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**Pathways to Sustainable Livelihoods: Coping and Adapting in
two Himalayan Villages, Himachal Pradesh, India.**

By
Laurie Ham

A Practicum Submitted in
Partial Fulfillment of the
Requirements for the Degree,
Master of Natural Resources Management

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**PATHWAYS TO SUSTAINABLE LIVELIHOODS:
COPING AND ADAPTING IN TWO HIMALAYAN VILLAGES,
HIMACHAL PRADESH, INDIA**

BY

LAURIE HAM

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial
fulfillment of the requirements for the degree of**

MASTER OF NATURAL RESOURCES MANAGEMENT

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Abstract

Mountain ecosystems comprise approximately twenty per cent of the world's landscape and are home to ten per cent of the world's population (Denniston 1995). The Himalaya's alone house 121 million people; people who struggle to exist in this vulnerable, diverse and rapidly changing landscape. Much literature points to the increasing degradation of mountain environments world wide; such as increased landslides and avalanches, abandoned crop terraces, reduced waterflows for irrigation, changes in botanical composition of forests, etc. (Jodha 1992). Further, this degradation is seen in the increasing impoverishment of the human population.

Rural individuals, households and communities which are situated within vulnerable and rapidly changing environments, such as the Indian Himalaya, routinely plan for and manage risk and uncertainty (Chen 1988). These risk minimizing activities, pursued in both "normal" years and in seasons or periods of abnormal and unpredicted stress and uncertainty, fall under the rubric of coping and adaptive strategies. These strategies constitute the ways in which local communities and households have changed their productive activities and modified their community rules and institutions in order to create viable and less vulnerable livelihoods for themselves (Titi and Singh 1994).

The purpose of this research was to investigate the livelihood systems of two mountain villages in the north-west Himalaya and, specifically, the coping and adaptive strategies at work in these livelihood systems. Specific objectives included: (1) to identify coping and adaptive strategies presently employed by households and communities within a mountain ecosystem; (2) to establish the observed strategies' capacities to contribute to sustainable livelihoods within the village and larger regional context; (3) to gain a preliminary understanding of policies which have affected household and community strategies in the past, both positively and negatively; and (4) to recommend the underlying principles and priorities for future policy in order to strengthen sustainable strategies.

Field research was carried out for a period of 10 weeks in two rural, predominately agricultural villages situated in the mountainous state of Himachal Pradesh, India. The women of 32 different households, of differing ages and castes, were interviewed. Literature links women's activities directly with household concerns and security, and therefore, the research assumed women to be an appropriate proxy for the household unit, especially with regards to livelihood concerns and security maximizing strategies.

Eight strategies were found to be of particular importance in the lives of the women interviewed. Many of these strategies play integral roles in the agricultural livelihood, of which 85% of the population of the Kullu Valley is involved. The strategies were: (1) the diversification of activities and household inputs; (2) the maintenance of crop biodiversity and landscape diversity in the agricultural system; (3) increasing negotiations with the market; (4) the reliance on agricultural wage labour and employment; (5) building up and drawing down household inventories; (6) the reliance on common property resources; (7) developing social networks leading to reciprocal commodity and labour relations; and (8) the formation of community groups.

With knowledge of these livelihood activities, policy implications were considered. Indeed, policy for mountain development has an important role to play in the achievement of sustainability in that it can work to strengthen already resilient livelihoods or it can weaken them. By understanding livelihood strategies, policy may further reflect the reality on the ground and fortify people's own responses to vulnerability, rather than work against them.

A number of recommendations emerge from the research which are directed largely to the audience of decision makers in government (both local and more regionally situated) and research institutions which concern themselves with mountain development and livelihood issues. Briefly, these are:

- (1) It is crucial that the question of market integration and sustainability in mountain ecosystems be further addressed through an integrated effort on the part of both research institutions and decision makers.
- (2) The important role of women in the livelihood systems within mountain villages should be given greater recognition in the design of policy created in the name of mountain development.
- (3) Policy for sustainable livelihoods in the mountain ecosystem should be formulated with a number of broad principles in mind, including:
 - i) Policy meant to encourage development within the mountain context must not be simply an extension of "plains" policy.
 - ii) Policy must recognize the diversity of livelihood systems at work within the village context.
 - iii) Policy which will directly affect livelihoods must stem from the knowledge and skills of local people and be formulated with their participation.
- (4) Policy for sustainable livelihoods in the mountain context should focus primarily on securing property rights and resource-use rights.

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CHAPTER ONE: Introduction and Overview

1.0 Preamble

Although mountain ecosystems, and more specifically the Himalaya, are often perceived of as symbols of permanence and strength, they are not "made of immutable rock but of unstable geological formations and vulnerable ecosystems...the natural processes of uplift, tectonic movement, and erosion make the range one of the most dynamic landscapes on Earth, prone not only to natural hazards, but also to human damage" (Denniston 1993). Approximately 121 million people subsist on Himalayan fields, pastures, and forests while, on the populated plains below, millions of people depend on the health of the mountains above them. If sustainable development and global livelihood security are truly visions for the future, ensuring the sustainability of one of Earth's most threatened environments must be given priority.

Rural individuals, households and communities which are situated within vulnerable and rapidly changing environments, such as the Indian Himalaya, routinely plan for and manage risk and uncertainty (Chen 1988). These risk minimizing activities, pursued in both "normal" years and in seasons or periods of abnormal and unpredicted stress and uncertainty, fall under the rubric of coping and adaptive strategies, or more broadly, household strategies. These strategies constitute the ways in which local households and communities have changed their productive activities and modified their community rules and institutions, in response to vulnerabilities, in order to "create" viable livelihoods for themselves (Titi and Singh 1994).

Increasingly, it is being recognized that an understanding of the diverse number of coping and adaptive strategies employed by households and communities can make a great contribution to the achievement of secure and sustainable livelihoods in many ecosystems; the "recognition of the central importance of vulnerable people's *own* responses to the threat of food and livelihood insecurity by planners and policy-makers [is] long overdue" (Davies

1993). Policy for livelihood security and interventions by non-governmental organizations (NGOs) and other agencies must "complement and strengthen rather than substitute for people's own efforts in dealing with contingencies, [be] appropriate to actual and not assumed needs, and [ensure] that people are seen as actors in the process of change rather than as passive recipients of aid and relief" (Agarwal 1990: 342).

1.1 Issue Statement

Coping and adaptive strategies that households and communities employ in vulnerable ecosystems play an integral role in resource control, use, allocation, and ultimately, livelihood security. These strategies will have socioeconomic, cultural, political and ecological impacts; impacts which might assist the poor in mobilizing their options to make the transition from vulnerability to secure and sustainable livelihoods, or impacts which might foreclose options for succeeding generations.

1.2 Purpose

The purpose of the research was to identify coping and adaptive strategies that have the capacity to self-empower the poor, in mountain ecosystems, to increase their own capacities to initiate and manage the transition towards livelihood security and, ultimately, sustainable livelihoods.

1.3 Objectives

The specific objectives of this research include the following:

- 1) To identify coping and adaptive strategies presently employed by households and communities within a mountain ecosystem.
- 2) To establish the observed strategies' capacities to contribute to sustainable livelihoods within the village and larger regional context.

- 3) To gain a preliminary understanding of policies which have affected household and community coping and adaptive strategies in the past, both positively and negatively.
- 4) To recommend the underlying principles and priorities for future policy in order to strengthen sustainable strategies.

1.4 Research Procedure

The basis of the methodology used to study livelihood security in mountain villages was largely qualitative, borrowing both concepts and research tools from agricultural systems research (Cornwall et al. 1993) and rapid rural appraisal (RRA).

Rapid Rural Appraisal has been defined as

...an approach for quickly developing a preliminary understanding of a situation where specific research techniques are chosen from a wide range of options and where it is assumed that (1) all the relevant parts of a local system cannot be defined in advance, (2) the local system is best understood by combining the expertise of a multidisciplinary team that includes locals, while combining information collected in advance, direct observations and semi-structured interviews, and (3) time should be structured to ensure team interaction as part of an iterative process (Beebe 1995: 43).

In the late 1970's, this particular methodological approach to understanding agricultural systems grew out of increasing dissatisfaction with "two common approaches to development research, 'rural development tourism' and 'survey slavery'" (Chambers 1983 as cited in Cornwall et al. 1993). Rapid rural appraisal combines a range of field techniques, including diagramming, transect walks, observational skills, interview and ranking techniques for rapid and reflexive data collection. Hallmarks of this approach include multi-disciplinarity, cumulative learning, a semi-structured and flexible research program that is regularly reviewed and refined, and an emphasis on exploring local categories, classification and perceptions (Cornwall et al 1993). Due to the short period of field research, the tools of RRA proved invaluable as they allowed a quick overview and preliminary understanding of the livelihood systems at work in the Kullu Valley. Further

this approach allowed the multi-disciplinary research team¹ to truly work as a unit, highlighting each of the researchers own strengths and allowing for a continual reflection and revision while in the field.

1.4.1 Literature Review

The research proceeded in two distinct phases; the first involved preparation for field work and the second consisted of the time spent in the field itself. The main component of the first phase of the research was a literature review. This task:

- 1) provided a review of pertinent topics including: poverty, empowerment, sustainable development, sustainable livelihoods, and issues of importance in mountain ecosystems;
- 2) further defined the concept of coping and adaptive strategies and the role these strategies play in rural communities in mountain ecosystems, specifically with regards to livelihood security;
- 3) enabled the documentation of coping and adaptive strategies already identified in the literature.

Library facilities, including access to CDRoms and INTERNET, were used at the University of Manitoba, the University of Himachal Pradesh (Simla), the University of Delhi, and the International Institute for Sustainable Development. Helpful literature was also obtained from two non-governmental organizations (NGOs) situated in New Delhi: the Center for Women's Development Studies and Development Alternatives.

1.4.2 Field Research

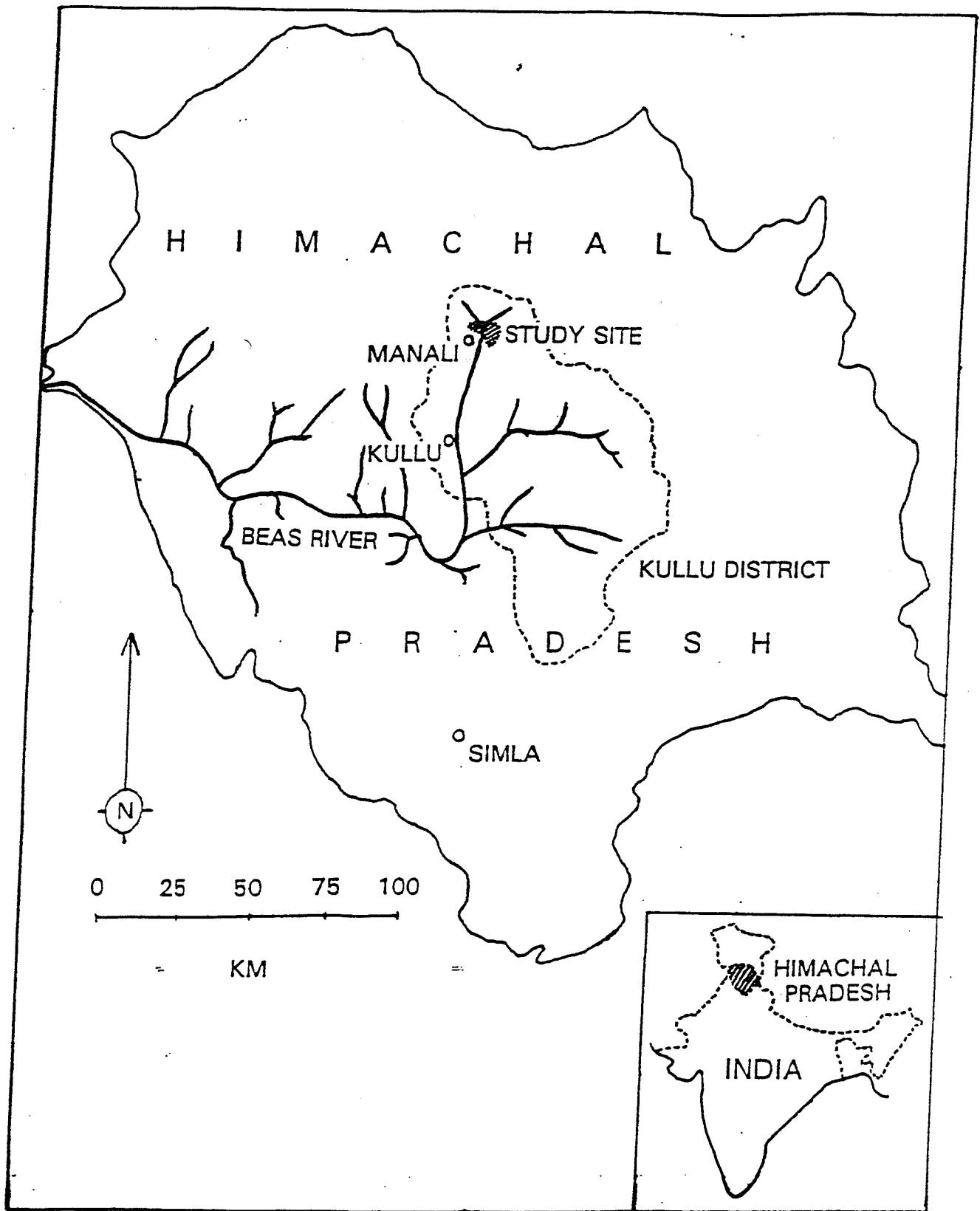
Field work was conducted for a period of ten weeks in the summer of 1994 with the purpose of identifying coping and adaptive strategies employed by or recently adopted by

¹The research team referred to consists of four student researchers all affiliated with the Shastri Project. Each researcher had a unique academic backgrounds, including anthropology, agriculture, history and physical geography.

households and communities within the study area. Two villages were chosen for a more in-depth study, Chachoga and Goshal. A number of factors contributed to the selection of the study site, from the larger ecosystem to the two study villages themselves, including the following:

Institutional Linkages. The mountain ecosystem was chosen as the focus for this particular study. This was done as this research finds its conceptual roots within two larger research protocols; "Adaptive Strategies for Sustainable Livelihoods in Arid and Semi-Arid Lands" initiated by the International Institute for Sustainable Development (IISD) and "Sustainable Development of Mountain Environments in India and Canada" pursued under the Shastri Partnership Programme. The former project seeks to identify pathways to sustainable livelihoods in diverse ecosystems throughout the world. These ecosystems include: arid and semi-arid lands, large scaled agricultural plantations, small island and coastal ecosystems, forest ecosystems and mountain ecosystems. This research represents the first of the research on mountain ecosystems. The latter project has the purpose of examining conventional and alternative approaches and policies to land resources management in India and Canada (Berkes et al. 1995). The two projects, along with the present research, share the common concern of mountain sustainability and livelihood security for mountain inhabitants. The Shastri project, further partnered with the Delhi School of Economics, chose the mountainous state of Himachal Pradesh in which to locate their research.

Himachal Pradesh. The Himachal Region is an area of 56 019 km² covering the state of Himachal Pradesh. It lies south of Kashmir, north of the Punjab Plain, to the north west of Uttar Pradesh and directly west of Tibet (Singh 1971). Himachal Pradesh, located in the Himalayan region, is comprised of various climatic systems, from sub-tropical to sub-temperate. The Kullu Valley houses the upper watershed of the Beas River and is part of the Hindu-Kush Himalayan watershed system (Figure 1).



Produced by Colin Duffield

Figure 1. Location of the Kullu Valley in the state of Himachal Pradesh, India.

The Kullu Valley is located within the Pir Panjal Range of the Western Himalaya. The area is typified by the vertical zonation of eco-climatic zones characteristic of mountain ecosystems, with decreasing temperature as elevation increases (Jodha 1992). Manali, a larger town central to the study area, locates itself on the valley bottom at approximately 2000 m. The immediate side valley slopes rise approximately 2500 m above Manali to an elevation of 4000 m. The major summits, peaking at approximately 6500 m, are set back from these side valley slopes. The major summits and their surrounding mountain groups support small to medium sized glacial systems which act as important water sources for the Beas and its tributaries (Berkes et al 1994).

This area was seen of interest to study for a variety of reasons. Presently, the Kullu Valley is undergoing a period of rapid change. First, the economy is moving from one of subsistence, characterized by a diverse and, for many years, robust mountain agriculture system to one that is mainly cash driven, comprised largely of one crop and highly integrated with and dependent on the market. Second, the development of the tourism industry in the area, largely resulting from the inaccessibility of the neighbouring Kashmir, has resulted in the unplanned and unprecedented explosion of hotels and, concurrently, jobs in the larger towns in the valley. Finally, a surplus of wage labour and opportunities for seasonal employment, and the close proximity of the valley to occupied Tibet and troubled Kashmir, creates a very transient and heterogeneous society. All of these forces have lead to increased pressure on the environment as vying interests attempt to gain and secure access to an already stressed resource base. The valley, although not without a dynamic history, is undergoing another period of rapid upheaval, adjustment and change. All of these processes have implications for rural villages at the periphery of the rapidly growing towns and larger market centers within the valley (Photo 1).

Photo 1. (*right*) Overlooking a small village on the way up to Hampta Pass south of the study villages.

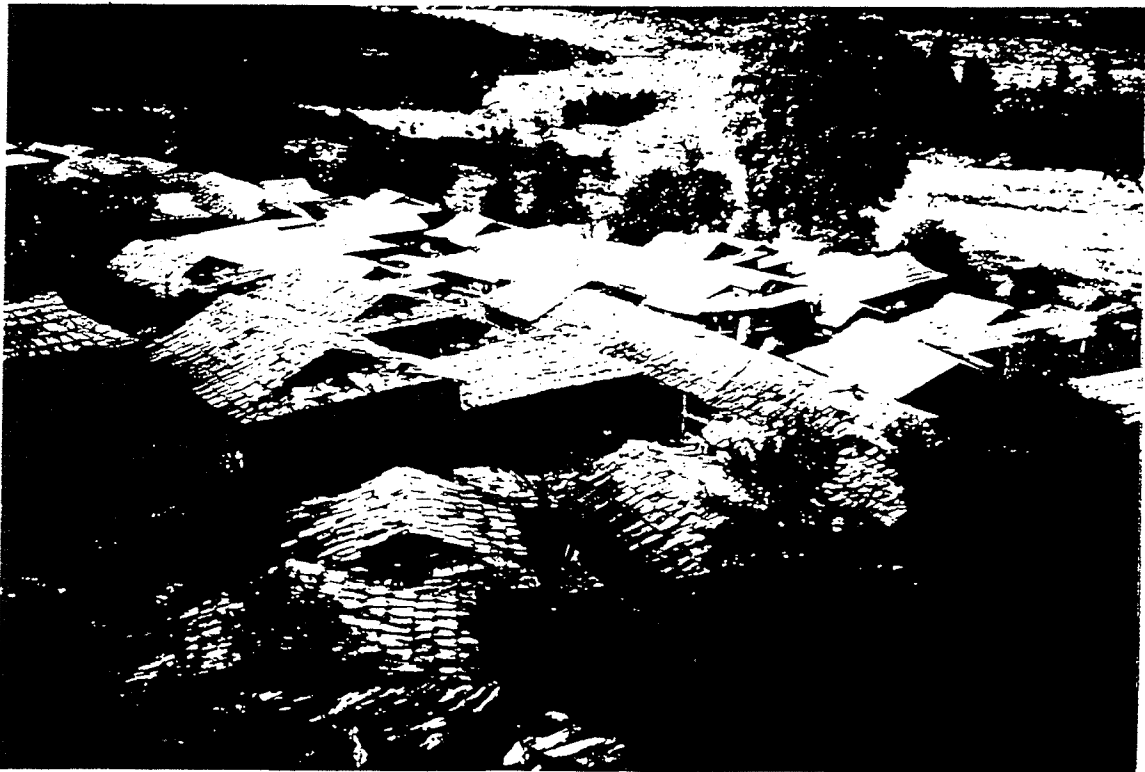
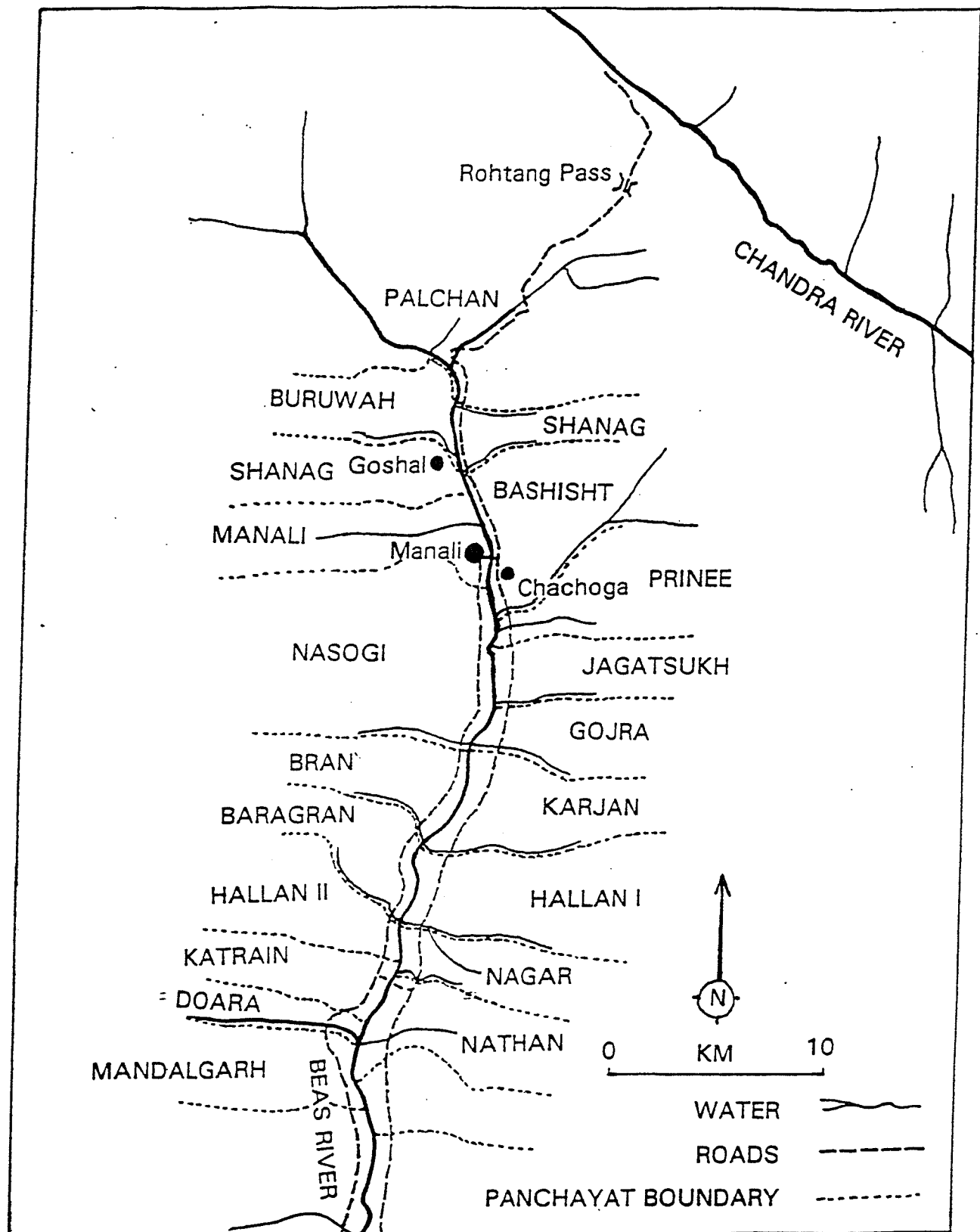


Photo 2. Overlooking the rooftops of Goshal.

The research team spent the first two weeks in the study region on a series of transect walks from Manali to the Hampta pass, Manali to the Rohtang pass, Manali to the Solang Valley and through a number of villages on the periphery of Manali. These walks were done to gain a preliminary understanding of settlement patterns, the agricultural system, and the vertical zonation and corresponding natural resources in the area. Concurrent with these activities, a number of contacts were made in the forest department in Manali and in the larger regional center to the south, Kullu. Further, the research team met with and established a relationship with the only active NGO in the area, The Society for Holistic Action in Rehabilitation and Ecology (SHARE). The interactions with these consultants proved to be invaluable as they provided the researchers with greater knowledge of resource use in the region, resource conflicts, production strategies and suggestions on villages in which to undertake further study.

Decisions throughout the research process were largely made in a consensual manner among research team members. The research team also had informal meetings with key informants in both villages to determine which women would be interviewed. The researchers and the key informants established criteria for selecting interviewees, including availability, level of interest and participation in the *Mahila Mandal*, etc.

From interactions with professional resource managers working in the area, two villages emerged as appropriate for further study (Figure 2). The forest guard from Manali offered to introduce the research team to the women's group in Chachoga; a group with which he had a relationship and an already established trust. The researchers were warmly received by the women's group (*Mahila Mandal*) which seemed eager to talk about their lives and experiences. Several days later, the *Mahila Mandal* consented to participate in the study and, in return, it was agreed that a small donation would be made to the day care which they operate in Chachoga. The village headman (*pradahn*) was then approached and also consented to the study being undertaken in the village.



