Local perceptions and indigenous institutions as forms of social performance for sustainable forest management in Bhutan

Author(s):
Wangchuk, Sanjay

Publication date:
1998

Permanent link:
https://doi.org/10.3929/ethz-a-001927030

Originally published in:
Forstwissenschaftliche Beiträge der Professur Forstpolitik und Forstökonomie 20

ISSN 1420-1143

Forstwissenschaftliche Beiträge 20

der Professur Forstpolitik und Forstökonomie

Local Perceptions and Indigenous Institutions as Forms of Social Performance for Sustainable Forest Management in Bhutan

Sanjay Wangchuk

Zurich 2000

ETH Eidgenössische Technische Hochschule Zürich

Acknowledgement

I would like to take this opportunity to offer my sincere thanks to the Forestry Service Division, Ministry of Agriculture, Royal Government of Bhutan, for giving me the opportunity to carry out this research, which will improve my capability to serve the country more effectively. In particular, I would like to mention Dasho Sangey Thinley, Joint Secretary, for allowing me to spend such a long period of time out in the field, and at the Swiss Federal Institute of Technology, Zürich.

This research could never have been possible without Prof. Dr. Franz Schmithüsen who very kindly consented to my working at the Chair of Forest Policy and Forest Economics, ETH Zürich, and to be the promoter of my research. His vast experience and intellectual excellence and depth have been a source of inspiration since I first discussed my research project with him in 1994. His background in European forestry was helpful in relation to our many discussions concerning the Bhutanese context.

PD Dr. Klaus Seeland, M.A. has not only been my co-promoter, but also a constant source of inspiration for the last three years, and will always remain one in my life. I would like to express my sincere and deep gratitude to him, for guiding me during my research in the field and at the Chair of Forest Policy and Forest Economics, ETH-Zürich. He travelled throughout the country to ensure that we had a better understanding of the socio-economic conditions in the research sites and that the concepts we discussed, properly reflected this understanding. It was he who introduced me, a forester, to social empirical research that not only enabled me to conduct this study, but shed a new light on the forests and people of Bhutan, and will thus be a lasting professional orientation for the future. I once again offer my sincere gratitude to him for all he has done for me.

It was Prof. Dr. Martin Menzi, who first introduced me to the Chair of Forest Policy and Forest Economics, ETH Zürich. This was in line with the priority of the Royal Government, which was to develop trained personnel who could shoulder responsibilities and reduce dependency on outside expertise. His experience and understanding of Bhutan's research needs have always been a resource that I could fall back on whenever necessary. I would like to express my heartfelt thanks for his consenting to be co-promoter of my thesis and for being a constant source of advice.

I would like to express my gratitude to the Swiss Development Corporation, Government of Switzerland, for funding my research, particularly to Dr. Hans Peter Maag, Mrs. Christine Grieder and Mrs. Particia Beutler at the Section Asia II for administering my stay in Switzerland.

My thanks also go to Helvetas for rendering assistance during visits to the research sites. I would like to mention Mr. E. Werner Külling, Secretary General, Mrs. Christina Suter, D. Zürcher, Samdrup Chhetri and Mrs. Chenzom for their valuable support.

My friends at the Chair of Forest Policy and Forest Economics, ETH-Zürich have been very nice and helpful during my stay at the Chair. I would like to mention in particular: Prof. Dr. Willi Zimmermann, Prof. Dr. Ingrid Kissling-Naef, Mr. Alois Keel, Mr. Gerhard Gasser, Mr. Stephan Wild, Mrs. N. Ottiger and Mrs. Christine Bächtiger. Special thanks are also due to Mrs. Kohler for handling my administrative matters.

I would like to thank Mr. Lhab Gyeltshen, Dy. Ranger, Radhi and his wife; Mr. Karma Dukpa, Divisional Forest Officer, Bumthang; Mr. Gopal Mahat, Divisional Forest Officer, Paro; Mr. Dodo, Forester, Paro *Dzongkhag* and Mr. Kingzang, Bumthang Division for assisting me during my field survey in Radhi, Chumey and Shaba *Gewogs*

respectively. I would also like to thank my colleagues at the Nature Conservation Section for giving me so much moral support during the research process.

Finally, I would like to thank my family members who have constantly encouraged me to complete this research and who will always remain a source of inspiration throughout my life.

Sanjay Wangchuk

Table of Contents

List of Figures

List of Tables

Abbreviations used in the Report

ADC	Austrian Development Co-operation
CFMG	Community Forestry Management Group
DA	*Dzongkhag* Administration
DFEO	*Dzongkhag* Forestry Extension Officer
DFO	Territorial Divisional Forest Officer

DYT	*Dzongkhag Yargye Tshogchung*
FAO	Food and Agricultural Organisation of the United Nations
FDC	Forest Development Corporation
FMP	Masterplan for Forestry Development
FRMC	Forest Resource Management Committee
FSD	Forestry Services Division
GFRMC	*Gewog* Forest Resource Management Committee
GYT	*Gewog Yargye Tshogchung*
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICIMOD	International Centre for Integrated Mountain Development
LUPP	Land Use Planning Project
MOA	Ministry of Agriculture
RNR	Renewable Natural Resource
SDC	Swiss Agency for Development and Co-operation
Skt	Sanskrit
SNV	Dutch Development Co-operation
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Cultural Organisation

Summary

This investigation analyses the performance of local institutions engaged in the management of forests and forest resources. The use of these renewable natural resources are studied with regard to their sustainable management by local communities. Perceptions and attitudes of people concerning the conservation of forests and safeguarding the continuation of indigenous social institutions at the local level have an increasing bearing on forestry development and policy. Their investigation thus provides the possibility for an improved understanding of existing management practices under specific social and cultural conditions, thus being a potential for adaptation to a changing environment. Local communities possessing an almost self-sustained agricultural structure, and whose management of their immediate surroundings is largely sustainable, have considerable environmental and political value. This sustainability is not to be understood in the sense of an active conceptualization and a reflected economic calculation of resource use, but rather in terms of a very broad and highly flexible mode of subsistence. For example a low population density and diversified patterns of use or non-use of particular forest products does not put pressure on single food sources.

The methodology used comprises of socio-cultural context analyses in which the socio-demographic baseline data of three typical villages located in West, Central, and East Bhutan are surveyed with the help of checklists in cultural ecology, and using structured and semi-structured interviews. Moreover, in 30 percent of the investigated households, supplementary and extensive interviewing was conducted regarding the villagers' perceptions of forest management, the use of forest resources, the socio-economic conditions of rural households and their everyday religious way of life in order to obtain a detailed picture of the social situation in the selected villages.

An analysis of more than 250 forest offence cases dating from the period of 1991-1996 from the records of the Forest Services Division supplement the survey findings and give an insight into the problems of forest use, in particular with regard to the implementation of forest legislation under conditions of an unequal distribution of forest wealth and a pricing-system for timber regulated by the state.

The results of the various empirical studies show a remarkable change that has occurred within Bhutan's local institutions of forest management and forest conservation. The rural population's concern for the forests and the role of the Forest Services Division has declined since the promulgation of the first Bhutanese Forest Law in 1969. Significant differences are found in people's access to timber and other forest products and in the various methods of forest tenure concerning the economic use of forest land with a locally appreciated degree of equity. People experience predominantly administrative problems and must endure time-consuming procedures to obtain permits which entitle them to cut timber and transport it to their homes. Options to make the use of timber more appropriate by simplifying forest utilisation and management procedures are discussed in the light of these findings. Alternative views are developed on shifting cultivation practices towards more sustainable ways of using impermanently cultivated land. A scheme that would enable the Forestry Services Division to provide the rural population with a sustainable fuelwood supply is discussed in the light of a process of overall negotiations among government appointed representatives, a private timber corporation and elected representatives of the districts who are to decide upon a new mode to distribute the forest resources of Bhutan.

Zusammenfassung

Diese Untersuchung analysiert lokale Institutionen der Waldnutzung. Wahrnehmungen und Werthaltungen der Bevölkerung hinsichtlich der Walderhaltung und der Überdauerung einheimischer sozialer Institutionen haben einen immer bedeutenderen Einfluss auf die regionale forstwirtschaftliche und politische Entwicklung. Ihre Erforschung ermöglicht damit auch ein besseres Verständnis bestehender Nutzungspraktiken unter spezifischen sozialen und kulturellen Bedingungen. Damit bilden sie ein Potential für die Anpassung an eine sich verändernde Umwelt. Lokale Gemeinschaften mit einer nahezu subsistenten Agrarstruktur haben einen bedeutenden funktionalen Wert für Umwelt und Politik, und zwar nicht so sehr im Sinne eines ökonomischen Kalküls der Ressourcennutzung, als vielmehr bezüglich einer breiten und hoch flexiblen Absicherung dieser Subsistenzwirtschaft. Eine geringe Bevölkerungsdichte und eine grosse Variationsbreite der Nutzung oder Nichtnutzung bestimmter Waldprodukte beispielsweise, reduziert den Druck auf einzelne Nahrungsmittelquellen.

Die Methoden, die in dieser Untersuchung Verwendung finden, sind sozio-kulturelle Kontextanalysen, in denen mit Hilfe empirischer Befragungen anhand einer kultur-ökologischen Checkliste die sozio-demographischen Basisdaten dreier typischer Dörfer in West-, Zentral-, und Ost-Bhutan erhoben werden. Zudem geben zusätzlich durchgeführte strukturierte und halbstrukturierte Interviews in 30% der erfassten Haushalte ein detailliertes Bild der Situation der Waldbewirtschaftung und Waldressourcennutzung, ihrer sozio-ökonomischen Lage und dem religiös motivierten Alltagshandeln in den Untersuchungsregionen. Die Auswertung von mehr als 250 Vergehen gegen das Forstgesetz im Zeitraum von 1991-1996 anhand des Straf-registers der bhutanesischen Forstverwaltung dient als zusätzliche Quelle zur Erfassung der Probleme bei der Waldnutzung und der Anwendung geltenden Forstrechts unter Bedingungen einer ungleichen regionalen Verteilung des Reichtums an Waldprodukten und einem staatlich regulierten Holzpreis.

Die Ergebnisse der verschiedenen empirischen Untersuchungsbereiche zeigen, wie sich Institutionen zur Ressourcennutzung und Walderhaltung im Verlauf des sozialen Wandels verändert haben. Seit Inkrafttreten des ersten Forstgesetzes im Jahr 1969 haben sich die lokalen Haltungen und Einstellungen der ländlichen Bevölkerung gegenüber dem Wald und dem Forstdienst in den verschiedenen Regionen Bhutans verschlechtert. Markant sind hier vor allem die Unterschiede hinsichtlich des Zugangs der Dorfbevölkerung zu Holz und anderen Waldprodukten und die Verschiedenartigkeit der Nutzung und lokalen wirtschaftlichen Bedeutung der Waldfläche, die im Hinblick auf eine gerechte Verteilung der Nutzungsoptionen lokal jeweils anders gehandhabt wird. Die Bevölkerung muss aufwendige administrative Genehmigungsverfahren und zeitraubene Prozeduren bei der Holznutzung und beim anschliessenden Holztransport über sich ergehen lassen. Möglichkeiten angepasster und vereinfachter Verfahren werden im Zuge dieser Befunde diskutiert. Es wird eine alternative Sichtweise entwickelt, die darauf abzielt, die in einigen Landesteilen Bhutans betriebene Brandrodungswirtschaft durch nachhaltigere Formen der Landnutzung auf nicht dauerhaft bewirtschafteten Flächen zu ersetzen. Die Gewährleistung einer nachhaltigen Brennholzversorgung der ländlichen Bevölkerung durch den Forstdienst ist Gegenstand der Diskussion, die im Licht eines Prozesses der allgemeinen Neuverhandlung der Verteilungsmuster forstlicher Ressourcen in Bhutan zwischen Verwaltung, privatwirtschaftlicher Holzvermarktung und gewählten Volksvertretern zu sehen ist. (Übersetzung: K. Seeland)

1. Context, Objectives and Research Methodology

1.1 Context and Research Objectives

Prior to 1969, property rights and the use of forest resources in Bhutan, were loosely defined. *The Thrimshung Chenmo* 1959 (Supreme Law) did not contain specific restrictions on the use of forest resources by the local people, with the exception of the poaching of endangered wild animals. The official recording of agricultural land which took place after 1953 (Ura, K. 1995) separated private and community property rights. This process did not have negative implications on the population's use of, and access to, forest resources. However, this changed in 1969 when the Forest Act was passed. The definition of what constitutes forest in the Act explicitly added a third dimension to the property regime, that of a state property which brought at least eighty percent of the land resources under government control.

In order to improve the interaction between the local people and government institutions, social forestry and afforestation programmes were decentralised to the districts in 1981. The policy change brought only limited improvement to the interaction between the forest resource users and the government institutions as there was no tenurial rearrangement of forest resources. Forests were still to be managed as defined in the Forest Act. In the process of implementation of the policy it was felt that there was a need to work more closely with the forest resource users.

In 1984, the then Department of Forests was asked by the government to create village forests in Paro as a pilot project. This could not be implemented as there were, among other reasons, no basic studies on the social and organisational structure of the various communities, the resource use patterns, the status of local resource management institutions and on the geographical distribution of forests in the region. The willingness of the concerned communities to accept transaction costs associated with such a programme, was also not assessed.

By 1995, the need to involve the local people more closely in the management of forest resources resulted in the inclusion of a chapter on Community Forestry in the Forest and Nature Conservation Act 1995. To clear any ambiguity on the status of community forestry and to provide direction, it defined Community Forestry as *'any area of Government Reserved Forest designated for management by a local community in accordance with the Rules issued under this Act'.*

The Ministry of Agriculture has drafted rules on the creation and management of community and private forests. At present, a project financed by the World Bank and the Swiss Development Cooperation is under implementation in the eastern part of the country. One of its principle objectives is the creation of community and private forests in the various districts of the project area.

The sequence of the passing of different resolutions and rules concerning utilisation, clearly demonstrates the commitment of the government to involve the population in the management of local resources. One of the main assumptions is that if the forests are owned and managed by the users, the sustainability of that particular resource will improve. Moreover, the government is concerned about the equity and access-differential to the forest resources. However, it is also aware of the dangers of making important decisions without proper research and adequate data. The implications of tenurial rights on the use of forests and forest land are important aspects of the decision-making concerning resource management policy. The knowledge of local resource management institutions and social organisational patterns of the

communities is vital for the government if it is to develop further and implement a consistent forest policy framework at the national level.

The study refers to this context and focuses on the following three research objectives:

(I) To analyse local resource management institutions and assess their present and potential capabilities on the basis of empirical studies in selected localities.

No formal documentation and analysis of local resource management institutions have been carried out so far. An effort is made to document and discuss these institutions as they functioned before some of them were modified or replaced by various legislation. The impact of state laws on the sustainability of forest resources traditionally used by the local communities will be examined. The capabilities of local institutions within the rapidly changing socio-economic environment is assessed based on empirical research findings.

(II) To contribute to a better understanding of the variety of forest uses as apparent from the perceptions of local people.

The dynamics of local attitudes towards a particular resource influence the management responses and the sustainability of that particular resource. This is determined by what is considered to be a resource in a given context and how this resource is locally perceived. The study examines these dynamics in order to provide a better understanding of resource use at local and regional levels. It sets out major issues relating to sustainable resource use and examines alternative possibilities for more appropriate institutional arrangements. Case studies in three regions of the country will show both the differences and the common aspects that may have to be taken into account at the national level.

(III) To provide stimulation to the development of resource management strategies and possible new policy approaches.

Based on the research findings, different resource management approaches and policy options will be discussed. Possible alternatives will be assessed with regard to their relevance to the study locations and to further policy developments at the national level.

1.2 Research Approach and Methodology

The study recognises the following aspects as essential for the elaboration of a forest development policy:

- a complete picture of the socio-economic conditions and the perceptions of the local people towards forest resources;
- an understanding of the constant interactions and flow of these resources, based on the perceptions among the households at varying levels, that maintain the dynamism of the local communities;
- the recognition of self-evolved local institutions as essential entities for sustainable forest management.

The research approach is based on three major elements. The first one examines the existing policy framework for forest uses at the national level. The structure of national institutions and the components of the renewable natural resources sector have to be considered in this context. Legislation regulating forest resource utilisation such as the *Thrimshung Chenmo* 1959, the Land Act 1978 and the Forest and Nature Conservation

Act 1995 will be analysed to a level necessary for the purpose of the research objectives.

The second and central part of the study is an investigation of local perceptions and practices related to the use of trees and forests in selected research sites. The empirical work analyses variations in forest use patterns and resource flow profiles of each locality. The changing capabilities of the local management institutions will be examined in relation to the prevailing national regulatory framework.

The findings which result from the field research at the local level will be used to discuss forest management options and possible new institutional arrangements. This refers, in particular, to the sharing of responsibilities between state and local communities in order to develop a coherent programme for sustainable forest uses.

Selection of Research Locations: To ensure relevance, comparability and specificity of the research results, it was decided to concentrate on one location for field testing within each of the major regions of the country. This approach ensures that the research results are significant for a given local context and contribute, at the same time, to the application of forest resource management and policy decision-making elsewhere in Bhutan. While Radhi represents the eastern region, Chumey represents the central, and Shaba the western region. The three localities were selected as typical for each region inasmuch as they represent a variety of geo-physical, socio-economic and natural resource conditions.

The methodology adopted for the field research is a combination of *'Contextual Analysis Method'* and *'Focused Survey'* aided by a checklist of topics to be dealt with. The preparation of the checklist was based on a course on *'Contextual Analysis - Methodology of Empirical Social Science Research in non-European Countries' at the ETH Zurich*. Guidelines prepared by UNESCO, under Man and Biosphere (MAB) by Anne Whyte, for field studies in environmental perception, have also been used. The chosen methodology provides an opportunity for comparative studies in generating an empirical social science data base which provides qualitative and quantitative indications on the flow of resources among different households and social categories. It also allows the segregation of data for selective interpretation.

The empirical research is based on a combination of varied data collection, field inquiries and observations. The following four data collection and field survey methods have been used:

- household surveys;

- structured interviews;

- semi-structured interviews;

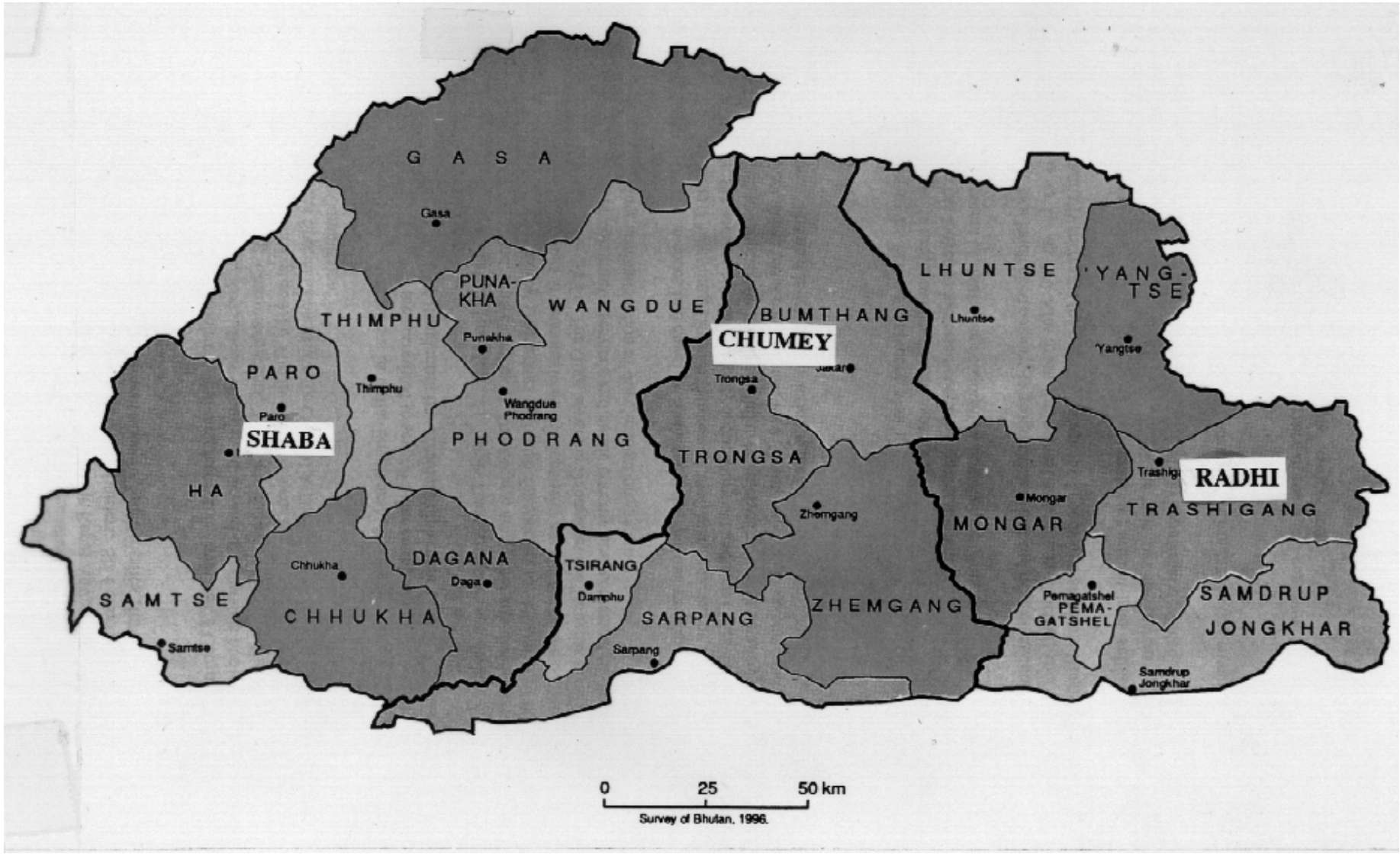
- analysis of forest offence cases.

Household Survey including firewood and Sokshing[1] ownership status: One hundred percent household surveys were carried out for each of the selected study areas. The main objective of the survey was to gain a general picture of the social setting in the research area. To ensure comparability among different local entities, the household data collection was separated into villages. Each village of the selected research sites thus represents a one hundred percent sample. Recording of the data was done through personal visits to each house during the day. Data collection was spread over a period of five months in Radhi, and over three months in both Chumey and Shaba.

---

1 *Sokshing* is a particular form of traditional local forest tenure which will be defined in chap. 2.3.3 and discussed in chapter 3.5.5

Figure 1: Map Showing the Three Research Locations


GASA
Gasa
PUNA-
KHA
Punakha
WANGDUE
Wangdue
Phodrang
THIMPHU
Thimphu
PARO
Paro
SHABA
HA
PHODRANG
DAGANA
Daga
TSIRANG
Damphu
CHHUKHA
Chhukha
SAMTSE
Samtse
SARPANG
Sarpang
BUMTHANG
CHUMEY
Jakar
Trongsa
TRONGSA
ZHEMGANG
Zhemgang
LHUNTSE
Lhuntse
YANG-
TSE
Yangtse
RADHI
Trashigang
MONGAR
Mongar
PEMA-
GATSHEL
Pemagatshel
SAMDRUP
JONGKHAR
Samdrup
Jongkhar
0
25
50 km
Survey of Bhutan, 1996.

The information collected in this survey referred to: the head of the family, residency status, number of persons in the family, sex ratio, occupation of the head of the household, number of children attending school, source of firewood, *Sokshing* ownership status and annual firewood consumption. In total, 718 households were covered by this type of survey.

Structured Interviews: The focus of the structured interviews covers four major subject matters which are of relevance for the study: the role and importance of forests; the variety of forest uses; the socio-economic conditions, and the importance of religious practices. On average, there are 30 questions for every subject. The preparation of the questions was based on a checklist of local institutional and forest resource utilisation patterns emphasising social and cultural aspects. Before initiating interviews, the *research units* were divided into seven different social categories: religious persons; rich farmers; *Sokshing* owners; government servants; recent settlers; traders, and average farmers. This categorisation into social strata reflects a relevant selection of local actors. 30 percent of the households were covered by interviews resulting from house-to-house visits, and with whoever was willing to respond to questions. As far as possible, efforts were made to interview a cross-section of various age groups and to divide them equally among the gender groups. 215 individual households were covered by this survey. The questionnaires for the selected research sites are identical, except where some of the obvious questions, such as the increase of forest cover in Chumey as compared to the decrease in Radhi and Shaba, have affected the sequence of the interviews.

Semi-structured Interviews: To supplement the information base from the household survey, the structured interviews with questionnaire were supplemented by semi-structured interviews which covered 30 percent of the households. The inquiry was undertaken during house-to-house visits and with whoever was willing to respond to questions. Efforts were made to interview a cross-section of various age groups and to divide them equally among gender groups, as was done in the case of structured interviews. 215 individual households were covered by this survey, which was spread over a period of three months in each research unit. There were no written questions, but reference was made to the check list and the conversation followed a systematic sequence related to the principal subject matter. The local forester usually attended part of the interviews and helped to 'break the ice' with the respondents whenever necessary.

Pre-testing: A pre-testing of the household survey format and of the questionnaires for structured interviews was done in the field, and found appropriate after the interpretation of the data and with reference to the check list. Being from the locality and speaking the local language (*Sharchogpa*) of Radhi, and of Chumey and Shaba *(Dzongkha*) made this approach effective. This has also allowed the internalisation of most of the perceptions.

Field Observations: To supplement structured and semi-structured interviews, various aspects of social and resource management patterns were observed. This was done over the whole period of the field survey. Occasions considered most convenient for such observations were *Tshechu*s (religious festival) formal meetings, religious ceremonies, visits by government officials, and market days.

Analysis of Forest Offence Cases: An analysis of forest offence cases was used to generate data on the effectiveness of forest law and its relationship to the nature, degree and location of the offences committed. 256 forest offence cases spread over a period of 5 years (1991-1996) were used for the analysis. Offence records were obtained from Forestry Services Division records, from various parts of the country. The data analysis was carried out under the limitation that standard screened government records have been used.

Use of local terms: Local terms have been used since it is difficult to translate the terms and still maintain the actual message, especially during the household survey and interviews. In many instances, there is no equivalent for certain terms, in the other language. Since there is no script for *Sharchogpa* and *Bumthangpa* dialects, it is often difficult to use an equivalent English word or phrase. The nearest possible translation has been provided in the glossary.

The presentation of the results from the selected study areas focuses on quantitative data and qualitative information in the format outlined in the following scheme:

1. Household Survey	
Number of households and population	Both qualitative and quantitative
Occupation	Both qualitative and quantitative
Sokshing area and ownership patterns	Both quantitative and qualitative
Location and consumption of firewood collection areas	Both quantitative and qualitative
2. Structured and Semi-structured Interviews	
Resource Profiles	Includes local perceptions
Social structures and status of social organisational capabilities	Includes local perceptions
Status of local resource management institutions	Includes local perceptions
3. Analysis of forest offence records	Includes references Forest and Nature Conservation Act of 1995

2. Institutional Framework for Forest Resource Management at the National Level

2.1 National Development and Institutions

Bhutan is a small mountainous country located between Tibet (China) in the north and India in the south. It is a landlocked country with elevations ranging from 150 meters above mean sea level (mamsl) in the south, to more than 7500 mamsl in the north. The total area of the country is 40,076 sq. km and has a population of approx. 600,000 (RGOB, Ministry of Planning 1994b). The majority of the Bhutanese are Buddhists. Buddhism was introduced in Bhutan in the 7th century by Guru Padma Sambhawa. Various schools of Buddhism assimilated other earlier practices and beliefs, including Bon religion. Hinduism is another religion practised in Bhutan, especially by Southern Bhutanese who immigrated to Bhutan during the turn of the century (White, 1909).

The watersheds drain from north to south, and the country is divided by five major river systems. The geo-physical characteristics of the country can be divided into three distinct features - the outer hills, or foothills adjoining the plains of India; the central belt lying between these hills; and the uplands immediately under the ranges of the Tibetan frontier. The orientation and nature of the watershed have influenced the location of settlements, and land use patterns, as well as the continuity of eco-floristic zones. The natural divisions brought about by the watersheds have shaped the country into three distinct regions.

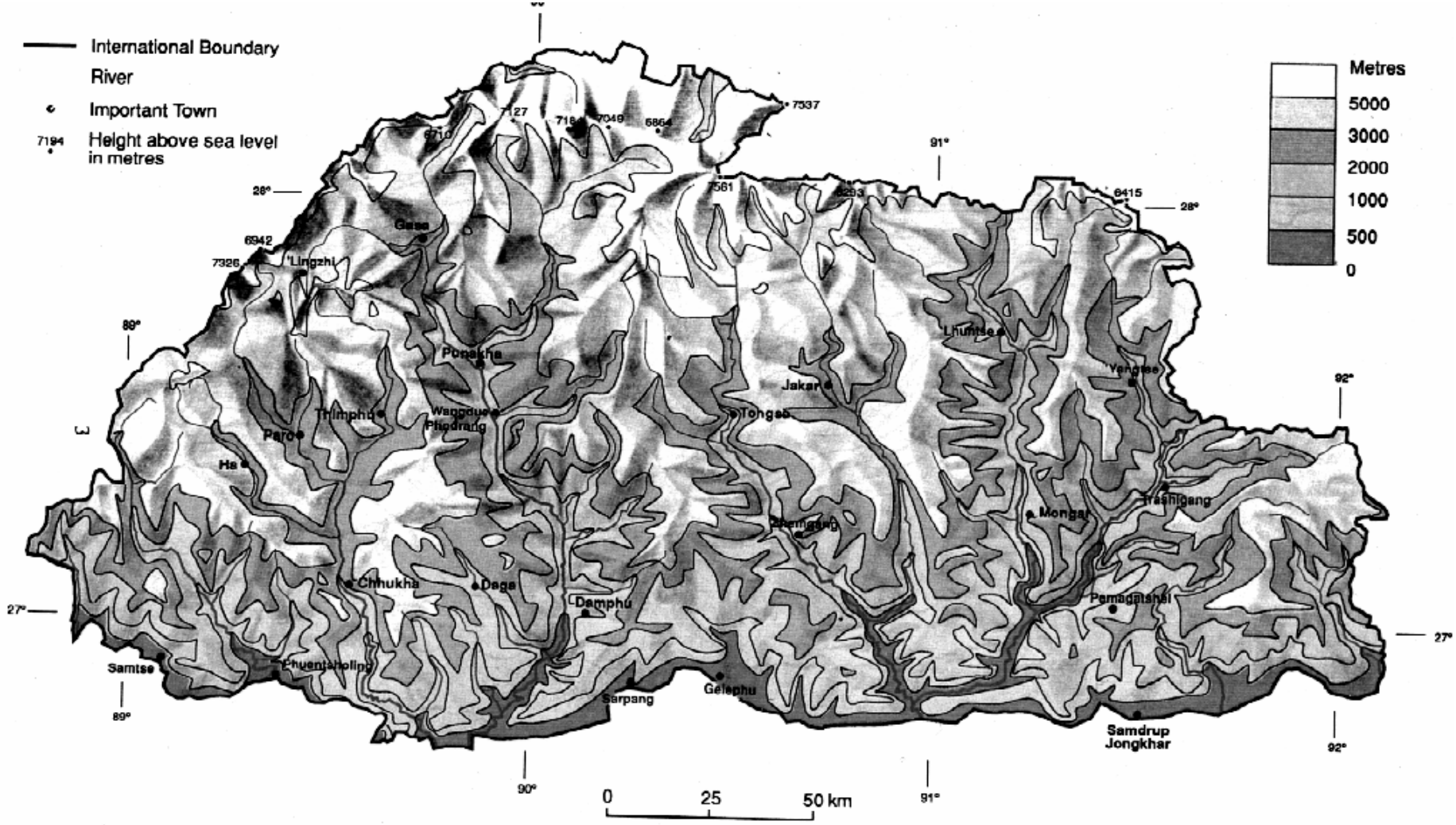
The major watershed that drains the rivers in the eastern region is the Manas. The central region is drained by the Mangdechu river, which merges with the Manas before entering India. The river valleys in the western region are drained by the Torsa and Puna Tshangchu watersheds. Topography and forest types are influenced by the structure of the watersheds. People residing in the three different geo-physical regions have responded according to the resources available. This has lead to distinct socio-economic environments in the country.

The people in the three regions, speak different dialects. In the east, *Sharchogpa* is the main dialect, whereas in the central region, Bumthangpa is the most widely spoken. In the western region people mainly speak *Dzongkha* which is also the national language.

The physical features of the country limited the interaction between people in different areas. For instance, it took more than 12 days to travel from Punakha (old capital) to Trashigang (in the east) before the introduction of motorable roads in the early 1970s. Furthermore, such interaction was only seasonal, as most of the mountain passes were covered by snow and thus impassable in winter.

Bhutan has been an independent country throughout its history. In the 17th century *Shabdrung* Ngawang Namgyal (1594 - 1652 A.D.) unified the country into one state and brought Bhutan under his rule (Ministry of Planning, 1996). The theocracy established by *Shabdrung* in 1652 ended in 1907 when Ugyen Wangchuk (1862 - 1926) was elected as the first king of Bhutan by popular consensus. Since then, Bhutan has been an enlightened monarchy, ruled by the king who is head of both the state and government (Dorjee, K. 1995). It was in the early 1960s that Bhutan decided to come out of its self-imposed isolation, through the construction of motorable roads linking Bhutan's capital and other major settlements with India.

Figure 2: Physical Features


International Boundary
River
Important Town
7194 Height above sea level in metres
Metres
5000
3000
2000
1000
500
0
7337
7127
7049
6864
6710
7561
6293
6415
28°
91°
92°
89°
27°
90°
6942
7326
Gasa
Lingzhi
Punakha
Thimphu
Paro
Ha
Wangdue Phodrang
Jakar
Tongsa
Lhuntse
Yangtse
Trashigang
Mongar
Zhemgang
Chhukha
Daga
Damphu
Pemagatshel
Samtse
Phuentsholing
Sarpang
Gelephu
Samdrup Jongkhar
0 25 50 km

Bhutan's history has been documented by White, 1909; Aris, 1980, 1984; Rose, 1977; Singh, 1972; Hasrat, 1980; Collister, 1987 and Mehra, 1974. The authors highlight the aspects of Bhutanese history in relation to the theocracy established by *Shabdrung* Ngawang Namgyal in the sixteenth century, Bhutan's relationship with British-India during the nineteenth and twentieth centuries, and the emergence of the present administrative system.

Modern and planned economic development was initiated with the commencement of the First Five Year Plan in 1961 (RGOB, Ministry of Planning, 1996a). The first two plans emphasised the establishment of basic infrastructure such as roads and social service centres. Subsequent plans broadened the scope into economic development and self-reliance. The Sixth Five Year Plan saw a major shift in emphasis from that of economic development to the preservation of the country's national and cultural identity. It is expected that this aspect will receive further emphasis during the Eighth Five Year Plan.

The National Assembly, established by the Third King in 1952, has 150 members. The members are people's representatives (105), the monastic body (10), government officials (35) nominated by His Majesty the King. Besides the National Assembly, there is a Royal Advisory Council comprised of four councillors elected by the people, two representatives from the body of monks and one nominated by the King. While the National Assembly makes laws, the Royal Advisory Council advises the government on important political issues. The National Assembly, the Royal Advisory Council, the Judiciary, the Council of Ministers and the Sectoral Ministries are the organisations that play a crucial role in the governance of the Kingdom of Bhutan.

At the regional and local level the country is divided into twenty administrative units known as *Dzongkhag*s (Districts). Each *Dzongkhag* is divided into *Gewog*s (administrative blocks). The number of *Gewog*s under each *Dzongkhag* may vary according to the size of the *Dzongkhag* and its geo-physical terrain. In 1995, there were 197 *Gewog*s. Some of the larger *Dzongkhag*s are sub-divided into *Dungkhag*s and administered by a *Dungpa.* While each *Dzongkhag* has an administrator (*Dzongda*), *Gewogs* are administered by a *Gup* (administrative head) and *Chimi* (member of the National Assembly). They are assisted by *Gewog Tshogpas* (*Gewog* Committee members) in the preparation and implementation of *Gewog* development plans. The members of the *Gewog Tshogchung* Committee are elected for a period of three years.

The *Gewog* is administered by the *Gewog Yargye Tshogchung*/*Gewog* Development Committee (GYT). The functioning of the GYT is governed by the *Chathrim* (constitution) issued by the Ministry of Home Affairs in 1992. It includes guidelines for the election of the GYT members, procedures for raising issues for discussion at the *Gewog*, *Dzongkhag* and national level, and the selection of development programmes for the *Gewog*. The *Gup* is the chairman of the GYT. He is assisted by *Gewog* Tshogchung members who also include the *Mangap*s (village elders). The *Chimi* also participates in the GYT meetings, in addition to representing the *Gewog* in the National Assembly.

Figure 3: Structure of Royal Government of Bhutan 1996

Structure of Royal Government of Bhutan, 1996

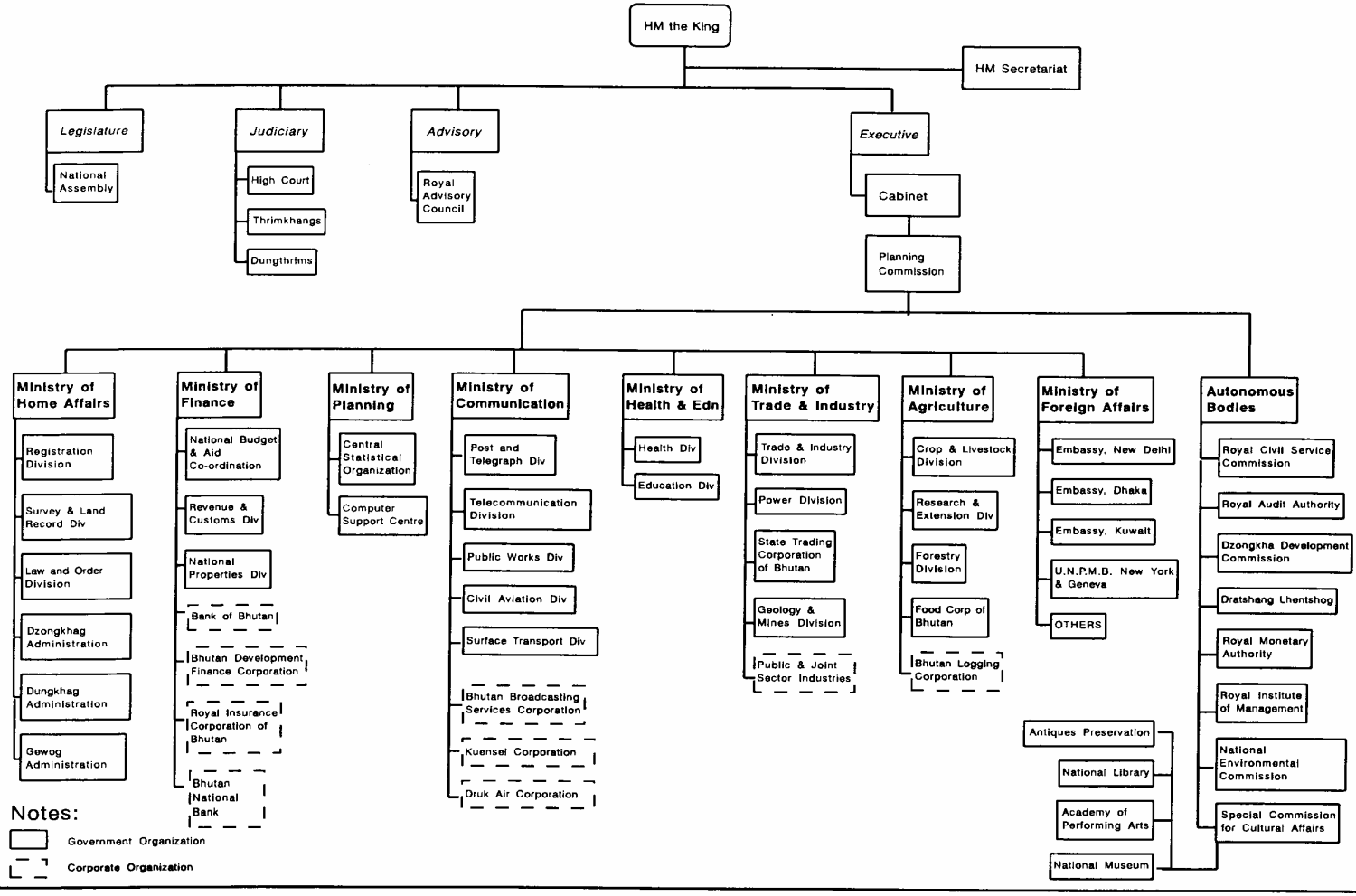
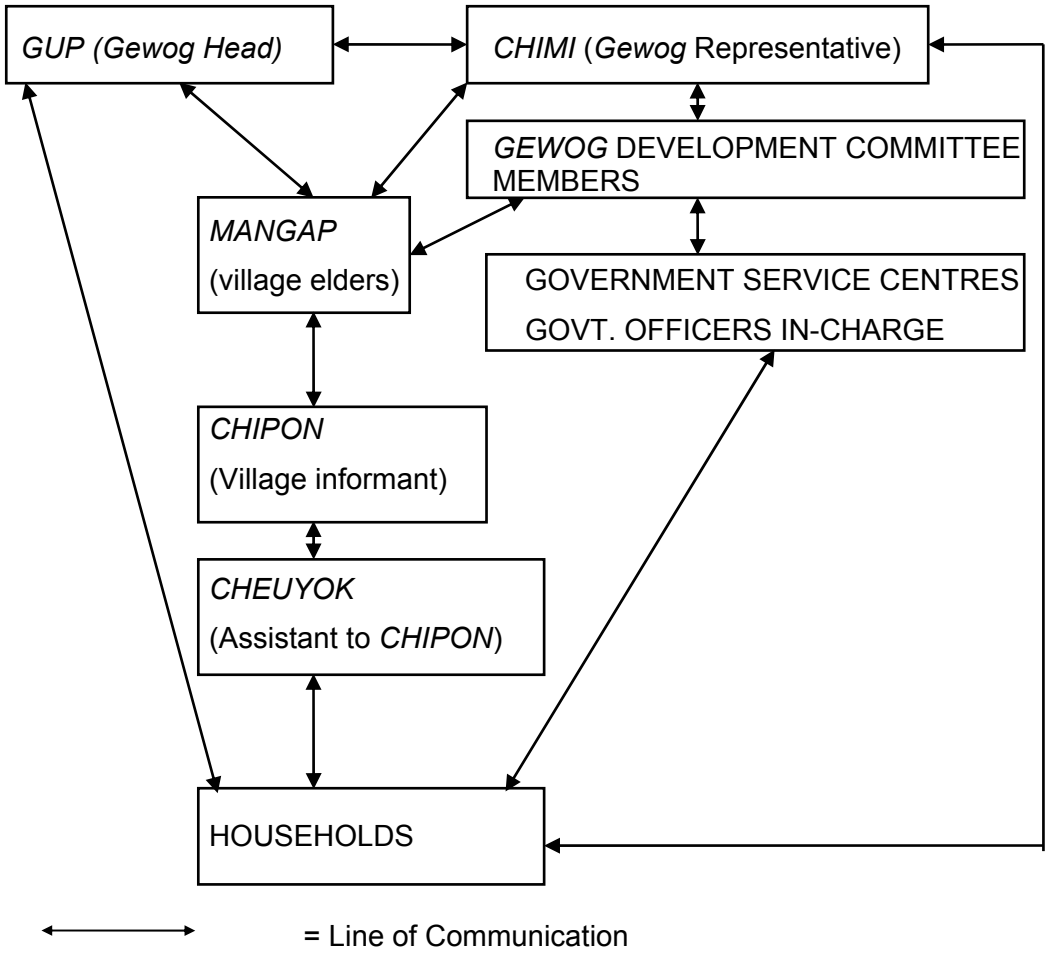


Figure 4: Structure of a *Gewog*



Source: Author, 1997

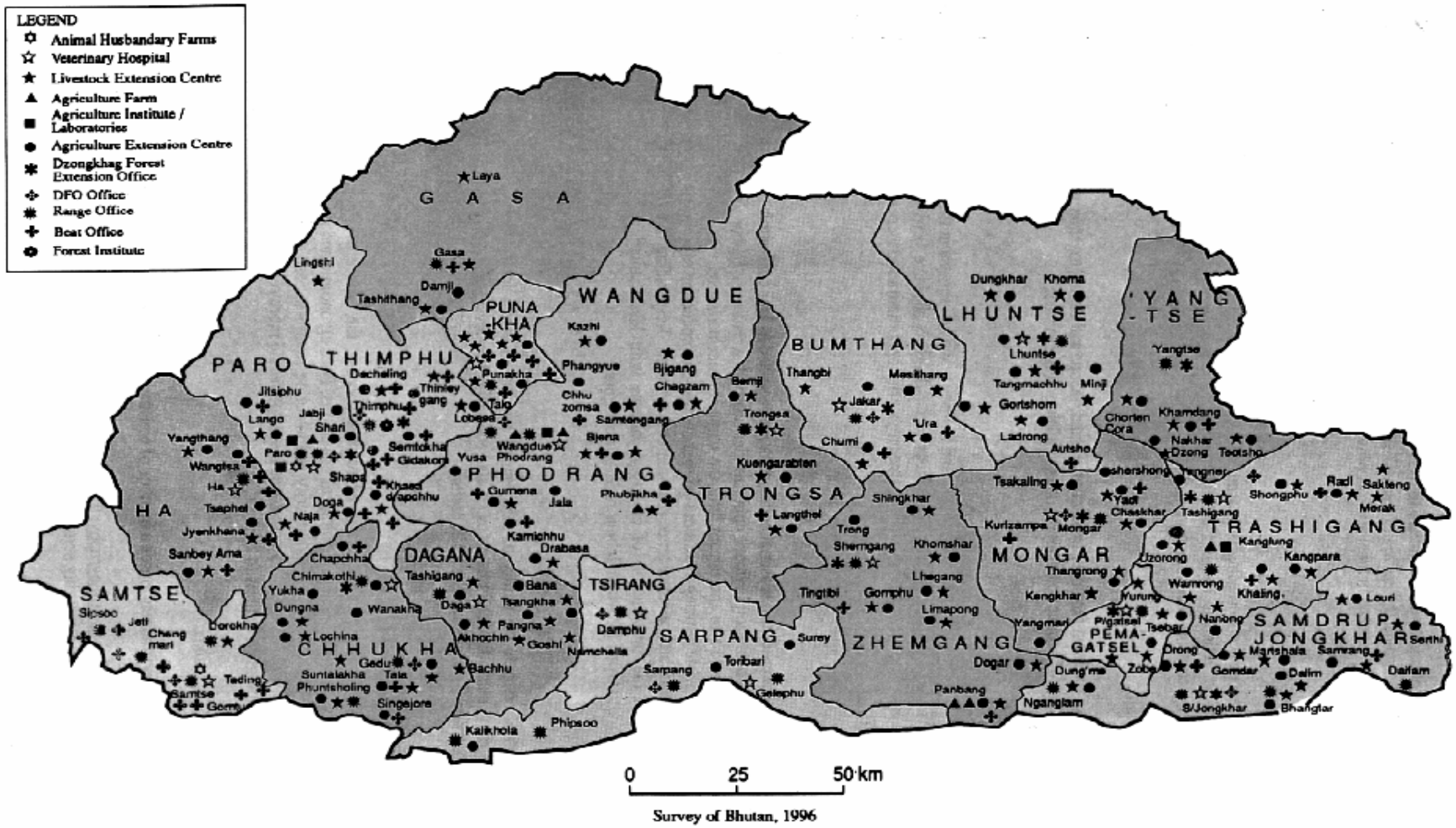
2.2 The Renewable Natural Resources Sector

2.2.1 National and Regional Organisation

The renewable natural resources sector (RNR) includes agriculture, livestock, forestry, nature conservation and national parks, and falls under the Ministry of Agriculture (MOA). In the past, while the Departments of Agriculture and Animal Husbandry were under one Ministry (Ministry of Development), Forestry was under the Ministry of Trade and Industries. To ensure proper co-ordination and increase the productivity of the land and water resources, it was considered prudent to bring these three departments under one ministry. Furthermore, this approach complimented the already integrated farming system practised by the farmers, in which crop production as the central theme is supported by livestock and forestry. The need to adopt the RNR approach also stemmed from the rationale not to confuse the farmer on priority programmes of agriculture, animal husbandry and forestry adopted by the government.

