Inter – Agency Co-ordination and Integration Modalities in Participatory Watershed Management: A Comparative Study of two Projects in Nepal

(A Case study Of Gerkhu Sub-watershed, Nuwakot, Danida supported Nepal-Denmark Watershed Management Project

and

Tungan Sub-watershed, Lalitpur, European Union supported Bagmati Integrated Watershed Management Project)

By

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Abstract

A comparative study of Inter-Agency Co-ordination and Integration modalities of two participatory watershed management projects in Nepal is presented. These projects' objectives, activities, planning and implementation modalities, institutional set up and stakeholders' involvement in participatory integrated watershed management are briefly discussed. This study focused on analysis of designed or planned co-ordination and integration mechanisms for participatory integrated watershed management and existing Inter-agency linkages and co-ordination modalities among green sector line agencies at the district and sub-watershed levels.

The main techniques employed in this study were Participatory Rural Appraisal (PRA), informal interview, meeting, observation and discussion through checklist with concern personnel and review of secondary information.

This study found that the Danida supported Nepal-Denmark Watershed Management Project (NEP-DKWMP) has intended co-ordination and integration modalities during project design stage at the central and district level. In Bagmati Integrated Watershed Management Project (BIWMP), only at the central level.

In the NEP-DKWMP, some degrees of co-ordination are carried out through different co-ordination mechanisms such as direct personal contact, regular meetings, mutual adjustment, and establishment of common working procedures, but the Co-ordination Committee have been found more used and effective mechanism. While in the case of BIWMP, co-ordination and integration is carried out mainly through direct personal contact. Overall, this study concluded that the Danida supported NEP-DKWMP has stronger and institutionalised co-ordination mechanisms than EU funded BIWMP.

This research found the reasons for inadequate inter-agency co-ordination and integration among green sector line agencies and not exchanging geo/spatial information during process of co-ordination and integration. This study also found some outcomes from the co-ordination and integration practices.

Some recommendations are proposed to improve institutionalised co-ordination and integration among green sector line agencies for the watershed management process in the future.

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List of Abbreviation

ADB/N	: Agriculture Development Bank of Nepal
BIWMP	: Bagmati Integrated Watershed Management Project
CA	: Chief Advisor
CDC	: Community Development Committee
CDG	: Community Development Group
CDO	: Chief District Officer
DADO	: District Agriculture Development Officer
DCI	: District Cottage Industry
DDC	: District Development Committee
DFO	: District Forest Officer
DIO	: District Irrigation Office
DLDO	: District Livestock Development Officer
DSCO	: District Soil Conservation Officer/Office
DSCWM	: Department of Soil Conservation Watershed Management
DTG	: District Technical Group
EU	: European Union
FAO	: Food and Agricultural Organisation
FTG	: Field Technical Group
GO	: Government Organisation
HMG	: His Majesty's Government
HMGN	: His Majesty's Government of Nepal
ICIMOD	: International Centre for Integrated Mountain Development
IGA	: Income Generation Activities
IRD	: Integrated Rural Development
IRDP	: Integrated Rural Development Project
ISWM	: Integrated sub-watershed management
IWM	: Integrated Watershed Management
LDO	: Local Development Officer

M &E	: Monitoring and Evaluation
MIS	: Management Information System
MPFS	: Master Plan for the Forestry Sector
NARMSAP	: Natural Resources Management Sector Assistant Programme
NEP-DKWMP	: Nepal -Denmark Watershed Management Project
NGO	: Non-Government Organisation
PCC	: Project Co-ordination Committee
PIWM	: Participatory Integrated Watershed Management
PM	: Project Manager
PMU	: Project Management Unit
PRA	: Participatory Rural Appraisal
PSC	: Project Steering Committee
PSO	: Project Support Office
PUCD	: Participatory Upland Conservation and Development
SCWM	: Soil Conservation and Watershed Management
SCWMC	: Soil Conservation and Watershed Management Component
UNDP	: United Nations Development Programme
VDC	: Village Development Committee
WIS	: Watershed Information System
W/S	: Watershed

1 Chapter One: Introduction

1.1 Watershed Management Situation in Nepal

Most rural people of Nepal depend on subsistence agriculture. In order to meet the increasing demand of the people for food, fuel, fodder and timber, marginal lands are being cultivated. The farming of sloping lands especially in the hilly and mountainous watersheds without adequate conservation measures are major reasons responsible for the erosion of fertile topsoil. Upland watersheds in Nepal are very fragile. It has been realised that the decline in soil fertility through soil erosion is one of the major ecological crises facing Nepal today (MPFS, 1989). High population pressure, scarcity of sufficient arable land resources, lack of alternative job opportunities and cultivation without adequate conservation measures are the underlying causes of land degradation in the mountain watersheds[1] of Nepal. The combined effect of the ecological disorders has been massive, resulting in soil erosion in thousands of minor sub-watersheds that form Nepal's topography (Joshi, et al 1993). The intensive uses of these resources have been causing on–site damage as well as off-site damage. The off-site damages are siltation in reservoirs, disruption of transportation systems due to landslides and mass wasting, etc. Floods from upstream and sedimentation downstream have increased losses of life and property in the area.

In order to mitigate the watershed problems, His Majesty's Government initiated watershed management programmes. The first step was to establish a separate department for watershed management in 1974 and soil conservation offices in several districts later on. The Department of Soil Conservation and Watershed Management under the Ministry of Forest and Soil Conservation has the overall responsibilities for the planning and implementation of all soil conservation and watershed management activities in the country. The department executes soil conservation and watershed management activities through its district soil conservation offices. Additionally, government also formulated policies for participatory watershed management. In 1980s Soil Conservation and Watershed Management was equipped with legislation of SCWM Acts and Regulations. The sub-watershed is considered as a working unit for effective soil conservation and watershed management. In the beginning of watershed management, the concept was more top-down approach like planning of activities from the central level and implementation of works through the contractor without consulting local people. Planning was based on existing land use versus proposed improved land use. This approach did not encourage farmers' participation, hence it often proved to be unsustainable. The programmes were purely government and individual efforts (Bogati, et al 1999). Somehow, participation was limited to the local leaders and elite groups. However, in many cases the department's initiations could not succeed due to lack of people's supports.

Over the past decade, watershed management has evolved from a government concern with mainly public land management to a situation where the watershed population is seen increasingly as the active partner with government agencies being placed in an advisory and supported role. There are several reasons for this: forest protection through policing by forest guards and nationalisation of forests in order to protect them has largely failed (Michaelsen, 1991). On the whole, lack of local initiation and control, limited transparency in project information among local people, lack of co-ordination between

[1] "Watershed" is topographically delineated area that is drained by stream system, i.e. the total land area that is drained to some point on stream or river.

user groups are formed by District Soil Conservation Offices in working sub-watershed areas. These groups are formed on the basis of geographical proximity, settlement pattern, commonalties of development interests and social homogeneity. The CDG is an in-situ institution responsible for community mobilising, planning, implementing and managing development activities. They are also responsible to develop an equity based benefit-sharing mechanism and practice accordingly. In addition to the CDGs/hamlet user groups formed by DSCO, there already exist a number of user groups formed by different line agencies (Government and Non-Government) according to their various programmes. These are forest user groups, livestock user groups, irrigation user groups, drinking water user groups, goat farming user groups etc. People involved in one user group are also associated in other user groups. Thus such user group in the same village creates complex, conflict and confusion among user group members and line agencies (Khadka, 1998).

Although, these line agencies are inherently independent and have defined responsibilities, they have different organisational objectives, priorities, targets, and policies for seeking people's contributions for example mandatory, or a percentage basis, negotiable, etc. as well as different implementation approaches. But, they have also some commonalties, for instance: they are working in the same area using similar kind of information i.e. biophysical, socio-economic, demographic, resources etc. In addition, they have similar goals, closely related activities and working with the same community/target people. Unfortunately, the selection, design and implementation of activities are carried out without consulting each other and they pay scarce attention to work together. Watershed management by nature is a multi-sectoral activity requiring close co-ordination among a number of diverse agencies viz. line agencies, local people, political units, etc. The present co-ordination and co-operation mechanisms do not seem to be strong, however. Integrated watershed management activities depends on a high level of joint planning, activity collaboration and information sharing. As a consequence, in many places, duplication of activities occurred due to lack of co-ordination and local people are more confused and misled due to the different working manner of various agencies.

In addition, the majorities of people in the watershed area are totally dependent on the different watershed resources for their livelihood. There is a multi-dimensional nature of problems (for instance: economic, technical, social etc). Development efforts carried out with an isolated approach can not generate the package of requirements for the multi-dimensional watershed problems. The top-down, single sector and growth oriented approach to watershed development could not lead to substantial and widespread alleviation of rural poverty, the new approach needs to be participatory, integrated, multi-sector and focused on the poor. The growing interest in the integrated rural development (IRD) approach is a result of obstacles impeding the pace of development caused by "uncoordinated and disintegrated programmes by different agencies of the government designed to solve the inter-related problems confronting the rural populace" (Ojha and Adhikari 1982).

As mentioned, watershed management is a holistic approach, which needs a multidisciplinary team for planning, implementation of watershed management activities. Therefore, successful integrated watershed management depends on a good co-ordination between associated line agencies. The co-ordination among different parties/stakeholders is indispensable for effective implementation. MPFS (1989) highlighted the necessity of co-ordination mechanism for watershed management in central and district level in Nepal. However, in context of Nepal, co-ordination has been generated simply through personal relations, behaviour and attitude. There are no institutional co-ordination mechanisms, which

1.3 Objectives

1.3.1 General Objective:

The general objective of this study is to examine the operational modalities of two Participatory Watershed Management Projects in Nepal, with particular reference to the working procedures for Inter-agency co-ordination and integration in planning and implementation, and assess the results or outcome of these procedures.

1.3.2 Specific Objectives

1. To analyse and compare the two projects designs and plans for co-ordination and integration modalities for Participatory Integrated Watershed Management.
2. To examine actual existing Inter Agency Linkages and Co-ordination modalities among green[2] sector line agencies at district and sub-watershed level in the two project areas.

2.1 To review the information that is needed and exchanged in the processes of co-ordination and integration.

3. Based on the finding of the study, to come up with recommendations, which may strengthen participatory integrated watershed management process in the future.

1.3.3 Research questions

1. Analysis of the Projects designed and planned co-ordination and integration modalities for Participatory Integrated Watershed Management,
    1. What are the objectives and activities of these projects?
    2. What are the mechanisms for programme planning and implementation?
    3. Which stakeholders/parties are involved in watershed resources management?
    4. What co-ordination and integration mechanisms were designed and planned for the projects?

2. The existing Inter Agency Linkages and Co-ordination modalities among green sector line agencies at district and Sub-watershed level will be examined,
    1. What are the actual present co-ordination and integration mechanisms during the planning, implementation and follow up?
    2. Is there a gap between planned/designed mechanisms and mechanisms actually used in the projects?
    3. If so, why?
    4. What are the constraints found with co-ordination and integration practices?
    5. What are the actual outcomes from co-ordination and integration during project operations?

1.4 Thesis Structure

This research study is structured into seven chapters. The research objectives, research questions and corresponding chapters are summarised in figure 1.

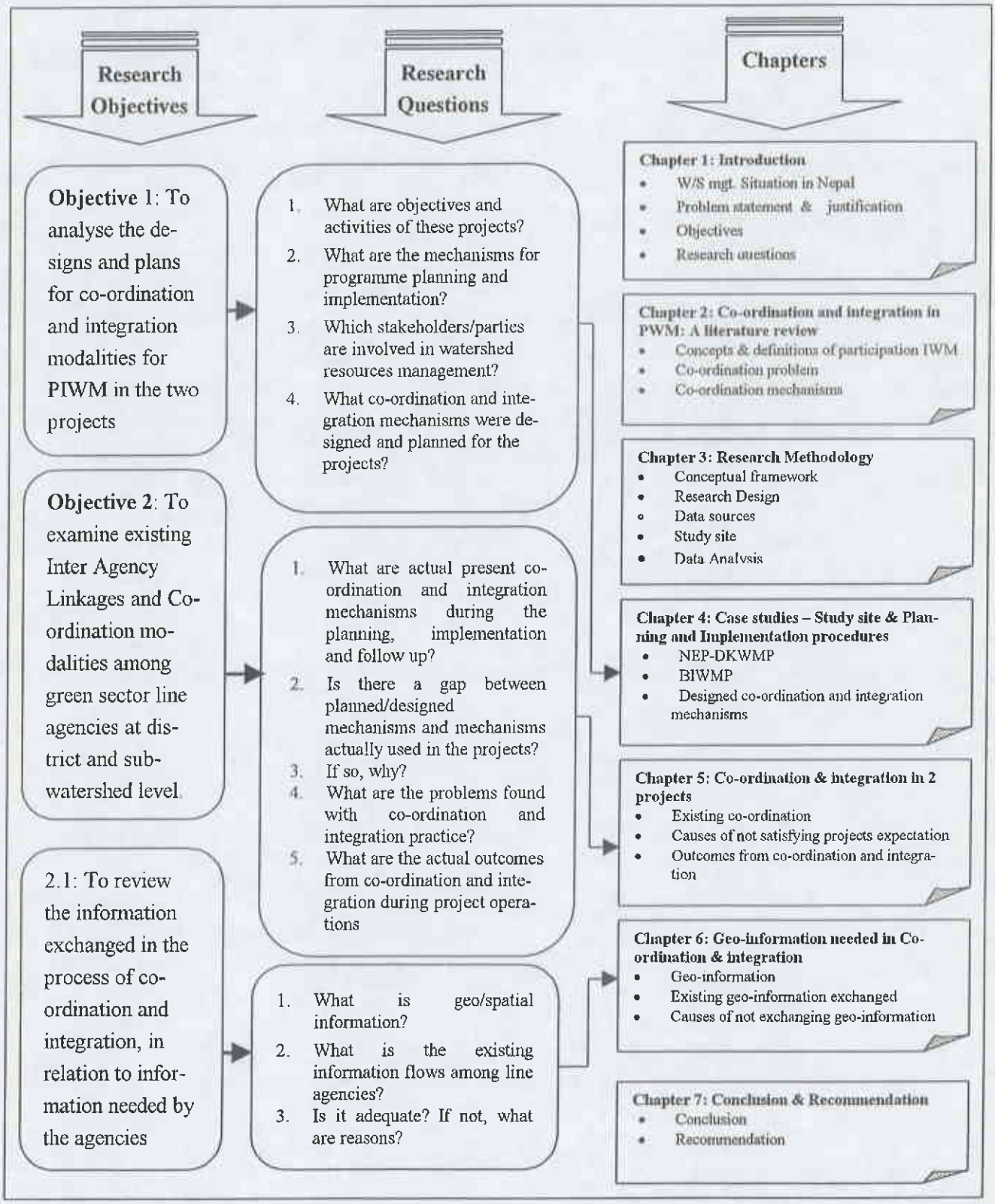


Figure 1: The thesis structure showing relationship between research objectives, Questions and Chapters

2 Chapter Two: Co-ordination and Integration in Participatory Watershed Management: A Literature Review

Chapter Summary:

This chapter deals with review of literature on participation, watershed, participatory integrated watershed management and co-ordination and integration mechanisms in participatory watershed management. The first part of this chapter explains about concept, definition and rational of participation, where many definitions, including participatory watershed management and purpose of participation, how does it help in development and development projects are briefly discussed.

The next part of this chapter is defining concept and terms of watershed and integrated watershed management that explain about definition of watershed and integrated watershed management.

The final part of this chapter is co-ordination mechanism in integrated watershed management. The co-ordination problems, different mechanisms adopted in co-ordination and integration in various situations and their strength, weaknesses are mentioned. The overall co-ordination mechanisms from reviewing literature and field experiences are proposed.

2.1 Participation: Concept and Definition

Many definitions of participation have been offered. Some are quoted by Clayton et al (1998) in a Documents: Empowering People - A Guide to Participation, UNDP, 1998. Following are a number examples illustrate meaning of participation in development:

> 'With regard to rural development . . . participation includes people's involvement in decision-making processes, in implementing programmes, their sharing in the benefits of development programmes and their involvement in efforts to evaluate such programmes.' (Cohen and Uphoff, 1977)
>
> 'Participation is concerned with . . . the organized efforts to increase control over resources and regulative institutions in given social situations on the part of groups and movements of those hitherto excluded from such control.' (Pearse and Stifel, 1979)
>
> 'Community participation [is] an active process by which beneficiary or client groups **influence** the direction and execution of a development project with a view of enhancing their well-being in terms of income, personal growth, self-reliance or other values they cherish.' (Paul, 1987)
>
> 'Participation can be seen as a process of **empowerment** of the deprived and the excluded. This view is based on the recognition of differences in political and economic power among different social groups and classes. Participation in this sense necessitates the creation of organizations of the poor, which are democratic, independent and self- reliant!' (Ghai, 1990)
>
> 'Participatory development stands for **partnership** which is built upon the basis of dialogue among the various actors, during which the agenda is jointly set, and local views and indigenous knowledge are deliberately sought and respected. This implies negotiation rather than the dominance of an externally set project agenda. Thus people become actors instead of being beneficiaries.' (OECD, 1994)

The key concepts in this view are:

- Participation as an organised activity of the people concerned: the primary unit of participation is thus conceived to be a collective of persons,
- The talking of initiatives by the collective;
- People own thinking and deliberations direct their collective activities;
- The people control the process of action thus initiated.

The basic framework for describing and analyzing rural development participation developed by Cohen and Uphoff (1980) is as follows.