Produced by Colin Duffield

Figure 2. Manali, Chachoga and Goshal within the upper Kullu Valley.

The second village chosen for study was Goshal (Photo 2). The research team was introduced to a young agriculturalist/horticulturalist by the owner of the guest house where the research team stayed. This man was the son of the village *pradahn*, spoke excellent english, had excellent relations with the majority of the households in the village and was very knowledgeable about the area. He was invited to join the research team and also act as a key informant and translator. His father, the *pradahn*, also consented to the study being undertaken in the village. Therefore, it was decided that research would be conducted in both Chachoga and Goshal.

After meeting with the *Mahila Mandal* of Chachoga and being welcomed into the community, the research continued with a series of unstructured interviews in that village. A translator was sought, and, again, the owner of the guest house introduced the research team to a young woman living in Manali who had an operable command of english. The female translator worked primarily with the two female researchers in Chachoga, particularly when talking to women. The male translator worked primarily with the two male researchers in Goshal, but also with the female researchers when talking to the women in Goshal. This seemed a sensible thing to do as he already had established rapport with the women of his own village.

Therefore, interviews proceeded in Chachoga after a relationship was established with the women's group, our purpose for research was explained, permission sought from the *pradahn*, and secondary sources were reviewed. Women were asked if they wished to participate, assured of confidentiality and offered the opportunity not to participate. No one in Chachoga refused to be interviewed, although some women in Goshal did not wish to talk to the research team.

Unstructured interviews were carried out with women specifically (Photos 3 and 4). The decision to talk to women of different households at length was made because the activities of women are seen as being of primary importance in the attainment of household security (Agarwal 1990 and 1988, Phillips 1989, Chen 1988, CWD 1987). Often the sole



Photo 3. A researcher during a typical interview with a number of women in one village.



Photo 4. A woman with her children in one study village.

actors in daily subsistence activities, women contribute to the household in a large variety of ways -- ways which have held little or no positive cultural valuation for a variety of reasons until recently. A recognition of these contributions has occurred only in the past decade.

For the purposes of this study, households were viewed as homogeneous units of analysis and women were seen as representing their household's interests when participating in daily activities. Women were, therefore, chosen as a proxy for the household unit in this research. Admittedly, assumptions such as this very much simplify the concept of the household (further discussed in chapter 2). Land and animal assets were rarely owned by the women, except in the rare cases of divorce or widowhood. Assets were, however, in large part assumed to be owned and controlled by a household unit as a whole. This, of course, ignores the intra-household allocations of both resources and power. Therefore, for the purposes of analysis, households were assumed to be homogeneous units, however it should be recognized that allocation of options and entitlements, as well as decision making powers, might differ markedly *within* the household, predominantly due to gender and age.

In total, the women of 32 different households, of differing ages and castes, were asked about their household's land and animal assets and seasonal activities. The discussion of seasonal activities incorporated a discussion of labour relations, the diversity of income sources, use and reliance on common property resources and diverse sources of livelihood security. A small gift meant to convey the appreciation of the researchers was given to the women after each interview -- often a bag of bananas or some other fruit.

Appendix A is an example of the questions and topics explored during the interview process. The researcher, although a participant in the unstructured interview process, directed the flow of the conversation along the lines of a number of broad themes, including: the agricultural system, the role the women played in this system, time spent collecting fuel or fodder from the forest, and seasonal trends. A number of strategies were identified in the literature prior to the field season and the broad themes within the interviews attempted to touch on these strategies and potentially verify their presence in the particular village.

Further, it was hoped that other strategies would be brought to light. The interview schedule was initially ambitious and was revisited, revised and simplified a number of times throughout the field season.

Every evening, the days' interviews were reviewed and more detailed field notes were compiled. Time was set aside every evening to allow for a discussion of the days' events among the research team. This provided for further reflection on the day and highlighted new areas of inquiry. New questions could then be incorporated into discussions with women during interviews the following morning. Further, the research team was able to revisit women from previous interviews to verify aspects of their interviews with the purpose of maximizing the accuracy, reliability and validity of the data collected.

The majority of the field season was spent in Chachoga; it was here that initial trends, relationships and dynamics were explored. Subsequently, unstructured interviews, similar to those conducted initially in Chachoga, were conducted in Goshal with the purpose of verifying and substantiating information (seasonal calendars, role of reciprocal labour relations, etc.) collected from the initial interactions in Chachoga. Since the two villages were found to differ in a number of ways, the time spent in Goshal proved invaluable in that it offered a chance to verify while bringing to light some differences between the two villages.

Unstructured interviews were also carried out with a number of individuals external to the villages. The forest guard employed by the Himachal Pradesh Department of Forestry was interviewed as were several women involved in *Mahila Mandals* in neighbouring villages and throughout the valley. Throughout the summer, the research team also attended and participated in a number of workshops and meetings organized by SHARE involving women from many villages throughout the valley.

As the field season progressed, groupings and categories of livelihood activities emerged largely from discussions among the research team. Data was grouped into

preliminary categories and then organized into tables; hence a preliminary analysis of the livelihood systems at work in the villages began in the field itself. This started an iterative process of data collection, discussion and reflection, preliminary analysis, and then taking emergent categories and themes back to the women while concurrently collecting more data. After the field season concluded, analysis continued largely along the lines of the categories established in the field. Approximately eight months after the field season, a series of technical reports summarizing the preliminary findings and results of the research were prepared and disseminated to both interested communities of researchers and several participants in the study. A workshop in the study area in the spring of 1995 allowed the research to be presented, discussed and reviewed again. Valuable feedback was gained throughout this process, particularly by SHARE. This document reflects the feedback that resulted from the spring workshop.

1.4.3 Summary

The research gained insight into how women create their livelihoods and, more specifically, what coping and adaptive strategies are employed by the household and community in negotiating change and uncertainty. The methodology adopted was primarily qualitative and resulted in a body of information which is largely descriptive in nature. This information paints a picture of the daily activities of women, their productive activities and their interactions with the natural resources endowment surrounding their villages.

The research did proceed in a linear fashion in a sense, in so far as contacts were made, relationships were established, permission sought and interviews were carried out. However, embedded in this process was constant reflection among the research team and between the researcher, translator and participants. This allowed the research agenda flexibility as new areas of inquiry could always be incorporated into the unstructured interviews. In this sense, the research in the field was cyclic and iterative. Finally, as descriptive trends seen in the field are interpreted and analysed, a fuller picture of the region

is painted. This analysis is helped by the theoretical constructs presented in the literature which not only provided a framework for analysis during the period after the field research was complete, but also influenced the direction of the research in the field and the initial analysis which took place among the research team while in India.

1.5 Organization

The document is divided into five sections, the first being this introductory chapter. The following section, Chapter Two, provides a more detailed overview of the larger research protocol in which this project finds its conceptual roots and an overview of the literature is provided to clarify concepts central to the research.

Chapter Three details the findings of the field component of the study focusing on the smallholder agricultural system; the predominant livelihood system within the Kullu District.

Chapter Four discusses the strategies detailed above with regards to the roles they play in providing insight into the individual household and village livelihood systems. The role that policy can play in the achievement of sustainable livelihoods is discussed. This is achieved by examining two policies whose negative impacts were seen in the study villages, followed by a presentation of principles and priorities for policy in the mountain context. An understanding of household and community strategies is considered central to this purpose.

Chapter Five summarizes the salient points emerging from the research. The initial objectives of the research are revisited and recommendations are made.

CHAPTER TWO: Literature Review

2.0 Preamble

The purpose of this chapter is threefold. First, the larger research protocol in which this research finds its conceptual roots is outlined. Second, concepts central to both the larger research protocol and the present research are discussed and defined. Concepts covered include: the shifting values in development which have allowed a consideration of livelihoods to emerge, the conditions of poverty and vulnerability, the processes of impoverishment and empowerment, sustainable development and sustainable livelihoods, and coping and adaptive strategies. A brief critique of the common methodological practice of using a "household" as an operational unit of analysis is presented, as well as the overall household strategy framework. This serves the purpose of elucidating the scope and limitations of the research. An understanding of these concepts, considered central to the research, is necessary. Finally, the uniqueness of the mountain ecosystem is briefly discussed.

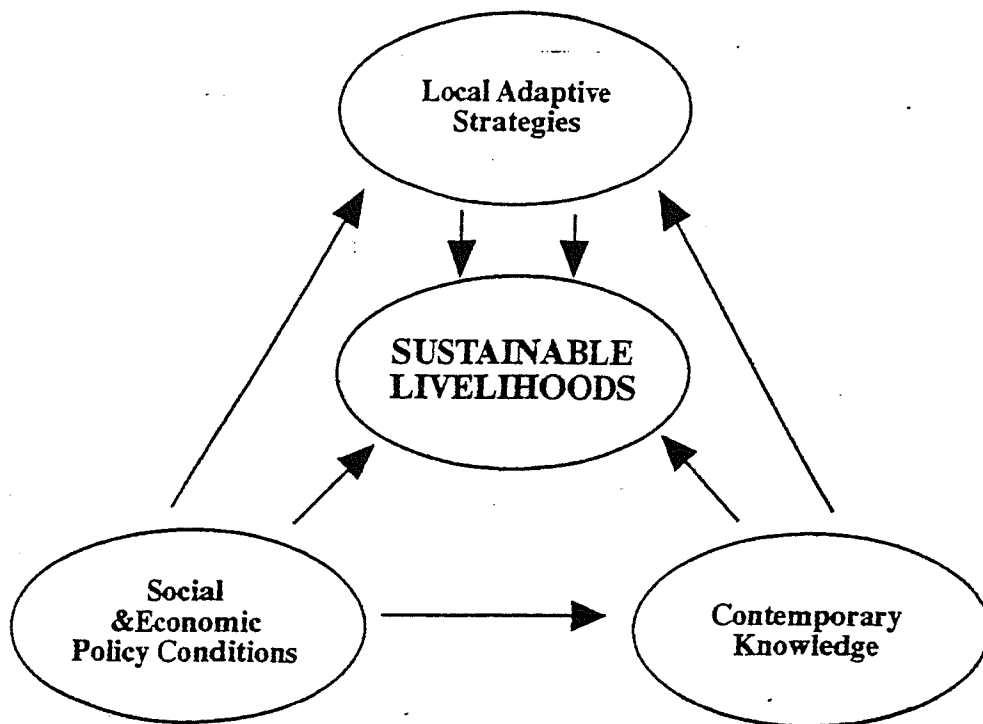
2.1 Conceptual Roots of Research

This research finds its roots in a larger project initiated by the International Institute for Sustainable Development's (IISD) Poverty and Empowerment Program. The larger project, "Adaptive Strategies for Sustainable Livelihoods in Arid and Semi-Arid Lands", is an initiative which attempts to identify adaptive strategies which have actually led to sustainable livelihoods, or have the potential to do so, and to communicate these findings via recommendations to policy makers as to what needs to be done to reinforce community responses (Titi and Singh 1994).

The IISD research is working with communities in five countries in Africa with the immediate objectives of: identifying and defining such adaptive strategies, and the contexts in which they have emerged; identifying those adaptive strategies which can form the basis

of sustainable livelihoods; and identifying the policy contexts which might affect the success of these strategies in promoting sustainable livelihoods, either positively or negatively. The longer term objectives of the IISD project include: to assist in the empowerment of local communities through validating their local knowledge and linking it to contemporary, form knowledge; to create, through the indicators of sustainable livelihoods and project methodology, the basis for wider adoption, replication and the mobilization of resources for community initiatives that would assist in sustainable development for people living in arid and semi-arid lands; and to use the outputs of the project to promote appropriate policy development both at the level of national government and within international agencies (Titi and Singh 1994). The research presented in this practicum report grows from the same conceptual roots as the larger IISD initiative, but places itself in a different socio-economic system; the mountain ecosystem.

Figure 3 represents the main components contributing to sustainable livelihood systems as envisioned by Singh and Titi (1994). The sub-systems are: the local adaptive strategies that people employ which have evolved within the ecosystem, the appropriate environment of social and policy conditions, as well as the appropriate contemporary knowledge systems. Each sub-system has significant contributions to make to the achievement of sustainable livelihoods. This research has as its main objective the identification of local household and community coping and adaptive strategies in a mountain ecosystem, but also attempts to elucidate the links between these strategies and the center circle as well as the policy realm.



Source: Titi and Singh 1994.

Figure 3. The main components contributing to sustainable livelihoods.

2.2 Central Concepts

Although complex to define, an understanding of concepts such as poverty, vulnerability, impoverishment, empowerment, sustainable development, sustainable livelihoods and coping and adaptive strategies is fundamental to the research.

2.2.1 Shifting Values in Development

Concepts such as sustainable livelihoods, community-based resources management, empowerment and the value of traditional ecological knowledge have only recently been given space to emerge as prominent issues due to a larger shift in values away from the traditionally economic-centered development paradigm. This is the paradigm that confuses development with economic growth; measuring “development” as indicated by Gross

National Products, per capita incomes, capital flows and material consumption (Todaro 1994). Almost a quarter century ago, Seers (1972: 21) asked:

Why do we confuse development with economic growth? Surely one could hardly say that the situation depicted by a set of projections was preferable to those shown by another set simply because the former implied higher per capita income. After all, in what sense is South Africa more developed than Ghana, or Kuwait than the U.A.R., or the United States than Sweden?

Now, twenty-three years later, the question still stands. However alternative concepts have emerged to effectively put people, their communities and their capabilities back into the picture. These include the concept of sustainable development and livelihoods and new notions of international development. This emergent paradigm of international development is one in which "development is woven around people" and not vice versa (Chambers 1991, Korten 1993). Chambers states that "where people are consulted, [and] where they participate freely...then economic and social performance are better and development is more sustainable" (1991: 515).

Bernard suggests "turning sustainability on its head by letting the poor set the development agenda" (1990: 6). The self-knowledge of indigenous peoples, both of their surroundings and their needs, should be a primary element in development planning. Chambers argues that truly sustainable development attempts to promote "livelihood security" and, therefore, sustainable livelihoods (1983). This implies sustainable resource-based opportunities "for creating and improving livelihoods at the level of the village" (Bernard 1990: 7). Inherently, this development would empower people by endorsing local level resource control and self determination. "Communities will thus tap the energies of their own citizens at the grassroots rather than accept top-down, state dictated political economic structures"; typified by the "development" that has occurred in the past three decades (Bernard 1990).

Korten summarizes this shift in development philosophies by labeling the first "growth centered" and the latter "people centered" (1993: 13). Growth centered visions of development involve: material consumption; economic returns to firms/capital; a borderless

and unregulated global market; and an economy favouring production for foreign markets, transnational ownership, local specialization, international dependence, financial and environmental borrowing/debt, externalized social and environmental costs, among others. Conversely, people centered visions of development involve: quality of life; needs of everyone; economic returns to households/people; community cooperation; and interlinked and locally regulated market economies favoring: local production for local markets, local ownership, local diversification, self-reliance in basic needs, financial and environmental conservation/saving, internalized social and environmental costs, taxed and regulated removal of basic resources, and assured free access to information and beneficial technology (Korten 1993: 13).

The research presented here is congruent with this emergent paradigm of development. By studying people's own responses to the dynamics of uncertainty, vulnerability and stress -- embodied in coping and adaptive strategies -- people, households and communities are effectively placed in the center of development, where they should be.

2.2.2 Sustainable Development

Is it possible to imagine a kind of development which not only improves the socioeconomic well-being of present and future generations of the poor but also seeks to restore and protect their natural resources? In international development and environmental literature, these questions are being addressed under the rubric of sustainable development (Bernard 1990).

The World Commission of Environment and Development popularized the use of the term sustainable development and defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). The Brundtland Report, considered to be the seminal document regarding sustainable development, has engendered a large body of work regarding this concept both nationally and internationally.

Operationalizing the concept of sustainable development is a difficult task as definitions of sustainable development are continually evolving. Slocombe states "...the implications of sustainable development are different to different people. To some it means

continued economic growth and resource use, but with fewer environmental impacts and more environmental controls. To others sustainable development requires fundamental changes in lifestyles, economies, and societies" (1992: 14). Goodland et al. reiterate the latter meaning, stating "sustainable development is defined as a pattern of social and structural economic transformations which optimizes economic and other societal benefits available in the present, without jeopardizing the likely potential for similar benefits in the future" (1989: 148).

Lélé (1991: 607) offers an excellent critique of the concept of sustainable development. He states "a review of the literature that has sprung up around the concept of sustainable development indicates, however, a lack of consistency in its interpretation". Although sustainable development has been widely embraced within political spheres, the ambiguity regarding the interpretation of the concept makes it inherently weak. Lélé feels that the concept provides us with an incomplete perception of the "problems of poverty and environmental degradation, and confusion about the role of economic growth and about the concepts of sustainability and participation". These weakness might lead to inadequacies or contradictions in policy making and program development. Adams (as cited in Bernard 1990) reiterates these criticisms when saying the ideology of sustainable development is confused, eclectic, conventional and reformist.

However, by translating the concept of sustainable development into discrete principles, a further translation to action is more accessible. Gardner proposes eight principles of sustainable development, including: seeking satisfaction of human needs, maintenance of ecological integrity, achievement of equity and social justice, social self-determination and cultural diversity, through goal-oriented, relational or systems-oriented, adaptive and interactive process (1989). Titi and Singh (1993: 5) state that, at an operational level, sustainable development means:

- ensuring self-sustaining improvements in productivity and quality of life of communities and societies including access to basic needs such as education, health, nutrition, shelter and sanitation; as well as employment and food self-sufficiency;
- ensuring that production processes do not overexploit the carrying and productive capacities of the natural resource base and compromise the quality of the environment, thus limiting the options of the poor, the present and future generations; and
- ensuring that people have basic human rights and freedoms to participate in the political, economic, social and environmental spheres of their communities and societies.

Therefore, the primary objectives of sustainable development involve overcoming poverty, protecting ecosystems, and protecting human options (Titi and Singh 1993). Relevant indicators include:

- maintenance of constant natural capital stock such as topsoil, freshwater, clean air, harvestable forests and fisheries, that is, the preservation of the renewal potential of natural resources;
- maintenance of environmental sink capacity to assimilate wastes, sewage and emissions;
- improvements in the quality of life through entitlements to the means of production such as land, credit, technology; entitlements to political and social organization and to social services; and access to basic needs such as nutrition, shelter, clothing and sanitation; and
- economic development which addresses problems of under- consumption and over-consumption.

In June of 1992, catalyzed by the Brundtland Report, the United Nations Conference on Environment and Development (UNCED) was convened in Rio. Agenda 21, the UNCED product, is, in effect, an action plan for sustainable development. Specifically, it

recognizes poverty alleviation as imperative to a global sustainable development strategy. The third chapter of Agenda 21 "addresses itself to combating poverty through enabling the poor to achieve sustainable livelihoods and cites empowerment as one of the enabling mechanisms" (Titi and Singh 1993). Further, Agenda 21 calls for an immediate focus on the mountain ecosystems of the world in Chapter 13, Sustainable Mountain Development, stating "the proper management of mountain resources and the socio-economic development of the people need immediate action" (Keating 1994).

2.2.3 Poverty

Destitution in the modern world is perpetuated by mutually reinforcing factors at the local, national, and international levels that form a global poverty trap. Poverty's profile, furthermore, has become increasingly environmental. The poor not only suffer disproportionately from environmental damage caused by those better off, they have become a major cause of ecological decline themselves as they have been pushed onto marginal land by population growth and inequitable development patterns (Durning 1990: 135).

Poverty is more than simply an economic position; instead it represents a condition which is the product of a systematic process (Durning 1990, Titi and Singh 1993, Yunus 1994). This is the process of impoverishment; an "active process leading to diminished access to options and entitlements, found in both developing and developed countries" (Titi and Singh 1993). Impoverishment, as a process, is the product of mechanisms, including continuing environmental degradation, increasing resource scarcity, inflation, unemployment and debt (*ibid.*). Yunus describes these mechanisms as "chains and barriers" which have "disabled people, crippled them, refused them access to work and income" (1994). These are the mechanisms which "set in motion the erosion of safety nets and the widening gap between rich and poor nations" (Titi and Singh 1993: 4).

Therefore, poverty is the product of impoverishment; a product which is delimited by a number of conditions. Traditionally, poverty is measured only in terms of income, however, as a condition, it encompasses all aspects of life, including: susceptibility to disease, limited access to most types of services and information, lack of control over

resources, subordination to and exploitation by higher social and economic classes, extreme vulnerability to sudden stress, complete insecurity in the face of change, the erosion of human dignity and self-respect and social and cultural marginalization (Durning 1990, Gallopin 1994).

Titi and Singh define poverty as "a condition of lack of access to options and entitlements which are social, political, economic, cultural and environmental" (1993). Chambers (1983) characterizes people in poverty according to their state of isolation, vulnerability and powerlessness. The poor are isolated due to their "peripheral location away from centers of trading and information, lack of advice from agriculture and health extension workers, and lack of adequate means of travel"; vulnerable due to "their lack of buffers against contingencies such as disasters, social conventions, physical incapacity and exploitation"; and without power due to "ignorance of their rights in the face of abusive exploitation by elites, their lack of access to legal advice, and their inability to bargain" (Titi and Singh 1993).

In 1980, the World Bank estimated that nearly 1 billion people were in absolute poverty (as cited in Durning 1990). Absolute poverty includes those people whose consumption falls below the minimum standard of nutritional intake necessary to function fully and in good health. This standard is defined as the "poverty line", and "may refer narrowly to measures of income per capita, or more broadly to measures of the incidence of energy-deficient diets, defined as being below a standard amount required to prevent stunted growth and serious health risks" (Titi and Singh 1993). Harrison states that "when we talk of absolute poverty, we are implying a level of income that imposes real physical suffering on people in hunger, disease and the massacre of innocent children" (1990: 406). Absolute poverty is more prevalent in developing countries.

Relative poverty includes people that subsist above the poverty line, yet their state is perceived as one of deprivation relative to existing societal norms (Titi and Singh 1993). Relative poverty can be almost as destructive as absolute poverty in a psychological sense;

"the man who is not suffering physically may suffer mentally when he compares himself with people vastly better off than he, and he can see no good reason for the discrepancy" (Harrison 1990: 407). Relative poverty, therefore, involves the mental suffering derived from inequality (Harrison 1990).

Sen's conceptualization of poverty and the dynamics of this condition largely focus on family units, personal relationships and entitlements (1983). Specifically with regards to calamity and subsequent effects on households, Sen notes that relationships within households involve both cooperative and conflicting elements, where various household arrangements are dependent on the basis of the implicit bargaining strength of its members. Thus, a cooperative or conflicting approach to food access and allocation within a household might depend on both economic factors, and "extra-economic" factors (Agarwal 1990). The entitlement approach conceptualized by Sen also provides a useful framework in which to view poverty. A person's ability to obtain and command food depends on his or her ownership entitlements (of land, labour, etc.) and exchange entitlement mapping (Agarwal 1990).

Kumar provides an excellent review of quantitative measures of poverty used in the evaluation of poverty alleviation programs (1993). Recent years have seen an increase in the use of quantitative measures of poverty as the result of their use in designing and evaluating poverty alleviation programs. There are mainly four measures of poverty that are in popular use, including: the head count ratio, the income gap ratio, Sen's index of poverty, and the Foster, Greer and Thorbecke index (Kumar 1993). The head count ratio is widely used in India for the comparison of incidence of poverty across regions and over time. Instead of detailing each measurement, suffice to say that any measure of poverty must satisfy certain criteria, such as: the identification of the poor, the identification of different degrees of poverty, the distribution of households according to different degrees of poverty, and the relative weight the policy-makers attach to different degrees of poverty (Kumar 1993).

To measure poverty, however, Jodha (1988) states that qualitative measures must be considered with quantitative indices. He endorses complementing conventional measures of income by qualitative indicators of change to arrive at a more realistic understanding of rural socio-economic change. Villagers were found to narrate change in their own economic status differently than those changes integral to quantitative measures. Villagers' perceptions of change were classified under the following five major groups:

1. reduced reliance of poor on traditional patrons, landlords, and resourceful people for sustenance, employment and income;
2. reduced dependence on low pay-off jobs/options;
3. improved mobility and liquidity position;
4. shifts in consumption patterns/practices; and
5. acquisition of consumer durables.

Jodha states that "factors underlying such changes [in economic status] are too detailed and at times too complex to be captured by standard and simplistic methods" (1988). Limitations inherent in quantitative approaches to documenting poverty are "increasingly recognized and the need for supplementing the formal concepts and norms by qualitative approaches" is seen as necessary (Jodha 1988, Sen 1983).

As previously noted, poverty will have significant implications for resource use. Durning states "...poverty drives ecological deterioration when desperate people overexploit their resource base, sacrificing the future to salvage the present" (1990: 145). This sets in motion what many researchers refer to as the downward spiral of economic and ecological deprivation; poverty is perpetuated as degraded ecosystems offer diminishing returns to the poor utilizing them (Durning 1990, Harrison 1990, WCED 1987, Ives and Messerli 1989). Insecurity or ambiguity with regards to land tenure, ownership and control appears to fuel the velocity of this downward spiral; "...poor but secure smallholders rarely overburden their land; dispossessed and insecure rural households often have no choice but to do so" (Durning 1990: 145). Further, "nothing incites people to deplete forests, soils, or water supplies faster than fear they will soon lose access to them" (Durning 1990: 145). Therefore, the establishment of well defined and secure user-access and property rights has been linked to the sustainable use of many common property resources; resources which are

often integral to the subsistence of poor communities in developing countries (Ostrom 1992, Grima and Berkes 1989).