The delivery of services and material inputs from the government is carried out through the renewable natural resource service centres established at the *Dzongkhags* and *Gewog*s. The renewable natural resource sector service centres have been integrated into one unit. This approach reduces the time and effort of the local people who use these centres.

Figure 5: Location of Renewable Natural Resources Facilities


LEGEND
Animal Husbandary Farms
Veterinary Hospital
Livestock Extension Centre
Agriculture Farm
Agriculture Institute / Laboratories
Agriculture Extension Centre
Dzongkhag Forest Extension Office
DFO Office
Range Office
Beat Office
Forest Institute
GASA
PARO
THIMPHU
PUNAKHA
WANGDUE
BUMTHANG
LHUNTSE
YANGTSE
PEMAGATSEL
SAMDRUP JONGKHAR
TRASHIGANG
MONGAR
ZHEMGANG
SARPANG
TRONGSA
TSIRANG
DAGANA
PHODRANG
CHUKHA
SAMTSE
HA
Laya
Gasa
Punakha
Thimphu
Paro
Haa
Wangdue
Bumthang
Lhuntse
Yangtse
Pemagatsel
Samdrup Jongkhar
Trashigang
Mongar
Zhemgang
Sarpang
Trongsa
Tsirang
Dagana
Phodrang
Chukha
Samtse
0 25 50 km
Survey of Bhutan, 1996

2.2.2 Major Land Uses

The land use survey (RGOB, Ministry of Agriculture, 1995b) showed three distinct land uses: forests, agriculture, and pastures. The largest part of the country is under forest, which constitutes 64.4 percent. Another 8 percent has been classified as scrub forest. Agriculture forms 7.7 percent followed by pastures at 3.9 percent. A notable feature of land use is the practice of rotational cropping, which extends to 2.2 percent of the total area of the country. 15.7 percent of the country's total area is under glaciers, water spreads, wetlands and landslides.

Table 1: Landuse Cover (National)

Land Category	Area in km2	Percentage of total area
Conifer forests	10,616	26.5
Broadleaf forests	15,107	37.7
Forest plantation	64	0.2
Scrub forests	3,258	8.1
Total Forests	**29,045**	**72.5**
Natural pastures	1,553	3.9
Improved pastures	11	0.0
Total Pastures	**1,564**	**3.9**
Wetland	388	1.0
Dryland	977	2.4
Tseri (Shifting cultivation)	883	2.2
Mixed cultivation	840	2.1
Total Agriculture	**3,088**	**7.7**
Orchards (Apples & oranges)	23	0.0
Cardamom plantations	35	0.1
Total Horticulture	**58**	**0.1**
Settlements	**31**	**0.1**
Others (Snow/glaciers, water spreads, wetlands, landslides)	**6,290**	**15.7**
TOTAL	**40,076**	**100.0**

Source: RGOB, Ministry of Agriculture, 1995b (LUPP, MOA)

2.2.3 Agro-ecological Zones and Agricultural Production

The steep rise of the country from the sub-tropical to the alpine eco-system has afforded a wide range of agro-ecological zones. They fall under six zones as per the classification carried out by Ministry of Agriculture. The wet sub-tropical zone rises from 150 to 600 mamsl, followed by the humid sub-tropical zone at 1200 mamsl. The dry sub-tropical zone starts from 1200 mamsl and extends to 1800 mamsl, followed by the warm temperate zone which reaches 2600 mamsl. The cool temperate zone lies between 2600 and 3600 mamsl, and finally the alpine zone reaches a height of 4600 mamsl.

Table 2: Agro-ecological Zones of Bhutan

Agro-ecological Zone	Altitude Range (mamsl)	Annual Rainfall (mm)	Annual Temperature Max. Degree C	Annual Temperature Min. Degree C	Annual Mean Temperature Degree C
Alpine	3600 -4600	< 650	12.0	-0.9	5.5
Cool Temperate	2600 - 3600	650 - 850	22.3	0.1	9.9
Warm Temperate	1800 - 2600	650 - 850	26.3	0.1	12.5
Dry Subtropical	1200- 1800	1200 - 1800	28.7	3.0	17.2
Humid Subtropical	600 - 1200	1200 - 2500	33.0	4.6	19.5
Wet Subtropical	150 - 600	2500 - 5500	34.6	11.6	23.6

Source : MOA/ISNAR, 1992 (Adopted by Gyamthso, 1996)

The land use survey published by the Ministry of Agriculture in 1995 (b), showed distinct variations in cropping pattern across the country. In western Bhutan, high altitude rice is the primary crop, whereas wheat and buckwheat form the major agricultural crops in central Bhutan. Maize is the main source of food in the eastern part of the country. The survey shows a definite change in cropping patterns; while the emphasis is now increasingly on apple orchards in western Bhutan, the main emphasis in the central and eastern parts is on potatoes.

Table 3: Sector Contribution to GDP

Sector	% GDP 1980	Average Growth Rate 1980-89	% GDP 1989	% GDP 1993
Agriculture	55.7	5.0	45.1	42.2
Mining	0.6	13.8	1.0	0.7
Manufacturing	3.2	15.2	6.0	9.2
Electricity	0.2	65.4	10.8	8.3
Construction	7.8	4.7	6.3	6.3
Trade	10.9	1.1	6.3	6.3
Transport & Communications	4.3	12.9	6.7	8.0
Financial Services	6.3	9.8	7.7	9.0
Community & Social Services	10.8	6.8	10.2	10.0

Sector Shares and Growth Rates of Gross Domestic Product (GDP) 1980- 89-93 (Ministry of Planning, 1992, adopted by Dorjee, K. 1995)

Agricultural farming is the occupation of more than 85 percent of the population. In 1980, agriculture, including livestock and forestry, formed 56 percent of the Gross Domestic Product (GDP). However, by 1993, agriculture's share of GDP had fallen to 42 percent. (RGOB, 1994b). This is not a reflection of a decrease in agricultural production in real terms but rather the result of an increase in other sectors. For

instance, the establishment of the Chukha Hydroelectric Power Plant has considerably increased the power sector's contribution to the GDP.

The policy of the Ministry of Agriculture has been to improve the productivity rather than the extent of the area under farming. There has also been a steady rise in areas under horticulture, more specifically under apple and orange orchards. This development has been driven to a large extent by the export to Bangladesh.

2.2.4 Livestock Production

Livestock rearing forms an integral part of the farming system in Bhutan. While in the higher elevations such as Laya and Lingshi, households depend on *Yak*s as the main source of livelihood (Gyamtsho, 1996), livestock in many areass renders an indirect support to the sustainability of agricultural crop production through provision of manure and draught power (RGOB, Livestock Development Policy and Strategy, MOA, 1995c, p.13). The production of butter, cheese and meat is increasingly becoming one of the main sources of cash income.

In 1986, the Draft Pasture Policy (Department of Animal Husbandry, 1986) proposed complete nationalisation of pastures. The nationalised pasture would then be leased according to livestock units for a period of 30 years. The leasing of pastures is linked to pasture improvement by the lease holder. The size of the improved pasture is based on its ecological resilience. For every livestock unit, 10 acres in the alpine region, one acre in the temperate region and 0.5 acres in the subtropical region are estimated to be adequate. The primary objectives of the pasture policy are to sedentarise the herders, thereby reducing the negative environmental impact, and at the same time improve the productivity of the livestock. Table 5 shows that over the period of six years, from 1985 to 1990, the cattle population has remained almost constant. While pasture improvement and a reduction in the number of livestock has taken place along the lines envisaged in the Draft Pasture Policy, the process of the nationalisation of pastures has met with considerable resistance, especially from the owners of large tracks of pasture. The need to compensate financially for approximately 126,400 ha. (RGOB, Ministry of Planning, 1994b) of registered pastures has posed a major obstacle to achieving this policy objective.

Table 4: Number of Livestock, 1985 - 1992 (in '000)

Livestock	1985	1986	1987	1988	1989	1990	1991	1992
Cattle	347.4	340.3	357.0	357.4	349.9	358.6	335.5	310.0
Yak	31.3	35.7	30.1	35.6	37.1	33.0	31.5	30.2
Buffalo	n.a.	n.a.	5.2	4.3	4.7	4.3	2.6	0.9
Sheep	52.3	43.8	36.4	46.6	47.8	45.2	36.0	31.0
Goat	n.a.	n.a.	40.9	36.7	32.5	36.6	25.1	14.5
Horse	n.a.	23.6	26.0	25.7	26.1	25.1	25.2	25.3

Source : RGOB, Ministry of Planning, 1994b

2.2.5 Forest Cover

The distribution of forest cover is not homogenous. While the western part of the country has an average forest cover of 70 percent, the eastern part, with a higher

population density, has an accessible forest cover below the national average. The central part of the country has the highest percentage of forest cover and lower population density. Forest cover varies not only in terms of distribution but also as far as the ecosystems are concerned. For instance, although small in size, the latitudinal change that starts at 150 mamsl passes through various eco-floristic zones that eventually culminate in the alpine eco-system at 7500 mamsl. This also influences the rainfall distribution which varies from 5000 mm/year in the south, to less than 600 mm /year in the north. The major forest types and tree species of the country are briefly enumerated. Local names of species are indicated in the annex.

Subtropical broadleaf forests: Subtropical broadleaf forest types extend from elevations at 150 mamsl adjoining the Indian plains, to 1000 mamsl. The major species are *Acacia catechu, Acrocarpus fraxinifolius, Adina cordifolia, Aesandra butyracea, Ailanthus integrifolia, Albizia lebbeck, Amoora wallichii, Anthocephalus cadamba, Bauhinia purpurea, Bombax ceiba, Cassia fistula, Carpinus viminea, Castanopsis hystrix, Cinnamomum Tamala, Dalbergia sissoo, Gmeliana arborea, Mangifera indica, Michelia champaca, Morus macroura, Terminalia myriocarpa, Toona ciliata*.

Temperate broadleaf forest: Temperate broadleaf forest types extend from 1000 to 2000 mamsl. The main species found here are *Acer campbellii, Alcimandra cathcarti, Alnus nepalensis, Betula alnoides, Daphniphyllum himalayense, Elaeocarpus varunna, Exbucklandia populnea, Ficus neriifolia, Juglans regia, Lithocarpus pachphyllus, Quercus lamellosa, Symplocos lucida.*

Temperate conifer forests: Temperate conifer forest types extend from 2000 to 4000 mamsl. The main species are *Abies densa, Betula utilis, Cupressus corneyana, Juniperus recurva, Juniperus pseudosabina, Larix griffithii, Picea spinulosa, Pinus bhutanica, Pinus wallichiana, Populus ciliata, Quercus semecarpifolia, Rhododendron arboreum, Salix babylonica, Taxus baccata and Tsuga dumosa*.

Table 5: Estimated Change in Forest Cover (1958 - 1989)

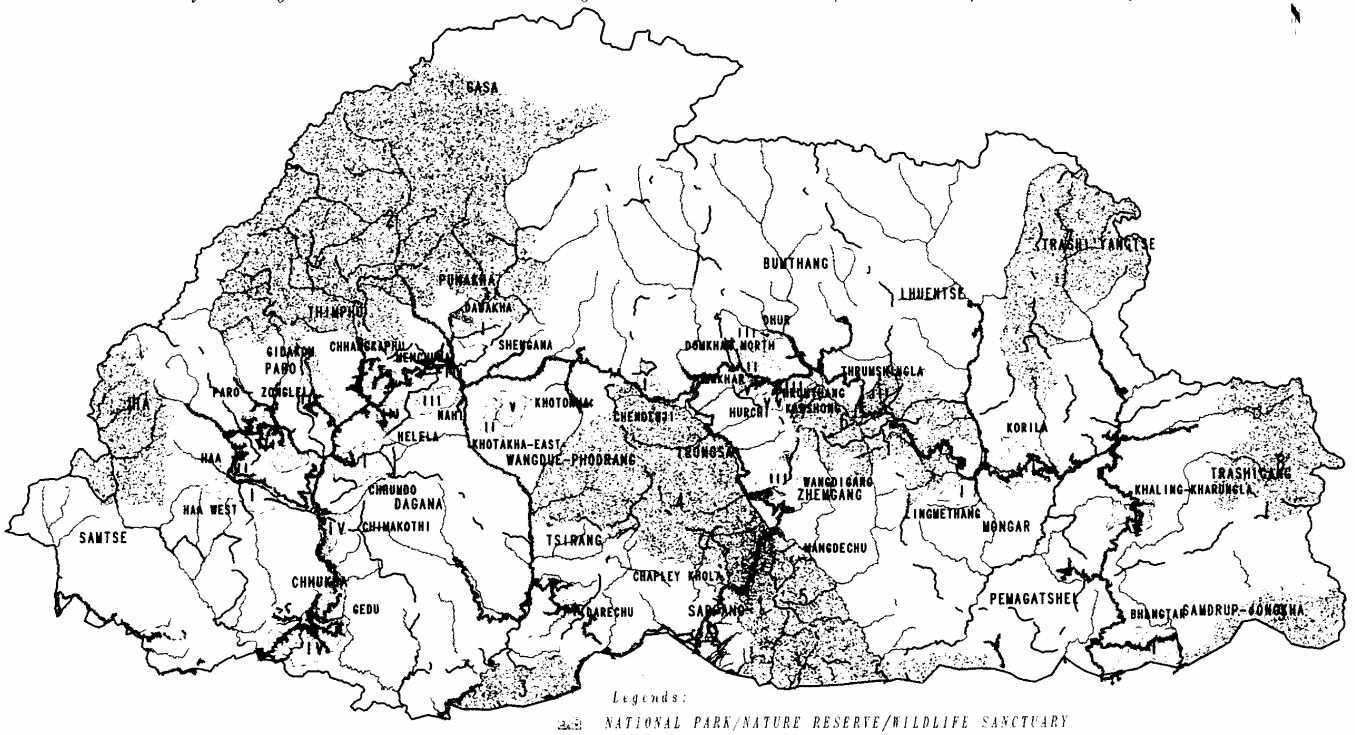
Land Classification	PIS 1958 in ,000 ha	FSD 1989 in ,000 ha	Increase or Decrease in ,000 ha.
Agriculture	299	554	+ 255
Broadleaf forest	1,485	1,056	- 429
Coniferous forest	1,011	1,006	-5
Degraded forest and others	1,245	1,426	+181
TOTAL	4,040	4,042	-

Source : RGOB, MPFD, 1991 / PIS - Pre-investment Survey; FSD - Forestry Services Division

Figure 6: Forest Cover (excluding scrub)

BHUTAN

Map showing Progress of Forest Management Inventories and Plans as of July 1996 and Existing National Park/Reserve/Sanctuary



Legends:

NATIONAL PARK/NATURE RESERVE/WILDLIFE SANCTUARY

1. *Torsa Strict Nature Reserve*
2. *Jigme Dorji National Park*
3. *Phipsoo Wildlife Sanctuary*
4. *Black Mts. National Park*
5. *Royal Manas National Park*
6. *Thrumshingla National Park*
7. *Kulong Chu Wildlife Sanctuary*
8. *Sakteng Wildlife Sanctuary*
9. *Khaling Wildlife Sanctuary*

International boundary

Dzongkhag boundary

Roads

Rivers

Community Forestry

I *1st inventory completed after 1988*

II *1st inventory ongoing*

III *1st inventory & management plan completed after 1988*

IV *1st inventory & management plan completed before 1988*

V *2nd inventory ongoing*

Scale 1:15,50,000

GIS Cell, FRDS

2.2.6 Forest Production and Growing Stock

Forests play an important role as a major renewable resource base. The mountainous terrain of the country imposes certain limitations on the use of forest resources, but the forests provide the population with other benefits. For instance, the settlements in the valleys are directly dependent on the conservation of forests in the upland catchment areas. Most of the arable land is located in the valleys and sustained by a constant flow of nutrients from the mountains above. A well regulated forest resource management regime in these areas is of paramount importance.

During the last 30 years, the estimated variations of forest cover appear to be small for the country as a whole. In this period, an estimated decrease of 429,000 ha of broadleaf and 5000 ha of conifer forests has occurred. The major part of this area has been converted to agriculture which saw an increase of 255,000 ha. There was also an increase of 181,000 ha of degraded forest. In 1993, forest products contributed 11 percent to the renewable natural resource sector GDP (RGOB, Ministry of Planning, 1994b). However, this did not include more than one million cubic meters of firewood extracted by the rural people from various parts of the country which, for practical reasons, is difficult to account for. This figure will increase in subsequent years with the increase in population. Although the Pre-investment Survey completed in 1980 showed an annual allowable cut (AAC) of 13.9 million cubic meters, the present (1995) level of harvest is only 450,000 cubic meters of timber. Shortage of personnel and the high cost of building infrastructure, such as forest roads, in the inoperable areas have limited the utilisation of forest resources.

Table 6: Wood And Wood-based Industries in Bhutan

Sl.No.	Type of Industries	No.
1.	Sawmills	49
2.	Sawmills with Crates/Boxes	5
3.	Particle Board	1
4.	Blackboard	2
5.	Plywood	1
6.	Joinery	3
7.	Broom handle	3
8.	Furniture	33
9.	Tea Chest	4
10.	Wooden Handicraft	1
11.	Calcium Carbide & Chemicals (for charcoal)	1

Source: Forestry Services Division, 1996

Woodbased industries are the second largest revenue earner for the government, after hydro power. The government's consistent policy has been to discourage the export of round logs, but instead to add to their value before they are exported. The main export markets are India and Bangladesh.

Growing stock: The total growing stock as of 1991 was 685.89 million cubic meters (cum.) with an annual yield of 11.96 million cum. of timber. The yield from forest

plantations was not calculated as they are at different stages of rotation and form only a negligible part of the present forest potential.

Table 7: Forest types, growing stock and annual yield

Forest Types	Area in sq. km	Percentage of Total Land Area	Growing Stock in million cubic meters (cum.)	Annual Yield in million cum.
Subtropical broadleaf	13749	34.30	346.75	6.30
Temperate broadleaf/conifer	1358	3.40	36	0.61
Temperate conifer	10616	26.50	303.14	5.05
Broadleaf plantation	20	0.10	-	-
Conifer plantation	44	0.10	-	-
Total	25787	64.4	685.89	11.96

Source: RGOB, MOA, 1995b and RGOB, FMP, 1991.

2.2.7 Nature Protection and National Parks

The protected areas are classified into nine national parks, wildlife sanctuaries and strict nature reserves. The selection of the protected areas is based on their ability to represent biodiversity and eco-systems within a particular region. All protected areas have been notified and gazetted by the government, and incorporated in the provisions of the Forest and Nature Conservation Act 1995.

Because of the high degree of biodiversity, Bhutan has been described as one of the 10 “Hot Spots” in the world. This is attributed to the fact that more than 64 percent of the country is under forest cover. Bhutan is home to 7,000 vascular plants, 700 bird species, 200 mammals and at least 5 globally endangered species of flora and fauna. It is an act of genuine benevolence, for a small and developing country to put 26.3 percent of its area under national parks and wildlife sanctuaries.

An integrated approach has been adopted as the major focus of the nature conservation policy. There will be no resettlement of the people already residing within the national park unless they want to move, or it is absolutely necessary. The programme approach to integrating conservation and development has met with a high degree of success in most of the protected areas. Another area emphasised by the policy, is buffer zone management. The policy states that there should be only minimal disruption to the residents in the existing enclaves of protected areas.

The nature conservation policy also provides for a gradual opening up of the protected areas to visitors. This will be done as commensurate with the establishment of park infrastructure and availability of an adequate number of trained personnel. The present thrust of the policy is the protection of endangered species from poaching, and the study of their habitats and population dynamics.

Figure 7: Protected Areas

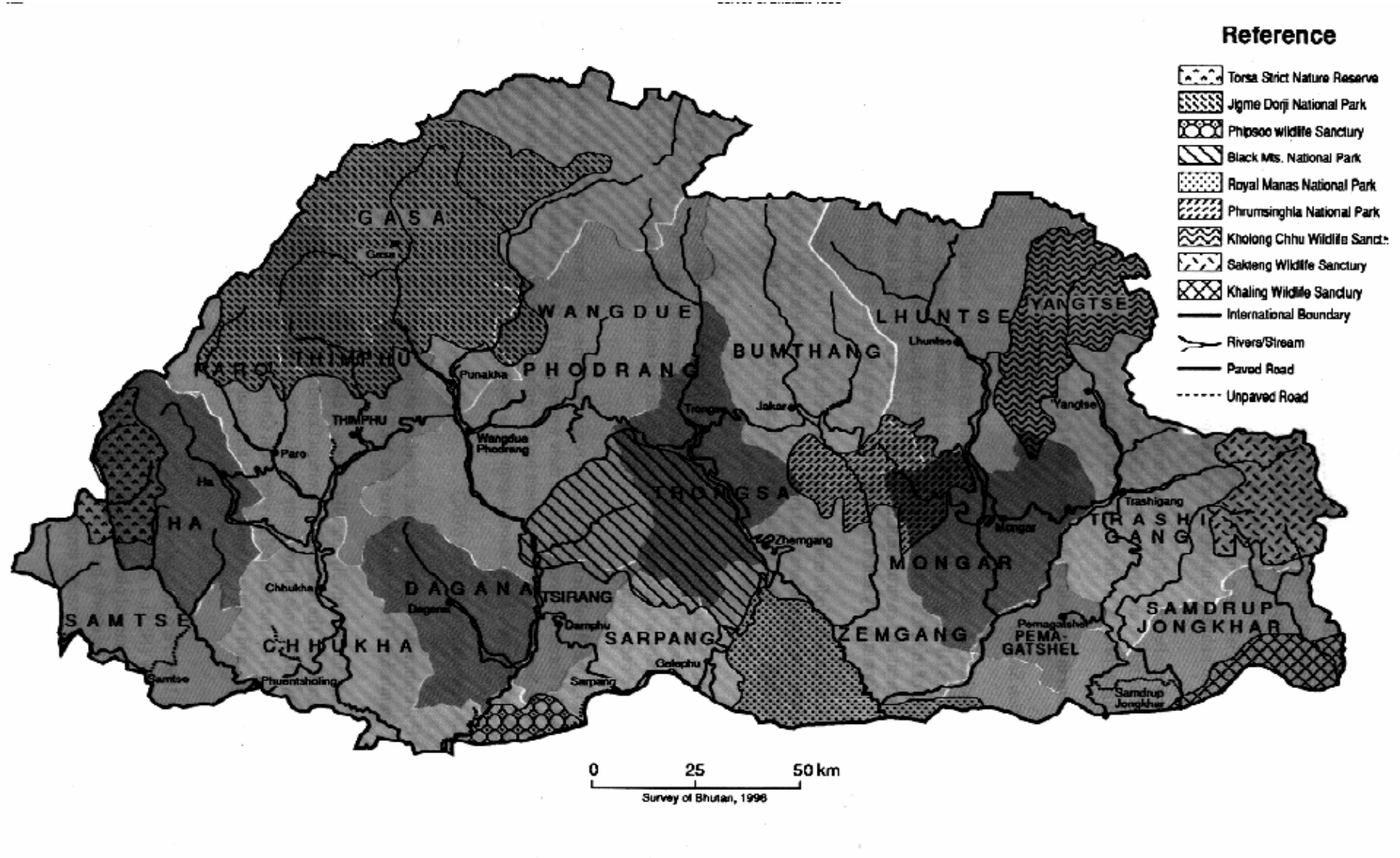

Reference
Torsa Strict Nature Reserve
Jigme Dorji National Park
Phipsoo Wildlife Sanctuary
Black Mts. National Park
Royal Manas National Park
Phrumsinghla National Park
Kholong Chhu Wildlife Sanctu
Sakteng Wildlife Sanctuary
Khaling Wildlife Sanctuary
International Boundary
Rivers/Stream
Paved Road
Unpaved Road
GASA
Gasa
PARO
THIMPHU
Punakha
PHODRANG
WANGDUE
BUMTHANG
LHUNTSE
YANGTSE
Lhuntse
Yangtse
Jakar
Trongsa
Wangdue Phodrang
Paro
Ha
HA
TRONGSA
Trashigang
TRASHI GANG
Mongar
MONGAR
Zhemgang
Chhukha
DAGANA
TSIRANG
Dagana
Damphu
SARPANG
ZEMGANG
Pemagatshel
PEMA-GATSHEL
SAMDRUP JONGKHAR
SAMTSE
CHHUKHA
Gelephu
Samtse
Phuentsholing
Sarpang
Samdrup Jongkhar
0
25
50 km
Survey of Bhutan, 1996

Table 8: Location and Status of National Parks and other Protected Areas

Protected Areas	*Dzongkhag*	Eco-system	Status
1. Manas National Park	Samdrup Jongkhar and Zhemgang	Subtropical	Fully operational
2. Khaling Wildlife Sanctuary	Samdrup Jongkhar	Subtropical and specifically for pigmy hog	Under general protection
3. Phibsoo Wildlife Sanctuary	Sarpang	Dry Shorea forest eco-system	Fully operational
4. Black Mountain National Park	Zhemgang, Wangdue, Trongsa	Mixed broadleaf forest eco-system	Fully operational
5. Thrumshingla National Park	Bumthang, Mongar	Temperate forest eco-system	Under general protection
6. Torsa Strict Nature Reserve	Ha, Paro	For research in biodiversity	Under general protection
7. Bomdiling Wildlife Sanctuary	Trashi Yangtse, Lhuntshi	Black Necked Crane Habitat	Biodiversity inventory in progress
8. Sakteng Wildlife Sanctuary	Trashigang	Broadleaf-conifer forest eco-system	Under general protection
9. Jigme Dorji National Park	Thimphu, Paro, Gasa, Punakha	Alpine eco-system	Fully operational

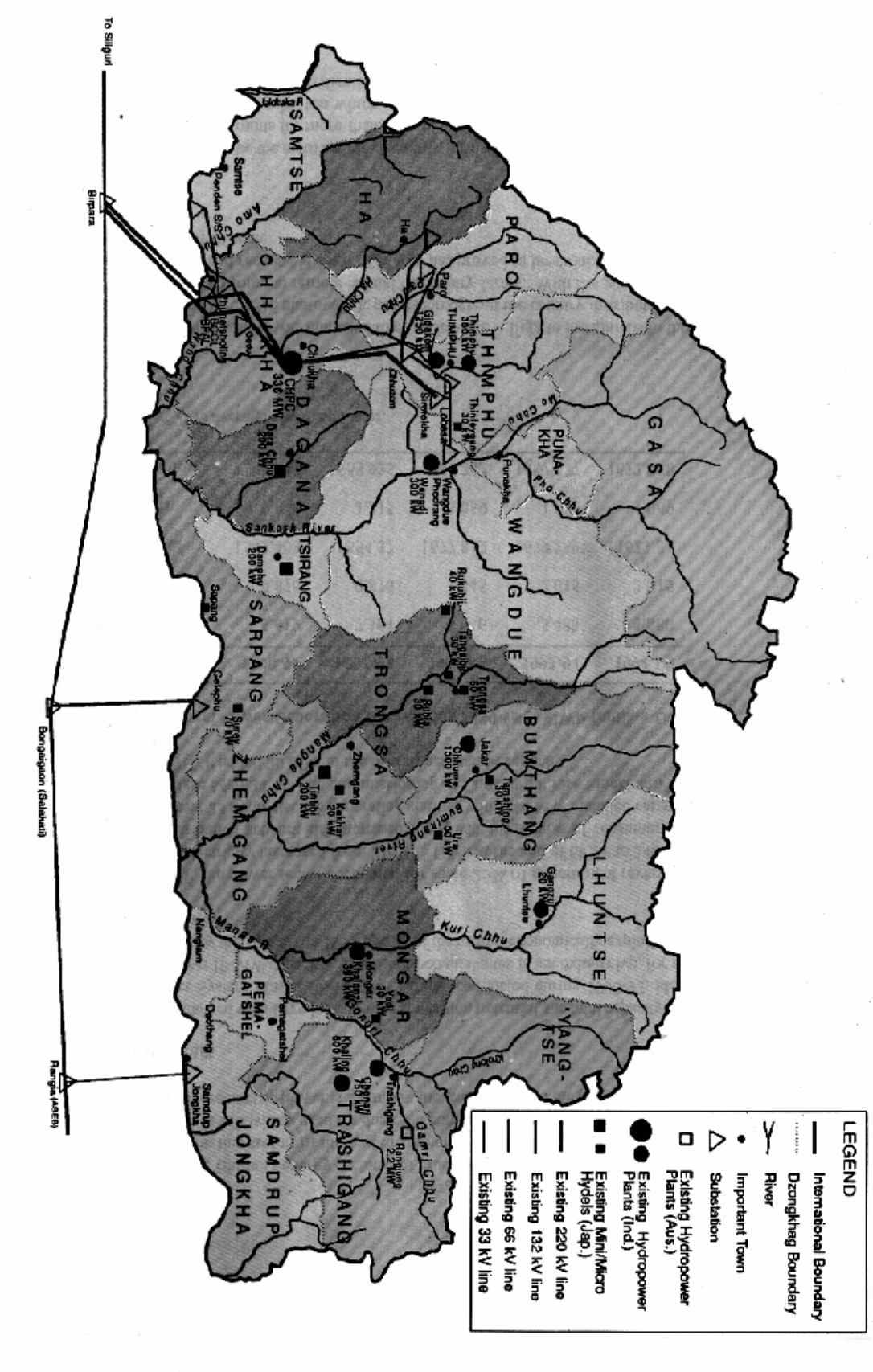
Source: FSD, 1996.

2.2.8 Forest Conservation and Hydro Power Generation

Forest conservation has relevance for the sustainable generation of hydro power. The country's large hydro power potential, estimated at 20,000 megawatts, can only be effective if the forests in the catchments of the rivers are adequately conserved. During the 7th Five Year Plan (FYP), the power sector accounted for 25 percent of government revenue. The Planning Ministry projects a growth rate of 7 percent per annum for the power sector, during the 8th FYP. Two major hydro power plants - Basochu and Kurichu are under construction and will be commissioned during the 8th FYP. Construction of the Tala Hydroelectric Project with a planned capacity of 1020 megawatts and Bunakha Reservoir Scheme with 180 megawatts will also commence during the 8th FYP.

Most of these rivers originate from the lakes in the northern part of the country, which are fed by tributaries from different catchments. The silt level in these rivers is influenced by the condition of the forest cover. This becomes relevant when one considers that all existing and planned hydro power plants are based on the run-of-the-river system which takes advantage of the natural drop of the rivers to generate power. The role of forest conservation in the context of hydro power developments is crucial. Forest conservation and hydro power generation policies are closely inter-related. Where applicable, costs of forest conservation programmes should be accounted for as part of hydro power development projects.

Figure 8: Hydro Power Development Projects



2.3 Legislation Regulating Forest Resources Utilisation

2.3.1 Development of Regulatory Framework

The National Assembly (*Tshogdu*) was established in 1953 by the Third King of Bhutan (Mehra, G.N. 1974, p. 106. Rose, L. 1977, p.113). This is the only legislative body in the country that has the authority to enact laws. The first time that this authority was exercised was in 1957/58. The *Thrimshung Chenmo* (Supreme Law) was passed in 1959 (Ura, K. 1995). This was followed by the Forest Act in 1969 (Master Plan for Forestry Development, 1991). Although it was generally based on *Thrimshung Chenmo*, the substantial influence of forest legislation from outside, also had its impact.

The enactment of the Land Act was followed, in 1978, by the forty eighth Session of the National Assembly (*Kasho*, Appended to the Land Act 1978). The Land Act drew much of its substance and direction from the *Thrimshung Chenmo*. However, many of the existing local resource management institutions were also subsumed in the process of enactment, which added depth and rationality to the Act. The Livestock Act and bylaws were passed in 1980, which placed major emphasis on the health of domestic animals and a restriction of their movements during periods of epidemics.

To incorporate many of the bylaws which were issued by the Forestry Services Division since the enactment in 1969, the new Forest and Nature Conservation Act has been elaborated. It was passed by the seventy second Session of the National Assembly in 1995 (RGOB, Minutes of the Seventy Second Session, 1995d). Bylaws such as fines and penalties for the poaching of wild animals and endangered plants, issued by the Forestry Services Division in 1989 and 1990, were incorporated into this Act.

Most of the legislation enhanced the conservation and productive utilisation of forest resources. An important objective has been to ensure adequate supply of basic forest products for the needs of population. The recognition by the government and the National Assembly, of the multiple role of forest resources and the need to promote sustainable uses, has led to more flexible provisions in forestry legislation. Other legal issues such as timber harvesting under concessions, leases for commercial plantations, and the supply of raw material to wood based industries, still need to be developed.

2.3.2 Forest Act 1969

This Act gave substantial power to the forest officials to protect, manage, and control access to the forests. It also gave a new dimension to natural resource property rights regimes. Much of the Act's spirit was drawn from the existing forest laws in the region which were aimed at protecting forests from further degradation by the expanding population. However, the most eventful decision was to define 'forests' in the Act. Under Chapter I, Section 4 (e) it states, '"*forest" means any land under forests which no person has acquired a permanent, heritable and transferable right of use and occupancy.'* To clarify the ownership status of such forests, it further states under Chapter II/5, Section 5 that '*with effect from the date of publication of this Act, all forests as defined under Section 4 (e) are declared as Government Reserved Forests'.* This process overlaid legislation over the existing customary laws and local resource management institutions. It also appropriated some of the common property resources such as village and community forests as government property. This was the first time that strong penalties such as imprisonment for violation of forest offences were promulgated. For instance, under Chapter III, Section 10, it is stated: *'Whereas the requirement of timber for bonafide domestic consumption of the local people shall be continued to be provided for from private land or Reserved Forest on payment of royalty as fixed by His Majesty's Government from time to time. His Majesty's*

Government reserves the right to the absolute ownership of trees, timber and other forest produce on private land. These trees may be made available by a Forest Officer or any Officer so empowered by His Majesty's Government. Sale or barter of such timber is strictly prohibited and violation of this will make the offender liable to imprisonment which may extend to one month or with fine which may extend to Nu.100/ or with both'. The Act grants forest officials considerable power to protect forest resources from the local people.

Since 1969, Royal commands and bylaws in the form of circulars have been issued from time to time for the utilisation of, and access to, forest resources (FSD, Vol. 1. II, III, 1994). This included a Royal Command to pay fifty percent of the values of the illegal forest products seized, with an upper limit of Nu. 10,000/ if the case is detected by an individual and upto Nu. 20,000/ if the case has been detected by more than one person (Government Orders and Circulars, Dept. of Forests, 1987). Through another Royal Command in 1993, local people were allowed to collect pipla (a species of pepper) from the forests and export it. Collection and marketing through middle-men, however, was prohibited as government auction yards can be used for direct sales.

2.3.3 Land Act 1978

Thrimshung Chenmo 1959 and Land Act 1978 gave tenurial rights over the agricultural land to the farmers. An earlier official recording of land ownership was already carried out in Trashigang in 1954 (Ura, K. 1995). This event seems to have triggered a far-reaching evolution in Bhutan. Recording of land in one's name gave official recognition of property rights, and acknowledged the rights of farmers over land which they had traditionally cultivated or intended to cultivate. The same event also led to the conversion of tax in kind to cash. The Land Act 1978, Chapter I, Section (A) 1-4 (b) provides legitimacy for the inheritance of land and protects the tenure rights of the property. It also protects the tenurial legitimacy of land acquired through other legal means. Furthermore, if a Bhutanese national becomes landless or his land has been requisitioned by the Government, Chapter I Clause (A) 6-8 and 6-9 gives him adequate protection whereby he is compensated financially or allotted land replacement. To ensure equitable distribution of agricultural land, the Land Act 1978, Chapter I, Clause (A) 3-4 fixed the land ownership at 25 acres per family.

The *Thrimshung Chenmo* and the Land Act 1978 are not explicit on the tenurial rights of forests traditionally used by the local people. Both Acts, however, provide a legal status to *Tshamdo* (grazing land) and *Sokshing* (forest maintained for manure). The Land Act 1978 defines Tshamdo as land *"used for grazing cattle"* and *"such land can neither be allotted nor sold but can be requisitioned by Govt. in time of necessary [*sic*] without paying the cost*" (Chapter VIII, Clause (A) 8-1). *Sokshing* is defined as „*forest land maintained for manure and shall be used for manure only. No tax shall be levied on such land and cultivation of other crops shall not be allowed on such land"*. (Chapter IV, Clause (A) 4-5). Chapter III, Clause (A) 3-5 also clarifies the status of *Sokshing* as „ *Person* [sic] *in possession of forest land maintained for manure and registered in Thram, has the right to make use of only the dead leaves for manure. He/she can not do any cultivation on such land. For the proper growth of mature trees, the owner can cut the branches of the trees from time to time and utilise other trees grown in the forest after acquiring permission from the Forest Department".* Under the same Chapter, Clause (A) 3-7 is stated "*Apart from grazing land, forest Land, (sogshing)[...] and orchard, naturally grown vegetation or planted by one-self in any other land registered in one's own name in Thram can be utilised by the owner of the land for one's own benefit. But for commercial purpose, clause (A) 4-6 should be referred to."* Clause (A) 4-6 states as *„But if they are used for commercial purpose, taxes shall be*

leived [sic] relevantly". The Act requires that both *Tshamdo* and *Sokshing* be registered under a similar procedure as followed for agricultural land.

2.3.4 Livestock Act and By-Laws 1980

The main purpose of this Act is to protect animal resource from diseases, and develop and improve hygienic utilisation of animal resources. (RGOB, Livestock Act, 1980, p.1). The emphasis is more on the administrative control on the movement of domestic animals in times of outbreak of epidemics and does not deal with issues related to forest resources and pastures. Forest related issues are covered by the draft pasture policy of 1985.

The implementation of the policy could have a profound impact on the forest management strategy, especially in terms of natural regeneration and reduction in the cost of fencing the plantation. As per the cost calculation carried out by the Forestry Services Division, 1996, fencing contributes to nearly 40 percent of the cost of the plantation. Land Act 1978 (Chapter VIII) grants rights to the pasture owners and does not impose any restrictions on cattle grazing in the forests so long as the pasture owner is consulted. This has a considerable impact on the general health of the forests.

2.3.5 Forest and Nature Conservation Act 1995

The Forest Act 1969 was repealed and its content has been expanded to become the Forest and Nature Conservation Act 1995 (RGOB, Minutes of the Seventy Second Session of National Assembly, 1995d). The basic principle of using the law to protect forests from local people has been maintained. Therefore the spirit of the Act does differ little from the former Forest Act. However, the definition of 'forest' covered under Chapter I Section 4(e) was revised and it now reads under chap. I, 3(e) as *'"Forest" means any land and water body, whether or not under vegetative cover, in which no person has acquired a permanent and transferable right of use and occupancy, whether such land is located inside or outside the forest boundary pillars, and includes land registered in a person's name as 'Tsamdog (grazing land) or Sokshing (woodlot for collection of leaf litter)'*. This definition further clarified the ownership status of forests and reduced some ambiguity in the previous law with regard to the ownership of trees in *Sokshing* and *Tshamdog.* The new Act recognises the need to create community forests and contains a chapter on Social and Community Forestry. This has been carried over from the Social Forestry Programme initiated in 1979.

The Act provides for the protection of flora and fauna and categorises their status. It lists twenty three wild animals and 7 plants as totally protected (RGOB, Forest and Nature Conservation Act, 1995, pp.44-46).

Another important revision has been the protection of forests against fires. According to the rules framed in 1983 by the Forestry Department, the local people had to pay a fine if nobody was found responsible for setting the forest on fire. The rule has been annulled by Chapter VIII, Section 31 a) where it states *'In order to protect the country's forests, every village head shall organize fire watchers and teams to put out forest fires and every person, to the maximum extent possible, shall help put out any forest fires and identify those who have caused the forest fire. If the culprit is apprehended he will be punishable under Section 10 (b) of this Act. If the culprit is not apprehended the relevant village community will be required to re-plant and maintain the area under the supervision of the Department, as per the rules framed by the Ministry'*. The new regulation, in contrast to the previous one, may be interpreted as a major shift in spirit.

The Act authorises the Forestry Services Division and Ministry of Agriculture to make rules on forest management and control. For instance, under Chapter III, Section 11 (a) states:

(a) 'The Ministry may issue rules to regulate, or prohibit without a permit, any of the following activities in Government Reserved Forests:

(i) entry in designated areas;

(ii) camping;

(iii) hiking, or using a vehicle;

(iv) taking any photograph, video, or sound recording;

(v) conducting any scientific research.

(b) Any violation of this section is an offence punishable with a fine which may extend either to an amount prescribed in the Rules issued from time to time or to twice the cost of the relevant permit, whichever is higher.'

2.3.6 Draft Social Forestry Rules 1996

Private Forest Rules and Community Forest Rules have been framed by the Ministry of Agriculture in keeping with the Command of His Majesty the King in 1979 and 1984, and as an exercise of the power conferred by Chapter IV of the Forest and Nature Conservation Act, 1995.

Private Forest Rules, 1996: The main objective of these rules is to encourage the local people to grow firewood and construction timber for their own use and as a source of cash income. For the government, it is expected to reduce the pressure on the existing state forests. Private forest is defined as "*trees and wild plants planted or sprouted naturally, on the following registered private land categories within the 25-acre ceiling: kamzhing, tshesa, pangzhing, tseri, and including marginal lands; provided that the cadastral survey has confirmed ownership with respect to that land, and which have been registered under Rule 3.*" However, private forest "... *excludes trees and wild plants on chhuzhing and on those categories of registered private land outside the 25-acre ceiling, such as khimsa, ngul thok dumra, tsadrog, sokshing, chilgi dumra, and pakshing zhing"*.

Registration of private forest can be done through the *Gup*, *Dzongkhag* Administration and the FSD. The most important legal document needed to register a private forest is the ownership certificate issued by the cadastral survey section of the Survey of Bhutan. No permission is required to harvest plants except those listed as endangered by the FSD. However, if the owner intends to transport products from private forest to another place, documentary evidence must be produced. This is to ensure that illegal forest products are not mixed with forest products from private forests. Once a private forest has been registered, there is no clause that enables it to be annulled by the state.

Community Forest Rules, 1996: A community forest is one that is established through a process of designation, application, preparation of a management plan, evolution of constitution and bylaws, and approval of the plan by the *Dzongkhag* Administration. Community forest products include any plants grown in the community forest.

The functioning of the community forest is based on the concept of a Community Forest Management Group (CFMG) formed from within a community. A group of at least ten households willing to establish, control, and manage a forest area as a

community forest in accordance with these rules can form a CFMG. The rules, however, do not mention how this group will be formed or who will be included in such a group. CFMG formation is seen as a mechanical process rather than an organic one inherent in a community.

The operationalisation of the community forest will be in accordance with the management plan prepared by the CFMG and approved by the *Dzongkhag* Administration, on the recommendation of the Divisional Forest Officer (DFO). The details required to be included in the management plan make it complicated for a trained forester to prepare a plan that is reasonably practical. For instance, the management plan should include the mapping of details such as boundary and various compartments, management objectives, descriptions of forest types and species, forest condition and an inventory of the forest area. The rules do not cover how the CFMG will interact with the *Dzongkhag* Administration and DFO in the process of management plan preparation. This would allow some room for the CFMG to negotiate with the plan approving authorities on the contents, should they consider changing the plan inputs and its direction at the time of approval.

The CFMG will function under the overall supervision of the *Dzongkhag* Administration and FSD, and within the framework of the Community Forest Rules. There is adequate protection against the misuse of community forests under Section 11. No royalty for the bonafide use of forest products from the community forest, by the CFMG members, will be levied. However, forest products will be subject to taxation if sold to outsiders. The CFMG can also establish funds from the sale of forest products from the community forests. However, all these benefits including the community forest itself can be suspended should the DFO and the *Dzongkhag* Administration jointly determine that a CFMG is unable to manage the community forest according to its approved management plan, or that the group has done something which has resulted in significant adverse effects on the forest, or the group activities do not comply with the Act, rules, or management plan. Following an investigation report, the Ministry of Agriculture can, if necessary, cancel the community forest.

3. Results of Household Surveys, Structured and Semi-structured Interviews and of the Analysis of Forest Offence Cases

Base line socio-economic data for the three research *Gewogs* have been generated based on a one hundred percent household survey. They are grouped under the headings of location and communication, demography, landuse and forest types and presented in the sequence of Radhi, Shaba and Chumey.

The natural resource flow in a community is influenced by three elements, which are: the nature of the resources, the way the distribution of the resources is organised, and the social patterns. It requires a particular kind of social organisation for its extraction and utilisation within a given socio-economic setting. The discussions on the flow of natural resources are based on responses from the structured and semi-structured interviews.

The concept of social energy flow addresses interactions among the households of a community. This flow maintains the dynamism of a community in which mutual help and compensation for services rendered, is one of the basic characteristics. It also reflects a still largely subsistence and non-monetary rural economy. Such exchange of services through gifts and commodities *"creates a complex set of threads binding individuals and groups"* together and are *"linked by relationships of debt."* (Gosden, 1994, p. 83). A dual emphasis on social and material relations exists in all societies whose relationships may be at varying degrees of coherence.

Elements which sustain social energy flow are mutuality, reciprocity, social obligation, kinship and resource ownership differential. If a particular household or a village became separated from such a flow, it would lead to isolation and even to disruption at the community-level. In the context of the research areas, various elements of the social energy flow are discussed. The structure of the flow varies to a certain extent in the three *Gewogs,* as can be expected in different socio-economic settings. Common elements which influence the flow in all *Gewogs* are religious persons, religious institutions, land use practices, local institutions and government services.

3.1 Radhi *Gewog*

3.1.1 Socio-economic Base Line Data

Location, Communication: Radhi *Gewog* falls under Trashigang *Dzongkhag*. To the east lies Phongme *Gewog* and in the west lies Shongphu *Gewog*. In the north there are the Merak and Sakteng *Gewog*s. The altitude of the *Gewog* extends from 1000 to 2200 mamsl. The *Gewog* is linked by a 25 km all-weather motorable road to Trashigang town and the *Dzongkhag* headquarters. The *Gewog* is also linked by motorable roads to the adjoining *Gewog*s of Phongme and Bartsham. There are scheduled transport services to and from Radhi, three times a week, to Trashigang town. The *Gewog* is served by government service centres such as a Basic Health Unit, Agriculture and Livestock Service Units, a Forestry Services Unit, a primary school and an adult education centre.

Demography: The survey covered 389 households with a population of 2156 people. The male to female ratio is 51 to 49 percent. At the time of the field survey, there were

63 government servants (2 percent), 281 students (13.1 percent), 53 monks (2.4 percent) including 6 nuns and 44 *Gomchens* (2 percent).

Radhi *Gewog* has the highest population among the three research areas. The number of 5.5 persons per household corresponds to the national average of 5.6 persons (Ministry of Planning, 1996a). The *Gewog* is divided into 15 villages. The ethnic composition is relatively homogenous, except that the residents of Tongling came from Zhemgang about a century ago. One hundred percent of the households depend on agriculture as the main source of livelihood.

