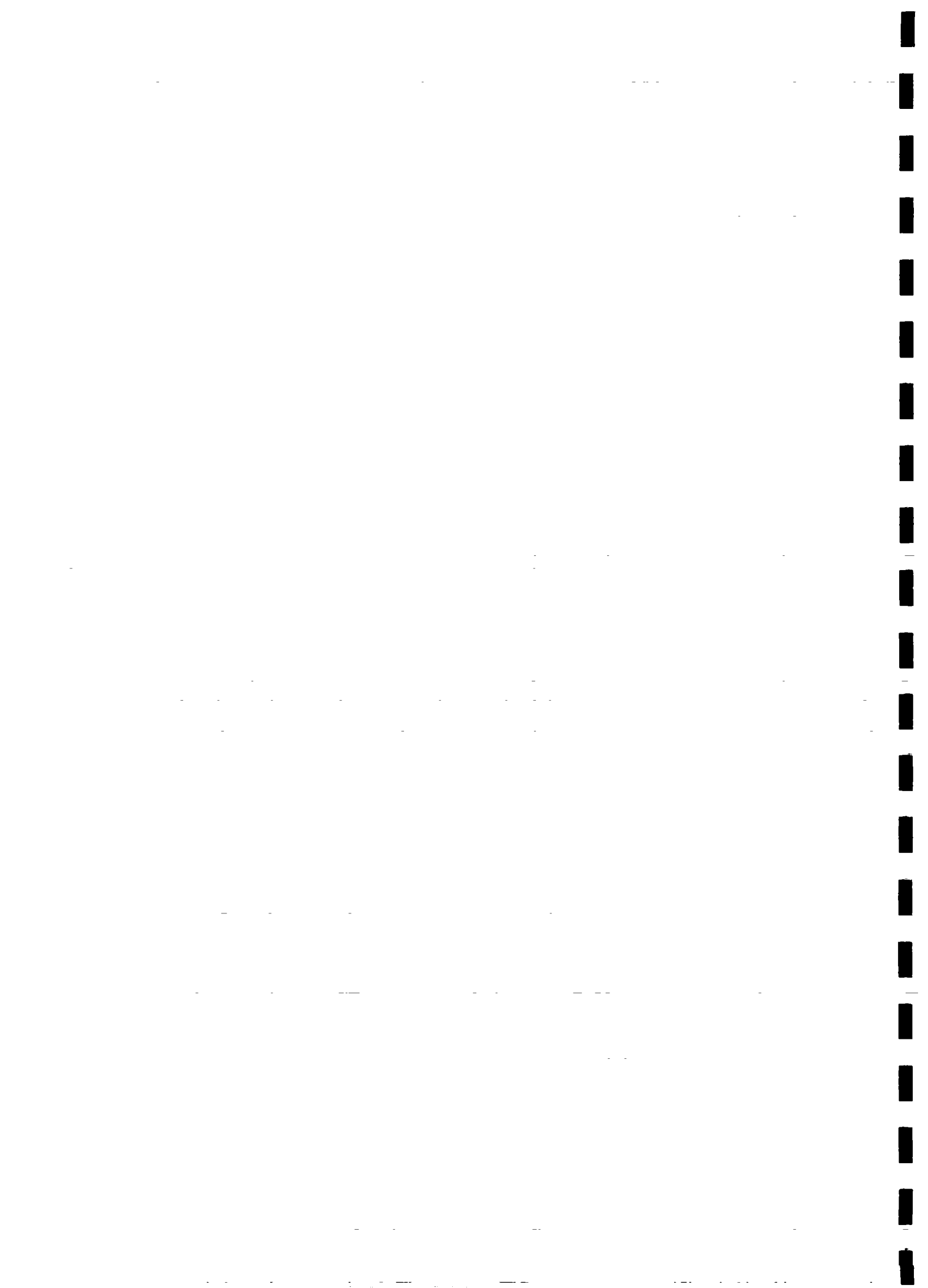


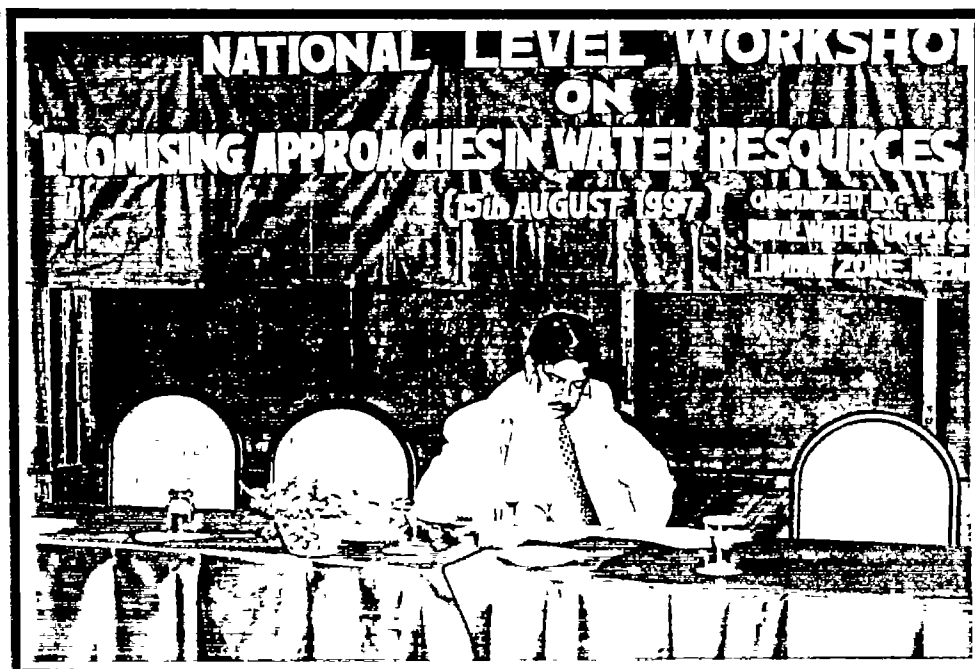
Intake of Banganga Irrigation Scheme



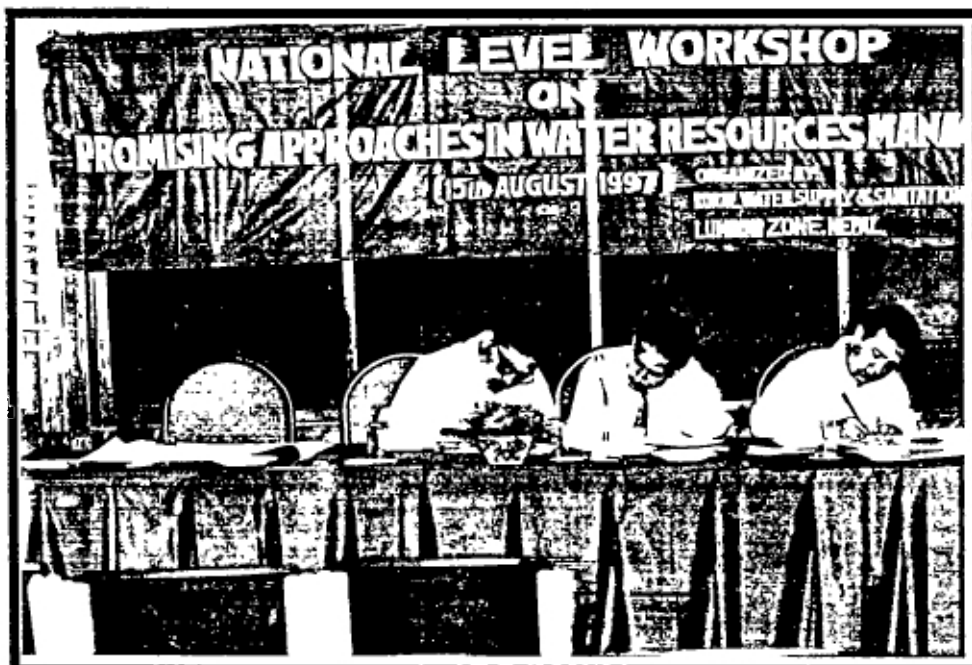
Handpump







Moderation by Mr. Dinesh Pyakurel, in National level workshop



Group work in National level workshop



Threat to WRM



Threat to WRM