The "downward spiral", referred to above, however, has been criticized by many as being a simplistic depiction of the processes involved which link poverty and environmental degradation. Admittedly, "there are two interlocking sets of problems in low income countries: a set of development problems and a set of environmental problems," (Bernard 1990); however, to draw a causal line between the two does not provide a helpful framework in which to address problems of this magnitude. Lélé states that "even a cursory examination of the vast amount of research that has been done on the links between social and environmental phenomena suggests that both poverty and environmental degradation have deep and complex causes" (1991: 613).

Although poverty can be defined in a variety of ways, it is generally conceded that mountain ecosystems are home to some of the poorest people existing on Earth; the India Himalayas are no different (Denniston 1993 and 1990, IMS 1991, ICIMOD 1988). Much of the literature defines poverty on the basis of land holdings and the ownership of assets; in these terms "poor" is often defined as those people belonging to households owning less than two hectares of land (24 bigha) (Mitra 1993, Agarwal 1992, Jodha 1986 and 1985, Shiva 1986). Therefore, poverty in the present study is seen as a condition with multiple dimensions, however "the poor" are largely recognized as such through quantitative indicators of land and animal ownership. Using land ownership as an indicator of poverty, as much of the literature does, confirms that the study area is indeed relatively poor; the Kullu District is largely characterised by land holdings of less than 2 hectares, while 58% of land holdings are less than one hectare (Kirk and Hobley 1993).

2.2.4 Impoverishment

Gallopin (1994: 15) identifies a number of "mega-processes" responsible for social and ecological degradation, "putting in motion an impoverishment process in the social and

natural subsystems". They are worthwhile mentioning here as many of these processes are actively at work in many mountain ecosystems today. These include:

- The expansion of a consumerist culture dislocating the social fabric, and the globalization of the international market economy mainly based on private rather than social benefit, competitiveness rather than cooperation.
- The dismantling and dysfunction of many state functions, particularly its regulatory role in the areas of wealth redistribution and protection of natural resources and the environment.
- Changes in the world market that foster major shifts in production and technology in rural areas in the South. This generally leads to quick social differentiation where an important percentage of the rural population lacks the resources needed to participate in the new economic configuration and is therefore pushed to marginal areas and activities.
- The endogenous processes favouring the spread of ineptitude, corruption, greed, and a lack of accountability among national and sub-national governments in many countries.
- The increasing loss of local control over resources and key aspects of livelihood (due, among other factors, to increasing interdependence, complexity, globalization, and polarization of power).
- Destabilization of traditional agricultural systems due to population growth or immigration, restricted access to new resources, and the resulting loss of resources because of over-exploitation and erosion.
- Encroachment of peasant communities by expanding commercial agriculture.
- Inappropriate institutional changes taking decision making away from local communities to distant national or regional centers.
- Degradation of the urban and peri-urban environment resulting from industrial pollution, urban disintegration, lack of maintenance of urban infrastructure and services, and fast and chaotic urban growth.

2.2.5 Sustainable Livelihoods

A livelihood refers to the means of gaining a living, including livelihood capabilities, tangible assets, and intangible assets (Chambers and Conway 1992). Therefore, a sustainable livelihood is one which consists of

the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (*ibid.*).

A livelihood system implies a *dynamic* process by which "rural households rearrange over time their mix of resources and activities to cope with changing economic and social objectives or contingencies" (Chen 1988: 3). The use of the word *system* conveys the interdependence, interactions and synergies between different units (individuals, households, community groups), their activities and their objectives.

Therefore, a sustainable livelihood system might be seen as one which shows high resilience and is able to further "evolve varied mechanisms and strategies to strengthen resistance to growing stress" (Titi and Singh 1994). These livelihood systems exhibit a capacity for change and flexibility; they will be able to evolve and adapt with changing or growing agents of stress. Vulnerable livelihood systems, on the other hand, are characterized as having low resilience and high sensitivity which makes dealing with contingencies, uncertainty and stress difficult. To expand the ecological metaphor, vulnerable systems might be seen as more *brittle* than their sustainable counterparts.

2.2.6 Empowerment for Sustainable Livelihoods

Empowerment for sustainable livelihoods implies "access to options such as cultural and spiritual space, recognition and validation of endogenous knowledge, entitlements to land and other resources, income, credit, information, training and participation in decision-making to meet today's needs without foreclosing future options" (Titi and Singh 1993: 19). Empowerment is a process, just as impoverishment is a process, which should enable the poor to critically look at their world, and break out of their "culture of silence" (Freire, as cited in Titi and Singh 1993).

Gallopin (1994) states that empowerment requires both self reliance and the capacity to respond:

Empowerment implies the capacity of human subsystems not just to respond to change, but to innovate and to induce change, both within and outside its boundaries, in pursuit of its own goals. It represents the system's capacity to

interact with other systems (communities, countries, regions) on more equal terms, and to exert an influence consistent with its objectives (Gallopín 1994: 41).

This notion of empowerment is congruent with the emergent paradigm of development. The persistence of poverty has challenged researchers and development workers to reevaluate the tools and underlying theories of development, and empowerment has emerged as a viable process promoting poverty alleviation (Titi and Singh 1993, Korten 1993, Rao 1988). Necessary conditions for empowerment, as envisioned by Singh and Titi (1994: 9), include:

- Local self-reliance, autonomy in the decision-making of communities and direct participatory democracy;
- Provision of space for cultural assertion and spiritual welfare;
- Provision of space for experiential social learning, the articulation and application of indigenous knowledge in conjunction with contemporary scientific knowledge
- Access to entitlements over land and other resources, education for change and other basic needs;
- Capacity to achieve food self-sufficiency and sustain it;
- Access to income, assets and credit facilities and the capacity to create credit facilities;
- Access to knowledge and skills (both endogenous and exogenous) for the maintenance of constant natural capital stock and the environmental sink capacity;
- Access to skills-training, problem solving techniques, best available appropriate technologies and information without which the knowledge and skills become virtually useless; and
- Participation in decision-making processes by all people.

2.2.7 Coping and Adaptive Strategies

How do poor agricultural families seek to cope with the problem of food insecurity associated with seasonal troughs in the agricultural production cycle? How do they cope with calamities such as drought and famine? How effective are the mechanisms they adopt? (Agarwal 1990).

Questions such as these are being posed increasingly, as public policy and other forms of external intervention attempt to ensure the strengthening of people's *own* efforts in dealing with contingencies, instead of substituting for them; to ensure that intervention is

appropriate to actual and not assumed needs; and to ensure that people are actors in the process of change, rather than passive recipients of relief and aid (Agarwal, 1990).

These questions attempt to explore peoples' strategies to cope with and adapt to their changing environments; behaviour which falls under the rubric of "coping and adaptive strategies". The concept of coping and adaptive strategies implies two things: first, the cultural, political, economic and biophysical environments of which the poor are a part are dynamic and often in periods of rapid change, and second, there exists an inherent uncertainty or risk imbedded in these changes (Titi and Singh 1994). Strategies are adopted by vulnerable individuals, households and communities to minimize risk in their lives and incorporate changes into their livelihood systems. Adaptive strategies are the ways in which local individuals, households and communities have changed their productive activities, modified their community rules and institutions, in response to vulnerabilities, in order to meet their livelihoods (Titi and Singh 1994). Adaptive strategies are a mix of traditional livelihood systems, modifications by local and external innovation, and coping strategies which have become permanent.

Coping and adaptive strategies can be differentiated based on the level of vulnerability and type of risk faced by households and communities (Davies 1993). Coping strategies are defined as "the bundle of poor people's responses to declining food availability and entitlements in abnormal seasons or years" (*ibid.*), while adaptive strategies constitute a permanent change in the mix of productive activities required to meet livelihood needs. Therefore, coping strategies are seen as characteristic of secure livelihood systems in *abnormal* periods of stress, while adaptive strategies are characteristic of more vulnerable socio-ecological systems (Titi and Singh 1994).

Strategies of the poor and vulnerable are "usually diverse and often complex" (Chambers 1994: 17). The overwhelming perception of a livelihood strategy in industrial countries is one that is one dimensional, usually involving employment or a single source income. Most livelihoods of the poor, however, are based on multiple activities and sources

of food, income and security (*ibid.*). Chambers states "the urban industrial concept of wage or salary employment has little connection to rural reality. Placing poor rural people with diverse subsistence and cash income sources in the context of a single job is inaccurate. For the purposes of illustration, Table 1 provides a general compilation of coping and adaptive strategies and sources of food, income, support and survival characteristic of a vulnerable livelihood system.

Coping strategies that families utilize during periods of food shortages fall into five broad categories (Agarwal 1990). They are:

1. Diversifying sources of income, including seasonal migration;
2. Drawing upon communal resources--village common lands and forests;
3. Drawing upon social relationships--patronage, kinship, friendship--and informal credit networks;
4. Drawing upon household stores of food, fuel, etc., and adjusting current consumption patterns;
5. Drawing upon assets.

None of these categories are mutually exclusive, and are often used simultaneously. Agarwal (1990) offers an in depth discussion of each category, specifically in regards to rural communities in India.

Davies (1993) incorporates a sequential aspect to her discussion of various strategies employed by poor people (Table 2). Insurance mechanisms include strategies that are undertaken to reduce the likelihood of failure of primary production. Examples of insurance strategies include: changes in cropping and planting practices, sale of smallstock, reduction of current consumption levels, and the sale of possessions, among others. These strategies are risk minimizing and involve a low commitment of domestic resources. Coping strategies involve the disposal of productive assets, for example, the sale of livestock, the sale of agricultural tools or the mortgaging of land, and the reduction of current consumption levels. These strategies are characterized by their high commitment of domestic resources.

Table 1. Strategies and sources of food, income, support and survival characteristic of poor people's livelihoods.²

Strategies and Sources
<ul style="list-style-type: none"> • home gardening • reliance on Common Property Resources • scavenging • processing, hawking, vending, marketing • share-rearing of livestock • transporting goods • mutual help • contract outwork • casual labour and piecework • specialized occupations • domestic service • child labour • craft work • mortgaging and selling assets • family splitting • migration • remittances • seasonal food-for-work and public works • stinting • begging • theft • production / agricultural strategies • extensive reciprocal relations • changes in consumption patterns • changes in intra-household allocations • reduction of current commitments • formation of new alliances • building up and drawing down inventories

Compiled from Chambers 1994 and Chen 1988.

²This list is by no means exhaustive; it serves to present a number of the diverse strategies that are characteristic of poor livelihood systems.

Table 2. Sequential use of insurance and coping strategies.

Sequential Use of Strategies	Examples of Strategies	Characteristic of Strategies
STAGE 1 Insurance Mechanisms	<ul style="list-style-type: none"> -changes in cropping and planting practices -sale of smallstock -reduction of current consumption levels -collection of wild foods -use of inter-household transfers and loans -increased petty commodity production -migration in search of employment -sale of possessions (e.g.jewellery) 	<ul style="list-style-type: none"> -risk minimizing -loss-management -low commitment of domestic resources
STAGE 2 Disposal of Productive Assets <i>(Coping)</i>	<ul style="list-style-type: none"> -sale of livestock (e.g. oxen) -sale of agricultural tools or mortgaging of land -credit from merchants and moneylenders -reduction of current consumption levels 	<ul style="list-style-type: none"> -high commitment of domestic resources
STAGE 3 Destitution	<ul style="list-style-type: none"> -distress migration 	<ul style="list-style-type: none"> -failure to cope

Source: Davies 1993 as adapted from Corbett 1988 and Frankenberger 1992.

If strategies do actually follow a discernible and repeatable sequence, as this sequential model would imply, they might be used to predict stress, vulnerability and impending crises. If a strategy's progress is monitored, "they will not only assist in predicting food crises, but also indicate appropriate and sustainable interventions to mitigate that crisis" (Davies 1993). Watts (1983) identified the ten most commonly observed responses to a crisis in food access and supply; also recognizing them in a sequential order. They were: collect famine foods; borrow grain from kin; sell labour power (migration); sell small livestock; borrow grain or money from merchants/moneylenders; sell domestic assets; pledge farmland; sell farmland; and migrate out permanently (Watts 1983).

Coping strategies are not necessarily economically, environmentally or socially sustainable (Davies 1993); and may, in fact, erode future prospects for sustainable livelihoods. In fact, Davies (1993) found that coping strategies employed in Mali (within a semi-arid zone) amounted to an "uncertain, piecemeal and poorly remunerated means of filling the annual food gap". Obviously, if coping strategies are inherently unsustainable, the role of indigenous coping strategies in famine and crisis mitigation must be questioned. "Reinforcing coping strategies may lock people into a vicious circle of subsistence and coping" (*ibid.*).

Table 3 provides a grading of coping and adaptive strategies according to their use. Intensity indicates the number of people pursuing a particular strategy; a high score for intensity means that the strategy is already pursued by many and therefore perceived by them to be the best option available (Davies 1993). Motivation indicates whether or not the strategy is abandoned once crisis is overcome and recovery is underway. Effectiveness could be measured by the likelihood of returning to pursue a particular strategy in the future. Finally, sustainability was measured by Davies on an economic and environmental basis only (i.e. social sustainability was not considered). Davies states that "economic sustainability would mean that these strategies could be pursued over time; and high environmental sustainability [implies] that they did not have deleterious effects on the natural

Table 3. Grading of coping/adaptive strategies according to use.

Source of Strategy	Example of Strategy	Use of Strategy		
		<i>Motivation/ Intensity</i>	<i>Effectiveness</i>	<i>Sustainability</i>
Production-based	Artisan Work	Medium	Medium / Low	Econ. Low
Common Property Resource-based	Collection of Wild Foods	High	Medium/High	Econ.High Env.High
Reciprocally-based	Internal Credit Mechanisms	Medium	Medium	Econ.Medium
Asset-based	Sale of Animals	High	Medium	Econ. Low/Med
Labour-based	Redivision of Household Labour	High	Medium/High	Econ. High
Exchange-based	Very Small Scale Retailing	Medium	Medium/Low	Econ.Med
Migration-based	Work in Nearby Livelihood System	High/ Medium	Medium	Econ. Med Env. Low/Med
Consumption-based	Reduce Intake	High	Low/Medium	Econ. Med/Low

Source: Davies 1993.

resource base" (1993). Davies does not, however, indicate exactly how these effects were determined.

Agarwal (1990) addresses the issue of the social sustainability of coping strategies in a more rigorous manner. By examining the family unit, or a household, and its coping mechanisms in times of food stress, social aspects of risk and vulnerability are apparent. Agarwal notes that "the burden of coping falls disproportionately on female members within poor households, traceable to women's already weak and further weakened (during calamity) bargaining position within the family" (1990: 341). Using the Bengal famine of 1943 as a case study, Agarwal documents the process of family disintegration and the abandonment of wives and children during severe calamity. The aspect of social sustainability must be considered in conjunction with those of economic and environmental sustainability when assessing coping and adaptive strategies for crisis mitigation and the movement to sustainable livelihoods.

2.2.8 Strategies in the Household Context

A household can be defined as an "operational economic unit on which observations are/can be made for a large number of entries for quantitative analysis" (Acharya 1985). A household is composed of members living in the same area (under the same roof, or "sharing the same hearth"), whereas a family unit may be geographically diverse (Wolf 1990). Household forms are varied throughout the world, including monogamous and polygynous, patrilocal and matrilineal, nuclear and extended, with and without servants -- so varied that no universal common functions or activities seem to exist (Netting 1993). However, ubiquitous throughout the world are the "recognizable domestic groupings of kin with a corporate character and an identity that is recognized in the use of terms like *family*, *house*, *hearth*, or *those who eat from a common pot*" (*ibid.*: 58).

Netting argues that the household is a highly adapted, functioning unit; a "recurrent, solvent form of social organization with a multitude of direct functional relationships to the

smallholding" (1993: 100). The household is uniquely adapted to manage smallholding, intensive agriculture, in that the family household mobilizes and allocates the labour and manages the resources of the smallholding: the household is the key productive unit. "There are practical social and economic reasons why the individual, the descent group, the managerial landlord, the collective, and the business firm may be less well adapted to the needs of intensive farming" (*ibid.*: 100). Netting states "agrarian social formations including the household, are constituted partially as work groups that motivate and apply the proper combination of labour, knowledge, and leadership to each task in an efficient (if not the most efficient) fashion" (Wilk 1991 as cited in Netting 1993: 61).

The past decade has witnessed the emergence of an interest in intra-household dynamics, particularly on the part of feminist scholars. Wolf states "feminists have cut through romantic assumptions about family and household unity, arguing that there exist instead multiple voices, gendered interests, and an unequal distribution of resources within families and households" (1990: 43). Although the household has been a unit of inquiry for many decades, little is known about intra-household processes, conflicts and dynamics, particularly between gender and generations. Indeed, "any generalized, functionalist model of the relationships between...agricultural production and household organization risks overemphasizing positive or adaptive features and tends to attribute an idealized, ahistoric stability to the smallholder household. Conflict and change are neglected..." (Netting 1993: 80).

Throughout the literature, the investigation of households and the strategies they adopt in interactions with their external environment implicitly assume that the household is a homogeneous unit. Wolf (1990: 46) states "whether based on a neo-classical economic framework or a neo-Marxist one, individuals and households are merged and are discussed interchangeably, as though they are one and the same unit, and this problem is most clearly reflected in the concept of household strategies". Ultimately, the household is treated as an

entity unto itself, "an individual by another name", with its own interests, logic and behaviour (Folbre 1986: 5).

The recognition of intra-household processes, conflicts and dynamics does not, however, negate the usefulness of examining how that household interacts with its immediate environment and the larger political, social and cultural context in which it locates itself. Household strategies are an effective and useful vehicle in which to frame this investigation, if this is done without losing sight of the dynamics that are potentially occurring *within* the household itself. The present research recognizes the complexity of intra-household dynamics while conceding that exploring the complexity of intra-household dynamics and implications for strategies in detail is beyond the scope of this practicum.

2.2.9 Strategies for Sustainable Livelihoods

As previously stated, coping and adaptive strategies are increasingly recognized as playing a possible role in poverty alleviation and, ultimately, the achievement of sustainability because they represent the actual behaviour of the people involved in these tenuous situations. Again, "indigenous coping strategies can be reinforced, in preference to imposing external, often late, inappropriate and unsustainable solutions to food crises..." (Davies 1993). It is clear, however, that the perpetuation of some coping strategies or adaptive strategies will do no more than provide short term and highly unsustainable vehicles of relief from risk. Therefore, identifying strategies in terms of their sustainability has a number of advantages, including directing policy formation and development intervention in ways that are truly beneficial to local communities. Further, for livelihoods to be sustainable, people must be given space to develop a number of successful strategies which enable them to survive and improve their standard of living in the face of change, be it natural or anthropogenic (Singh and Hudson 1994).

2.3 The Mountain Ecosystem

Mountain ecosystems, making up approximately one-fifth of the world's landscape, are home to at least one-tenth of the world's population. Although appearing rugged and resilient, "such massive monoliths of rock and ice...also include highly complex, ever-changing, and *vulnerable* ecosystems" which are home to a diverse number of cultures (*ibid.*: 11, original emphasis). Approximately 121 million people derive their livelihoods from the Himalayan pastures, forests and fields (Denniston 1995). Much literature points to the accelerating degradation of mountain ecosystems and the further impoverishment of mountain inhabitants throughout the world (Thompson and Warburton 1985, Ives and Messerli 1989, IMS 1991, Jodha 1992, Denniston 1993 and 1995).

It is proposed by some researchers that pathways to sustainable livelihoods in mountain ecosystems lie in the knowledge and skills of the agriculturalists and pastoralists who subsist within this biome (IMS 1991, Jodha 1992). Ives states "it is maintained that until the subsistence mountain farmer is recognized as part of the solution, rather than branded as the main cause of the problem, little real progress in successful development... can be anticipated" (IMS 1991: 4). Therefore, an understanding of the coping and adaptive strategies employed by the people who create their livelihoods in mountain ecosystems is a necessary pre-requisite to the achievement of sustainable livelihoods in mountains, and more specifically, the Himalaya. First, however, it is necessary to have an understanding of the environment from which mountain people create their livelihoods.

2.3.1 Downward Spiral?

The world's mountain regions may have the appearance of being remote, durable, and barely affected by the environmental ills that beset the more densely populated areas of our living space. This is not the case. What is worse, when mountain environments are degraded they often take longer to recover than many other types of environment. It is increasingly evident that their low priority on the world's environmental agenda cannot be allowed to continue (IMS 1991: 5).

The above quote is a call to action from the International Mountain Society; its objectives being to raise public and political concern for the mountains and their inhabitants. As early as 1975, Eckholm heralded the call for an increased research effort directed towards mountain ecosystems in his much cited article *The Deterioration of Mountain Environments*. Eckholm states "...it is no exaggeration to suggest that many mountain regions could pass a point of no return within the next two or three decades. They could become locked in a downward spiral from which there is no escape, a chain of ecological reactions that will permanently reduce their capacity to support human life" (1975: 769). The factual basis of predictions such as these are debated to this day (Thompson and Warburton 1985, Ives and Messerli 1989, IMS 1991). There is the acknowledgment, however, that mountain environments are experiencing increasingly "profound problems in both rich and poor regions of the world" (IMS 1991) and, further, there remains a dearth of successful development efforts within mountain regions.

A large body of literature provides overviews of the negative trends occurring in mountain regions today (e.g., Allan et al. 1987, IMS 1991, Jodha 1992, Denniston 1993 and 1995). These trends largely relate to crop yields, availability of mountain products, the economic well-being of mountain people, and the overall condition of environmental and natural resources. Specifically, Jodha (1992: 43) observes the following changes, as compared to the "situation 50 years ago":

...the extent and severity of landslides is higher, water flows in traditional community irrigation systems are lower, yield of major crops in the mountains...are lower, diversity of mountain agriculture is reduced, regenerative processes...are weakened, the inter-seasonal hunger gap (food deficit period) is longer, time spent by villagers for collections of fodder and fuel from neighbouring uncultivated areas or common property lands is longer, the botanical composition of species in forests and pastures has undergone negative changes, and finally, poverty, unemployment, and out-migration of people are higher in the hills.

There appears to be general consensus among mountain researchers that, indeed, these trends are occurring, although their causes are continually questioned. Table 4 is a compilation of negative changes that can be considered indicators of unsustainability.

Table 4. Negative changes as indicators of the unsustainability of mountain agriculture.

Visibility of Change	Changes Related to:		
	Resource base	Production flows	Resource use/ management practices
Directly visible changes	<ul style="list-style-type: none"> • increased landslides and other forms of land degradation • abandoned crop terraces • per capita reduced availability and fragmentation of land • changed botanical composition of forest/pasture • reduced waterflows for irrigation, domestic uses and grinding mills 	<ul style="list-style-type: none"> • prolonged negative trend in yields of livestock, etc. • increased input needed per unit production • increased time and distance involved in food, fodder and fuel gathering • reduced capacity and period of grinding/saw mills operated on water flow • lower per capita availability of ag. products 	<ul style="list-style-type: none"> • reduced extent of fallowing, crop rotation, intercropping, diversified resource management practices • extension of plough to sub-marginal lands • replacement of social sanctions for resources use by legal measures • unbalanced and high intensity of input use
Changes concealed by responses to changes	<ul style="list-style-type: none"> • replacement of cattle by sheep/goat • replacement of deep-rooted crops by shallow-rooted crops • shifts to non-local inputs • replacement of water flow by fossil fuel for grinding mills • replacement of manure by chemical fertilizers 	<ul style="list-style-type: none"> • increased seasonal migration • introduction of externally supported public distribution systems (food, inputs) • intensive cash cropping on limited areas 	<ul style="list-style-type: none"> • shifts in cropping pattern and composition of livestock • reduced diversity • increased specialization in monocropping • promotion of policies/programmes with successful record outside, without evaluation
Potentially negative possibilities due to development initiatives	<ul style="list-style-type: none"> • new systems without linkages to other diversified activities • generating excessive dependence on outside resources • ignoring traditional adaptation experiences (e.g. new irrigation structure) 	<ul style="list-style-type: none"> • agricultural measures directed to short-term quick results • primarily product-centered (vs. resource centered) approaches to agricultural development 	<ul style="list-style-type: none"> • indifference of programmes and policies to mountain specificities • focus on short-term gains • high centralization • excessive, crucial dependence on external advice, ignoring wisdom

Source: Jodha 1992.

2.3.2 The Mountain Perspective

The "mountain perspective" means the explicit or implicit consideration of specific mountain conditions or characteristics and their implications while designing and implementing activities in mountain habitats (Jodha 1992: 43). An understanding of these mountain conditions and characteristics--the constraints and opportunities inherent in a mountain ecosystem--is imperative; the incorporation of the mountain perspective alone in decision making and planning "can determine the relevance and effectiveness of any development intervention in mountain areas" (Jodha 1992: 43).