Table 9: Demographic Data Villagewise of Radhi *Gewog

Village and No. of Households in Brackets	Males	Females	Govt. ser-vants	Students	Monks	*Gom-chens*
Pangthang(29)	56	70	4	30	1	1
Tanglamani(9)	14	28	-	4	-	1
Tshangkhar(21)	89	69	8	38	2	-
Jonla(58)	152	134	-	21	6(+1 Nun)	9
Tongling Kadam(12)	29	26	3	3	-	2
Tongling(45)	123	127	11	16	7	6
Cheyma and Kadam(36)	88	85	4	20	3	3
Dekiling(26)	88	84	7	38	2 (+ 1 Nun)	-
Dungye Gonpa(5)	17	15	2	3	3	1
Pakaling(51)	146	141	8	31	+1 Nun	6
Khudumpang(21)	80	88	8	34	4 (+1 Nun)	1
Langteng(30)	66	70	3	12	6	1
Tongling Tangphrang(8)	17	21	-	7	-	-
Melongkhar(12)	29	30	1	3	2	4
Bongman(26)	92	82	4	21	16 (+2 Nuns)	9
			63	**281**	**53 (6)**	**44**
TOTAL (389)	**1086**	**1070**				

Source: Author's Field Survey, 1995.

*The number of government servants, students, monks and *Gomchens* are included in the total population of the *Gewog*.

Landuse: Paddy is grown in the lower parts of the *Gewog*, where the altitude ranges from 1200 to 1750 meters mamsl. Maize is grown along with paddy in areas where water is unavailable. The latitudinal versatility of maize is much greater than that of paddy, extending to an altitude of 2200 meters mamsl. Wheat is normally only grown in

winter and is increasingly being replaced by potatoes. Finger millet and upland dry paddy are cultivated in the upper parts of the *Gewog,* but there is no set cropping pattern as crops from such cultivation are used only as a supplementary food source. While chilli, radish, spinach and potatoes were, at one time, the main vegetables, the government has distributed many new vegetable seeds such as cabbage, cauliflower, carrot and turnip.

Table 10: Landuse Data of Radhi *Gewog*

Sl.No.	Land use type	Area in ha.	Percentage of total area of *Gewog*
1.	*Chuzhing* (wetland)	719	25
2.	*Kamzhing* (dryland)	84	3
3.	Mixed Cultivation	949	33
4.	*Sokshing*	57	2
5.	Conifers	0	0
6.	Broad leafed forest	914	32
7.	Scrub forest	147	5
8.	Pasture - natural	10	-
	Total	**2880**	**100**

Source: RGOB, MOA, 1995b (Revised by the author, 1997)

Table 11: Agricultural Cropping Cycle

Activity	J	F	M	A	M	J	J	A	S	O	N	D
Rice Transplanting	-	-	-	-	-	x	x	-	-	-	-	-
Weeding of Rice	-	-	-	-	-	-	x	x	x	-	-	-
Maize Sowing	-	-	x	x	-	-	-	-	-	-	-	-
Maize Weeding	-	-	-	-	x	x	-	-	-	-	-	-
Potato Planting	x	x	-	-	-	-	-	-	-	-	-	-
Wheat Sowing	-	-	-	-	-	-	-	-	-	-	-	x
Maize Harvest	-	-	-	-	-	-	-	-	-	x	x	
Rice Harvest	-	-	-	-	-	-	-	-	-	-	x	x
Wheat Harvest	-	-	-	x	-	-	-	-	-	-	-	-
Potato Harvest	-	-	-	-	-	-	-	-	x	x	-	-

Source: Author's Survey Report, 1995.

x = Activity

- = Non-activity

The cropping cycle and type are based on climatic variations. This imposes certain limitations with respect to the work involving forest activities. For instance, paddy transplanting is done during June-July which coincides with the weeding of maize (Table 11) and also with the tree planting season. Winter cropping is a new

phenomenon in the *Gewog*. Wheat is the main winter crop which has recently received encouragement from the government through the provision of subsidised seeds.

Forest types: Forest type profiles of the *Gewog*s were constructed, based on the eco-altitudinal zones. As compared to the national figure (64.4 percent), Radhi has very thin forest cover (less than 32 percent) including 5 percent scrub forest. The forest type falls under dry chir pine (*Pinus roxburghii*) at the lower parts and mixed coniferous in the upper parts. *Pinus roxburghii* is the dominant species found at the lowest elevation of the *Gewog,* usually interspersed with some associates such *as Rhus sp*., *Grevillea sp..* At 1500 mamsl altitude, mixed broadleaf species take over. The main species found at this altitudinal range are *Schima wallichii, Rhus sp., Melia sp., Alnus sp., Michelia champaca, Juglans regia, Ficus sp., Woodfordia sps., Emblica officinalis* and *Symplocos sp.* The mixed broadleaf forest yields to *Pinus bhutanica* (2000 mamsl) and associated species, and then to mixed conifer forests (2200 mamsl). The main species are spruce (*Picea spinulosa*), hemlock (*Tsuga dumosa*), oak (*Quercus griffithii*), birch (*Betula utilis*), and *Rhododendron sp*.. Beyond 2200 meters altitude, these species merge into alpine pastures which eventually extend to Merak *Gewog*.

Bamboo (*Leeshing/soo* in *Sharchogpa* and *Pakshing* in *Dzongkha), Artemisia (mayragma* in *Sharchogpa* and *khempa in Dzongkha*)) and lemon grass (*sorbang in Sharchogpa*) are found all over the *Gewog* in Radhi - ranging from altitudes of 1000 to 2200 mamsl.. All three species are versatile for the local people who use them for manure, for medicinal purposes and as a source of cash income. Bamboo has become a favourite species for the local people after the ongoing Forestry Project showed a film on the use of bamboo in China. Many bamboo clumps were observed planted in and around the houses and along the banks of streams.

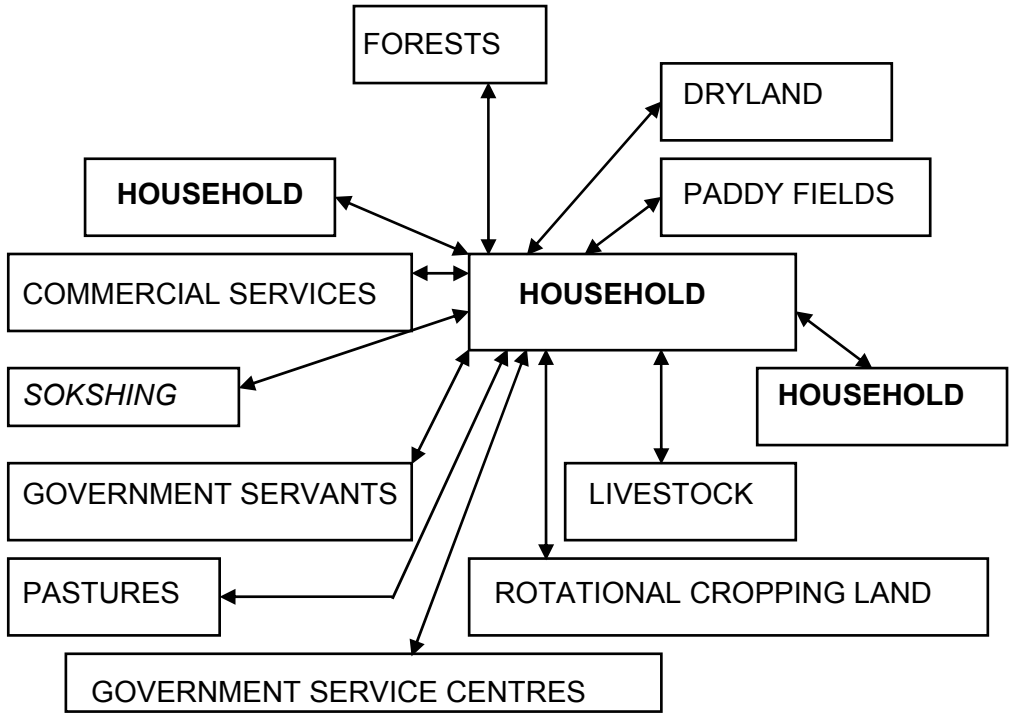
3.1.2 Natural Resource Flow

Natural Resource Flow Profile: Resources include both renewable natural resources and service centres located in the *Gewogs*. The major resources are forest, dryland, paddy fields, livestock, rotational cultivation land (shifting cultivation), government service centres, pastures, government servants, *Sokshing* and commercial services. The flow of these resources within and outside the *Gewog* is discussed, based on the interviews. Households are considered the smallest unit in the flow of these resources.

Forest: In Radhi, since there are only limited forest resources, the flow is mostly in the form of firewood, the supply of plants required for religious purposes and grazing ground for cattle. Some households also depend on the forests of Phongme *Gewog* for firewood and construction timber. Since all the forests are owned by the government, there is no visible flow back to the forests either in the form of services or products from the households.

Dryland: Dryland and mixed cultivation are landuse terms for agricultural land where crops are grown without irrigation. 36 percent of the total land area of the *Gewog* falls under this category. The main crop grown on dryland and mixed cultivation is maize. Other summer crops grown are wheat and potatoes. During the winter months, dryland is left fallow. The most striking cropping pattern is the practice of traditional integrated farming; soya beans, ginger, garlic and potatoes are grown with maize, and trees are also grown along the peripheries of the dryland. While maize is consumed locally, soya beans, garlic, ginger and potatoes are sold in Trashigang market. Some of the garlic finds a market in Thimphu, because of its high value. Animal dung that has been composted with leaf litter from the *Sokshing,* is the only source of replenishment of soil fertility on the dryland and mixed cultivation land.

Figure 9: Resource Flow Profile (Based on Products and Services)



Source: Author's Field Survey, 1996

Paddy fields: 25 percent of the total land of Radhi is under paddy cultivation. Upland dry rice is also cultivated where irrigation is not possible. All paddy fields are terraced. Only one crop of rice is cultivated per year, although in the lower parts of the *Gewog*, double cropping has been tried. Radhi is almost self-sufficient in food. Only 9 percent of the households said that they buy agricultural products to supplement their own production. Rice is the preferred diet and also a matter of prestige among the local people. However, the people of Merak and Sakteng said that they prefer maize to rice as the by-products of maize can be fed to their *Yak*s. Animal dung is the main fertiliser that replenishes the rice fields, though chemical fertilisers are increasingly used. During winter months, cattle are kept in the paddy fields for their manure. In some cases, those who do not own cattle request their neighbours to keep their cattle in the paddy fields and are paid in the form of grains. The practice of terracing reduces soil erosion and land slides caused by water run off.

Livestock: Livestock rearing is not as important as other agricultural practices. The reason given by the local people during the interview was that they lack space during the summer months, when all agricultural crops are cultivated. Moreover, their livestock product needs are supplemented from Merak and Sakteng. It is customary to let the cattle graze free in winter, and generally no penalties are imposed for crop damage. More than 90 percent of the people interviewed said that damage done to planted trees by cattle is a main reason why they do not plant trees. Winter wheat has been introduced and is increasingly being taken up by the local people. This may have some positive impact on the survival rate of trees planted by the farmers in Radhi *Gewog*.

Rotational Cropping Land (Shifting cultivation): Radhi has only 1 percent of its land under this category. Two farmers have converted their land, which was traditionally farmed on a rotation basis, into tree plantations. They have planted commercial species such as *Machelia champaca*, *Pinus bhutanica* and *Juglans regia*. They said that the remote location of the land made it difficult to protect the crops from wild

animals like wild boar and deer. They felt that high value trees may be a better alternative use of the land. Others said that they may also follow the same landuse strategy if the government can provide fencing material such as barbed wire, to protect the trees from damage by cattle.

Government Service Centres: The *Gewog* is served by all basic service centres such as agriculture, livestock, forestry, health and education. The main functions of these centres are to deliver government inputs to the households in the *Gewog*. The agriculture centre provides improved vegetable seeds, fertiliser, agricultural implements and technical services. The main service provided by the livestock centre is the breeding of bulls and horses. The forest centre issues permits for forest products. The people of Radhi have access to health services which are located with other service centres. All the students in Radhi are enrolled in the primary school which is situated at the central point of the *Gewog*.

Pastures: In Radhi, there is no visible flow of resources from pastures as the *Gewog* does not have any registered pastures in the vicinity. The pasture in Yabrang is too far away to be of any practical use.

Government Servants: There are 63 persons from the *Gewog* in government service. The flow of resources from these people is in the form of cash and household goods. During the field survey, it was observed that most of the new and large houses in the *Gewog* belonged to the government servants. In times of emergency, such as a death in a family, the government servants are the main source of financial support.

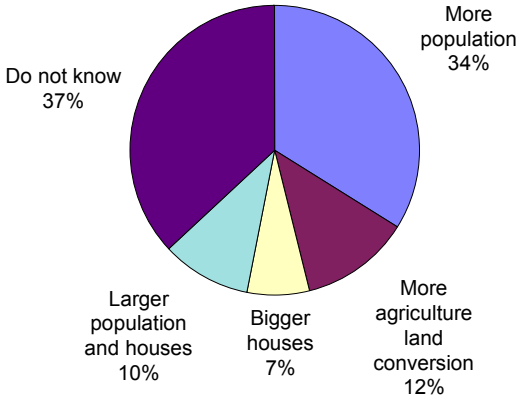
Sokshing: In Radhi, firewood is the main product that flows into the households from the *Sokshing*. Leaf litter, and in some cases construction timber, are extracted from the *Sokshing*. Substantial services flow back into the *Sokshing* from the owners. The trees in the *Sokshing* are protected from forest fires, theft by neighbours and the bushes are cleared to facilitate the proper growth of the trees.

Commercial Services: 40 percent of the cloth woven in Radhi is sold in Thimphu, 18 percent in Arunachal Pradesh and 31 percent in other *Gewog*s. This entails a substantial amount of travelling for commercial purposes by the male members of the households. Some of the respondents of the interview said that the marketing of woven cloth is increasingly becoming a constraint as they have to compete against cheap imitations imported from outside.

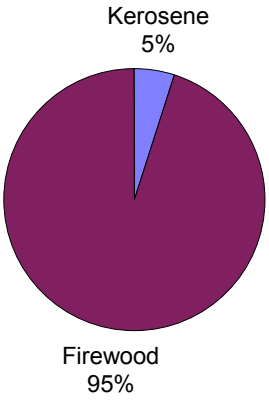
Selected answers relating to the respondents' perception of resource uses are presented in Figure 10. They are based on the structured and semi-structured interviews. The perception of the local population as to why the forest cover has decreased or increased in their *Gewog* can provide some insight into the resource use pattern that has evolved over the years within their locality. The perception can also be quantified in terms of the flow of resources from the forests to the households and from the households to the forests. The present state of the forest may be a reflection of this flow. For instance, in Radhi a larger population and higher consumption level, in comparison to some of the other *Gewogs*, have been perceived as the main cause of the decline in forest resources. It is also possible that the forest, being a state property, did not receive as much attention as agricultural resources which are generally private property.

Figure 10: Perception of Resource Uses in Radhi *Gewog*

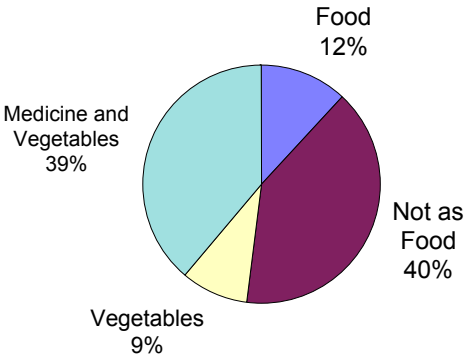
Why is there less forest in your *Gewog* than in other *Gewogs*?



What is your source of energy for cooking?



Do you use plants as food, medicine or vegetables?



Source: Author's Field Survey, 1996

The perception of the main source of energy may be a possible source of information that could be an indicator of the changing role of forest resources in locations traditionally dependent on firewood for cooking. Analyses of such perceptions may assist in the quantification of the general socio-economic change[2] taking place in a particular locality. It is perceived that if one can shift from the use of traditional sources of energy such as firewood to new and modern sources, one has attained a certain level of socio-economic status within the context of that particular community. Therefore, the effort is to move along these lines which ensure upward mobility in the social hierarchy. In Radhi, only a few households have managed to attain this level but the trend is moving in this direction. Such perceptions can have some impact on the use of forest resources, particularly on aspects of the firewood management policy at the community level.

The use of plants as a source of food or medicine may indicate the extent of the importance of forest resources for the local people. It is generally perceived that the households who use plants and tubers as substitutes for rice or maize are of lower social status. This is related to the social performance of particular localities with a high degree of physio-geographical limitations including land capability. However, the use of plants and herbs as vegetables and medicine has no such social stigma. As expected, there was a very small percentage of households who said that plants and tubers are used as a source of food.

3.1.3 Social Energy Flow in Radhi

The social resources of Radhi *Gewog* are religious institutions, religious persons, trading centres, outsiders, government service centres, government institutions, and other *Gewogs*. The flow of these resources is discussed based on the responses from structured and semi-structured interviews. As households are the core social units within the social structure of the *Gewog*, they are considered as reference points for the flow of social energy.

Religious Persons: Religious persons, which make up nearly 5 percent of the population, play a crucial role in the flow of social energy in the *Gewog*. There are 47 monks, 6 nuns and 44 *Gomchens* in the *Gewog*. One hundred percent of the respondents said that religious people have a higher social status than lay-people. This perception dictates, to a large extent, the direction of social energy flow. One hundred percent of those interviewed said that they offered *saunum* (annual offering of grains, mainly rice and maize) to the religious people, who, in return, performed religious ceremonies at various levels depending on the needs and aspirations of the households.

Religious institutions: There are five *Lhakhangs* (temples) in the *Gewog* - Radhi, Jonla, Deuyee Gonpa, Tanglamani and Pakaling. Each *Lhakhang* has its own annual *Tshechu (religious festival)* which comprises of religious ceremonies and dances. Most of the dances are the enactment of life after death, with the central theme that the quality of one's next life is a reflection of the present life. This seems to have profound impact on the general life style of the people of the *Gewog*.

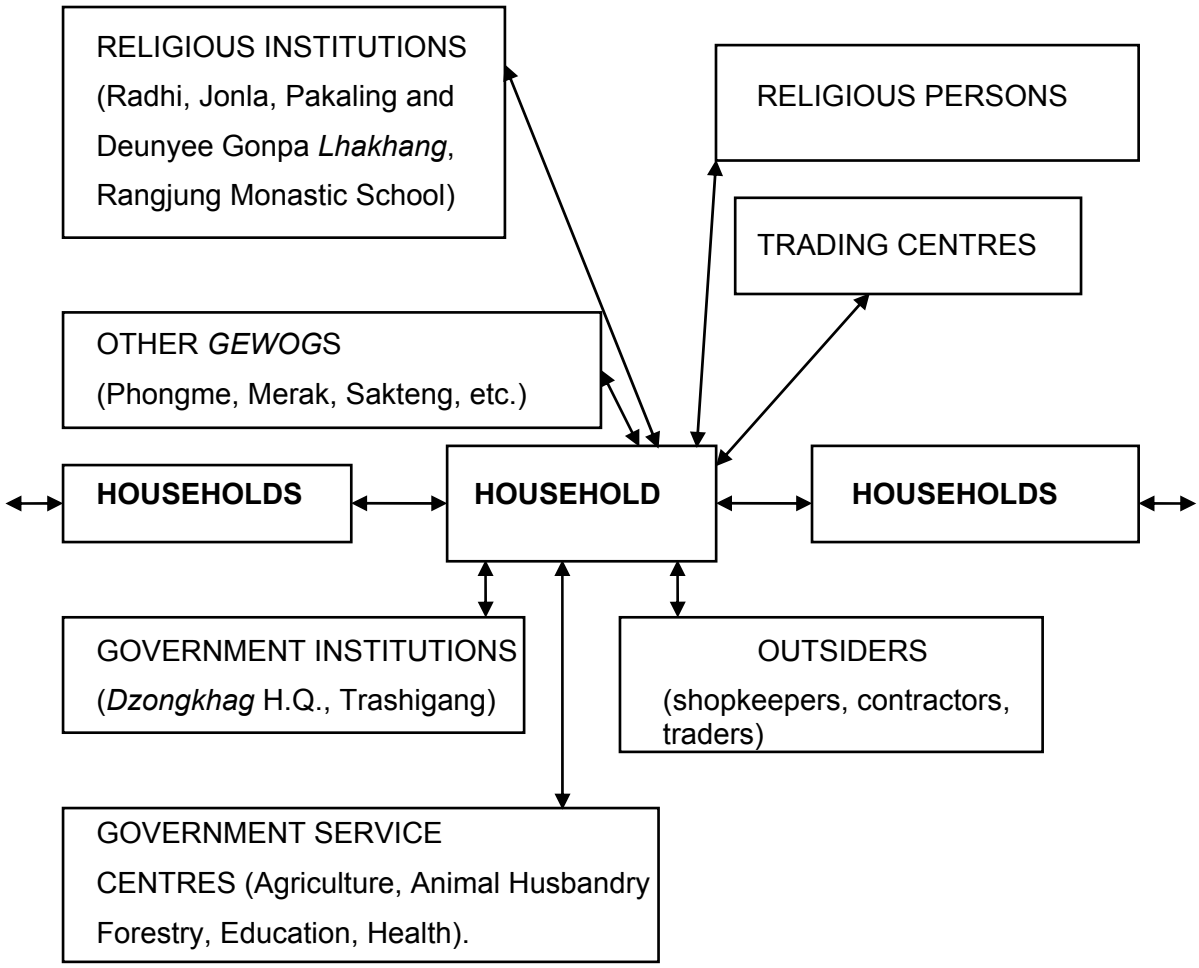
All the *Tshechu*s are presided over by the most venerable religious person of the village. People from many adjoining *Gewog*s such as Phongme, Shongphu, Merak and Sakteng also attend these *Tshechus.* This is an opportunity for considerable interaction among the religious and lay persons. A large Buddhist Monastic School has recently

---

[2] Analyses on perceptions and attitudes of the population towards forest and forest management over the last decades made for the German speaking countries in Europe show the same phenomenon in a different cultural context (Schmithüsen, Kazemi and Seeland, 1997).

been completed in Rangjung. It has already become a national centre for Buddhist learning, as many monks from various parts of the country have enrolled in the school.

Figure 11: Social Energy Flow (Based on Products and Services)



Source: Author's Field Survey, 1995

Trading Centres: The households of Radhi trade with the people of Merak and Sakteng, and Arunachal Pradesh. 49 percent of the people interviewed said that they travel out of the *Gewog* to trade. The mode of trade is in the form of products and services. Barter is the most prevalent practice with the people of Merak and Sakteng. The people of Merak and Sakteng provide *yak* butter, cheese and meat. In exchange, the people of Radhi provide rice and maize. This is an annual event and has been going on for generations. The other trading centre for some of the households of Radhi is Arunachal Pradesh, India. The main trade products are alcohol, Chinese made thermos flasks and kitchen ware. These products are transported by horses and sold for cash.

Outsiders: Outsiders constitute shopkeepers, construction contractors and traders. 90 percent of the shopkeepers in Radhi are of Tibetan origin. There seems to be some doubt about the ability of the residents of Radhi to run the shops profitably. Construction contractors are engaged in the maintenance of the Radhi - Trashigang road and employed by the Division of Roads. Many residents of Radhi are employed as daily wage labourers by these contractors.

Government Service Centres: The main flow between the government service centres and the people of the *Gewog* is in the form of services. The government servants posted in these service centres depend on the *Gewog* for agricultural products, and in turn, the local people earn cash. In contrast to natural resource flow where the services rendered are in the form of inputs from the government, this interaction is based on personal and individual relations with the local people.

Government Institutions: The *Dzongkhag* headquarters of Trashigang under which Radhi falls, is located 25 km west of the *Gewog*. The residents of the *Gewog* have to go to the *Dzongkhag* headquarters for all official transactions. The district court is located in the *Dzongkhag* headquarters. The residents of the *Gewog* are obliged to render services such as *Dzongsel Woola*, *Zhapto lemi* to the *Dzongkhag* Administration. The residents are expected to contribute labour for any undertaking of national importance. The residents of the *Gewog* entertain government officials who may visit the *Gewog*.

Other Gewogs: Radhi's immediate neighbours are Phongme, Shongphu, Merak and Sakteng *Gewogs*. Interactions take place in the form of matrimonial alliances, the sharing of the services of religious persons and exchange of labour during peak agricultural seasons. Irrigation canals for Radhi and Phongme are jointly maintained. Residents of the adjoining *Gewogs* visit Radhi for medical and agricultural services as these are all located in this *Gewog*.

The perceived income, as indicated by the respondents during the interviews, reflects some of the sources of the social energy flow. Agricultural crops alone form 27 percent of the cash income of households. Weaving forms 20 percent and for some the source is a combined one. Agricultural crops and weaving form 26 percent of the cash income. Off-farm income constitutes 12 percent.

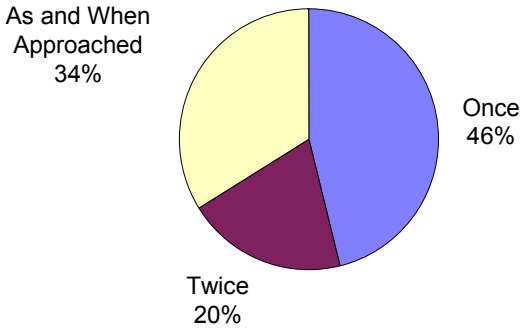
Figure 12 shows this phenomenon in services and products. Selected responses from individuals, on the social behaviour and income in the *Gewogs*, are presented here. They are based on structured and semi-structured interviews. For instance, the number of times that households offer grains to religious persons may be a possible indicator of interaction among the household members and religious persons. It also reflects the level of interaction based on the exchange of services and products. This type of flow of social energy among the households and the religious persons can be used to demonstate the extent of services and products.

Another aspect of social behaviour is the interaction between households of one *Gewog* with households of other *Gewogs*. A traditional trading and barter system is considered to be one way of measuring this type of interaction. For instance, trading and barter between Radhi, Merak and Sakteng is based on products and services that have evolved from local land use practices. Any change in the terms or products and services is an indicator of change at the source or at local level.

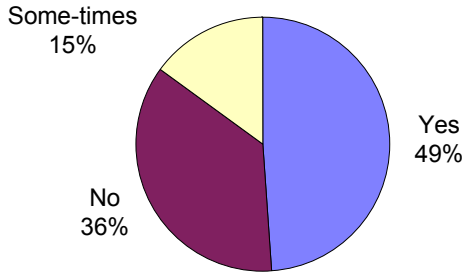
The source of income indicates some aspects of the socio-economic environment of the *Gewog*. It is an indicator of the capability at the local level to appropriate resources at one’s disposal irrespective of legislative restraints. Local indigenous knowledge is a key factor that determines the socio-economic setting. For instance, in Radhi the main source of cash income is from the sale of woven cloths. This is sustained by the fact that the weaving of cloth of a particular pattern (*Aikarpo*) is indigenous knowledge exclusive to Radhi and in the next *Gewog*, people do not know how to weave this particular pattern.

Figure 12: Social Behaviour and Income in Radhi *Gewog*

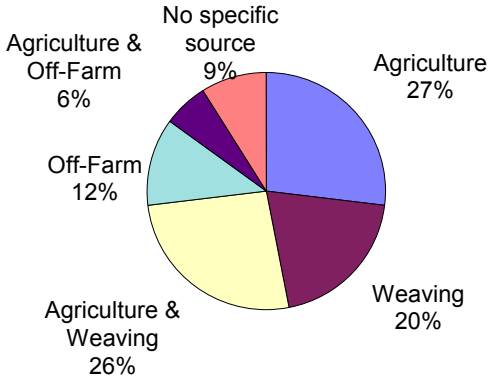
How often do you offer grain to religious persons?



Do you travel out of the *Gewog* for trading?



What is your source of income?



Source: Author's Field Survey, 1995

3.2 Shaba *Gewog*

3.2.1 Socio-economic Base Line Data

Location, Communication: Shaba *Gewog* is located in Paro *Dzongkhag* in the western part of the country, 65 km from the capital. The altitude of the *Gewog* ranges from 2100 to 2800 mamsl. As it is situated 7 km from the *Dzongkhag* headquarters, local people use the service centres located there. The Thimphu-Paro national highway passes through the *Gewog*.

Demography: The survey covered 143 households with a population of 1007 people. Within the survey area, the male to female ratio is 47 to 53 percent. At the time of the survey, there were 82 government servants (8 percent), 245 students (24 percent), 21 monks (2 percent) and 1 *Gomchen* (less than 1 percent).

Table 12: Demographic Data of Shaba *Gewog**

Village and Number of Households in Brackets	Males	Females	Govt. Servants	Students	Monks	*Gomchens*
Nangayley Bara (18)	68	65	16	16	2	-
Bara (15)	64	74	19	45	6	-
Shingkana (18)	53	55	5	26	2	1
Dyenkha (18)	38	65	1	20	1	-
Shengno (10)	22	39	3	15	-	-
Tiley Gonpa (20)	67	71	10	30	1	-
Rabina (16)	61	62	12	40	5	-
Drugyel Dhingkha (28)	98	105	16	53	4	-
	-	-	82	245	21	1
TOTAL(143)	**471**	**536**	**-**	**-**	**-**	**-**

Source: Author's Field Survey, 1996

* Total number of government servants, students, monks and *Gomchens* are included in the total population of the *Gewog*.

Landuse: Shaba has a variety of land use opportunities and the most robust agricultural profile among the three *Gewog*s. This has generated a complex cropping cycle (Table 14). The average land-holding per household is 3.65 ha which does not include *Sokshing*. A field survey shows that there is no landless household in the *Gewog*. Any agricultural crop, including vegetables, that has a market value, is grown in the *Gewog*. However, rice is the predominant agricultural crop followed by apples and vegetables. The *Gewog*'s agricultural production is enhanced by many favourable factors such as an efficient irrigation system, fertile land, a reliable market and above all, a strong work ethic. Most of the agricultural land is not left fallow at any time of the year. This is enhanced by the Paro Valley Project which began in the early 1980s, and from which the *Gewog* has benefited enormously. The cultivation of rice is followed by wheat or potato and vegetables. The fertility of the land is replenished through the use of chemical fertiliser and manure.

Table 13: Landuse Data of Shaba *Gewog*

Sl. No.	Landuse Type	Area in ha.	Percentage of total area of *Gewog*
1.	Wetland	271	4
2.	Dryland	376	5
3.	Apple orchards	79	1
5.	Mixed cultivation	308	4
6.	Mixed conifer forest	2,135	28
7.	Blue pine (*Pinus wallichiana*)	2,918	38
8.	Scrub forests	1,071	14
9.	Plantations	57	1
10.	Rock outcrops	168	2
10.	Pasture	161	2
11.	Waterspread	98	1
	TOTAL	**7,642**	**100**

Source : RGOB, MOA. 1995b (Revised by the author, 1997)

Table 14: Agricultural Cropping Cycle in Shaba

Activity	J	F	M	A	M	J	J	A	S	O	N	D
Rice Transplanting	-	-	-	-	x	x	-	-	-	-	-	-
Weeding of Rice	-	-	-	-	-	-	x	x	-	-	-	-
Wheat Sowing	-	-	x	x	-	-	-	-	-	-	-	-
Vegetable Cultivation	-	-	x	x	x	x	x	x	x	x	x	-
Potato Planting	x	x	-	-	-	-	-	-	-	-	-	-
Rice Harvest	-	-	-	-	-	-	-	-	-	-	x	x
Wheat Harvest winter/summer	-	-	-	-	-	-	-	-	-	x	x	x
Potato Harvest	-	-	-	-	-	x	x	x	-	-	-	-
Potato Harvest	-	-	-	-	x	x	-	-	-	-	-	-
Apple Harvest	-	-	-	-	-	-	-	-	x	x	-	-

Source: Author's Survey Report, 1996.

x = Activity

- = Non-activity

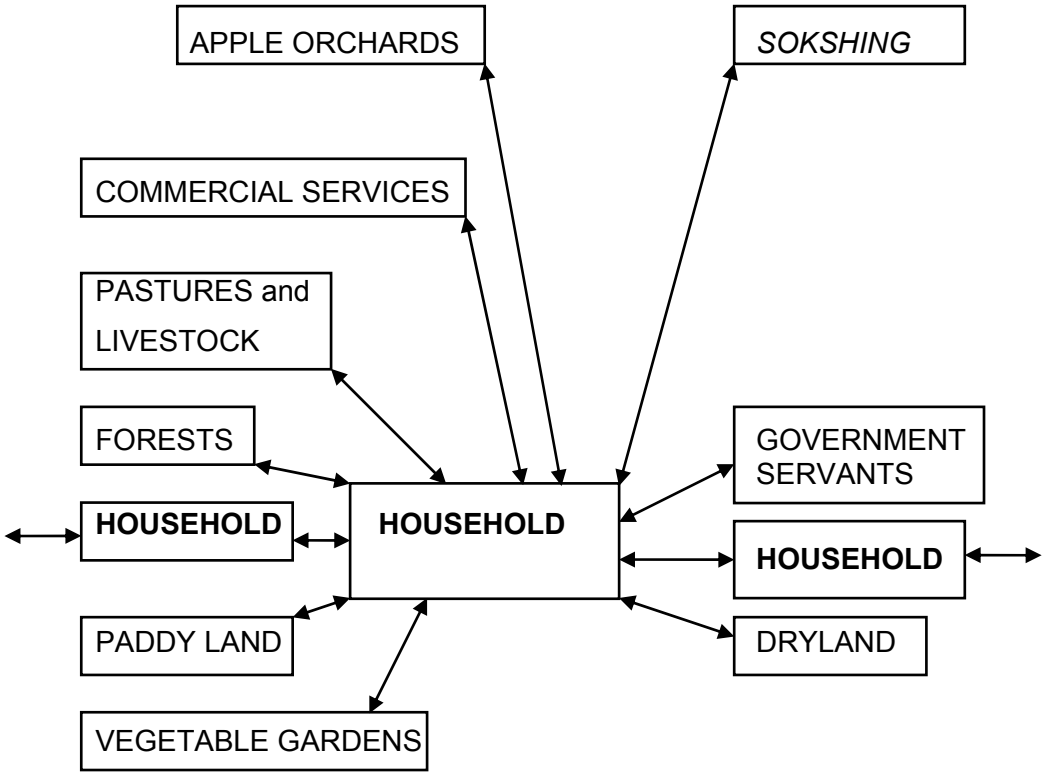
Forest types: Shaba's forests and scrub forests cover 67 percent and 14 percent respectively, which amounts to 81 percent of the *Gewog* area. At the valley bottom, blue pine (*Pinus wallichiana*) is the dominant species which, at an altitude of 2700 mamsl, yields to *Populus spp*., spruce (*Picea spinulosa*) and hemlock (*Tsuga dumosa*), oak (*Quercus semicarpifolia, Q. griffithii*) *Larix griffithii*, (larch), fir (*Abies densa*) and *Rhododendron* spp. Most of the *Sokshing* around the *Gewog* has either been cut for

firewood in the early 1970s by the army camp located within the *Gewog,* or converted to apple orchards or other forms of landuse. However, a village forest and a religious forest have existed in the *Gewog* for at least 100 years (according to the statements of some local people). The species composition of these forests is similar to other forests.

3.2.2 Natural Resource Flow

Natural Resource Flow: The resources include both natural resources such as apple orchards, *Sokshing*, livestock, dryland, vegetable gardens, paddy land and pastures, and services (commercial services, and government servants). The discussion concerning the flow of these resources is based on structured and semi-structured interviews. The basic pattern of resource flow is the same as in Radhi (Figure 13). However, there are two main differences in the flow of the resources; the use of *Sokshing,* and access to external markets.

Figure 13: Resource Flow Profile of Shaba *Gewog* (Based on Products and Services)



Source: Author's Field Survey, 1996

Sokshing: Sokshing is not only the source of firewood and pine needles for composting, but is also considered to be potential land for apple orchards. Therefore, the flow of resources from the *Sokshing* has changed with the landuse pattern. It was observed that many *Sokshing*s have already been transformed for horticultural purposes and many more may follow. Firewood is only a marginal resource from the *Sokshing* but property rights over the land seem more important. This may have also increased the number of households (87 percent) claiming to own *Sokshing*.

Vegetable gardens: Vegetable gardens are an important resource for the residents of Shaba. A large consumer market in Thimphu makes vegetable production very rewarding. The main vegetables observed during the field survey were tomato, potato,

chillies, radish and asparagus. Vegetables from the *Gewog* are also exported to India during the dry months of May and June. This is a comparative advantage for the households of Shaba, as during these months there is a shortage of vegetables in India. Most of the agricultural products including rice, vegetables, and horticultural products are either sold in Thimphu town or exported[3].

Apple orchards: Apple orchards are one of the most important resources in the *Gewog*. This has transformed the landuse pattern, especially of the marginal land which, in the past, was left fallow. This has put pressure on government forests. On average, one household earns Nu. 25,000 per year from the sale of apples. More than 90 percent of the apples are exported to Bangladesh which pays in hard currency. The appreciation of hard currency is also an advantage for the apple growers.

Forests: Forests are only marginally important as a resource for the residents of Shaba. Only households who can not afford cooking gas depend on the forest for firewood. Although Shaba has more than 64 percent of the total area under forest cover, most of the construction timber and firewood are acquired from other *Gewogs,* based on contractual services.

Paddy land: Paddy land is the most important resource for Shaba. The highest income is from the sale of rice. On average, one household earns Nu. 40,000 per year from the sale of rice. This compares well with a government servant's average pay of Nu. 48,000 per year. It was observed during the field survey that rice cultivation requires intensive inputs of both labour and fertiliser. In the past, labour was exchanged for rice, with other *Gewogs*. This practice is no longer in existence and households depend more on chemical fertilisers and weedicides.

Dryland: Dryland used to be only a marginal resource for the *Gewog* and comprises only 4 percent of the total land area. However, with the market for agricultural and horticultural products, its resource value has increased. Most of the dryland is converted into orchards and vegetable gardens. The planting of chillies was a prominent landuse observed during the field survey.

Pastures and Livestock: Pastures are a marginal resource for the *Gewog*. Households who own large herds of *yaks* and cattle use the pastures in the high altitude areas such as Soe and Lingshi. Forests near the *Gewog* are used as pastures by the households who own a limited number of cattle. These are community pastures and there are no restrictions on their use. Some households have replaced local cattle breeds with jersey cows for milk production.

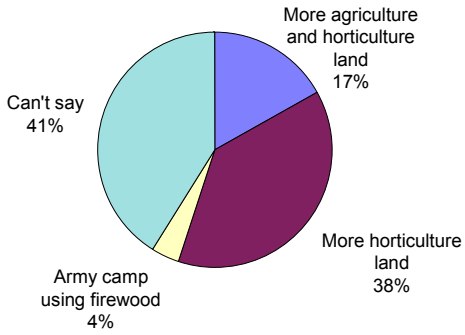
Commercial Services: Most agricultural and horticultural products are sold in Thimphu. This is enhanced by the existence of a reliable, all-weather motorable road that passes through the *Gewog*. Besides the market in Thimphu, there is a small market place in Shaba, where goods and services from the *Gewog* are traded. This centre is used largely by farmers with smaller production units, who can not afford to hire transport to Thimphu and other markets. Some of the *Gewog* official meetings are held in this centre. Paro town is also used as an outlet for agricultural and horticultural products.

---

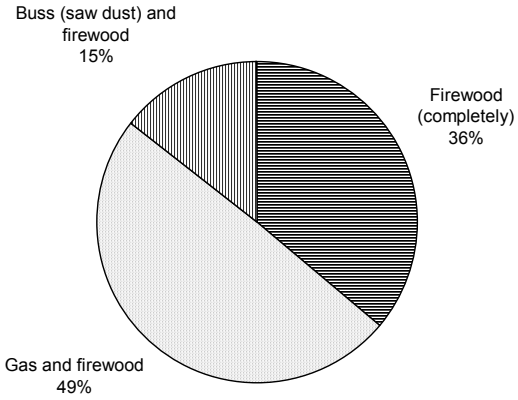
[3] In some cases the local rice which fetches Nu. 20/ per kilogram is sold and imported rice which costs Nu.10/ per kilogram is consumed.

Figure 14: Perception of Resource Uses in Shaba *Gewog*

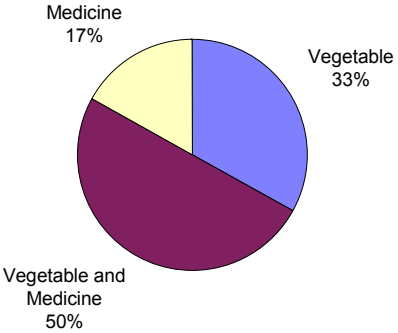
Why is there less forest in your *Gewog* than in other *Gewogs?*



What is your source of energy for cooking?



Do you use plants as food, medicine or vegetables?



Source: Author's Field Survey, 1996

Government servants: 8.1 percent of the total population of the *Gewog* are in government service. This has had a profound impact on the resource flow of the *Gewog*. The plough back of the resources from the government servants to the *Gewog* is evident in the general condition of the houses and household appliances. More than 40 percent have installed cooking gas stoves and many refrigerators were noticed during the household survey. Most of these are a result of the support of the government servants from the *Gewog*. Therefore, government servants are both a social and material resource for the *Gewog*.

The local people's perception of resource use varies from that of Radhi and is based on the profile discussed above. Selected responses from the individuals on the resource uses in the *Gewog* are presented inFigure 14. In contrast to Radhi where the larger population is perceived to have contributed to the decrease in forest cover in the *Gewog*, in Shaba, agriculture and horticulture expansion is perceived to have contributed to the decrease in the forest cover. This gives an indication of the emphasis and social performance of the households based on locality and capability of the land resources.

Varied sources of energy for cooking are one of the indicators of the shift in the forest resource use pattern at the community level. Firewood is no longer perceived as the main source of energy in Shaba. This also reflects the priority in the overall resource management strategy of the households.

The use of plants and tubers as a source of food is thought to be non-existent in Shaba, based on the perception that the households in this *Gewog* have gone far beyond the stage where they have to resort to such a practice. This may be one indication of the abundance of agricultural resources and a high degree of self-esteem relative to some other parts of the country.

3.2.3 Social Energy Flow Profile

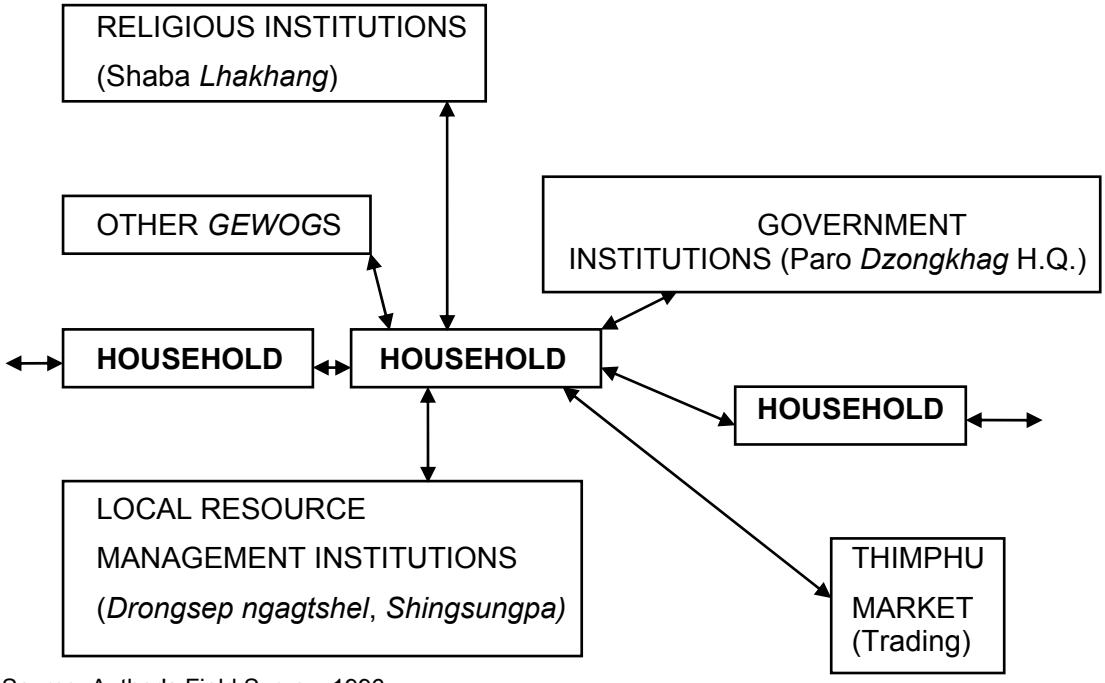
The social resources of Shaba are religious institutions, religious persons, government institutions, local resource management institutions, and other *Gewogs*. The flow of these resources is discussed, based on structured and semi-structured interviews with the residents of the *Gewog*.

Religious Institutions: In Shaba, there are two temples under the management of the *Gewog*. These temples *(Lhakangs*) are well maintained and are the location of the annual *Gewog* festivals and appeasement of the deities. Major religious functions are held in the Kichu and Taktshang monasteries which are located in the next *Gewog*. The caretaker of the *Lhakhang* is selected from the existing religious persons in the *Gewog,* for a period of three years. A share for his subsitstance is contributed by the *Gewog*.

Religious Persons: Shaba has 21 monks and 1 *Gomchen* who form 2 percent of the total population of the *Gewog*. While the pattern of social energy flow based on the patron-client relationship is similar to the one in Radhi, the terms are slightly different. Most of the religious ceremonies are performed by the monks of Paro *Dzong*. 71 percent of the respondents confirmed that the performance of *Choghu* (annual ritual) is one of the most important religious ceremonies of Shaba. Every year, all households perform *Choghu,* through the religious persons, for the appeasement of the deities and general welfare of the household.

As in the case of Radhi, 100 percent of the households said that religious persons have a higher social status than any lay people, irrespective of their administrative position in the society. However, it was observed during the field survey and interviews revealed that so much social energy is dissipated when some of the households try to offer substantial material to religious persons, which is a demonstration of social status.

Figure 15: Social Energy Flow in Shaba *Gewog* (Based on Products and Services)



Source: Author's Field Survey, 1996

Government Institutions: The pattern is the same as in Radhi. The relationship of the *Gewog* with the *Dzongkhag* head quarters is a standard one, guided by fixed rules and regulations. It is increasingly perceived by the local people, that the transaction cost of attending official meetings conducted by government officials in relation to the planning and implementation of *Gewog* development programmes, is rising.

Thimphu Market: Thimphu market is a social resource of the residents of Shaba. Many people from Shaba, who carry out business in Thimphu, or work for the government, are a source of information on the prices of various agricultural products grown by the other residents of *Gewog*. During the visit to Thimphu, they stay with their relatives and neighbours from Shaba.

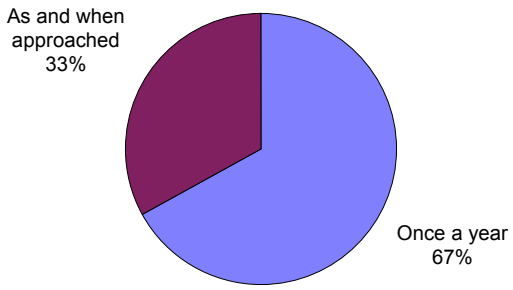
Local Resource Management Institutions: Not all the households of the *Gewog* are involved in the management of *Drongsep Ngagtshel* (Village/Community Forest). Only the households of Shingkana village are the members of the *Drongsep Ngagtshel,* as this forest is situated just above the village. Every household is required to take the responsibility of forest guard for one year on a rotational basis. The forest guard is also delegated the responsibility of S*hingsungpa* of the village.