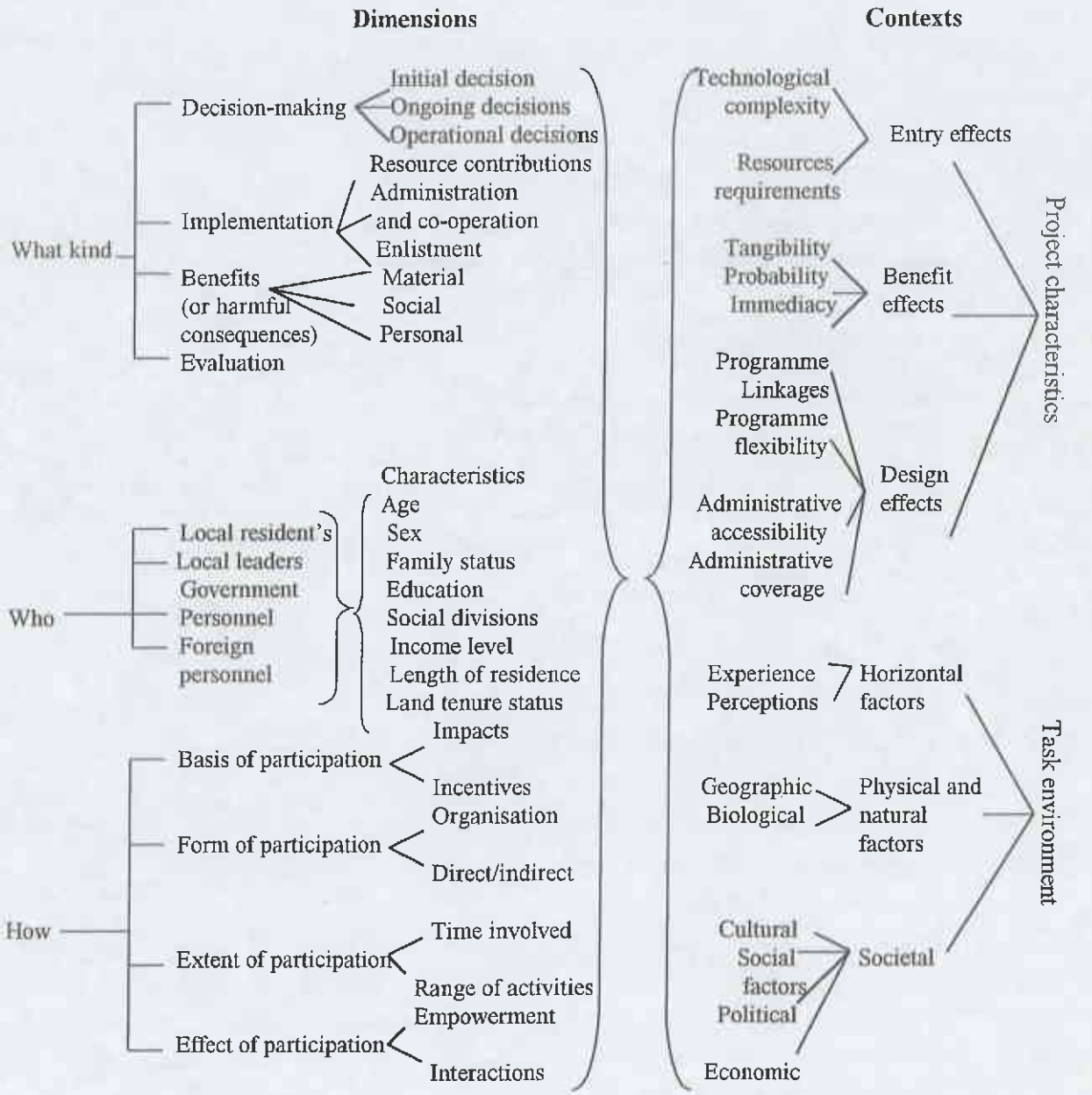


Figure 2: Basic Framework for Describing and Analysing Rural Development Participation adapted from Cohen and Uphoff, 1980

- higher-level general policies are modified and redirected according to local conditions in order to reflect local needs and aspirations

7. Participation to empower the weakest group of people

- "power" refers to local access and control of resources and social distribution of these resources

Clayton et al (1998) stated argument for participation in development activities in a Documents. Empowering People - A Guide to Participation, UNDP, 1998. They are summarised as follows:

- People's participation can increase the efficiency of development activities in that, by involving local resources and skills, it can make better use of expensive external costs;
- It can also increase the effectiveness of such activities by ensuring that, with people's involvement, they are based upon local knowledge and understanding of problems and will therefore be more relevant to local needs;
- Participation helps to build local capacities and develop the abilities of local people to manage and to negotiate development activities;
- Participation can increase coverage when local people are able to assume some of the burden of responsibility and thus help to extend the range of activities of a development activity;
- Participation can lead to better targeting of benefits to the poorest via the identification of key stakeholders who will be most affected by the activities;
- Crucially participation can help to secure the sustainability of the activities as beneficiaries assume ownership and are willing to maintain its momentum; and
- Participation can often help to improve the status of women by providing the opportunity for them to play a part in development work.

Ohler (1999) states that Participatory watershed management is a process involving a large proportion of the watershed population in appraisal, planning, funding, implementation, monitoring and evaluation of conservation and development activities, and does not resemble more traditional top-down watershed management practices.

Wagley (1999) explains the participatory approach in sustainable integrated watershed management. Participation means involving the users, farmers or beneficiary groups in a development programme. It begins at the initial stage of identifying, selecting, designing and planning through the implementation, monitoring and evaluation stages and lasts up to the follow-up or maintenance stage. Participatory approach involves active collaboration of all groups such as policy-makers, officials and beneficiaries.

2.3 Watershed and Participatory Integrated Watershed Management: Defining Concepts and terms

There are various definitions of watershed defined by many authors. A Watershed is a topographically delineated area that is drained by a stream system, i.e. the total land area that drained to some point on a stream or river. A Watershed is a hydrological unit that has been described and used as a biophysical and socio-economical- political unit for planning and management of natural resources (Sheng, 1990). Sheng further describes Watershed Management is the process of formulation and carrying out a course

Honadle G. and Cooper L. (1989) forwarded meaning of co-ordination. According to them "CO" means jointly, or together. "ORDINATION" means rank ordering or prioritising. Thus to co-ordinate literally means to prioritise jointly. In practice, the term co-ordination is often used as an excuse to get something from someone else.

Dale (1992) defined co-ordination as the harmonisation of work undertaken by different bodies within an organisation, through specific mechanisms realised through the execution of specific tasks, which are commonly the responsibility of specific core part of the organisation. Co-ordination as a tool for promoting integration, in other words, as a means for promoting linkages of various sorts. He quoted many definitions stated by different authors in the Organisation of Regional Development Work:

> Co-ordination, as "various efforts to alter or smooth the relationships of continuing, independent elements such as organizations, staff and resources"(Honadle et al 1980).
>
> Co-ordination is specified in to three dimensions (claeson, 1982): "focalization", which stands for the "co-ordination of disparate intentions or projects which have a common goals"; "complementation", referred to as "sets of supporting actions around a primary objectives"; and "combination", meaning " a multipurpose arrangement in which projects with varying objectives [are] co-ordinated for practical/economical reasons".

Co-ordination and integration problems have been facing and realising in many development works. Pongquan (1992) find out co-ordination problem i.e. lack of co-ordination in planning and implementation of rural development work in Thailand. According to him, the co-ordination of the work of the line agencies is very weak. There is still a high degree of control by the central administration. The co-ordination mechanisms at the decentralised level are not strong enough to weaken this attachment due to following administrative procedures.

- Each field agency in any rural development organisation reports on its work performance directly to its central administration.
- Each field agency has its own system of managing and organising development administration. As a consequence, work principle, nature of programme and method of working at field level differ among various ministries. Thus, different standard and different criteria in selecting and prioritising projects are employed by various line or field agencies involved, even within the same locale.
- Each field agency has its own separate budget allocation at the central level of administration. Thus, they are in a position of operating their programmes independently.

Carley, et al (1992) found the similar constraints in co-ordination and linkage among agencies on integrated environmental management. Ojha (1988) clearly stated that one of the main problems of the Integrated Rural Development Projects (IRDPs) in Nepal was seen in the area of co-ordination. He mentioned that IRDPs are multi-sectoral by nature. On various occasions, the sectoral agencies are over-stretched in their regular sectoral programmes. The problem of co-ordination between the IRD projects input and the regular sectoral ministry inputs thus arises. Further he illustrated that the problems of integrated planning and implementation is faced in IRDPs.

Integrated Rural Development (IRD) projects are usually administratively complex. They impose heavy requirements for co-ordination on project staff with limited leverage over line ministries and other agencies whose co-operation is critical to a multi-sectoral effort (Honadle, et al 1985).

- Standardisation of work process, which means that "the contents of the work are specified, or programmed".
- Standardisation of work outputs, by which is meant that" the results of the work- for example, the dimensions of the product or the performance – are specified"; and
- Standardisation of worker skill, which means that "the kind of training required to perform the work is specified".

Dale (1992) further modified the co-ordination mechanisms illustrated by Mintzberg (1983). Which are:

- **Establishing common objectives and procedures**: standardisation of goals and work processes for the programme as whole
- **Creating common attitudes and skills**: actual tasks of standardising (which means the arrangement and execution of actual training, guidance, etc of involved actors)
- **Mutual adjustment**: the co-ordination of work by the simple process of informal communication,
- **Direct supervision**: co-ordination by having one person take responsibility for the work of others, issuing instructions to them and monitoring their actions.

The Inter-regional Project for Participatory Upland conservation and Development (PUCD) has been focusing on develop stakeholders capacity to autonomously conduct the cycle of iterative planning, implementation, monitoring, evaluation and re-planning at the local level for promotion of co-ordination mechanism. In addition, creating a group of professionals and field workers among local institutions and sensitised to the participatory and integrated watershed management approach. Finally, establishing or strengthening forums for negotiation and decision making involving all watershed stakeholders i.e. grassroots organisations, local government, line agencies, NGOs, international projects, the private sectors, etc. for promotion of co-ordination mechanism (Warren, 1998).

Bandyopadhyay, (1989) pointed out, at least three levels of integrational needs for the natural resource management in mountain environments. They are as follows:

- Integration at the disciplinal level,
- Integration at the geophysical level,
- Integration at the institutional level.

Poppe (1992) stated Horizontal co-ordination on the administrative level of a district as the territorial unit is often lacking or weakly established. In order to ensure an effective co-ordination of planning activities, a bottom –up planning mechanism, which encompasses the district, the sub-district, town and villages, has to be established. This process receives its inputs from all levels of administrative – political hierarchy in the district. In decentralised planning, horizontal linkage becomes more important than vertical ones because decision making is entrusted to lower levels of government and administration which are close to the real problems and needs of the district. The establishment of appropriate horizontal co-ordination mechanisms has to take into account that there are both substantial as well as processual dimensions of planning which have to be co-ordinated with each other. The table below shows the different co-ordination mechanism and their strength and weakness (table 1).

Honadle, et al (1985) summarised co-ordination mechanisms (formal and informal) in lessons from IRD project as follows (table 2 and 3):

Table 2: Interagency formal co-ordination mechanisms in lessons from IRD project adapted from Honadle, et al 1985

	Interagency co-ordination	Agency beneficiary co-ordination	IRD experience
Formal mechanisms	• Interagency co-ordination or advisory committees (standing) • Matrix organisational structures • Liaison office at port or central ministry • Interagency task force (temporary) • Binding co-operative agreements • Loaning of personal between agencies • Cost sharing • Joint training and orientation courses for agency personnel • Copies of reports sent to heads of other agencies • Fixed reimbursement agreements • Single report format used by two or more co-operation agencies • Existence of an independent monitoring and evaluation entity • Merging of agencies • Creation of an incentive system (financial, promotional, professional) to encourage working on joint projects • Field teams are interagency staff	• Beneficiary participation in decision making and/or monitoring of the project • Formal staff participation in project linked beneficiary organisation meeting • Orientation courses for beneficiaries • Requiring contribution by beneficiaries to project costs (labour, money, materials, etc) • Periodic public meeting of staffs with the community • Use of paraprofessional and local volunteers • Beneficiary inclusion in staff training workshop • Beneficiary membership on standing committees and task forces • Beneficiary representative at staff meetings • Policy of staff recruitment from local area – sex, ethnicity and class also considered	• For policy and objective to be taken seriously by bureaucrats or beneficiaries, formal co-ordinating mechanisms must be established. Committees, liaison offices, task forces, joint training, and report sharing all work at the interagency level, but single report formats often crate more conflict than co-ordination, and both formal incentive systems and matrix structures work better in theory than in practice. • At the beneficiary level, participation in decision making through committee membership and input contribution and important. Inclusion in training workshops also helps. The record of improvement based on staff recruitment from the area is mixed, however. • Co-ordination is more political than technical. Different local contexts will cause identical mechanisms to produce varied results.

Cruz et al (1999) suggested necessity of development of effective institutional arrangements to ensure the involvement of other agencies for improvement of integrated watershed management in Philippines. According to them, such arrangements among watershed related institutions should be able to:

- Co-ordinate all actors, projects and resource at the national, regional, provincial, municipal and watershed level to promote sustainable watershed resources development.
- Create responsible and competent multi-sectoral watershed management governing bodies at the national, regional, and watershed levels.
- Promote multi-sectoral co-operation and participation in watershed management.
- Identify and delineate the nature and extent of participation and/or responsibilities of various institutions in watershed management, and
- Strengthen the capacity of all institutional for sustainable watershed management.

Bryant, et al, 1982 pointed out variety of ways to carry out co-ordination, some are more formal than others and some are encouraging more learning than others. There are as follows:

- Ad hoc meetings to co-ordinate as problems arise.
- Training seminars (support understanding).
- Transfer of staff between divisions.
- Development of task forces (temporary co-ordination across divisions).
- Part –time membership in team/committee (ensures knowledge of other divisions and activities).
- Participation in a regular planning meetings.
- Development of liaison positions (e.g., co-ordinator role).
- Full time membership in a committee (e.g., development committees).
- Development of a liaison group.
- Participation in a structure that has dual reporting relationships

Honadle G. and Cooper L. (1989) classified the three behavioural types of co-ordination (table 4). The first is *Information Sharing*. This is basically a communication practice. The second dimension of co-ordination related behaviour is *Resource Sharing*. The third type of co-ordination behaviour is *Joint Action*. This involves two separate actors or organisations actually doing something together. Each may be using its own resources, but they have synchronised their actions so that they complement, enhance and reinforce each other. They further put forward co-ordination mechanisms for different situations.

2.4.3 Why Co-ordination and Integration?

Co-ordination and integration is realised, very much important in the every development works in Nepal. The purpose of co-ordination and integration in the participatory integrated watershed management are as follows:

1. Low Cost
2. Same target group from green sector line agencies
3. Wise use of limited resources
4. Provide effective service/support
5. Mobilise local resources
6. Sustainability of Programme
7. Avoid duplication of work
8. Avoid mis-understanding among line agencies and people
9. In long term: food security, poverty alleviation, environmental protection, regional balance, etc.

2.4.4 Co-ordination and integration mechanisms in different aspects

From above literature reviews, it is illustrated that there is no single mechanism or approach for co-ordination and integration with different line agencies in the integrated watershed management. It is difficult to say that one appropriate mechanism in the one place can fit to the other place. Therefore, after reviewing literature and field experiences in the field of integrated watershed management the researcher proposes the following co-ordination and integration mechanisms.

1 **Institutional Level**

- **Policy Aspect**:
  - ❖ Legal provision (mandatory) to all agencies for co-ordination and integration
  - ❖ Clear guidelines for co-ordination and integration: how, where, when, etc
- **Organisational Aspect**:
  - ❖ Proper institutional set up
  - ❖ Leading agency
  - ❖ Responsible person for co-ordination and integration

2 **Operational Level**

- ❖ Information exchange
- ❖ Regular stakeholders co-ordination meetings
- ❖ Relevant agencies work together
- ❖ Work in the pilot area to generate experiences and mechanisms regarding co-ordination and integration
- ❖ Information management and dissemination
- ❖ Develop data- base
- ❖ Common extension message
- ❖ Common holistic Master Plan: according to watershed area

The researcher would proposes overall good co-ordination mechanisms for participatory integrated watershed management. Which are as following:

1. **Direct personal contact**: This is a fast and ad hoc method of information exchange and perspective. This mechanism can be useful in the matter of urgency and in case of arising conflicts.
2. **Regular meetings**: This mechanism is simple and easy way for information sharing. This could be useful to make common understanding and build up personal relations and co-ordination. It can generate a wide range of solutions in a risk –free environment.
3. **Co-ordination committee**: This mechanism promotes the sharing of professional experiences and useful for long term planning and implementation.
4. **Establishment of independent monitoring and evaluation unit**: monitoring by independent person or agency. It can identify an independent viewpoint and difficult problems and uncover blockages.
5. **Mutual adjustment:** the co-ordination of individual agencies, work by the simple process of informal communication among them.
6. **Establishment of common working procedures**: standardisation of work process for the programme as whole

3 Chapter Three: Research Methodology

Chapter Summary:

This chapter deals about the methodology adopted during this study. The study is conceptualised with the review of literature and experiences regarding watershed management situations in Nepal. The conceptual framework indicates idea of study where explain about the overall sequential situation of government policy, different donors' involvement in integrated watershed management, inadequate inter-agency co-ordination and integration in watershed management and study to be carried out in this research.

The second part of this chapter explains about research framework, where sources of data and method of data collection are presented.

The last part of this chapter is data analysis that deals about method of data analysis and relationship to draw the conclusion and recommendations of this study.

3.1 Conceptual Framework

Nepal is a mountainous country, the country has several and thousand watersheds and sub-watersheds. The main watershed (green sector's) problems are scarcity of resources, decreasing of productivity of land, increasing environmental consequences and increasing poverty, which have been facing in Nepal. It is quite impossible to solve these problems by government efforts alone. Therefore, the Government of Nepal has policy to encourage people's participation in the integrated watershed management. The participatory group approach is mandatory in the every step of development work. In addition, many donors are involved in the participatory integrated watershed management in Nepal.

Given the situation of watershed management in Nepal, a conceptual framework is developed (figure 3), analysing the problems and its justification of this study. Watershed management has to be integrated because of multiple needs, problems, and target groups. Therefore, integrated approach needed. Integrated approach needs holistic approach. But, different government agencies have different working approaches, mechanisms and different projects involved in watershed management have different approaches as well. In addition, there is insufficient information exchanges among line agencies. It is causing an inadequate Inter –agency co-ordination and integration in watershed management.

The other part of conceptual framework describes about analysis to be carried out in this study. The study is mostly focus on intended co-ordination and integration in watershed management during project design stage, existing inter-agency co-ordination and integration among line agencies in planning, implementation and follow-up stage, and the information needed in the process of co-ordination and integration.