Jodha (1992) terms the important and unique conditions characterizing mountain areas as "mountain specificities". Four mountain specificities are of primary importance; they are: **inaccessibility**, **fragility**, **marginality**, and **diversity** or **heterogeneity**. These can be called first order specificities. Second order specificities include **niche** and **human adaptation mechanisms** which differ from the former in that they are responses or adaptations to the first order specificities. Specificities are interrelated and spatially and temporally heterogeneous within mountain ecosystems. For instance, not all locations in mountain areas are equally fragile, diverse or inaccessible. Further, specificities appear to have dominant physical dimensions, however it is important to realize that all have socio-cultural and economic dimensions as well.

i) Inaccessibility

Inaccessibility is possibly the most known feature of mountain areas (Price 1981, Groetzbach 1987). Inaccessibility is a product of slope, altitude, overall terrain conditions and natural hazards (landslides, snow, storms, etc.). Inaccessibility, as a mountain specificity, manifests itself in isolation, distance, poor communication and constrained mobility (Jodha 1992).

ii) Fragility

When the IMS speaks of mountain environments taking longer than many other types of environments to recover from disturbance, stress or shock, they are referring to its fragility. Fragility is a condition that rises out of altitude and steep slopes combined with geologic, edaphic and biotic factors. These factors limit the environment's capacity to withstand disturbance (Jodha 1992). Jodha states that this vulnerability extends to physical land surface, vegetative resources and "even the delicate economic life-support systems of mountain communities" (1992: 45). Hence, fragility affects both physical and social spheres of mountain regions. Fragility also has implications for degradation rates; a fragile environment will deteriorate at a fast rate after a disturbance (IMS 1991, Jodha 1992).

iii) Marginality

Marginality is an attribute of an entity that reflects its relatively low status, low priority, and low consideration in the treatment accorded to it by mainstream decision makers (Banskota and Jodha 1992). This entity could be a region, such as a mountain area, or a community within that region. Banskota and Jodha state "[marginality] is the least understood attribute of mountain areas and mountain people, but it is highly central to the approach to mountain areas in the overall national contexts in the countries under question" (1992: 107). One way in which marginality is apparent in many marginalized environments is in the lack of decision making ability and self-determination imparted to mountain area communities with regards to managing their resources. Instead, decisions are made within urban centers often found in adjacent plains, or, in the case of predominantly mountain countries (e.g., Nepal and Bhutan), within mountain urban centers removed from these rural areas.

iv) Diversity

An extreme diversity can be found within mountain ecosystems as a result of the interactions of such factors as: elevation, altitude, geologic and edaphic conditions, steepness and orientation of slopes, wind and precipitation, mountain mass, relief and terrain. Diversity, or heterogeneity, is unique because it can easily be perceived of as an opportunity rather than a constraint; "the diversity of mountain habitats offers both a range of opportunities and a set of constraints" (Banskota and Jodha 1992). Again, diversity is seen in physical, socio-cultural and economic aspects of mountain environments.

v) Niche or "Comparative Advantage"

Mountains provide a "niche" for specific activities or products due to specific environmental and resource-related features. Examples of "niche" or "comparative advantage" include mountain regions acting as a source of unique products such as medicinal plants, apples and other fruits and vegetables. Mountains also provide the best known sources of hydropower production (Jodha 1992). Circumstances may be created to exploit a certain niche; many "narrow" niches are found in mountains due to their heterogeneity that local communities harness through their diversified activities. The proper harnessing of 'niche' can support sustainability while their reckless exploitation can result in elimination of 'niche'" (*ibid.* 1992: 45).

vi) Human Adaptation Mechanisms

As previously stated, mountain environments, largely through their inherent diversity, offer a wide range of constraints and opportunities to their inhabitants. Rural individuals, households and communities have created their own adaptation mechanisms to operate within these constraints and make use of these opportunities (Jodha 1992). "People's adaptation experiences or mechanisms in mountain habitats are reflected through various technological measures (ethno-engineering, folk agronomy) and institutional

arrangements for individual and collective management of mountain resources" (Banskota and Jodha 1992: 111).

A large body of literature exists which details these mechanisms within the context of agricultural systems (for example Jodha et al. 1992 vol. 2). Briefly here, some examples of farmers' adaptations to the first order mountain specificity of *fragility* include: adaptive agronomic and ethno-engineering practices, resource conservation and recycling, joint action resource management and the strengthening of interlinkages among various components of the farming system (Jodha et al. 1992).

Increasingly, it is being recognized that an understanding of people's adaptation mechanisms will make development initiatives more sensitive to other mountain specificities (Bhati and Swarup 1985, Bhati et al. 1992); "...if properly understood they [adaptation mechanisms] can provide useful insights for designing public interventions in the mountains" (Banskota and Jodha 1992: 111). This has obvious implications for sustainability. The experience, knowledge and capabilities of local, rural people continue to go grossly under recognized and under utilized, although there is an effort to integrate indigenous knowledge and experience in development planning. "A first step in developing sustainable agricultural systems is to draw on the existing body of knowledge and practices" (Edwards et al. 1993).

Therefore, as described above, inaccessibility, fragility, marginality, diversity, "niche" and human adaptation mechanisms are all characteristics of mountain environments that make them unique from other ecosystems (Jodha et al. 1992). These aspects of the mountain ecosystem are termed mountain specificities. Policy for sectoral development or poverty alleviation within mountain ecosystems must take into account these unique characteristics; many have not in the past and environmental and cultural degradation has been the outcome.

2.4 Summary

The research locates itself in a shift from the more traditional view of development to one in which the household, community and individual -- their capacities and knowledge -- are valued. As shown by the literature, through investigating people's responses to change, uncertainty and vulnerability, pathways to sustainable livelihoods can be highlighted while pathways which foreclose options for present and future generations can be challenged (Jodha 1992; Denniston 1992, 1995; Agarwal 1988, 1990; ICIMOD 1988; Chambers 1994; Korten 1993). The literature also identifies the household as a unit central to the movement to sustainability as it is the loci of production, consumption and reproductive decisions integral to the functioning of the moral economy in many agrarian societies. Discussion of the household as an entity, however, does not negate the intra-household dynamics at work in any or all social and cultural contexts, however, it is not the purpose of the research to highlight these dynamics.

Concepts discussed above, such as poverty, empowerment, impoverishment, are central to understanding the conceptual basis of the present research. They were, therefore, concepts reviewed before the field work was undertaken, and are not discussed to any length again.

The literature also provides a number of insights into what strategies might be employed presently within the mountain villages in which the field work was to take place. These broad areas included strategies which are: asset based, consumption based, production based, reciprocally based, exchange based, labour based and resource-use based (from Davies 1993). These themes were subsequently used to direct the unstructured interviews in the field.

Finally, the literature highlights the uniqueness of the mountain ecosystem and the constraints and opportunities open to mountain inhabitants largely due to its inaccessibility, marginality, diversity and fragility. Without an understanding of these characteristics (or

specificities) it is impossible to contextualize and fully appreciate strategies that might lead to sustainability which are adopted by the household and community in this particular environment. Further, it is impossible to create policy that would lead to sustainable livelihoods within the mountain ecosystem without a knowledge of this ecosystem.

CHAPTER THREE: Coping and Adaptive Strategies in the Livelihoods found in Chachoga and Goshal, Himachal Pradesh

3.0 Preamble

As discussed, the literature points to an increased degradation of mountain ecosystems and growing impoverishment of mountain inhabitants. An understanding of coping and adaptive strategies employed by mountain inhabitants -- both households and communities -- may provide insight into complex livelihood systems and, when strategies are considered in terms of their sustainability, potential pathways to sustainable livelihoods might be highlighted. This chapter presents the findings of the ten week field season undertaken with the purpose of investigating the livelihood systems at work in two Himalayan villages, Chachoga and Goshal. More specifically, the coping and adaptive strategies employed by households and different communities within the villages are presented and discussed.

3.1 The Pahari Culture of the Lower Himalaya

Chachoga and Goshal, two small, predominantly agricultural villages, were chosen for further study. Figure 2 locates Chachoga and Goshal within the Kullu Valley, Kullu District, Himachal Pradesh, India.

Chachoga is a small village of approximately 80 households located on the east bank of the Beas River, approximately 1.5 km south of Manali. The village is comprised mainly of two castes, the Rajput and the Scheduled (Dom or "untouchable"; the service caste) castes. The majority of households in both groups own land and are predominantly agriculturalists and/or horticulturalists, with a smaller number of pastoralists. Approximately 30 women from Chachoga participate in the *Mahila Mandal*, a women's group which actively works to protect the resources within the Chachoga forest area.

Goshal is a larger and wealthier town than Chachoga, situated on the west bank of the Beas River approximately 5 km north of Manali. Goshal has approximately 120 households and is also comprised of the Rajput and Scheduled Castes. Again, the majority of households in both groups own land and participate in agriculture and/or horticulture. There are a number of pastoralists in Goshal as well.

The cultures and languages of this area of the Kullu Valley are collectively known as *Pahari*, literally, "of the mountains" (Berreman 1972). The villages in the valley are part of this unique culture characterized by an "unorthodox" Hinduism, which differs from the North Indian culture and from the High Himalayan *Bhotian* culture found in the northern districts of Lahaul and Spiti. Pahari languages are derived from Sanskrit, an Indo-Aryan language (*ibid.*: 7).

Caste organization throughout the *Pahari* culture is largely divided between higher castes, the Rajput Caste, and the lower caste, the Scheduled Castes (commonly referred to as "untouchables" or "Harijans" in the study area). The Rajput Caste is dominant throughout the valley both in numbers and wealth while the Scheduled Caste have either an indigenous history in the area or immigrated to the area as labourers -- likely a mix of both (Kirk and Hobley 1993, Berreman 1970). The latter, Scheduled Castes, comprise approximately 28% of the population in the Kullu District (Kirk and Hobley 1993). Historically, the Rajput Caste have been the land owners and intensive agriculturalists in the valley, while wage labour and landlessness was more typical of the Scheduled Caste (Kirk and Hobley 1993). A series of land reforms in Himachal Pradesh over the last three decades has changed this only slightly.

Scheduled Tribes comprise approximately 3.1% of the population in Kullu District, including Gaddis (transhumant pastoralists herding sheep and goats) and a smaller number of Gujjars (transhumant buffalo herders) (*ibid.*). These migrants travel each year from the Punjab plains throughout the Kullu District to the high alpine pastures of Lahaul and Spiti.

3.2 Changing Livelihoods

Agriculture is the predominant livelihood pursued in the villages of the Kullu Valley; approximately 85% of the population of the Kullu District presently depend on the agricultural system for their livelihoods (Kirk and Hobley 1993). Traditionally pastoralism has also played an important role as a livelihood in area, however, within many villages in the Kullu Valley pastoralism is becoming less viable as land use changes from a mixed field crop agricultural landscape to a fruit belt (Photos 5 and 6). The introduction of apple orchards is placing unprecedented pressure on grazing commons, and, although many pastoral families negotiate throughout these changes, adapting and surviving, many do not. An overview of indicators of change in Chachoga and Goshal is presented in Table 5. Of interest is the change in the number of households owning significant numbers of sheep (>100). In 1962, approximately 10 households in each of Goshal and Chachoga owned more than 100 sheep, while in 1994 only 2 and 3 households, respectively, owned more than 100 sheep (Berkes et al. 1995). Thus, pastoralism as a livelihood is becoming increasingly rare (Davidson-Hunt, I. 1995).



Photo 5. A shepherd with his flock of sheep and goats.

Table 5. An overview of indicators of change in Goshal and Chachoga. The change in the number of households which use different kinds of land and animal ownership from 1962 to 1994³.

	Chachoga		Goshal	
	1962	1994	1962	1994
Total number of households	60	80	60	130
Irrigated agricultural land	40	22	60	20
Non-irrigated agricultural land	60	80	60	130
Redistributed Common Land	0	60	0	90
Cattle	60	76	60	90
>1 sheep or goat	60	20	60	40
>20 sheep or goats	60	10	30	16
>100 sheep or goats	10	3	10	2

The Kullu Valley also offers employment opportunities for seasonal immigrants from Nēpal, Bihar, and Rajasthan, thereby providing for a very insecure and poor livelihood. These people “appear to have few assets, often live in very basic conditions in temporary labour camps, and receive only basic wages. These are probably the poorest people in Himachal Pradesh” (Kirk and Hobley 1993: 3). Tibetan refugees, often operating stores or stalls in the larger urban center of Manali, form a distinct, more prosperous group

³Based on information from village leaders. The number represent the local “best estimates” and not official data. The year of 1962 was used as a “marker” in interviews to summarize long-term changes (Berkes et al. 1994).



Photo 6. A "fruit processing plant" where apples are boxed to be transported to southern markets.

of resident immigrants. Finally, the explosion of tourism in the area in the past decade has provided ample opportunity for people with capital to buy hotels or establish trekking companies, while others can sell their skills and become porters or guides.

3.3 Agricultural Livelihoods within the Kullu Valley

The predominate livelihood system in the villages of the Kullu Valley consist of "agriculture and animal husbandry...[which] was dominantly subsistence-oriented. Rain-fed rice, wheat and various millets were the main food crops. Animal fodder and fuel were derived from a variety of sources near the village, and the demand for these resources was dispersed via a seasonal migration cycle which provided access to resources outside the immediate village area" (Moench 1989). This livelihood falls under Netting's (1993) classification of smallholder, intensive agriculture. Smallholders are "rural cultivators practicing intensive, permanent, diversified agriculture on relatively small farms in areas of dense population. The family household is the major corporate social unit for mobilizing agricultural labour, managing productive resources, and organizing consumption" (*ibid.*: 2).

Netting lists common characteristics of smallholder, intensive agriculture; this description aptly applies to the agricultural system that is at work in both Chachoga and

Goshal presently. Quoting Netting (1993: 28) at some length: smallholder, permanent agriculture involves:

(1) moving and manipulating soil to feed and foster plant growth and to control erosion, as in deep tilling, ridging, and terracing of permanent fields; (2) regulating water by increasing its supply through irrigation or removing excess through drainage; (3) restoring or increasing soil fertility by systematic manuring, usually involving the stall-feeding and fencing of livestock... (4) diversification of production with a wide variety of cereal, legume, tuber, vegetable, fodder, and tree crops that are interplanted, rotated, and scheduled according to existing microenvironments and seasonal conditions, and with a range of large and small domestic animals; and (5) protection of plants and animals from growth-inhibiting competition or predation by weeds, diseases, insects, and other pests through guarding, fencing, and reducing exposure.

Further, smallholders do not normally live in isolation of the market; "the scarcity of their resources and their desire for goods and services they cannot produce at home necessarily involve them in important external relationships" (*ibid.*: 15). Due to the proximity of many villages within the Kullu Valley to the Rotang and Hampti Passes, trade, commercial agriculture and market interaction are not new to the area. The Kullu Valley spans what was in colonial times and earlier a major corridor of trade between the plains of north India, including the Punjab, and the Tibetan plateau, including Lahaul and Spiti (Kirk and Hobley 1993).

Both Chachoga and Goshal are largely characterized by smallholder, mountain agriculture which is immediately recognized by its terraced slopes (Jodha 1992, Kirk and Hobley 1993). In the larger valley landholdings are small; a 1980/81 census put 80% of land holdings in the Kullu Valley at less than 2 hectares (equivalent to 24 *bigha*, the local measure of land area), while 58% were below one hectare (Kirk and Hobley 1993). The average landholdings of the 32 households interviewed was approximately 5 *bigha* of non-irrigated land and 1 *bigha* of irrigated land⁴. The average land holdings, therefore, fall under what Bhati et al. (1992) term the "marginal farm category" (<1 ha), while only three

⁴These figures are significantly lower than the averages quoted above; inaccuracies (if they exist) may in part be due to the fact that women were asked about their household's land assets and, while it is women who are most familiar with the land due to the intensity of their day to day interactions with it, they may not know of the actual area in *bigha*. The household men would be responsible for any market interactions with regards to land (registering, selling, buying) and would likely have a more accurate idea of the actual land area.

of the 32 households interviewed claimed to own more than 12 *bigha* of land and, therefore, could be defined as belonging to the "small farm category" (1-2 ha) (*ibid.*).

The Rajput Caste generally enjoys a greater wealth than the Scheduled Caste in both Chachoga and Goshal in terms of land, animal and tree assets. Referring to Table 6, the interviewed households of the Rajput Caste own an average of 5.1 *bigha* of non-irrigated land, while the Scheduled Caste own 2.8. In Goshal, these figures are 7.0 and 6.2 *bigha* respectively. Large apple tree ownership also differs markedly; in Chachoga the Rajput Caste owns an average of 189 large trees while the Scheduled Caste own 84. In Goshal, these figures are 95 and 50 respectively. It was also observed that animal assets differ along caste lines.

Ownership of assets, and subsequently socio-economic status, however, does not fall strictly along caste lines. Some wealthier members of the Scheduled Caste will own more than some of the Rajput Caste. Further, things such as hotel ownership and tractor ownership are also indicative of economic status and, while worth mentioning, are not considered here in detail.

The research was carried out within the study villages of Chachoga and Goshal and, therefore, it primarily explores two livelihoods systems at work within the larger valley. These can be generalized as: the smallholder agricultural system of the wealthier household and the marginal land holding household largely dependent on wage labour. The former is the main focus of the research, although both are touched on due to their interdependence. Because 85% of the population of the Kullu District depend on the agricultural system for their livelihoods (as previously cited), examining the mechanics of the system and potential changes of the system with regards to sustainability is well justified.

Table 6. Average land holdings and animal and tree assets by caste, Chachoga and Goshal, 1994 (n=32).

	Chachoga		Goshal	
	Rajput (n=8)	Scheduled (n=10)	Rajput (n=9)	Scheduled (n=5)
Land (<i>bigha</i>)				
Non-irrigated	5.1	2.8	7.0	6.2
Irrigated	2.3	0.2	1.3	0.4
Animals				
Cows	1.9	0.8	1.4	1.0
Bullocks	0.8	0.2	0.7	0.4
Sheep/Goats	8.1	0	10.8	0.6
Apple Trees				
Large ⁵	189	84	95	50
Small	88	46	144	111

3.4 Strategies within the Agricultural System

Both coping and adaptive strategies adopted by households involved in an agricultural livelihoods are presented below. Thirty of the 32 (94%) women interviewed represented households which owned land, while two women represented landless households (6%). Therefore, the majority of women interviewed were heavily involved in the day to day activities of "running the farm": planting, weeding, collecting fodder, firewood, fertilizer, caring for livestock and countless other activities. The mountain agricultural system is well known for its diversity and resilience; there are a number of factors which add to the overall security of the agricultural (and therefore social) system in

⁵Large trees are those which bear fruit and small trees are one which are not bearing fruit yet.

both Chachoga and Goshal. These factors can be thought of as coping and adaptive strategies which have evolved within the context of the overall agricultural livelihood strategy -- components of the larger system⁶.

Because field work was done over a short period of time (spanning only a portion of the rainy season), it was difficult to delineate between the two types of strategies (coping and adaptive), and possibly, it is not necessary to do so. Both strategies are important; access to a wide variety of short-term response options (coping strategies) in times of periodic stress should contribute to a more resilient livelihood system (Chambers 1992, Davies 1993). The household which is able to turn to a number or bundle of coping strategies during times of stress will weather contingencies more successfully than those which have only one option to pursue (an example being the selling of livestock or eating of seed). Further, the continued availability of these coping strategies and options may be necessary for adaptive strategies to work.

Strategies observed in both village included: the diversification of activities and household inputs, the diversification found within the agricultural system, increasing or decreasing market integration, the increased reliance on employment and wage labour, the building up and drawing down of inventories, the reliance on common property resources, the development and maintenance of social ties leading to reciprocal labour and commodity relations, and the formation of community groups.

3.4.1 Diversification

i) Diverse Activities and Household Inputs

Diversification or the concurrent management of multiple activities is a key dimension of livelihood security (Barlett 1980, Chambers 1983, CWD 1987, Chen 1988, Agarwal 1988 and 1990). Of the 32 households interviewed, all are engaged in multiple activities that secure diverse sources of household inputs and regularly bring either food,

⁶Likewise, the larger agricultural system can be seen as a sub-component of the regional system which involves pastoralism and the other livelihood systems mentioned above.

income or other inputs into the household⁷. Chambers (1994: 17) describes this adaptive strategy as a diversified portfolio of activities

with different members of the family seeking and finding different sources of food, fuel, animal fodder, cash and support in different ways in different places at different times of the year. Their living is improvised and sustained through their livelihood capabilities, through tangible assets in the form of stores and resources, and through intangible assets in the form of claims and access.

Although primarily agriculturalists, many households participate in at least three or four secondary activities providing household income or inputs. Table 7 illustrates the diverse activities and sources of household inputs of five selected, representative households in Chachoga. Income and inputs enter the household both through traditional activities and activities which are now possible and lucrative due to the dynamic social and economic changes occurring around the villages. For example, Household 1 has seven sources of non-market inputs entering the household including: crops, apples, milk and wool from privately owned assets (agricultural land or animals); and fodder, fuel and minor forest produce (MFP) from the forest (a common property resource). Further, money enters the household through interactions with the market. Household 1 sells apples, milk and some MPR to stalls within Manali. And finally, the woman representing Household 1 rents a room of her house to a divorced woman from Kashmir, adding to the cash income entering the household. This household is representative of the diversity found within the majority of households which own land and animal assets.

Two of the thirty-two (6%) women interviewed represented households with no land and animal assets. Both were of the Scheduled Caste and from Chachoga. These households exhibit a very different "portfolio of diverse activities", and the households represented in Table 7 would not reflect the reality of these landless and assetless women. Instead, these women largely participate in agricultural wage labour when they have the opportunity, as discussed further below.

⁷The concept of household livelihoods involves both income generating activities and subsistence generating activities (Chen 1988).

Table 7. Example of the diverse source of household inputs and income from five representative households (HH), Chachoga, 1994.

	HH 1	HH 2	HH 3	HH 4	HH 5
Non-Market Household Inputs¹					
Food from crops	✓	✓		✓	✓
Apples	✓	✓		✓	✓
Milk	✓	✓		✓	✓
Fodder	✓	✓		✓	✓
Fuel	✓	✓	✓	✓	✓
MFP	✓		✓	✓	✓
Wool	✓				
Income Generation Through Market Sale of Commodities:					
Crops				✓	
Apples	✓	✓			✓
Milk	✓				✓
Fodder			✓		
Fuel					
MFP	✓		✓		
Wool					
Weaving					✓
Income Generation Through Employment:					
Employed in market		✓	✓	✓	✓
Employed in tourism					
Employed in government		✓			
Seasonal agriculture wage labour			✓	✓	✓
Odd jobs in village			✓		
Other ²	✓	✓		✓	

¹ The concept of household livelihoods involves both income generating activities and subsistence generating activities (Chen 1988). Therefore, these are household inputs that are not bought in the market yet are an important aspect of the household's assets and security. For example, "fuel" is most likely dead wood collected from a Common Property Resource, the forest. Note that household inputs will differ due to the land and animal assets of the household. If a household has no animals, there is no need for fodder as a household input.

² An example of other income generating activities includes employment with the only active NGO in the area.

As Chen (1988: 5) notes, the diversification of activities has a seasonal component; "seasonal difficulties are most easily weathered by those who have access to one or more secondary activities and effective management of multiple activities can help smooth out seasonal troughs or, even, promote new peaks". Although the entirety of the field season was conducted during the rainy season, two seasonal calendars were established (Figures 4 and 5). It was necessary to present two calendars as the first depicts the activities of a woman from a land-owning household while the second depicts the activities of a household with a paucity of land, animal and tree assets. Obviously, they differ markedly.

Figure 4 illustrates the dimension that throughout different months of the year there are often a number of concurrent activities undertaken. The diversity of this system adds to -- in fact, potentially *creates* -- its resilience and robustness. Figure 5, on the other hand, illustrates a lesser degree of diversity. Instead, the predominant activity throughout the year is the participation in daily agricultural wage labour, which is, in itself, a strategy employed by nine of the thirty-two households interviewed.

Woven throughout the seasonal activities of women from land owning households are daily subsistence activities, including: the collection of firewood, caring for animals (cows and bullocks, largely), caring for families (cooking and cleaning) and season-specific, agricultural activities (planting, weeding, and harvesting). Through the participation in these daily, subsistence activities, women interact with other women and households throughout the village, developing and maintaining important social relations, while interacting intimately with the natural resources found in the region. It is through these interactions that women become the possessors of many livelihood skills and develop intimate knowledge of the natural resources on which they (and subsequently their households) depend. The responsibility for daily, subsistence collection of forest products, maintenance and tending of crops, as well as tending of livestock appeared to fall largely within the woman's realm of duty.