Other Gewogs: The national airport is located in the next *Gewog*. Some of the people working for the airport reside in Shaba. Some have also entered into matrimonial alliances with residents of Shaba. Unlike Radhi, the interaction with other *Gewogs* is more formal and monetised. Social interaction is carried out mostly during the annual archery competition among the *Gewogs,* which is taken very seriously.

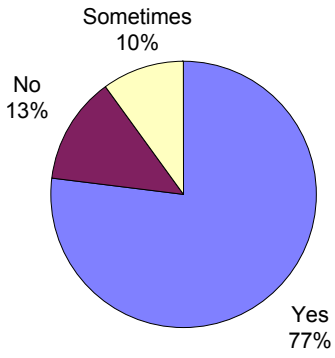
Agriculture contributes 25 percent to the cash income in Shaba. The major cash income comes from a combination of agriculture and horticulture which constitutes 64 percent. Government salaries contribute 11 percent to the income of the *Gewog*.

Figure 16: Social Behaviour and Income in Shaba *Gewog*

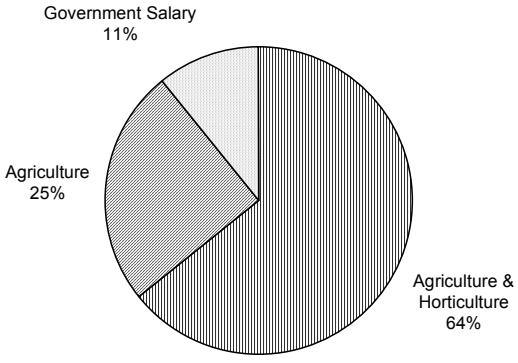
How many times a year do you offer grains to religious persons?



Do you travel out of the *Gewog* for trading?



What is your source of income?



Source: Author's Field Survey, 1996

The social behaviour in relation to exchange of services and products differs from that of Radhi *Gewog*. Selected responses, derived from the structured and semi-structured interviews, on the social behaviour and income in the *Gewogs*, are presented in Figure 16. The criteria used for the selection of these responses are the same as those used in Radhi. Religion plays an important role in the social behaviour of individuals. Among others, the existence of the practice of annual or bi-annual offerings of grain made to the religious persons may be a reflection of the social relationship between the households and religious persons. Compared to Radhi, where the offerings are informal, in Shaba, religious activities are household-centred.

Trading in Shaba is fully formalised and market-based which can be compared to a completely monetised community. The barter system is obsolete as all commodities are either sold or bought in cash.

Compared to Radhi, the source of income is more distinct and assured in Shaba. The land use can be adjusted to suit the changing demand of the market forces. For instance, the currently lucrative export market for horticultural products is shaping the emphasis in land use practices.

3.3 Chumey *Gewog*

3.3.1 Socio-economic Base Line Data

Location and Communication: Chumey *Gewog* falls under Bumthang *Dzongkhag* in central Bhutan. The *Gewog* is divided into 7 villages. The average altitude is 2650 mamsl. The east-west national highway passes through the *Gewog*.

Demography: The survey covered 185 households with a population of 1612 people. The male to female ratio is 45 to 55. At the time of the survey, there were 85 government servants (5 percent), 256 students (16 percent), 65 monks (4 percent), 3 *Gomchens* (less than 1 percent) and 6 *Norzips* (less than 1 percent).

Landuse: The landuse of Chumey (Table 16) is strongly influenced by climatic conditions[4]. Table 17 shows that the main agricultural crops are wheat, buckwheat and barley. Vegetables such as radish, turnip and potatoes[5] are also grown. However, good markets for cash crops such as potatoes, apples and honey are tilting the balance of the social energy flow in favour of families with larger work-force.

Forest types: The entire *Gewog* is covered by coniferous forest types which are similar to Shaba *Gewog*. The main species are blue pine (*Pinus wallichiana*), *Populus* spp., spruce (*Picea spinulosa*), hemlock (*Tsuga dumosa*), larch (*Larix griffithii*), oak (*Quercus semecarpifolia, Q. griffithii, Q. lamellosa*), *Castanopsis* spp., *Rhododendron* spp., *Daphne* spp. and fir (*Abies densa).* Among the three *Gewog*s, Chumey has the highest percentage of its land under forest cover. Blue pine is invading the agricultural land and it is estimated that at least 33 percent of the agricultural land has been covered by blue pine forest.

---

[4] In the past, buckwheat was a staple food of Bumthang, and usually associated with lower income groups. However, it can now only be afforded by people from the higher income group because of low per unit production and high labour cost.

[5] The introduction of potatoes has transformed the cropping pattern over the years, in the high altitude areas where once only few selected crops could be grown.

Table 15: Demographic Data of Chumey *Gewog

Village and Number of Households in Brackets	Males	Females	Govt. Servants	Students	Monks	*Gomchens*/ *Norzips*
Buly (15)	36	46	5	7	-	3/
Auroo/Gytsha (35)	130	158	15	50	13	/6
Gytsha (15)	53	80	5	21	5	-
Domkhar (16)	48	77	5	20	5	-
Hurchi (15)	77	94	11	30	2	-
Khromay (16)	54	73	4	14	6	-
Nangay (7)	20	22	7	-	-	-
Zunggay (25)	127	135	11	50	9	-
Trakar (16)	80	93	6	34	10	-
Nangar (22)	97	112	16	30	15	-
	-	-	85	256	65	3/6
TOTAL 185 Households	**722**	**890**				

Source: Author's Field Survey, 1996

*The numbers of government servants, students, monks, *Gomchens* and *norzips* are included in the total population of the *Gewog*.

Table 16: Landuse Data of Chumey *Gewog*

Sl. No.	Landuse Type	Area in ha.	Percentage of total area of *Gewog*
1.	Wetland	72	*-
2.	Dryland	1,608	4.0
3.	*Tseri*	9	-*
4.	Mixed cultivation	15	-*
5.	Fir (*Abies densa*)	9,256	23.0
6.	Blue pine (*Pinus wallichiana*)	6,722	17.0
7.	Mixed conifer forest	16,432	41
8.	Scrub forest	1,961	5
9.	Pasture - natural	3,039	7
10.	Waterspread	139	-*
11.	Settlements	11	-*
11.	Rock outcrops	1,083	3
	TOTAL	**40,347**	**100**

Source : RGOB, MOA. 1995b. (Revised by the author 1997)

* = Value below 0.5 percent ignored and above 0.5 percent, rounded off to next figure

Table 17: Agricultural Cropping Cycle in Chumey

Activity	J	F	M	A	M	J	J	A	S	O	N	D
Wheat sowing	-	-	x	x	-	-	-	-	-	-	-	-
Potato planting	x	-	-	-	-	-	-	-	-	-	-	x
Wheat harvesting	-	-	-	-	-	-	-	x	x	-	-	-
Buckwheat sowing	-	x	x	-	-	-	-	-	-	-	-	-
Buckwheat harvest	-	x	x	x	x	x	x	x	x	x	x	x
Potato harvesting	-	-	-	-	-	-	x	x	-	-	-	-

Source: Author's Survey Report, 1996

x = Activity

- = Non-activity

3.3.2 Natural Resource Flow

Natural Resource Flow: Resources in Chumey include renewable natural resources such as rotational cropping land (*Reeshing*), dryland, livestock, *Sokshing*, pastures, and services such as government service centres as well as a sawmill and a logging unit. The discussion on the flow of these resources is based on responses to structured and semi-structured interviews. A household is considered to be the smallest social unit for the flow of these resources within and outside the *Gewog*.

Rotational cropping land (shifting cultivation): The households perceive rotational cropping land as a negative resource as it attracts wild animals that destroy agricultural

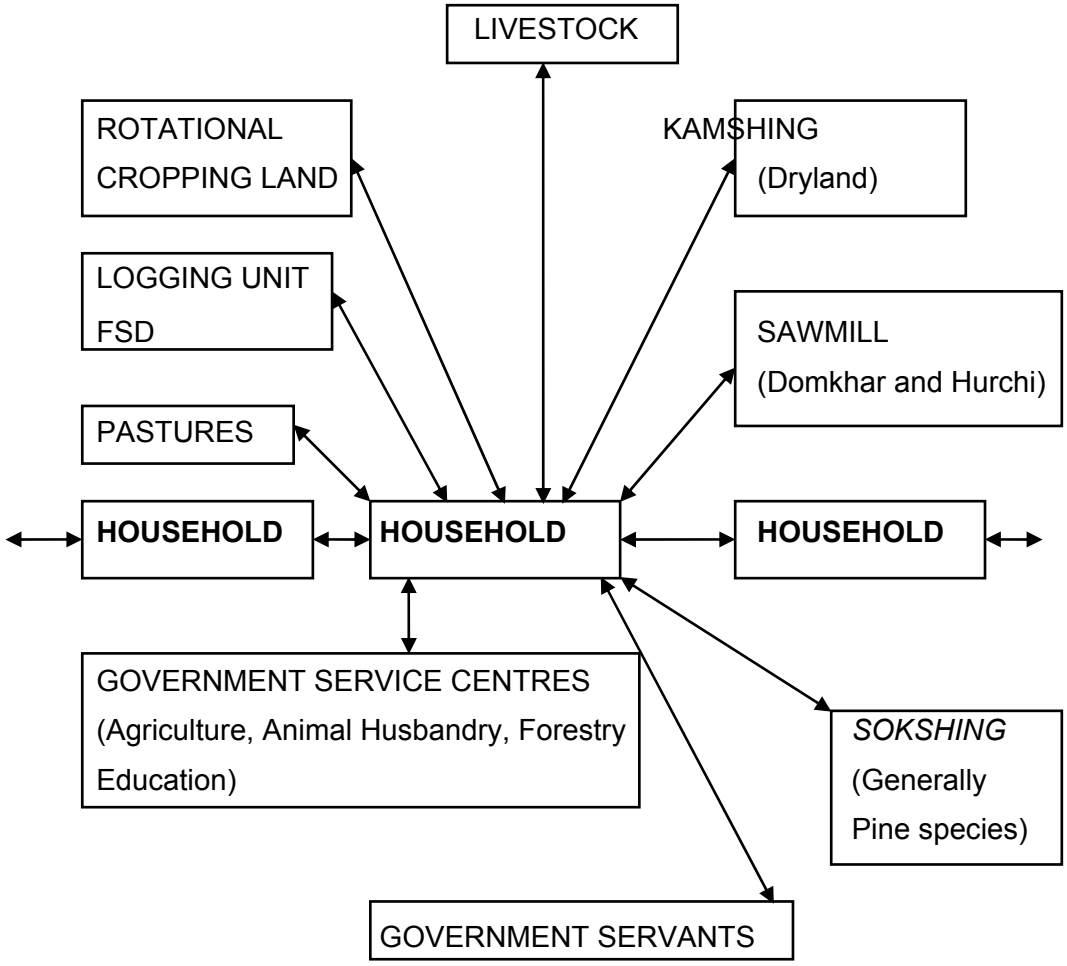
crops. In contrast to Radhi and Shaba, they also perceive that it can only become a resource with a positive impact, if they are allowed to sell the trees standing on such land.

Pastures: Pastures are one of the most important resources for the *Gewog*. In contrast to the open pastures in Shaba, the ones in Chumey are managed. They consist of imported pasture seeds and the majority are clover grasses. During the field visit it was observed that pasture owners earn money from the sale of pasture seeds to the government. This has two advantages for them. On the one hand the biomass can be fed to the cattle, and on the other hand, the seeds are sold. The pasture owners said that the use of chemical fertiliser in these pastures is increasing. Some of the large pasture owners obtain their livestock products by leasing their pastures to others, especially in Zhemgang and Mongar *Dzongkhags*.

Livestock: Before the introduction of potatoes, livestock was the main source of cash income. While the small herds are maintained within the *Gewog*, larger ones migrate to Zhemgang and Mongar during the winter months. Many households claim to be reducing the herd size of the local breed and introducing a Jersey breed. They said that Jersey cows gave more milk, but that the maintenance cost was also high.

Sawmill: There are two sawmills providing employment for some of the residents of the *Gewog*. The employees of the sawmills rely on the *Gewog* for agricultural and livestock products. Besides these types of interactions, there is no specific flow of resources between the sawmill owners and the residents.

Figure 17: Resource Flow Profile in Chumey (Based on Products and Services)



Source: Author's Field Survey, 1996

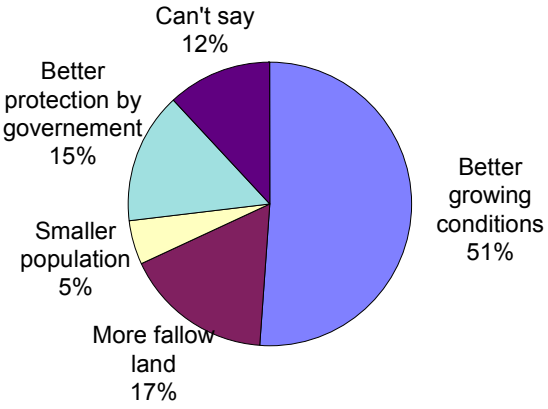
Logging Unit: For some of the residents of Chumey *Gewog*, the logging units in Domkhar and Hurchi are the main source of cash income. They carry out minor forest road construction and logging contracts. The logging unit has also enhanced the transportation of firewood and construction timber for the residents.

Government service centres: The flow of resources from these centres are similar to the ones in Radhi and Shaba *Gewogs*.

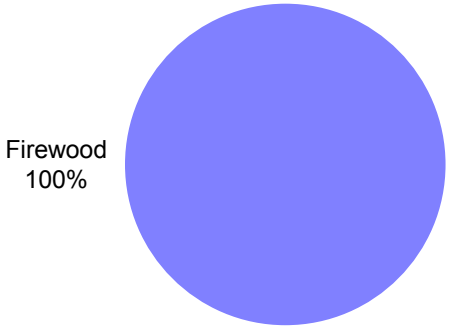
Government servants: 85 persons from the *Gewog* are in government service. Most are employed in the projects in Bumthang *Dzongkhag*. The pattern of the flow of resources into the *Gewog,* from these persons, is similar to Radhi but not as intense as in Shaba.

Figure 18: Perception of Resource Uses in Chumey *Gewog*

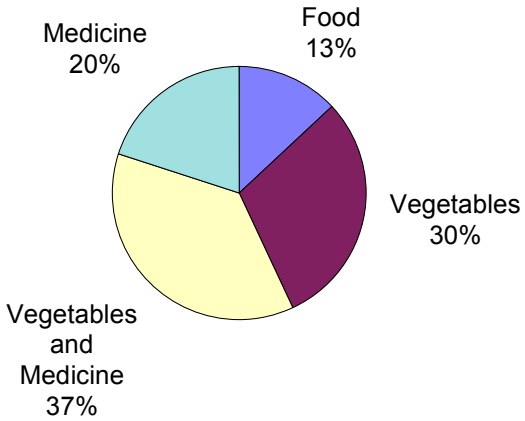
Why is there more forest in your *Gewog* than in other *Gewogs*?



What is your source of energy for cooking?



Do you use plants as food, medicine or vegetables?



Sources: Author's Field Survey, 1996

Selected responses from individuals, on the resource uses in the *Gewog*, are presented in Figure 18. The case of Chumey, as far as forest resources are concerned, is a reflection of the high variability within the country. While the concern of the other two research *Gewogs* was the reduction of forest cover, in Chumey, it is the increase in forest cover that seems to be having a negative impact on the socio-economic development. Increased forest cover is perceived as being one of the reasons for the reduction in agricultural production, due to the restrictions imposed by the government on the use of these trees even on one's own registered land.

Firewood as the main source of energy is an indication of forest resource abundance and a limited source of cash income. This may also be related to the climatic conditions that demand energy for heating which can only be provided by the use of firewood, and which can not be substitued by other sources, given the technology presently available.

As with Radhi and Shaba, it is perceived that the use of plants and tubers as a source of food lowers one's social status in the community. As Chumey is not self-sufficient in agricultural products, some households in the past, may have resorted to the use plants and tubers as food, although there were only 13 percent of affirmative response to the question.

3.3.3 Social Energy Flow

Social energy flow profile: Social resources that constitute the social energy flow in Chumey are religious institutions, religious persons, other *Gewogs*, outsiders, government service centres, government institutions. The discussion on the flow of these resources is based on the responses from the structured and semi-structured interviews. A household is considered the smallest social unit for the flow of the social resources into and out of the household.

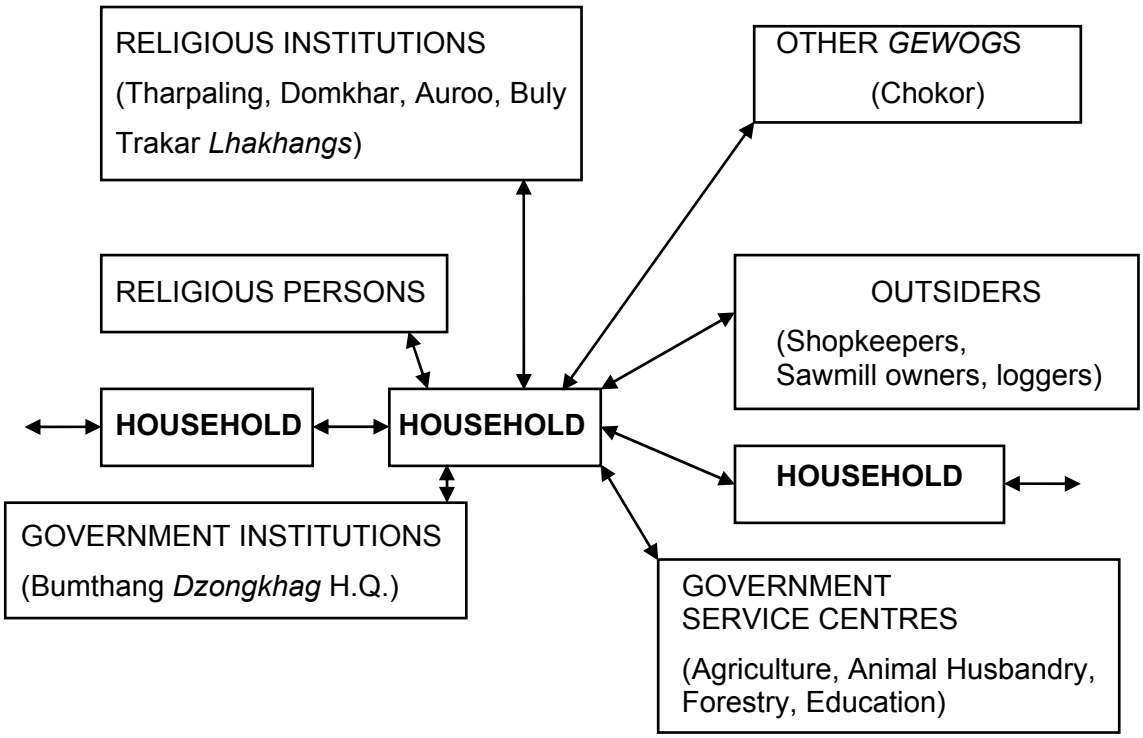
Religious persons: There are 65 monks and 3 *Gomchens* in the *Gewog*. The role of the religious persons in the social energy flow is similar to the one in Radhi and Shaba. The belief that rituals can only be performed by the religious persons, maintains the flow of social energy between the households and the religious persons. The patron-client relationship is more marked in Chumey than in Radhi and Shaba. Although some of the households maintain contact with religious persons from outside, 85 percent of the households said that they usually request the services of religious persons from within the *Gewog*.

Religious Institutions: As in Radhi, each village has a *Lhakhang*. They are located in Tharpaling, Auroo, Buly, Gytsha, Domkhar, Hurchi, Trakar and Nangar. Annual *Tshechu*s are held in each of these *Lhakhangs.* Tharpaling is a government sanctioned Buddhist learning centre and considered to be of national importance. A new Buddhist school has been built in Domkhar, by the government, but is not yet in use. Its function will be to assume the role of a Buddhist university.

Other Gewogs: Next to Chumey is the *Gewog* known as Chokor. Since the main market is located in Chokor, most of the households use it for trading and buying provisions. The households of Chokor depend on Chumey for most of their forest products.

Outsiders: There are two sawmills within the *Gewog,* though most of the workers come from outside. There are also two logging units operating in Chumey. Local inhabitants are engaged in logging activities which are a source of cash income. There are eight shops which are run by people from outside the *Gewog*. Local people who can not afford to travel to Chokor *Gewog* depend on these shops for provisions. In times of need of cash, these shops act as a source of supply for the residents of Chumey.

Figure 19: Social Energy Flow in Chumey *Gewog* (Based on Products and Services)



Source: Author's Field Survey, 1996

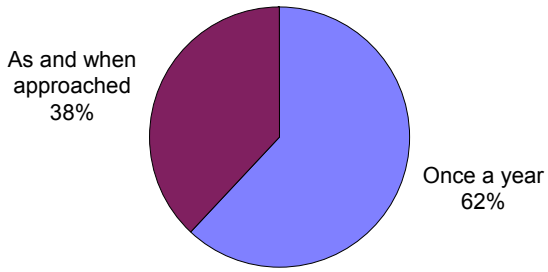
Government Service Centres and Institutions: The interaction between the government servants and the local residents is similar to the circumstances in Radhi and Shaba. The terms of relationship between the government institutions in Chumey are also similar to the ones in Radhi and Shaba *Gewogs*.

Off farm activities are the main source of income, at 17 percent together with government salary that constitutes 17 percent, while agriculture contributes 8 percent of the total cash income. 50 percent of the income is generated from unspecified sources.

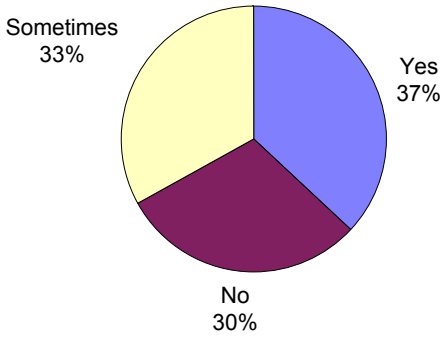
Selected responses from the individuals, concerning social behaviour and income in the *Gewog*, are presented in Figure 20. The criteria used for the selection of these responses are similar to the ones used in Radhi and Chumey. While the interaction among the households and religious persons are of a pattern similar to the other two *Gewogs*, the systems of trading and barter are different. In Chumey, trading is localised and the barter system is replaced by cash transactions. Cash is generated through the provision of services to the government projects operating within and outside the *Gewog*.

Figure 20: Social Behaviour and Income in Chumey *Gewog*

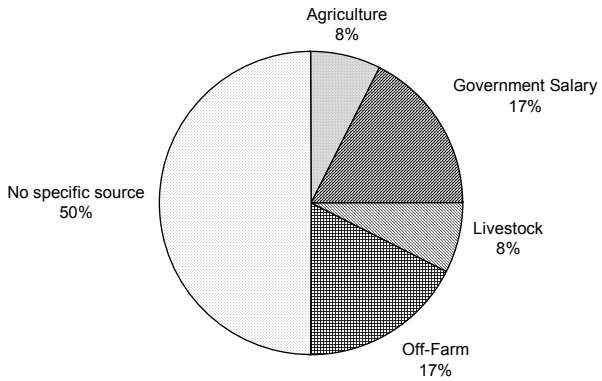
How many times do you offer grains to religious persons in a year?



Do you travel out of the *Gewog* for trading?



What is your main source of income?



Source: Author's Field Survey, 1996

3.4 Social Organisational Capabilities

3.4.1 General Considerations

Social organisational patterns: These are influenced by basic elements of human social order. There are at least three elements which set this pattern: hierarchy, territory and norms. While variations in hierarchy regulate the distribution and utilisation of social and physical resources, and act as a stabilising element, social cohesion and self-reliance is sustained by the sense of territory, where individuals reside as a community. Social norms (Burch and DeLuca, 1984, p.35) or rules of conduct establish and limit appropriate and inappropriate behaviour for particular social roles. Resource distribution and utilisation are influenced by power and rank within the community, and the degree of social organisation required to utilise renewable resources becomes a resource itself (Seeland, 1990, p.12). The social organisation for the utilisation of resources in the research *Gewog*s is in transition. This is influenced by social stratification even within the same ethnic community. The transitional nature of the human social hierarchy observed in the field research, shows that this hierarchy is in a state of flux. The field survey also revealed that as new elements, including outside interventions, are absorbed into the village social order, there is mobility within the hierarchical system. This demonstrates the resilience of a hierarchical system. The description below reflects the relevance of this statement.

Buddhism and religion: Residents of all three *Gewog*s practice Buddhism. Religion seems to play an important role in shaping the norms and perceptions of the people. The Ministry of Planning has stated in the Eighth Plan Document Vol. 1 that "*the aspirations towards enlightenment and the belief in the innate goodness of human beings are widely shared among Buddhists, and the majority of the Bhutanese are Buddhists*." (1996a, p. 5). This sense was reflected in the interviews where more than 99 percent of the interviewees said that *Lhakhangs* (monasteries) were one of the most important social resource centres of the *Gewog*.

Unlike Hinduism, Buddhism is not built upon a caste system, and therefore no social hierarchy based on religious beliefs should exist. However, close observation has revealed a form of social hierarchy based not entirely on religion, but more on differences in access to resources (Seeland, 1988). This is more prominent in Chumey than in the other two *Gewog*s. For instance, in Auroo village, one person owns more than 75 percent of the land in the village, while the other 34 households have to depend on 25 percent of the land. Therefore the patron-client relationship, to a large extent, still shapes the social hierarchical ladder in the rural areas. Such a situation, in many ways, could be compared to the social hierarchy that existed before 1953, when the system of serfdom was still in existence.

Since there is no caste system or ethnic differentiation, there is no bar on marriages among the local people. However, in Radhi very few inter-marriages took place between the Radhipas and Tonglingpas, who migrated from Zhemgang. Many respondents said that this may be due to a perceived social hierarchical barrier created by an insider-outsider social relationship. In Chumey, the social background (i.e. serf-landlord relationship) of the prospective suitor is also one of the factors taken into consideration when marriages are arranged. The trend, however, is inclining towards attaining access to resources and upward social mobility, through marriage, especially in the urban areas.

Radhi *Gewog* has a patrilineal society, whereas Chumey and Shaba both have matrilineal societies. In Radhi therefore, the sons claim the major share of the ancestral properties and the wife usually lives in her husband's house, whereas in Chumey and Shaba, the husband normally lives in his wife's house and the major share of the

parental property is inherited by the daughter. Ura has described the existence of a similar social structure in Ha and Ura (Ura, K., 1993). Various government documents have also mentioned the social structures in the country. In earlier times, a form of primogeniture was also practised in Radhi, whereby the greater share of the parental property was inherited by the eldest son.

Rationale for selection of activities to discuss social organisational capabilities: The discussion of social organisational capabilities is based on the interviews and household surveys made over a period of three years of field work. Since these types of organisations are not officially documented, the discussion also relies on oral communication with the elders, on observations, and on references from literature.

The rural population's strategies for coping with short term and long term problems developed through the ages, which enabled them to meet their needs and avoid taking risks.[6] The social organisational capability in many parts of Bhutan was reflected by the ways that communities managed and utilised their resources. Fulfilment of some resource needs required collective effort, while others were based on convenience. For instance, while the collection of firewood, construction timber and shingles was done with the participation of community members, trading involved risk avoidance since they had to pass through hostile areas en route. Like many aspects of Bhutanese society, the social organisational capability is also in transition, moving from community to household. Based on household surveys and interview results, the collection of firewood, construction timber, coniferous wood-splinter and shingles, the practice of weaving, the use of pastures, and trading have been selected to form the discussion on the social organisational capabilities of the *Gewog*s. These activities are an integral part of the day-to-day lifestyle in the rural areas and involve a certain degree of social organisational capabilities within a rural setting. They therefore reflect, to some degree, how households fulfil their needs, and are also indicative of their social performance in resource appropriation.

3.4.2 Collection of Firewood

Firewood collection used to be carried out in groups, based on a concept of mutuality of labour exchange. However, this seems to be changing rapidly, which is characteristic of a society in transition. While for some households the organisational effort required for the collection of firewood has, with time, become more demanding, for others this is no longer an important activity as it is replaced either by contractual collection or by other forms. This seems to be a reflection of the new social stratification that is taking place based on access to economic resources and the assimilation of the old system that was based on mutuality and reciprocity. The field survey in the three *Gewog*s confirmed this trend. For instance, only 32 percent in Shaba and 28 percent in Chumey felt that forests were important as a source of firewood. However, in Radhi 56 percent felt that forests were important because they provided firewood.

For most of the households in Radhi, the organisational effort required to collect firewood is, over time, becoming more demanding. This is likely to continue as firewood is the only source of energy for the households in the *Gewog*. In Chumey, firewood is also the main source of energy, but the social organisational capability may not be so demanding as the forests are close to their houses.

---

[6] Seeland, K. 1990, p. 11: "The loss of legitimacy in resource management weakens the social resource in environmental management and leads to a process of social erosion, i.e. parts of the community no longer feel concerned about environmental matters, migrate to other areas or try to assimilate --- The result of these processes is a weakening of the social structure of the community, which in turn leads to a fragmentation of society and to a degradation of cultural values--."

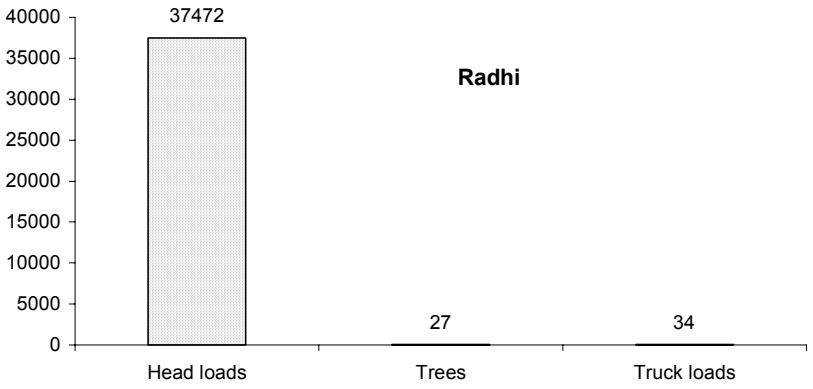
The institution of mutuality and reciprocity has almost collapsed, and the availability of forest resources has diminished with the increase in population. In the past, for example, the collection of firewood did not entail a cash transaction, and neighbours had an obligation to safeguard each others' needs, which included their firewood requirements. The householder concerned would request his neighbours to help him collect firewood and, in return, he would then willingly help his neighbours for an equal amount of time, when the need arose. Nowadays, the collection of firewood in this manner is rare. Such change has made it even more difficult for the households with less manpower and cash income, to be able to afford firewood in a village.

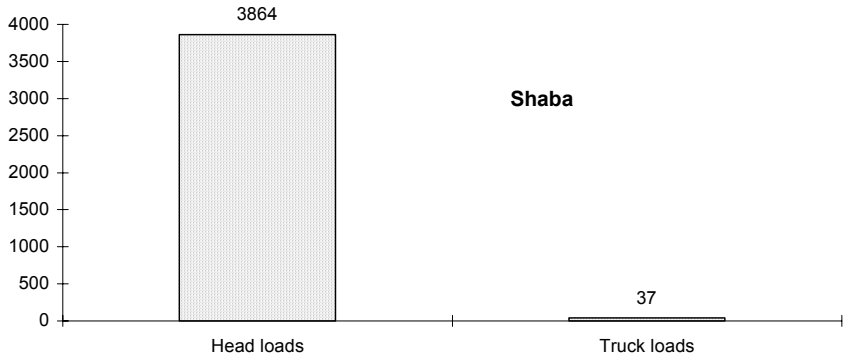
The Forest Act of 1969, and subsequently the Forest and Nature Conservation Act 1995, have made it mandatory for people to have a Government issued permit before using any tree, irrespective of whether it is on ones own land or on Government land. Chapter III, Section 12, *Taking forest produce from Government Reserved Forest for own domestic use* - states under (b) "*An authorised Forest Officer may issue a permit in accordance with rules issued by the Ministry for a person to take forest produce, from nearby areas of Government Reserved Forests if all of the following conditions are satisfied: (i) the taking will not increase the danger of landslides, soil erosion or other environmental damage; (ii) anything taken is for a person's own domestic use in rural areas; (iii) the taking is not restricted by other sections of this Act or any other law or rule; and (iv) the prescribed royalties have been collected'*. Furthermore, all trees must be marked by a forest official before they are felled. Therefore, the acquisition of a permit alone, does not give sufficient legal protection to someone who fells a tree; the bureaucratic procedure includes obtaining a letter of recommendation from the *Gup* for any forest product, endorsement by the *Dzongda*, approval by the Divisional Forest Officer, and marking of the trees by the Range Officer. This bureaucracy, as well as the transportation of the tree to his home, can make the whole process a long and tedious one for the villager. For instance, the forest official concerned may be engaged in carrying out a similar activity in another location so that a person may have to wait for days before his trees are marked for felling. Furthermore, trees available silviculturally have to be identified to avoid overharvesting. Such trees may be located only in far-flung areas, making it impossible for an individual to transport them manually. All this makes it extremely difficult for a villager to acquire firewood whereas in the past this was done on a basis of mutual reciprocity.

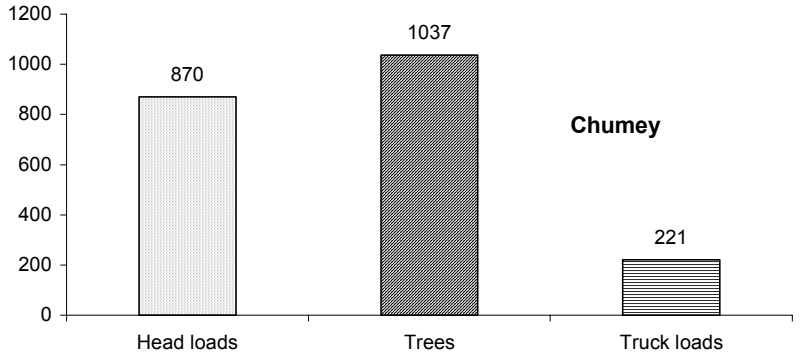
On the other side of the scale are the growing number of households who have completely moved away from the old system of collecting firewood, towards a contractual system or other sources of energy. For instance, in Shaba 49 percent of the households use liquidified petroleum gas (LPG) for cooking, while firewood is only a supplementary source and even this is acquired through a contractor. About 15 percent of the households use saw mill waste supplemented by firewood. Only 36 percent rely on firewood as a source of energy.

With the introduction of technology and contractual services, the perception of firewood collection as a social activity has changed to an individual household activity. In Chumey the transition level is not as high as in Shaba, but it is moving in that direction. More than 40 percent of the households interviewed said that their firewood was transported by trucks, and even that they used sawmill waste. The system of mutual and reciprocal firewood collection has faded away.

Figure 21: Annual Consumption of Firewood

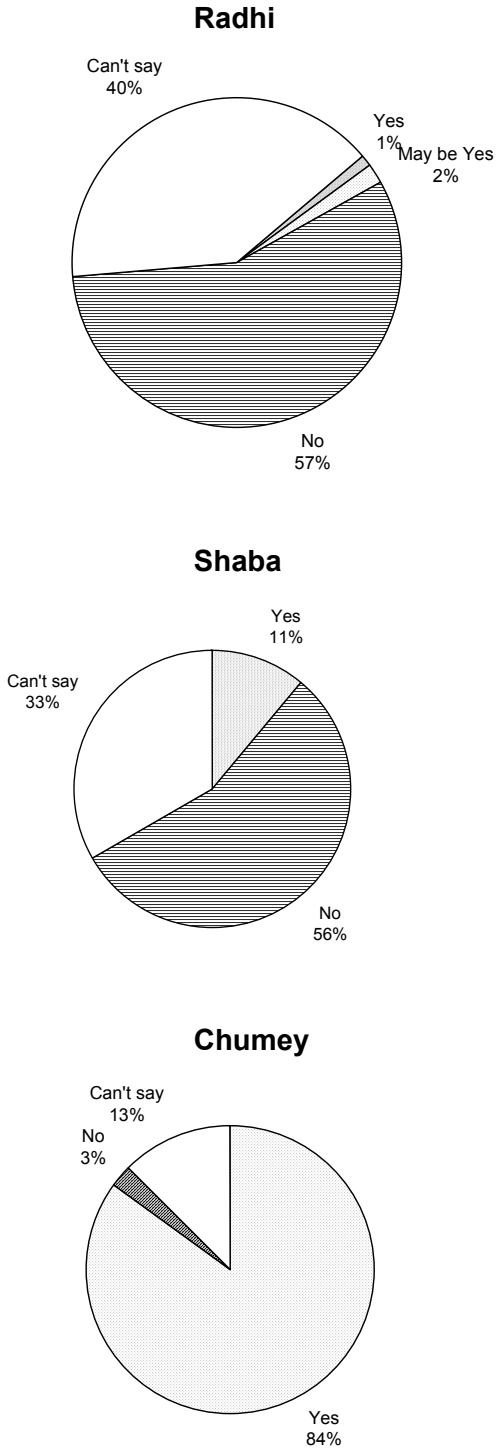






Source: Author's Field Survey, 1996

Figure 22: Perception of Forest Products Needs[7]



Source: Author's Field Survey, 1996

[7] Question: Are forest product needs uniform in the *Gewog*?

3.4.3 Collection of House Construction Timber

The social organisational pattern for the collection of timber for house construction used to be similar to that of firewood collection. In this case, however, the transition from the old to the present pattern seems to be more drastic, whereby the concept of mutuality and reciprocity has given way to an emerging pattern that is based on economic returns. The relationship between the house owner and the chief architect (*Zow*) has also changed from that of a social to a contractual one. In the past, the whole community was obliged to help in the construction of a house. This was done through contribution of free labour, and sometimes by payment in kind, such as for food and alcoholic drinks. The house owner in turn would ensure that the helpers were fed well.

As in the case of firewood collection, households who can't afford to pay cash must struggle the hard way. Because of the breakdown in the mutual and reciprocal relationships, very few people are available to help during activities such as house construction. Furthermore, timber prices and labour rates have become so expensive that it is beyond the affordability of lower income households.

In all the three *Gewog*s, one can feel that the sense of mutuality and reciprocity is fast declining. Contracts for timber extraction are given in return for cash, or other forms of payment. More than 90 percent of the households who built new houses in the three *Gewog*s covered by the survey, said that they paid cash for extracting timber and labour for construction. Construction timber that is made available from the saw mills by the government, has made this transition even more convenient for households who can afford to pay in cash. Not surprisingly, there were only about 10 percent who said that mutual and reciprocal activities are still in existence, especially when constructing a new house.

3.4.4 Use of Shingles and Splinters

The role of mutuality and reciprocity is also reflected in the participation required for the extraction of shingles, which was once a social activity. This was more prominently observed in Radhi, as Chumey and Shaba have coniferous forests immediately adjacent to their *Gewog*s, which requires less organisational capability. Therefore, the discussion is limited to Radhi *Gewog*. It is evident from the altitudinal variations between the location of Radhi *Gewog* and the natural habitat of the fir (*Abies densa*) used for shingles, that extra social organisational capability is needed for its extraction. Radhi *Gewog* is situated at an average altitude of 1000 mamsl and the habitat of fir is at 4000 mamsl. This involves a climb of 3000 meters. Moreover, it is customary that the shingles are extracted at one time. The social organisational capability becomes more important for the organiser as there are no strict rules as to how many pieces an individual should carry. However, a number sufficent to roof the whole house has to be transported. It was observed during discussions in the field that the number of shingles carried by the individuals is based on reciprocity. In other words, one would carry as many as the other person had carried for oneself earlier.

However, households who can afford to pay cash transport their shingles from as far away as 200 kilometres from Sengor. The position of the lower income households is the same as in the case of the collection of firewood or construction timber. It has become increasingly difficult to roof the houses of those who are unable to pay for the shingles in cash. This is aggravated by non-availability of neighbours to participate in the previous tradition of shingle extraction. This is an example where a social resource based on cohesion has been lost. Some of the households said that fir trees suitable for shingles were also becoming scarce. Furthermore, many households are using corrugated tin sheets in place of shingles. One indicator of social status perceived by

the local people is the ability of a household to roof the house with slates or corrugated tin sheets. This was evident during the field visits to the households and interviews.

The extraction of pine splinters used to be an important activity in the past, before the introduction of kerosene and electricity. Pine wood affected by fungus was extracted in the form of splinters and used for lighting. In all the research sites, pine splinters are sparingly used in times of electricity failure or kerosene shortages. People are also becoming conscious of health hazards from the smoke generated by the splinters.

3.4.5 Weaving

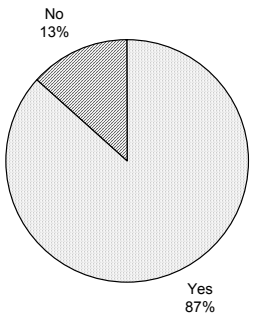
While an effort has been made to include the various processes of weaving and its historical aspects, the main emphasis here is on the change that has taken place over the years. It has been observed that weaving has, over time, become a household activity rather than a community activity.

Weaving was the main source of income for the people of Trashigang, Kuorte and Khengrig Namsum. It once formed such a valued and essential commodity that villagers fulfilled their obligations to the state, in part, by producing quantities of cloth annually. (Myers, D. and Aris, M. 1994, p.78). Ura also describes the *trelpas* (households who were liable to pay tax) of eastern Bhutan paying taxes to the government in the form of woven cloth, until the introduction of the cash-tax system in 1955 (Ura, K. 1995, p. 228). Regions, and even specific villages, are known for the special fabrics created there, such as the wool brocades (*yathra*) of central Bumthang district and the uniquely Bhutanese techniques of interworking supplementary-weft yarns with warp elements and each other (*thirma, sama*), for which northern Lhuntshi district is renowned. Patterns originating in eastern Bhutan, which are formed by manipulating supplementary-warp yarns (*Aikarpo*), have been adopted nation-wide and have unofficially become the preferred fabric for mens' formal robes (Myers, Diana et al. 1994, p.17).

Figure 23: Importance of Household Weaving*

Radhi

Question: Is weaving important for your household as a source of cash income?



Source: Author's Field Survey, 1995

While weaving does not form an important socio-economic activity in Shaba, in Radhi it is the primary source of cash income. In Chumey, *Yathra* weaving also forms an important source of cash income. However, the type of weaving that is carried out in Radhi seems to be more relevant for the study.

In Radhi, 87 percent of the households interviewed said that weaving was the number one source of cash income (Figure 23). 40 percent of the cloth produced, is sold in Thimphu, 18 percent in Arunachal Pradesh and 31 percent in other *Gewog*s. Only 11 percent is used by the manufacturers themselves. The fact that this particular cloth is of

such high quality, and is produced only in Radhi and a few other *Gewog*s, draws special attention. This seems to be a local knowledge in the true sense.

Weaving has now become a household affair. In the past, it used to be a community activity, which created many forms of social interaction among the community members. For instance, individuals who were experienced in the selection and dying of thread would help the less experienced ones. This type of interaction seems to have been on the decline. Interaction is now limited to family circles which also increases competition between the neighbours since they are weaving for the same market, usually Thimphu and other urban centres.

With the decrease in the availability of vegetable dyes, local people are forced increasingly to use artificial dyes for dying the thread. Furthermore, the import of machine-produced material, copied from local patterns, is threatening the local knowledge of weaving. The local people are unable to compete with the cheap machine-produced imports. Therefore, what seems to be at stake is the existence of a local knowledge which is limited to very few individuals within the *Gewog*. It was not surprising to discover that some of the women in the adjoining village did not know how to weave *Aikarpo*. Instead, they weave special garments for the market in Arunachal Pradesh.

The weaving of *Aikarpo* involves a very complex chain of processes. Since the raw silk thread is not produced in Bhutan, but imported from Assam in India. The right species of plant material and dye combination have to be applied. For instance, the roots of the *Yungka* (turmeric plant) are dried and pounded to produce a yellow colour. *Tsoe* (red colour) and *shungkeyshing's tshoser* (yellow colour) are mixed in equal proportions to produce *leewang* (orange colour). In the Bhutanese Indigenous Knowledge Newsletter Volume 1. No.1. 1994, Aum Kezang describes the process of dying the thread. *Rhus, Strobilanthes* and *Prunus species* are also commonly used as dyes. Lac, produced by *Ziziphus species* (*Khanglayshing*) is used to ensure the permanence of the dye. The production of this lac is unique. Sticks from the *Zizyphus* trees with the lac insects still alive in them, are placed on the branches of the *Kydia species* (*Tshoshing*) in autumn. In the next season most of the branches are covered by lac insects, which are harvested. John Claude White described lac production in the east, when he passed through eastern Bhutan in 1906. The Forestry Research Section has documented the plants used for dying thread.

3.4.6 Use of Pasture

Pasture use is not only limited to nomadic pastorialists, since the majority of the households retain cattle as a source of butter and cheese. Use of and access to pastures is well defined in the Land Act 1978 (Chapter VIII). The ownership pattern of pastures has influenced the present patron-client relationship. While Radhi has virtually no pastures, neither private nor communal, Shaba has 200 ha. of private pasture. On the other hand, Chumey has extensive pasture areas, both private and communal. For instance, according to the draft Pasture Policy of 1986, Chumey owns 9,904 ha. of private pasture and 2,264 ha. communal pasture. Pasture is an important and highly contested resource in all three *Gewog*s. Ura (1993) describes litigation over communal pastures between two communities, that can be traced back to 1913.

There is a patron-client relationship in Chumey and Shaba *Gewog*s that is determined by the pasture ownership pattern, whereas in Radhi there is continuous conflict over access to the pastures. During the agricultural season, the grazing area is drastically reduced and the only solution is to take the cattle to the next *Gewog*, i.e. Merak and Sakteng. Given that more than 60 percent of the households own cattle, it becomes difficult for the pasture owners of Merak and Sakteng to share the pasture without

affecting its quality.[8] Conflicts have sometimes culminated in the slashing of cattle owned by Radhi *Gewog,* and vice-versa. The people of Radhi filed a case with the Forestry Services Division, against the *yak* herders of Merak and Sakteng who, they claimed, were destroying the forests in the pasture, which in turn was affecting the availability of forest products for the people of Radhi, since this area is so close to their *Gewog*. This has paid off and recently Radhi *Gewog* was allotted a large parcel of pasture in Yabrang, which is located in the next *Gewog,* following a prolonged court case at Trashigang court. A resident of Radhi said that only the presence of the *Thrimpon* (district judge) averted a clash between the local residents and the people of Radhi, when the latter went to officially take over the communal pasture from the people of Yabrang. To reduce conflicts relating to pastures led to firm rules and regulations set by the state.

Most of the households in Chumey, however, have the luxury of moving their cattle down to Mongar and Zhemgang *Dzongkhag*s in winter and bringing them up to Chumey during the summer[9]. Ura in "The Nomad's Gamble" describes the existence of a similar pattern of pasture use and cattle movement by the people of Ura *Gewog* which also falls under Bumthang *Dzongkhag*. Pema Gyamthso has described in detail the pasture ownership and use pattern in Laya, which is similar to the Chumey and Shaba pattern. The old system of *Tsarin*[10] (payment for grass/fodder), between the pasture owner and pasture user, appears to still be in existence. In this case, the cattle owners of Mongar and Zhemgang make annual payments of a fixed quantity of butter and cheese to the pasture owners in Bumthang. The quantity of butter and cheese is determined by the number of milking cows in the herd. Generally the pasture owners did not want to reveal the exact quantity of butter and cheese bartered for the use of the pastures. However, what was revealed during casual conversation with the pasture owners was their air of social authority over the herders who use their pasture. Because of the distance there does not seem to have been frequent personal contact, but the line of social-relationship is maintained. This pattern of pasture ownership and social interaction between those who have pastures and those who have not, is similar in Shaba. Except for a few households who own private pastures in Gedu and Dungna areas, generally speaking, households do not own as much pasture outside their *Gewog*s as owned by the households of Chumey.