3.2 Research Design

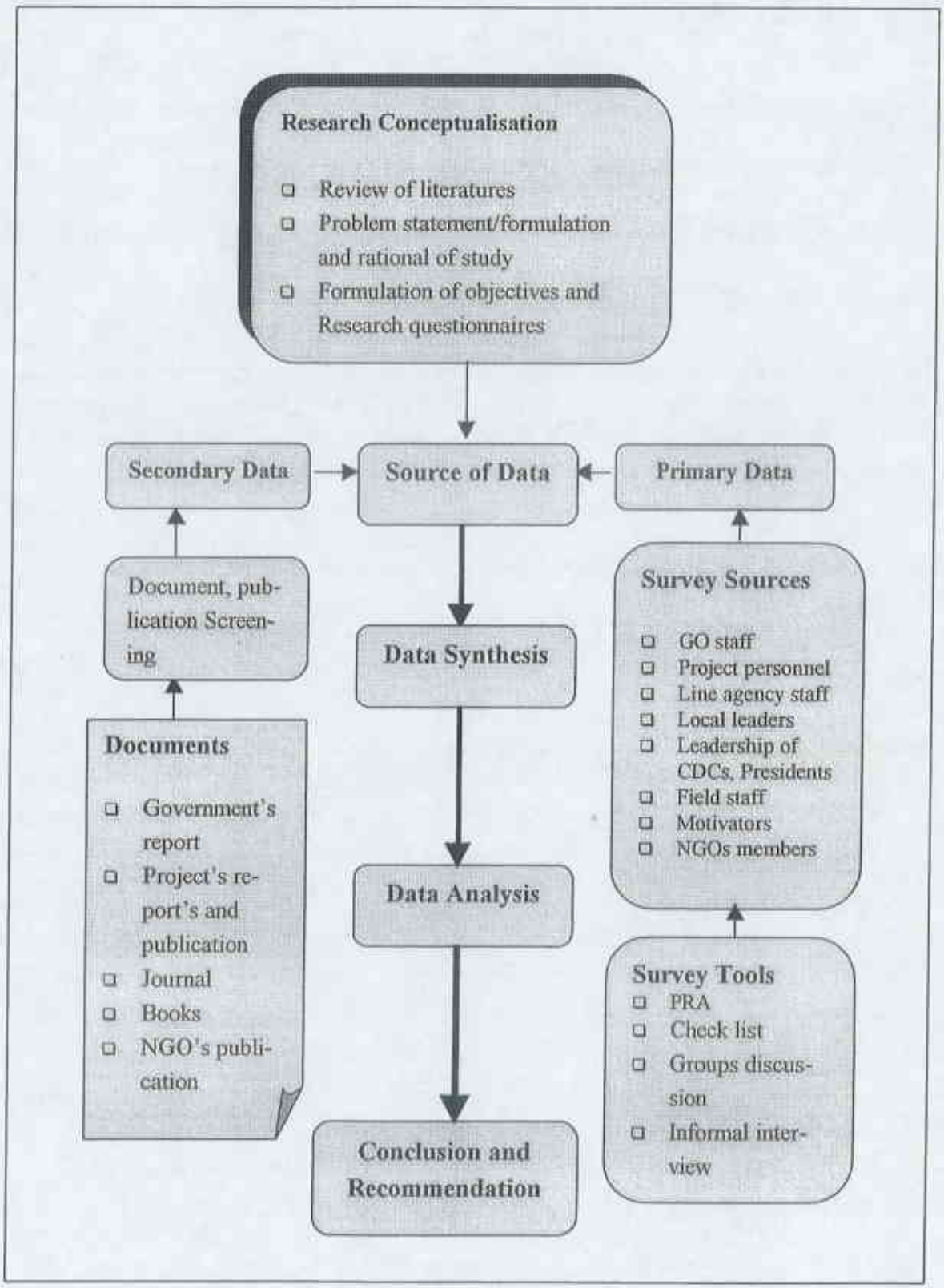


Figure 4: The schematic diagram of Research design

3.4.2 Primary data collection

The Primary data were collected during field visit. The Participatory Rural Appraisal (PRA), check list, informal interviews, observation, individual and group discussion were the basis of primary data collection. Discussions were held with district level different green sector line agencies (e.g.: DSCO, DFO, DDC, DADO, DLDO, ADB/N, DCI etc.) on the individual basis. Likewise, DDC chairpersons and vice-chairpersons were interviewed to know the present co-ordination mechanisms and how can be improved it in the future. The present situation of inter agency linkages and co-ordination and the information exchanged in the process of co-ordination and integration were collected though line agencies field staff, local leaders and motivators.

The individual and group discussion were carried out with community development committee (CDC) members to verify the involvement of other concern line agencies during planning, execution and follow up of integrated watershed management activities. In addition to personal interviews during field survey, discussion with village leaders, teachers, CDC members, local NGOs etc. were carried out to know their view and experience about constraints in co-ordination for participatory watershed management.

3.4.2.1 Sampling

The main method applied for primary data collection from the communities was sampling. There are several misconceptions about the necessary size of a sample. One is that the sample size must be a certain proportion (often set at 5 percent) of the population, another general argument is that any increase in the sample size will increase the precision of the sample results. However, the determination of a sample size is directly dependent on the value of the standard error and on the width of the confidence interval that is set by the researcher (Nachmias et al 1996). A two-phase sampling technique was applied to select samples. The sub-watershed was divided in to the two strata (i.e. upstream and down-stream) based on the location of CDGs and hamlet groups. One CDG or user group has been randomly selected from each stratum. The CDC members (community leaders) from selected CDG or user group have been taken for sampling. A survey was carried out with selected community leaders to verify the co-ordination and integration process in the sub-watershed area. In addition, triangulation method was be applied in order to cross-validate of working procedures. The sampling was carried out as follows:

- Divide the sub-watershed area into two strata (i.e. upstream and down- stream) according to location of CDGs and hamlet User groups.
- Randomly selection of one CDG or hamlet User Group from each stratum.
- Survey with Community development committee members from selected CDG or hamlet User Group.
- Proportionally distribute community leaders for survey in each stratum.

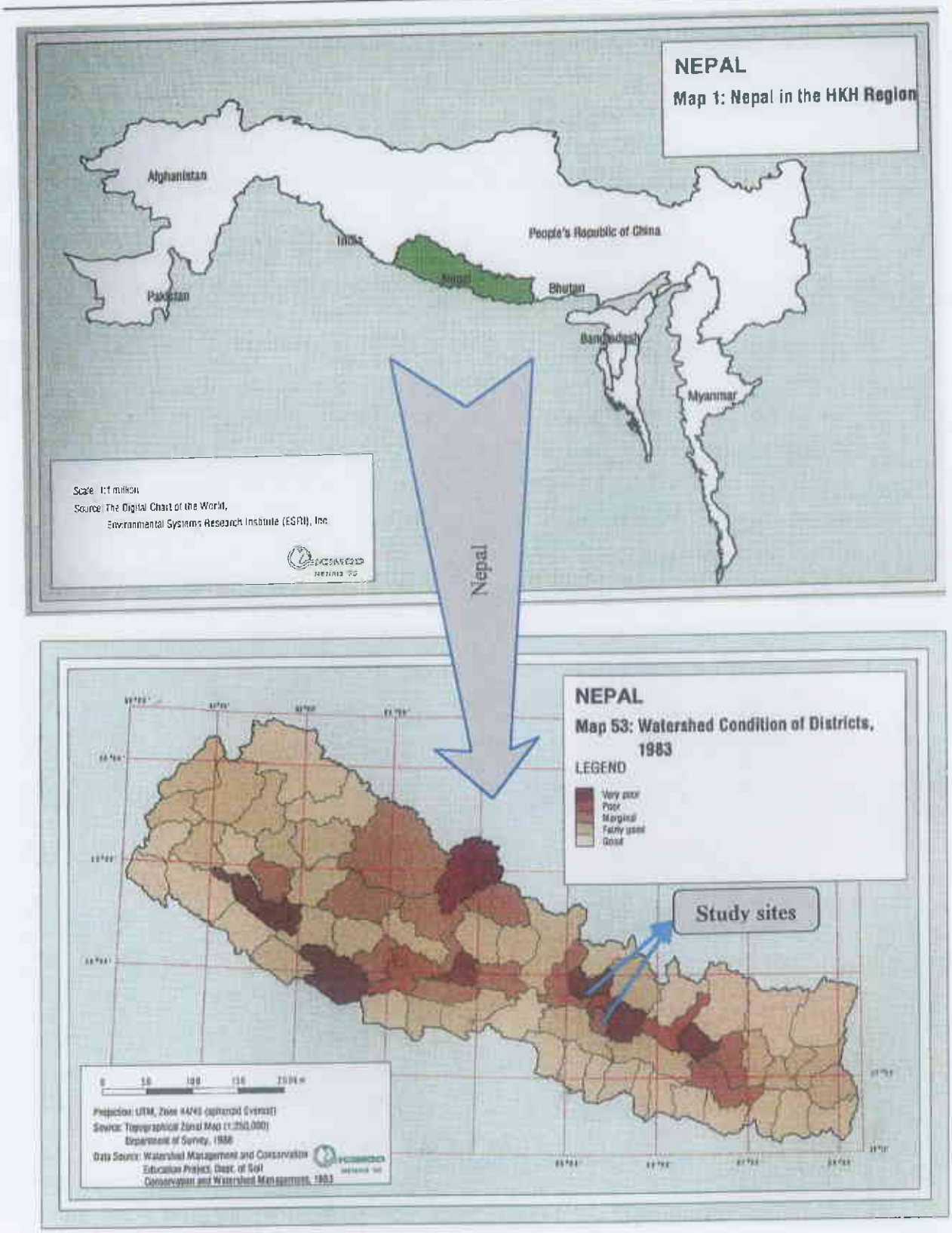
Summary table (table 5) of required information, Sources of information and data collection methods

Table 5: Summary table of data collection methods

SN	Required information	Sources of information	Method of data collection
1	Objectives and activities of Projects	DSCWM, Project offices, Literatures	Discussion and Literature reviews
2	Institutional arrangement of Projects	DSCWM, Project offices, CDGs, User groups, Literatures	Discussion and Literature review
3	Mechanism of programme planning	Project offices, DSCO, field staffs, CDGs, user groups	Discussion with help of checklist, observation
4	Implementation methods	Project offices, DSCO, field staffs, CDGs, user groups	Discussion with help of checklist, observation
5	Stakeholders and their roles in integrated watershed management	Project offices, DSCO, Line agencies, field staffs, CDGs, user groups	Discussion
6	Intended co-ordination mechanism	Project Offices, DSCOs	Literatures and Discussion
7	Present co-ordination mechanism	DSCOs, line agencies, DDC, VDCs, etc	Discussion with help of checklist
8	Information required during co-ordination	DSCOs, line agencies, DDC, VDCs, etc	Discussion with help of checklist
9	Constraints for co-ordination and integration	Village leader, teacher, CDG members, local NGOs, government and project staffs	Discussion, informal interview
10	How can be improved co-ordination mechanism	Project offices, DSCWM, DSCO, line agencies, field staff, CDCs, user groups	Discussion with checklist

3.5 Study Site

Nepal comprises of five physiographic zones, i.e. the High Himal (> 2500 m), High Mountains (2000 – 2500 m), Middle Mountains (700 – 2000 m), Siwaliks (300 – 700 m), and Terai (<300 m) on the basis of altitude. The country further divided in to five Development Regions, i.e. the Eastern Development Region, Central Development Region, Western Development Region, Mid-Western Development Region, and Far Western Development Region. The both study sites located under physiographically Mid Mountains and Central Development Region of Nepal. Gerkhu sub-watershed is one of the sub-watersheds of Trisulit watershed of Nuwakot district. It is bordered by Falangu sub-watershed in north, Choakde Bhajyang and Bageswrori VDC in the east and south and the Trisuli River in the west. Likewise, Tungan sub-watershed is one of the sub-watersheds of Bagmati River in Lalitpur district. The Tungan sub-watershed lies Southeast part of the district.



Map 1: Nepal Map showing study area

Source: ICIMOD, Kathmandu, Nepal

3.5.1 Criteria of Study Site Selection

The main reason for selecting these sub-watersheds for this study is set based on the research objectives and purpose of the study. The purpose of this study is to assess the operational modalities of two participatory watershed management projects in Nepal, with particularly reference to working procedures for inter agency co-ordination and integration on planning and implementation. The criteria for selection of these watersheds are as follows:

1. The sub-watershed should be priority watershed of DSCO, where watershed management activities are implementing through people's participation,
2. The sub-watershed management programme should be supported by donors, and
3. The sub-watershed should be accessible for data collection due to short period of fieldwork.

The Danida supported NEP-DKWMP and EU supported BIWMP are two major projects in the DSCWM in terms of budget and districts cover. The sub-watersheds are chosen for this study because watershed management activities have been implementing through people's participation and are supporting by above donors.

3.6 Data Analysis

The most of data collected in this study are qualitative. Basically, these data were collected using PRA tools, therefore, subjective analysis has been carried out. The participatory integrated watershed management operational modalities have been analysed using table, format, chart etc. The table, matrix have been used to analyse stakeholder, their interest and responsibilities in integrated watershed management and compare intended and present co-ordination and integration practices.

The descriptive methods were used in presenting both projects' objectives, activities, planning and implementation mechanisms, institutional set up, as well as intended co-ordination and integration at the project design stage and existing co-ordination and integration practices among line agencies for participatory integrated watershed management. While, the reasons of gap between exiting co-ordination practices and intended co-ordination were employed as a tool to analyse the quantitative data and information. Beside, the causes of gap between intended co-ordination and present co-ordination practices were analysed (figure 5) through two perspectives i.e. project did not flow it's own intended plan and design was inappropriate or did not follow sustainable programme approach and practice.

4 Chapter Four: Case Studies- Study site and Planning and Implementation Procedures

Chapter Summary:

The first part of this chapter gives a general description of the both study areas. Its location, climate, vegetation, socio-economic conditions of people and land use types are briefly presented.

The last part illustrates about both projects' objectives and activities, institutional set up, mechanism of programme planning and implementation, and stakeholders for integrated watershed management. The intended co-ordination and integration mechanisms during project design stage in both projects for integrated watershed management is briefly explained. This part focus on the planned co-ordination and integration mechanism in district and sub-watershed levels.

4.1 Nepal- Denmark Watershed Management Project (NEP-DKWMP)

The case study site i.e. Gerkhu khola sub-watershed, Nuwakot district has been supporting by Danida since July 1996 as pilot project. The name of pilot project is called Nepal-Denmark watershed management Project (NEP-DKWMP). It is expected that to generate experience and modalities for the implementation of Soil Conservation and Watershed Management Component (SCWMC) of Natural Resource Management Sector Assistant Programme (NARMSAP) of His Majesty's Government of Nepal (HMG/N) to be supported by Danida beginning of July 1997. One of the main aim of implementation of this project was to produce a replicable, participatory planning and implementation modalities, based on existing systems and capacities of both the implementing agency and local communities, so that the new SCWMC will function smoothly and successfully (Bogati, 1999). This Project working in the three district of Nepal as pilot project. One of the areas is Gerkhu sub-watershed, Nuwakot. The developed approaches and modalities will take into consideration the large-scale nature of the SCWMC (Presently 17 districts of Nepal).

4.1.1 Brief Description of Gerkhu sub-watershed, Nuwakot

4.1.1.1 Location

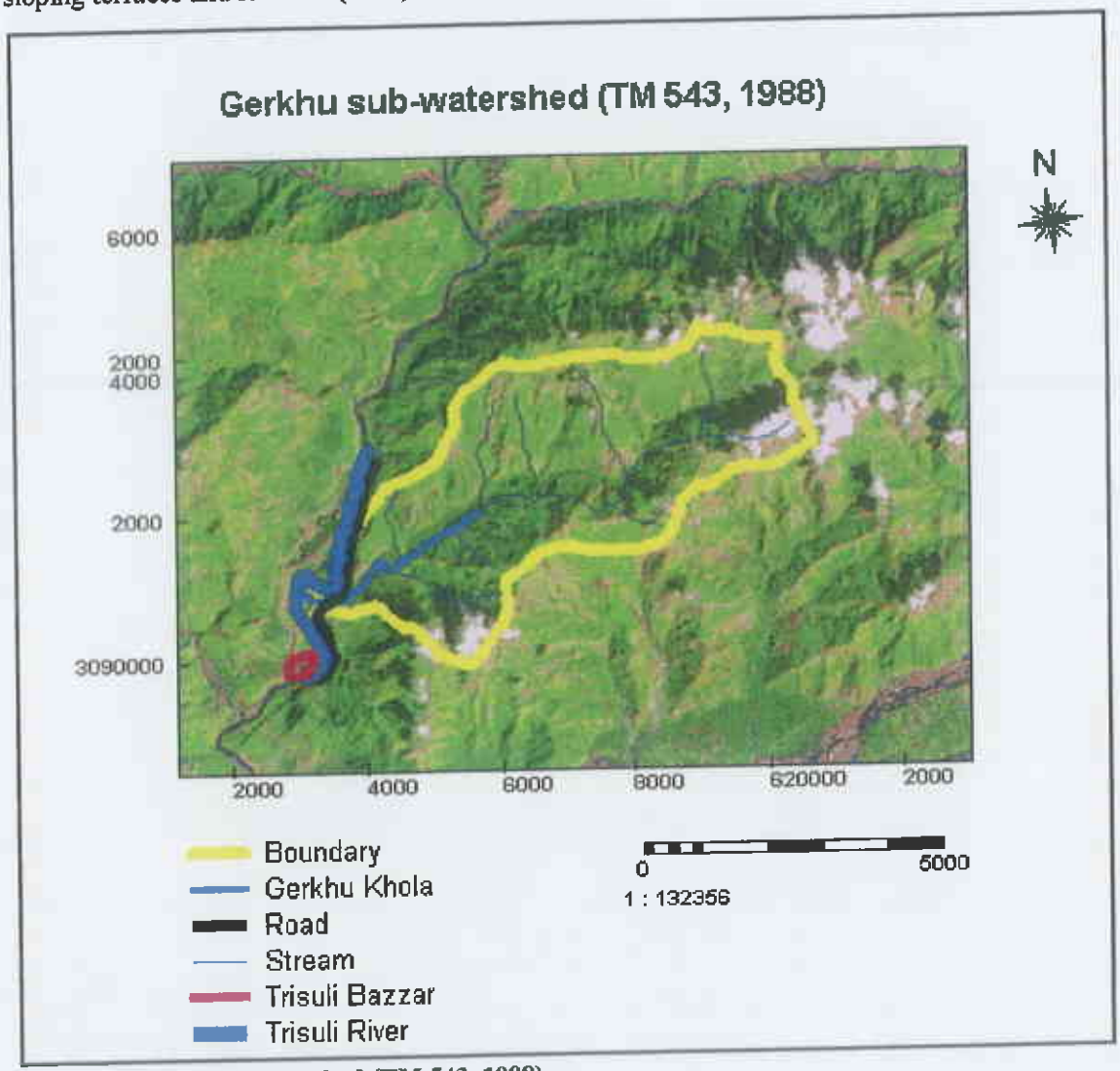
The study area Gerkhu sub-watershed, the Nuwakot district located central region of Nepal. The district lies between longitudes 84^0 58' to 85^0 30'and latitudes 27^0 48' to 28^0 06'. The district is classified as a very poor watershed condition (MPFS, 1989). The Gerkhu Khola sub-watershed belongs to administratively seven wards of Gerkhu Village Development Committee (VDC), two wards of Bageshowari VDC and part of ward number one of Bidur Municipality. The total area of the case study site is 17.98 sq. km.

4.1.1.2 Climate

The climate of the study area is sub-tropical. The average maximum and minimum temperatures of the district are 26.6^0 C. and 16.3^0 C respectively. It receives monsoon rain from June to October. More than 90 percent of the rainfall occurs in the monsoon season. Little rainfall occurs in the winter season. The annual rainfall is 3,062.8 mm.

4.1.1.3 Land use

The most of the study area is using in the agriculture. Other land use types are forest, degraded barren land, grazing and others. The operated land in the area are mostly two types viz. Upland (Bari) with sloping terraces and lowland (Khet) with level terraces.



Map 2: Gerkhu sub-watershed (TM 543, 1988)

4.1.1.4 Vegetation

Dominant forest species in the study area are pine (*Pinus roxburghii*) on the upper part of sub-watershed, sal (*Shorea robusta*) on the lower part and in the middle combination of chilaune (*Schima wallichi*), katus (*Castanopsis indica*) and other forest tree species.

4.1.1.5 Socio-economic conditions

The total population of the Gerkhu Khola sub-watershed area is estimated about 7000 persons in 1249 households. The Brahmin and Chhetries are the dominant caste groups that constitute 72 percent followed by Tamang and other professional caste groups. More than 55 percent of the economically active population in the area are engaged in agriculture as their main occupation. Thirty two percent population are illiterate (can not read and write).

4.1.2 Project Short Description

4.1.2.1 Objectives and activities of NEP-DKWMP

The approach the project is taking to achieve its field objectives is both participatory and multi-disciplinary. Where the intention is to integrate ward, Village Development Committee (VDC) and district level planning and implementation processes. Primarily by promoting and supporting community based management of natural resources, with supporting and co-ordinated inputs from both the project and associated line agencies at district level (Thomson et al, 1997). The overall aim of the project is to develop the basis –modalities for nation-wide implementation for support to a soil and water conservation component under the Danida financed NARMSAP, which will have long termed time horizon.