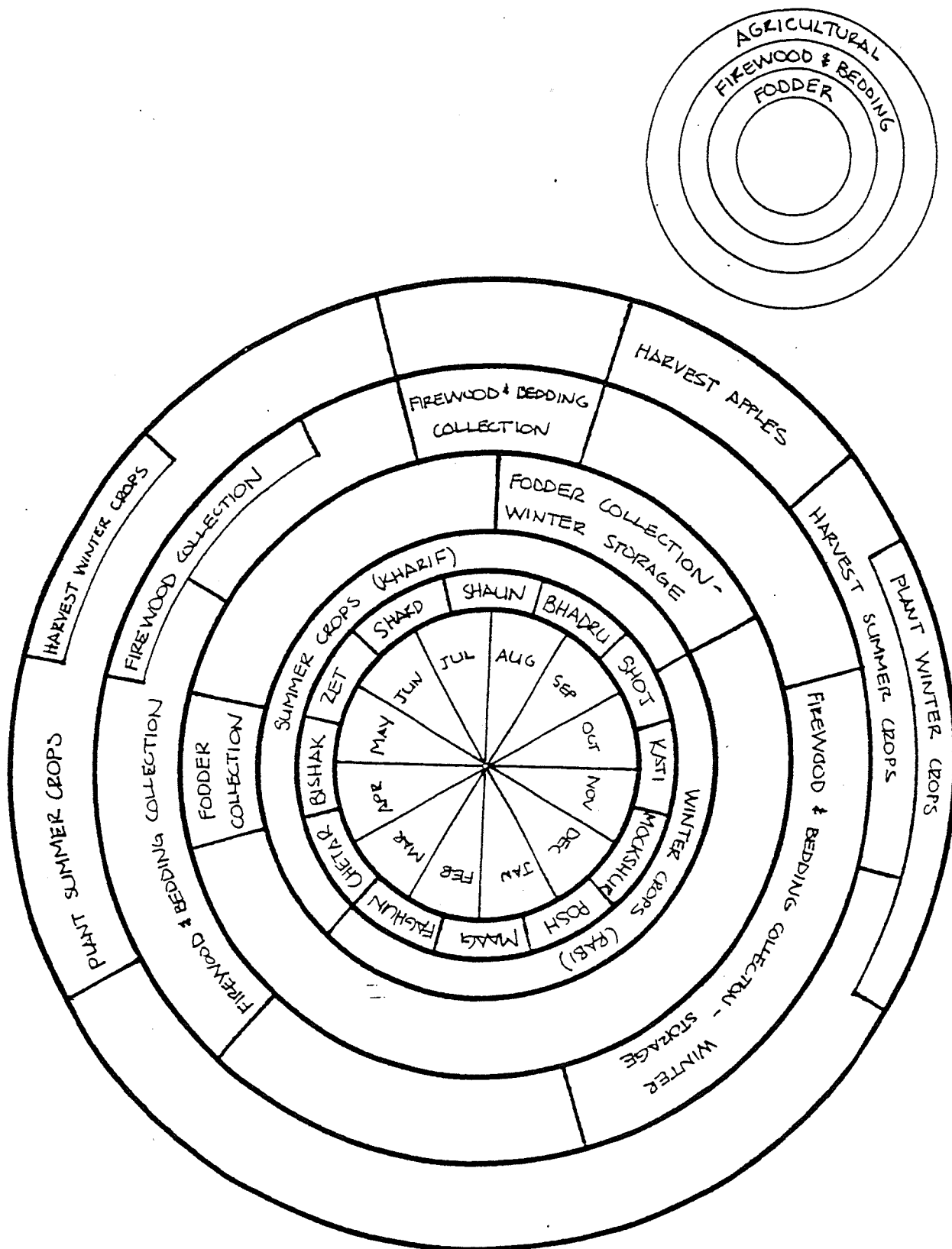


Figure 4. Annual cycle of seasonal livelihood activities, focusing mainly on women's involvement from land and asset owning households, Chachoga and Goshal, 1994.

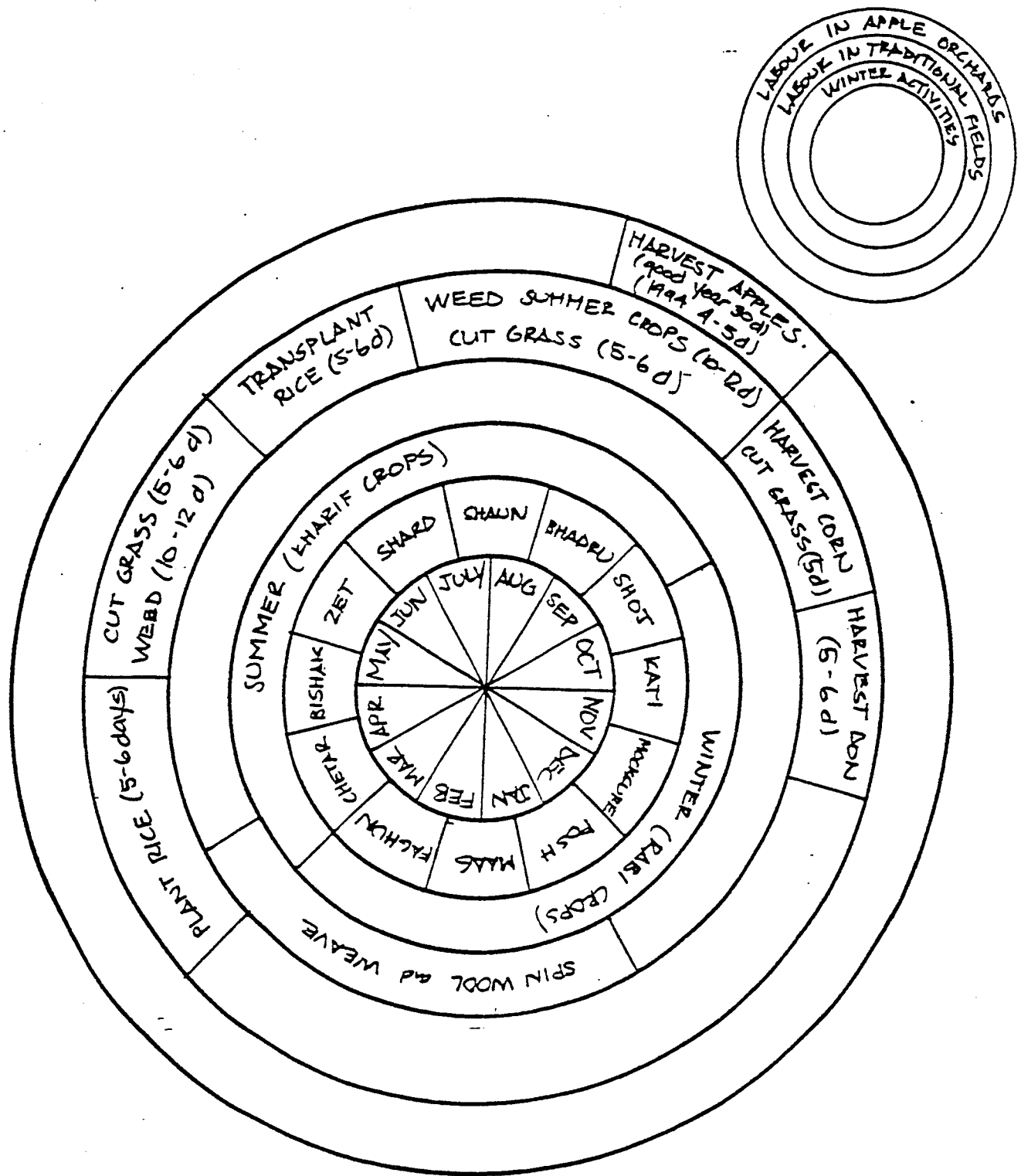


Figure 5. Annual cycle of seasonal activities, focusing on women who participate in agricultural wage labour. Each activity on the calendar is done in another household's field or orchard for approximately 30 - 40 Rupees / day (approximately \$1.30 - 1.80 Cdn, summer 1994). The number of days are averaged from interviews and represent the amount of time women can expect to work at each activity. This calendar is representative of women from landless and assetless households. Note the potential loss of wage labour opportunities with the movement away from traditional agriculture to apples.

At certain points throughout the year, stocks and stores of food, fodder and fuel wood are built up, to be used during the months in which there is significant snow cover in the forest (approximately mid-December to mid-March). Firewood and needles for bedding are collected from the forest on a daily basis from mid-October (*Shoj* and *Kati*) until snowfall. Men are largely involved in these activities which involve the building up of stores (Netting (1993) refers to these as "bottleneck" times) rather than the gathering of products for daily use. The point to be emphasized is the diversity of activities throughout the year, both in succession and concurrently, create household resilience and, concurrently, an element of livelihood security.

ii) Diversity in the Agricultural System

The primary activity of the majority of households in the two villages is agriculture and horticulture. Diversity is embedded in the agricultural system, working to minimize risk and increase security and resilience. Both Chachoga and Goshal are located in the *high hill wet zone* of the Himalayas (1800 - 2200 m altitude) (Bhati *et al.* 1992). Here a mixed-farming system predominates, involving strong livestock--farming--forest linkages. Again, the majority of land holdings fall under small and marginal farm categories (*ibid.*). Slopes are extensively terraced; an adaptation necessary to farm the steep gradient while minimizing soil erosion and directing water movement. Jodha *et al.* (1992) provide an extensive discussion and analysis of mountain agriculture systems.

The diversity in the mixed-farming system characteristic of the region is expressed in a number of ways, two being: the diversity of crops planted (both throughout the year and during one season in a single field), and the diverse locations of fields in which crops are grown. Throughout the year, two cycles of planting, growth and harvesting occurs. *Rabi* crops (winter crops) are those seeded in the fall (October 1 to November 30) and harvested in the late spring. *Kharif* crops (summer crops) are those seeded in the spring (April 15 - June 15) and harvested in the fall (Figure 4). Crops common to the winter season include:

wheat, barley, mustard and pea. Crops common to the summer season include: corn, kidney bean, paddy and upland rice, potatoes, millets, lentils, soybean, amaranth and a variety of vegetables. Although the largest harvest is the fall harvest, the presence of the winter crops and subsequent spring harvest ensures some minimal source of nutrients or income year round.

The benefits of growing a diverse number of crops together in one field has long been recognized by rural people. A number of the advantages to mixed cropping include: different rooting systems exploit different levels in the soil profile for moisture and nutrients; one crop may provide a favourable micro-climate for another; nitrogen-fixing plants fertilize non-nitrogen fixing plants; crops which are scattered among others are less vulnerable to pest attacks than single stands; labour requirements are less, especially in reducing weeds; labour peaks are spread out; and more moisture is retained in the land (Chambers 1983: 86). These advantages are recognized and optimized by farmers when deciding what to plant in each of a number of fields. Table 8 illustrates the mixed cropping system utilized by one family in Goshal.

In both Chachoga and Goshal, the majority of households own a number of discrete parcels of land which are scattered throughout the surrounding areas. By not consolidating all their land in one area, households have effectively managed risk and reduced uncertainty; there is more chance of losing a larger portion of crop if extensive flooding occurs and the household's land is all in one area. Further, due to the vertical zonation characteristic of the mountain ecosystem, microclimates can vary significantly within very short distances and households can maximize their homestead production by matching their crop association to the environmental potential (Netting 1993).

Figure 6 illustrates a household's land parcel distribution within village lands, as well as the diversity of crops grown. The household represented in this figure is of the Rajput caste, wealthy, and owned a larger than average amount of land. Their land holdings are parcelled out in fifteen discrete fields, each planted with different crops. Table 8 depicts

Table 8. Example of a mixed cropping system within the different parcels of land of one household, Goshal. See Figure 6 for the spatial distribution of the fields.

Field Number ¹	Rabi (Winter) (1993 - 1994)	Kharif (Summer) (1994)	Rabi (Winter) (1994 - 1995) ²
1	-----	-Drowned by River--	-----
2	Pea	Radish, Cabbage, Cucumber, Eggplant ³ ----- ⁴ Kidney Bean + Corn ⁵	Mustard or Wheat
3	Pea	Kidney Bean + Corn	Barley
4	Barley	Kidney Bean + Corn	Wheat
5	Mustard	Millet + Cowpea	Barley
6	Mustard	Hemp	Barley
7	Fallow	Kidney Bean + Corn	Barley
8	Pea	Kidney Bean + Corn	Fallow
	----- Wheat	Kidney Bean	
9	Wheat	Kidney Bean	Fallow
10	Fallow	Kidney Bean + Corn	Mustard
11	Barley	Kidney Bean + Corn	Mustard
12	Mustard	Kidney Bean+ Corn	Wheat
13	Mustard	Potato	Wheat
14	Fallow	Potato	Wheat
15	Fallow	Potato	Wheat

Source: Berkes et al. 1994.

¹Field numbers correspond to numbered locations in Figure 5.

²Crops are those grown by the consultant or those she planned to grow in the coming Rabi season.

³Vegetables are grown for market and home consumption. Other crops are grown primarily for home consumption.

⁴Crop groupings separated by ----- indicates that crops are grown separately within the same parcel.

⁵Crops separated by + indicate crops which are intercropped within the same parcel.

the mixed cropping strategy in each of the fifteen fields shown in Figure 6. While the first field (parcel no. 1) was drowned by the river, the remaining 14 were planted in both the *Rabi* and *Kharif* seasons (with the exception of a number of fallow periods).

The mountain, smallholder agricultural system consists of a number of linked components. The important components include: the forest, fields, livestock and, finally but no less importantly, the linkages between them. Women play a central and prominent role in the latter category; it is through women's energy that the former three components are integrated to make a viable agricultural system. Again, Figure 4 attests to the diversity of components in the system, yet fails in communicating the importance of the links between these components. For example, the forest provides the agricultural system with fodder and bedding for livestock. Women's roles in this regard involve the daily collection of both fern and needles for bedding, and grass for fodder, and the transport of these products to the household⁸. This largely looks after livestock needs, while providing the agricultural system with the highly valued mixture of bedding and manure (*gobar*) which women then carry to the fields and work into either agricultural land or around the base of apple trees. This example illustrates the way in which female labour works to link the diverse system components: the forest (a common property resource) and the privately owned agricultural fields and animal assets.

Therefore, diversity is woven throughout the smallholder, intensive agricultural system in a variety of ways. Indeed,

The major strategy for combining high production per unit area with risk reduction and sustainability in [smallholder] agriculture is diversification. This entails the careful fitting of crop complexes and techniques to existing microenvironments, the interplanting of mixed crops, and systems of crop rotation (Netting 1993: 32).

⁸Indigenous cattle are able to graze "upside" (up the mountain side above the village) and can therefore accompany women when they go to the forest to collect firewood and other MFP. Many households, however, now own "improved" cattle (an exogenous breed) which cannot navigate the steep, rocky slopes "upside" and must be stall feed. Although these cattle give more milk, the women now are required to carry fodder from the forest to the stall, increasing their time spent in meeting livestock needs. It was not indicated how women feel about this change, although it is conceivable that they would see it in a negative light. Owning improved cows did, however, seem to be a sign of "status" within the villages.

Produced by Colin Duffield

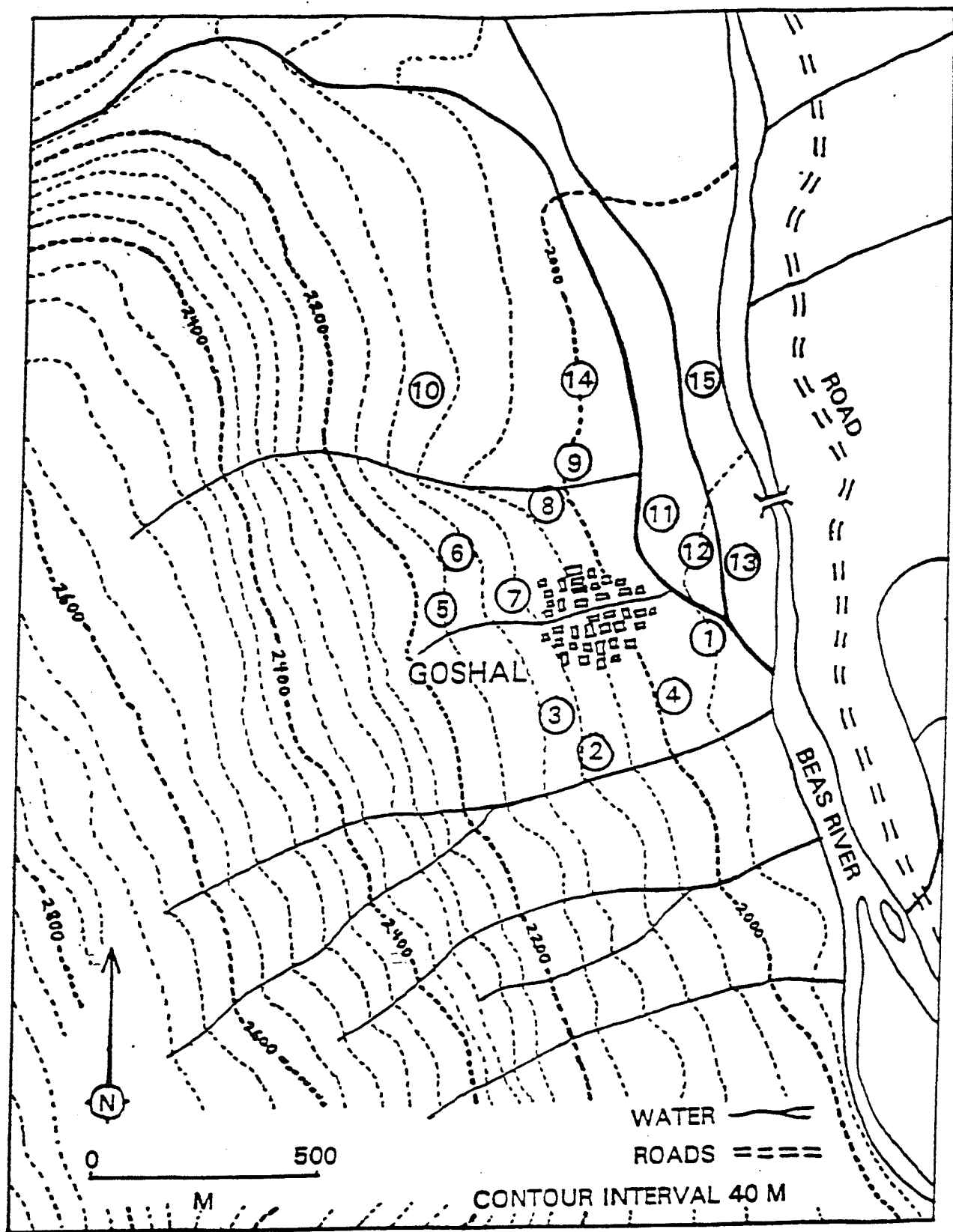



Figure 6. Example of the spatial distribution of one representative household's agricultural fields throughout village lands. The numbered locations correspond with the fields listed in Table 8. The village of Goshal is represented by the cluster of .

3.4.2 Employment and Reliance on Wage Labour

Formal employment, casual labour and contract outwork are all ways in which a household can further diversify their sources of livelihood. Formal employment involves "having an employer, a job, a workplace and a wage" (Chambers 1994: 19) while casual labour is negotiated and renegotiated on a short term basis; a day, a week or until a task is completed. Contract outwork includes weaving for others, spinning wool for others, etc. Within a household, each of these income generating activities may be represented.

Contract outwork involves the completion of small tasks for others on a short-term, informal basis. Many women spin wool for other people for money during the winter months (*Posh, Maag and Phagun*) and are paid for their work. A number of women also weave for other households. One woman's husband does odd jobs in Chachoga throughout the year, building stone walls and doing simple carpentry jobs.

Households which have a lack of assets (thought of in terms of livestock and apple trees) are most likely the poorest households in the villages, and possibly the most vulnerable. Interestingly, in Chachoga, the decision of women to participate in agricultural wage labour throughout the year fell distinctly along caste lines; eight women of eighteen (44%, or 80% of the women interviewed belonging to the Scheduled Caste) interviewed in Chachoga participate to varying degrees in wage labour throughout the year, all of them from the Scheduled Caste. No women from the Rajput caste interviewed stated that they work as agricultural labourers. Of the eight women that *do* work in wage labour, the average number is 19.9 full days. Although this does not seem like much, it does bring in an extra bit of money into the household when it is most needed. The largest demand for wage labour coincides with the harvests; traditionally a time when food stores are low in rural households. Some women stated they could earn thirty to forty rupees each day they work; an amount which is well above the minimum daily wage rate in Himachal Pradesh of twenty-six rupees⁹.

⁹\$1 Cdn = Rs. 22 (summer 1994)

The eight households of the women that do participate in agricultural wage labour all owned a lower average number of large and small apple trees, cows, bullocks, goats and sheep; for example, the average number of large apples trees owned by the eighteen households (including the eight households of the wage labourers) is approximately 131 trees, while the agricultural wage labourers' households averaged only 60 large apple trees. This contrast is illustrated in Figures 7 and 8. In both Figure 7 and 8, each scattered point represents a woman interviewed. Women representing households with the smallest number of trees and livestock assets seem to routinely participate in more agricultural wage work.

As the agricultural system moves more fully towards a market orientation with the planting of more orchards, it is difficult to say if the demand for agricultural wage labour will decrease with an increasing area of land being devoted to the cultivation of apples. Already, a number of the eight women work in the apple harvest in late August and September, and in "good apple years" are guaranteed many days of work. One woman stated that in good years, she might be hired for thirty days, however this past year culminated in a bad apple harvest and she only had five days of work during this time. It is possible that the demand for wage labour will still be there as more apples are harvested, but this demand may be less predictable and more erratic from year to year. This will have negative implications for the women and households which rely on agricultural wage work during these times of year.

Chachoga and Goshal are in close proximity to the larger center of Manali; a town which has undergone unprecedented tourism growth and urban expansion in the last decade. This growth has subsequently lead to the opportunity for employment within the town; jobs are readily available and actual migration for work is not necessary. Many households have taken advantage of these opportunities and it is likely that someone from each household unit will be involved in the market or in tourism. Of the thirty-two households interviewed, twenty-one (66%) had members (possibly more than one) who were employed in either the

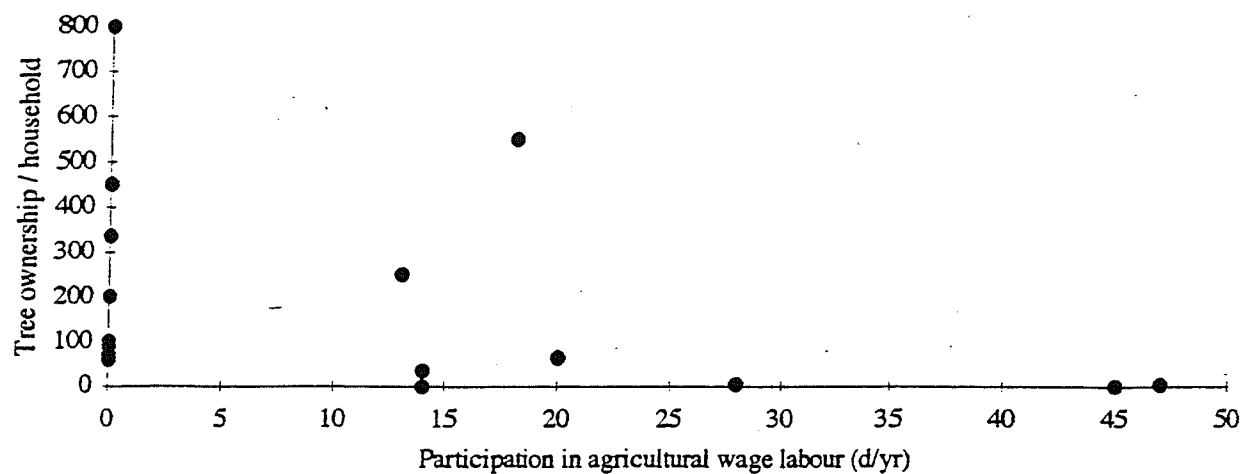


Figure 7. Comparison of participation in agricultural wage labour (d/yr) and tree ownership, Chachoga.

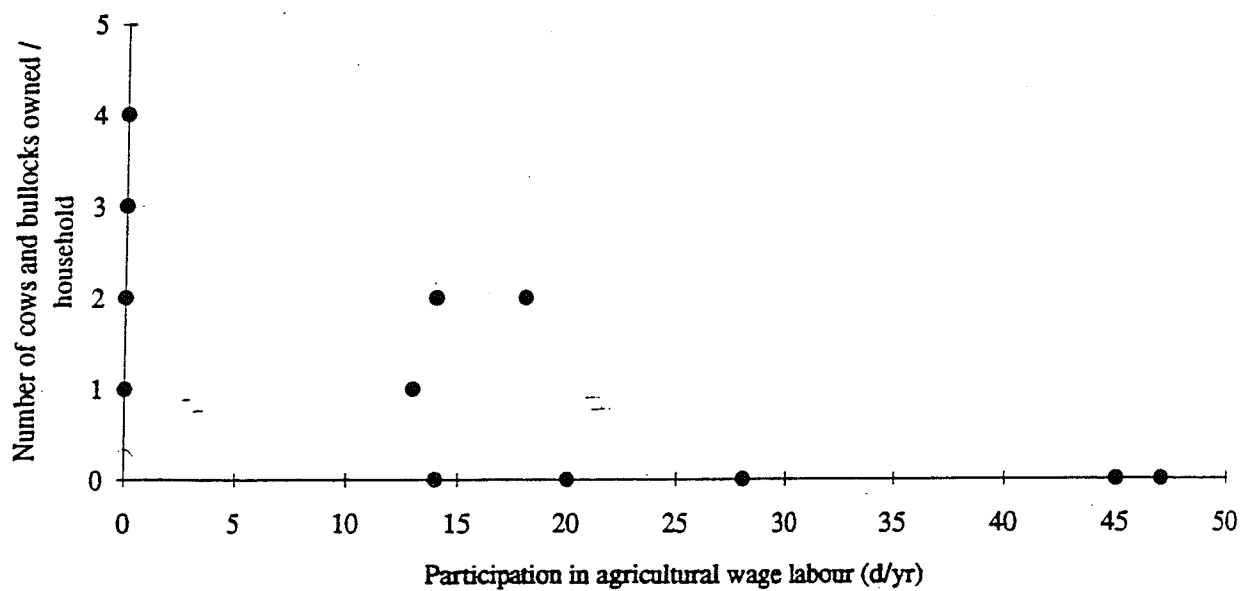


Figure 8. Comparison of animal ownership and participation in agricultural wage labour (d/yr), Chachoga.

market, the tourist industry, the government or some other form of employment. Those involved in external employment were all men, except in one case a woman worked in a hotel in the small town across the Beas from Goshal.