3.4.7 Trading

The introduction of motorable road communication appears to have ushered in a number of changes, in particular, a major change in the mode of trading in Bhutan. For instance, the people of Radhi used to walk for seven days to the Indian border on trade missions. This used to be an annual event and was considered to be so important that religious persons were consulted for an auspicious day to set out on the journey. The most important item on the list of goods to bring back to the village was the annual requirement of salt. However, what has changed is the mutual and reciprocal aspects of the trade mission. In the past, people would travel in groups which ensured safety and some assistance with carrying the load, should a person get sick, or their horse die enroute. The home coming was also an important event. On hearing the news of their father's imminent return, children would travel for hours to share the load. The home coming was celebrated for at least two days, when neighbours got together and shared drinks and special meals. Imported dried fish, betel nut and leaves were also shared

---

8 During the field survey, it was learnt that Radhi lost the case to an absentee pasture owner after 30 years of litigation. This pasture is now used by Merak and Sakteng.

9 This has some relationship with the seat of the state power being in Bumthang till 1952.

10 The patron-client relationship goes beyond the exchange of goods and services. Indebtedness also forms an important part of the relationship.

among the neighbours, and children would listen to stories about the distant Indian border towns.

Until 1959, when the border was still open, some trading was also carried out with Tibet. The mode was both barter and cash. John Claude White[11] also described in 1906, the existence of the trade route between Trashigang-Tawang-Tshaona. Some people of Radhi still use this trading route to Tawang in Arunachal Pradesh. Before the distribution of *Mencha* (mithun bulls) by the Government, oxen used to be bartered for the bulls domesticated by breeders in Arunchal Pradesh. Now the main trade is based on woven cloth and alcohol. However, nowadays trading groups are limited to one or two individuals.

Trading between the people of Merak and Sakteng and Radhi has been going on for generations. 52 percent of the households in Radhi have contacts in Merak and Sakteng for the purpose of barter and regular trade. An average of 49 percent of the households in all the three *Gewog*s travels out of the *Gewog* for trading. In the case of Radhi, the trade is based on an efficient barter system. This was observed during the field survey and interviews during the months of December to February. The people of Merak and Sakteng produce *Yak* butter, cheese and meat, while Radhi is considered to be the rice basket of eastern Bhutan. The barter system is guided by standard norms conformed to by the concerned individuals and households. The people of Merak and Sakteng move down towards Radhi with their *Yak* herds in November, bringing with them butter, cheese and meat accumulated during the summer months. It is not just a process of bartering livestock products for agricultural products, but a relationship that has been built based on trust and each others needs. There is a *Naypo* [12](guest-host) relationship that is passed on from generation to generation. The exchange represents a unique risk management option, adopted by the high altitude residents, for their survival. A few people, however, said that the shortage of firewood is affecting this relationship as they are forced to minimise the number of guests.

The mode of trading in Chumey and Shaba was similar to the one practised in Radhi. While, for the people of Shaba, Phari was the main trading route in the north, people also travelled down to the Indian border for trading. The people of Chumey also carried out trading, both in the north with Tibet, and in the south with India. With the introduction of motorable roads in the 1960s all this has changed. These days people talk in terms of first bus or second bus when they travel from their home to the trading centres. It is now an individual decision where and when to travel out of their *Gewog,* rather than a group decision as it was once. The absence of an individual from the community is now barely noticed.

3.5 Local Resource Management Institutions

Although some effort has been made to document local institutions using pasture (Ura, K., 1993), little research has been carried so far in the field of forestry. It is necessary to document the existing resource management institutions of the *Gewogs* and to analyse their functioning, in relation to the expanding governmental activities.

3.5.1 *Reesup* (Village Forest Guard)

Previous to the enactment of the Forest Act in 1969, most of the forests in the villages were managed by the *Mang (*Community/Village) through the institution of *Reesup.* The *Mang,* which used to comprise of one to few villages, would appoint the *Reesup* on an

---

[11] Sikkim and Bhutan: Twenty-one years on the North-East Frontier, 1887- 1908.

[12] The value of this relationship goes beyond that of guest-host. It is based on mutuality and reciprocity which is difficult to describe.

annual or biannual basis. (Oral communication with many elders in all three research *Gewogs*). The function of the *Reesup* was defined by the *Mang,* wherein the village elders made most of the decisions. The *Reesup* was delegated with the authority to ensure that everyone had adequate firewood and construction timber, which to a large extent was in contrast to the policing responsibility of forest watcher in Nepal or forest *chowkidar* in India under joint-forest management schemes. He was also empowered with the responsibility to enforce *Reedum* (Prohibition of forestry activities, including extraction of bamboo, and grazing during summer, i.e. June-October) in communities wherever this was practised.

The institution of *Reesup* was a customary one and social sanctions were exercised through him before formal interventions by the government. Protection of forests through this institution also included the catchment areas. No formal permission from the *Dungpa* or *Dzong* was required to cut trees for firewood, house construction or prayer flag poles. The *Thrimshung Chenmo* 1959 (Clause NYA 1-16) prohibited the hunting of endangered wild animals such as tiger, elephant, musk deer etc., but did not impose any restrictions on the felling of trees or the use of forest products by the local people. So this institution, like many of the local resource management institutions in other parts of Asia or Africa, was loosely formed, and based on mutual trust and reciprocity. The *Reesup* drew its legitimacy to control peoples' use of and access to forest resources from the mandate by the *Mang (village/community).* The customary rights and sanctions were all geared towards sustainable use and equitable distribution of benefits from the forests.

The *Reesup* ensured that every community member had equal, and easy, access to forest products when required. This was achieved through frequent informal meetings and discussions and proper guidance from the village elders. While in many locations the functioning of the institution was guided by customary norms, other communities had written documents with thumb impressions (in place of signature), agreeing to the terms and conditions set out for the functioning of the *Reesup* institution. Such arrangements ensured both rewards and penalties for the members.

This social organisation is still observed in Shingkana, the village under Shaba *Gewog*. The *Reesup* ensured that everyone has equal and easy access to the forest products. However, he was also expected to enforce certain rules and regulations so that trees were not felled around water sources; he ensured that an adequate number of seed trees were left behind during harvest and that harvested forest areas had an adequate period of rest to ensure their regeneration. Penalties included a fine of Nu. 50 for every tree felled, and Nu.150 for every load of firewood collected from the *'Drongsep Ngagtshel'* (village/community forest). Funds generated from the collection of fines go towards the annual *Mang Rimdo* (performance of rituals for the welfare of the village). Therefore, economic incentives seem to be an important element concerning the willingness of the local people to be involved in forest resource management. The perceptions of the local people differed concerning their capability to manage the forest if the government transferred some of them.

The *Reesup* was paid in kind and exempted from obligatory services to the government and the community. This was the standard practice for services rendered to the state or community. It was the same for the *"pangoleng garpa*" who went to Bumthang to cultivate agricultural crops before the 1950's (Ura, 1995, p.91.). By virtue of holding such a post, they commanded high social authority in the family and community, especially in terms of property inheritance.

Minute details on the functioning of the institution of *Reesup* would differ from region to region, but there was no drastic difference in the principles, objectives and decision making processes. For instance, if one looks at the institution of *Reesup* in Radhi, Chumey and Shaba *Gewogs*, the structure, responsibilities and functions of the

Reesup were almost identical. However, in Radhi *Gewog* the *Reesup* was also entrusted to implement the practice of *Reedum*.

When the first Forest Act was passed in 1969, the institution of *Reesup* was replaced by forest officials appointed by the government. Existing government structures such as Divisional Forest Office, Range Office, Beat Office and Forest Check Posts were strengthened in various parts of the country. As no provisions were made for the legitimacy of customary rights and sanctions over forest products, including the institution of *Reesup*, the Act annulled all customary rights and sanctions. However, in practice, most of the customary rights and sanctions continued, since the government did not have adequate personnel to implement the provisions of the Forest Act. During the field survey, a *Dongsep Ngagtshel* in Shaba and *Gapteyna* in Paro were examined which are managed fairly well.

Furthermore, the annulment of the institution of *Reesup* did not make much difference to the individuals or to the local community as a whole. The primary reasons for this were that forest products were available in abundance, and the government was not in a position, as far as field staff was concerned, to enforce penalties when offences were committed. For instance, in Chumey, 100 percent of the households and 92 percent of the households in Shaba were self-sufficient in firewood. In Radhi, only 46 percent of the households said that they were self-sufficient whereas. The responses to interviews and the results of household surveys show that people increasingly feel the thrust of the forest legislation. Field survey results also show that, on an average, 35 percent of the households said that the present rules on the use of forest resources are too strict.

An institution that had evolved as a heuristic process matched by the social structure faded away due to a inadvertent oversight in 1969, when the first Forest Act was passed. If the dissolution of traditional local institutional arrangements are not followed by the establishment of more effective institutions, common property becomes an open access resource.[13]

After more than fifteen years since the dissolution of an effective local forest management institution, the Forestry Services Division realised the importance of the institution of *Reesup* for interpreting the concept of sustainable forest management and the useful role of such an institution as a link with the local people in the management of forests (RGOB, 1991). In 1985 the institution of *Reesup* was revived with major structural changes in its composition and functioning (Fifth Five Year Plan). The selection of the *Reesup* was done by the communities, and formal appointment made by the Forestry Services Division with a fixed salary from the government. Its responsibilities included distributing the message of the government policies on the sustainable use of forests, explaining rules and regulations listed in the Forest Act and in various circulars, encouraging the local people to abide by government rules and regulations on the use of forest products, and assisting local Forest Officials to detect forest offenders. Its progress, when reviewed by the Forestry Services Division, shows that this approach is effective in bringing the government administration closer to the local communities. One reason for this could be that the local people can now talk to someone from the village instead of someone from the government, who is usually from outside the village.

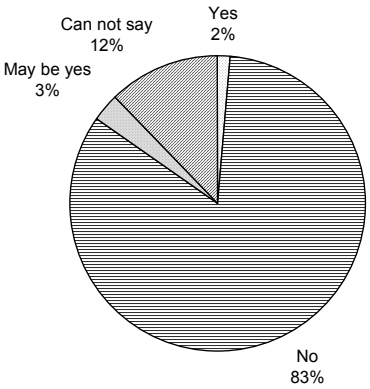
Figure 24: Perception of Local Forest Management Capability[14]

---

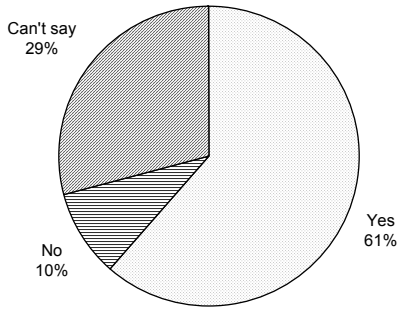
13 See Bromley and Cernea, The Management of Common Property Natural Resources, World Bank, 1989, p.7.

14 Question: Can local people manage the forest?

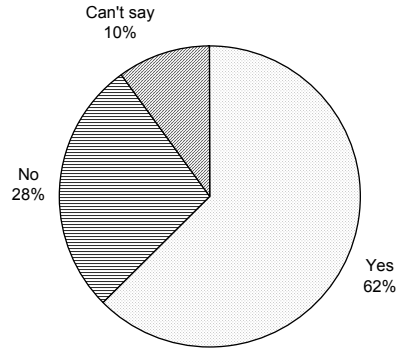
Radhi



Shaba



Chumey



Source: Author's Field Survey, 1996

3.5.2 *Meesup* (Forest Fire Watcher)

The discussion of *Meesup* is mostly based on oral communication, discussion with government officials engaged in dealing with forest fires, and semi-structured interviews. Similar to the institution of *Reesup*, was a local resource management institution known as *Meesup*. This institution evolved in the same manner as other similar local institutions, as a response to risk aversion and the need to use the resources more sustainably. Whereas the *Reesup* was mandated with both executive and legislative authority over the forest resources, the *Meesup* was responsible only for

the protection of the forests from fires. The terms of appointment and functioning were similar to that of *Reesup* (personal communication from elders). The *Meesup* was expected to mobilise labour from the community to fight forest fires, and at the same time ensure that the culprit who set the forest on fire was detected and reported to the *Dzong*. The institution of *Meesup* also faded away with the enactment of the Forest Act in 1969. In many ways, this absolved the local communities of the legal responsibility to protect the forests from fire. One would imagine that this was not the intention of the Forest Act, but rather an oversight, as in the case of *Reesup*. The Forest Act of 1969 Chapter II Section 6 states *"The following acts are prohibited in Reserved Forests:* (b) *setting of fire to a reserved Forest or leaving any fire burning in such manner as to endanger such a forests [*sic*]"* and Section 19 states *"Whenever fire is caused willfully or by gross negligence in a Reserved Forest, the offender shall be punished as per decisions in the National Assembly".* The Act does not mention the existence of any local resource management institutions, neither is it explicit in their annulment as a result of the enactment of the Forest Act. This is in contrast to the Land Act of 1978 in which relevant local resource management institutions were incorporated. This may be a reflection of the adaptation process that the formulation of the Acts went through. For instance, the Land Act was formulated by the Law Committee, which consisted of members from a wide range of sections of the Bhutanese society. As a result of this process, the responsibility for the protection of forests was transferred to the Forestry Services Division. However, in actual practice, the local communities still continued to be held responsible whenever any forest fire broke out. A decision taken in the meeting between the *Dzongda*s and Forestry Services Division in 1983, put the onus of protection of forests on the local communities. This was both in terms of expending effort to put out the fire, and in paying the penalty if the culprit was not detected. This process, on the one hand, divested the local community of the authority to organise forest fire protection schemes, but on the other hand, it was expected to contribute labour to fight forest fires in addition to accepting legal liability.

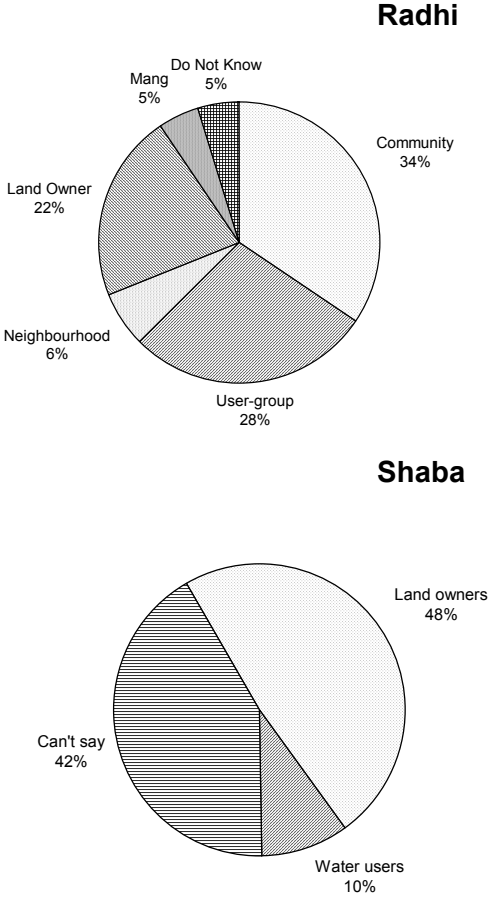
However, when the Forest and Nature Conservation Act was submitted to the National Assembly (72nd Session) for approval in 1995, one of the main issues raised by the people's representatives concerned forest fire. After a lengthy period of debate, a major amendment was made which absolved the local communities from the legal liability of forest fires. The final version of the Act states that *"The local communities are expected to contribute labour for fighting forest fires but do not have to pay financial compensation for the loss of forests even if the culprit is not detected. Instead the local community has to plant the burnt forest area with tree seedlings provided by the Forestry Services Division free of cost".*

3.5.3 *Chusup* (Drinking Water and Irrigation Water Watchman)

The discussion of the institution of *Chusup* is based on the provisions made in the Land Act 1978 for the use of water for irrigation, and on oral communication and observations made during the field visits in Radhi and Shaba. *The Chusup* institution does not exist in Chumey since there is no paddy cultivation. The concept of *Chusup* evolved in a manner similar to that of *Reesup* or *Meesup.* The watchman's responsibilities included making sure that the traditional rights to drinking water were respected by the concerned households, and to ensure proper distribution of water for irrigation among the land owners. He was legitimised by the local community to arbitrate in minor disputes among the irrigation canal owners. Since his role was based on customary rights and sanctions, litigants were free to approach the *Gups* or court in case of disputes over the use of water. Unlike in the case of forest products, property rights over water were strictly enforced. For instance, both in Radhi and Shaba, one's inclusion in the ownership and therefore sharing of water from a particular irrigation canal depended on either one's direct contribution, or the contribution made by one's

ancestors, in kind or cash for the construction and maintenance of the water canal. The *Chusup* also made sure that the existing or newly constructed water canals did not cause damage to nearby fields. The present irrigation canal ownership pattern is based on land ownership and is location-specific. The ownership was transferred with the land and therefore social hierarchy or kinship has played only a limited role in shaping the irrigation canal ownership status that exists today. The expansion or conversion of paddy field from other land uses would require the endorsement of the existing canal members. In case of agreement by the members, the new member would have to pay an equivalent amount in terms of cash or labour expended by the old member.

Figure 25: Perception of Irrigation Management[15]



Source: Author's Field Survey, 1996

The Land Act 1978 seems to have formalised the institution of *Chusup* by including it in the Act. The Act (Chapter VI, Clauses (A) 7-1 to 7-14) explicitly provides guidelines for the functioning of the institution and lays specific penalties for non-compliance. It seems that the Act has drawn substantial direction from the informal *Chusup* institution, as little has changed, both in the spirit and structure of the law, on the use of water for irrigation in the Land Act of 1978.

The construction of new irrigation canals and the maintenance of existing ones were considered to be important government inputs, for the attainment of self-sufficiency in food production. This intervention also had a direct impact on the local water management institution. Although the membership pattern is similar to the informal

---

15 Question: How is irrigation managed?

one, the inclusion of new members is formalised and legitimised through the axiom that inputs from the government should be available to everyone. The Department of Agriculture carried out a survey of “Farmer Managed Irrigation System Research Project” in 1990. One of the main findings were disputes between the land owner and share cropper. This seems to be more accentuated in some parts of Trongsa *Dzongkhag*. Anyone with land can now become a member and gain property rights over it. This is done through the creation of a "Water Users Association“, a concept introduced from outside. This concept is also applied to managing drinking water schemes mostly provided by the government.

3.5.4 *Shingsungpa* (Agricultural Crop Damage Arbitrator)

This is an effective institution still in practice in the villages. The functions of the *Shingsungpa* are broadly outlined in the Land Act 1978, under Chapter XI. Like the institution of *Chusup*, the Land Act 1978 seems to have taken into consideration the existing local resource management institution and formalised it as law of the country. This process seems to be the most crucial element for the survival of local institutions and knowledge.

In the past, the selection procedure of *Shingsungpa* was the same as that of *Reesup* or *Chusup*. However, with the establishment of *Gewog Yargye Tshogchung* (*Gewog* Development Committee) during the Fifth Five Year Plan, the appointment must now be approved by this committee. Under the broad guidelines listed in the Land Act 1978, the framing of detailed rules and regulations are left to the individual communities. The existence of different situations in the three *Gewog*s of Radhi, Chumey and Shaba is a reflection of this approach.

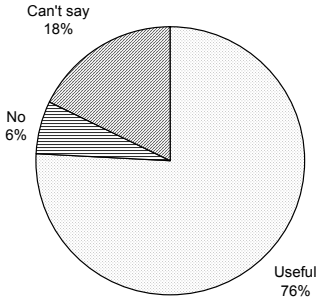
In Radhi, 76percent of the respondents said that the institution of *Shingsungpa* is useful in protecting their crops from cattle damage. In Shaba, only 59 percent attributed the lower degree of crop damage to the *Shingungpa* institution. They felt that even without this institution, the rules of compensation for crop damage by cattle are built into the day-to-day functioning of the social system. In Chumey, the institution of *Shingsungpa* does not exist.

The Shingsungpa institution as practised in Radhi and Shaba. Each village selects one person judged to have a high degree of integrity, as he is expected to arbitrate in disputes in the process of fulfilling his responsibilities, which include the declaration of the agricultural season. This is done by going from house to house, usually in March. From this day on, compensation and fines for crop damage by cattle becomes effective. The modes of calculation of compensation and litigation seem to be both practical and logical. When an agricultural crop has been damaged by cattle, the land owner requests the *Shingsungpa* to inspect the field and make an assessment of the damage, which is done in the presence of the cattle owner. The methodology to be used for the damage assessment is jointly agreed among the three individuals, i.e. land owner, cattle owner and *Shingsungpa*. For instance, in the case of paddy, the number of damaged clumps are counted. During harvest time, paddy is harvested from an equal number of clumps from the adjacent field and the land owner is compensated with the same quantity.

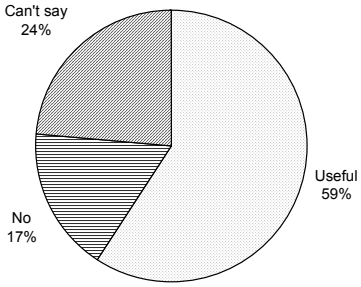
Figure 26: Perception of the Usefulness of the *Shingsungpa*[16]

Radhi

[16] Question: Is the *Shingsungpa* a useful person?



Shaba

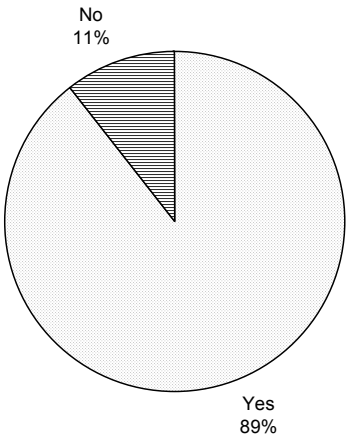


Source: Author's Field Survey, 1996

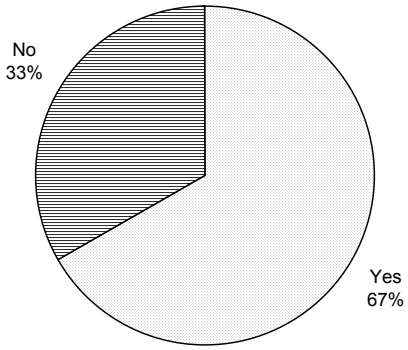
There are occasions when the job of *Shingsungpa* can become complicated. Among the acceptable proof required to charge someone for crop damage is that the cattle should either be tied up at the damage site or witnessed by a third party. This may be difficult in small communities where people try to avoid getting into legal tangles when their own members are involved. Ocular damage assessment is also another source of conflict. However, 89 percent of the respondents in Radhi and 67 percent of those in Shaba said that they usually accept the verdict given by the *Shingsungpa.*

Figure 27: Perception of the Arbitration of the *Shingsungpa*[17]

Radhi



Shaba



Source: Author's Field Survey, 1996

3.5.5 *Sokshing*

The term *Sokshing* is used inter-changeably, as a physical resource, as a local resource management institution and as a tenurial system. The differentiation of the meaning becomes evident when seen in the context of how *Sokshing* is used by the local communities.

Local resource management institutions such as *Sokshing* have demonstrated that forest resources can be sustainably managed if tenure is ensured. Only a proper monitoring will prevent the appropriation of these resources for other purposes. The existence of an equivalent of *Sokshing* can not be found in other parts of the region but, loosely defined, it could be interpreted as wood lots.

---

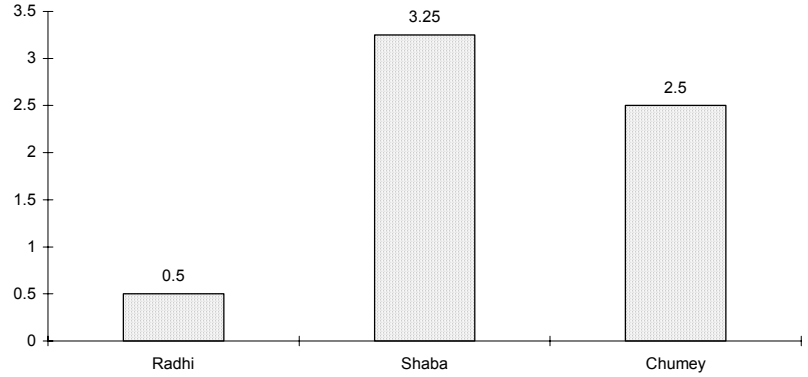
[17] Question: Do you usually accept the verdict of the *Shingsungpa?*

Like most of the other forest resources, prior to 1969 (when the Forest Act was passed by the National Assembly) and later on in 1978 (when the Land Act was passed by the National Assembly) *Sokshing* ownership rested with owners who had registered it under their names. The Forest Act of 1995, 3(e) is not very clear on the legal ownership status, as can be seen by the definition of the term forest: "'*Forest' means any land and water body, whether or not under vegetative cover, in which no person has acquired a permanent and transferable right of use and occupancy, whether such land is located inside or outside the forest boundary pillars, and includes land registered in a person's name as Tsamdog (grazing land) or Sokshing (woodlot for collection of leaf litter).*" However, the definition of *Sokshing* in the Land Act is more explicit on the status of ownership of *Sokshing*. The Land Act 1978 defines *Sokshing* as "*forest to be used as a source of leaf litter and fodder and the owner has no right over the standing trees and land over which Sokshing is established*".

According to the field survey, 37 percent of the households in Radhi own *Sokshing,* whereas in Shaba 87 percent own *Sokshing*, as compared to 69 percent in Chumey. In terms of area it amounts to 40.8 ha in Radhi, 131.6 ha. in Shaba and 52.6 ha. in Chumey. The *Sokshing* 'ownership' pattern is the same as that of agricultural land in the three *Gewog*s. However, their roles and extent of area differ. In Radhi, the average Sokshing holding is 0.5 acre per household, while in Shaba it is 3.25, and 2.5 acres in Chumey. In Radhi the contribution of *Sokshing,* both as a source of basic forest product needs and social interaction, is very high. There is also a definite pattern of *Sokshing* use in the three *Gewog*s. While 10 percent of the households obtain their firewood directly from *Sokshing*, 46 percent depend on *Sokshing* supplemented by nearby forests in Radhi. 58 percent of the households in Shaba collect pine needles from *Sokshing,* and 70 percent said that the main function of *Sokshing* in Chumey is the provision of pines for compost. Less than 3 percent depend on *Sokshing* for firewood in Shaba and Chumey.

Figure 28 shows a skewed distribution of average Sokshing holding per household. In Radhi, this may be a reflection of high population density with limited land area. The higher *Sokshing* holdings in Shaba may not correspond to the actual registered area but rather to the perceived potential of *Sokshing* for other land uses in the future. This is a reflection of the change in the value of local resources. It is customary to claim more area than is actually registered in ones name, as the boundaries are usually natural features such as streams, rocks or trees. The *Sokshing* holding in Chumey, on the other hand, may be nearest to the registered size as the owners do not seem to perceive it as being of particular value, at least in the immediate future.

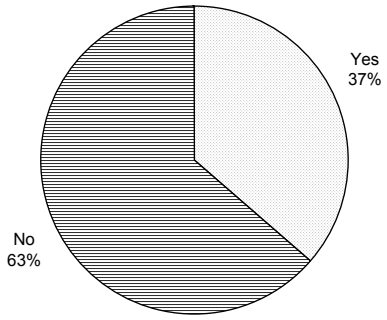
Figure 28: Average *Sokshing* Size per Household (in acres)



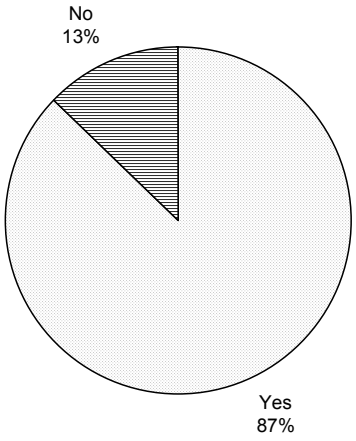
Source: Author's Field Survey, 1997

Figure 29: Perception of the Importance of *Sokshing*[18]

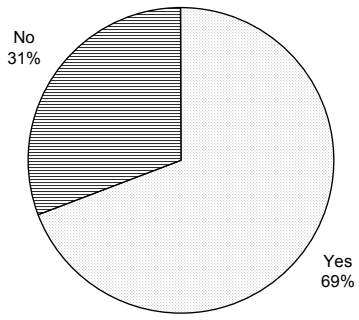
Radhi



Shaba



Chumey



Source: Author's Field Survey, 1996

---

18 Question: Do you own *Sokshing*?

The distribution or inheritance of *Sokshing* when a household member starts his/her own household, is done in the same manner as with agricultural land. This has resulted in a high degree of fragmentation of *Sokshing*. The field survey showed that 62 percent of the households own less than 1 acre of *Sokshing*, and that the *Sokshings* of more than 10 percent of the households comprise of only three to five trees. This illustrates that *Sokshing* is as important for the household as agricultural land.

The institution of *Sokshing* plays an important role in the social energy flow. More than 50 percent of *Sokshing* owners said that firewood from *Sokshing* can only be 'given' to their neighbour when someone in family dies. While no direct cash or material is accepted for this favour, the *Sokshing* owner assumes a certain level of legitimacy of social authority over his neighbour. This pattern of social structure was observed and analysed from interviews with both those who own, and those who do not own *Sokshing*.

Care and protection accorded by the owners to *Sokshings* can be physically observed by comparing these areas with the adjoining government forests. While most of the *Sokshings* are well protected from damage by outsiders, government forests are seen to be at varying stages of destruction. One of the reasons for the efficient management of such a resource can be attributed to the existence of a law that respects the right to a benefit granted by others. (Bromley 1989, p.5.)

The silvicultural practice for the management and harvest of *Sokshings* is sound. It has evolved over the years and the knowledge is passed on from generation to generation. Everyone interviewed in the *Gewog* knew all the tree species grown in the *Sokshing* or nearby forests. They were also aware of the specific silvicultural requirements and that different species are harvested differently to suit their ecological resiliency. More than 80 percent of the people interviewed said that trees in the *Sokshings* are never felled at ground-level. Oak (*Quercus sp*.), for example, is pollarded at two meters height, a practice which takes advantage of its sprouting capability. This ensures that the tree is not completely lost and also reduces the need to protect the sprouts from the cattle. Fodder trees (mostly *Ficus sp*.) are also never felled at ground-level. Instead, the biomass is usually harvested by lopping. This ensures that the regeneration takes place successfully. Therefore, it becomes evident that the concept of sustainability is incorporated into the management of *Sokshing.*

Leaf litter of oak and pine needles from the *Sokshing* have a multifunctional role. While the leaf litter and pine needles keep the cattle warm in winter in their sheds, the decomposed material makes ideal manure, thereby contributing to food production. Gilmour 1991, p.60; Chhetri 1993, p.117; and v. Fürer-Haimendorf 1964 in Chhetri and Pandey 1992 describe similar uses of forest products made by the hill people of Nepal, including the Sherpas of Khumbu.

The institution of *Sokshing* can also be a source of social conflict in the *Gewog*. Although more than 50 percent of the households interviewed said that it would be a good idea to hand-over the full ownership title of *Sokshing* to the *Sokshing* owners, more than 40 percent of the *Sokshing* owners said that theft from *Sokshing* is increasing. Few of the respondents were very vocal on the issue of transfer of *Sokshing* ownership. While the present *Sokshing* owners said that if the full transfer of ownership is done, it will encourage them to protect and plant additional trees, the households who do not own *Sokshing* said that it will not be equitable. They contend that with the present mode of appropriation of firewood, they are sure to get what they need through the permit issued by the government. If, by the transfer of full ownership, their access to *Sokshing* is denied, then it would become difficult for them to obtain firewood, which is one of their basic forest product needs.

Although the Forest and Nature Conservation Act of 1995, and the Land Act of 1978 defined the legal status of *Sokshing*, it was only recently that these provisions were imposed. The *Sokshing* owners enjoyed full authority, and in many places the non-*Sokshing* owners were not aware of the real legal status of *Sokshing* anyway. In Radhi, most of the *Sokshing* depletion can be attributed to the recent imposition of the legal definition of *Sokshing*. This generated a double negative impact. On the one hand the *Sokshing* owners who had protected and nurtured them for generations suddenly lost control of their very important resource, felt legitimised to use the *Sokshing* as much and as possible, before others did. On the other hand, the non-owners felt that a resource that was once restricted, was suddenly available to them and started making higher demands. Furthermore, they perceived it as a question of equity that has been ensured by the government.

The institution of *Sokshing* seems to be as old as the agricultural crop production institution in Bhutan. This is evident from the legal status accorded to *Sokshing* in the land records of the households, and the existence of the *Sokshing* inheritance system. The local people have also acquired the knowledge for the sustainable management of the *Sokshing*.

The legal status or tenure of the *Sokshing* is presently the most critical factor in the sustainability of basic forest product needs. At the same time it is a resource which facilitates the social interaction of the *Gewog*. If the tenurial rights are not ensured, the *Sokshing* owners will continue to over-use them and will neither be interested in protecting them from outsiders, nor have the legitimacy to do so. Since the land does not belong to the users, there is no incentive to improve it through enrichment planting or by other any means. This situation leads eventually to a conversion of *Sokshing* into an open access resource.

3.5.6 Religious Trees and Forests

Among the species that have been indicated as being of religious importance in the three *Gewogs* are the following: *Pinus roxburghii, Castanopsis hystrix, Ficus cordata, Bambusa species, Musa species, Oroxylum species, Rhus species, Cymbopogon species, Artemisia species* and *Quercus species*. These species are used according to the rituals. During the field survey, it was observed that all these species are used in Radhi, and a number of them are used in Shaba and Chumey.

These plant species are used for performing rituals, mostly of Bon origin, such as the one in Radhi known as *Mingchang,* performed usually every year for the general welfare of the household or an individual who may be sick at the time of the performance. This ritual is carried out by a local Shaman, whose role is usually inherited. *Pinus roxburghii, Oroxylum species, Bambusa species, Musa species, Castanopsis species, Cymbopogon species* are required for completing the ritual. Although these species are used in rituals, there is no special spiritual attachment to these species. They are treated just like any other plant species while using them as firewood or for other purposes. Likewise, most other Bon-based rituals involve the use of plant species. However, trees planted around *Lhakhang*s, *Chorten*s, community centres, and resting places along trails are considered to be sacred and are not cut or harmed. It is a taboo to cut or damage forests considered to be inhabited by local deities and evil spirits. This is also true for mountains, rocks, etc.

In the eastern part of the country, the most preferred species for cremation is oak. While it was not possible to find a plausible reason as to why only fresh oak is used for cremation, the logic seems to be that the only fresh wood that burns well is oak which is readily available in the *Sokshing*. In this context, the role of *Sokshing* goes far beyond providing just forest products. They become a source of social interaction between the households who have them and those who do not have them, especially

during times such as death and religious ceremonies where extra and specific species of firewood are required.

Two religious forests were observed in Radhi and Shaba *Gewogs*. 100 percent of the respondents to the interviews in both the *Gewogs* said that they would never destroy a religious forest or do anything forbidden by the local religious persons. For instance, a small patch of well stocked religious forest in Radhi has been in existence for many generations, whereas the forests nearby have either been completely destroyed or are in frequent use by the local people. The religious forest in Shaba has protected the catchment of the local temple for generations. Religious influence also seems to have restrained people from deliberately setting fire to the forest, to obtain new grass shoots for their cattle. More than 95 percent of the people interviewed said that it is a sin to set forests on fire because it kills millions of insects and animals. 100 percent of respondents to my field interviews in Radhi agreed that if religious forests are damaged, the people suffer physical and spiritual harm.

3.6 Traditional Sanctions and Offence Cases under the Forest Law

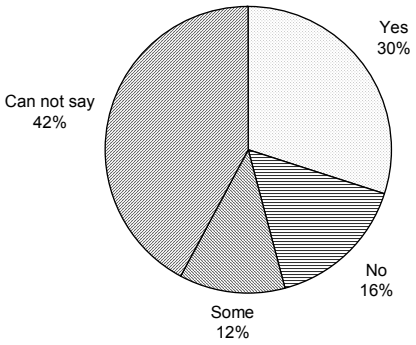
3.6.1 Traditional Forms of Sanctions (*Reedum)*

The enactment of the Forest Act in 1969 saw a major change in the way in which forest resources were appropriated, both for commercial and domestic consumption. Prior to this period it was not considered an offence to harvest any forest resources for one's own use without formal sanction from the state, with the exception of hunting endangered species. There were informal restrictions on the use of forest resources by self-evolved and self-imposed social sanctions of the local communities. Contravention of these sanctions could be resolved through amicable discussions, in which the context of the act was considered a more crucial issue on which to base any decision, rather than the actual contravention of the sanctions. The implementation of such social sanctions was less complex, as the forest resources were in abundance and the economic role of the forest resources was limited.

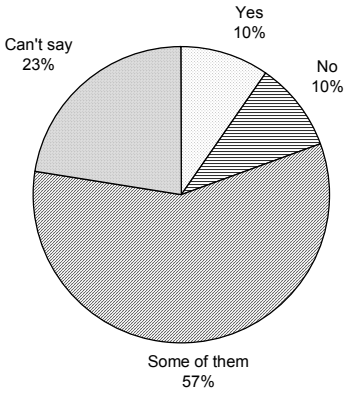
One of the customary sanctions still functioning, is the practice of *Reedum*. This is not reflected in any formal manner in any legislation. In Radhi, households strictly conform to the sanctions. Whereas such a practice does not exist in Shaba or Chumey. The practice of *Reedum* is linked to the religious belief that the mountains are the abode of the local guardian deities. This practice is linked to Bon religion, which is still practised in most of the eastern part of the country. In Radhi for instance, it is considered to be a serious offence if someone from the village extracts any forest product from the mountains above the village during summer, when agricultural crops are still standing. During the field survey, more than 95 percent of the interviewees said that the practice of *Reedum* is good for the whole community. In other words, agricultural crops are protected from natural calamities such as floods, storms and insect epidemics by the deities residing in these sacred mountains. The ban on the extraction of forest products includes bamboo and forbids grazing. The ban also includes the cremation of dead bodies in the vicinity of the village during this period. All cremations are carried out in designated locations which are usually by the river banks and away from the villages.

Figure 30: Perception of Customary and Formal Sanctions[19]

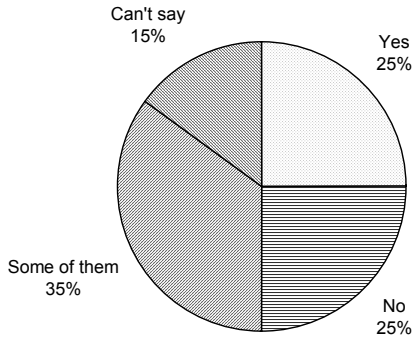
Radhi



Shaba



Chumey



Source: Author's Field Survey, 1996

---

19 Question: Should social sanctions be superseded by new laws?

Even if the institution of *Reesup* in its original structure and functions has vanished, the practice of *Reedum* is still enforced by the *Gups* (*Gewog* Head), *Chimis* (people's representative and member of the National Assembly) and *Mang Aps* (village heads). This may be attributed, on the one hand, to the forbearance of the government on such issues, and on the other, to the religious belief that has been in practice for generations. This seems to be the case where the religious sanctity of a particular resource is determined by natural factors, such as the season of the year that has its expression in the environment. Whatever the interpretation, in actual practice it is very functional. In summer, forest operations, especially harvesting, are likely to cause more environmental damage than during the dry season, the same refers to the grazing by cattle.

There is no distinct pattern of perception concerning the issue of whether social sanctions should be superseded by modern laws. In Radhi, 30 percent said that social sanctions should be superseded by modern laws, only 16 percent felt otherwise and 42 percent said that they were not sure about it. In Shaba, the response was 10 percent who agreed and 10 percent who disagreed. In Chumey, the ratio between who agreed and did not agree was equally split. However, there was a high percentage of those who were not sure and who felt that only some of the social sanctions should be superseded.

3.6.2 Offence Cases under the Forest Law

As the demand for forest resources grows, and the economic value of these resources increases, legislation has to play an appropriate role in ensuring orderly use and access. An enabling institution such as a Forest Act is required[20]. However, these enabling institutions should match the socio-economic environment and be dynamic enough to adjust to the changing needs and aspirations of the concerned people. In view of such considerations, the analysis of 256 forest offence cases was carried out to assess the implications of forest development policy. The offence cases, which cover a period of six years (1991-1996) were collected from government records at various Forestry Services Division offices across the country.

The Nature of Offence Cases: The cases show that the nature of the offences are wide ranging and include: illegal felling of trees, illegal collection of firewood, illegal lifting of timber, illegal transportation of sand and stones, the felling of trees on one's own land, land encroachment, poaching and illegal fishing. Poaching constitutes the major share of forest offences (33 percent). This is followed by illegal felling of trees for house construction, and clearing land for cultivation (21 percent). Illegal fishing comprises of 13 percent of the total forest offences committed. Other significant offences are illegal lifting of timber (11 percent), encroachment into government forest land (5 percent), forest fires (3 percent), felling trees on one's own land (5 percent) and illegal collection of firewood (4 percent).

Out of a total number of 256 cases, only 2 were committed by women, and under the categories of poaching or illegal felling of trees, no woman was involved. In the rural areas, most of the cases are usually registered under the name of the father or the eldest male, therefore gender aspects could hardly be investigated.

Location of Offences Committed: The location of offence cases was classified as rural; semi-urban and urban. 60 percent of the offences have been committed in rural areas, followed by 27 percent in urban areas. 13 percent of the offences were committed in the semi-urban areas (urban enclaves and satellite towns).

---

[20] See Kaul, Chakravarty, 1992: Forest Rights and Forest Laws in the Indian Himalayas during the Second half of the 19th Century, p.3.

Occupation of Offenders: Five categories of occupation have been distinguished. Farmers constitute 63 percent of the total number of offenders, individuals working for the government comprise of 15 percent, and contractors 17 percent. Only 5 percent of the offenders were urban residents. Forest offences related to illegal felling were analysed. 63 percent of the illegal felling was carried out by farmers, 17 percent by timber contractors and 15 percent by individuals in government service.

Degree and Status of Offence Cases: The degree of offence has been categorised according to the amount of fine levied. For the convenience of presenting the results, the first fine amount is fixed at Nu. 500 and then at an interval of Nu. 1000. Beyond Nu. 5000 it has been fixed at an interval of Nu. 5000 and Nu. 10,000 and above. It was found that 38 percent of the offences were committed at the fine amount range of Nu. 500, followed by 15 percent which fell into the category of Nu. 501-1000. The category at Nu. 1001-2000 comprised of 8 percent, followed by 3 percent in the ranges of Nu. 2001-3000 and Nu. 5001-10,000, and 2 percent in the ranges of Nu. 3001-4000 and Nu. 10,000 and above. A significant 26 percent of the cases were forwarded to the civil and armed forces court. 78 percent of the offence cases were compounded at the Range and Divisional Forest Offices. In all the cases that were compounded, where applicable[21], the person who detected the offence was paid 50 percent of the fine and compensation amount.[22] 20 percent of the cases were forwarded to the court and 2 percent were withdrawn.

The registered cases show a relationship between the occupation, location and nature of the offences. For instance, the fact that 63 percent of illegal felling is done by the farmers, calls for deeper reflection on the performance of legislation. The illegal fellings include lopping trees for fodder, or to reduce their shade effect on agricultural crops, the need for construction timber for cow sheds or for temporary huts used for guarding the crops from wild animals and illegally felled trees for firewood. The offenders had a permit but the trees were not marked by officials. The time frame of an official visit for the purpose of marking the trees for felling is beyond the control of the farmer. This is, in fact, one of the major reasons for illegal tree cutting, with the result that 60 percent of the offences are in rural areas against 27 percent in urban and 13 percent in semi-urban areas. The figures reflect the inability of the Forestry Services Division to reach remote areas within reasonable time for marking trees or issuing land clearance certificates. Instead, the farmers continue to fell the trees in order to meet their needs, rather than waiting for the completion of formalities. The actions of the farmers, if detected by the officials of the Forestry Services Division, are registered as forestry offences, irrespective of the circumstances.

Another group of offences concern the illegal lifting/transportation of forest products. Contractors were responsible for 44 percent, and farmers for 25 percent while offences by urban residents amounted to 17 percent and individuals working for the government to 14 percent. The major reason for this type of offence are different categories of rates for the same forest products. At present, they vary for different locations and uses.

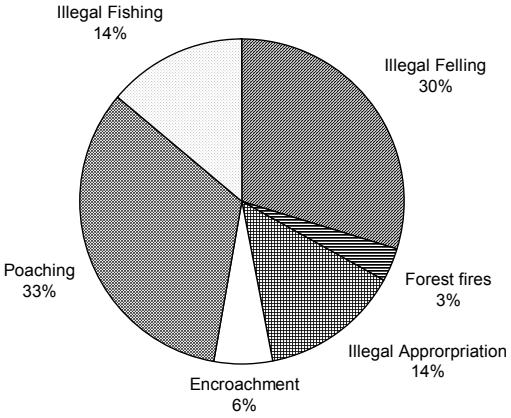
---

21 In case of seizure of parts, or products, of totally banned forest products, a reward for the informer or detector of the offence is not applicable since it is difficult to realise cash from the sale of such products (Such products as musk, bear biles, tiger bones, etc. are considered as non-tradable).

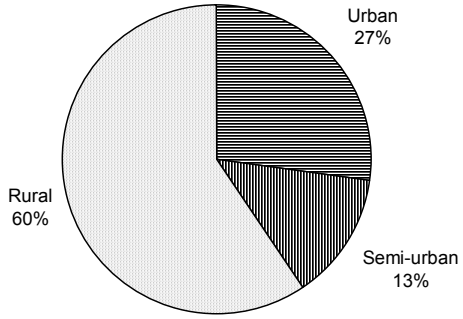
22 This is done as per Royal Decree which has been incorporated into the Forest and Nature Conservation Act 1995. Chapter IX, section 45.

Figure 31: Nature and Location of Offences, Occupation of Offenders

Nature of Offences



Location of Offences



Occupation of Offenders

Source: Forestry Services Division, 1996

An important group of offence cases involves the poaching of endangered wild animals and plants. Poaching constitutes 33 percent of the total number of registered events. Records show that poaching of the musk deer amounts to more than 70 percent of this category, due to the high price fetched in the market. For instance, as per the records of the Forestry Services Division, in 1996, the bile of the musk deer fetched Nu. 3500 to 4500 for 10 grams. When the bile eventually reaches Japan, the Convention for International Trade in Endangered Species (CITES), an international organisation which is against the trade of endangered plant and animal species, claims that musk deer bile fetches at least US$ 50 per gram. Therefore, the poaching of wild animals is encouraged by the quick and substantial economic returns. Poaching of tigers and cordiceps sinensis (mushroom) occurs for the same reasons. Most of the products are smuggled across the northern borders and eventually reach South East Asia. The pressure on endangered species, such as cordiceps sinensis which have a high traditional medicinal value, is increasing both in the country and across the borders. The remote and harsh environment in which these species live makes law enforcement difficult and expensive.

3.7 Summary of Important Aspects for Forest Policy Development

Base Line Socio-economic Data: Some aspects relating to the demographic and social structure in the three research *Gewogs* are presented in Table 18.