The immediate objectives for the watershed management projects are:

- Increased involvement of the communities and their organisations in planning, execution and maintenance of watershed management projects.
- Increased management capabilities of Government and private organisations concerned to the requirement by the farming communities and their groupings or organisation in the field of watershed management.
- Increased capabilities of resource users (women, landless and underprivileged in particular) in decision making concerning all aspects of natural resource management by:
  - Applying their self – help potential;
  - Making use of their natural resources in an ecologically sustainable manner, and
  - Interacting effectively with service organisation at all levels.

The project has proposed following activities and expected outputs (table 6):

Table 6: NEP-DKWMP Activities and Outputs

	Activities	Outputs
1.1	Revision of existing management plants for the selected sub-watershed involving communities and multi-disciplinary district teams	Execution of integrated watershed management plans in progress in one sub-watershed.
1.2	Development of criteria for project selection	
1.3	Identification of field activities following the sub-watershed approach on a participatory basis.	
1.4	Implementation if identified activities	
2.1	Support to workshops/seminars concerning awareness raising within the communities in the selected sub-watersheds about HMG policies and procedures with regard to integrated watershed management projects	Increased knowledge of the farming communities and their organisation about HMG policies and procedures with regard to integrated watershed development.

4.1.2.2 Institutional arrangement

This project has been implementing through normal HMG channels. In central level, it has Project Support Office (PSO) staffed with chief advisor, programme officer and few administrative staff. The PSO is headed by Project Manger (PM), who is appointed by DSCWM. Co-ordination with other line ministries is carried out through Project Co-ordination Committee (PCC) at central level. The Project Manger and Chief Advisor have permanent status as advisors to the PCC. All activities in field are implemented through District Soil Conservation Office (organisational chart is given in appendix 6). At district level co-ordination and integration take place through District Technical Group (DTG). The District Soil Conservation office as a lead agency has the responsibilities of co-ordination and integration of all the project activities at field and district level. The District Soil Conservation Officer (DSCO) plays role as a member secretary of DTG. DSCO staffs are mainly Mid-level technicians and Motivators. These staffs are deputed in the field site office to serve the surrounding farmers. In addition, There are four local women motivators employed by project in field site to facilitate, assist and organise the community to act as a group for the community development

Picture 1: Sketch map of a micro-watershed prepared through PRA (NEP-DKWMP)
Photo: Khadka

4.1.2.3 Mechanism of Programme planning and implementation

Watershed people have different kind of problems. They depend upon different watershed resources for their daily life. The planning process is one of the important steps to deal with multidimensional problems of local people. Therefore, involvement of line agencies is highly necessary in the holistic planning approach. During the planning stage, a planning team of mid-level technicians from different line agencies including local motivators was proposed to form to facilitate the community development group for the plan preparation. The implementation approaches are based mainly on participatory planning and implementation, development of institutional capacities, and process oriented. Following procedures have been followed for the CDG plan preparation (SCWMC, 2000).

CDG Plan Preparation

- Carry out district technical group (DTG) workshop
- Form a multidisciplinary team including line agencies representatives
- Carry out field technical group (FTG) workshop to work out planning approaches
- Perform extension on line agencies supports and CDG's planning steps
- Assessment of the Community through
  - House to house visit by the community motivator
  - Area investigation by the mid-level technicians (planning team) for information collection
- Prepare community development vision
- Through Participatory Rural Appraisal (PRA)
    - Preparation of resource map
    - Problem analysis
    - Prepare farmers (men and women separately) working calendar
    - Identification of needs
    - List the activities first into physical and IGA categories.
    - Then categorise the physical activities based on the probable line agencies to assist the CDG
    - Broad categorisation of needs into the most needed, medium needed and the least needed
    - Evaluate the implementation capacity of the CDG
    - Decide on the activities to be implemented in the year
- Carry out feasibility study of the activities agreed to carry out for the year
- Decide on the allocation of the CDG resources for the implementation of different activities in the year

4.1.2.4 Stakeholders in Integrated Watershed Management

In case of NEP-DKWMP, different stakeholders have been identified and have developed a mechanism that brings those stakeholders in a single forum to plan and implement the programmes using an integrated approach for watershed management programme. Stakeholders can be mainly classified into five types according to their interest in the context of watershed management and role with in the project. These stakeholders are Local people, Political body mainly VDC and DDC, Government

The DDC is involved in the overall planning of activities at the district level on an annual basis. Under the Decentralisation Act, there are four co-ordination committees, each composed of clusters of line agencies. The groups are: (i) Infrastructure Development (roads, irrigation, drinking water, housing); (ii) Social Development (education, health, women in development); (iii) Agriculture (livestock, agricultural development, Agriculture Development Bank, agricultural inputs, soil testing, co-operatives); and (iv) Industry, Forests and Environment (forests, soil conservation, industry or cottage industry, Timber Corporation, trade). The Industry, Forests and Environment Committee is responsible for formulating and co-ordinating the planning process for the soil conservation and watershed management activities at the district level. In the subsistence farming system of Nepal, the integration of agriculture, livestock, forests, irrigation, drinking water and cottage industry is essential for the successful implementation of the soil conservation and watershed management programme. But agencies such as agriculture, livestock and water resources have separate committees. Therefore, **it is necessary to have a mechanism that brings these agencies to a single forum to plan and implement the programme using an integrated approach.**

Basically various district line agencies are staffed with qualified personnel of different disciplines such as forests, agriculture, livestock, drinking water, irrigation, cottage industries etc. It is wise to capitalize this opportunity in favor of CDG by developing appropriate environment and mechanism so that these agencies provide technical support in identifying different development alternatives potential to the specific area. CDG benefits assistance of different line agencies to ensure technical validity of the plan incorporating biophysical and socioeconomic realities of the area (SCWMC, 2000).

Thomson, et al (1998) further clarified the mechanism set up in response to this multi-disciplinary need is the formulation of District Technical Group (DTG), which consists of the District Forest Officer, District Livestock Development Officer, District Agriculture Development Officer. Others are District Drinking Water Supply Officer, Local Development Officer, District Cottage Industry Officer, District Irrigation Officer, and Seven Community Development Groups representatives.

The responsibility has given to the District Soil Conservation Officer for organising the DTG. For better co-ordination with local institutions, the DDC chairman has been proposed as the chairperson of the DTG.

It was planned that the DTG co-ordinates the different line agencies at the district level within the directives of the PCC. The DTG has set responsibility to give directives to the field level technicians to provide regular technical support to community development groups in preparation of operational plan, implement and follow-up. The DTG has planned to meet twice a year and discuss on the different issue come from field and line agencies. At field level, a groups of technicians (FTG) has been proposed from DSCO and other line agencies such as agriculture, forests, livestock and others which are working in the sub-watershed to mobilize communities and facilitate in operational plan preparation, implementation and follow-up. It was proposed that the DTG with its field units (field technical groups) make regular fields visits and liases with local NGOs. It assists the user groups, CDC, VDC and DDC in planning and implementing development activities. The DTG prepares the technical programme and budget that is presented to the District Development Assembly for approval, and also implements the approved programme accordingly through the VDC and CDC. In long term, it was planed that the formation of DTG is to develop a co-ordination system and the development activities reflected in the community operational plan could be adjusted into respective line agency's regular annual programme.

and mullti-sectoral approach in which equal attention is also paid to the extension education. One agency may not have all the required expertise with the appropriate disciplinary knowledge in own office, so it needs common extension messages, which only can possible through communication or collaboration with different institutions, departments and government and non-government organisations. This integrated extension approach is nowadays a major concern to the local community as well GOs and NGOs staff. This applies especially to communities, who are very much in need of information and new technology to improve their living conditions. The project has two basic training for field level technicians and local motivators in the field of community resource mobilisation and facilitation skills in promoting conservation activities

Picture 2: Community awareness campaign (NEP-DKWMP)
Photo: DSCO, Nuwakot

2. **Group formation**: HMG/N has set responsibility for all development organisations to work through local community groups. The group approach becomes mandatory in all programmes. There are different local user groups formed by various development agencies. These groups are formed on different basis such as hamlet, micro-watershed, activity wise, etc. This is one of the important steps to make common understanding about mobilisation of one user group to execute their targeted activities. Therefore, it is essential to participate relevant line agencies during community group formation.

3. **Planning**: It is one of the important steps for involvement of line agencies during integrated watershed management. It consists the community envisioning, participatory need assessment, prioritisation of the needs, community resource inventory, categorisation of activities related to watershed management and other line agencies, preparation of five-year and detailed annual plan. This leads to identification of the communities various problems, their causes and possible solution.

Community may have different types of problems, which could not be possible to solve from the one agency. Therefore, co-ordination and collaboration with other line agencies and local authorities is essential in the planning stage.

4. **Implementation:** This leads the feasibility survey, design, estimates and implementation of the prioritised activities by the communities. Line agencies technical support is required during the survey, design and estimation of proposed activities. Similarly, necessary financial resources and common policies for peoples' contribution, common subsidy policy in similar kinds of activities and standardised norm to be developed for execution of activities. One agency may not have adequate skills and knowledge to carry out most of the activities. This gap can be bridged by co-ordination with the other line agencies. During this stage, co-ordination and integration of programmes, identifying tasks and activities, and assigning responsibilities are carried out. So, co-ordination and integration of line agencies is highly important during implementation stage.

Picture 3: Conservation Pond (Gerkhu sub-watershed)

Photo: Khadka

5. **Monitoring**:

Generally progresses of activities are carried out during follow-up. Monitoring of the programme is essential to determine whether investments made have any impact and to identify problem in the different stages of programmes. Whatever activities are under construction and finished, the situation and future improvement are suggested. Field level staff and motivators monitor the field activities. In district level monitoring is carried out during progress report time by comparing what is planned and what is present situation. The process of participatory monitoring and evaluation of planning and implementation of field activities is essential at least once a year, although it would be better if it was a continuo process.

programme of work, which describes where, when, and how the activities (outlines in the ISWM strategy) are prepared. After this the aggregated sub-watershed plan is submitted to the DDC for approval from DDC council.

4. Plan implementation:

In NEP-DKWMP, the CDC has been overall responsible for implementing planned activities. Basically DSCO staff carried out the detailed survey, design and estimate of proposed activities. Generally DSCO staffs facilitate implementation of most of activities. In some cases technical support is provided by line agencies. Many activities are supported by project; however, in very few cases other line agencies provide financial support. In BIWMP, all implementation activities are carried out through facilitation by DSCO.

5. Monitoring:

In NEP-DKWMP, Generally DSCO and project staffs carried out monitoring mainly through field visit and direct communication with local people. Monthly DSCO staffs meetings have been conducted at the district. In addition, pubic audit has been carried out in the presence of all community members. It is found that joint monitoring with green sector line agencies has never been carried out. In BIWMP, the monitoring of activities has been conducted by DSCO and project staffs. There is no involvement of other line agencies.

5.1.4 Proposed good co-ordination mechanisms/practices

In the context of comparing NEP-DKWMP and BIWMP, the analysis is structured in the two main aspects: the co-ordination tasks/stages, and the co-ordination mechanism applied. As regards the co-ordination tasks/stages, co-ordination "covers very wide area and describes the types of marginal behavior required to produce the results visualized in the project design". It is therefore, desirable to narrow the concept to more specific tasks (Dale 1992). So, in this study, specific stages or tasks such as sensitization, group formation, planning, implementation, and monitoring are denoted, where different parties or institutions perform co-ordination and integration mechanisms. The different stages are briefly described in chapter four (sections 4.1.3).

In this connection, the co-ordination mechanisms proposed by different authors are mentioned in chapter two: literature reviews (section 2.4). However, from reviewing different literatures and own field experiences, the researcher would say or propose that the following are good/appropriate co-ordination mechanism/practices for integrated watershed management.

1. **Direct personal contact:** This is a fast and ad- hoc method of information exchange and perspective. This mechanism can be useful in the matter of urgency and in case of arising conflicts.
2. **Regular meetings**: This mechanism is simple and easy way for information sharing. This could be useful to make common understanding and build up personal relations and co-ordination.
3. **Co-ordination committee**: This mechanism promotes the sharing of professional experiences and useful for long term planning and implementation.
4. **Establishment of independent monitoring and evaluation unit**: monitoring by independent person or agency.

The very general pictures of co-ordination in two projects through different co-ordination mechanisms are given as follows (table 13 and 14).

Table 13: NEP-DKWMP: Actual stages and mechanism of co-ordination

Types of Mechanisms in use / Stages of W/S Mgt.	NEP-DKWMP					
	Direct personal contact	Regular meetings	Co-ordination committee	Establishment of independent monitoring unit	Mutual adjustment	Establishing common work procedures
Sensitisation	✱	✱	✱✱			
Group formation	✱	✱	✱			
Planning	✱✱	✱	✱✱		✱	✱
Implementation	✱✱	✱	✱✱		✱	✱
Monitoring						

Source: Fieldwork interviews and observation

✱✱✱ - Strong co-ordination
✱✱ - Moderate co-ordination
✱ - Weak co-ordination

Table 14: BIWMP: Actual Stages and mechanism of co-ordination

Types of Mechanisms in use / Stages of W/S Mgt.	BIWMP					
	Direct personal contact	Regular meetings	Co-ordination committee	Establishment of independent monitoring unit	Mutual adjustment	Establishing common work procedures
Sensitisation	✱					
Group formation						
Planning	✱					✱
Implementation	✱					
Monitoring						

Source: Fieldwork interviews and observation

5.2 Causes of not achieving project expectations from co-ordination

There may be many causes for not achieving planned or intended co-ordination and integration. The principal factors/causes responsible for inadequate co-ordination or not satisfying intended expectations in both projects are shown in figure 9, and discussed individually below.

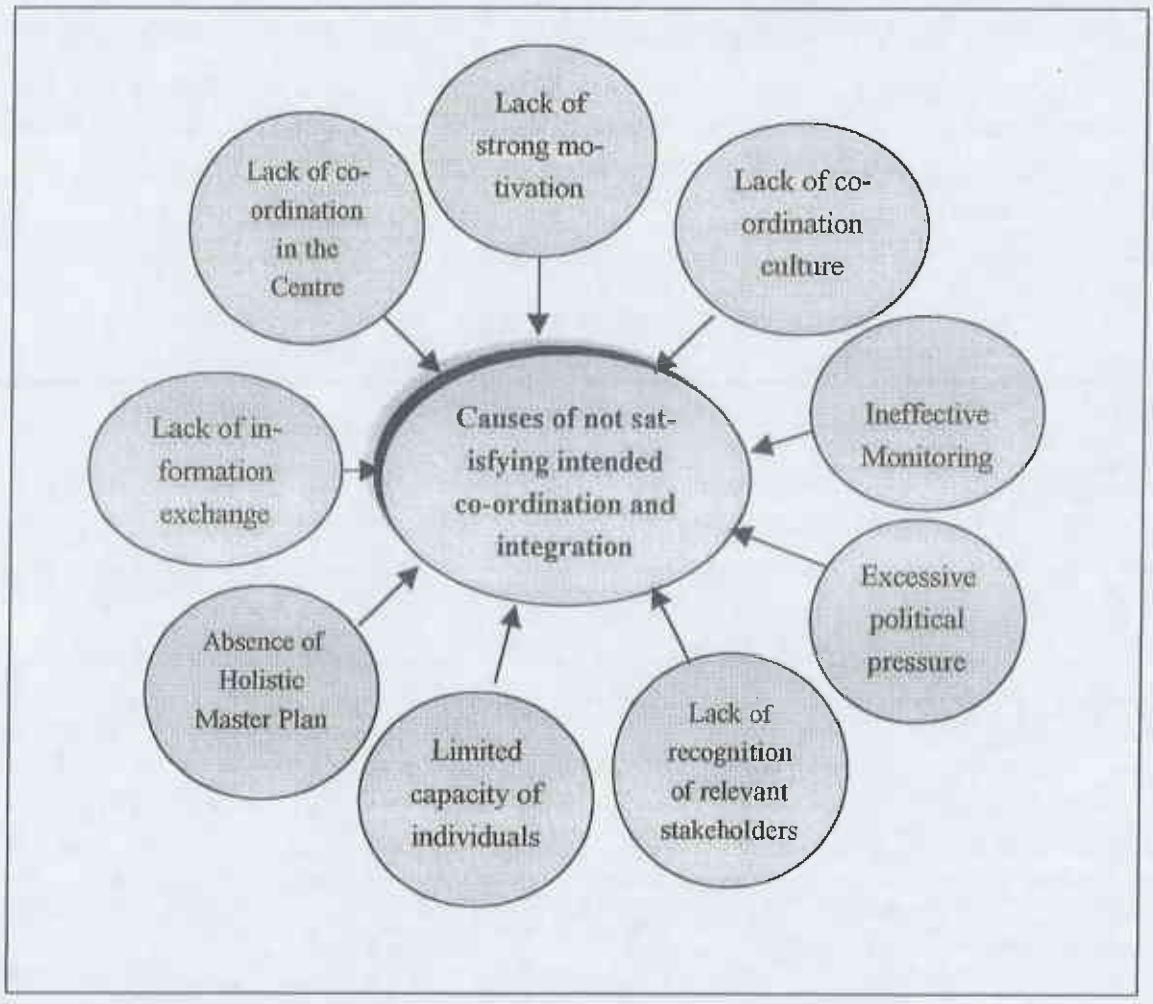


Figure 9: Summary of inadequate Inter – Agency co-ordination and integration

1. Lack of co-ordination mechanism in the Centre:

PCC/PSC was formed in the centre to provide the overall management and policy support to the project, develop and support inter-ministerial co-ordinate and give directives to district. However, no such co-ordination mechanisms have developed, nor has any circulation or guidance to district level agencies been given. This is due to not having regular formal and informal meeting and interaction among PCC/PSC members. In practice, the co-ordination of the various departments at a lower level (district, province) rarely presents a problem. However, co-ordination on the national level is more difficult (Kropp, 1984). As consequence, PCC/PSC is unable to fulfill its task sufficiently, even though, there are lots of guidelines regarding people's participation. But the district lacks clear guidelines about co-ordination mechanism from the Centre, which is very important, because if an agency chief is transferred from the district, the circulars and guidelines from the centre will be directed to new chiefs.

The stakeholders in two projects and their spatial location, opportunities, roles and functions within the Projects and their interests in the context of watershed management are given as follows (table 16):

Table 16: Stakeholders, their spatial location, resources, role and interest

Stakeholders	Spatial location	Resources/Opportunity	Roles and functions within the Projects	Interests in the context of watershed management
Local people	Sub-watershed	• Joint group action • Local knowledge • Local resources • Willing to participate in project activities	• Organise CDGs • Formation of CDC (executive committee) • Participation in planning, implementation and follow-up • Regular meeting • Resources mobilisation • Public auditing	• Agricultural activities • Forest products i.e. firewood, fodder, bedding material , etc. collection • Livestock management • Water quality and quantity improvement • Production increase • Socio-economic upliftment • Basic education • Income generation
Political Body (VDC/DDC)	VDC – Sub-watershed, DDC-District headquarters	• Co-ordinating organisation • Legal authority • Political power • Financial resources	• Co-ordinate all line agencies • Mobilise the resources • Mandate of formulate and implement VDC and DDC level development plans	• Support to village and district development
Local NGOs	Sub-watershed	• Local knowledge • Manpower • Government and Project policy to use NGOs in development works	• Awareness creation • Group mobilisation • Mediator role between project and people • Facilitate in local development works	• Raise community awareness • Saving mobilisation • Skill development of women • Resource conservation • Promote sports, tradition and culture • Establishment of library, primary health care and adult education facility

4. Absence of Holistic Master Plan:

This is one of important causes not to have co-ordination and integration among line agencies in the district. All line agencies have own sectoral target, objectives, priorities and policies. They have their own "master plan" for development of their sector programme. The master plan prepared by one agency may not complement other's plan. In addition, they have different implementation approaches and different subsidy policies in similar kinds of activities. Besides, these line agencies have different policies for seeking people's contribution. As a result this leads to duplication of works and lack of co-ordination and integration.