3.4.3 Building Up and Drawing Down Inventories

In normal years, households store surplus commodities during certain seasons, often the summer and fall, and draw down these inventories during lean seasons, often winter. This is done to ensure year round availability of various goods. Household stores are often the products of common property resources: grass and leaves for fodder, ferns and coniferous needles for animal bedding, branches and twigs for fuel, shrub fiber for making rope, and some minor forest produce for food (Photos 7 and 8). Other stores include agricultural products; some families store more than 100 kg of rice for the winter.

Adequate stores are a characteristic of a sustainable and resilient livelihood (Chambers 1983). The presence of stores is a good indicator of household resilience; if stores are ample enough, unpredicted contingencies -- such as a death, illness or pregnancy -- can be accommodated for a transitional period of time until adjustments are made. In Goshal, it was observed that the poorer families do not have the stores that the richer ones do; many Rajput families have stores of bedding, grass and fuel wood that could last up to one year. Women from poorer households were often cutting grass for a richer families' stores to earn money, rather than building up their own stores of fuel wood or fodder. This leaves the poorer families in the village more vulnerable to any contingency, crisis or stress.

3.4.4 Drawing Upon Social Relations

A very important inter-household strategy for livelihood security is that involving reciprocal labour relations and reciprocal commodity relations; both are interwoven throughout the work that women do everyday to meet their household needs. Reciprocal labour relations were practised in two common forms, locally called *playdee* and *suari*. A



Photo 7. Drying grass on slate roof for winter storage, Goshal.



Photo 8. Drying seeds and grass on porch in Chachoga.

task was said to be done in *playdee* if a select group of women take turns working in each other's fields over a certain period of time, often within a week or a few days. An example is the weeding of crops in the busy agricultural month of *Shard* (mid-June to mid-July). Five women might get together, all friends or neighbours and usually of the same caste, and work on one woman's fields until they are done, possibly a day to two days work, and then move to the next woman's field until all the fields are done in this manner.

Suari is also an exchange of labour, however the reciprocal exchange does not need to happen within a set period of time. For example, if a person is building a house, he or she might call a *suari* to help fetch clay from the river bank. They are then obliged to attend and help at any *suari* people call who have previously worked for their benefit in a *suari*. Both *playdee* and *suari*, besides their obvious benefits of making the time spent working pass more quickly and efficiently, allows the cultivation and strengthening of social relations within the community. In communities characterized by vulnerability, this is a very important function which establishes and strengthens fall back positions in times of stress; again making households more resilient. All households interviewed regularly participated in *playdee* or *suari*. Tables 9 and 10 list activities regularly done in *playdee* and *suari*.

Reciprocal commodity relations also play an important role in securing household needs. Households with differing endowments and assets can, by sharing these items continuously or trading them at particular times during the year, attain the benefits of the item without investing in it themselves. An example that a woman described in Chachoga involved her mother-in-law caring for her (the daughter-in-law's) cow. The older woman would feed and care for the cow, and in return, was able to use its products (milk, butter and curd). The *gobar* (bedding mixed with dung) was given to the daughter-in-law to apply to her crops and fertilize her parcel of land, while also shared with the mother-in-law's other sons. The daughter-in-law benefits from the *gobar*, yet is not responsible for fulfilling any of the cows needs. This frees up a considerable amount of time; an important resource as she was the mother of four young children. The mother-in-law benefits from the use of the

Table 9. An example of activities done in *playdee*¹.

	Activity	Season	Participants ²
<i>Playdee</i>	Harvest <i>goa</i>	May	8 - 10 women ³ and 2 men ⁴ 15 days of work
	Transplant rice	June	10 women 17 days of work
	Cut grass from fields		5-6 women 6-7 days work
	Weed fields	July	5-6 women continuous work throughout month
	Cut grass from fields	August	6-8 women 15-16 days work
	Cut grass from fields and forest	September and October	5-6 women 7-10 days work
	Harvest all <i>Kharif</i> crops (except rice)	September and October	5-6 women throughout month
	Collect firewood	November	5-6 women 6-7 days

¹Both *playdee* and *suari* are reciprocal labour relations. If an activity is done in *playdee*, a number of women will participate in completing a task for each household in turn, including their own, over a short time period. If an activity is done in *suari*, people may congregate to help one household with a certain activity. This household is then obliged to attend the *suari* of the people who participated. This table is not representative of one household; not all households will participate in *playdee* or *suari* for each activity listed. Instead, it is compiled from all the interviews to illustrate the depth of reciprocal labour relations occurring throughout the year.

²The number of participants listed and the duration of the activity in days are averaged over the interview set.

³Women stated that they usually participated in *playdee* with their neighbours.

⁴While the women move from field to field, men help harvest on only their own land.

Table 10. An example of activities done in *suari*¹.

	Activity	Season	Participants
<i>Suari</i>	Build house	Spring, Summer, Autumn	Neighbours, Extended Family, Friends
	Harvest apples	September and October	" "
	Build flagstone porch	Spring, Summer, Autumn	" "
	Collect mud from riverbank for house construction	" "	" "
	Collect stones from mountain side for house construction	" "	" "

¹Both *playdee* and *suari* are reciprocal labour relations. If an activity is done in *playdee*, a number of women will participate in completing a task for each household in turn, including their own, over a short time period. If an activity is done in *suari*, people may congregate to help one household with a certain activity. This household is then obliged to attend the *suari* of the people who participated. This table is not representative of one household; not all households will participate in *playdee* or *suari* for each activity listed. Instead, it is compiled from all the interviews to illustrate the depth of reciprocal labour relations occurring throughout the year.

cow's milk. Further, she is tied to the younger women's crops, in a sense, because she provides what is seen as one of the most vital inputs to crop production, fertilizer. Again, the older women's fall back position in times of crisis is strengthened.

Another common commodity which is extensively traded is the use of a bullock during planting seasons for ploughing. Less than one third of the households interviewed own one bullock, while only one household owned two -- the number needed with which to plough. Two households do their ploughing by hand. Therefore, the majority of households trade some service or commodity for the use of a bullock -- possibly their labour, food or some other service.

Reciprocal commodity relations such as these work in a similar sense to the labour relations discussed above; they are the basic foundations of the social fabric and security within the villages and larger region (Chen 1988).

3.4.5 Drawing Upon Common Property Resources

Common property resources (CPRs), an important form of natural resources endowment and collective subsistence (Chen 1988: 18), are defined as "the class of resources for which exclusion is difficult and joint use involves subtractability" (Berkes 1989: 7). CPRs "are often a major source of livelihood for the rural poor and a safety-net fallback source of food and income in bad times" (Chambers 1994: 18). Throughout Himachal Pradesh, common land is vested in the state under the Village Common Land Vesting and Utilization Act of 1974 (Kirk and Hobley 1993). Villagers do have some usufruct rights, however, in certain specified forest areas -- largely the local demarcated protected forests (DPF) and the undemarcated protected forests (UPF). These rights are defined in the settlement acts for the region (specifically Anderson, 1886, for the Kullu District). In the settlement acts, rightholders are guaranteed access to a wide variety of products from both the forest and the pasture, including fodder, bedding, fuel, timber and grazing (Kirk and Hobley 1993). The authors of the settlement reports in the late 1880's

recognized the central importance of the common property forest or grazing lands to the village livelihoods.

Products that households depend on from CPRs include: grass and leaves for fodder, ferns and coniferous needles for animal bedding, branches and twigs for fuel, shrub fiber for making rope, and some minor forest produce for food. Women from households that have both land and animals are dependent on CPRs for agricultural inputs, fuel wood and products to fulfill animal needs. Poorer households, without land or animal assets, relied on CPRs only for cooking fuel needs. Although the majority of CPR literature contends that the poorest villagers (Jodha 1986 and 1985, Shiva 1986, Chen 1988), and especially women (Mitra 1993, Agarwal 1992), are the most dependent on CPRs, this was not observed. Instead, it is thought that the villagers with medium sized land holdings interact the most with CPRs, while the poorest interact relatively less, only relying on common forests for fuel wood needs.

This trend is illustrated in Figures 9 to 11. As established, participation in agricultural wage work was seen as a fairly good indicator of a poorer household, one which lacks assets such as livestock and apple trees. In Figure 9, women's participation in agricultural wage work and the total number of days she goes to the forest in a year are presented. The trend appears; as a women participates less and less in agricultural wage work, she goes to the forest more. From Figure 9, the four respondents that use the CPR the least also participate in the greatest number of wage work days. One explanation for this is that the women from households without livestock, who also tend to be the women who take advantage of agricultural wage work, do not need inputs from CPRs such as fodder and bedding. Figures 10 and 11 illustrate the same: women of households with less land (tending to correspond with less livestock assets as well) also use the forest less.

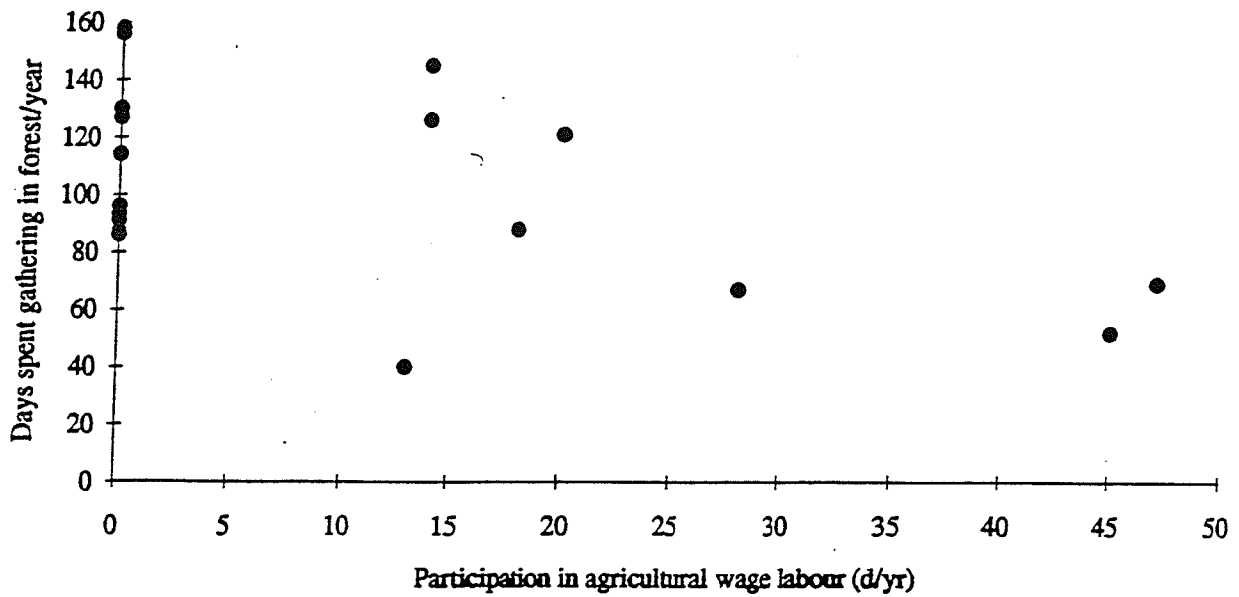


Figure 9. Comparison of days spent gathering in forest/yr and participation in agricultural wage labour (d/yr), Chachoga.

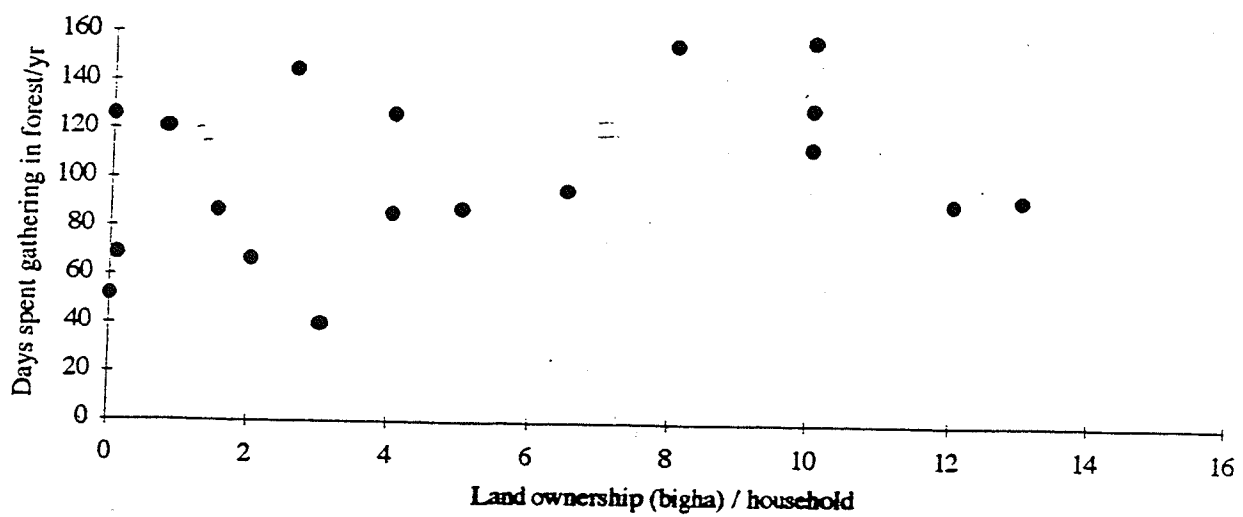


Figure 10. Comparison of household land ownership (bigha) and days spent in forest gathering / yr, Chachoga.

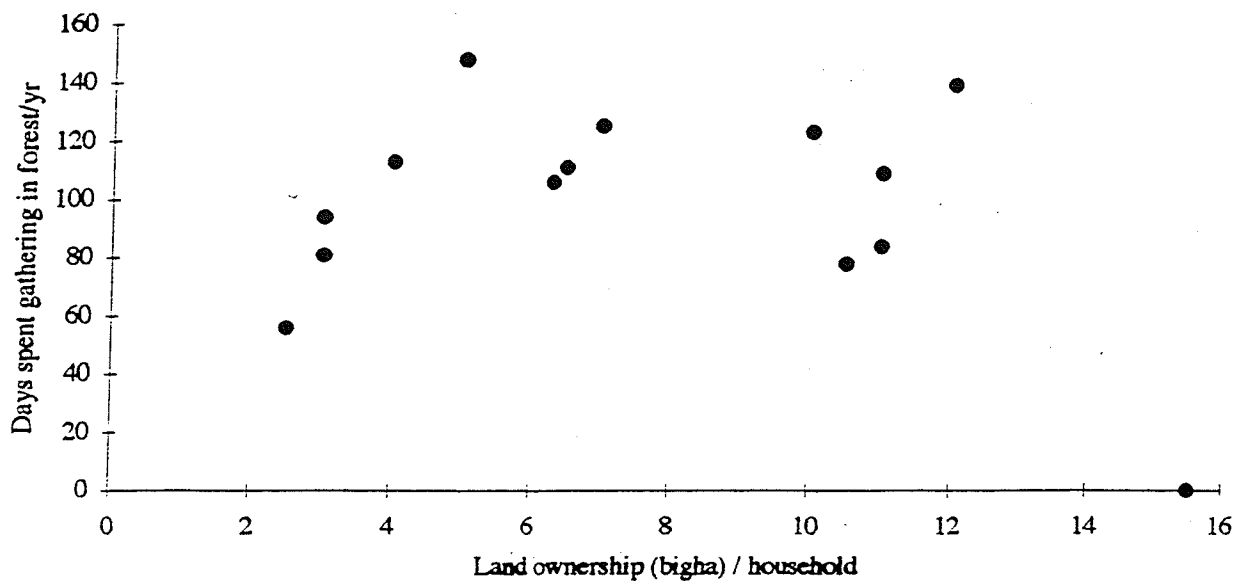


Figure 11. Comparison of household land ownership (bigha) and days spent in forest gathering / yr, Goshal.

CPRs do, however, provide vital inputs to the livelihood systems -- both for the relatively well off and the poor -- within the village and, therefore, the secure access and user rights to CPRs are an integral part of a secure livelihood system in both Chachoga and Goshal. Presently, however, the common grazing and forest areas (particularly the former) are under pressure as apple trees and cultivated fields encroach the commons. A number of women interviewed in the villages admitted to planting apple trees on land that was not registered as theirs. Further, the booming tourist industry in the larger urban center, Manali, has created a huge demand for the predominate timber species, *deodar*. This demand is increasingly satisfied illegally; people external to the villages (and possibly within the

villages¹⁰) would go to the forest at night and literally “poach” trees. This pressure is a large and very real threat to the forest commons and the agriculturally based livelihoods in the villages. Recognizing this threat, women have, within the last five years, organized to catch poachers and further regulate interactions with the forests. Women, due to their intimate interactions with both the grazing and forest commons, play an important role in the village level management of the common property on which their livelihoods and those of their families depend.

3.4.6 The *Mahila Mandal*: Community Groups as a Livelihood Strategy

The formation of community¹¹ groups that address village problems while providing forums for discussion and community decision-making is another example of a risk minimizing and empowering strategy which has positive effects for both household and community security.

About 200 000 grassroots organizations (GROs) have formed in developing countries to improve and develop their own communities. Although many have been promoted and stimulated by outsiders, some GROs have formed or become more active without outside help. Faced with the deterioration of their environment and increasing poverty, both traditional and newly created GROs are organizing horizontal networks with each other, usually based on geographical proximity. Women have been particularly active in organizing GROs (Fisher 1994: 7).

In both Goshal and Chachoga there is a women's group, the *Mahila Mandal*, which, although initially encouraged and formed by the government in the 1950's (1952 under the Community Development Program), has undergone a recent revitalization largely due to the mobilization efforts of the NGO working in the area. In Chachoga, a very dynamic group

¹⁰It was never conclusively established who was “poaching” timber from the village forests. It could have been villagers or people from Manali.

¹¹Defining the community is a difficult task. Possibly, it is most helpful to think of community as “groups with meaningful, regular social interactions” and is, therefore, not defined by political creations or geographical boundaries (Titi and Singh 1994). Community, in the context of the Himalayan village, does not necessarily refer to the total village nor is it restricted to the village alone.

of women form the core of the *Mahila Mandal*; their largest activities being forest protection and the operating of the *balwari* (day care) (Photos 9 and 10).

The main aim of the *Mahila Mandals* is to "draw rural women into the mainstream of development and to enable them to function as instruments of social change by providing them with programs in which they will have a stake or a sustained interest such as improving their income or productivity and employability or employment" (Jain and Reddy 1979: 3). The active NGO in the area, SHARE, estimates that there are approximately 120 *Mahila Mandals* in the Kullu Valley, with 15 - 20 of them actively involved in forest protection.

The active *Mahila Mandals* in the Kullu Valley are presently organized against local internal village and inter-village threats to the forest; there is no immediate threat of industrial logging by external corporations in the area. Instead, threats stem from the growing "black market" for timber, namely for the Himalayan cedar, *deodar*. This market is largely fueled by the increasing tourist trade and the concomitant explosion in the number of guesthouses and hotels being built throughout the valley. The *Mahila Mandal* is a vehicle through which to take organized action against these external and internal threats to each agricultural household's livelihoods.

In Chachoga, actions in which the *Mahila Mandal* are involved, specifically with reference to the village forest, include: making and enforcing rules regarding the use of certain products of the forest, catching poachers of timber through night watches, and planting seedlings with the support of the local forest department. The leader of a *Mahila Mandal* in Chachoga stated "If you gave me a house, a nice house, I will take care of it. It's like the jungle; if the government gave the forest to use, we will take care of it...the women feel it is their house". Echoing this thought is the leader of the *Mahila Mandal* in a nearby village. She comments: "This is our property. If no one protects it, the future is not certain".



Photo 9. A number of members of the *Mahila Mandal* in one study village.



Photo 10. The *balwari* (primary school) in one study village. This school is run largely by the *Mahila Mandal* and the staff salaries are paid by SHARE.

It is easy to "romanticize" the *Mahila Mandals* and the agency that the involved women exhibit within the village, however the presence of the group is hotly contested by some. Empowering for some, the *Mahila Mandal's* presence in Chachoga is a point of debate among many village women. The women that are most involved in the *Mahila Mandal*, and interested in ecosystem protection, appear to be the medium land-holding Rajputs. These are the villagers who are thought to be the most dependent on the products of CPRs and, therefore, it follows that they are the most interested in preserving them for both their household's and their children's futures. Many women from the Scheduled Caste, however, do not feel that the group represents their interests, while they are effectively banned from attending many group meetings due to social rules regarding caste interactions. Some Scheduled Caste women expressed the concern that the *Mahila Mandal* care nothing for the poor and one woman hoped to start a petition demanding their disbandment¹².

The Mahila Mandal does respond largely to the needs of the agricultural households, while the needs of households with little or no land and, therefore, not pursuing an agricultural livelihood have been effectively barred from selling forest produce or cutting firewood from certain trees. The fact that the Rajput caste not only generally holds a stronger economic position within the village but also largely controls social and political affairs is also reflected in the social stratification and the subsequent agenda of the Mahila Mandal. The predominance of upper caste women in the social composition in Mahila Mandals throughout India is well documented (Jain and Reddy 1979).

Regardless, for a certain group of women, the process is definitely empowering, although it is not clear whether the benefits of the activities of the Mahila Mandal accrue to the majority of the village residents. However, with the formation and development of a strong *Mahila Mandal*, problems that were once solved only by seeking help from outside the village -- or problems that were not solved at all -- can now be dealt with within the

¹²Since the time of this research the Scheduled Caste women who were involved in the Mahila Mandal have withdrawn (Berkas, pers. comm. 1995).

confines of the village. Within Chachoga, this appeared to place decision-making power back in the hands of the community, although a very narrowly defined community, and increased control over their resources.

3.4.7 Market Integration

Presently, the majority of land-owning households (30 of 32 households interviewed (94%); or *all* land owning households) interviewed were planning on planting an increasing number of apple trees, thereby furthering their integration with the market. Concomitant with the planting of more trees is the reduction in land set aside for traditional agriculture use and the booming demand for packing cases. Packing cases were formerly made from locally grown pine, however this practice is now prohibited and eucalyptus is now imported to serve the purpose (Kirk and Hobley 1993). The development of orchards has occurred slowly over the last 30 years, but the past decade has seen the majority of agricultural households involving themselves more intensely in the production of fruit for market. Increased planting of orchards has further changed an already dynamic and evolving landscape. Although many villages of the Kullu Valley have always interacted with the market, improvements in communications and transportation infrastructure over the last forty years has had a major impact on trade, agriculture and horticulture; an impact which is possibly unparalleled in the valley's past (Kirk and Hobley 1993).

There is no question that the further market integration of households will have far reaching effects, touching the social, economic, political, cultural and biophysical spheres of their lives. Indeed, the most readily visible sign of change in the productive strategies of the village is the movement of orchards onto both dryland and irrigated agricultural land, and into the unprotected demarcated forest. This has four immediately obvious consequences: the marginalization of the herding economy due to a decreasing grazing commons, the increased reliance on the market to meet day to day consumption requirements, the loss of

diversity in the agricultural system, and the potential shift in intra-household decision-making powers.

Of greatest interest with respect to women and livelihood strategies of the smallholder agriculturalist are the latter two. The nature of apple production appeared to be controlled more explicitly by the males -- women playing a less integral role in the system. In a group interaction with 20 women from Mahila Mandals in the Kullu Valley, one woman stated that, given subsistence agriculture *or* orchards: "We will still do all the work!". All women agreed, however, that agricultural decisions were made mutually within the household by both the man and the woman and with orchards, it would be no different. This contradicts the fact that the majority of women, in individual interviews, stated that the men in the household decided what to plant each year¹³.

The loss of diversity with the movement to apple orcharding is more obvious to see than the shift in intra-household decision-making. Fields that were once seeded with beans, corn, millets, amaranth, rice or vegetables are now seeded with a limited variety of apples. Madan (pers. comm. 1995) comments: "[The loss of biodiversity] ...is a crisis situation...the apple yield in the last 5 to 10 years has not increased and perhaps is even showing decreasing trends. Birds, bees and insects essential for a biodiverse scenario are fast disappearing. The land use changes, in our opinion, have set in motion serious non-sustainable trends in the biophysical environment".