Table 18: Comparative Information on the Demographic and Social Structure

Elements	**Radhi**	**Shaba**	**Chumey**
Population	2156	1007	1612
Male/female ratio	51:49	47:53	45:55
Average *Sokshing* size in acres	0.5	3.25	2.5
Firewood consumption	Head loads: 37472 Trees: 27 Truck loads: 34	Headloads: 3864 Truck: loads: 37	Head loads: 870 Trees: 1037 Truck loads: 221
Number of religious centres	6	2	8
Number of religious persons	Monks: (47) Nuns: (6) *Gomchens*:(44)	Monks:(21) *Gomchens*: (1)	Monks: (65) *Gomchens* : (3)
Average Household size	5.5	6.99	8.7
Occupation	Government servants: (63) Students: (281) Farmers: (1694)	Government servants: (82) Students: (245) Farmers: (658)	Government servants: (85) Students: (256) farmers: (1203)
Residency	Permanent: 74 % Recent: 22 % Absentees: 3 %	Permanent: 100 %	Permanent: 100 %

Source: Author's compilation 1997

Natural resource flow profiles of the three *Gewogs,* are summarised in Table 19. Agricultural products are very important in Radhi and Shaba and less relevant in Chumey. While paddy is relevant in Radhi and Shaba, orchards are only important in Shaba. Products from *Sokshing* are extremely important in Radhi, but less so in Chumey and Shaba. Forests are important to all three *Gewogs,* with particular emphasis in Radhi. Pastures are only relevant for Chumey *Gewog*. Rotational cropping is quite important in Radhi, but less so in Shaba and Chumey. Government service centres are most developed in Radhi but also of importance in Shaba and Chumey.

Table 19: Comparison of Relevance of Natural Resources

Elements	Radhi	Shaba	Chumey
Agricultural products	XXX	XXX	XX
Paddy land	XX	XXX	-
Dryland	XXX	X	XXX
Orchards	-	XXX	-
Rotational cropping	XX	-	X
Sokshing products	XXX	X	X
Forests	XX	XX	XX
Pastures	X	X	XX
Government service centres	XXX	XX	XX

Highly Relevant: XXX; Relevant: XX; Less Relevant: X; Non Existent: -

Source: Author's compilation 1997

Table 20: Comparison of Relevance of Social Resources

Elements	Radhi	Shaba	Chumey
Religious persons	XXX	XX	XXX
Lhakhangs	XXX	XX	XXX
Government service centres	XXX	XXX	XX
Government servants	XX	XXX	XX
Agricultural practices	XX	XXX	XX
Patron-client	XXX	XX	XXX
Weaving	XXX	-	X
Household-household	XXX	XX	XXX

Highly Relevant: XXX; Relevant: XX; Less Relevant: X; Not Existent: -

Source: Author's compilation 1997

Social energy flow profiles of the three *Gewogs* are summarised in Table 20. Religious persons and institutions are important for all three *Gewogs*. Agricultural practices are of great importance in Radhi and Shaba and somewhat less in Chumey. The role of government servants is particularly pronounced in Shaba and of considerable importance in the other two *Gewogs*. While weaving is very significant in Radhi, it does not exist in Shaba. In Chumey, weaving of *Yathra* is practised. The patron-client

relationship is more relevant in Radhi and Chumey, but somewhat less so in Shaba *Gewog*.

Probably the most important issue that has emerged from the analysis of empirical surveys is the need for a combined and guardianship approach to forest resource management. The need to have relevant institutions at the local level becomes obvious from the field studies of the three sites. Many of the local resource management institutions have been replaced by state legislation. Economic incentives, and tenure for enhancing the involvement of local communities in the management of forest resources, need more consideration in forest policy development. This has been discussed in relation to the impact of the interventions and the changing socio-economic environment.

The second issue that emerged in the process of the field data analysis is the pattern of present forest uses within a given economic environment. Firewood, still the most necessary of forest products for the rural communities, has been highlighted as an issue that deserves forest policy attention. While firewood supply is not an immediate issue in Shaba and Chumey, it is of great importance for the households of Radhi and the eastern region in general. The non-uniform distribution of forest resources, especially in the warm temperate forest type, is a natural phenomenon that imposes limitations on sustainable forest management. Within such a setting, an appropriate forest policy has to be developed and solutions sought for. A programme approach based on co-operative action may lead to some degree of success in addressing this problem.

The third issue that is becoming increasingly controversial is the practice of combined landuse. This has become relevant for forest policy development, especially in the light of the decision taken by the RGOB to phase out shifting cultivation. A natural landuse system is emerging, based on the productive capability of the land and on social elasticity. For instance, shifting cultivation in Radhi has decreased from 3.9 percent to 1 percent over the last 40 years. These areas have been converted to permanent cultivation through a process of socio-economic development and the changing role of land resources. On the other hand in Chumey the socio-economic environment and the marginal productivity of the shifting cultivation land have favoured the abandonment of 33 percent of such land, which has now become forest. The role of shifting cultivation should be considered a dynamic one which is adaptable to new socio-economic requirements.

4. Discussion on Issues Related to Sustainable Forest Management

4.1 Towards a Combined Local and Government Resources Management Approach

The first part of the discussion analyses how the government assumed the responsibilities of resource management, and arrived at the present situation. The second part considers how the decentralisation of government responsibility for forest resources, can be carried out without major changes to the existing institutional set-up of the Forestry Services Division.

4.1.1 Changes in the Role of the Government in Forest Resource Management

The process of increasing state regulation generally changes the relationship between the resource availability and the communities from a customary one to a formal one. Such a process forfeits the minimisation of transaction costs (Kaul, 1992, p.23) achieved through customary arrangements among the community members. The difference between the local resource management institutions and government introduced land management was that the former ensured fulfilment of basic forest product needs, such as firewood, through customary arrangements, while the government institution required the individual to go through a set of procedures to acquire a permit to legally appropriate forest products. Talbot and Lynch (1995) describe the legacies of state appropriation and ownership of forests in the postcolonial era in South East Asia, and comment that it has generally shown negative effects. This procedure usually imposes a high number of transaction costs on the households concerned. It has forced households who can avoid the high transaction costs, to do so through reversion to contractual services to acquire forest resources and to sometimes use access-differential facilities to reduce their costs. The process tends to favour fragmentation of the community (Guha, 1989, p.57) and the erosion of social bonds.

The shift of resource management responsibilities, from the communities to the state, takes place at different stages. It has an impact on the social organisational capability and local resource management institutions at the community and household levels. It influences the perception of the sustainability of the forest resources traditionally used by the local communities. The changing socio-economic environment plays an important role in this context.

As substitutes for forest products become available, or can be obtained through contractual services, the use of forest resources becomes more a matter of economic stratification regulated by public authorities. It generally leads to the weakening or dissolution of local, social organisational capabilities and institutions. A shifting cultivator and a paddy cultivator will have differing perceptions of the forest[23]. The

---

[23] Seeland, K. 1991, p.5, where he quotes the Japanese J. Kawakita: 'One very important aspect in the interaction of villagers with their environment is that the Magars feel an affection and exhibit a pious attitude towards forests and have since very olden times. In this sense the close ecological relationship between the Magars and their forest is not only an economical, hygienic and social one, but also emotional, through the sense of strong traditional value orientation. In contrast to the Magars, forests are not vital to most Hindus as they subsist on paddy cultivation. The Hindu attitude toward the forest is quite different from the Magar's: they also value the forests, it is through simple interests in economic benefits, such as for obtaining firewoods.'

change of events is continuously shaping the perception of the local people, within the context of forest resource use[24].

In Bhutan, local resource management institutions, such as *Reesup*, *Chusup*, *Shingsungpa*, and *Sokshing,* based on customary rights and sanctions*,* were overlaid by the forest and land legislation. A similar development occurred in India, through the Forest Acts of 1878 and 1927, described by Kaul, 1992, Guha, 1989, Pathak, 1994 and Talbot and Lynch, 1995.

The Forest Act of 1969 subsumed the existing local resource management institutions under chap. III "Rights and Concessions", and limited free access to forests and other categories of government land, to private individuals. For instance, under Chapter V, Section 28, it states "*Every person, who exercises any right in a Reserved Forest or who is permitted to take any forest produce and every person who is employed by such person shall be bound to furnish, without unnecessary delay, to the nearest Forest Officer, any information he may possess regarding commission of any forest offence or occurrence of any forest fire. Failure to do so shall be punishable with imprisonment which may extend to one month or with a fine which may extend to Rs. 200/- or with both".* The Forest and Nature Conservation Act 1995 did away with local resource management institutions by removing the "Rights and Concessions" Section from the Act. Although the Land Act of 1978 mentioned the legitimacy of customary rights and social sanctions over agricultural land and forests, it overlooked the existence of institutions such as *Reesup* and *Meesup*. However, it recognised the local institution of *Shingsungpa* and *Chusup*, and prescribed rules and regulations on their functioning, which were included in the Act under Chapters on "*Crop Compensation*" and *"Water Canal*" respectively.

In the meantime, many government outposts were established to represent the state. This led to the state assuming responsibilities for delivering forest resources, to the communities, from state property. Resources such as forest plantations were created for the benefit of the communities. The process has led to the present situation whereby every community member expects the government to provide most of the resources for them. With the increase in the state's capacity to enforce legislation, local practices of self-reliance and customary regulations become less important.

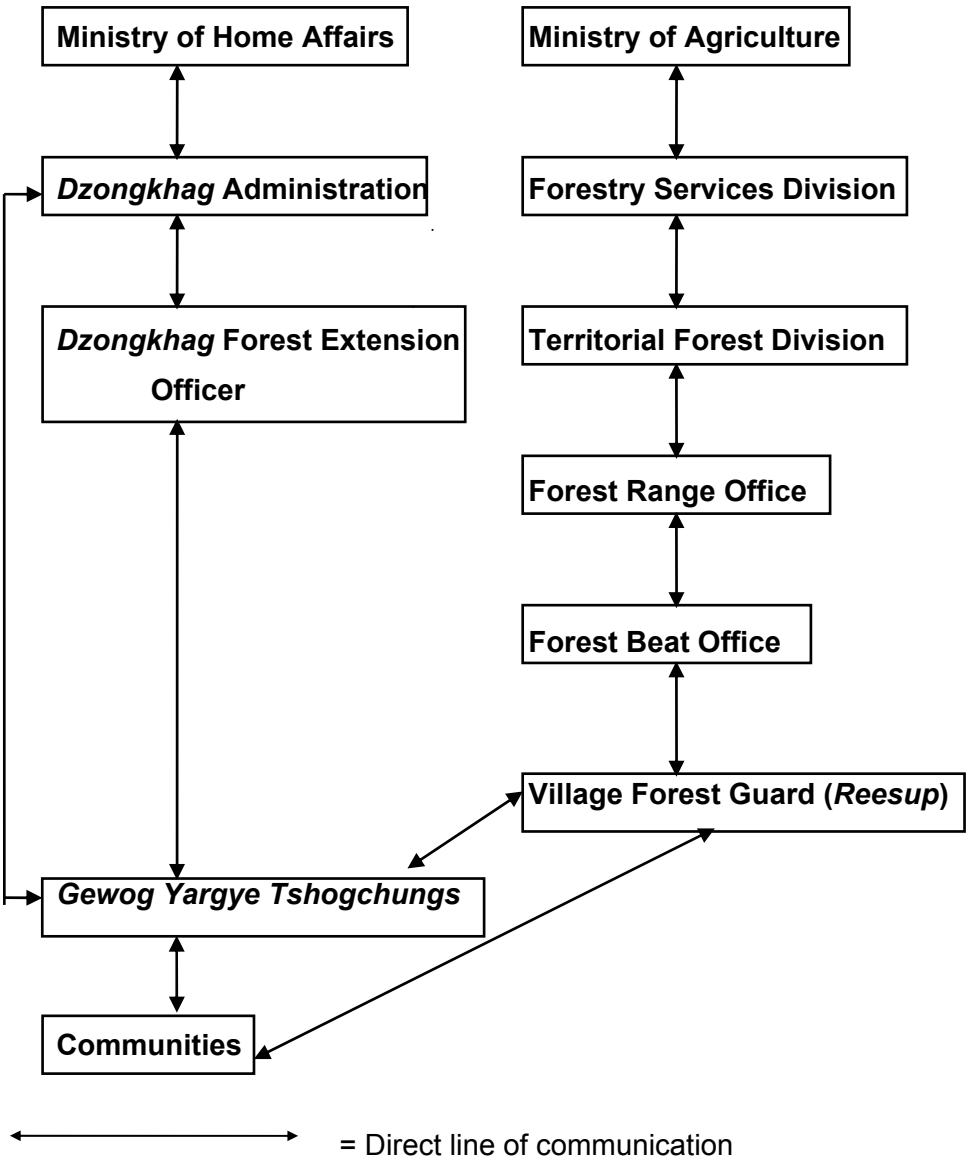
The applicable forest law provides a complex communication system between the concerned agencies, and many detailed regulations for the appropriation of forest resources (Figure 32 and Figure 33). These give rise to a patron-client relationship in which the government assumes the role of a provider and the communities see themselves as the recipients. This places local communities in the management of forest resources from where they do not see them in the same perspective. As long as public authorities provide the forest products, and as long as these resources are under the influence of the provider, participation in forest management can not be attractive to the communities. A concern that develops, is the question of what one will participate in, and with whom?[25].

---

[24] Shengji, Pei, (1995), Ethnobotany and Sustainable Use of Plant Resources. Newsletter No. 23. p.7. - emphasises the need to understand how mountain people conceptualise their ecosystem in relation to resource use patterns.

[25] Seeland, K. (1995), discusses the essence of participation and the ambivalence of the term in many cases.

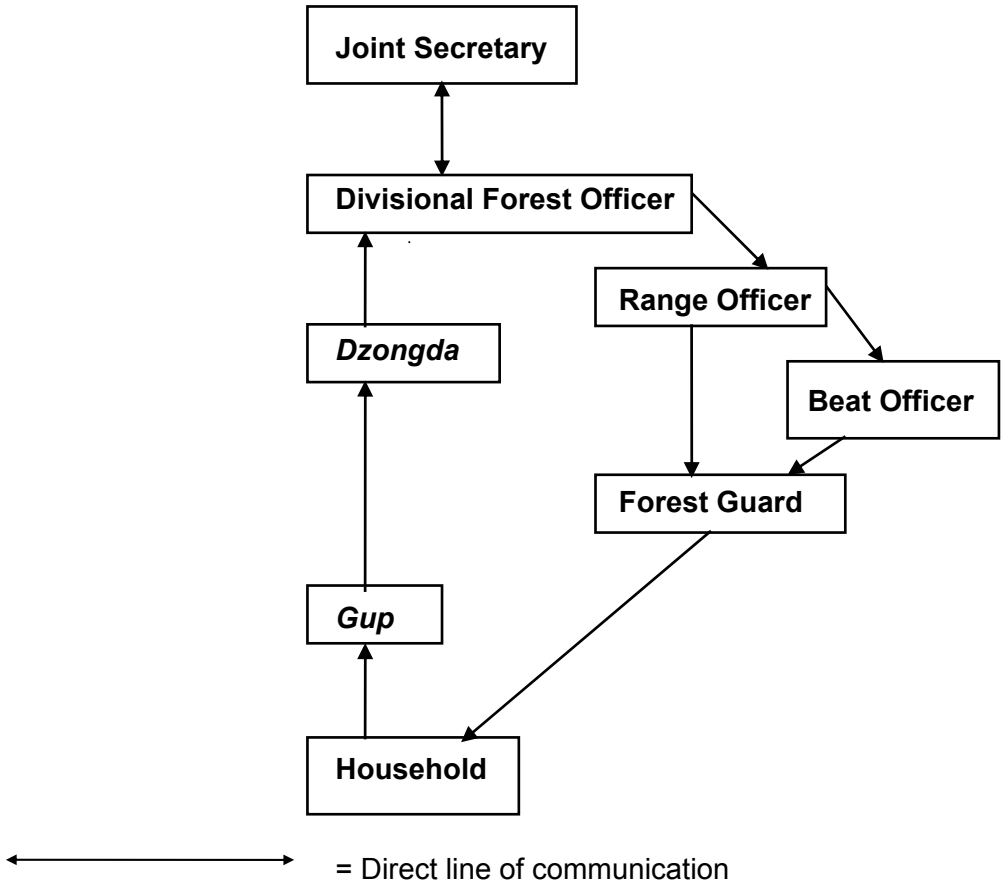
Figure 32: Existing Governmental Organisation in Regulating Forestry Activities at the Local Level



Source: Author's construction, based on the existing system, 1997.

The real option that will encourage and enhance participation of the local communities in the responsibilities of forest resource management, is to decentralise some of the state control over forests traditionally used by them. As experienced in the research *Gewog*s, without deregulating some of the management control, it may be a difficult task to translate some of the concept of participation in forest resource management, into activities. This becomes even more relevant when it is considered in the context of an action that appropriated forest resources in the past and is now intending to retransfer some of the forest benefits. Therefore, the concept of decentralisation is central to initiating the process of participation by the local communities, at terms perceived as beneficial for them. This may eventually lead to the evolution of institutions based on the local communities' needs and aspirations.

Figure 33: Existing Procedure for Households to Obtain Permits



Source: Author's construction, based on the existing system, 1997

4.1.2 Development of Forest Management Institutions at the Local Level

Resource degradation actually originates from the dissolution of local level institutional arrangements, whose very purpose was to develop resource use patterns that were sustainable. The formalising and further legitimising of previous, or existing, customary, and other rights, may provide a framework for an essential social security, enabling communities to invest their labour and time in the protection and management of the forest, and ensuring (Talbot, K. and Lynch, O., 1995) equitable bargaining processes. For the decentralisation to be effective, institutions established by communities themselves must be in place to take the role of the existing state resource management institutions. This requires an institutional infrastructure not only to exclude over-use but also to sustain them. There must be some institutionalised means of constraining individuals to at least some degree of conformity to accepted norms (Beattie, 1989, p. 165). This can only be achieved if the community members themselves have the social capability, as well as the publicly acknowledged authority, to organise sustainable forest uses. As the organisational capacity of local communities may grow over time, the government can reduce administrative regulations gradually. With changes in institutions, management systems should also change, but towards assuring benefits to the local communities which have become

institutional partners.[26] Institutions which have emerged through such a process, contribute to making the process of resource appropriation less susceptible and more equitable.[27] One proposal for an immediate diversification in the mode of forest resource appropriation could be, the reduction and simplification of administrative procedures for local forest resource uses.

There was a varied response to the question of whether local people could manage forests if transferred to them by the government. For instance, 83 percent of the households in Radhi said that local people would not be able to manage the forests if the government transferred some of them. On the other hand, 61 percent in Shaba and 62 percent in Chumey felt that local people could manage the forest if given an opportunity. The different reactions in the three localities may be more of a reflection of the perceived value of the forest products, rather than of the actual social organisational capabilities. It may also be an indication of the willingness to be involved in the management of a resource which has economic returns. In Radhi, local people have little idea of the commercial value of timber as no large scale logging is taking place in the region, whereas in Shaba and Chumey commercial logging has been going on for many years.

One way to initiate the process of decentralisation could be the establishment of a forest resource management committee, initially at the *Dzongkhag* level. In a second phase, it could be extended to the *Gewog* level as the institutions mature through a process of self-evolution. Such institutions, which evolve as a result of a new distribution of competencies sanctioned by the state, may lead to local communities having entitlement over the forest resources they have traditionally been using. It may also place them in a more convenient position to negotiate other forms of resource appropriation. An embedded institutional design along these lines (Ostrom, 1992, p.13) is a form of social capital.

The role of the *Gup*s, who are the chairmen of the *Gewog Yargye Tshogchungs* (GYT), is crucial to the process of a smooth transition of decentralisation of government responsibilities and the internalisation of forest resource management into community-based institutions. The government will be represented, in the committee, by the *Dzongkhag* Forest Extension Officer who will represent the *Dzongkhag* Administration; the territorial Divisional Forest Officer (DFO) will represent the Forestry Services Division. The Forestry Development Corporation (FDC) will be represented by the Divisional Forest Manager (DFM).[28] The participation of the *Gup*s may increase with the maturation of the institutions and with the increase in benefits from the forests[29].

The experience and qualifications of the *Gup*s and GYT members may eventually increase from the present level, due to the fact that many *Gup*s and *Chimis* have attended at least primary school and the increase in financial remuneration by the government is encouraging capable local community members to assume responsibilities as *Gup*s, *Chimis* and GYT members.[30] This may increase the

---

26 Colchester, M. (1995), Indigenous People's Rights and Sustainable Resource Use in South and Southeast Asia, in: Indigenous People's of Asia, edited by Barnes, R.H. et al. states that control and management of the resources must be vested in open, accountable institutions which respect the principle of equity.

27 Equitable distribution of resources has been a consistent policy of the RGOB during all the Five Year Plans.

28 All these agencies are usually located in one area, for example in one *Dzongkhag*. What is missing is a medium to bring them together as an organic institution.

29 Since the government raised the pay scale of the *Gup*s, it is becoming a competitive post from that of an obligatory one in the past.

30 Special emphasis is laid on the education policy of the government to encourage the students who do not wish to continue their studies further to go back to the villages.

willingness to assume more responsibilities associated with managing forest resources on behalf of the community. As the process gains momentum, the state can share more responsibility within the community-based institution in the sequence of FDC, FSD and the *Dzongkhag*. The approach favours concerted management on an institutional basis, and legitimises the use of forest resources on agreed terms and on an equitable basis.

Comparable arrangements regarding access to drinking water are already in existence. An example is the water dispute involving the Natural Resource Training Institute (NRTI), Lobeysa. The local community led by the *Gup* and GYT members of Lobeysa discussed on equal terms with representatives of the NRTI the possibility of sharing the drinking water of a source that is located within their community. After the community assessed it needs, the NRTI was requested to look for an alternative source of supply, which was found 20 km away, in Thinleygang. The scenario developed as a result of legitimacy accorded by the *Thrimshung Chenmo* 1959 (KA 1-9) and later by the Land Act of 1978 (Chapter VII Clause (A) 7-1), on the property rights of water resources.

An important implication of this approach is that the definition of 'forest', as contained in the Forest and Nature Conservation Act 1995, needs some revision in order to accommodate the emergence of community-based forest resource appropriation institutions and legitimise the use of the forest resources by the local communities.[31] This will engender a sense of psychological security among the community members. Such a spirit is considered a prerequisite for establishing viable relationships between the local communities and the government, on forest resource use and ownership.

In an effective process, the government and the local communities understand (Talbot, K. and Lynch, O., 1995) their obligations and concomitant duties, and negotiate a mutually acceptable, secure, and balanced agreement. This process ensures that the government and local communities know the optimal outcome of the bargain. Another benefit that may result from such a process, is the reduction in misappropriations of forest resources. For instance, the existing timber price in the urban areas of Bhutan creates temptation among those with vested interests, to over-harvest.[32] Institutions that have evolved in association with the broad participation of the local communities, could eventually control such a tendency and ensure that access to forest resources based on hierarchical structures, is limited.

Formal legitimisation of forest resource use will also reduce the present ambiguity surrounding the modes of forest resource appropriation resorted to by different communities. For instance, *Sokshing*, which is a government property (with the exception that the owner is permitted to collect the dead leaves), is appropriated in a different manner. In Radhi *Gewog*, most of the *Sokshing*s are under pressure from the expanding population's need for firewood. Property rights are strictly enforced by the government, as outlined in the Land Act 1978 and Forest (Chapter III, Clause (A) 3-5) and Nature Conservation Act 1995 (Chapter III, Section 12 (a)). Therefore, most of the *Sokshing* owners who would like to carry out enrichment plantations in the degraded *Sokshings* are discouraged from doing so, as the land covered by *Sokshing* belongs to the government. However, on another scale is the manner in which *Sokshing*s are being used in Shaba. Since most of the daily forest product requirements are either met from outside the *Gewog* or obtained through contractual services, the functions of *Sokshing* as a source of firewood and manure, have taken a dramatic change.

---

31 If the definition is not revised in line with the requirements in the local context, local institutions may not be effective as the legal status of forests will still remain the same.

32 FSD (1995f) report shows that 95% of the forest products are exported to India. An open border and high price for forest products (Nu.6,259/SFr.255 per cum of timber) renders forests of Bhutan vulnerable to over-harvesting.

Sokshing is now perceived as a source of land that can be appropriated for other uses, in particular, for apple orchards, which has resulted in the conversion of most of the *Sokshing*s. However, some owners of *Sokshing* have not resorted to this mode of appropriation, and have instead decided to take a 'wait-and-see' approach. Furthermore, some *Sokshing* owners were granted government loans to develop orchards, which was seen by some, as a legitimate way of converting their *Sokshing* to apple orchards, since it implied that the government shared some of the liabilities through the sanctioning of loans for the purpose.

Self-evolved institutions will require some form of medium if they are to mature into congenial substrata for a sustainable and stable forest resource management system. The medium could be an element that is conducive to the flow of social energy. The smooth flow of social energy will ensure that the resource flow is both smooth and equitable. As has been shown by the results of the field research, two factors are considered to be an effective medium for the flow of social energy - tenure over forest resources, and economic incentives from the management of forest resources. This argument may be in contrast with the role of self-evolved local community-based institutions, whereby such institutions will take care of issues such as tenure, economic return and access-differential to forest resources. However, an analysis of field data shows that the gap between the various levels is too wide to encourage and motivate the evolution of some types of institutions at the local level. At the initial stage, the tenurial system and economic incentives from forest resources could be the bridge between the local communities and the state. One of the limiting factors of the theory of self-evolved institutions and decentralisation of some state control of forest resources for sustainability and stability in Bhutan, is the question of who will initiate the process of evolving a forest resource management institution. An activity, such as the provision of a tenurial system and economic incentives, in which the local communities and the state are involved together, could start the process. Otherwise, the mode of negotiation will have to be drastically altered to ensure that the institutions are recognised as legal sanctions, and this may need quite some time. The revision of the Forest and Nature Conservation Act 1995 will need to be carried out corollary to the change in tenurial and utilisation rights over the forest resources.

4.2 Towards a Sustainable Supply of Firewood in Rural Areas

4.2.1 Firewood Consumption and Extraction in Rural Areas

With 64 percent of the country under forest cover and a low population of 600,000, the chances of a shortage of firewood or other forest products, is minimal at the national level. However, at the local level, there is a high variability in the distribution of the forest cover. The concentration of human settlements in the valleys and in other favourable locations, reduces the per unit forests that are economically feasible for harvesting. This imposes extra pressure on nearby forests. Such a trend was observed in Radhi and the adjoining *Gewog*s. Field surveys also show no evidence that this dependency on the forests for firewood, will decrease in these regions for a long time.

More than 75 percent of the firewood extracted in the rural areas is unaccounted for in the official records. This means that the harvesting is unregulated and therefore the extraction in some localities could be beyond sustainable limits. The present quality and growing stock of forests, around Radhi *Gewog* in particular, and in Trashigang *Dzongkhag* in general, has shown this effect. Forestry development is by nature, a long term activity, which has to be matched by a long term perspective. Therefore, a programme approach to the firewood supply problem in selected areas, could be a viable solution. The state would have to play a supporting role by assisting the *Dzongkhag*s who are presently responsible for providing firewood permits to the

households in the rural areas. The households in Radhi *Gewog* said that they would be willing to share the cost of firewood extraction which would be helpful, particularly to the lower income group of the *Gewog*. Presently, the nonavailabliity of firewood within easy reach, and an absence of cash to transport it over long distances have placed some households in socio-economic difficulties.

Physical location and distribution of the forest areas: During the field survey, it was observed that the terrain in Radhi is very rugged and that 65 percent of the total land area is under cultivation. A sample measurement using the clinometer showed that the average gradient of the *Gewog* is 45 degrees (100 percent). The survey also showed that all existing forests are confined to the periphery of the *Gewog,* interspersed with shifting cultivation areas and pastures. The distance between these patches of forests and large areas of coniferous forests is one day's climb. Therefore, the pressure on the existing forests, close to the *Gewog,* rises with the increase in population which is 2.9 percent (RGOB, Ministry of Planning, 1996b). A similar trend was observed in the adjoining *Gewog*s of Phongeme and Shongphu. Maps produced by the LUPP (RGOB, MOA, 1995b) also showed this trend. The topography in Shaba and Chumey is less rugged and forest cover more evenly distributed. Analyses of land use maps also indicate that large parts of the degraded forests are clustered around human settlements, predominantly in the warm temperate and sub-tropical parts of the country. 31 percent of the households said that the reason for the decrease of forest cover in Radhi, was the high population density, while in Shaba 38 percent of the households said that the expansion of horticultural land use has contributed to the decrease in forest cover.

Access to forest areas: A study carried out by the Forestry Services Division in 1985 showed that in most of the coniferous forest types in inaccessible areas, the growing stock was decreasing due to the internal decay of trees. Such forests are located beyond practical reach of the rural households. The constraint is therefore, not the inadequate extent of forests, but the physical location of these forests relative to the location of the human settlements. While some of the households in Shaba can afford to transport firewood from long distances, the lack of financial resources in Radhi have forced households to rely on available forests, irrespective of their unsustainable level of harvest.

The analysis of harvesting forests for firewood is based on the observations made during the field survey, and not on the analysis of existing prescribed rules and regulations. As firewood is the most important forest product in Radhi, its shortage in the *Gewog* has forced the households to go to Phongme and Yabrang (adjacent *Gewog*s). As per the rules of the FSD, all trees have to be marked by a forester before they are felled.[33] This is carried out in accordance with the general guidelines issued by the FSD. The permit is obtained from the FSD office. The observance of the rules generally ends at this stage of the process. Permit holders wait for the FSD official to mark the trees, although it is usually beyond the capability of foresters to cover all the rural areas within a time-frame that suits the permit holder, with the result that he will begin felling the trees of his own accord. The number of trees he fells may by far exceed the number he applied for or had been sanctioned. This has two implications on the sustainability of the concerned forests. Firstly, the level of extraction may be beyond sustainable limits or sustained yield quantity. This is very likely, as a household with an average family size of 5.6 persons would need about 12 cubic meters of firewood. In terms of number of trees, it is equivalent to 10 (at an estimated volume of over 1.0 cum. of firewood per tree) and generally only 5 to 6 trees are sanctioned by

---

[33] FSD, Marking Rules, (1996c) 'over-matured, dead, dying, diseased, malformed and wolf-trees must be given preference in the selection of trees to be removed'.

the FSD. Secondly, the more accessible and closer the forest areas are, the more they are in continual use, until they are completely degraded. For instance, in Radhi the nearby forests are completely degraded, so that households must go to the next *Gewog* which has a lower population density and larger forest area.[34]

Table 21: Firewood Consumption (1992 to 1995) for Thimphu City and Nearby Villages (Cubic Meters)

Sl.	Particulars	92 - 93	93 - 94	94 - 95	Total
1.	Government	-	560	910	1,470
2.	RBG	1,421	861	1,337	3,619
3.	RBA	3,444	3,024	994	7,462
4.	RBP	2,555	2,457	-	5,012
5.	GREF/IMTRAT	1,708	2,520	273	4,501
6.	Villagers	7,826	7,154	1,092	16,072
7.	Urban	9,387	6,419	11,683	27,489
	TOTAL	26,341	22,995	16,289	65,625

Source: Progress Report of Divisional Forest Office, Thimphu Division, FSD, 1995f

RBG = Royal Body Guards

RBA = Royal Bhutan Army

RBP = Royal Bhutan Police

GREF = General Reserve Engineering Force

IMTRAT = Indian Military Training Team

Regulations of firewood extraction: Regulations for the extraction of firewood are clearly laid out in the Forest and Nature Conservation Act 1995 (Chapter III, Section 12). A firewood permit is issued free of charge to the individual concerned, at the recommendation of the *Gup* and *Dzongda*. The policy of the government is to encourage the local people to use trees of inferior quality, or ones that are dead or dying, as firewood and this instruction is noted on the permit issued. These trees must be marked by a forest official before they can be appropriated as firewood, as using unmarked wood is considered an offence which carries penalties. However, it was observed during the field survey in the three *Gewogs* and other parts of the country that more than 75 percent of the firewood is extracted without either marking or a permit. This is difficult to detect with only limited forestry personnel. It was also observed that timber species of high commercial value are used as firewood.

Firewood is an everyday necessity for cooking and heating in winter. According to the 8th FYP (1997 - 2002) projection of programmes, the majority of the rural areas will not have electricity or motors for sometime to come. Fire places or stoves, which burn firewood, are considered to be sacred places and will continue to be a source of spiritual resource for the household members. There are, therefore, social and

---

[34] A similar situation in some parts of India has been described by Guha, R. (1989), The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya. and Poffenberger, M. and McGean, B. (eds.), (1996), Village Voices, Forest Choices. They also describe the co-relationship between the population and forest degradation in India.

Ives, Jack and Messerli, Bruno (1989) The Himalayan Dilemma: Reconciling development and conservation. pp.43-66. They argue that local population can not be blamed for the deforestation in the Himalayas.

economic reasons why households will continue to depend on firewood for many more years. With limited access to market and tradable goods, sources of cash income are also limited. This reduces the affordability of firewood, should the present royalty (Nu.10 per tree, FSD, 1996) be increased.

The Master Plan of Forestry Development (RGOB, 1991) estimates a total 230,000 ha of degraded forests, which amounts to almost 8 percent of the total forest cover of 25,787 sq.km. The survey, which was carried out using Spot Imagery by the Ministry of Agriculture in 1995, shows a figure of 32,580 ha of scrub or degraded forests. The cause of the degradation can not be completely attributed to the haphazard extraction of firewood, but with more than 90 percent of the total wood harvesting carried out in the form of firewood, the major share must be borne by firewood extraction. The land use map produced by LUPP, MOA shows that a large part of the degraded forest land is clustered around human settlements, mostly in the warm temperate and sub-tropical regions. Comparing the maps of 1958 and satellite imagery of 1989, the FMP has estimated the annual loss of broadleaf forest to:

- agriculture	8,000 ha
- other open land (deforested)	5,600 ha
The decrease in the broadleaf forest annually is	13,600 ha

Bhutan's per capita fuelwood consumption is one of the highest in the world at 1.92 cubic meters (RGOB, 1991). Hoon (1986, p. 23) calculated an average energy consumption of 35MJ/kg per capita/day for cooking using firewood, kerosene and, dung in Kumaon Himalayas. The total growing stock has been calculated at 686.31 million cubic meters. The annual fuelwood consumption of Bhutan is estimated at 1.2 million cubic meters (FSD, June, 1996). This is beyond the sustainable limit estimated by the FMP. Of the annual permitted cut of 11.96 million cubic meters, only 1.18 million cubic meters is estimated to be in operable areas. Therefore, over harvesting is evident, even if it is only firewood extraction that is taken into consideration. Besides firewood extraction, construction timber, and logs to supply wood-based industries and export are harvested. FSD (1996) records show that 210,000 cubic meters of timber are harvested annually, in addition to 250,000[35] trees felled as part of the programme to supply subsidised construction timber in the rural areas in the form of standing trees.

The need for a policy on firewood extraction is urgent, given that it is considered a basic forest product, while at the same time operable areas are limited. If new areas are not opened and alternative sources such as the logging residues (lops and tops left after logs have been taken out) are not used, the present annual deficit will grow from the present operable areas. In other words, the annual cumulative deficit will lead to the harvesting of operable areas far beyond their sustainable limits. Paradoxically, on the other hand, negative increment may set in, in the form of a 'die-back' due to the old age of trees, that will lead to the degeneration of growing stock in inoperable areas. In addition to the rural needs, substantial firewood is extracted for use in urban areas and institutes. Following studies carried out on fir (*Abies densa*) die-back in 1985 (RGOB/FAO, et al. 1985) in Thimphu, Paro and Ha revealed that one of the factors for the die-back process was the old age of the fir trees. The fir forests of Bhutan are more than 400 years old and are usually limited to inoperable areas, due to the nature of their ecological habitat, at an altitude of 3000 mamsl.

---

[35] Information on Forest Resources and Development, as on 30th June, 1995, pp. 4,5.).

Table 22: Projection of Fuelwood Consumption in Relation to Population Increase (1997 - 2017)

Year/Commencement of 5 Year Plan	VIII Plan -1997 - 02	IX Plan - 2003 - 07	X Plan - 2008 - 12	XI Plan - 2013 - 17
Estimated Population in '000	620/ 2.92% **	742/ 2.23% **	808/ 1.8% **	881/ 1.42% **
Fuelwood Consumption in '000 cum				
(Base Case) Domestic	1,351.1	1,513.8	1,696.1	1,900.3
Other Sectors	223.8	229.8	237.1	245.9
TOTAL	**1,574.9**	**1,743.6**	**1,933.2**	**2,146.2**
Best Case				
Domestic Sector	1,246.7	1,328.7	1,415.4	1,508.1
Other Sectors	223.8	229.8	237.1	245.9
TOTAL	**1,470.5**	**1,558.2**	**1,652.5**	**1,754.0**

** estimated growth rate

Source: Adopted from RGOB, 1991.

The overharvesting of forests for firewood is predominantly a local problem. In and around Radhi *Gewog*, there is no doubt that the present growing stock (assessed during the field survey) is depleted and will continue to be so until other measures, such as alternative areas, are identified. However, this is not a concern in Chumey as lower population density and physiogeographical conditions create a more congenial environment, in which tree species thrive. In Shaba, alternative sources of energy and methods of appropriating firewood, usually from outside the *Gewog,* have reduced pressure on the existing forests. In light of such local variability in the condition of resources and in people's perceptions, it is evident that the challenge lies in formulating an effective national forest policy which considers the local situation and meets the varying demands of different regions. One way of meeting this challenge, is through local community institutions evolving as a result of the state's policy of decentralisation.

There is an over-lap of locations where firewood is collected. Table 21, for example, shows that in an average of three years, more than 75 percent of the firewood supplied by Thimhpu Forest Division serves urban consumption. However, all firewood originates from the rural areas. Most of the management plans now include a section concerning firewood supply to the urban areas. Since local communities are not aware of such resource management plans, some of the areas become inaccessible to them. This has a cumulative negative impact on forest resource use in general, but particularly, in relation to firewood extraction by rural people. Once a particular forest area has been worked in accordance with the management plan, further yield becomes unavailable to the local people.

The distribution of the forests, in relation to the location of the communities, make it even more complicated to develop a practical firewood extraction policy. As mentioned

earlier, the forests in Radhi are so unevenly distributed, that for reasons of distance and difficult terrain, some households find it more convenient to go to the next *Gewog.* Given such a scenario, what kind of policy for firewood extraction can be implemented, considering that input units are based on *Gewog* administrative units? This calls for a national firewood extraction policy that aims to ensure a steady supply of firewood and at the same time reducing overharvesting in the operable areas.

4.2.2 A Proposal for a Programme Approach Based on Co-operative Action

Decentralisation vs Regulation of Firewood Supply in Rural Areas: The present mode of firewood extraction by the local communities is decentralised by default in many parts of the country, especially in the remote areas. As discussed earlier in the context of the enactment of the Forest Act in 1969, the existence of rules and regulations makes little difference to the rural communities, since they inhabit areas rarely covered by the state administrational infrastructure. On the other hand, the state is not concerned about this situation, as there is little opportunity in the remote areas for the local communities to mis-use, or harvest, beyond what is actually required. However, this scenario may develop into one of the priority issues to be dealt with by the state, in areas where such rules are eventually enforced. For example, the analysis of forest offence cases (1991-1996) shows that more than 60 percent of the recorded forest offences are committed in rural areas. Most of the farmers felling trees for firewood, lop trees for fodder and clear saplings for cultivation. Since taxes for the rural use of forest products are negligible, the offence is for felling the tree before it has been marked by a forest official.[36]

This is the dilemma for both the local communities and the state. For the state it is difficult to cover all the remote areas with administrational infrastructure and to complete the formalities in a reasonable period of time. For the local communities, it is difficult to wait for an official to mark the trees. The issue is, to what extent should this strategy of regulated, and yet de facto deregulated, policy of firewood extraction continue within the context of potential issues, in the long run. The essence of the assessment is that once self-evolved institutions are in place, firewood extraction should be decentralised, particularly in remote areas.

The programme aims to show how a decentralised firewood extraction strategy would fulfil three objectives: 1) assurance of a steady supply of firewood, while maintaining sustainable limits of increment; 2) reduction of conflicts and offences related to firewood extraction 3) promotion of local community-based forest resource management institutions, based on mutuality and co-operation. Opening of certain areas, for regular local uses, which were closed for a recovery period at the start of the project, will also encourage the communities to co-operate more closely with the state. Managing the forest resources in a sustainable manner will be their concern.

Consultation with interest groups: The first activity will involve consultations between the different interest groups. For example, the *Dzongkhag* Administration should examine possible alternative methods for the extraction of firewood by the communities. Unless the change is arbitrated by the concerned authority, conflicts could arise during the process, which could generate counter-productive results. On the other hand, the genuine commitment of the concerned agencies, to stabilising the firewood extraction at a sustainable level, will go a long way towards making the process meaningful for the local communities. It is also important to ensure that these

---

[36] As per FSD rules, all trees before they are felled have to be marked - this is considered to be the only legal action. - Royalty for one tree is Nu. 10 (Sfr. 0.40) for rural use against commercial royalty of Nu.3,400 (Sfr. 139) with a girth class of 8' to 9'11".

two agencies, i.e. *Dzongkhag* Administration and FSD, are responding to innovative approaches.

Assessment of the resource situation. The existing situation has to be assessed. This will involve carrying out an inventory of the existing forests traditionally used by the communities for the extraction of firewood. The capacity, of these forests, for natural regeneration, has to be analysed in relation to the pressure from grazing. The size of the communities and the number of users have to be taken for reference. It is important to record the average distance of the forests from the location of the communities, for the planning of future inputs such as access improvements. The inventory data should also include on-going commercial logging activities and their location in the community. These activities should lead to the preparation of a management plan for the sustainable supply of firewood, to the local communities, from specific forest areas.

Management planning. The preparation of the management plan is, to a certain extent, a reflection of the whole exercise of the project. The prescriptions of the management plan will determine the implementation process. Before finalising the plan, discussions should take place, concerning possible alternative sources of firewood. This is of particular importance, as some of the forests traditionally used by the local communities may have to be closed for a certain period. Cost-sharing arrangements acceptable to the local communities and to the government agency concerned, will have to be in place before the implementation of the project can begin. The identification of new forest areas from where firewood will be harvested and the mechanism for its delivery to the local communities are a necessary part of the management plan. The location of a firewood depot may have to be decided, based on a general consensus of the local communities and the government agencies,

Implementation of joint management approach: The implementation of the management plan requires the participation of the *Dzongkhag* Administration, FSD, FDC, donor agency (if necessary), GYT, and the concerned local communities. There must be a clear understanding between these entities in terms of each other's role in the implementation of the management plan. The time-frame, the level of involvement of the state agencies and a schedule for the further sharing of responsibility once the local-level institutions are in place and functioning, must be clearly stated.

The implementation scheme should also clearly specify the time schedule for the closure of the forests if necessary. The criteria for the closing of forests that are considered to be degraded will have to be a joint agreement between the local communities and the concerned government agency. Such a process will ensure that some do not become suspicious of the government's intentions, which could then have a negative impact on the whole process-stabilisation of firewood supply and sustainable extraction practices, and evolution of local community-based forest resource management institutions.

Project evaluation: The evaluation of the project should form one of the most important activities of the process. It will indicate whether or not the project has been successfully implemented. Evaluation results will also guide further inputs needed to correct some of the activities of the project, in order to make the decentralisation more effective in engendering a practice of sustainable firewood extraction, and the evolution of local community-based, forest resource management institutions.

Establishment of a combined local firewood extraction institution on a pilot basis: Analyses of field surveys show that there are no visible local institutions capable of absorbing inputs efficiently from outside, or making co-operative approaches to forest resource management an effective mechanism. Within the changing socio-economic environment, the local communities have to play an increasing role in the management of the resources they use. Therefore, a possible prudent approach would be to

establish an institution at the local level, with combined inputs from the government and the concerned communities. This could lead to the gradual evolution of an institution comprised of the individuals who are the users of the firewood. It is crucial for the key players in the use and supply of the firewood, to be involved, from the outset, in the institution's evolution. The institution must also be flexible, so that the role of each partner, including the government, can adjust to changing needs.

Within the present socio-economic setting, there will be variations in the level and depth of consultations among the partners. This will level off as the institution matures and the benefits from the programme permeate the households. A simple, combined approach to firewood supply may therefore lead to the evolution of resource management institutions at the local level.

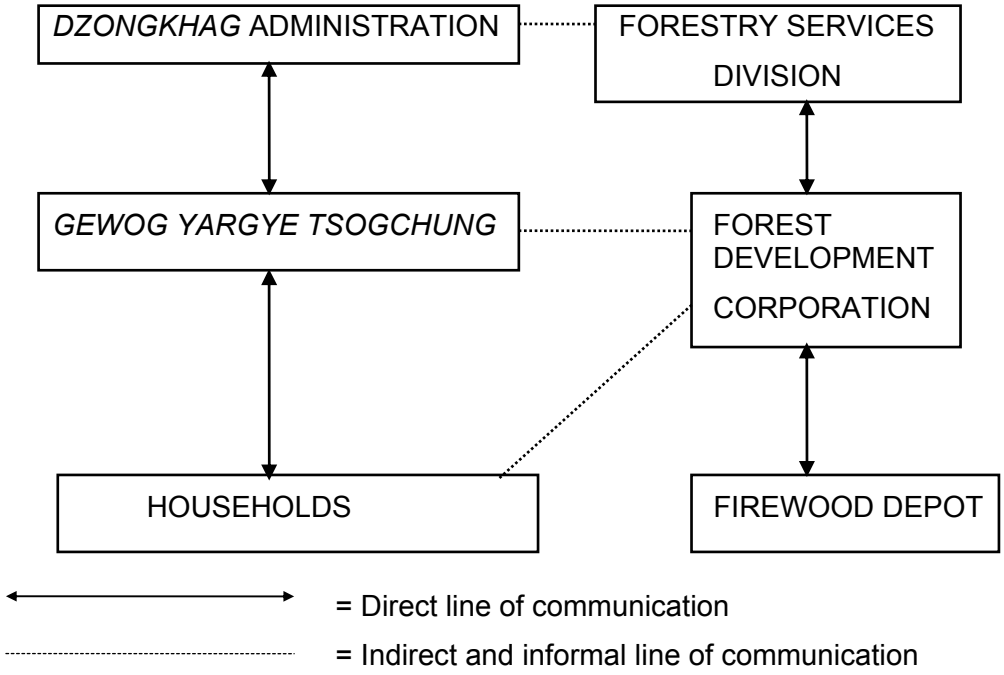
A *Gewog* Firewood Supply Management Committee could be one possible mechanism of implementing the long term programme of resolving the firewood supply problem. The inclusion of the members in the *Gewog* Firewood Supply Committee could be based on the agencies concerned with firewood supply, and possibly include the *Gewog Yargye Tshogchung*, *Dzongkhag* Administration, Forestry Services Division and Forest Development Corporation.

The establishment of the *Gewog* Firewood Supply Management Committee will have to be approved by the Ministry of Agriculture and Home Affairs to gain legitimacy. The legal framework should be developed and approved by the concerned Ministries. The framework should specify authority, principle types of contracts and conditions under which they will function. The general obligations and conditions of the framework must be drawn from the Forest and Nature Conservation Act 1995 and Land Act 1978. The framework should also include the rights and obligations of the Committee to the state, as well as to the local communities. The Committee's authority to sanction and withhold household members rights of access to the firewood, must be clearly stated.