5. Lack of Co-ordination and Integration culture:

All line agencies are inherently independent and have own separate regular programme and target. To accomplish their targeted activities they mobilise their own staff working under the district office. Each of the district staff is responsible to his or her own ministry and department in the national capital. They are used to working under the vertical line of command. In the case of NEP-DKWMP, DTG is in existence to co-ordinate and integrate all relevant line agencies in watershed management programme. Besides, there are different parallel co-ordination committees in every line agency under the chairmanship of DDC chairman such as agriculture office has own agriculture co-ordination committee, irrigation office has separate co-ordination committee, education office has separate co-ordination, etc. In the district, there are many co-ordination committees to co-ordinate line agencies in development works. All line agencies are familiar with own co-ordination committee. So, they do not feel necessity for sharing of information with other agencies. In fact, all line agencies are depend on their staff and no tradition to take support and services form the other agencies, which is a lack of co-ordination and integration culture among line agencies. It is causing more confusion and complex to co-ordinate and integrate in watershed management programme.

6. Lack of strong motivation and dedication to their works:

Integrated watershed management initiatives requires more time than normal government procedures because of their complex nature. Communities needs are multi-sectoral, while line agencies approaches are sectoral. These multisectoral needs do not match with a sectoral approach, they require greatly improved co-ordination and integration, which demands too much time for line agencies. To achieve integration and co-ordination, more exercises should be carried out. Line agency staff should visit sub-watershed area to facilitate CDGs during planning, implementation and other works. There are no incentives to line agency staff for providing support to the programme, except daily service allowance, although they have high aspirations from projects such as office logistics, training abroad and career development opportunities. As a consequence, an attitude has developed that it is not worthwhile to give more time and effort without good incentives. Moreover, DTG is not an ideal committee to co-ordinate district line agencies in watershed management. If one agency is not interested to co-ordinate and integrate, the DTG doesn't have any legal power and provision to bring all line agencies in one place and force them to work together. Beside this, most resources are available in the project-supported office, and they are not accessible to other line agencies.

Most projects intend to implement project activities in isolation or in project capsule form. The projects hire many highly paid professionals as well as administrative project staff both at central and district level. The benefits and salary of project staff as compared to the government staff (implementation personals) are very high, whereas the responsibility and accountability of later is very high. Both of

The reasons for gaps between intended or proposed co-ordination and actual practising on the ground are analysed in two perspectives. These are as follows;

1. Because project did not follow it's own intended plan (GAP 1). See chapter 3, section 3.6, and
2. Because design was inappropriate or did not follow sustainable programme approaches and practices (GAP 2). See chapter 3, section 3.6.

The reasons for not satisfying the intended co-ordination/expectation as a result of a project not following it's own intended plan, are analysed as the planned intention, their actual outcomes and causes for not following the intended plan in the different activities/stages (see table 17).

Table 17: Project did not follow it's own intended plan

Activities	Planned intention of plan	Outcome of the activities	Why not followed intended plans? Causes
Sensitisation	• Information exchange • Joint training /workshops • Common extension message • Exchange of knowledge	• Some joint training, workshops	• Plan was too ambitious • Project could not understand/analyse real situation of line agencies as inherently independent • Line agencies have own target and programme • Lack of recognition of relevant stakeholders and their role. • Lack of legal provision to co-ordinate relevant agencies in watershed management • Lack of trained and skilled manpower • Absence of clear guidelines about how to mobilise line agencies. • Lack of strong motivation of DSCO and their staffs on which project heavily depend • Lack of good understanding between district staff and project • Frequent transfer of district line agency chiefs • Lack of co-ordination in centre • Delay in release money from centre • Unclear Norms and guidelines • Project does not adopt government norms, guidelines and modality. • Frequent changes in project guidelines • Lack of transparency
Group formation	• Information exchange • Joint efforts to facilitate communities	• Groups have been formed, but only through DSCO efforts	
Planning	• Planning team of field level technicians • Technical backstopping • Discussion on aggregated plan	• Generally DSCO staff facilitate • Some time technical support • Discuss aggregated plan at district	
Implementation	• Work together • Technical support • Financial support	• Some activities carried out jointly • Some times technical support provided by line agencies	
Follow-up	• Joint monitoring • Participatory monitoring	• Monitoring is done by DSCO and Project only	

The reasons why a project didn't follow it's own plan are mainly due to having too ambitious a plan during project design stage, lack of strong motivation of district staffs, misunderstanding between

Implementation	• Similar subsidy policy • Cost sharing • Resource sharing • Direct personal contact • Regular meetings • Co-ordination committee • Mutual adjustment • Establishment of common working procedures	• Some activities are carried out jointly • Most of the activities are implemented by DSCO only • Different implementation approaches • Different subsidy policy • Different policies for seeking people's contribution	• Lack of information • Different implementation approaches • Lack of co-ordination in centre • Lack of recognition of relevant stakeholders • Lack of strong motivation and dedication to their work
Monitoring	• Establishment of independent monitoring unit • Joint monitoring • Single report format	• Monitoring is mainly carried out by DSCO and Project • No joint monitoring	• Different monitoring formats • Absence of joint and participatory monitoring culture • Lack of transparency • Some authority has vested interest • Lack of provision to strengthen the CDGs in terms of fund and legal safeguard

As shown in table the main causes of plan failed are lack of information exchange among line agencies, lack of legal provision to bind relevant agencies in integrated watershed management, and different working approaches. In addition, lack of recognition of relevant stakeholder, lack of strong motivation and dedication to work, different monitoring formats, and lack of transparency of project to all line agencies are responsible for plan failure.

5.2.1 Problem Tree:

In the problem tree, which is a simplified reduced form of a real problematic situation, are shown the various gap elements, such as lack of co-ordination in the Centre, lack of information exchange, absence of holistic master plan, lack of recognition of relevant stakeholders. Other elements contributing towards the core problem are lack of strong motivation and dedication to the work, ineffective monitoring, lack of co-ordination and integration culture among line agencies, limited capacity of individuals, and excess political pressure. Because of these problems there could be irrational use of limited resources, high cost and duplication of development activities, misunderstanding among line agencies and local people, and non-mobilisation of local resources. The problem tree shows (Figure 10) the relationship between causes and effects of inadequate inter –agency co-ordination and integration in watershed management.

Causes of Inadequate Inter – agency co-ordination and Integration in watershed management problem

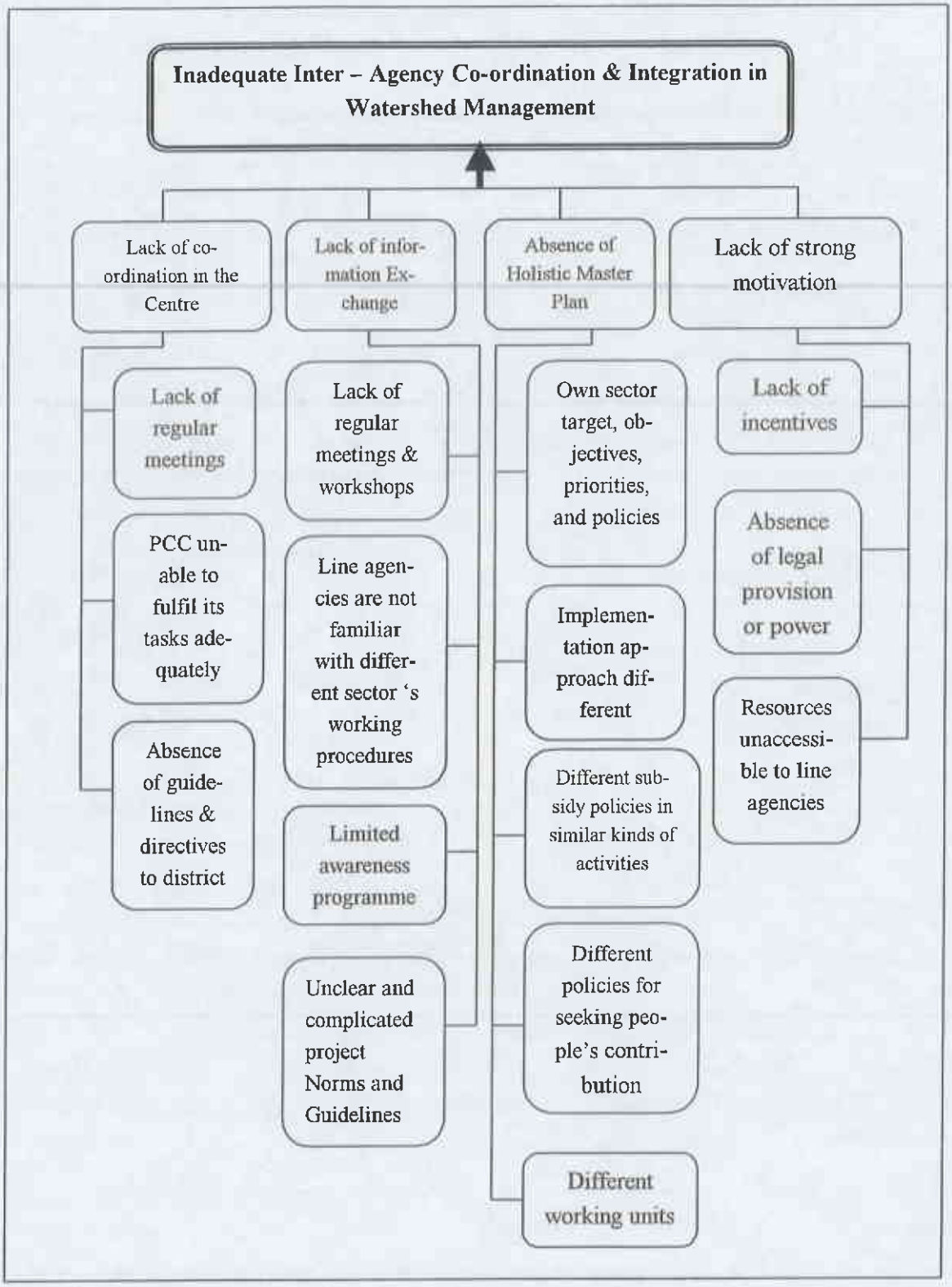


Figure 11: Causes of Inadequate Inter – agency co-ordination and Integration

(Elaboration of figure 10)

5.2.2 Objective Analysis

Objectives can be derived from the problems identified in the problem tree. An objective is a positive situation to be achieved by the project in the future. The assumption is that once the objective is achieved, the problem is solved. Problems are reworded into positive statements (objectives) which form an objective tree with the same structure as the problem tree. The objectives are analysed and presented in the Objective tree.

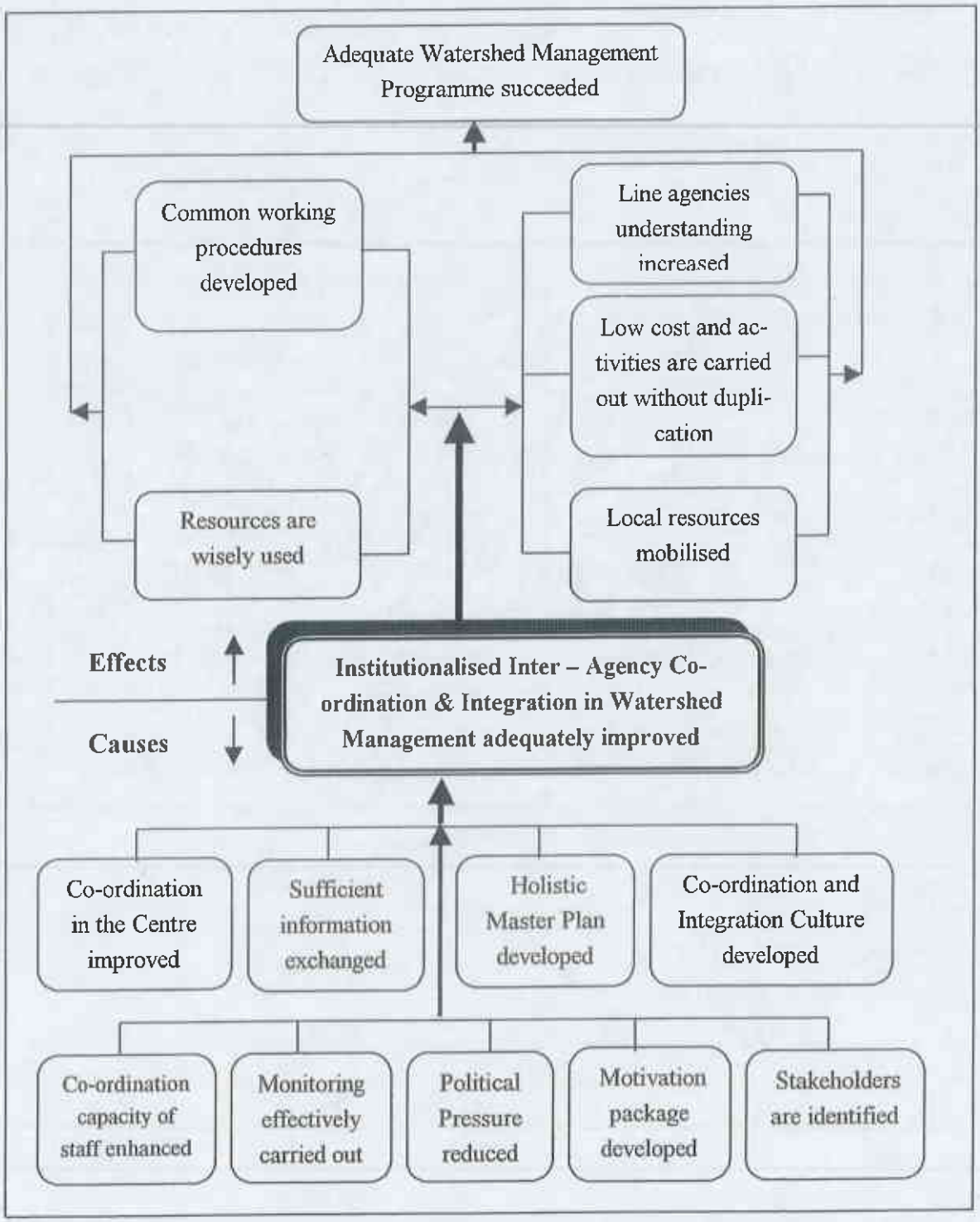


Figure 13: Objective tree based on the problem tree (further elaborated in figure 14 & 15)

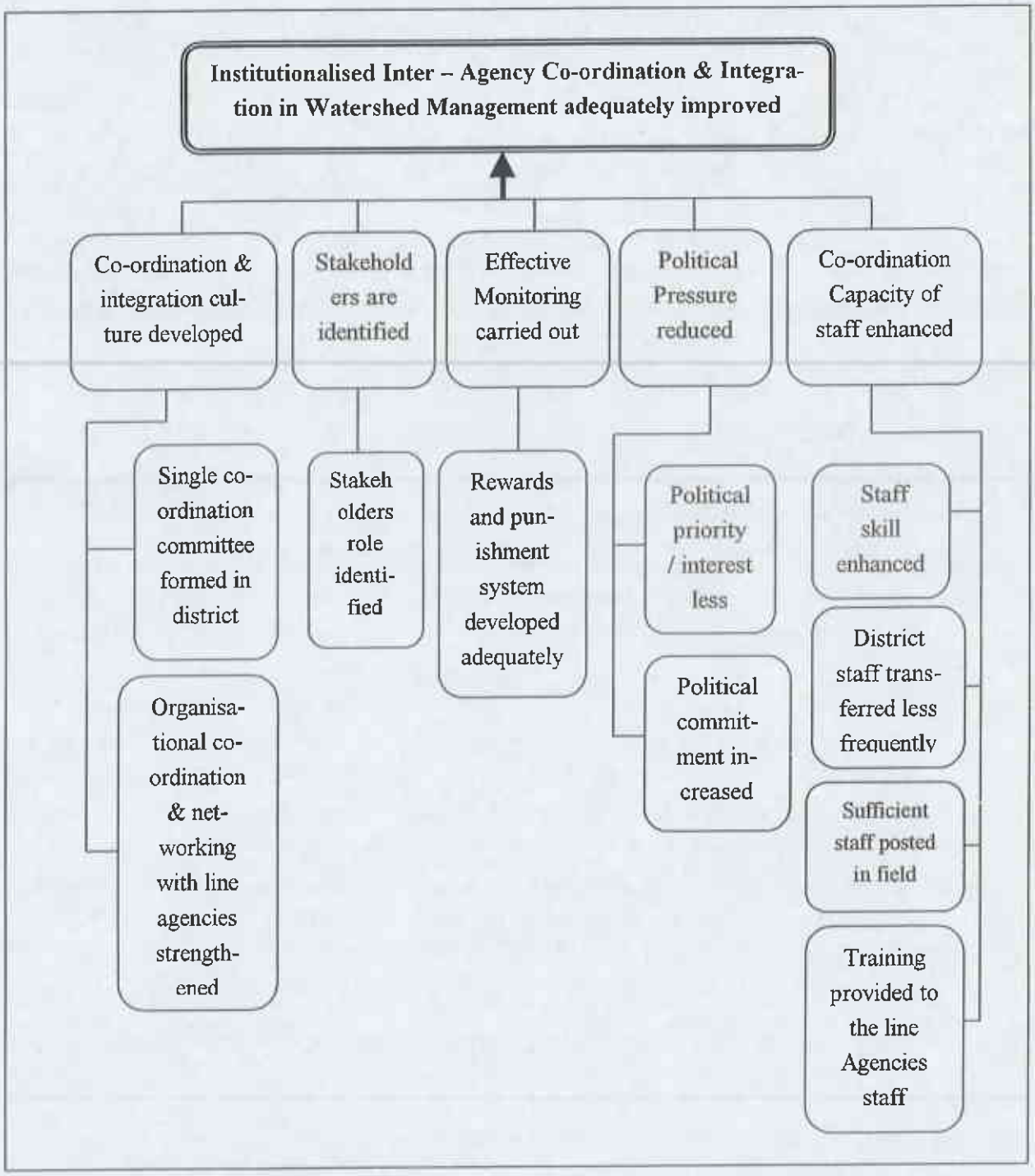


Figure 15: Objective tree (elaboration of figure 13)

- **Undefined stakeholders and lack of clarity about their responsibilities**: Identification of stakeholders and their role in integrated watershed management is one of the important constraints in Nepal for a long time. Stakeholder analysis should always be done at the beginning of the project, and their interests and possible roles in watershed management. But, in these projects, neither are all relevant stakeholders clearly identified, nor are their roles.