Again, it is interesting to note that the agricultural system within the Valley has always been a dynamic one, negotiating with external influences throughout its history. More than a century ago it is likely that the agricultural system did not resemble what is thought of as the "traditional" system found throughout the valley today. During the 1800s, the Kullu Valley was deeply involved in the production of opium and tobacco for national and foreign markets (Harcourt 1871). Therefore, the present agricultural and livelihood

¹³This may not be a contradiction at all, as only a small number of the women at the group workshop were also individually interviewed.

system in Chachoga and Goshal today is most likely not truly "traditional" but, instead, an agricultural and livelihood system with *a tradition* of adapting and changing. As it was pointed out: "Apple trees can always be cut down"¹⁴.

3.5 Summary

Smallholder intensive agriculture is presently the predominant livelihood pursued in the villages of Chachoga and Goshal. Women play a central role in this system; they are the cultivators of the Kullu Valley responsible for planting, weeding, harvesting, caring for livestock, among other tasks. A number of strategies have evolved within the context of this system, including: the diversification of activities and household inputs, the diversity embedded in the agricultural system, employment and reliance on wage labour, building up and drawing down of inventories, reliance on common property resources, development and maintenance of reciprocal social and commodity relations, the formation of community groups and, most recently, the fuller integration with the market. While many of these strategies have interacted in the past to create viable livelihoods for the majority of households, some have been recently adopted (market integration and the present rejuvenation of the Mahila Mandal) in response to new opportunities, constraints, pressures and influences.

The smallholder, intensive agricultural system is a sustainable one spanning countless political and cultural borders (Netting 1993, Jodha 1992). In the Kullu Valley, and more specifically Chachoga and Goshal, it has been no different. In ecological terms, the agricultural livelihood strategy historically linked to the Rajput caste is a sustainable one with diverse links and multiple resource-use leading to a social sustainability and security at

¹⁴This is not to belittle the risk embedded in the movement to a greater reliance on the market. However, Netting (1993), in his extensive study of smallholders across cultural and political boundaries, points out that intensive smallholders may negotiate with the market (which is always there) on their own conditions, both engaging in more market integration and withdrawing from the market when they feel necessary, reverting back to more subsistence-oriented crops. Netting dismisses the more deterministic approach which places smallholders on the evolutionary path to agri-business -- instead, there are a myriad of factors which influence each cultivator's production decisions, the market being only one of them.

the household level. Between households, however, the question of social equity -- an integral part of sustainability -- is more difficult to address. It was found that the Scheduled Caste households are continually marginalized and effectively barred from participating in decision-making processes that surround resource use and control at the village level. This is especially apparent with regards to the village commons.

This is not to say that the resilience exhibited by the smallholder agricultural system over the centuries should be discounted. Instead, the strategies these households adopt have evolved over time out of intense interactions with the mountain ecosystem -- its constraints and opportunities -- and are sensitive to the mountain specificities described above (Jodha 1992). The agricultural system, possibly even in its decreasing or (presently) increasing negotiations with the market, is an impressive case study in sustainability.

Also important to this discussion is a consideration of the role that policy and government intervention has to play in the future sustainability of Himalayan villages, including Chachoga and Goshal. Referring back to Figure 3, policy can fortify strategies adopted by households and communities and, thereby, strengthen an already resilient system, or policy has the ability to work against people's own responses to the vulnerabilities existing in their immediate environments. Policy also has the capacity to further distort intra-village dynamics with its tendency to treat all villagers, be they smallholders or wage labourers, as a homogeneous group of "poor" people -- all with the same capacities, needs and knowledge.

CHAPTER FOUR: Linking Livelihoods with Policy

4.0 Preamble

Jodha states: "in order to sensitize macro-level decisions to mountain specificities, the need for a greater focus on micro-level realities through the understanding of farmer's strategies and responses is emphasized" (1992: 29). This statement summarizes one of the basic roots of the research, that is: policy will only aid in ensuring a sustainable future when people's knowledge is recognized and the complex livelihood systems in which they take part are understood by decision-makers. Conversely, if policy is not sensitized to the reality "on the ground" a number of unsustainable trends can result, as previously noted. These may include: an accentuated rate of resource extraction, increased centralization in decision-making, the perpetual subsidization of development activities, the replacement of traditional self-help and resource protection devices by formal government interventions and the reinforcement of inequitable power structures leading to a greater social, economic or political stratification both intra- and inter-villages (*ibid.*).

4.1 Strengthening Policy through an Understanding of Strategies

It is important to look, therefore, at formal policies pursued by the Indian government and their impacts "on the ground" with specific reference to the livelihoods in Chachoga and Goshal. Land reform policies and the government encouragement of *Mahila Mandals* are two policies which have played important roles in shaping both the physical and political landscape in these villages. Ultimately, these examples illustrate how important it is for decision-makers and, subsequently, policy to have an intimate understanding of the livelihood systems within the villages and the important components and linkages within these systems. One vehicle in which to achieve this understanding is by studying the strategies smallholder households and other households employ to create their livelihoods. An understanding of strategies such as household diversification, reciprocal labour relations,

a reliance on wage labour and the reliance on CPRs, among others, will allow policy to become more sensitized to the reality "on the ground".

The second point to elucidate is the tendency for decision-makers and policy to view groups within the village context as homogeneous. In a closer look at the villages, countless stratifications occur along political, social, economic, gender and caste lines. In the following discussion, the fallacy of treating a seemingly homogeneous group as such is illustrated twice. First, with regards to land reforms, all landless households are treated as equal, whether or not they actually possess the complementary resources (labour, livestock, knowledge, informal rights to use the forest) available to make a viable livelihood through cultivation. In the second example, the women in the village are treated as a homogeneous group although, again, stratification already exists within this community. This stratification is largely dependent on caste and socio-economic status and the historical interactions between individual households and village resources. These factors all contribute to an unequal and inequitable control of village resources which is heightened by the official promotion of the *Mahila Mandals* by the government.

4.2 Select Policy Impacts within the Mountain Ecosystem

4.2.1 Asset Redistribution Policies

Asset redistribution policies are often very powerful and controversial tools for improving access to land by poor households. Their success has varied widely across many developing countries (ESCAP 1994). Within the Kullu Valley a number of periods of land reform have occurred in the past three to four decades, and a recent Overseas Development Administration (ODA) report states that absolute landlessness in the Kullu and Mandi Districts is now relatively rare (Kirk and Hobley 1993). Again, two women of the thirty-two interviewed represented landless households (6%).

Land was redistributed from large land owners in 1953 under the Himachal Pradesh Abolition of Big Landed Estates Land Reform Act and, more recently, in 1972 under the

Himachal Pradesh Tenancy and Land Reform Act and the Himachal Pradesh Ceilings on Land Holdings Act. With the land reforms of 1953 and 1972, the government divested large landowners of their estates and land ceilings were set at 24 bigha (2 ha) for irrigated land, 36 bigha (3 ha) for non-irrigated land, and 72 bigha (6 ha) for orchards (*ibid.*). In 1974, the Himachal Pradesh Village Common Land Vesting and Utilization Act vested village common land in the state. Much of this nationalised land was redistributed to landless households, targeting 5 bigha (0.4 ha) per household.

Madan states, "the government, in all its wisdom and political expediency, distributed all common lands meant for grazing or community purposes. This is what has opened the flood gates to encroachment of forest lands" (pers. comm. 1995). If the dependence of agricultural livelihoods on CPRs as an adaptive strategy is recognized, such land reforms can be shown in a negative light. Although potentially creating greater equity within agricultural communities, "most households still have access to only very small holdings; and beneficiaries of land distribution under the reforms have often received only marginal land" (Kirk and Hobley 1993: 5). This observation was reinforced in the interviews conducted in Chachoga. Some households which had acquired land under the 1974 Act are unable to farm it as it is completely unsuitable for such an intensive land use, although could possibly support a minimal number of trees¹⁵. Further, some families only received enough land on which to build a house.

Findings from Jodha (1986) also indicate that "land distributed under welfare programmes was often poor and sub-marginal". Further, the mere distribution of land without the provision of complementary resources makes it virtually impossible to successfully develop and cultivate land. Jodha concludes by stating that "the privatization of CPRs as a strategy to help the rural poor yielded a negative result" (1986: 1179).

Land reform policies must be contextualized within the social, bio-physical and cultural environments in which they are enacted. In the Kullu Valley, the Act of 1974

¹⁵Madan comments "a few trees do not provide economic viability" (pers. comm. 1995).

reallocated Unclassified (or Undemarcated) Protected Forest, and although “unclassified” by the state, the commons are an important component of two livelihood structures: they are integral to the smallholder agricultural system that has sustained itself in the region for centuries as well as being crucial grazing lands for pastoralists. Although “government wasteland, grazing land and undemarcated protected forest / Class III forest land are widely [considered] an open access resource” (Kirk and Hobley 1993) by those unfamiliar with the local land use, often local institutions do exist which work to manage these resources in a sustainable way¹⁶. The final implication is that land redistribution policies, although with the aim of resulting in a potentially greater equity within agricultural livelihood systems, do so to the degradation of other livelihood systems which work throughout the valley.

Therefore, land redistribution policies, although generally considered a success within the Kullu Valley (Kirk and Hobley 1993), have had negative implications for a number of livelihood structures. Possibly land redistribution *has* benefitted some households which were once landless; although even within this context, land reform has not been overwhelmingly successful; reasons which emerged from interviews included the marginality of the land provided and the lack of complementary resources to cultivate this land. Ultimately, policy makers must remain cognizant of the negative implications of the redistribution of village common property. Policy makers have not demonstrated this realization in the past, and still today, the redistribution of village grazing lands and CPRs is a policy pursued in a number of mountain ecosystems (Denniston 1995).

4.2.2 The Formation of *Mahila Mandals*

As discussed above, *Mahila Mandals* are women's groups formed throughout India during the 1950's. In 1952, under the Community Development Programme, the government sought to catalyze women's participation in mainstream development. It was

¹⁶For example, an intricate system of grazing permits exists within the study region.

thought that the formation of a network of *Mahila Mandals* could serve as vehicles for both social change and empowerment throughout the country.

The *Mahila Mandals* in both study villages were active. Chachoga, especially, had a core group of women who dominated the activities of the Mahila Mandal, and predominantly these women were of the upper caste -- largely Rajputs. The needs and concerns of these upper caste women dictated the activities of the Mahila Mandals, often to the detriment of the needs and concerns of the lower caste women. Within the study area, the higher caste women were able to develop and enforce rules regarding the use of the forest; rules which restricted certain uses of the resources found within the forest.

The formation of *Mahila Mandals* did differentially benefit women within the study villages. This differential depended largely on the caste and socio-economic status (including land and animal ownership) of the women. If "women" are seen as a homogeneous group (much like the "poor" and landless are perceived), the implementation of the policy enacted to benefit this "homogeneous" group will fail because it does not recognize the differences embedded within the village livelihood systems. The official encouragement of Mahila Mandals recognizes only one livelihood system and, indeed, the *Mahila Mandal* is empowering for some. However, it must be recognized that the policy is only empowering for some, while it is disempowering for others. Policy makers need to recognize that this policy does not draw *all* women into the security of a "community" group. Analysis and an understanding of existent structures within the villages is needed so that the implications of potential policy on internal village dynamics and power structures can be more fully understood.

By studying and understanding coping and adaptive strategies that households and different communities within the villages adopt, the complexity, stratification and heterogeneity within the villages can begin to be understood. Without this understanding, policy may mistakenly overlook internal stratification and existent structures of power and control within villages. When differences are recognized at the village level, diverse and

representative voices can be brought to light, and by acknowledging inequities it may be possible to begin new dialogues leading to a more effective policy promoting more equitable, secure and sustainable livelihoods. Equally important, policy must recognize the linkages within livelihood systems (for example, the forest (CPR), the field and livestock linkages). Without this recognition, policy has the capacity to weaken these links and, subsequently, weaken the livelihoods within the region.

4.3 Principles for Policy Leading to Sustainable Livelihoods

4.3.1 The Clumsy Institution

The above discussion has argued for an understanding of the strategies that households and communities within villages adopt on a daily basis to negotiate their livelihoods. This understanding and subsequent incorporation by decision-makers should have positive implications for policy. Therefore, it is also important to recognize that a village does not have one adaptive strategy to "use" when reacting to change and attempting to mitigate vulnerability; instead, as shown by Chachoga and Goshal, there are a number of strategies used by women throughout the village that constitute a bundle of options. Further, not all strategies are viable for each group within the village. Indeed, some strategies may be village-wide, while others are specific to gender, socio-economic status, age or caste (or any mixture of the myriad of variables which differentiate groups within the village context). And finally, this picture of complexity is deepened when it is recognized that some strategies are only viable when others are in place; "each one's distinctive strategy makes viable the other's" (Thompson 1993: 6). Therefore, in the study area there exists a complex picture of numerous and sometimes indistinguishable strategies which interact and often depend on one another for success.

This picture of complexity has important implications for the formulation of policy; policy which would work to support and reinforce (rather than work against) strategies which have the capacity to contribute to the achievement of sustainable livelihoods. When

the complexity of the village is recognized, Chachoga and Goshal would fall under what Thompson calls "a clumsy institution" (1993). A clumsy institution is one in which:

transactions are parcelled out to what seem to be the appropriate cultural modes and, if circumstances change, some of those transactions can be switched to a more appropriate mode. It is this combination of plurality and flexibility that confers such a high level of resilience on the Himalayan village (Thompson 1993: 4).

These transactional realms are defined as: fatalistic, hierarchical, individualistic and egalitarian. In contrast to the clumsy institution (as seen in the Himalayan village) is the "streamlined, rationalized, optimized" organizations of the "North" in which transactions are parcelled out in only one way, and there is "just one way of doing things, and just one idea of what is fair" (*ibid*: 6). Concomitant with the idea that transactions exist only in one realm (be it hierarchical, individualistic, etc.) is the belief that there is only one solution to what is perceived to be the problem. Often, it is this "one solution" which is then translated into policy. Thompson (1993: 7) offers the example :

Where we in the North have only one solution to what we perceive (often wrongly) to be the "tragedy of the commons"--privatize the commons--the Himalayan villager has a wealth of options. He or she can ease transactions in any of four organizational directions. This sort of rearranging of transactions for institutional appropriateness is going on all the time...

The challenge, therefore, appears to be creating policy which does not limit the movement between transactional realms or, in more extreme cases, force all villagers into one transactional realm. The result of these forces would be a huge loss of resilience within the Himalayan village, and strategies which fill important and distinctive niches -- niches that exist only due to the diversity within the "clumsy institution" -- might cease to exist. Policy needs to become "sufficiently clumsy" to reflect the reality which it is also attempting to shape (Thompson 1993:10).

4.3.2 Principles for Policy in the Context of the Clumsy Institution

Understanding strategies that are adopted by the household and different communities within both Chachoga and Goshal is the first step in incorporating the dynamics of “the clumsy institution” into future policy scenarios. Strategies embody the skills and knowledge of the individuals and many are necessarily adapted to the uniqueness of the mountain ecosystem -- its diversity, fragility, marginality and inaccessibility. In the study villages, this knowledge is manifested in adaptations within a resilient and sustainable smallholder agricultural system, including its diversification, the reliance on common property resources, the development of and reliance on social relations and the formation of community groups, among others.

Three principles stem from this research which should underlie policy created in mountain ecosystems for the promotion of sustainable livelihoods. They are as follows:

- 1) Policy meant to encourage development within the mountain context must not be simply an extension of “plains” policy. Instead, it must take into consideration the uniqueness of the mountain ecosystem and its people; including their diversity, fragility, marginality and inaccessibility.
- 2) Policy must recognize that there are a number of livelihood systems at work within the village context. If policy is to be enacted with one livelihood structure in mind, the effects of this policy on other livelihoods must be examined and acknowledged.
- 3) To effectively allow people, households and communities to adapt and adjust to change, relying on their own strengths rather than substituting for them, policy which will directly effect livelihoods must stem from the knowledge and skills of local people and be formulated with their participation.

4.3.3 Priorities for Policy in the Mountain Context

With these principles in mind, priorities for policy -- that is policy meant to promote sustainable livelihoods -- in mountain ecosystems should focus on a number of areas. Denniston (1995: 55) outlines six broad areas that need to be addressed by policy. These are:

promoting efforts to secure land tenure or control over local resources; reducing the impacts of livestock, timber, hydropower, and minerals production in mountains; creating regional networks of conservation areas; improving knowledge about mountains through integrated research, social and environmental monitoring, and public education; establishing institutions and cooperative agreements for each major range; and integrating mountains into the projects and policies of development agencies.

The majority of these recommendations apply largely to the institutional framework in which mountain development is to be addressed. However, the first two priority areas listed by Denniston are of crucial importance to the villages of Chachoga and Goshal in their search for sustainability. A third priority, the inclusion of the gender perspective when formulating policy, should also be a priority for policy in mountain ecosystems.

The first addresses the need for secure land tenure or control over local resources. This issue is paramount in mountain villages where the main livelihood system is that of smallholder agriculture which depends on the products of village common property resources, both the forest and grazing lands. This priority re-emphasizes a necessary condition for empowerment (discussed further in Chapter Two), namely the secure access to entitlements over land and other resources central to the livelihood under consideration (in this case, the livelihood of the smallholder agriculturalist). Implicitly, this argues for some degree of decision-making power over the resource base by the local community, be it through a co-management board with the local government or through a community-based management regime where the community of resource users has the right to make and enforce rules regarding resource use. Integral to the concept of sustainable livelihoods is the

idea of control over the resources and entitlements on which livelihoods depend (Jodha 1992, Titi and Singh 1994, ICIMOD 1988, Denniston 1993 and 1995).

The second priority, reducing the impacts of livestock, timber, hydropower, and minerals production, also has implications for Chachoga and Goshal. Although not directly affected by hydropower and minerals production, both villages are under the constant threat of the indiscriminate felling of the timber on which their livelihoods depend. Increasing demand for wood in the nearby tourist centers have made it quite lucrative for the illegal selling of timber; one sleeper¹⁷ of legal timber costs Rs. 2000 (approximately \$90.00 Cdn) while an illegally obtained sleeper sells for Rs. 400 to 500 (approximately \$20.00 Cdn) (Madan pers. comm. 1995). Impacts of this illegal felling are both biophysical and social, affecting both the forest and its capacity to control erosion on steep slopes and affecting the livelihoods within Chachoga and Goshal. With regards to policy, recognizing the immediate threat of this situation and subsequently attempting to reduce these impacts should be a priority.

A final priority for policy in the mountain context is the explicit consideration of the role women play in the Himalayan village and, specifically, the agricultural system. The smallholder agricultural system of the Himalayas is primarily characterised by heavy labour inputs from women; indeed, it is women's energy that maintains the flow of biomass between the distinct components of the agricultural system (ICIMOD 1988). ICIMOD states:

There is no debate concerning the linkage between farming systems and resource management and the potential scope this offers in arresting negative trends in the productivity and sustainability of mountain resources that sustain the bulk of the mountain population. It is unfortunate, however, that, so far, in spite of the substantial contribution of women to overall farming activities, the gender issues have not been given sufficient emphasis in programme design and implementation. (1988: 5).

Harnessing the knowledge and experience of women as resource managers has been largely overlooked in past policy for promoting development and productivity of the agricultural

¹⁷A sleeper in the area refers to a piece of wood approximately 10" x 10" x 6'.

system. Instead, in the past, government policy has characteristically divided the farming system into different sectors and encouraged the cash-based and market-oriented economies (*ibid.*). The emphasis has been on high-yield breeds of cattle to provide milk for markets, the increased production of timber to supply raw materials to industries, or the increased production of grains for market while the essential inputs to maintain and sustain the system are largely overlooked or ignored. If policy were to look more closely at the role women play in the agricultural system, these linkages could be strengthened potentially leading to a stronger, more resilient overall livelihood system within mountain villages.

Therefore, three priorities for policy for sustainable livelihoods within the mountain ecosystem include: the securing of land tenure and local control over resources, minimizing of the impacts of purely resource extractive activities, and recognizing the strong and prominent role that women could play as effective environmental managers while utilizing their knowledge and experience.

4.4 Summary

Policy impacts can be both positive and negative and can vary in time and in space -- from region to region, household to household, individual to individual. If the linkages between components of a livelihood system are not understood, policy may weaken these necessary flows of resources, for example, by removing the commons from the agricultural system through land reforms. If existent structures of decision-making and resource control within villages are not recognized, policy may act to perpetuate or emphasize an already inequitable allocation of power while not attempting to bring the diverse voices within the village to light.

Both of these negative impacts of policy -- although both initially enacted over two decades ago -- were seen in the study villages. First, in both Goshal and Chachoga, redistributed land is marginal and often unfit for intensive cultivation. Further, divesting the village of control over the commons in the 1970s heightened the insecurity attached to

resource access and use. This insecurity continues to today, potentially fuelling the increased encroachment onto certain forest lands (Jodha 1993, Madan pers. comm. 1995). Secondly, the activities of the *Mahila Mandal* accentuate intra-village inequities as it is built on existent power and decision-making structures with very long histories, favouring a certain group of people with the powers of resource control.

By understanding the strategies that people, households and communities employ as they negotiate their livelihoods and highlighting the strategies that are integral to sustaining particular livelihood structures (e.g. reliance on CPRs), negative policy impacts can be minimized. Three principles are suggested for this end in mind: the involvement of people -- their skills, experience and knowledge -- in the policy formulation stage, the necessary fit between policy and mountain specificities, and the recognition of the diverse livelihoods working within the "clumsy institution". Priorities in which these policy principles can be operationalized are: increasing land tenure security and local control of resources, mitigating the negative impacts of extractive activities in the village resource areas, and heightening the involvement of women in mountain development.

CHAPTER FIVE: Conclusions and Recommendations

5.0 Preamble

The main objectives of the research were to identify coping and adaptive strategies that people, households and communities have adopted to create viable livelihoods; establish these strategies in terms of their sustainability; and to recommend underlying principles and priorities of policy with the goal of strengthening those strategies which have the capacity to lead to sustainable livelihoods specifically in mountain ecosystems.

Primarily, the research focused on the smallholder agricultural system which presently constitutes the livelihood of approximately 85% of the population of the Kullu District (Kirk and Hobley 1993). To explore this livelihood system, women were chosen as a proxy for the household unit and they were interviewed exclusively. Women, as the key players in the smallholder, intensive agricultural system, were often solely responsible for maintaining the crucial links and flows of physical resources between components of this livelihood system -- the forest, the fields and livestock. Therefore, household security is intimately linked to and dependent on the work that women do on a daily basis. Alternatively, livelihood systems could be explored by interacting with several different members of a single household. Indeed, had this been done in this research, different strategies may have been brought to light. However, it was thought that strategies which emerged through interacting with women exclusively represent those strategies with the primary goal of achieving or enhancing livelihood security for the entire household unit.

5.1 Strategies and Sustainability

The first two objectives were to identify coping and adaptive strategies presently employed by households and communities within a mountain ecosystem and establish the observed strategies' capacities to contribute to sustainable livelihoods.

This research recognized a number of livelihood systems at work in the dynamic Kullu Valley today and, primarily, the livelihood of the smallholder agriculturalist was explored. Within the villages of Chachoga and Goshal, this agricultural system was uniquely adapted to the mountain ecosystem and its marginality, fragility, diversity and inaccessibility. Adaptive strategies include the ways in which local households and communities have changed their productive activities and modified their community rules and institutions, in response to vulnerabilities, in order to "create" viable livelihoods for themselves (Titi and Singh 1994). This process of adaptation and modification within the agricultural system has a long history; strategies such as diversity, reciprocal social relations and the reliance on common property have evolved to play an integral role in the agricultural system over time -- their sustainability is attested to throughout history.

A number of adaptive strategies, however, are of recent origin, responding to new threats, constraints or opportunities. Two examples within Chachoga and Goshal were the further integration with the market through the increased planting of orchards and the recent rejuvenation of the *Mahila Mandal*. Although some immediate impacts of these activities -- both positive and negative -- were seen in the villages, the longer term impacts of these adaptive strategies and their implications for sustainability are, as of yet, unknown.

With regards to the former, villages in the Kullu Valley have always had some integration with the market. Smallholder cultivators may increase or decrease their market negotiations depending on a number of factors, and "calculate their interests over long spans of time, forgoing immediate benefits such as might come from cash-crop specialization in order to lessen risk in the short term" (Netting 1993: 17). The fact that the agricultural system was highly market oriented in the valley over a century ago attests to the adaptability of the mountain cultivators and does not immediately allow the assumption that the fuller integration with the market will lead to the inevitable collapse of the system.

Therefore, the smallholder cultivators that are now increasing their interactions with the market by devoting the majority of their agricultural land to orchards may move back, in

the future, to what is seen as the more "traditional" and diverse system. To allow this transition, however, a number of factors must be present. First, the knowledge presently possessed by smallholders in their complex cultivation of crops must be intact and, secondly, the property rights and secure access to resources must not have changed substantially throughout the movement to market integration¹⁸. These are serious questions posed for future research: Will the knowledge base be there for the cultivators of tomorrow to disentangle themselves from the market and move back to a more subsistence based agriculture? and, will the property rights have changed throughout the course of this transition in such a way that future options are foreclosed for the cultivator? These questions lie at the heart of the sustainability issue with regards to market interactions and were beyond the scope of the present research to answer.