More specifically, the role of the committee members, in the day-to-day functioning of the committee, must be clarified. The endorsement of the *Dzongkhag* Administration is essential for the establishment of the committee in which the *Gewog Yargye Tshogchung* is involved. The *Dzongda* could represent the *Dzongkhag* Administration, while the latter will also communicate directly with the Forestry Services Division, on matters beyond the concerns of the committee. The Forestry Services Division could be represented by the local Divisional Forest Officer who will ensure that adequate forest areas are made available to the committee for harvesting and at the same time monitor the implementation of the rules and regulations. The Forest Development Corporation will be represented by the local Forest Divisional Manager. Based on the agreed mode of harvesting of the firewood, it will be responsible for the delivery and the management of the firewood depots. The *Gewog Yargye Tshogchung* will be represented by the *Gup*, *Chimi* and the GYT members, who will ensure the proper distribution of the firewood once it has reached the depots.

Once the committee has been in operation for a period of five years, an evaluation should be carried out. If found useful in addressing the problem of firewood shortage, while, at the same time engendering the evolution of local forest resource management institutions, it could be replicated in other parts of the country.

Figure 34: Firewood Supply Mechanism at the *Gewog* Level



Source: Author, 1997

4.3 Towards Alternative Strategies in Dealing with Shifting Cultivation

4.3.1 Issues

The practice of shifting cultivation is analysed with regard to the following issues: 1) its implications for land use, 2) its impact on ecology and biodiversity, and 3) its effects on growing stock of timber, and its socio-economic implications. Based on the analysis of the three elements, some alternative approaches to shifting cultivation are laid out.

Implications for land use: Shifting cultivation is concentrated in sub-tropical and upland broadleaf forest types (Upadhyay, 1988). Table 23 shows that the percentage of shifting cultivation area against permanent cultivation ranges from 5 percent to 132 percent. In other words, in *Dzongkhag*s such as Pema Gatshel and S/Jongkhar there is more shifting cultivation area than permanent cultivation area. The study carried out by FAO/RGOB in 1986/87 (Upadhyay, 1988), also revealed that the distribution of the areas under such practice is characteristic of their remoteness and the absence of market outlets for agricultural products. It is difficult to state that the practice is deeply rooted in the tradition or culture of the people who practice shifting cultivation, as, wherever feasible, most of the shifting cultivation areas have been converted into permanent cultivation or abandoned for economic reasons. The ease with which the practice is abandoned for another type of agricultural practice, or adjusted to suit alternative sources of food supply, reflects this trend. For instance, in Radhi, as per landuse survey (1995), only 1 percent of the area is under shifting cultivation. However, as per land records (1954/55), 3.9 percent is recorded as shifting cultivation. This shows that almost 75 percent of the shifting cultivation area has been converted into other forms of land use. In Chumey, the total arable land, including shifting cultivation, has decreased from 1162 ha to 682 ha as per the land use survey (RGOB, 1995b). This is a reduction of almost 50 percent in arable land, which has now become forest as a result of long fallow period.

As reflected in the Land Act 1978 (Chapter III, Clause (A) 3-9.), shifting cultivation (*tseri*) has the same legal ownership status as any category of land, such as dry land (mixed farming without irrigation) and wetland (paddy). According to the Act, the only difference between permanent land and shifting cultivation land, is that the government must be informed after converting shifting cultivation to permanent cultivated land. However, the Forest Act 1969 (Chapter II, Section 8 (b) and Forest and Nature Conservation Act 1995 (Chapter VIII, Section 29 (b) put some restrictions on the practice of shifting cultivation. As per this legislation, while it was implied that the old practice of shifting cultivation can be continued at the forbearance of the state, fresh clearances of forest for shifting cultivation were prohibited.[37] A policy decision was taken during the 7th FYP to phase out shifting cultivation by the end of the plan period (June 1997). Furthermore, the National Assembly adopted a resolution which stated that, if *tseri* or *pangzhing* land was left fallow beyond twelve years, it would automatically revert to government forest. This resolution was reaffirmed by the 74th Session of the National Assembly in August 1996.

There is a substantial difference between the area under actual shifting cultivation and what is recorded as shifting cultivation. In Shaba, the practice of shifting cultivation is non-existent, as all arable land is permanently and intensively used. This trend of land use is also a reflection of social elasticity within the communities practising shifting cultivation and other land use forms. In other words, shifting cultivation is practised according to the amount of available labour, and food demands of the household, and it provides the cultivator with a high degree of potential to react to the peak and lean seasons of the year. Social elasticity also allows farmers to adjust to annual variations in agricultural production caused by bumper harvests, or by calamities such as crop failures, or damage to crops by wild animals or flooding. It also maintains the self-esteem of the shifting cultivators, as they are not forced to seek help from the neighbours or the state.

The study of shifting cultivation in Zhemgang *Dzongkhag* by the *Dzongkhag* (1995e, p. 90) found a similar trend among the shifting cultivators of the *Dzongkhag*. It revealed that shifting cultivation is practised to provide a reserve source of food when irrigated crops fail, or when the harvest has been poor. Through such a practice, the shifting cultivators have avoided having to work as seasonal labourers during periods of grain shortages. It follows that shifting cultivation is practised according to the social organisational capability and the ability to adjust to food shortages or over-abundance. Forcing those farmers who practise shifting cultivation to make specific land use decisions within a time-frame, saps out the social elasticity. This leads to land use complications later on, as their mode of social performance is to change and adapt, while a shift towards permanent agricultural structures may reduce this capacity to react to environmental change.

---

[37] Forest Act 1969, Chapter II, Section 8 (b) states the practice of shifting cultivation (Jhumming) in the areas where it was practised prior to issue of this Act, His Majesty's Government reserves the right to withdraw this concession if such land endangers the safety of Highways and public property. Fresh clearance for shifting cultivation is strictly prohibited and offenenders [sic] shall be punishable under Section 7 of this Act.' and Section 7 of the same chapter states: *'Any person who commits any offence [...] shall be punishable with imprisonment which may extend to three months or with fine which may extend to Rs.300/- or with both in addition to such compensation for damage done to the forest as may be ordered by the convicting court.*' '

Table 23: Distribution of Shifting Cultivation Area (in Sq.Km)

Dzongkhag	*Tseri* Area	Permanently cultivated area	Forest area	Geographical area	% of *tseri* against permanent area	% of *tseri* against forest area	% of *tseri* against geographical area
Bumthang	-	70	1,237	3,000	-	-	-
Chirang	88	152	618	890	58	14	1
Dagana	22	83	778	930	27	3	1
Gasa	-	23	1,036	5,020	-	-	-
Gaylephug	17	225	1,597	1,890	8	1	1
Haa	29	35	1,178	1,730	83	2	1
Lhuntshi	61	122	1,699	2,900	50	4	2
Mongar	55	151	1,655	1,920	36	3	3
Paro	33	113	1,526	2,130	29	2	1
Punakha	-	-	-	-	-	-	-
Pema Gatshel	87	66	336	490	132	26	18
Samchi	122	362	1,337	1,950	34	9	6
S/Jongkhar	261	201	1,653	2,150	130	16	12
Zemgang	88	98	2,119	2,420	9	4	4
Trashigang	203	311	2,907	4,070	65	7	5
Thimphu	7	132	2,158	2,760	5	1	1
Trongsa	76	96	1,309	1,750	113	6	4
Wangdue	-	196	2,572	4,250	-	-	-
Bhutan	1,151	2,409	25,715	40,250	48	4	3

Source: Upadhyay, 1988, p. 44.

Table 24: Comparison of Shifting Cultivation Area between Landuse Survey and Land Records

	As per Negi (1983)		As per RGOB Land Records	
Region	**% of *tseri***	**% of permanent cultivation land**	**% of *tseri***	**% of permanent cultivation land**
Western	6	3	8	1
Central	16	18	16	2
Eastern	36	17	30	4
Southern	42	20	45	6
Country	100	32	100	12

Source: Upadhyay, 1988, p. 42.

Ecology: A common belief, concerning the effects of shifting cultivation, is that once the vegetation has been cut and burnt, all fertile top soil is washed away by the rain, the area degenerates into infertile land and the biodiversity of the area is reduced.

According to other studies, this view is debatable.[38] Conklin (1954) found the practice of shifting cultivation linked to the cultural and sociological matrix in the Hanunoo tribe in the Philippines. Since, the practice is inherent in their cultural and sociological patterns, it ensures the sustainability and productivity of the land's resources. Several studies on the practice of shifting cultivation have been carried out in the Indian states of Orissa, Bihar, Assam and north-eastern states, in collaboration with United Nations Education, Scientific and Cultural Organisation (UNESCO), under the programme of Man and Biosphere in 1983. UNESCO carried out similar studies in the Philippines, Thailand, Malaysia and Indonesia. Most of these studies show that in many parts where it is practised, shifting cultivation is an appropriate land use. Under traditional shifting cultivation, the use of mechanical tools are minimal, ploughs are not used, no draught animals are required and even the harvest is reaped by hand (McNeely, n.d.).

A joint case study entitled 'Alternatives to Shifting Cultivation', carried out in Pema Gatshel by the Royal Government of Bhutan and the Food and Agricultural Organisation (FAO) in 1986/87, did not reveal any devastating negative impact of the practice of shifting cultivation.[39] As the shifting cultivation area is covered by vegetation throughout the year, except for a brief period after the slashed vegetation has been burnt, it is possible that soil erosion could be much less significant in these areas, than in the steep sloped, permanent dry cultivation area, where the soil has been tilled. In fact, the practice of shifting cultivation comprises of a highly organised, site-specific, crop production system, developed in response to local environmental and cultural conditions.

Biodiversity: The loss of biodiversity as a result of shifting cultivation is less documented than the ecological damage. A study carried out in Zhemgang *Dzongkhag* (1995e, p. 90) showed that in some shifting cultivation areas, new species were observed, especially wild foods such as mushrooms, wild potato and wild banana. These new species contribute to the increase in biodiversity in a larger context[40]. A study by the International Union for the Conservation of Nature and Natural Resources discovered that, in northern Thailand, about 120 crops are grown, including 75 food crops, 21 medicinal crops, 20 for ceremonial or decorative purposes, and 7 for weaving or dyeing. The Hanunoo, of the Philippines may plant 150 species of crops at one time or another in the same swidden.[41] The study also found that under appropriate systems of shifting cultivation, wildlife flourishes, with elephants, wild cattle, deer, and wild boars all feeding on abandoned shifting cultivation areas; tigers, leopards and other predators are attracted by the herbivores. McNeely quotes Wharton (1968) who provides evidence that the distribution of the major large mammals of South East Asia is highly dependent on shifting cultivation. Some of these wild animals become a source of protein for the shifting cultivators.

Growing Stock: One of the major negative impacts of haphazard shifting cultivation is on the growing stock of the forests. Since all vegetation is either cut or burnt, the increment put on during the fallow period is completely lost. This reduces the growing stock of the forest. For instance, within a fallow period of ten years, fast growing species such as blue pines (*Pinus wallichiana*) could have accumulated 100 cubic

---

38 Conklin, Harold C. (1954). p.140-141. He argues that the practice of shifting cultivation is not as environmentally damaging as most people make it out to be. Guha, R. (1989) and Poffenberger, M. et al. (1996) also imply that the negative impact of shifting cultivation was not proved but was used as a means to control access to forests during the British rule in India.

39 See Upadhyay, K. (1988), Alternatives to Shifting Cultivation.

40 RGOB Resource Inventory of Zhemgang *Dzongkhag*, 1995e. Carried out jointly by the *Dzongkhag* and a project supported by the Royal Government of the Netherlands.

41 Refer to McNeely for a detailed discussion on swiddens and biodiversity conservation.

meters (a standard annual increment of 10 cubic meter per ha is adopted by FSD) of growing stock per ha. All this is lost when the area is slashed and burnt for cultivation.

According to a survey by LUPP (RGOB, MOA, 1995b), there are 883 sq.km of area under shifting cultivation. In Bhutan, the average growing stock per ha, under site quality II, is 350 cum. Potentially, the loss of growing stock could be estimated at more than 30 million cum. of timber in the coniferous forests. Under the conditions of broadleaf, the potential loss of growing stock could be in the range of 22 million cum. (Assuming a yield of 250 cum. per ha). These figures should be seen in relation to the fact that the shifting cultivation areas would be fully stocked over a rotation of 120 years.

Table 25: Value of 1 ha of Fully Stocked Coniferous Forest and Price of Selected Hardwood

Timber Species	Volume in Cubic Meters per ha	Average Price at Timber Depot in Nu. (1996) per Cubic Meter permitted to export	Per ha value at Timber Depot in Nu.
Blue pine	300	6,259	1,877,700
Mixed Conifers	300	6,259	1,877,700
Hardwood	200	2,453.15	490,630
Champ - sawn	-	4,777.5	-
Off-cuts - Saw mill waste	-	270	-
Walnut- sawn	-	4,935	-

Source: Compiled from the Progress Report 1996, Forest Development Corporation.

Besides the loss of growing stock, there it also has the effect of changing the composition of tree species. Shrubs and bush species tend to take over commercially desirable species. However, shifting cultivation areas are also a source of firewood and fodder. In Radhi 10 percent of the households depend on shifting cultivation areas for firewood and fodder. In Zhemgang and Pema Gatshel *Dzongkhag*s, the main source of firewood, fodder and subsidiary forest product needs are met from the shifting cultivation area. The loss of growing stock is therefore a phenomenon which is differently perceived and valued by user groups.

4.3.2 Policy Alternatives

Considering the above arguments and findings of the survey in the three research *Gewogs*, two alternatives to the present status of shifting cultivation are broadly discussed. The first alternative is to maintain, to a certain extent, the status quo of the practice of shifting cultivation. The arguments are drawn from the present socio-economic trend and landuse practice, based on the field survey results from the research in the three *Gewog*s. The second alternative is to provide possibilities of landuse within the limits of the scope of social elasticity among rural farm families. The over-riding factor is that land should be used as per its capability and not based on ready-made guidelines. As an example, an outline for a bamboo plantation is presented as a viable alternative project.

Maintaining the Status Quo of the Practice of Shifting Cultivation: The argument for discussing this alternative is that shifting cultivation is considered to be a complex social phenomenon and therefore, a proposal to phase out a custom that is part of a

culture's heritage could be difficult, especially from social and sustainability points of view. However, there are compelling reasons why phasing out shifting cultivation deserves a closer look. It is expected that the approach adopted to deal with shifting cultivation will add a new perspective to the world view of the practice of shifting cultivation.

By phasing out shifting cultivation, a social structure and cultural phenomenon would also be phased out. Maintaining the traditional land-based patterns of environmental adaptation[42] can be essential for the sustainability of any production system. Phasing out shifting cultivation by bringing in alternatives based on land use guidelines, would be a case of applying a technical solution over a social and cultural phenomena. Such processes may put under stress, the social and environmental adaptation capabilities, inherent to such a practice. For many shifting cultivators, whatever the productive capacity of the land, the symbolic values and emotional attachments to such land, are very high. A change of farming system or occupation may result in a change in social organisation and behaviour that may not be compatible with the new environment, and could also result in the loss of self-esteem. Such a trend has also been discussed in the report of Zhemgang *Dzongkhag* (RGOB, 1995e, p.90).

The shifting cultivators have responded to the growing socio-economic trend, concerning the use of the land. This process has taken place, with little government intervention, in response to the emerging socio-economic trend, and social change. Such a process has engendered a smooth and stable change of land use, and increased the sustainability of a land resource considered inferior to other types of land use. However, if the phasing out of shifting cultivation is done in a structured manner, within a set time-frame, it may sap social manoeuvrability inherent in households and communities practising such farming system.

A Programme Approach for the Promotion of Bamboo Plantations: While tree species are considered to be one of the socially acceptable and economically viable alternatives to shifting cultivation, bamboo species[43] have an even higher potential for success. In Radhi, for example, bamboo mats were brought from as far as 90 kms away, at a cost of Nu. 150 per mat. It usually takes a person one day to weave one mat. This compares well to resin tapping or lemon grass oil extraction,[44] and to the trend in the use of bamboo throughout the country.[45] The land classification system has recognised the existence of bamboo as part of a household property.[46] If the investment is compared with timber species, bamboo, particularly species such as *Arudinaria sps., Bambusa sps., Bambusa hamiltonii*, has higher returns. The sale of bow and arrow bamboo in the vegetable market, is a promising source of income.[47] The use and processing of bamboo, as an occupation in many parts of the country, is recognised by the government. This is reflected by tax reduction, and in some cases,

---

42 Goodland, Robert, (1982), p.17. Tribal Peoples and Economic Development: Human Ecologic Considerations. World Bank.

43 Traditionally used for roofing, fencing, as household utensils, bows and arrows, water canal and many day-to-day uses.

44 FSD records (1995) show that on the average a person earns Nu.75/ per day from collection of lemon grass or resin.

45 FSD Report of 1996 shows that between July 1992 and June 1995 a total of 1.24 million numbers bamboo were supplied for urban and government construction in addition to 799,722 numbers as free grant to the rural areas.

46 The draft Community Forest Rules (RGOB, 1996b) defines *Pakshing zhing* as land under bamboo cultivation.

47 Archery is the national sport and competitions at the national, *Dzongkhag* and village levels are held annually. It is considered as one of the prominent traditions of Bhutan and to maintain it from fading away, some archery tournaments are held where only the use of bamboo bow and arrows is allowed. Increasingly, many fibre glass bows are imported.

exemption granted by the government, to specific areas for marketing bamboo and cane products.[48] Bamboo is also considered useful for making traditional utensils and important household items[49]. A bamboo and cane survey completed early in 1997 by the Ministry of Agriculture revealed that Bhutan has at least 30 species of bamboo and 10 species of canes.[50] On the subjects of regeneration and harvesting, it imposes the least environmental problems. Bamboo species have an efficient root system, making it one of the best species for soil conservation. It is a habitat for many bird and mammal species such as pheasants, jungle fowl, red panda, etc. Unlike the cultivation of tree species where a long rotation period reduces economic viability, most of the species can be harvested within one to five years, thereby making it an investment with an immediate return, a crucial factor, for shifting cultivators, in making investment decisions.

An outline of a possible project on bamboo cultivation is suggested. For a fully-fledged project implementation, a detailed survey and project formulation would have to be carried out. The emphasis should be based on the decisions of the shifting cultivation land owner, so that the land is used in a way suited to him and not according to any official specifications.[51]. In 1988, the FAO, at the request of the RGOB, carried out a pilot study (Upadhyay, K. 1988) to explore alternatives to shifting cultivation in Bhutan. Pema Gatshel *Dzongkhag* was considered as the most appropriate *Dzongkhag* in which the problems relating to shifting cultivation needed to be tackled.

Identification of Shifting Cultivation Areas Suitable for Bamboo Plantation[52]*:* Identification of project areas should be carried out as a joint exercise between the shifting cultivation land owners and the FSD. While certain criteria can be agreed for including shifting cultivation land in the project, a major decision should be taken by the land owner over whether it should be included in the programme. The data available from the joint survey being carried out by the Ministry of Agriculture and Home Affairs, should be used as the main source of information in planning the project.

Project objectives:

- To explore suitable alternatives to shifting cultivation

- To develop socially acceptable, and economically feasible, landuse practice that engenders social elasticity within the households practising shifting cultivation.

---

48 A government order issued in 1979 states -- '*The inhabitants of Mongar and Zhemgang districts are permitted to take Bangchung (bamboo plates), Palang (alcohol container made of bamboo), and other products made from bamboo and canes anywhere they like as presentation or gifts*' as per G.O.No. TIF/FOR/IV-3/79/913 dated 7 May 1979.

49 Another government order states --- '*The member of the Phrumjur (Mempa) community of Trongsa shall be permitted to extract bamboo and cane from the forest free of royalty and other government levies for bonafide purpose of making finished bamboo and can products*'.

50 Kuensel Vol. l0 No. 12, March, 1995.

51 The decision taken during the 7th FYP requires that shifting cultivation areas are either be converted to permanent cultivation areas or to be abandoned.

52 This can be part of Private Forestry Programme that FSD has been planning to implement during the 8th FYP. Inventories of bamboo species found in Bhutan have been completed.

Expected Outputs:

- A pilot project on bamboo cultivation in the shifting cultivation area whose property rights are protected by the Land Act 1978 and Forest and Nature Conservation Act 1995[53].

- Awareness among the various sections of the government of the need for sensitivity, when phasing out the practice of shifting cultivation.

Establishment of nurseries: The location of the nursery sites is crucial, as this determines the cost of transporting seedlings to the plantation sites. The choice of species needs to be based on a market survey and on the ecological demands of the respective sites. There have been past cases, connected with tree plantation, where people planted species, not because of their silvicultural or economical value, but because of what was available in the nursery.

Establishment of Marketing Co-operatives: Bamboo marketing co-operatives could be formed, to ensure that a fair price is obtained and middle-men are avoided. The same marketing model that is used for the sale of timber by the FSD could be adopted. For example, the marketing co-operatives could organise the sale of bamboo through public auctions in Samdrup Jongkhar, where regular timber auctions are held, while for a special class of bamboo such as bows, arrows and utensils, distribution centres could be set up in Thimphu and some other major urban centres. The marketing co-operative could also establish links with cottage industries which use bamboo as raw material[54]. The other comparative advantage of bamboo over timber, because of its size and vegetative characteristics,[55] is that it can be sold directly at the plantation site, which reduces establishment costs for the farmers.

4.4 Summary of Important Aspects for Forest Policy Development

Issues related to forest policy are discussed in the light of the findings from the three research sites. What has emerged from the field study, that could have a possible impact on forest development policy, includes: the ways of social performance at the regional and local level, the role of the government in local forest resource management and the role of tenure patterns and legislation.

Perception of Forest Resources: The impact and variations in socio-economic dynamics, related to the use of forest resources at the regional levels, will need to be taken into consideration. High variability across the three research *Gewog*s, in the social performance related to forest resources and land use practices, entails careful consideration in the development of forest policy. The results of the study have revealed the transformation of local forest resource management institutions and social organisational capabilities based on the perception of the people. Some of the important factors which have influenced the shift in perception are legislative interventions and the changing socio-economic environment. The effect of these factors, on the perception of forest resources, occurs at various levels. This is reflected by the way in which forest resources are locally perceived and appropriated.

Combined local and government resource management approach: There is no visible local institution in Bhutan that is capable of taking the responsibility of forest resource

---

53 Bamboo in the shifting cultivation area will have the same legal status as agricultural crops or trees planted on private land (Land Act 1978, chapter III, (A) 3-5 and Forest and Nature Conservation Act 1995, chapter IV, section 16 (a)).

54 There are many shops selling bamboo products in Thimphu.

55 Most of the bamboo species regenerate naturally well and do not need to be frequently planted.

management at the local level. The few that have existed have not adapted to the change in the role of forest resources and the socio-economic environment. As a result they have lost most of their functionality relative to the present requirements. The state has so far effectively protected the forest resources, through legislation inspired by some methods used in the region. This has resulted in a patron-client relationship. As the needs of the clients increase, this relationship will increase their expectations of the state and the resources it controls. Such a situation will also widen the gap between state institutions and local level social performance.

Self-evolved institutions at the local level could raise the social performance margin of the communities and in the long run contribute to a sustainable, equitable and stable forest resource management system. There is no medium to start a process of evolution of institutions at the local level, however, such a medium is necessary to encourage the local communities to see the benefits of such a venture. Presently, tenurial rights and economic incentives from the forest resources that they manage, are made available by the state. The state may need to come to terms with institutions at the village level.

The research findings show that the role of the government and the local communities in the management of forest resources must be synchronised to ensure the sustainability of the forest resources. The present approach used by the government to enhance local community participation has to be matched by the social organisational capabilities and an understanding, locally, of each others' role in the management of a communal resource. A balance between what should be a communal forest resource and a state forest resource, is required.

Sustainable firewood supply in rural areas: Firewood will continue to be the main source of energy in most of the rural areas of Bhutan. This is particularly relevant in the remote areas of the country, where firewood is the only source of energy for cooking and heating. With limited opportunities of a cash income in the rural areas, economic considerations will always be a constraint, in any change to the mode of appropriation. Furthermore, in the context of Bhutan, the household stove is sacred and has a role in many social events. A shortage of firewood should not affect this social phenomenon in a country which comprises of more than 64 percent forest cover and which has a yield of 10.78 million cum. in the so called 'inoperable' areas.

As the population grows (2.92 percent per year, Ministry of Planning, 1996a), and the present annual wood deficit of 0.43 million cum. (RGOB, 1991) accumulates, the situation will present a correspondingly greater social, environmental and economic challenge to the state, which will be forced to look for a solution before it reaches a critical level. The project proposal discussed above is an endeavour to combine all three issues to respond to such a complex situation.

Alternative Approaches in dealing with Shifting Cultivation: Shifting cultivation is a form of land use in its own right, due to cultural history. Although the manner in which it is practiced varies in different parts of the world, there are some fundamental aspects common to this method of cultivation, such as fallow period management, crop rotation and nutrient recycling. The practice of shifting cultivation, with its advantages and disadvantages, has been documented in many South-East Asian Countries (Conklin, 1954) and the Indian Sub-continent (UNESCO)[56]. On the whole, environmentalists and conservationists perceive the practice of shifting cultivation as a as a contributary factor in the degradation of the environment and its biodiversity. However, there are

---

[56] Mahapatra, L.K., 1983: An Overview of Swidden Cultivation in India, p.13 - 50.
UNESCO, 1983: Swidden Cultivation in Asia, Volume Two, India, Indonesia, Malaysia, Philippines and Thailand.

individuals and groups who see the practice of shifting cultivation as a way of life that is a social system of the communities practising it. In many areas it is considered to be the most appropriate under conditions of scarcity, insecurity and shortage of labour. This debate, however, will continue.

Within the context of Bhutan, it has been assumed that shifting cultivation is detrimental to the environment (Forest Act 1969, Forest and Nature Conservation Act, 1995, 8th FYP, 1996). However, RGOB has also acknowledged the social and economic impact that could result from the process of phasing out the practice of shifting cultivation (RGOB, 1996a). The practice of shifting cultivation is socially bound to the day-to-day life styles of the people, through the phenomenon of social elasticity. It provides individuals with a life style that is less distracted by unrealistic expectations, but satisfied with the productivity of the land under cultivation. Even so, an analysis of field data shows that there is a shift in land use taking place through local social change. This has taken place of its own accord, so the process has been relatively trouble free. On the other hand, the presumed environmental degradation caused by the practice of shifting cultivation is disputed and depends ultimately on the local situation. Decisions with regard to shifting cultivation have to be adequate to deal with a complex issue which is a social phenomenon by itself. Even if there is evidence of some level of environmental degradation in Bhutan, that can be attributed to the practice of shifting cultivation, the social benefits may outweigh its negative effects. Even the physical aspects are favourable for such a policy decision. For instance, it would make little difference in ecological terms if the present 2.2 percent of the total land area under shifting cultivation (RGOB, 1995b), against 64 percent of effective forest cover, was in fact encouraged for its sustainability as it engenders social elasticity within the community. Moreover, all ecological systems are represented under the protected areas, which constitute more than 26 percent of the country. Complications in land use and loss of social elasticity within the households and communities could perhaps be a greater hazard to the country and its rural population than some of the environmental benefits expected as a result of phasing out shifting cultivation.

Land Tenure: From the field surveys, the role of the land tenure pattern and legislation have emerged as the crucial elements, that could have an impact on forest policy development. The effects of the present state control of local forest uses have had a mixed impact on the way in which forest resources are perceived by the local communities in the three research *Gewog*s. The field survey also indicated that dealing with forest land tenure entails elaborate co-ordination between the state and the communities. The sporadic distribution of low quality forests in one region, and the occurrence of high commercial value forests in other regions, may make the issue of tenurial re-arrangements even more demanding. Tenurial re-arrangements however, may lead to the emergence of self-evolved local forest resource management institutions.

5. Discussion on Issues Related to Forest Policy Development

5.1 Social Performance at the Regional and Local Level

The dynamics of a community are expressed in the manner that it conducts itself in relation to the resources available in its locality. In the context of forest resources, the community's impact[57] is reflected by the land use and mode of appropriation of forest resources. In some cases, this may run contrary to the provisions of the state legislation. The degree of variance between the legal prescription concerning the use of the forest resources, and how their use is locally performed is determined by the level of variation in social performance among different communities. The uses and values associated with communal forests are complimentary, locally specific, and have different implications in time and space[58]. They represent many options.

The discussion concerning implications for national policy development is based on the research data from the three research *Gewog*s. The appropriation of *Sokshing* and forest products, the practice of shifting cultivation, timber pricing and forest offence cases are analysed in relation to locality factors and their effect on the social elasticity of the local communities.

5.1.1 The Use of *Sokshing*

*General relevance: The d*efinition of *Sokshing,* contained in the Land Act 1978 and Forest and Nature Conservation Act 1995,[59] clearly states that *Sokshing* is a government forest registered by an individual for collecting leaf litter, while the land and the trees belong to the government. In its entirety, it comprises a woodlot, usually located next to a village or settlement. In Radhi, the main species in the *Sokshing* is oak (Quercus sps.); in Shaba and Chumey it is the blue pine (*Pinus wallichiana*). In some parts of the country, *Sokshing* is a precious resource, not only as a source of leaf litter and firewood but also of wood for cremation. In Radhi, oak is the preferred species for cremation, and such species are now limited to *Sokshing*. The fact that a household owns *Sokshing* commands some social authority within the communities. In other regions, *Sokshing* is perceived as a potential source of land for appropriation for purposes other than leaf litter and firewood production. It is, however, sometimes perceived as a habitat for the wild animals that are detrimental to agricultural crop production. Problems associated with this type of land use include a lack of tenure entitlements to legitimise the local communities[60].

The regional variations in the use and perception of *Sokshing* are reflected in the various elements that constitute the social structure of a community, and that determine the capability of a particular locality.

---

57 Seeland, K. (1995), p. 6. Sociological Remarks on 'Community Forestry' in Nepal. He uses the concept of social performance to comment on the performance of local communities within Nepal.

58 See Schmithüsen, F., (1997). Communal Forests - A Modern Form of Public Land Management; (1996b) The Meaning of Forests in a Perspective of Social and Political Development.

59 Land Act of 1978 (Chapter III, Clause (A) 3-5 and Chapter V, Clause (A) 5-9) and Forest and Nature Conservation Act of 1995 (Chapter III, Section 12, Chapter IV, Section 16 (b)).

60 See Guha, R., 1989, p. 139.

Radhi Gewog: In some regions, for instance in Radhi, resource scarcity and the important role of *Sokshing* have stimulated the emergence of appropriate local[61] *Sokshing* management patterns. Firstly, *Sokshing* is considered a highly valued inheritance property and is shared among the family members just like any other property, such as agricultural land and livestock[62]. As in the case of agricultural land, *Sokshing* land has become fragmented. This is due to the absence of the joint family system which exists, for instance, in Chumey and to some extent in Shaba where the joint family makes productivity, at the household level, more viable.

Secondly, in response to the scarcity of forest products, a sustainable silvicultural practice of managing *Sokshing* has emerged. It is based on the fact that most of the oaks (*Quercus sps*.) coppice successfully[63]. However, no *Sokshing* owner fells his trees from ground level, but pollards them instead. This reduces the risk of damage to the shoot by the cattle, which are legally and socially sanctioned to graze freely in the forest area. Through the application of such a silvicultural system, the *Sokshing* owner avoids the extra cost of guarding the new shoots, while, the main trunk is saved for further growth and also acts as an "insurance tree".

Thirdly, the under-storey of the *Sokshing* is cleaned annually, just before the commencement of the collection of dead leaves. The dead leaves not only decompose to form high quality natural fertiliser, but provide comfortable bedding for cattle during the cold winter months.

In the region of Radhi, while most of the *Sokshing*s are managed sustainably, many degraded *Sokshing*s were observed during the field visit. State ownership of property rights of *Sokshing* have discouraged the households from carrying out enrichment plantations in the degraded *Sokshing,* as anything grown on it will be state property. The ambiguity of tenure is the key to understanding the state legislation and the performance of local communities in the sustainable utilisation of forest resources. It also influences the genuine participation of the local communities in the management of forests.

Shaba: Socio-economic development processes, that have taken place over the years, have resulted in the emergence of a new *Sokshing* management paradigm[64]. There is a distinct difference between the social performance of the state legislation, and the local communities, with regard to *Sokshing* management [65]. The field survey shows that firewood from the *Sokshing*s is only a secondary product, as more than 40 percent of the households depend on LPG for cooking. State legislation and the social performance of local communities have been highly influenced by a scarcity of space for agricultural and horticultural production. With the increase in agricultural products, the rising population in Thimphu City, and a lucrative export market for horticultural products, every corner of land has been brought under cultivation. Since the functions of the *Sokshing* could be replaced by cash income, the perceived gains from the *Sokshing*s, if used for other crops rather than as a source of leaf manure and firewood,

---

61 Gilmour, D.A., 1990, p. 145-158. Resource Availability and Indigenous Forest Management Systems in Nepal. Discusses three scenarios of forest resource management in Nepal - plentiful supply, slight restriction and severe restriction. He analyses the three different situations and the responses of the local people to each one.

62 During the field visit, I was told that only at times of death would trees from *Sokshing* be given for use by a neighbour.

63 Champion, H.G. and Seth, S.K., General Silviculture of India, Delhi, 1968.

64 Among the three research *Gewog*s Shaba has the highest per capita income. This is reflected by a higher standard of living.

65 For instance, 59 percent of the households depend on *Sokshing* for firewood, only 3 percent do so in Shaba. In Shaba, 58 percent of the *Sokshing* is used for collecting leaf litter. In Chumey, less than 30 percent depend on *Sokshing* as source of firewood.

were high. Such a perception has led the local communities to convert the *Sokshing*s to apple orchards and other economically more profitable forms of land use. The method used for converting *Sokshing* into apple orchards in Shaba is different from various other regions of the country. For instance, if the *Sokshing* owner is detected clearing *Sokshing*, the fine is paid without any real bureaucratic problems. The area becomes devoid of trees, and takes on the landscape of any agricultural field. This makes it convenient for the individual to use the land in any way he likes, since it becomes difficult for the state, with limited personnel, to detect every case[66]. This is a reflection of a high degree of effective local social performance, since all this is happening within a limited area, where it does not go unnoticed by the local people. The sustainability of such a social performance contrary to the performance of state legislation will need to be influenced by a process of access-differential and a client-patron relationship.

The social performance of the local communities in Shaba, is on quite another level. For instance, while the *Sokshing*s, which legally are state property, are converted to other land use forms and finally to private property, some state forest, close to the *Gewog,* is declared *Drongsep ngagtshel* (village/community forest)[67]. The main function of this type of forest is to provide leaf manure and protection of the *Gewog's* drinking water source. The distribution of benefits from the *Drongsep ngagtshel* is limited to its members only and through such a process, access to non-members is restricted. This is another level of social performance based on locality factors relating to forest resources.

Chumey: The social performance of the local communities of Chumey is a reflection of their being in a position of abundance, on the forest resources continuum[68]. No household member needs to walk for more than ten minutes to reach a forest. Moreover, Chumey has one of the most versatile tree species in Bhutan - blue pine (*Pinus wallichiana*)[69]. The households have no interest in expending time and energy on the management of the forest, for it is considered to be the responsibility of the state, since the state owns the forest. On the other hand, the local communities realise that forest resources can be a source of high income, as logging contractors and the state earn substantial money from the sale of forest products[70]. In the case of Chumey, social performance has tilted towards the state. It becomes even more complicated when one considers that between the period when private land was first recorded (1955/56) in formal land registers, and the landuse survey, which was carried out in 1995, almost 50 percent of the agricultural land has become forest[71].

Bio-physical limitations have also shaped the life-style of the local communities of Chumey. Horticultural development is constrained by physical limitations such as altitude (2800 mamsl). The cultivation of traditional crops such as buckwheat is considered too laborious in comparison to what could be achieved in other areas through off-farm activities. Potatoes and wheat are cultivated with heavy labour input, to protect these crops from wildlife damage. Therefore, such bio-physical limitations

---

66 This was observed in several sites during the field visit.

67 The present care-taker said that this type of forest is useful as a source of leaf litter as agriculture in Shaba is one of the main sources of income.

68 This situation is on the scale of abundance, similar to the one described by Gilmour, D.A., 1990.

69 This species fetches the highest price in India among all conifers and regenerates well naturally if protected from forest fires at the sapling stage.

70 Their expectations are heightened by the sight of large tracts of well stocked forests next to their homes.

71 RGOB, 1995b.

have also influenced the social performance of the local communities[72]. State legislation has limited the use of forests for cash income generation, although the growing stock is healthy[73]. All logging is carried out, based on an approved management plan and sale of timber, including export, and on existing rules and regulations. Although the flow of forest resources is complicated, the existing over-stretched social elasticity has engendered a stable social energy flow. It has not risen as an issue of inequitable distribution of forest resources.

It has been said that a resource[74] is not actually a resource or a commodity (Seeland, 1990, p.6), until a social meaning has been ascribed to it within the respective economy and society. While *Sokshing,* in Radhi, is considered a precious resource, in Chumey it is perceived as a liability, especially by the households who do not own *Sokshing*. The reason for a high percentage of fallow land (nearly 50 percent) in Chumey, is that it is difficult to protect the crops from the wild animals living in the *Sokshing*s, which are generally close to settlements and agricultural fields. The presence of *Sokshing* near the agricultural field, increases its rate of invasion by blue pine species (*Pinus wallichiana*) due to its silvicultural characteristic of colonisation[75]. As per state legislation, it is an offence to cut any trees, including saplings, irrespective of the legal status of the land on which they are growing. This has, to a large extent, hampered the social performance of the local communities and been an obstacle to the self regulation of the villagers in shaping their environment.

Comparative Findings (Table 26): In Radhi, the pressure on *Sokshing* will grow as the population increases over the years. This will also lead to the fragmentation of *Sokshing,* as there is no practice of a joint family system in Radhi *Gewog*. Firewood will continue to remain the main source of energy, as possibilities to use alternative sources, such as cooking gas or electrical appliances, are limited. The survival of *Sokshing* may depend on the ability to evolve an appropriate management approach. The degraded *Sokshing* must be allowed to be replenished by enrichment plantations, otherwise further degradation of *Sokshing* will continue. This may also result in the increase of thefts from the *Sokshing,* which could provoke conflicts among the community members. One possible way of resolving these issues is the creation of communal *Sokshing* from the existing government forests, accompanied by the establishment of appropriate local institutions to manage this type of property.

The socio-economic environment for the appropriate, and most productive, use of available land may end the survival of some of the *Sokshing* in Shaba. The present trend of converting *Sokshing* into horticultural land is likely to continue, if compared with the present trend of social performance of the households. It will lead to an informal shift in property rights, from state to private, illustrating one mode of resource appropriation. This mode of appropriation could be formalised in the next cadastral survey.[76] Local people are aware of this provision in the law and therefore build their strategy along these lines. This is reflected in their social performance and justifies

---

72 There is an inclination for off-farm occupation as compared to Radhi and Shaba where agriculture is still the main occupation.

73 By definition of forest in the Forest and Nature Conservation Act 1995, all trees, waterbodies, sand, stones outside owns registered land, are the property of the state. Only the state and authorised agencies or individuals can harvest or trade in forest products irrespective of where such products are located.

74 Seeland, K. (1990), Environment and Social Erosion in Rural Communities of South Asia. He states that the term resource is a relative one and has different connotations in different contexts.

75 Troup, R.S. (1921). Silviculture of Indian Trees.

76 As per Chapter VI, Clause (A) 6-4, Land Act 1978, at the time of resurvey, if the land area is more than the official records, the individual has the option to pay the additional tax and register it under his name.

their action, which is a response to the perceived needs and the ability of the local land resources to meet their needs.

Table 26: Social performance relating to *Sokshing*

Indicators	Radhi (Eastern Region)	Chumey (Central Region)	Shaba (Western Region)
Pressure	Will increase proportionally to the increase in population	No visible change. May also decrease as more *pangzhing* become forest	Not as a source of firewood and leaf litter
Change in land use	May further degrade if enrichment plantation of trees is not permitted	May become high forest	More may be lost to horticultural and other land uses
Role as a source of firewood and leaf litter	Will continue at the present level	No visible change	Will decrease as more households look for alternative sources

Source: Author, 1997

The *Sokshing* in Chumey will become important to the owners, only to the extent in which it can be used for commercial purposes. Bio-physical conditions of the *Gewog* impose limitations to make *Sokshing* to more productive use other than as a source of needles for compost. The *Sokshing* will not be replaced by other land use forms as more than 33 percent of *pangzhing* has been abandoned, only to become high forest, which appears to be the general trend. The imposition of legal restrictions on the owners' use of their *Sokshing*, while allowing access to outsiders through official permits, may lead to conflicts in the long run. This may initiate a process of pressure for commercial use of the *Sokshing* by the owners.

5.1.2 The Use of Forest Products

General relevance: The mode of appropriation of firewood, construction timber and other forest products are carried out within the limits of social elasticity. This is reflected by the position of a particular locality on the socio-economic transition scale. For instance, in some regions, firewood or shingles are collected based on reciprocal and mutual terms, while in other regions, this is done through contractual arrangements. Within different localities, the different social and contractual arrangements for acquiring or using forest products, are expressed as the social performance of that particular locality.

Radhi: In Radhi, firewood is still collected from in and around the *Gewog* based on one's own physical input, and cash transactions are rare. Furthermore, more than 95 percent of the households depend on firewood as a source of fuel for cooking. A perceived shortage of fuelwood has also affected, to a certain extent, the social relationship with some of the visitors from Merak and Sakteng, who were traditionally given a great welcome. Perceived shortages and the physical energy involved in collecting firewood, has created the perception that it is more valuable than rice or maize[77].

[77] I was told during the interviews that in some cases the cost of firewood is more than rice or maize. Guests from Merak and Sakteng who stay almost for the whole winter impose much pressure on firewood stock of the host.

Electricity and kerosene oil have replaced the use of resinous pine splinters for lighting. The use of such splinters is limited to households who can not afford electrical wiring or kerosene oil.

The extraction of construction timber is based on contractual services, as it can not be performed by a single individual due to the size of the logs and amount of energy involved. This is a result of the partial break down of the social cohesion and organisational capability. A small percentage of households who have cash, obtain their construction timber through contractual services. The same trend observed in the extraction of shingles can also be attributed to this factor. Therefore, the emphasis on weaving as both a main source of cash income, and as a substitute for otherwise paying with cash, will continue[78]. Discussions with some individuals revealed that there was a preference for brides who could weave, over those who were less skilled.

Table 27: Source of fuel for cooking

Gewog	Firewood (percent)	Kerosene/LPG (percent)	Other Sources (percent)	Remarks
Radhi	95	5	None	-
Shaba	40	40	20 (Saw dust)	Saw dust, locally called *buss,* is used for cooking
Chumey	100	-	None	Few houses use improved stoves designed by a project

Source: As per author's survey

Table 28: Mode of Collection of Forest Products

Gewog	Firewood - Self (percent)	Firewood - Contract (percent)	Construction Timber - Self (percent)	Construction Timber- Contract (percent)	Shingles - Self (percent)	Shingles - Contract (percent)
Radhi	85	15	20	80	20	80
Shaba*	20	60	10	90	5	95
Chumey	70	30	30	70	40	60

Source: Author's Survey Report

* Rest comprises of other sources

Shaba: An analysis of the social performance of the Shaba village community, in relation to forest product appropriation, seems to set the tone and direction of future forest policy. Immediate and high return from agricultural and horticultural investment have had a double impact on the people's perceptions of the forest. Shaba's survey showed that more than 95 percent of the households perceived that planting trees was not as important as planting horticultural species. This is only natural, as more than 30 percent of the cash income accrues from the sale of horticultural products. In Shaba, the tendency to acquire more land, is an attempt to increase the cash income base which is sustained by a comparative advantage of market and input delivery. In Radhi, however, the comparatively low productivity of the land, in addition to the high population, has forced households to cultivate all available land. Therefore, the

[78] Radhi produces the best *Aikarpo* in the country wich is sold mainly in Thimphu.

existence of forest cover is very low at 32 percent, as against the national figure of 64 percent (RGOB, 1995b).

In Shaba almost all forest products are acquired through contractual services and other sources. For instance, 40 percent of the households use LPG for cooking, supplemented by firewood which is delivered by contractors from Chielela (50 km away). More than 20 percent use sawmill waste (Cee Dee Sawmill, 1 km from the *Gewog*), while only 40 percent of households depend on firewood as a source of energy for cooking. The struggle of the local communities is to reduce the dependency on others including on the forest products, especially if they have to be acquired physically on their own[79]. Owning a set of LPG equipment, or being able to replace shingles with corrugated tin sheets, is a way of improving one's social status. New strata emerge around 'new' natural resources, and this means socially acquired resources, mainly by an independent joint family unit[80]. Therefore, this trend creates a perception whereby the role of forests is individualised - in other words its importance is valued by what could be realised at the individual household level.

Another important aspect of social performance is time management by the local communities in Shaba. Household members are occupied all year round, either producing or marketing agricultural and horticultural products. This has led to a process where time is managed in terms of input and output, unlike in Radhi and Chumey, where time is still not calculated in economic terms. Time invested in acquiring forest products is considered less profitable than when it is invested in agricultural or horticultural activities. Short-term and often immediate returns make this comparison more glaring to the communities. Therefore, the full scale participation of Shaba's local communities in forest management, will require incentives that would have to outweigh economic returns from agricultural and horticultural ventures[81].

Chumey: In Chumey, the impact of social performance in the appropriation of forest products is at another level in comparison to Radhi or Shaba. Forest resource abundance has had a direct influence on social performance, as the importance of forest resources is associated with the ability to generate cash income. This has led to a perception, among 100 percent of the households interviewed, that it is not important to plant trees unless they are horticultural species. 100 percent of the households said that they were self-sufficient in firewood. Their perception of the importance of forest resources only as a source of cash income has been shaped by ongoing logging activities and the sale of logs at lucrative prices. The rise of the economic status of a few individuals who have access to such business, is considered to be evidence of the high potential for earning large profits from forest resources.

In Chumey, all forest product needs, such as firewood, construction timber and shingles are available in abundance, in and around the villages. Therefore, both in the case of Shaba and Chumey, the motivation for expending any time and energy for forest management would have to be sustained by economic benefits to the local communities. Although, the forces which led to such a perception are different, the impact on social performance, as far as forest resource management is concerned, had the same effect - that of linking forest management to economic returns. In Shaba, better opportunities in other land use forms have relegated the practice of forest

---

79 It is increasingly looked at as any commodity that can be bought in the market.

80 Burch, W. and DeLuca, D. (1984), Measuring the Social Impact of Natural Resource Policies. - p.28 say that - patterns of shifting privilege are distributive processes or explain who gets what and why?

81 Schmithüsen, F. (1996a). Tenure and Joint Resources Management Systems on Public Forest Lands: Issues and Trends. 'To determine a reasonable balance between two fundamental concepts i.e. the rights of owners to use forest land as they see it, and restriction of some uses in public interest, is the salient point in shaping forest tenure policy.' (p. 37).

management to a secondary consideration in their socio-economic structure. In Chumey, the abundance of forest resources in and around the *Gewog,* has had the same impact on the perception of the local communities. Such variability[82] in causes with a similar effect on the perception and social performance makes the formulation of an effective national forest policy, that is applicable at all levels, very complicated[83].