2. **Financial problem**: lack of budget, incentives, logistic support and career development opportunities are the main financial constraints facing co-ordination and integration. Many line agencies have limited resources through which they have to accomplish their fiscal target in their priority area. But co-ordination and integration in watershed management, which requires line agencies commitment, is not happening due to financial constraints. In addition, more project resources are available only to the counterpart office, and not to other agencies.
3. **Managerial problem**: Lack of trained staff, frequent transfer of staff, competing and non supporting attitudes among line agencies are main managerial constraints observed during co-ordination and integration practice. Co-ordinated in districts which could not be co-ordinated and approved from the center, control of resources, absence of separate authorized persons for co-ordination and integration in district and center are, other managerial constraints found in these projects. According to Decentralization Act, all line agencies must be accountable to DDC in all development works and DDC is responsible to co-ordinate all agencies in the district. However, line agencies have a duel responsibility to district as well as central ministries. In fact very little actual attention is paid to DDCs, and more focus is on the directives of central ministries and departments. Line agencies are more accountable to their ministries than DDC, DDC has no mandatory legal provision to make them accountable to co-ordinate with DDC. The four mid-level technicians in each DSCO, particularly Nuwakot are insufficient to provide adequate technical support and others out reach across the district. However, the financial constraints and HMG policies do not allow for staff expansion. In this connection, constraints with the co-ordination and integration practice result from shortage of manpower as well trained manpower to perform functions and support communities.
4. **Political problem**: Among the main constraints in the watershed management is the weakness in political commitment and support. Most political leaders are not well aware about integrated watershed management approach. They have therefore been unable to perform their role during co-ordination and integration. So, they give priority to political interests rather than to the actual needs or demand of the people.

Picture 8: Three years old fruit plantation (Gerkhu sub-watershed)
Photo: Khadka

Picture 9: Grass plantation on the bound of terraces (Gerkhu sub-watershed)
Photo: Khadka

Chapter Conclusion

In NEP-DKWMP, a PCC was formed under the chairmanship of the Secretary of the Ministry of Forest and Soil Conservation including different line ministries and departments at the central level for Inter-agency co-ordination and integration. It is found that the PCC could not work effectively as designed. In addition, the DTG and FTG are formed at the district and sub-watershed level respectively to co-ordinate line agencies in integrated watershed management. However, the assumption of co-ordinated approach, where green sector line agencies work together in the district and sub-watershed, and ultimately local people receive multi-disciplinary technical support could not be came in practice effectively as intended. Mostly DSCO staffs are involved in through out the integrated watershed management activities. However, some degree of line agencies' co-ordination and collaboration is found mainly during planning and implementation. Where as in BIWMP, PSC has been formed under the chairmanship of the Secretary of Ministry of Forest of Soil Conservation including the other line ministries and departments representatives as members. It is found that the PSC could not perform their responsibilities as planned. Furthermore, there is some limited level of co-ordination found with line agencies in the planning stage, particularly at the district level planning, however, in other stages almost nil.

From comparison of the NEP-DKWMP and BIWMP for co-ordination mechanisms, the Co-ordination Committees (DTG) and FTG have been found to be effective mechanisms in case of NEP-DKWMP. Some degrees of co-ordination mechanisms are also carried out through direct personal contact, regular meetings, mutual adjustment, and establishments of common working procedures. While in BIWMP, only direct personal contact is mainly used as a co-ordination mechanism. From the above analysis it can be concluded that the Danida supported NEP-DKWMP has stronger and institutionalised co-ordination mechanism than the EU funded BIWMP.

The gap elements are identified based on field interviewed and discussion for not achieving project expectations. These are lack of co-ordination in the Centre, lack of information exchange, absence of holistic master plan, lack of recognition of relevant stakeholders. Other elements contributing towards the gap are limited capacity of individuals, lack of strong motivation and dedication to the work, lack of co-ordination and integration culture among line agencies, ineffective monitoring, and excess political pressure.

The underlying bottlenecks associated with co-ordination and integration in integrated watershed management are institutional, managerial, financial, and political.

Some positive outcomes have came out from it, which can not be ignored. Some physical activities were carried out jointly, but most important outcome is a sense of consciousness and awareness engendered among line agencies in the matter of co-ordination and integration.

6 Chapter Six: Geo/Spatial Information that is needed and exchanged in the process of Co-ordination and Integration

Chapter summary

This chapter deals with the information exchanged in the process of co-ordination and integration, in relation to information needed by the agencies. Firstly definition of geo/spatial information, the second part discusses what geo/spatial information are needed in the process of co-ordination and integration, and likewise, existing geo/spatial flow among line agencies during co-ordination and integration is presented. Finally, the causes of not exchanging geo/spatial information are examined.

6.1 What is Geo/spatial information?

The term geo-information/spatial information is used with reference to information with spatial dimensions or locational distributions. All resources whether natural or socio-economic have spatial and time dimensions. The term geo-based information is used to indicate both information with spatial dimensions or locational distribution like land, water, population (De Man et al, 1980).

Geo-graphical data /spatial information have three main characteristics. These are location or position, attributes or properties, and time. These three characteristics are interrelated to each other. Most spatial objects can be sub-divided into three main classes according to their dimensions and representations such as point, line and area surface. Two types of data may describe those spatial objects: spatial and non-spatial data (attribute data).

Spatial data refers to the object's location in space consisting of positional data and topological data, while non-spatial data or attribute data identify other properties and characteristics of spatial objects besides its locational reference. Most of the socio-economic data i.e. demographic, agriculture, occupational structure, infrastructural facilities, etc are available in the form of tables and concern administrative units i.e. village, district, state and so on. In the context of GIS, these datasets are called non-spatial data (ICIMOD, 1996).

Spatial data may occur in three forms (De Man, et al 1980), given as follows:

1. Aerial photographs, topographic maps
2. List or tabulations of values, which occur at specific places (at co-ordinate, locations or within zones), such as climatic data for weather stations, etc
3. Thematic maps, which show the distribution of single factors such as geology, vegetation, population density or land use.

Normally, location data and information might be stored and represented on a map. A map present spatial object with reference to a co-ordinate system and to their non-spatial attributes. The map legend is the key linking the non-spatial attributes to the spatial entities.

After prioritising all the sub watersheds of a district, again these sub-watersheds were selected based on people's willingness to participate in the soil conservation programmes, intensity of degradation within the sub-watershed and view of local leaders (DSCWM, 1994).

According to DSCWM (1993), following methods are adopted during critical sub-watershed prioritisation. These detail steps are as flows:

Step 1: Topo-map, Landuse maps, Land system maps and population density maps of the watershed to be prioritised are necessary.

Step 2: Delineate area/district/watersheds/sub-watersheds to be prioritised on Topo-maps

Step 3: Show High, Medium and Low values on both Landuse and Land system maps of the same area

Step 4: Now prepare an "erosion status map: by overlying ranked land use map on valued land system map, High, Medium and Low values on the "erosion status map" will be assigned according to the sub-watershed prioritisation matrix.

Step 5: Next step is to overlying of sub-watershed delineated topo-map on the "erosion status" map. Then calculate the areas of High, Medium and Low erosion status on each sub-watershed.

Step 6: Give weightages of 1, 3 and 9 for Low, Medium and High erosion values respectively.

- Total erosion status value will be find out by multiplying weithtage value with their respective erosion status type areas.
- Land use, Land system erosion value will be calculated by dividing the total erosion status value by the total area of dub-watershed.

Step 7: Prepare a list of prioritised sub-watersheds depending upon their land use, land system erosion value for programme over a period of time considering budgeting resources, district implementation capacity and population density.

The above-mentioned information are collected by District Soil Conservation Offices from secondary and primary sources. Although above-mentioned information are needed and used by Soil Conservation Office during sub-watershed prioritisation and plan preparation, there is no involvement of other line agencies during that period. In fact, no geo/spatial information are exchanged with line agencies in the process of co-ordination and integration.

6.4 Causes of not exchanging geo/spatial information

Following are some causes of not exchanging geo/spatial information during process of co-ordination and integration.

1. **Lack of database, and whatever present are not up-to date**: As mentioned above, data are used mainly in sub-watershed prioritisation and plan preparation. District lacks data and there is no data base system, whatever present are not up-to date. DSCO collect required information/data from different sources. All required data have to be collected from different agencies mainly Maps, Aerial photographs from Department of Survey, climatic data form Department of Hydrology and Metrology, some from DDC, VDC, and others about sub-watershed area and people through using PRA tools. Therefore, only one agency involves collecting these information and not exchange with other agencies.

2. **Shortage of trained manpower**: District agencies lack trained manpower to interpret and analyse the many information which are required during planning such as Aerial photo interpretation, preparation of different maps like erosion status map, soil map, land use map, land system map, etc. In addition, there is shortage trained staff to use new technologies such as use of computer, GIS, etc. Therefore, DSCO should depend on central DSCWM for these matters.

3. **Financial problem**: District line agencies have financial problem to generate and maintain all data. It requires to use computer and many software for generate and maintain these information. Therefore, if there are no data, no exchange of information among line agencies.

4. **Small working area (sub-watershed):** According to DSCWM the ideal size of sub-watershed is 25 sq. km. It is not big area to work for district line agencies. Most of information about sub-watershed such as settlement pattern, infrastructure, problems, resources within the sub-watershed, etc are well known to line agency after some visits to sub-watershed area. There are not necessary to use Aerial photographs, maps and others to present sub-watershed situation to the line agencies.

5. **Involvement of one agency**: In practice, mainly DSCO is involved in watershed management planning and implementation, as result, no need to share information.

6. **Absence of specific unit in the district to maintain and work on this matter**: District agencies have different sections or unit such as extension, planning and implementation, but there is lack of a specific unit to maintain and work on spatial information. Therefore, a responsible unit needs to be established in the DDC to take care of all these information.

7. **Less priority for data**: Information generated by projects are often used ineffectively or not used at all. Information systems are designed but never implemented; data are collected but never processed.

7 Chapter Seven: Conclusion and Recommendation

7.1 Conclusion

The similarities of these two projects are that they are working in the sub-watersheds, which have more or less similar types of biophysical and socio-economic conditions. The overall objective of both projects is to improve watershed and living condition of people in sustainable manner. They had set priority to increase the involvement of potential stakeholders in planning, execution and maintenance of watershed management programmes during project design stage.

But there are many differences, which are; the Danida supported Nepal-Denmark Watershed Management Project (NEP-DKWMP) executes their activities through normal HMG channels where, District Soil Conservation Office (DSCO) has limited number of technical staff. Whereas the EU funded Bagmait Integrated Watershed Management Project (BIWMP) implements watershed management activities through normal HMG channels too, but DSCO has many additional technical and administrative staffs employed by project on temporary basis. In addition, Project Management Unit (PMU) has muli-discplinary support team to back up the DSCOs on the different matters.

The NEP-DKWMP identified Government organisations, local people, local NGOs, political body, and donors as stakeholders, but their roles in integrated watershed management are still undefined. In the case of BIWMP neither stakeholders nor their roles are clearly identified. Basically DSCO, donor and local users are considered as stakeholders.

The co-ordination and integration mechanisms were designed and planned by the NEP-DKWMP for inter-agency co-ordination and integration in participatory integrated watershed management. At the central level, the project designed a Project Co-ordination Committee (PCC) to bring inter-ministerial co-ordination and directives to the respective district agencies. Likewise at the district, mechanisms (DTG) were planned to co-ordinate relevant line agencies and provide overall directive to the field level technicians. In the case of BIWMP, no such intended co-ordination and integration mechanisms were found at district and sub-watershed level, except Project Steering Committee (PSC) in the central level to ensure co-ordination of the relevant bodies.

It is found from the analysis of both project documents that the NEP-DKWMP has planned or designed co-ordination and integration mechanisms among relevant line agencies for integrated watershed management. In the BIWMP, the project document does not indicate and guide co-ordination mechanisms in the district and sub-watershed level.

In NEP-DKWMP, a PCC was formed under the chairmanship of the Secretary of the Ministry of Forest and Soil Conservation including different line ministries and departments at the central level for Inter-agency co-ordination and integration. In addition, the DTG and FTG have been formed at the district and sub-watershed level respectively to co-ordinate line agencies in integrated watershed management. In BIWMP, PSC has been formed under the chairmanship of the Secretary of Ministry of Forest of Soil Conservation including the other line ministries and departments representatives as members.

7.2 Recommendations

The following recommendations can be made to improve institutionalised Inter-agency co-ordination and integration in Participatory Integrated Watershed Management.

1. Policy Recommendation

1. The present SCWM Act 1985 should be enforced with appropriate amendments in order to enhance co-ordination and integration with line agencies. The Act is more focus on technical matters and traditional top-down planning approach. Thus, participatory group approach and role to be played by various agencies in the integrated watershed management should be incorporated.

2. In the present situation, this research found that there are various Watershed Management Co-ordination Committees at central level. Therefore, A central-level Watershed Management Co-ordination Committee should be developed for all integrated watershed management programme/projects in Nepal, instead of forming one for each project, to co-ordinate and integrate relevant line ministries and departments and give required guidelines/circulation to respective district offices. Because district lacks clear guidelines regarding co-ordination and integration from the centre. So, a clear guideline should be given through the concerned department to the district line agencies.

3. Participation of line agencies currently depends only on personal relations, behaviour, and attitude of the DSCO. Therefore, a clear legal provision should be developed for mandatory involvement of all line agencies in integrated watershed management.

4. Inter-agency co-ordination and integration mechanisms at the district level should be institutionalised. The DTG in Nuwakot District seems parallel to the District Plan Co-ordination Committee. So, there should be only one co-ordination committee formed under the chairmanship of DDC chairman to co-ordinate relevant line agencies. Therefore, the leading role for co-ordination and integration at the district should be taken by DDC, because DDC is mandated from the DDC Act 1992 to co-ordinate and administer district level development activities on long term basis with wider prospective. Furthermore, DDC is responsible to co-ordinate with HMG offices, INGOs and NGOs for all development programmes in the district.

5. It is too early and unrealistic to follow a common working procedure through out the district at this time. Therefore, an initiative should be taken for working in a small pilot area through involvement of all district line agencies. It will help to develop a common working procedure, where line agencies will have an opportunity for similar interpretation/work of guidelines, Government directives, norms, and policy documents, etc.

6. A common holistic master plan should be developed on the basis of sub-watersheds. Because of political instability there are always chances of political boundary changes, whereas watersheds would provide a permanent and stable boundary to work for all development agencies. In present situation, all line agencies have own "Master Plan" for development of their sector programme. The Master Plan prepared by one agency may not complement other's plan. Therefore, a common holistic Master Plan developed on the basis of sub-watersheds, which would set common directives and help brining all line agencies into line.

5. The project guidelines and norms should not be changed frequently. It creates confusion and complications in the district. So, at least these norms and guidelines should not change for two years.
6. An effective monitoring system for participatory integrated watershed management should be developed together with transparency of budget, programme, and expenditures to all stakeholders. Currently, monitoring is carried out by the same agency as the implementation agency. Therefore, it is recommended that an independent monitoring unit should carry out monitoring.
7. A clear incentive package (financial, promotional, and professional) should be developed to support the line agencies in favour of their involvement in integrated watershed management.
8. Necessary action for improving awareness programmes should be made for mid-level technicians and district line agency chiefs on how to use effectively the available spatial information for integrated watershed management and decision making.
9. Long time frames are essential to a process approach to allow for the build up of planning and implementation capacity of line agency staff. Most watershed management projects in Nepal are for short period. Watershed management is a complex task and for process approach, a three to five year's period is too short. So, for the process approach to watershed management, project period should be at least 10 years but probably even longer.

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The concept of integrated planning and implementation in the integrated watershed management at the district level (adopted from Thomsan, et al 1997)