5.2 Monitoring for Strategy Sustainability

The strategies categorized and described within this research are more characteristic of smallholder, intensive agricultural systems and less specific to the actual mountain ecosystem. Strategies such as diversity, reciprocal labour relations, the reliance on common property resources and the increasing or decreasing integration with the market, among others, are simply categories or ways of describing human activities and transcend the biophysical system in which they are observed. For example, the diversification of crops is not unique to the mountain ecosystem; instead it appears to be more characteristic of insecure or vulnerable livelihood systems regardless of the ecosystem in which these livelihoods are situated. Indeed, "the major strategy for combining high production per unit area with risk reduction and sustainability in [smallholder] agriculture is diversification" (Netting 1993:32). Netting's observation is not confined to one ecosystem.

¹⁸For example, large orchard owners buying up smaller plots of land, precluding the now landless family from moving back to a production system more independent of the market.

At a finer scale, however, the actual *process* of diversification or the means used to achieve diversity within an agricultural system will be limited by the opportunities and constraints which already exist in the specific social, cultural and ecological context. Insecure and vulnerable households in the Himalaya may diversify their crops just as Sub-Saharan, non-mountainous villages in Africa may. Both may rely on the strategy of diversification to enhance household security yet both will utilize different means and mechanisms with which to achieve this diversification; means partially dictated by the ecosystem in which these households are located.

If the sustainability of local coping and adaptive strategies is to be considered, the mechanisms -- that is, activities specific to the mountain ecosystem -- by which these strategies are fulfilled must be examined. Two have already been discussed: the formation of the *Mahila Mandal* and the greater integration with the market. Other strategies described in this research included: the reliance on common property resources, the reliance on agricultural wage labour and employment in the larger urban center, the increasing integration of the household with the market economy and the formation of community groups. While a number of these have already been discussed, some preliminary observations can be offered about the sustainability of the very important strategy of the reliance on common property resources.

In the case of Chachoga and Goshal, the most prominent CPR was the forest. Here women collect many crucial ingredients for a successful agricultural system, primarily bedding, fuel and fodder. One person in the research team concerned himself specifically with indicators of sustainability and, by drawing on these results, future directions in the monitoring of sustainability can be highlighted.

Duffield (1995) found that the sustainability of the forest could be monitored in a number of ways, using a variety of indicators. Sustainability indicators were explored from the perspective of both the professional and the villager. From a professional perspective, resource health can be established and monitored by looking at forest cover, quality and age

class structure (Duffield 1995). Soil erosion within the forest is also a crucial indicator of sustainability. From a villager's perspective, indicators of sustainability can be categorized as (1) forest indicators, (2) linkages to forest indicators, and (3) forest management indicators. The first includes forest area cover, tree species diversity, forest density and the availability of forest products (fuel, fodder, bedding, MFPs and timber). The second category includes the frequency of snow avalanches and landslides, consistent hydrology of streams, springs and rivers and, finally, clean water and the scenic beauty of the area (*ibid.*). The third group of indicators relates to forest management. Two positive indicators are the presence of reforestation efforts and natural forest regeneration. Enforcement effectiveness over the annual timber harvest allowed by households was also deemed an important indicator of sustainability by villagers.

Therefore, to draw any conclusions about the sustainability of the forest resource and, therefore, the sustainability of the strategy of relying on CPR, it would be necessary to spend a greater amount of time in the field and involve the people who interact with these resources on a daily basis in a monitoring program. Monitoring could focus on indicators as defined by both the villagers and the professional foresters in the area as outlined above.

5.3 The Role of Policy

The final objectives of the research involved gaining an understanding of policies which have affected household and community coping and adaptive strategies and, therefore, livelihoods; and to recommend underlying principles and priorities for future policy in order to strengthen sustainable strategies.

The role of policy in future scenarios of sustainability is paramount. The negative effects of policy, as seen in the impacts resulting from land reform in the 1970s and the promotion of the *Mahila Mandals* without consideration of diverse voices within the village, attest to the need for decision-makers to possess knowledge of the livelihoods -- components and linkages -- when creating policy. Coping and adaptive strategies are seen

as an effective vehicle in which to begin to understand livelihood systems and their complexity. Predicated on an understanding of livelihood strategies, the research presented a number of principles and priorities for policy in the mountain context. These are reiterated below.

5.4 Recommendations

A number of recommendations stem from this research. These recommendations are primarily directed to decision-makers within the mountain ecosystem and not only those with immediate interactions with Chachoga and Goshal. A secondary audience for these recommendations includes research institutions who presently pursue the mandate of studying pathways to sustainable livelihoods within mountain ecosystems.

(1) It is crucial that the question of market integration and sustainability in mountain ecosystems be further addressed through an integrated effort on the part of both research institutions and decision-makers.

Although the Kullu Valley has a long history of market integration, the impacts of the present move to orcharding and subsequent implications for sustainability are largely unknown. Two important issues that need to be addressed in this regard are: first, the potential erosion and disappearance of cultivator's knowledge over time and, second, the potential change in property and resource-use rights, both of which may foreclose options for future generations.

(2) The important role of women in the livelihood systems within the villages should be given greater recognition in the design of policy created in the name of mountain development.

Rather than having a primarily market-oriented and external perspective, policy must attempt to fortify an already resilient agricultural system by recognizing women's roles in this

system. Policy for mountain development should focus on strengthening the internal linkages and flows within the agricultural system -- flows that women are largely responsible for maintaining through their work.

(3) Policy for sustainable livelihoods in the mountain ecosystem should be formulated with a number of broad principles in mind. Each of these act as smaller recommendations. These are:

- 1) Policy meant to encourage development within the mountain context must not be simply an extension of "plains" policy. Instead, it must take into consideration the uniqueness of the mountain ecosystem and its people; including their diversity, fragility, marginality and inaccessibility.
- 2) Policy must recognize that there are a number of livelihood systems at work within the village context. If policy is to be enacted with one livelihood structure in mind, the effects of this policy on other livelihoods must be examined and acknowledged.
- 3) To effectively allow people, households and communities to adapt and adjust to change, relying on their own strengths rather than substituting for them, policy which will directly effect livelihoods must stem from the knowledge and skills of local people and be formulated with their participation.

(4) Policy for sustainable livelihoods in the mountain context should focus primarily on securing property rights and resource-use rights and reducing, minimizing or mitigating the impacts of extractive resource use.

Insecure entitlements to land and other resources is a constant threat to the livelihoods found within Chachoga and Goshal. A truly sustainable scenario is not possible without a vision of secured access to the resources on which livelihoods depend. This does not argue for the privatization of all resources; instead, it argues for creative and flexible ways to secure rights within the "clumsy institution" -- the Himalayan village. This implicitly requires more local control over resources. Further, the impacts of indiscriminate logging, fuelled by a booming and highly unregulated tourism sector, needs to be quickly and effectively addressed by decision-makers.

5.5 Concluding Remarks

Whether or not pursued under the rubric of household strategies or coping and adaptive strategies, inquiries into livelihood systems should be pursued. A sensible place to begin appears to be understanding people's own responses to risk and vulnerability, and their own capacities in adapting to and managing change. Often these capacities are predicated on individual assets of knowledge, ingenuity and creativity. In a global search for pathways to sustainable livelihoods, we cannot afford to overlook these valuable assets. Finally, an expression of deep gratitude and appreciation is offered to the brilliant, creative and energetic women who donated their time and expertise to the author during their busy agricultural months of *Shaun* and *Bhadru*, 1994 (Photo 11).

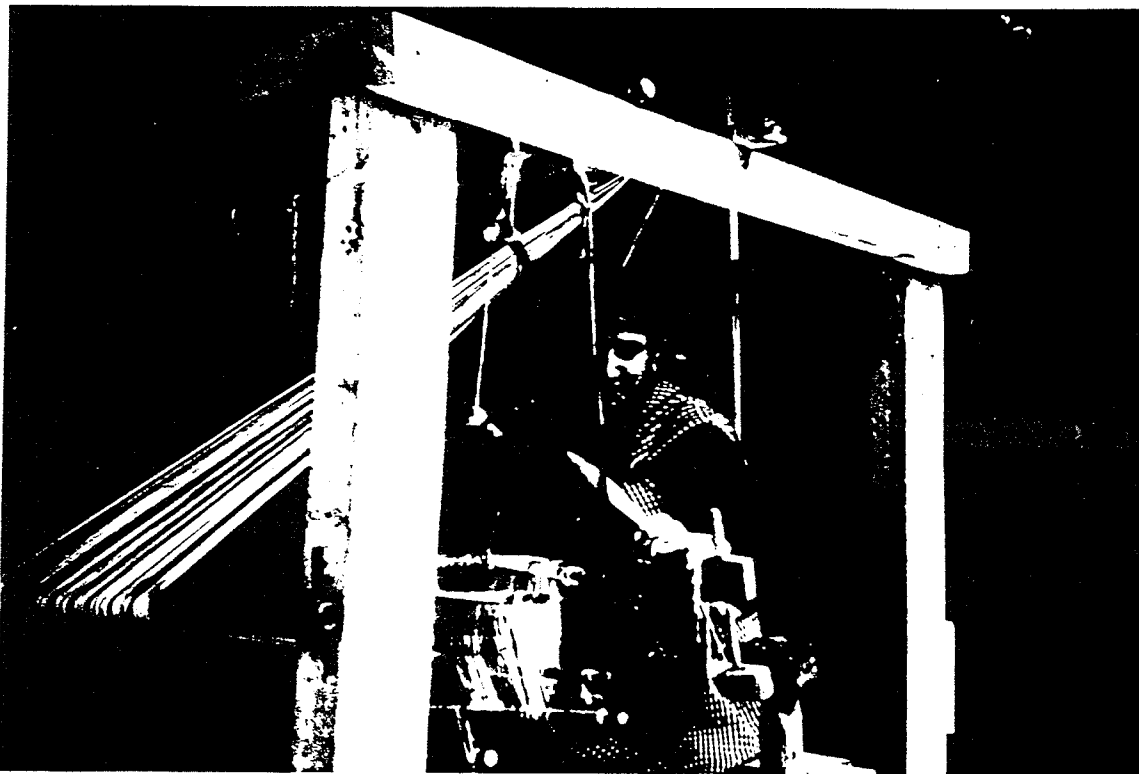


Photo 11. A consultant weaving a *pattu* on a home made loom in one study village.

References Cited

- Acharya, S. 1985. Women's work and family strategies in South and South East Asia: An intra-regional collaborative study. Center for Women's Development Studies, New Delhi.
- Agarwal, B. 1988. Neither Sustenance Nor Sustainability: Agricultural Strategies, Ecological Degradation and Indian Women in Poverty. *Structures of Patriarchy: State, Community and Household in Modernizing Asia*. Kali for Women, New Delhi, pp. 83 - 120.
- . 1990. Social Security and the Family: Coping with Seasonality and Calamity in Rural India. *Journal of Peasant Studies*. 17 (3): 341 - 412.
- . 1992. The Gender and Environment Debate: Lessons from India. *Feminist Studies*. 18: 118 - 58.
- Allan, N.J.R.; Knapp, G. W. and Stadel, C. (Eds.) *Human Impact on Mountains*. Rowman and Littlefield, New Jersey.
- Banskota, M. and Jodha, N. S. 1992. Mountain Agricultural Development Strategies: Comparative Perspectives From the Countries of the Hindu Kush-Himalayan Region. Chapter 3 in: Jodha et al. (Eds.) op. cite.
- Barlett, P. F. 1980. Adaptive Strategies in Peasant Agricultural Production. *Ann. Rev. Anthropol.* 9: 545 - 573.
- Beebe, J. 1995. Basic concepts and techniques of rapid appraisal. *Human Organization*. 54: 42 - 51.
- Berremen, G. D. 1970. Parhari Culture: Diversity and Change in the Lower Himalayas. in Ishwaran, K. (Ed.): *Change and Continuity in India's Villages*. Columbia University Press, New York.
- . 1972. *Hindus of the Himalayas: Ethnography and Change*. University of California Press, Berkeley, CA.

- Berkes, F. (ed.). 1989. *Common Property Resources: Ecology and Community-Based Sustainable Development*. Belhaven Press, London.
- Berkes, F., G. S. Chauhan, I. Davidson-Hunt, K. Davidson-Hunt, C. Duffield, J. S. Gardner, L. Ham, B. W. Pandey, J. Sinclair, R. B. Singh, and M. Thakur. 1995. Sustainability of a mountain watershed ecosystem in the Himachal Pradesh Himalaya: Background and overview. Technical Report No. 1. Natural Resources Institute, Winnipeg, MB.
- Bernard, F. E. 1990. Sustainable Development in Low Income Countries. Paper presented at CAGONT/ELDAAG '90 Conference. Brock University, St. Catharines, Ontario.
- Bhati, J.P.; Singh, R.; Rathore, M. S.; and Sharma, L.R. 1992. Diversity of Mountain Farming Systems in Himachal Pradesh, India. Chapter 21 in Jodha et al. (Eds.) op. cite.
- Bhati, J. P. and Swarup, R. 1985. Why Eco-Development Planning Fails in the Himalayas. in Singh, T. V. and Kaur, J. (Eds.) *Integrated Mountain Development*. Himalayan Books, New Delhi, pp. 337-348.
- Center for Women and Development (CWD). 1987. Women's Work and Family Survival Strategies Under Conditions of Modernization and Resettlement: A Case of Cotton Development Project in Nepal. Preliminary Draft prepared for the UNU Workshop on Comparative Studies of Women's Work and Family Strategies in South and South-East Asia, Kathmandu, Nepal.
- Chambers, R. 1983. *Rural Development: Putting the Last First*. Longmans, London.
- . 1991. Shortcut and Participatory Methods for Gaining Social Information for Projects, in Cernea, Michael (Ed.) *Putting People First: Sociological Variables in Rural Development*. 2nd ed. World Bank, Oxford University Press, Oxford, England.

- , 1994. Poverty and Livelihoods: Whose Reality Counts? A Policy Paper commissioned by UNDP for the World Summit for Social Development. New York, NY.
- Chambers, R. and Conway, G. 1992. Sustainable Rural Livelihoods: Practical Concepts for the 21st Century. Institute for Development Studies Discussion Paper 296, University of Sussex, England.
- Chen, M. 1988. Women and Household Livelihood Systems. Paper presented at the IVth National Conference on Women's Studies, Waltair, Andhra Pradesh.
- Cornwall, A., I. Guijt, and A. Welbourn. 1993. Acknowledging Process: Challenges for Agricultural Research and Extension Methodology. Institute of Development Studies, Discussion Paper 333.
- Davidson-Hunt, I. 1995. Changing Property Rights and Contemporary Pastoralists of the Kullu Valley: A case study from the Himalayas of Northwest India. Paper presented for Community-Based Resources Management Conference, April, Natural Resources Institute, Winnipeg, MB.
- Davidson-Hunt, K. 1995. Gender, Class and the Commons: A Case Study from the Indian Himalayas in Natural Resources Management. Technical Report No. 3. Shastri Project on Sustainable Development of Mountain Environments in India and Canada. University of Manitoba, Winnipeg, MB.
- Davies, S. 1993. Are Coping Strategies a Cop Out? *IDS Bulletin*. 24 (4): 60 - 72.
- Denniston, D. 1993. Saving the Himalaya. *World Watch*. 6(6):10-21.
- , 1995. High Priorities: Conserving Mountain Ecosystems and Cultures. World Watch Paper 123. World Watch Institute. Washington, D.C.
- Duffield, C. E. 1995. Sustainability Indicators in a Temperate Mountain Watershed: Two Villages of the Upper Beas River, Himachal Pradesh, India. Technical Report No. 6. Shastri Project on Sustainable Development of Mountain Environments in India and Canada. University of Manitoba, Winnipeg, MB.

- Durning, A. B. 1990. Ending Poverty. in Brown, Lester (Ed.) *State of the World 1990*. W. W. Norton and Company, New York, NY.
- Eckholm, E. 1975. The Deterioration of Mountain Environments. *Science*. 189: 764-70.
- Economic And Social Commission for Asia and the Pacific (ESCAP). 1993. Economic Bulletin for Asian and the Pacific. December, United Nations, New York.
- Fisher, J. 1994. Third World NGOs: A Missing Piece to the Population Puzzle. *Environment*. 36 (7): 6 - 11 and 37 - 41.
- Folbre, N. 1986. Cleaning House: New Perspectives on Households and Economic Development. *Journal of Development Economics*. 22: 5 - 40.
- Gallopín, G. 1994. *Impoverishment and Sustainable Development: A Systems Approach*. International Institute for Sustainable Development. Winnipeg, MB.
- Gardner, J.E. 1989. Decision Making for Sustainable Development: selected approaches to environmental assessment and management. *EIA Review*. 9: 337-366.
- Goodland, R., G. Ledec, and M. Webb. 1989. Meeting Environmental Concerns Caused by Common-Property Mismanagement in Economic Development Projects. in Berkes, F. (ed.) *Common-Property Resources: Ecology and Community Based Sustainable Development*. Belhaven Press, London.
- Grima, A. P. Lino and Berkes, F. 1989. Natural Resources: Access, Rights-to-Use and Management. in Berkes, F. (Ed.) *Common Property Resources: Ecology and Community-Based Sustainable Development*. Belhaven Press, Great Britain.
- Groetzbach, E. F. 1987. High Mountains as Human Habitat. Chapter 3 in Allan, N.J.R., G. W. Knapp and C. Stadel (eds.) *Human Impact on Mountains*. Rowman and Littlefield, New Jersey.
- Gupta, A. K. 1991. Household Survival through the Commons: Performance in an uncertain world. Draft. Indian Institute of Management. Ahmedabad, India.

- Harcourt, A. P. F. 1871 reprinted 1972. *The Himalayan Districts of Kooloo, Lahoul and Spiti*. Delhi: Vivek Publishing House.
- Harrison, P. 1990. *Inside the Third World*. 2nd ed. Richard Clay Ltd. Bungay, Suffolk, Great Britain.
- International Center for Integrated Mountain Development (ICIMOD). Women in Mountain Development: Report of the International Workshop on Women, Development and Mountain Resources: Approaches to Internalising Gender Perspectives. Kathmandu, Nepal. November.
- International Mountain Society (IMS). 1991. World Mountain Network Newsletter: September. Davis, CA.
- Ives, J. D. and Messerli, B. 1989. *The Himalayan Dilemma: Reconciling development and conservation*. The United Nations University. Routledge, New York.
- Jain, S. P. and V. K. Reddy. 1979. Role of Women in Rural Development: A Study of Mahila Mandals. National Institute of Rural Development, Hyderabad.
- Jodha, N. S. 1986. Common Property Resources and the Rural Poor. *Economic and Political Weekly*. July 5. pp 1169 - 81.
- , 1988. Poverty Debate in India: A Minority View. *Economic and Political Weekly*. November.
- , 1992. Mountain Perspective and Sustainability: A Framework for Development Strategies. Chapter 2 in Jodha et al. (eds.) op. cite.
- Jodha, N.S.; Banskota, M. and Partap, T. (eds). 1992. *Sustainable Mountain Agriculture*. Vol. 1 and 2, International Center for Integrated Mountain Development. Oxford & IBH Publishing Co. Pvt. Ltd.
- Jodha, N.S.; Banskota, M. and Partap, T. 1992. Strategies for the Sustainable Development of Mountain Agriculture: An Overview. Chapter 1 in Jodha et al. (eds.) op. cite.

- Keating, M. 1994. *Agenda for Change: A plain language version of Agenda 21 and the other Rio Agreements*. Centre for Our Common Future, Geneva, Switzerland.
- Kirk, C. and Hobley, M. 1993. Socio-Economic Setting: Kullu and Mandi Districts. Himachal Pradesh Forestry Project. Volume II Annex I.
- Korten, D. C. 1993. Growth for Whom? Rethinking Foreign Aid, Development, and the Meaning of Human Progress. *World Business Academy Perspectives*. 7 (3): 7-18.
- Kumar, T. K. 1993. Measures of Poverty Suited to Design and Evaluate Poverty Alleviation Programmes. *Economic and Political Weekly*. December 25.
- Lélé, S. M. 1991. Sustainable Development: A Critical Review. *World Development*. 19 (6): 607-621.
- Mitra, M. 1993. The Role of Women in Common Property Resources Management: Experiences from India. Paper presented at meeting on Property Rights and the Performance of Natural Resources Systems. Stockholm, Sweden, September.
- Moench, M. 1989. Forest degradation and the structure of biomass utilization in a Himalayan foothills village. *Environmental Conservation*, 16: 137-146.
- Netting, R. 1993. *Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture*. Stanford University Press, Stanford, CA.
- Ostrom, E. 1992. *Governing the Commons*. Belhaven Press, Great Britain.
- Phillips, L. 1989. Gender dynamics and rural household strategies. *Canadian Review of Sociology and Anthropology*. 26 (2): 294 - 310.
- Price, L.W. 1981. *Mountain and Man: A Study of Process and Environment*. University of California, Berkeley.

- Rao, V. M. 1988. Interventions for the Poor: Critical Dimensions, Potentialities and Limitations. *Economic and Political Weekly*. Special Number: November. pp 2409-2420.
- Seers, D. 1972. What are we Trying to Measure? in Baster, Nancy (Ed.) *Measuring Development: the Role and Adequacy of Development Indicators*. Cass Publishing.
- Sen, A.K. 1983. Economics and the Family. *Asian Development Review*. Vol.1.
- Shiva, V. 1986. Coming Tragedy of the Commons. *Economic and Political Weekly*. 21 (15).
- Singh, R. L. 1971. Himachal Region. *India: A Regional Geography*. Oxford and IBR Publishing Co., New Delhi.
- Singh, N. and Hudson, M. 1994. Adaptive Strategies and Sustainable Livelihoods in Forest Ecosystems. International Institute for Sustainable Development, Winnipeg, MB.
- Slocombe, S. 1992. Focus on Sustainable Development: Toward Sustainable Resource Management in Canada. *Canadian Society of Environmental Biologists*. Newsletter/Bulletin. 49 (2).
- Thompson, M. 1993. The North starts to catch up with the South: The Himalayan village as a clumsy institution and its lessons for policy. The International Academy of the Environment. Paper prepared for the workshop on *Risk and Fairness*, Laxenburg, Austria.
- Thompson, M. and M. Warburton. 1985. Uncertainty on a Himalayan Scale. *Mountain Research and Development*. 5(2):115 - 135.
- Thorne, B. and Yalom, M. 1982. *Rethinking the Family*. Longman, New York, NY.
- Titi, V. and Singh, N. 1994. Adaptive Strategies of the Poor in Arid and Semi-arid Lands: In Search of Sustainable Livelihoods. International Institute for Sustainable Development. Winnipeg, Manitoba.

- Titi, Vangili and Singh, N. (eds). 1994. Participatory Research for Sustainable Livelihoods in Arid and Semi-Arid Lands: A guidebook for field projects on adaptive strategies. International Institute for Sustainable Development, Winnipeg, Canada.
- Titi, V. and Singh, N. 1993. Empowerment for Sustainable Development. Working Paper. International Institute for Sustainable Development, Winnipeg, Manitoba.
- Todaro, M. 1994. Economic Development. 5th Ed. Longman, London.
- Watts, M. 1983. Silent Violence, Food, Famine and Peasantry in Northern Nigeria. University of California Press, Berkeley.
- Wolf, D. 1990. Daughters, Decisions and Domination: an Empirical and Conceptual Critique of Household Strategies. *Development and Change*. 21: 43 - 74.
- World Commission on Environment and Development (WCED). 1987. *Our Common Future*. Oxford University Press, Oxford, England.
- Yunus, M. 1994. Hunger, Poverty and the World Bank. *Grameen Dialogue*. Newsletter, Grameen Trust, Bangladesh.

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Appendix A: An example of questions asked when interviewing village women.

Household Structure

Were you born in Chachoga/Goshal?
 How long have you lived here?
 Who else lives in this house?
 How are you related?

Assets

How much land do you have?
 How much *chet? ropha?* orchards?
 Do you have any cows?
 Do you have any bullocks?
 What other animals do you own?
 Will you always keep some animals?

Agriculture

Do you have apple trees?
 How many? How old? Where are they planted?
 Do you still cultivate crops under the trees?
 What else do you plant?
 What do you buy from the market in terms of food?
 Will you buy more from the market in the future or less?
 Do you have a vegetable garden around your house?
 Who decides what to plant each season?
 Who decides when and where to plant apple trees?
 What do you do in a bad year of apples?

Seasonal Activities

The women were asked to explain what their main activities were each month and how much time (in days / month) was devoted to each activity. Other questions were incorporated into the ensuing discussion if permitted. For example:

What do you do in *Vishak* (April 15 - May 15)?
 How many days do you spend doing this?
 Who do you work with when you do this activity?
 Do you do this activity in *playdee* or *suari*?
 Does this activity produce a product that is sold in the market? An input to the household/agricultural system? For daily needs or storage?

Other...

Does anyone in the household work outside the village?
 Do you participate in the *Mahila Mandal*?