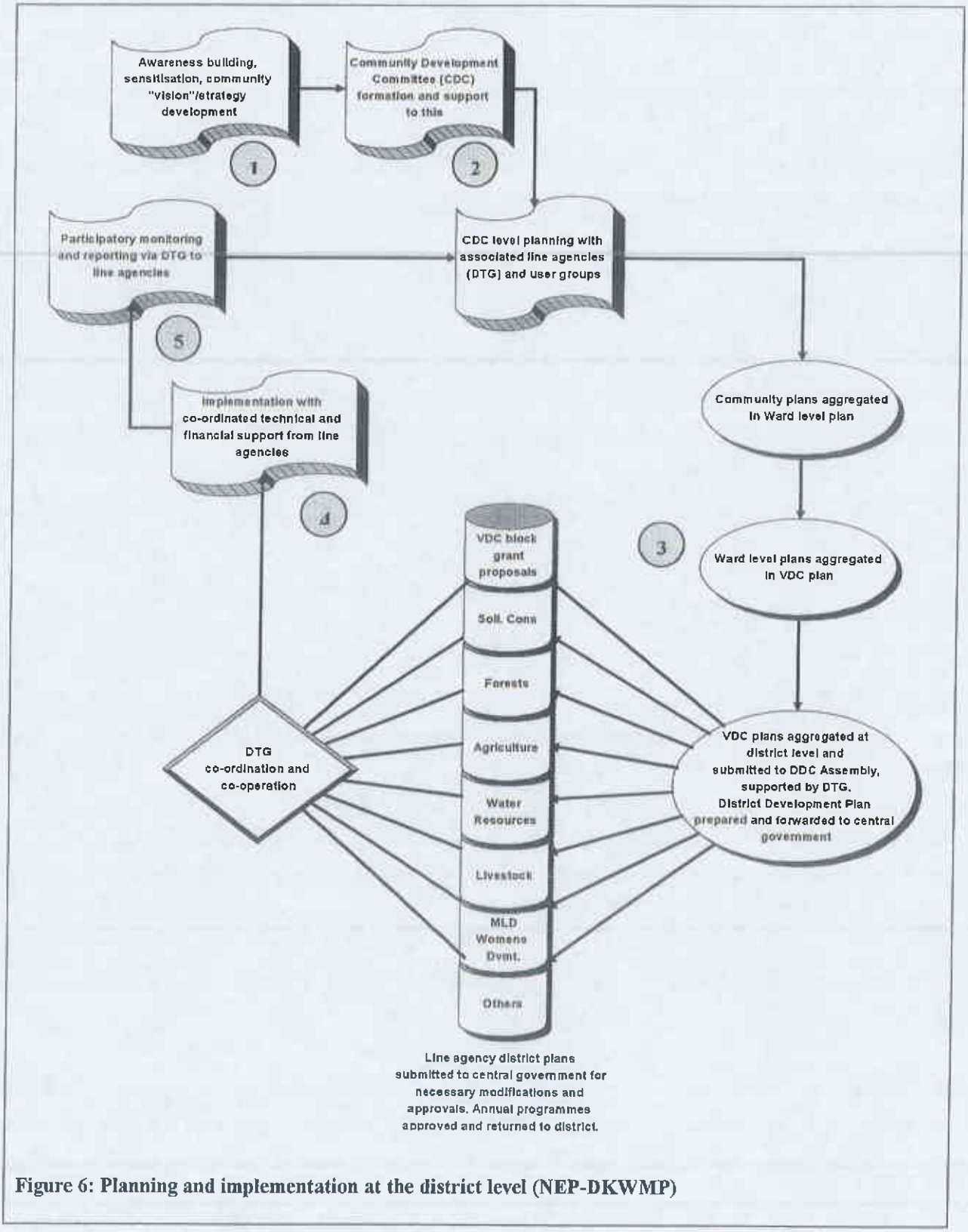


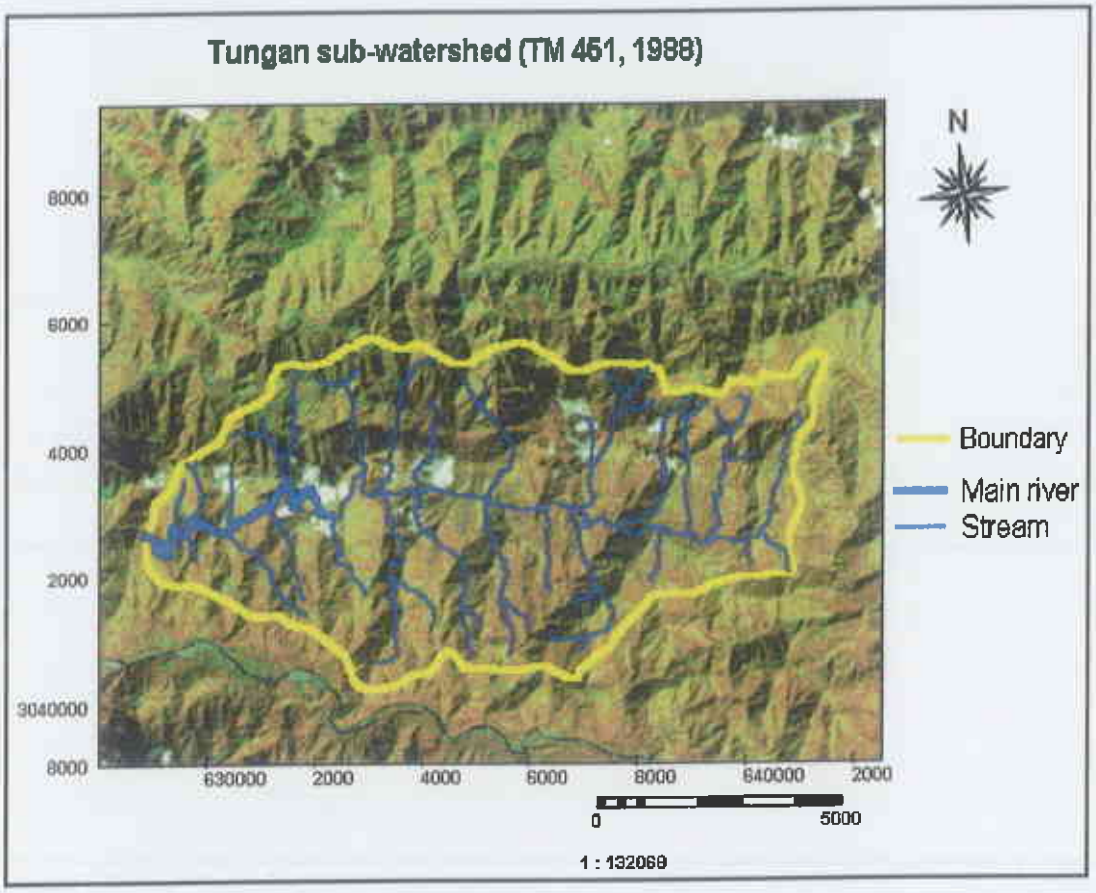
Figure 6: Planning and implementation at the district level (NEP-DKWMP)

4.2 Bagmati Integrated Watershed Management Project (BIWMP)

This is second phase of the European Union supported BIWMP. The financial agreement between the European Commission and HMG/N was signed on July 1997 and implementation officially began on April 1998 with some considerable changes in modalities. During the first phase, the project followed a technical mainly on-farm, soil conservation package consisting of terrace improvement, catchment ponds, gully and landslides control through water management and afforestation together with some infrastructure works such as trail improvement and the construction of a conservation ropeway. Now, it addresses on a more area specific holistic approach to natural resource management with decentralised and more participatory community programme (HMGN/EU, 1999). This project covers the priority sub-watersheds in Kavre, Makwanpur, Sindhuli, Lalitpur and Kathmandu Districts. One of the areas working in Lalitpur district is Tungan sub-watershed.

4.2.1 Brief Description of Tungan Sub-watershed, Lalitpur

The Tungan Sub-watershed area, Lalitpur district, central region of Nepal has been funding by European Union (EU) since April 1998 for integrated watershed management programme as an integrated project. The name of the integrated project is called Bagmati Integrated Watershed Management Project (BIWMP).



Map 3: Tungan sub-watershed (TM 451, 1988)

4.2.1.1 Location

The study area, Tungan Sub-watershed located in Lalitpur district, one of the district of Nepal. The district lies between longitudes 85^0 14' to 85^0 26'and latitudes 27^0 22' to 28^0 50'. The study area lies in the Southeast part of the district. The Tunagan Sub-watershed area covers to administratively Bukhel (100%) Village Development Committee (VDC) and partly Chandanpur VDC (8%), Gotikhel VDC (83%), Ikudol VDC (29%), Kaleshwar VDC (42%), Manikhel VDC (32%) and Sankhu VDC (57%). The attitude of sub-watershed ranges from 1036 m to 2652 m and 52 % area of sub-watershed fall under the greater than 30 degree slope categories. The total area of Sub-watershed is 47.14 Sq. km.

4.2.1.2 Climate

The climate of the sub-watershed area is that of a typical monsoon variety with rainy summer and dry winter. This is a similar pattern of the middle mountain region of Nepal having a rainy season from June to September. More than 80 percent or rainfall is occurred during monsoon period. The dry temperature in summer frequently rises to 30^0 C. and falls below 20^0 C. at night and 18 ^{0}C. to 0^0C. or less during winter season from December to February.

4.2.1.3 Land use

The land use of this sub-watershed area is mostly for agriculture, forest and shrub lands. According to Land Resources Survey, 1986, following percentage of total area are under the different land use practices. Such as agriculture land (38.9 %), forest (54%) and shrub land (7.1%). Cultivation in most of the area is practised on steep sloping terraces.

Picture 4: A glance of Tungan sub-watershed

Photo: DSCO, Lalitpur

4.2.1.4 Vegetation

The vegetation of the sub-watershed area consists of natural forest types depending upon altitude and aspect. These are mixed forest of broad leave and evergreen. The evergreen forest is mainly coniferous (*Pinus roxburghii*). The dominant tree species are chilaune (*Schima wallichi*), katus (*Castanopsis indica)*. Wet and gullies are occupied by *Alnus nepalensis.* The majority part of sub-watershed area consists of mixed vegetation with a large number of shrubs and small tress. A wide varieties of medicinal plants are found in the sub-watershed area.

1..1.2 Socio-economic conditions

Different ethnic backgrounds inhabit the sub-watershed area. The main ethnic groups are Brahmin, Chetri, Tamang, Magar, professional castes and others. The total population of sub-watershed area is 7807 and total household number is 1351. The main economic activities of people are agriculture and livestock. In terms of combined value of cash and non-cash income, the livestock sector was and still is dominant in the rural economy of the most Tungan sub-watershed area. Dairy product is one of the important sources of income for local farmers.

Picture 5: Collection of dairy from village (Tungan sub-watershed)

Photo: Khadka

Picture 6: Sending dairy to Kathmandu (Tungan sub-watershed)

Photo: Khadka

4.2.2 Project Short Description

4.2.2.1 Objectives and activities of BIWMP

The main objective of the programme is to increase productivity and improve the livelihoods of local people living with in the working sub-watersheds of the Bagmati catchment through improved watershed management systems.

The immediate objectives of the project are:

- Improve institutional capacity to manage watershed resources.
- Improve Conservation awareness
- Reclaim degraded land.
- Improve Community management and utilisation of natural resources.
- Promote income-generating opportunities.
- Improve and develop infrastructure for accessibility.
- Provide project management support to prepare project plans for Chandragiri and Phulchoki.

The BIWMP has following working strategies:

- Promote and support community based process approach by involving potential stakeholders in detailed planning process.

- Partnership between communities, district authorities, line agencies, community based organisations in a participatory process so that all are placed and informed in decision making process.
- Reduction of poverty through sustainable income generation by making representation of the interests of the poor and poorest.
- Increase the awareness of gender power relationship and women's capacity for their equitable involvement in development.
- Involve the socially disadvantaged groups to address on the issue of social differentiation.
- Encourage self regulative technologies packages at the intervention of bio-engineering techniques, these are ideally simple and of low cost from the economic and socio-cultural point of view.
- Promote environmental rehabilitation and conservation of natural resources with improved land management system that controls soil erosion in Bagmati catchment.
- Respond to the community demand and expand project ownership among stakeholders so that they are committed to contribute to the sustainability to the cost of activities.

The BIWMP has proposed following activities and expected results (table 8):

Table 8: BIWMP Activities and Results

	Activities	Results
1.1	Improve the capacity of DSCWM and WM staff to facilitate community development process ▪ Identify and organise links with academic and professional training facilities in country and overseas. ▪ Provide academic and professional training in-country and overseas ▪ Support participation and organisation of workshops and seminars. ▪ Construct and rehabilitate office facilities ▪ Construct field Centre buildings	Institutional capacity to manage watershed resources improved
1.2	Build capacity of community groups to plan and implement their development activities. ▪ Training needs assessment ▪ Provide community level training ▪ Support installation of communication facilities (telephone, radio etc) ▪ Develop a strategy for empowering women and disadvantaged groups ▪ Implementation of strategy for empowering women and disadvantage groups ▪ Assist establishment of community network	
2.1	Promote awareness of link between population and environment ▪ Identify partners and develop linkages for family health programmes ▪ Support training of health service providers ▪ Sustainable support family planning practitioners.	Same as 2.2

5.3	Design & operationalise savings and credit programmes ▪ Review local experience of S&C programmes ▪ Prepare manual for credit programme ▪ Assist with establishment of revolving funds ▪ Set up credit monitoring system	Income generation opportunities promoted
5.4	Assist establish market linkages ▪ Assist identify possible intermediaries ▪ Assist development of collection centres	
5.5	▪ Assist promotion of small businesses ▪ Examine ways to minimise economic potential of cold stores and ropeways ▪ Identify possible interested individuals ▪ Organise training in entrepreneurship development ▪ Assist to upgrade marketing infrastructure	
6.1	Assist farmers to build and operate conservation ropeway ▪ Identify users/stakeholders & form ropeway/micro-hydro construction committee ▪ Identify alignment; carry out survey, design and estimate ▪ Construct repeway with people's participation ▪ Assist users to operate and maintain	Infrastructure for accessibility improved
6.2	Assist communities with trail improvement ▪ Help to organise users groups ▪ Assists identify trails to be improved and carry out survey, design, estimate etc. ▪ Assist execution of plans	
6.3	Provide support for construction of stream crossings (foot bridges/tarpul) ▪ Help organise users groups ▪ Assists identify crossings and carry out survey, design, estimate etc. ▪ Assist execution of plans	
6.4	Provide maintenance support ▪ Strengthen users groups ▪ Establish system for maintenance support	
7.1	Co-ordinated plan preparation ▪ Staff posted to district ▪ Provide necessary training and orientation ▪ Provide planning support ▪ Baseline studies	Project management support provided
7.2	Establish MIS ▪ Operationalise financial management system ▪ Update WIS ▪ Provide training M&E ▪ Operationalise MIS	

4.2.2.2 Institutional arrangement

The responsibility for the implementation of BIWMP's field activities in the selected sub-watersheds has been devolved to the District Soil Conservation Offices in operation districts. In the central level, A Project Management Unit (PMU) is responsible for day - to - day management of the programme, which is headed by the National and European Co-Directors. In addition, the PMU has operational autonomy over the technical, administrative, financial and human resource aspect related to project co-ordination, implementation and management. Within the PMU the technical support team provides a technical back-up and liaison function with the district soil conservation offices. The organisation of BIWMP is given in appendix 7.

4.2.2.3 Programme Planning and implementation mechanisms

The DSCWM has overall responsibility for the planning and implementation of all soil conservation and watershed management activities in the country. The department executes soil conservation and watershed management activities through its district-based offices. The DSCO is under the District Development Committee (DDC) in planning of its development activities. According to the Decentralisation Act, DSCO should submit the sub-watershed plan to DDC on an annual basis, which is overall planning of activities at the district level. The Local Development Officer (LDO), who represents the Ministry of Local Development, and who acts as the secretary to the DDC. His or her responsibility is to administer and co-ordinate development activities of all district level line agencies including DSCO. In the field level problems of area are identified on participatory way through using PRA tools. All the problems are aggregated on the sub-watershed basis and forwarded to DDC to approve it.

Picture 7: DSCO staffs and communities during planning (BIWMP)

Photo: DSCO, Lalitpur

4.2.2.4 Stakeholders in Integrated Watershed Management

The different stakeholders have to be involved in the planning and implementation of the community development plan. They can play crucial role in this regard. In case of BIWMP, no such stakeholders and their roles were proposed for integrated watershed management during project design stage. Some central level organisations were anticipated for member of PSC to co-ordinate to relevant line agencies. In the field level, DSCO, Donor and local users have been considered as stakeholders.

4.2.2.5 Intended co-ordination and integration mechanism in the project design stage

In centre level, it was planned to form a Project Steering Committee (PSC) to ensure co-ordination among relevant bodies. Besides, PSC has other responsibility to approve the annual budget, work plan, and advice the PMU on policy matter. The PSC planned to meet twice a year. The PSC is to be chaired by the Secretary of Ministry of Forest and Soil Conservation and other member are:

- Director General, Department of Soil Conservation and Watershed Management
- Representative of the Department of Forests
- Representative of the Ministry of Agriculture
- Representative of the Department of National parks and Wildlife Conservation
- Representative from the National Planning Commission
- Representative from the Nepal Electricity Authority
- Representative from the Ministry of Finance
- The European Project Co-Director
- The National Project Co-Director
- Representative from the EC Delegations (as an observer)

While, PSC is a committee to co-ordinate with relevant line agencies for integrated watershed management in central level. But in district and sub-watershed level no such any mechanism of co-ordination for watershed management has been planned during project design stage. But, BIWMP has working strategies to promote and support community based process approach by involving potential stakeholders in detailed planning process and partnership between district authorities, line agencies, community based organisations in a participatory process so that all are placed and informed in decision making process.

Chapter Conclusion

The brief description about both sub-watershed specifically location, climate, land use, and socio-economic conditions of inhabitant are presented. Both sub-watersheds are found those more or less similar physiographic and socio-economic conditions.

The development objectives of both projects are to improve watershed and living condition of people in sustainable manner. The NEP-DKWMP project executes their activities through normal HMG channels where DSCO has limited number of technical staff. Whereas the BIWMP implements watershed management activities through DSCO, but, there are many technical staffs employed by project on temporary basis. In addition, PMU has muli-discplinary support team to back up the DSCOs on the different matter.

In the case of NEP-DKWMP, major stakeholders are identified, but their roles in integrated watershed management are undefined. Due to undefined role of these parties there is still confusion in their responsibilities to be played in integrated watershed management. In the case of BIWMP, neither stakeholders nor their roles are clearly identified. Basically DSCO, donor and local users are considered as stakeholders.

The NEP-DKWMP had intended co-ordination and integration among line agencies for participatory integrated watershed management. At the central level formation of a Project Co-ordination Committee (PCC) had been planned to bring inter ministerial co-ordination and directives to the respective district agencies. Likewise, designed a mechanism (DTG) to co-ordinate relevant line agencies in the district and provide overall directive to the field level technicians. In the case of BIWMP no such intended co-ordination and integration were found at district and sub-watershed level, except PSC in the central level to ensure co-ordination of relevant bodies.

These Integrated Watershed Management Projects made provision for a co-ordination committee at the central level under the chairmanship of the Secretary of the Ministry of Forest and Soil Conservation. At the central level two committees were formed under the chairmanship of the same Secretary to co-ordinate watershed management programme as per Project wise.

5 Chapter Five: Co-ordination and Integration in the Two Projects

Chapter Summary:

This chapter mainly addresses the existing inter agency co-ordination and integration mechanism during planning, implementation and follow up, the causes of gaps between intended and existing co-ordination and the integration mechanism in the ground. The present situations of co-ordination and integration among line agencies for watershed management is presented. There is a descriptive analysis of parties or institutions and their relationships and existing degree of co-ordination in the different stages of watershed management. Appropriate co-ordination mechanisms are proposed based on a review of literature and field experience of integrated watershed management. The comparison of two projects is carried out on the basis of these proposed co-ordination mechanisms cum different co-ordination tasks/stages.

Emphasis is placed on analysing the causes of not satisfying project expectations. The analyses are presented in matrix form. The core problem, its causes and effect are presented in the problem tress.

The problems found with co-ordination and integration practices in both projects are briefly discussed. The end part of this chapter deals with outcomes from co-ordination and integration practices in the field.

5.1 Existing Inter-agency co-ordination and integration mechanism during the planning, implementation and follow – up

In order to achieve the goal of integrated watershed management, the co-ordination mechanism is a most critical part. Integrated watershed management cover a wide range of activities is a complex task and must be treated in an integrated manner, particularly at the programme planning and implementation stage. It has to take into account not only the one agency's involvement in design and implementation of activities, but also participation of line agencies required in sustainable watershed management. Co-ordination and integration of line agencies in integrated watershed management should start from the beginning. The involvement and linkage need to be strengthened not only with the line agencies, but also local organisations. Watershed planning has to cover a wide scope of issues cutting across organisational hierarchy, geographical areas, and various sectors.

The heterogeneity of the local community people, and their needs, resources, capacities, objectives needs to be considered during the planning process. Moreover, activities are carried out in different geographical areas (upper stream, down stream of watershed) for different types of target groups (cash crop farmers, women, and landless labourers, etc.). Problems from one place to an other may not be identical. Like any other planning exercise, watershed planning is a dynamic and site specific process that must take into account relevant environmental, social, cultural, economic and political considerations. Therefore, watershed-planning process should adopt a holistic, integrated and participatory framework. In fact in the field, the ways to identify problems may vary from agency to agency. Each agency has different perspectives in assessment of problems, causes of problems and possible solutions. So, there should be common understanding and agreement on the existence of a

agency chiefs, it is found that the FTG is found very effective and suitable co-ordination mechanism. Because, FTG members mostly work in the same field and stay close with local people, and they may aware about real situation of sub-watershed and their role to be played in the integrated watershed management.

Mostly Community motivators and DSCO field staff carry out the sensitization and community mobilization. In some cases involvement of other line agencies staff have been found in capacity building programmes. Line agencies do not participate significantly in identification, prioritisation, planning, implementation and follow-up of activities in the sub-watershed. Similarly, the VDCs do not play a vital role in programme planning and implementation.

Functional Groups and Community Development Plans

There are 30 functional community development groups in Gerkhu sub-watershed at micro-watershed basis. As planned in project design stage, the micro-watershed based community development plan needs to be aggregated at Ward and Village Development Committee (VDC) level. This will be Master plan of Ward and VDC. The Master plan of VDCs within the sub-watershed needs to be aggregated to form sub-watershed level Master plan. Finally, the DTG discusses the aggregated sub-watershed plan and forwards to DDC plan formation committee (sectoral co-ordination committee) using DDC guidelines and formats to approve from district assembly.

In practice, these micro-watershed based community development plans are directly aggregating at sub-watershed level Master plan without aggregating at Ward and VDC level. This demonstrates the gap of co-ordination and integration in Ward and VDC level. According to Decentralisation Act, all development activities proposed from any line agencies should be discussed and reflected in VDC level plan. VDCs have mandate to develop village level development programmes to be implemented by GOs or NGOs, and to submit to the district assemble for approval.

While discussing on aggregated sub-watershed plans, concerned line agencies provide technical input to the proposed activities. The existing inter agency co-ordination mechanism during CDG planning and implementation is given in figure 7.

In summary, following activities have been performed for inter- agency co-ordination and integration in watershed management programme.

1. Establishment of the District level co-ordination committee (DTG)
2. Existence of the Field level Technical Group (FTG)
3. Direct personal contact with line agency chiefs
4. Some degree of joint training, workshop
5. Formal meeting
6. Some degree of information exchange
7. In some cases, mobilizing professionals from relevant line agencies for technical back up
8. In some cases, joint activities implementation
9. Common understanding and practice to avoid overlapping activities
10. Common understanding on use of existing group in the field

Planning	• GO field staff mostly DSCO staff • Motivators • GO district staff • Local people • VDC/DDC	• Area Potential Plan and CDG Plan • Generally planning is carried out through local people's participation • Generally DSCO staff facilitate CDGs during planning • Some times line agencies staffs involve in CDG planning • Some degree of technical back up • Generally district based line agency staff rarely involved in the field level needs assessment, prioritisation and programming. • District line agencies discuss aggregated sub-watershed plan in district before DDC council. • VDC/DDC discuss plan during DDC council	Some degree of Co-ordination /collaboration
Implementation	• GO field staff mostly DSCO staff • GO district staff • Local people • VDC/DDC	• Some activities are carried out jointly • In some cases technical support is provided by line agencies • In very few cases other line agencies provided financial support.	Some degree of Co-ordination /collaboration
Monitoring	• GO field staff • Motivators • GO district staff	• Public auditing is carried out • Monitoring is done by DSCO and Project	Nil

5.1.2 Existing Inter-agency co-ordination and integration mechanisms in BIWMP

In EU supported Bagmati Integrated Watershed Management Project (Tungan sub-watershed), the following mechanisms are adopted (until September 2000) for inter-agency co-ordination and integration. At the central level, a Project Steering Committee (PSC) has been formed to co-ordinate the relevant bodies. The Secretary of Ministry of Forests and Soil Conservation chairs PSC and other line ministries and departments representatives participate as members. The PSC has responsibilities to approve the annual budget, work plan and advise the Project Management Unit (PMU) on the policy matter as in intended. However, the PSC could not co-ordinate relevant agencies in centre and advice to PMU.

At the district level, DSCO is responsible for co-ordination and integration with other line agencies. DSCO has government employs as well as project hired temporary staff (district team). In addition, PMU has other disciplinary staffs for technical backstopping to districts. The district team is mainly involved in sensitisation, needs assessment, prioritisation, planning, implementation and follow-up process in the field. Many of these staff are deputed in the field to facilitate and mobilise local people for watershed resources conservation and management. Although various line agencies field offices and staffs are working in same sub-watershed, there is no co-ordination and integration among these agencies during field level group mobilisation, planning and implementation stages. Besides there are

As a matter of fact, with regard to the planning, implementation and follow-up of watershed management programmes in BIWM, it is found that co-ordination and integration of the line agencies is weak. BIWMP staff carries out all activities. Because, BIWMP has multi-disciplinary support team in the PMU for technical back up to the districts. In addition, if more support on technical matters is necessary, there is provision of employing national and international consultants. But there is still the question about sustainability of activities after phase out of project.

In above figure, it is illustrated that DSCO has separate staffs and own process for identifying and selecting the development projects. The submission of aggregated sub-watershed plan to the DDC seems only for formality. There is no thing more to do about co-ordination and integration because many relevant line agencies are in separate committee. It seems that the planning and decision making are mostly intra-department with very little involvement of local authorities and other line agencies. Although, BIWMP has a working strategy to make partnership between line agencies and district authorities in a participatory decision making process, no single meeting has been organised in district and sub-watershed with the line agencies and district authorities for co-ordination and integration.

The various parties or institutions' involvement, their relationship and existing degree of co-ordination in the different stages of integrated watershed management (BIWMP) is given below (table 11). The existing degree of co-ordination with the line agencies in the planning stage seems some limited level of co-ordination particularly in district level planning. However, in all stages no co-ordination has been found.

Table 11: actual co-ordination practices (BIWMP) at the district level

Stages of W/S Mgt.	Parties/Institutions involved	Types of relationship	Existing degree of co-ordination
Sensitisation	• DSCO staff • Social Mobilises	• The sensitisation and awareness creation activities carrying out by DSCO staffs and social mobilises.	Nil
group formation	• DSCO staff • Social Mobilises	• Generally DSCO staffs are involved • Separate hamlet groups formed	Nil
Planning	• DSCO staff • Social Mobilises • GO district staff • Local people • DDC	• Generally planning is carried out through local people's participation • Generally DSCO staff facilitate to CDG during planning • Few district line agencies discuss aggregated sub-watershed plan before DDC council. • DDC discuss plan during DDC council	A small degree of communication
Implementation	• DSCO staff • Local people	• Generally all activities are carried out by DSCO	Nil
Monitoring	• DSCO staff • Project	• Joint monitoring is rarely carried out • Monitoring is done by DSCO and Project	Nil

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Interviews: List of persons met and organisations visited during the fieldwork are given in Appendices 1 and 2.

Appendices

Appendix 1: List of persons met and discussed during the fieldwork

Persons met in Kathmandu

1. Mr. Mohan Prasad Wagley – DG, DSCWM
2. Dr. Shiva H. Achet – DDG, DSCWM
3. Mr. Rabin Bogati – PM, NEP-DKWMP/SCWMC/NRMSAP
4. Mr. Per Hartmann – CA, NEP-DKWMP/SCWMC/NRMSAP
5. Mr. MD Joshi – Training Consultant, SCWMC/NRMSAP
6. Mr. Bharat Pudasaini – DSCO, Gorkha and Ex- PM, NEP-DKWMP/SCWMC/NRMSAP
7. Mr. Basant Rimal – National Co-director, BIWMP
8. Mr. Durga Bahadur Dura – Asst. Soil Conservation Officer, BIWMP
9. Mr. H.N. Manandhar – Ex. Advisor, NEP-DKWMP/SCWMC/NRMSAP

Persons met in Nuwakot District

1. Mr. Bharat Dhungana –DDC Chairman, Nuwakot
2. Mr. Narayan Parsad Khatiwada – DDC Vice-Chairman, Nuwakot
3. Mr. Bhawani Prasad Parajuli – LDO, Nuwakot
4. Mr. Ram D. P. Yadav – DSCO, Nuwakot
5. Mr. Suman Rijal – District Development Advisor, PDDP, Nuwakot
6. Mr. Sudhir Chandra Paudel – District Cottage Industry, Nuwakot
7. Mr. Shachet Bahadur Nepali (Ghimere) – DADO, District Agriculture Development Office, Nuwakot
8. Ms. Shabnam Shivakoti (Aryal) – Asst. Planning Officer, District Agriculture Development Office,
9. Mr. Danda Pani Neupane, Farm Manager, Horticulture Farm, Nuwakot
10. Dr. Rajesh Jha, Asst. Livestock Officer, District Livestock Development Office, Nuwakot
11. Mr. Hari Pyakurel – VDC chairman, Gerkhu
12. Mr. Chandra Bahadur Pyakurel – VDC Secretary, Gerkhu
13. Mr. Madhu Lamsal, VDC chairman, Bageshwori
14. Mr. Shamvhu Pd. Nepal, Ranger, Field staff
15. Mr. Anil Kumar Karna, Ranger, Field staff
16. Mr. Resham Dahal, JT, Field staff
17. Ms. Tulsa Dhungana – Motivator
18. Ms. Iswori Thapa – Motivators
19. Many local leaders, CDC members

Persons met in Lalitpur district

1. Mr. Madhav Prasad Paudel, DDC Chairman, Lalitpur
2. Mr. Saradabhakta Paudel, Local Development Officer, Lalitpur
3. Dr. Binod Sharma – DADO, District Agriculture Development Officer, Lalitpur
4. Mr. Govinda Kafley – DFO, District Forest Office, Lalitpur
5. Mr. Khureshev Shrestha – DSCO, Lalitpur
6. Mr. Bed Bahadur Lama – Team Leader, Local trust fund Board, DDC, Lalitpur
7. Mr. Basu Dev Roy – Livestock Development Officer, DLDO, Lalitpur
8. Mr. Dhes Bhakta Mallik – ASCO, District Soil Conservation Office, Lalitpur
9. Mr. Ganesh Pd. Pathak – Overseer, District Soil Conservation Office, Lalitpur
10. Mr. Ram Shawartha Yadav, Ranger, District Soil Conservation Office, Lalitpur
11. Mr. Shayam Raj Bajgai – Social Mobiliser – LGP, Gotikhel, Tungan Sub-watershed
12. Mr. Ram Kripal Shah – JT- Livestock Service Centre, Gotikhel
13. Mr. Indra Bahadur Ghalan – VDC vice-chairman, Gotikhel
14. Mr. Hemanta Parajuli – Head Master, Mahakal Higher Secondary School
15. Mr. Nil Kantha Paudel – JT, Agriculture Service Centre
16. Mr. Krishna Sudan Maharjan – Health Assisstant- Ilaka Health Post,
17. Mr. Udhav Pd. Parajuli – Ward Chairman, Gotikhel -2
18. Many local leaders, CDC members

Appendix 2: List of Organisations Visited

1. Department of Soil Conservation Watershed Management
2. Nepal-Denmark Watershed Management Project
3. Bagmati Integrated Watershed Management Project
4. International Central for integrated Mountain Development (ICIMOD)
5. District Development Committee, Nuwakot
6. District Soil Conservation Office, Nuwakot
7. District Agriculture Development Office, Nuwakot
8. District Forest Office, Nuwakot
9. District Livestock Service Office, Nuwakot
10. Horticulture Farm, Nuwakot
11. District Cottage Industry, Nuwakot
12. Participatory District Development Programme, PDDP, Nuwakot
13. District Development Committee, Lalitpur
14. District Agriculture Development Officer, Lalitpur
15. District Forest Office, Lalitpur
16. District Soil Conservation Office, Lalitpur
17. Local trust fund Board, DDC, Lalitpur
18. District Livestock Servicet Officer, Lalitpur

Appendix 3: Checklist for interview to DSCWM/DSCO and Project staff

1. General Information:

Interview Number:

District:

Sub-watershed:

Interview date:

Interviewer:

2. Personal details

1. Name:
2. Designation:
3. Office:

3. Objectives, Activities and Institutional framework

1. What are objectives of project?
2. What are activities of Project?
3. In which institutional framework do you working?

4. Programme Planning and Implementation

1. How do you select sub-watershed area?
2. Who are involved in selection of sub-watershed?
3. Do you think watershed management needs multi-disciplinary and multi-sector involvement?
2. If yes, What you designed and planed co-ordination and integration for Participatory Integrated Watershed Management?
3. What information needed during the sub-watershed selection?
4. Do you work through existing local farmer's group or make new group?
5. Why you not working through existing group?
6. Have all stakeholders been listed?
7. What are the interests of stakeholders?
8. Who support on identified problems? From your organisation alone or other line agencies also?
9. Do all line agencies involve during identifying community problems? If yes, How?
10. How do you make participatory community plans?
11. Do all concerned line agencies involved during planning?

12. If yes, How they involved?
13. What information exchanged/needed during planning an implementation among all agencies?
14. What is your role during programme planning and implementation?
15. Do you provide any subsidy to CDG or User group to implement activities? If yes, in which programme and what?
16. Do you hear any comment from CDG or User group about subsidy policy? If yes, what?
17. How do you co-ordinate yours planning process with existing District Development planning system?
18. What activities you did last year?
19. Do you think some degree of co-ordination mechanism required for watershed management? If yes, what types?
20. What are out-comes from co-ordination and integration?

5. Problem and constraints in co-ordination and integration

1. What types of problems/difficulties you have been facing on co-ordination and integration in participatory integrated watershed management?
2. Why you facing these difficulties?
3. How can develop a co-ordination and integration mechanism?
4. Can you give a successful story about co-ordination mechanism?

Appendix 4: Checklist for interview to Line Agencies

1. General Information:

Interview Number:

District:

Sub-watershed:

Interview date:

Interviewer:

2. Personal details

Name:

Designation:

Office:

3. Objectives, Activities and Institutional framework

1. Do you know, any participatory integrated watershed management project implementing in this district?
2. If yes, What types of activities have been implementing?
3. Do you think all these activities can perform from one organisation?
4. Do you think, watershed management needs multi-disciplinary and multi-sector involvement?
5. Is there your any field office in that sub-watershed area?
6. Did you implement some activities in that sub-watershed area?
7. What and how do you implement your activities?
8. How do you integrate your programme with watershed management programme?
9. Did you involve in selection of sub-watershed area?
10. What information needed during the sub-watershed selection?
11. Do you work through existing local farmer's group or make new group?
12. Why you not working through existing group?
13. Did you involve during identify community problems of watershed programme? How?
14. What you supporting on identified problems? Where?
15. How you make participatory community plans?
16. Did your organisation involve during sub-watershed planning?
17. If yes, How?
18. What information exchanged/needed during planning an implementation among all agencies?
19. What is your role during programme planning and implementation?
20. Do you provide any subsidy to CDG or User group to implement activities? If yes, in which programme and what?
21. How do you co-ordinate your planning process with existing District Development planning system?
22. What activities you did last year?
23. Do you think some sort of co-ordination mechanism required for watershed management? If yes, what types?
24. What are out-comes from co-ordination and integration?
25. What information should exchanged for co-ordination and integration?

4. Problem and constraints in co-ordination and integration

1. What types of problems/difficulties you have been facing on co-ordination and integration in participatory integrated watershed management?
2. Why you facing these difficulties?
3. How can develop a co-ordination and integration mechanism?
4. Can you give a successful story about co-ordination mechanism?

Appendix 5: Checklist for interview to Village leaders and CDC members

1. General Information:

Interview Number:

District:

Sub-watershed:

Mico-watershed/User group name:

Interview date:

Interviewer:

2. Personal details

Name:

Gender: M/F

Designation:

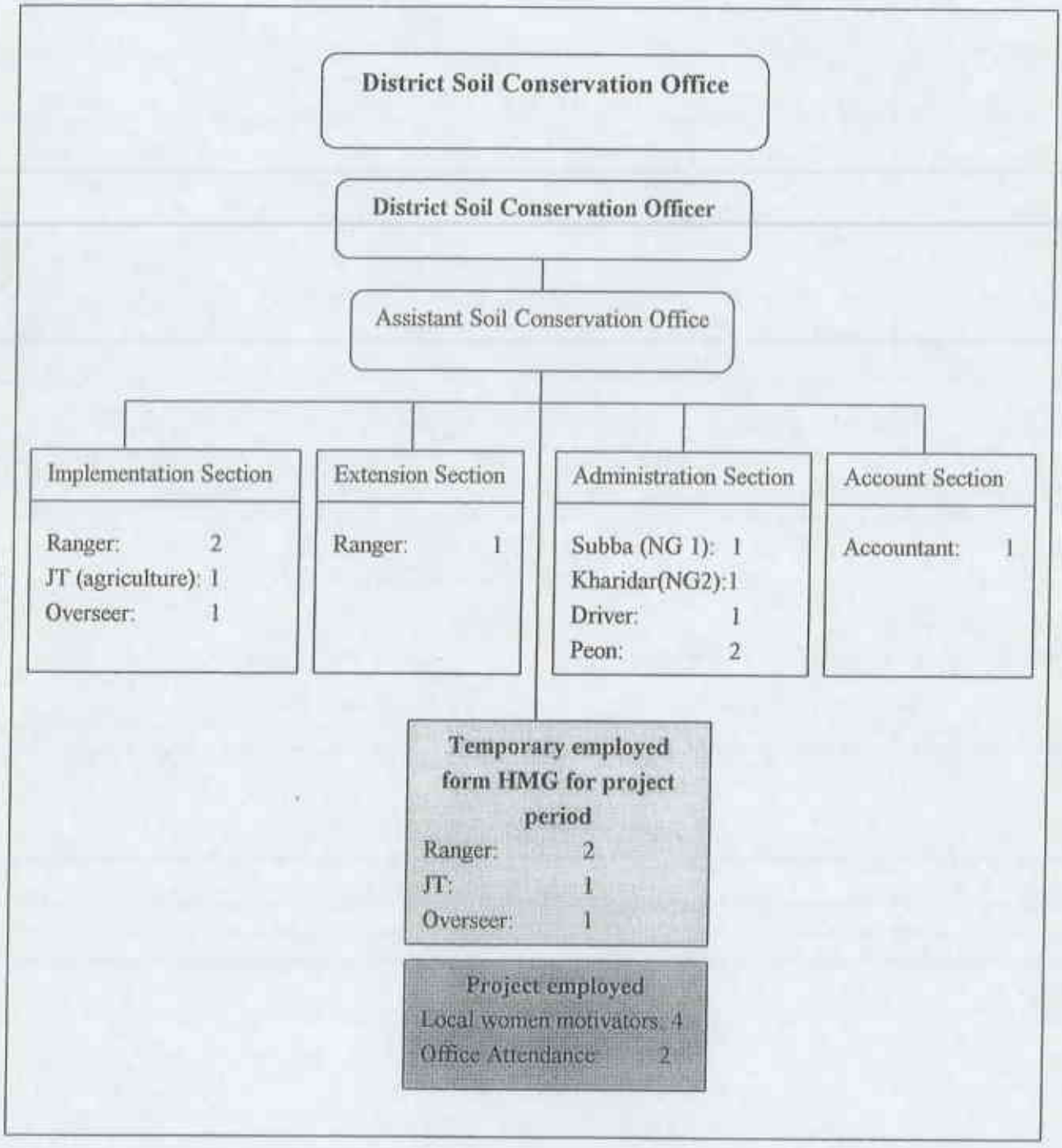
VDC/DDC:

3. Check list for Objectives, Activities and Institutional framework

1. Do you know any projects work in your village/sub-watershed area?
2. How the project works?
3. Do any offices are present in your village?
4. What these offices do? How?
5. How you involve in the Watershed management Project activities?
6. How you identify community problems?
7. Do different agencies involved during problem identification?
8. Who support on your groups identified problems?
9. How you make participatory community plans?

10. Did many agencies involve during planning?
11. What you get supports from project/DSCO during programme planning and implementation?
12. Do you get any subsidy from DSCO/Project for implementation of activities? If yes, what subsidy?
13. Do you know only DSCO/Project staff support in watershed management activities or other agencies also support?
14. If other, please mention, which other agencies support on what programme?
15. How you co-ordinate your planning process with existing Ward/VDC planning system?
16. Do all parties involve in participatory planning and implementation of watershed management activities?
17. Do you think involvement of all agencies is necessary for Integrated Watershed Management?
18. If yes, what types of co-ordination mechanism required for watershed management?
19. What types of problems you have been facing in participatory integrated watershed management?

Appendix 6: Organisational chart of DSCO, Nuwakot



Appendix 7: Organisational chart of BIWMP