Comparative Findings (Table 29): The mode of appropriation of forest products clearly indicates the variation in the social performance of the three regions. In Radhi, state forests play an important role in fulfilling the forest product needs of the communities. This situation is likely to continue, as the increase in population will impose even more pressure on the existing forests. There is little leverage to shift to contractual services to acquire forest products, or to resort to alternative sources of forest products. The main source of cash income in Radhi is weaving. However, even this source is threatened by the import of cheap substitutes. The households of Shaba are increasingly less dependent on the state for their forest product needs, while the geo-physical location of the *Gewog* gives a comparative advantage over the other *Gewogs* in terms of improving its socio-economic development. The land capability supports most of the agricultural or horticultural products, and returns are high. For this reason, the households in Shaba perceive forestry issues as low priority. Chumey *Gewog* is amidst natural forests, therefore a shortage of forest products is not perceived as threat. With low population density and congenial growing conditions, it is not likely that Chumey will ever experience a shortage in forest products. A conflict could arise from the restriction on the use of *pangzhing* which have now become government forests. The on-going timber harvesting and the derivation of economic benefits from such forests by the state, could increase the chance of a conflict.

Table 29: Social performance relating to forest products

Indicators	Radhi (Eastern Region)	Chumey (Central Region)	Shaba (Western Region)
Mode of Appropriation	May continue to depend on the present system	May increasingly rely on contractual services	May depend more on contractual services for delivery of most of the forest products
Availability	May decrease with increase in population	May increase as forest cover increases	May decrease but could be supplemented from other *Gewog*s
Pressure for Commercialisation	May increase as other sources of income are limited	May increase as more *Sokshing* and *pangzhing* become high forests	Regular income from other sources may ease the pressure

Source: Author, 1997

5.1.3 The Importance of Shifting Cultivation

General relevance: The relevance of shifting cultivation for social performance is limited to Radhi and Chumey *Gewog*s. In Radhi, it is a practice of appropriate land use, where, over a period of time, the shift from long fallow-period cultivation is replaced by

---

82 Bromley, D. W. (1991), Environment and Economy: Property Rights and Public Policy, chapter 7 - Property Rights Problems in the Public Domain, p.155.

83 Cernea, M., (1992), p.188, The Privatisation of the Commons: Land Tenure and Social Forestry Development in Azad Kashmir. He describes three social variables that effect success of social forestry projects: the complex land tenure system and the processes affecting it at various levels; the community unit with internal interactions, non-homogenous groups, and inability to act consensually; and the behavioural patterns of individual farmers.

permanent cultivation practice. However, in Chumey, 33 percent of the permanently cultivated land is covered by blue pine forests. The impact of the socio-economic change that is taking place may be reflected by many aspects, of which the practice or non-practice of shifting cultivation is considered to be an important issue.

The practice of shifting cultivation also places a high demand on the already over-burdened staff of the Forestry Services Division to enforce rules and regulations. The remote and scattered nature of shifting cultivation areas makes it even more difficult to enforce rules, such as the phasing out of the practice of shifting cultivation. The process could even lead to controversies over definitions of what constitutes a forest 'offence'. The practice of shifting cultivation gives a form of social elasticity to the cultivators. The practice allows the households to plan annual agricultural crop production according to the resources available to them. Social performance in the case of shifting cultivation is analysed in relation to the social elasticity afforded by such a land use. The practice of shifting cultivation is not ubiquitous, but dictated by the capability of the land, and by cultural heritage.

Radhi: In Radhi, the need for additional agricultural land commensurate with the high pressure of population (2,135 which is the highest among the three research *Gewog*s - Shaba - 1,007 and Chumey - 1,612) has led to the gradual phasing out of the practice of shifting cultivation. For instance, over a period of 40 years (1954/55 - 1995) - the area under shifting cultivation has reduced from 279 acres to 72 acres, which represents a reduction of over 75 percent.[84] This is a reflection of yet another level of social performance, sustained and stabilised by the existence of the fragile social structure which could be sapped by the high level of interference by government legislation. Enforcement of phasing out the practice of shifting cultivation may encourage the land owners to convert their land under shifting cultivation into permanent cultivation, which could be even more damaging to the environment.[85] During the field survey, it was observed that there was more soil erosion in cultivated areas than in shifting cultivation areas, during the monsoon period. This is contrary to the popular belief that one of the main sources of soil erosion is the practice of shifting cultivation.

Chumey: In Chumey, alternative sources of food and the intensification of agricultural crops, such as potato (introduced as a commercial crop recently) has led to a situation where almost 50 percent of the *kamzhing* (dry land), *pangzhing* (dry land with some vegetative growth) and *reeshing* (shifting cultivation land) has now become forest. Traditionally, the people of Chumey have been inclined more towards occupations such as the rearing of livestock, and trading than agricultural production. This is evident if one looks at the taxation policy until the early 1960s. Tax was based on resource-specificity (Ura, K.,1995, p.137), and Bumthang used to pay in the form of livestock products. Most of the land registered as *kamzhing*, *pangzhing* and *reeshing* have mature trees ready for harvesting and in some areas they are harvested by the state. The action of the state is legitimised by the National Assembly Resolution (reconfirmed in 1996 by the 74th Session). The opportunity costs for the land owner are substantial, given that one cubic meter of timber fetches more than Nu. 6,259 per cubic meter. However, since such land is still registered under the name of the individual who pays land tax to the state, complicated tenure problems arise.[86]

---

84 RGOB, 1995b.

85 Pathak, A. (1994), Contested Domains: The State, peasants and forests in contemporary India, p.26 states that to term shifting cultivation 'environmentally damaging' is a self-fulfilling prophecy of the state.

86 After the completion of cadastral survey, private land declared as 'forests' will be reconfirmed physically and the formalities completed for conversion as government forests. By July, 1996, only 2

Shaba: In Shaba, shifting cultivation is not practised. The available land is intensively used for annual and bi-annual agricultural production. All marginal land is used for horticultural production.

Comparative Findings (Table 30): Shifting cultivation is not a major issue in the three research *Gewog*s. However, in a broader context, it may become one if the policy decision to phase out shifting cultivation is not implemented in a manner sensitive to the local socio-economic environment. This is more of a land use issue which will stabilise by itself, with little intervention, either through legislation or material support from the state, to change the practice. However, provision of alternatives to the practice of shifting cultivation, compatible with the local land capabilities, may enhance the land use stabilisation process. Possible alternatives could be the reinforcement of an agro-forestry type of land use already in practice in most parts of the country. The provision of market outlets for these products would lead to the sustainability of such a land use, given that most of the shifting cultivation areas are located in remote areas where communication infrastructure for access to the market are minimal. Such situation was observed in most of the adjoining *Gewog*s of Radhi and some parts of Chumey.

Table 30: Social Performance Relating to Shifting Cultivation

Indicators	Radhi (Eastern Region)	Chumey (Central)	Shaba (Western)
Trend of increase/decrease	May decrease as pressure for food production will increase with an increase in population	The area under shifting cultivation may increase as more land is left fallow	No likely visible change
Land use change	More areas may be converted for agricultural and cash crop production	No likely change	No likely change

Source: Author, 1997

5.1.4 The Impact of Governmental Timber Pricing

Relevance to social performance: The main source of the misuse of forest products in the urban areas, is the difference in timber pricing. Some of the subsidised forest products for rural use find their way into the urban areas. Some of these cases are detected while others are not. To a large extent, the ability to cope with such a situation is reflected by the social performance and the access-differential to resources. On the other hand, the state has responded by framing strict rules to implement the different timber pricing policy. This has impacted negatively on the rural people, especially on the use of forest resources in their locality, and the transportation of forest products from one area to another, since the timber pricing policy is based on the location where a particular forest resource is used.

Variations and their impact: The performance of the present timber pricing could have profound implications on forest policy, both at the regional and national level. The following tables give the different types of timber prices. The pricing structure of forest products, including timber, is a reflection of the state's role as provider and protector of the interests of various income levels[87]. This is reflected in the timber price difference between the rural and urban price of almost 50 percent. The allotment of timber in the form of trees in areas where there are no sawmills or logging activities, makes such

---

*Dzongkhag*s have not been covered by the cadastral survey (RGOB, Survey of Bhutan, Report to the National Assembly, 1996f).

87 One of the main functions of forest check posts at the entry points to all urban areas is to ensure that forest products provided for use in rural locations are not brought into urban areas.

pricing systems complicated, and can even encourage the abuse of the system by both sides[88].

The timber pricing policy has two crucial aspects which have direct bearing on the forest policy. The first one relates to the principle that all rural people should have forest products at an affordable price. The second one is that the timber is a national resource and therefore the nation should get the best price for it[89]. In rural areas, the question one might ask is why should people pay for a resource that has been there for centuries for their own free use. The state has not expended any investment in its growth nor over the land on which the resource is standing. On the other hand, the National Assembly has legitimised the ownership of the property rights (Forest Act 1969). However, what is important is that the forest policy should aim at achieving an objective whereby the mode of appropriation of forest resources itself acts as the stabilising factor.

Table 31: Rate of Urban Timber Price in Nu. per cubic meter

Timber species	1994	1995	1996	Remarks
Blue pine - logs	1,412.6	1,859.55	1,859.55	-
Blue pine - sawn	-	2,572.85	2,572.85	-
Mixed Conifers - logs	1,237.60	1,650.60	1,650.60	-
Mixed Conifers - sawn	1,981.0	2,363.55	2,363.55	-
Average - Export - Conifer Logs	-	3,147.55	6,259.0	Changes at every auction

Source: Compiled from Progress Reports 1994, 1995 and 1996, Forest Development Corporation.

Table 32: Rural Timber Supply Price in Nu. per cubic meter

Timber species	1994	1995	1996	Remarks
Blue pine - logs	928.20	1,044.05	1,044.05	This is the preferred species by the carpenters
Blue pine - sawn	1,201.10	1,533	1,533	-
Mixed Conifers	784.70	1,044.05	1,044.05	-
Mixed Hardwood	1,060.50	1,367.80	1,367.80	-

Source: Compiled from Progress Reports 1994, 1995 and 1996, Forest Development Corporation.

---

88 For most of the households in the rural areas, this is the preferred method as it does not involve cash transaction-action.

89 One of the issues raised by the World Bank in the Forestry III Project implemented in eastern Bhutan.

Table 33: Timber Price for Supply to Wood-based Industries

Timber species	Block Size	Scantlings	Logs	Pole Size	Hakaries - logs below 6' length
Blue pine	6,259.05	5,086.20	4,992.75	4,386.55	3,042.55
Mixed Conifers	4,434,85	4,302.20	3,140.90	3,140.90	2,803.85
Mixed Hardwood	-	-	2,453.15	-	-
Chir pine	-	-	3,155.6	-	-
Oak	-	-	1,832.95	-	-

Price in Nu. per cubic meter as of 1.8.1995
Source: Compiled from Progress Reports 1994, 1995 and 1996, Forest Development Corporation.

Some of the village representatives have questioned the reason for the existence of the present royalty rate of Nu.10 per tree.[90] Their argument is that since there is no source of cash income, there should be no transaction in cash with the state. With a resolution in 1985, the National Assembly rejected the proposal of the Bhutan Chamber of Commerce not to allow outside bidders into the timber auctions[91]. The logic of the resolution was that all the basic forest product needs of the people are met by the state, therefore, the rest of the forest products should fetch the best possible returns for the state.

Findings: The pricing policy for the different forest products, will become more complicated as the number of interest groups grow. On the one hand, the government will have to respond to the rural communities for maintaining the present royalty level, while on the other, it must increase the productivity of the forest resources to support developmental programmes. Therefore, the pressure from different interest groups will mount. For instance, more forest areas, for commercial extraction and feeding the wood-based industries, will have to be opened. This may conflict with the traditional use by the local communities[92]. The question is therefore: What levels of institutions and types of forest development policies can be effective in responding to such pressure, while ensuring a sustainable and stable use of forest resources? The present system of legislation is increasingly under threat of abuse, and this increases the need for more resources to enforce the rules and regulations[93]. As long as such variability in the pricing system exists, it is likely that the formulation of a more effective forest policy, that encompasses the interests and needs of all sections of the socio-economic strata, will remain a challenge.

5.1.5 The Policing Effect of Present Forest Regulation

Relevance to social performance: As per the Forest and Nature Conservation Act 1995, no forest product can be appropriated without a permit from the government. This includes dead wood, stones, wild plants used as vegetables, and medicinal plants. However, the enforcement of these rules are constrained by a lack of personnel. This results in the communities appropriating forest resources based on their ability to deal

---

90 The royalty for all forest products was raised by 100 percent during the 7th FYP. For instance, royalty per tree for rural house construction was raised from Nu. 5 to Nu. 10

91 The Bhutan Chamber of Commerce wanted to exclude buyers from India so that the Bhutanese contractors could then sell or export at a commission to India. India is the sole market for Bhutanese timber.

92 Firewood collection and charcoal conversion for industries may be in the same location.

93 Access-differential to resources and locations also play a role in this.

with the legislation. In some cases, the high performance of the state leads to the unsustainable use of forest resources. Some believe that as many forest resources as possible should be appropriated, before the state finds out.

The analysis of forest offence cases is considered to be one possible method of discussing the impact of policing effects of the present forest regulation on the social performance of the communities. One of the ways the social performance of local communities can be expressed in relation to state legislation, is in the nature of the offences committed. The locality of the commissioning and the degree of the offence are also indicative of the social performance of the communities.

The encounter between the local communities and state legislation, in the sphere of forest development policy, is discussed based on 256 forest offence cases from various parts of the country. The type of forest offence, and its relationship to occupation, reflects the performance of legislation that may not necessarily be the best scenario for achieving the ultimate goal for sustainability and stability. The Planning Ministry's policy statement for the 8th FYP also emphasises this aspect. (RGOB, 1996a). Not all forest offences are recorded, and for various reasons, the occupation of the offenders is not always reflected.[94]. Therefore, the analysis is carried out, taking these inherent limitations into consideration.

The high rate of forest offences committed in the rural areas is indicative of an intensive interaction between the forests and the rural communities as compared to urban dwellers. 60 percent of the forest offences are committed in rural areas, and the types of offences reflect the rural situation. Figure 31 in paragraph 3.6.2 illustrates that illegal felling of trees (30 percent) and poaching of wild animals (33 percent) accounts for more than 60 percent of the forest offence cases. By the nature of such offences, it can not be assumed that all offenders are residents of the area. There are no restrictions on the use of forest resources based on the residency of an individual. Therefore, someone from outside a particular village could commit the offence, but the case can be recorded as though it was committed by the residents of the village. For instance, the poachers of musk and cordiceps (a high value medicinal mushroom for use) are mostly from the lower parts of the Linghsi and Laya, but inevitably the residents of these *Gewog*s must go through the legal process to prove their innocence.

Findings: That a high percentage of offences are 'case-compounded'[95] is also indicative of a situation where the offenders are resigned to state legislation and are not interested in going to the court for redress. Complicated and long bureaucratic procedures of legally appropriating forest resources, contribute to the increase in forest offences. The thinly spread forest officials, who are unable to issue permits and physically mark the trees within reasonable time, aggravate the problem, especially for those in the remote areas. Increasingly, the local people perceive appropriation of firewood and construction timber as meeting their basic forest product needs, while the state maintains that it as an obligation to ensure that appropriation of forest product needs are met in a manner that is legally acceptable. While most of the forest offence cases are compounded, the rate of litigation cases with the state, concerning the contractual services, are on the increase.

There is a need to adjust the spirit of the legislation to the changing socio-economic environment. The results of the analysis of the forest offence cases show that control elements have to be placed in a context. For instance, the delivery of services in the rural areas has to be enhanced, so that farmers are not forced to commit offences and

---

94 It is not mandatory to appear in person if the culprit is willing to compound the case as per existing rules. This can be done with the representative of the administration.

95 60 percent of these offences are committed in the rural areas.

so that basic forest product needs are available on time. However, the performance of the government will need to be reinforced in the urban areas, as the price difference between a forest product to be used in a rural area, and one for use in an urban area, is open to exploitation[96]. The results of the analysis of the offence cases also show that poaching will continue to be another source of forest offence. These issues will need to be addressed on a programme basis.

5.2 Role of Government in Local Forest Resource Management

5.2.1 Present Government Objectives and Approaches

The present forest policy objectives, which have been carried forward from the Forest Policy of 1974 and the 5th, 6th, 7th and 8th Five Year Plan objectives, are reflected in the findings of field research data. The over-riding emphasis of the government, in the forestry sector, has been the involvement of local communities in the management of forest resources and the transfer of some of the responsibility of forest management, to the communities. Subsequent government documents and field programmes show this very clearly.

A strategy to achieve the policy objective of community involvement and participation in forest resource management, was adopted for the first time in 1979, with the promulgation of the Social Forestry programme[97]. It was assumed that if individual households planted trees on their own registered land, the concerned individuals would become more conscious of the importance of forests and also reduce pressure on the existing government forests. Under this programme, each household was encouraged to plant at least ten trees on their own registered land. According to records at the Forestry Services Division, by 1995, 1.82 million seedlings at a cost of Nu. 3.13 million were distributed to individual households, free of cost, under this programme. The programme of free distribution of seedlings to the households in the rural area continues today. A monitoring and evaluation of the programme revealed that the survival percentage was low, especially in the initial years as households were not sure of the point of planting tree seedlings amid the forest areas where they lived.

During the 7th Five Year Plan, one of the strategies adopted to involve local communities in the management of forest resources was to create community and private forests. This strategy was legitimised by including it in the Forest and Nature Conservation Act 1995 (see Chapter IV, Section 16, 17 and 18). The creation of community forests was to be carried out on a pilot basis, in the eastern *Dzongkhag*s, and if found successful, to be implemented in other parts of the country. The take-off period of the programme has been, and as a result there is no fully operational community forestry in 1997. The draft rules on community and private forests are being discussed. The main objective of the draft rules on community and private forests is to let the local communities manage their own forest resources. Many aspects of the functioning of the community forests, such as the institutions, may be at best, presumptuous[98].

---

96 There are four types of pricing for the same forest product: 1) Rural 2) Urban 3) Industrial and 4) Export.

97 This was influenced by the concept of social forestry to create forest resources in the developing countries, initiated by United Nations agencies such as the Food and Agricultural Organisation in the 1970s.

98 Some of the activities prescribed in the Community Forest Rules have no relevance to the traditional forest resource use patterns in the Bhutanese context, e.g. formation of groups to have access to forest resources but are nevertheless taken into consideration for implementation.

The 8th FYP emphasises the importance of sharing responsibilities in the management of the country's natural resources between the government and the communities. 'Management of Bhutan's natural resources is the responsibility of both the RGOB and the communities.' (RGOB, 1996a). One of the methods foreseen to achieve this objective is to have an effective extension programme in place. The main components of the programme are to support the development of self-reliance by rural households and communities; to support and promote the development and use of management strategies by rural households for sustained utilisation of natural resource and to support the participation of rural households and communities in their own economic development.

The 8th FYP has foreseen three main programmes of the Forestry Services Division

- sustainable forest management;
- nature conservation and protected area management;
- social forestry and extension.

The social forestry and extension programme aims to address the demands of the rural population for forest products, and involve rural communities in the management of forest resources. The programme has three main aspects:

- designation of community forest areas to be managed by village forest management units
- community afforestation/reforestation initiatives in degraded areas
- agro-forestry and private forestry on privately owned agricultural land.

It is foreseen that the implementation of social forestry will be the responsibility of the *Dzongkhag* Forest Extension Officers. The programme, which is currently being implemented on a pilot scale, mainly in the eastern *Dzongkhag*s, will be expanded during the 8th FYP.

5.2.2 Promotion of Local Participation in Forest Utilisation through Decentralisation

General considerations: Analysis and observations in the research *Gewog*s show that people's participation in forest resources management has to be looked at from a long term perspective, beginning with the building of a partnership. The manner in which this could be brought about is discussed in a realistic and simplified way, and an approach to engender people's participation is suggested. The discussion also draws experience from other countries since people's participation has become a crucial element in the development of forest policies.

The research data analysis reveals that there is a high degree of variability in perceptions and forest resource use patterns within the country[99]. Such a situation could lead to instances when, what is seen as a solution from one perspective, is often considered as a source of problems when viewed from another angle.[100] Variability in spatial and temporal dimensions are crucial elements that will need to be dealt with at the national level. The strategy for developing a link between the state and local communities regarding the appropriation of forest resources, is approached using the concept of 'institutional legitimisation through a process of decentralisation'. Initiatives[101]in this direction, already taken by the state, are discussed in the light of the

---

99 Radhi in the east, Chumey in the centre and Shaba in the west.

100 Redclift, Michael and Benton, Ted, (1994), Social Theory and the Global Environment, p.92.

101 Community Forest and Private Forest Programmes in RGOB, FSD, 1996b.

research findings, particularly in terms of their relevance to issues such as local perceptions and local institutions.

Local community-based institutions that have evolved through a process of decentralisation can be one of the most effective means of achieving the policy objective of transferring state responsibilities for forest resource management and control to the local communities. For this process to evolve, full scale, genuine participation of the communities is essential. Some of the elements considered crucial for sustaining the process are institutions, land tenure, and entitlements over particular resources. Issues such as local perceptions, social organisational capability and local institutions play important roles in shaping the community response to state initiatives targeted at improving existing systems.

A medium that can facilitate the relationship between the government and communities for the translation of policy objectives into action, is essential.[102] This medium could take various forms, such as social units and local community based institutions. Analyses of research findings reveal that such media are not visible in the rural areas to participate in programmes as viable institutions, especially in the management of forest resource development programmes introduced by the state with the objective of improving the quality of life of the local communities.[103] Such a situation demands adjustments in the social interactions among the community members and the state, and a revision of the ways in which business is conducted.[104]

State interventions, such as the enactment of forest legislation referred to earlier, had a direct impact on the emergence of a situation whereby the state can not identify viably negotiating partners that are not free of structural deficiencies.[105] On the other hand, forest resource abundance in the past, did not demand the existence of institutions with a high degree of organisational capability. A development strategy must be formulated around clearly identified social units, which are interested in its outcome and capable of carrying it out.[106] When farmers are hard pressed, in terms of time and effort, to fulfil their agricultural, horticultural and livestock duties, it would be unrealistic to expect them to be interested in carrying out afforestation, through a community or collective effort, where the outcome of their association with the state is not immediately evident.[107] Moreover, there are different perceptions and needs in different regions and locations. While 50 percent of the households in Radhi said that planting trees is important, only 10 percent of the households in Shaba felt it was important to plant trees. In Chumey, field survey results show that none of the households considered it important to plant trees. In fact they said that they had too many of them in their

---

102 de Montalembert, M.R. and Schmithüsen, F., (1994). Policy, Legal and Institutional Aspects of Sustainable Forest Management, p. 165-166 "*Any major change in the respective roles of the forestry institution, of the private sector and of local communities must consider the distinct needs and behaviour of these categories. The possible impacts on sustainable forest management need careful assessment, i.e. economic performance, social equity and ecological stability.*"

103 The 8th FYP document states .. "*The importance of increased community participation in RNR sector programme has been emphasised both as a way of reducing demands on the government budget and as a means of ensuring the long term sustainability of programmes beyond their development phase. Considerable progress has been made in transferring responsibility for irrigation schemes to Water User's Association (WUA) which were introduced under the new irrigation policy adopted in 1992.*"

104 This has led to a situation where the state is compelled to perform most of the roles of the local communities - e.g. project identification to distribution of benefits.

105 The impact of legislation on social performance of indigenous forest resource management institutions and organisational capabilities are discussed in section 5.3.

106 Cernea, Michael (1989), User Groups as Producers in Participatory Afforestation Strategies, World Bank Discussion Papers No. 70, p.7.

107 Forest management still does not form part of the integrated farming system in Bhutan.

Gewog[108]. In Shaba, inspired by the lucrative market of Thimphu and outside, all available land is used for agricultural or horticultural purposes. Under these circumstances, it would only be natural to expect limited success of a tree planting programme on private land. From the analysis of local perceptions, it has also emerged that social organisational capabilities and local resource management institutions, in the three regions of the country, are at different stages of transition. The perceptions of the governmental role in resource management are also changing along the lines of this transitional movement.

The success of community forestry programmes is thus dependent on the participation of the community members. Without any visible changes in the existing legislation, participation may remain an agenda item of the development programme[109] as has been reported by other countries. The word 'participation' tends to become a concept to fulfil diverging objectives. One of the main objectives of the private and community forests rules that were framed by the Forestry Services Division (RGOB, 1996b) is to engender participation by the local people. Adequate flexibility will need to be built into the process of implementation.

Participation as individuals or groups in a programme, has to be considered in relation to the existing cultural and religious constellation within the community. For instance, it was observed during the household survey that the households 'participate' in meetings and group discussion that burdened their day-to-day way of life. This has led to the development of a perception among the rural people that their participation in meetings and group discussions is considered, by the government to be virtually obligatory. This may reflect adaptations in the social performance of the rural people as a local community, versus the perceived governmental strategies, and may result in superficial participation by the local communities. Such a process has only limited benefit, and fulfils the objective of 'tick-marking' some of the checklists drawn to increase the feasibility of a project. On the other hand, it has been observed during the field survey that some individuals participate actively in discussions and express their needs and visions, which may not necessarily represent those of the community as a whole.

5.2.3 Reinforcement of Local User Groups

Unlike in many other developing countries, the primary issue in Bhutan, which has a per capita distribution of over 4 ha of forest area, is not to create additional forest resources, but to ensure their sustainable management through, among other means, institution building among the communities. It has been argued above, that the overlaying of structures from outside, on the already complex maze of social patterns, may not be the most appropriate approach to engendering full scale participation by the communities. Helping users to organise themselves into groups (Cernea, 1989, p. 28), and to undertake production and management functions in forestry, would, in fact,

---

[108] The same households said that one third of the agricultural land has now become forests. This is in contrast to figures published by RGOB, 1995b where it is claimed more than 50 percent of agricultural land has been converted to forest.

[109] Guha, R. (1989), The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalayas, pp. 35-62. Pathak, A. (1994), Contested Domains: The state, peasants and forests in contemporary India. pp. 104-123. Kaul, Minoti Chakravarty, (1992), Forest Rights and Forest Laws in the Indian Himalayas during the second half of the 19th Century. pp. 3-23. These authors discuss how the appropriation of forests by the British-India government created despondency in the local communities on state services and regulations. Seeland, K. (1995), Sociological Remarks on 'Community Forestry' in Nepal and Gilmour, D.A. and Fisher, R.J. (1992), Village, Forests and Foresters: The Philosophy, Process and Practice of Community Forestry in Nepal. pp. 1-20, discuss the in-congruencies of the approach of participation and the realities on the ground for implementing community forestry programmes.

restore the participation to normality, so that the users of forests and forest products act as the primary producers and decision-makers, and the forest departments participate in their activities, rather than the other way round. Decentralisation may thus be considered to be one of the most effective engines for restoring the participation of the communities to normality. Furthermore, decentralisation could lead to the emergence of a functional forest resource use by social groups, based on mutual obligation along traditional patterns of mutuality. This is in contrast to the present approach where household members are simply lumped together into an artificial entity. Therefore, for local institutions to be effective, and capable of ensuring that all their forest resource needs are met, the following conditions should be created: a process of selection or self-selection of the members, the willingness to associate, the members' perception of the advantages and responsibility, and the establishment of an enduring intragroup structure with well-defined functions.[110]

There is ample documentary evidence to show that the policy of the Royal Government of Bhutan (RGOB) is trying to keep pace with the change in the socio-economic environment and perception of the local communities[111]. This has not been matched by the emergence of appropriate strategies to achieve this policy's goals at the sectoral level. The households interviewed said that in general, the sustainability of forests would improve if some of the forests traditionally used by them were managed by the local people. However, there was a very varied response from the three research *Gewog*s.

In the early 1980's, one of the strategies used to engender local community participation was the distribution of seedlings, free of cost, to be planted on one's own registered land. The expected output of the programme was to create forest conservation consciousness and to reduce pressure on the existing government forests. There was only limited response from the local communities, although the concept of the programme was discussed in the National Assembly. The low level of 'participation' can be attributed to the perception of the programme by the households, as being more of an obligation to the government than one of self-interest, as trees were available in plenty in and around the communities. Moreover, one was not sure about the property rights of the trees when they matured. The programme did not develop a tenure system corresponding to the creation of a new resource, based on inputs from the individual and community. This was reflected in the low survival rate of seedlings and the response from the households who had planted trees under the Social Forestry Programme.

The objective of creating forest conservation consciousness through the distribution of free seedlings may not accrue corresponding benefits to the state. Neither is there a need to emphasise such a concept on a programme-basis, especially in the rural communities. Most of the people with a subsistence economy, residing in and around the forests, could hardly be considered a source of pressure on the forest resources, including on the growing stock. In fact, the institutions could draw intellectual raw[112] material from the local communities, for making forest resource use more sustainable. The distinct forms of social organisation of each group are a reflection of its pattern of culture. Therefore the form of social behaviour is expected to conform to the customary

---

110 Cernea, M. (1989), User Groups as Producers in Participatory Afforestation Strategies, World Bank, Discussion Paper No.70, p.28. He discusses the importance of restoring 'participation equation' to normality for rural based afforestation projects to be successful.

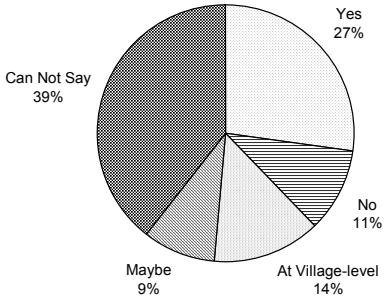
111 For more details on the policy of the RGOB on people's participation and decentralisation, refer to 7th Five Year Plan (1993-97) and 8th FYP (1997-2002), Vol. I , Ministry of Planning, RGOB.

112 McNeely, Jeffrey (n.d.), Conserving Cultural Diversity: How the Variety of Human Experience can help Promote Sustainable Forms of Using Natural Resources. IUCN. He discusses the important role of the local communities in the emergence of sustainable resource management policies.

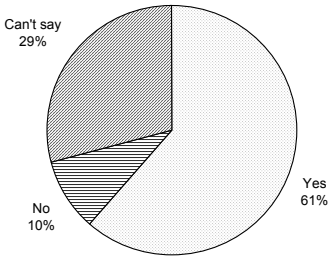
obligations of one's reference community. With limited agricultural land, the prospects of planting trees on private land are debatable, especially in places like Trashigang and Paro, where pressure on agricultural land is high. On the contrary, in Bumthang trees are looked upon as weeds invading agricultural land.

Figure 35: Perception of Sustainability of Locally Managed Forests[113]

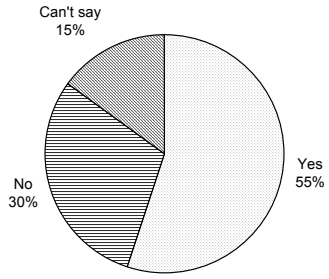
Radhi



Shaba



Chumey

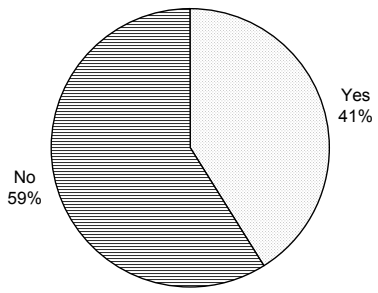


Source: Author's Field Survey, 1996

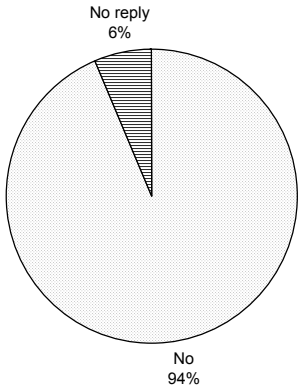
113 Question: Will sustainability of forest improve if managed by local people?

Figure 36: Importance of Local Tree Planting[114]

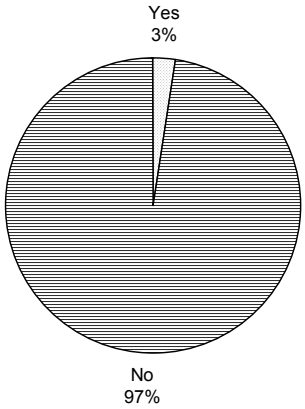
Radhi



Shaba



Chumey



Source: Author's Field Survey, 1996

The usual strategy for enhancing local community participation in forest resource management is the creation of community and private forests. The draft Community and Private Forest Rules provide limited room for local people's participation. The strategy has assumed that the new structure can be overlaid onto an existing local community socio-economic structural maze. The field research data analysis shows

---

[114] Question: Have you planted any trees?

other results. The perception of the importance of forests among the households differs substantially. The socio-economic patterns are also evolving at a different pace and in a different direction, influenced by locality factors. Furthermore, these patterns are at different stages on the transitional continuum. This would create (Ostrom, 1992b) new forms of relationship between individuals, which may not be socially conducive for collective action. This state of affairs could lead to the creation of a relationship that may be incompatible for further association. The process of transferring responsibilities of the government to the communities, through the distribution of free seedlings or creation of community forests without having suitable institutions for 'participation', may result in mixed success. The process of building a community under an outside agency's supervision, may run into limitations of compatibility.[115]

Some of the social prerequisites for the evolution of community-based forest resource management institutions are decentralisation and the absence of inhibitions. The forest resource management groups must consist of social units and organisations that are capable and willing to function as one unit or institution. Presently, such entities are absent. The process of self-evolution of resource management institutions must therefore begin with the establishment of functional social units. This is also emphasised by Cernea (1989) who states:

'*... afforestation strategies or projects must start with the identification (or establishment) of such a viable unit or group; aim to engage the rural users of fuelwood in patterns of collective action for producing the fuelwood they need*...' and continues:

'*Group formation is an acute need particularly in development programs that involve (even to a small extent) natural resources that are either (1) under a common property regime, or (2) lend themselves to group use and management even if they are under a state property regime. To ensure both the immediate use and the long-term renewal and sustainability of a commonly owned natural resource, the owners must act in consensus, as a group that subjects itself to the same norms*.'

The present strategy adopted for transferring some of the government responsibilities to the communities, through the creation of community forests, may have by-passed such a process. Collective social action without the mutual desire of the group, can have only limited success and is not sustainable in the long run. For instance, in Radhi, 95 percent of the households depend on forests as a source of fuelwood, whereas in Shaba, only 40 percent of the households depend on it. Other forest products, such as shingles and house construction timber, are appropriated through different means in all three *Gewog*s, depending on the economic and social limits of the individual households. More than 30 percent of the houses in Shaba have changed from shingle to corrugated tin sheet roofs. The trend is the same in Chumey and Radhi *Gewog*s, where the aim of the households is to replace their roofs with corrugated tin sheets. House construction timber is also delivered by trucks wherever motorable roads exist, and not necessarily from one's own *Gewog*. Therefore, the availability of cash seems to determine the forest resource appropriation pattern. [116]

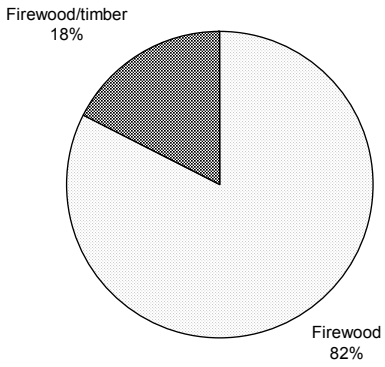
---

[115] Seeland, K. (1995), What is Indigenous Knowledge and Why Does it Matter Today? p.6 '-who are favouring economic development interests of the advanced sectors in nation-wide struggle over the appropriation of resources' Also refer to his 'Sociological Remarks on 'Community Forestry' in Nepal, (1996).

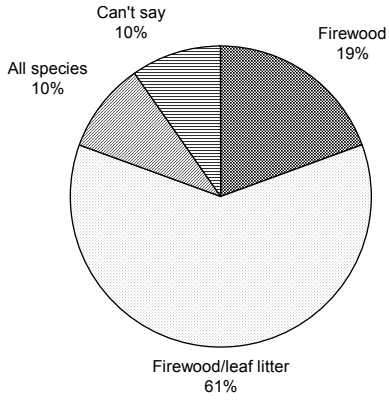
[116] This is the general trend in all the three research *Gewog*s.

Figure 37: Perception of the Importance of Forests[117]

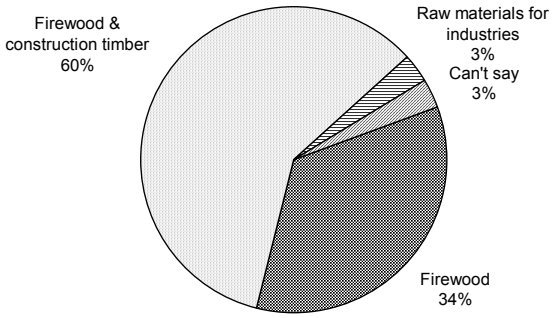
Radhi



Shaba



Chumey



Source: Author's Field Survey, 1996

---

[117] Question: Why are forests important?

Jodha's (1986) research in India, on common property resources (CPR), shows that relatively poor households depend more on CPRs who receive the bulk of their fuelwood supplies and fodder from CPRs. Such a situation in the field underscores the need to deal with a high variability of patterns of resource use and socio-economic environments. Some of these variations are revealed by the social life of the local community, which is performed with respect to the possibilities and potentials that are granted by the local environment which can be equated with the performance of locality itself.

Communities, as population clusters, cannot and should not be treated as ready-to-use corporate actors (units of social organisation or economic agents) for community forestry programmes. Designing clear social arrangements for tenure, management and distribution, arrangements that are known, implemented and adhered to consensually, and are considered to be the glue and fabric of the group, have to be taken into consideration while looking for sustainable resource management options. Therefore, variations in the socio-economic structure of social units call for culturally informed forest management strategies prepared within each socio-ecological and cultural context. The varied role of *Sokshing*s lends support to this argument. For instance, in the three *Gewog*s, the role of *Sokshing* ranges from provision of firewood, to potential land for apple orchards, to a habitat for wildlife. Although the legal status of *Sokshing* is the same in all three *Gewog*s, the modes of appropriation of *Sokshing* are different, which is linked to the socio-economic structure of the communities. This is considered to be a reflection of the social performance of the individual households that constitute the communities. In view of such variations, to lay a proto type approach, such as the presently envisaged community forest strategy, over all the communities, will only lead to social inequality among the different parts and social sections of Bhutanese society.

5.2.4 Economic Benefits and Tenurial Arrangements as Preconditions for Local Forest Management Capabilities

Research findings in the three *Gewog*s show that there is a high degree of heterogeneity in the socio-economic composition of the households. To assume that a proto-type strategy, such as the presently envisaged one, is adequate, would be equivalent to 'putting together' a number of 'willing to cooperate households' as a "community" and expecting them to function as an organic unit. Interventions from outside have stratified the households on economic and kinship lines. For instance, in Shaba, all efforts are directed towards earning cash from agricultural and horticultural products. Time, space and energy for acquiring forest products, or for forest management, are perceived to be too high in relation to what could be earned from agricultural or horticultural activities. However, as there is a limited flow of cash in Radhi, in comparison to Shaba (weaving is the main source of cash income) households are still willing to expend time, space and energy for forestry activities. In Chumey, an abundance of forest resources is the reason why households perceive that expending time, space or energy would bring only limited returns, given the present legal status of the forests. Therefore, in Shaba and Chumey, economic benefits would be the main incentive to expending any additional time, space or energy for the management of forest resources, as cash seems to have brought the basic situational change in the fields of agriculture and horticulture.

Winning the confidence of the community members would be crucial for participation in the management of a resource which has been under the Forest Department's control for so long. One way of starting the process of confidence-building is through the provision of economic incentives and tangible benefits (Schmithüsen, 1993, pp. 156-157) to the envisaged social actors. Particular emphasis on this issue is only rarely felt

in the present community forestry approach. The enactment of the Forest Act in 1969, which to a large extent brought more than 95 percent of forest resources under the state property regime, was not just a shift in emphasis in the resource ownership pattern, but almost a complete change of forest use and access. Extra effort in the form of economic incentives, tenurial rights and legal protection would be necessary to revitalise the enthusiasm of the local communities, to participating in programmes initiated by the state.

The shift from customary common property regimes (Cernea, 1989, p. 9) to state ownership has often entailed a faster rate of destruction of forest resources than would otherwise have occurred. This is not the case in Bhutan, which still has more than 64 percent (RGOB, 1995b) of the country under effective forest cover, in addition to 8.4 percent of degraded forests. The enactment of the Forest Act in 1969, to a large extent annulled some of the local forest resource management institutions and changed the social organisational patterns, but had no quantifiable effect on the reduction of forest cover. In fact, in places like Bumthang, there was an increase in blue pine forest cover (author's survey, 1996). Given such facts, why propose a new approach to forest resource management? What should be decentralised and who should be responsible for the decentralisation? One rationale lies in the explanation given by F. Schmithüsen (1996a):

"*The judgement on tenure policies and public timber allocation systems is influenced by a changing vision in society on the importance of forests as a renewable resource of considerable economic value and as a significant part of man's environment; by changes in public attitudes demanding a more equitable distribution of benefits among social groups; by competitive economic conditions* ..." (p. 35). "*Different forms of appropriation have developed which decide on access to uses and on the distribution of benefits from forests. Institutionalised patterns of appropriation lead to different forest tenures, the constitutive elements of which are ownership rights, use and management rights and restrictions on certain uses*." (p. 37).

This concept explains the underlying reason, such as the changing vision in society, for the economic importance of renewable natural resources and the demand for an equitable distribution of benefits among different social sections in the country, as societies move from one transitional phase to another. The degree and pace of interaction between social values and spatial elements are different, and are determined by the constantly changing socio-economic environment.

It is considered a logical assumption that the present forest resource management ownership pattern, where more than 95 percent of the forest resources are under state control, may not be sustainable, and in the long run could lead to complications. This view becomes even more relevant when one looks at it in the context of the entire rural population relying on forests for one product. It is also adequately argued with evidence from the field and studies carried out in other parts of the world, that forest resource management based on synthetic user-groups is not the most appropriate option for equitable and sustainable forest uses. Cernea (1989) describes how the West Bengal Forest Department increased the sustainability of Arabari forests through the creation of a clear link between a well-defined group, a well-defined track of forest land and well-defined benefits and distribution network. Talbot and Lynch (1995, p. 64), Fisher and Gilmour (1992, p. 11), Seeland (1995, p. 2) attribute some of the factors that led to an accelerated process of deforestation to the nationalisation of forests in Nepal in 1957. They have proposed various means of reversing this trend, among which the creation of community forests and legitimisation of the local communities figure prominently. Poffenberger and McGean (1996) have tried to reconstruct the cycle of forest resource ownership which has gone through a process of community-state-joint management, as an option to increase the sustainability and

improve equitable distribution of a resource that was once a community resource. One of the main recommendations for achieving these objectives is the implementation of the concept of 'joint forest management' in which the 'participation' of the local communities is considered a key factor for the success of the programme. The relevancy of the proposed strategy of using the means of decentralisation to encourage the communities within the Bhutanese context to come forward themselves, of their own accord, seems well placed. The analysis of forest offence cases also reveals that a certain level of rationalisation of the present legislation would engender further involvement of the communities.

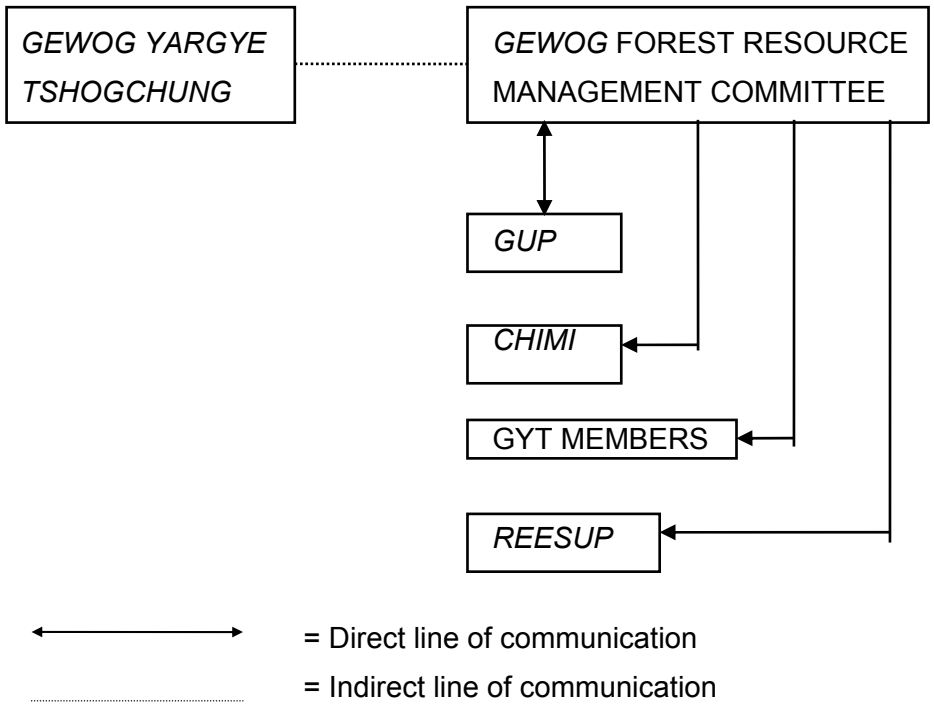
Privatisation or state regulation is not always the most efficient and sustainable way of managing forest resources. Self-evolved institutions are the crucial elements needed to make collective action more meaningful in the context of resource management. Unless there is some level of coercion or some other special device to make individuals act in their common interest, rational, self-interested individuals will not act to achieve their common or group interests. Social and policy changes towards private property and market economies tend to reduce the importance of local management and to initiate a process of destabilisation of traditional tenures (Schmithüsen 1996a, p. 39). Jodha (1986) found in India, that over-exploitation and degradation of common property resources (CPRs) were the result of the combined impact of state policies, market integration, demographic, economic and institutional changes at the village level. Therefore, most of the villages have given up traditional CPR management practices involving protection, development and usage regulation, thus converting CPR into open access regimes.

5.2.5 Approaches to Strengthening Local Management Institutions

The process of finding a new balance between local interests and capabilities, and governmental objectives in forest resource management, could, on the one hand, be initiated with the establishment of suitable and functional institutions. On the other hand, this must be matched by a revision of a legal framework such as the Forest and Nature Conservation Act 1995, governing the present use of, and access to, forest resources by the communities. The most crucial factor is the sanction of the state so that such a process of change can be initiated from below. The initiative has to be taken by the FSD, for the establishment of the Forest Resource Management Committee (FRMC). The establishment of the FRMC is based on the participation of the concerned agencies and local community members. The FRMC members will form part of the future institution when it begins to function on its own. The existing forest resource management institutions at the divisional level can include the *Gup* as the representative of the local community, and the *Dzongkhag* Forest Extension Officer as the representative of the *Dzongkhag* Administration. Not all forests in a territory can be put under the management of the FRMC. One of the primary functions of the FRMC will be to identify forest areas that will come under its management. The forests set aside for the FRMC are to be legally recognised by the FSD, while the functioning of the FRMC is to be legitimised by a government decree for the effective delivery and evolution of the committee into a local community-based institution. It is to be expected that initially, the Gups will not participate fully, but as the FRMC matures and local communities feel less inhibited, this may change and lead to the evolution of local community-based institutions. As the *Gup*s take on more responsibilities, the FRMC should move to the *Gewog* level. At this stage, the state officials may have fewer responsibilities in the FRMC, and would have adequate time for the management of state forest resources. The GYT institution can play an important role in the functioning of the *Gewog* Forest Resource Management Committee. The GYT members and the *Reesup* will form the GFRMC. At a later date, one *Dzongkhag* may have one GFRMC

in each *Gewog*. As the GFRMC expands, the *Dzongkhag* forest product marketing unit could function concurrently with the existing state marketing unit.

Figure 38: Proposed *Gewog* Forest Resource Management Committee

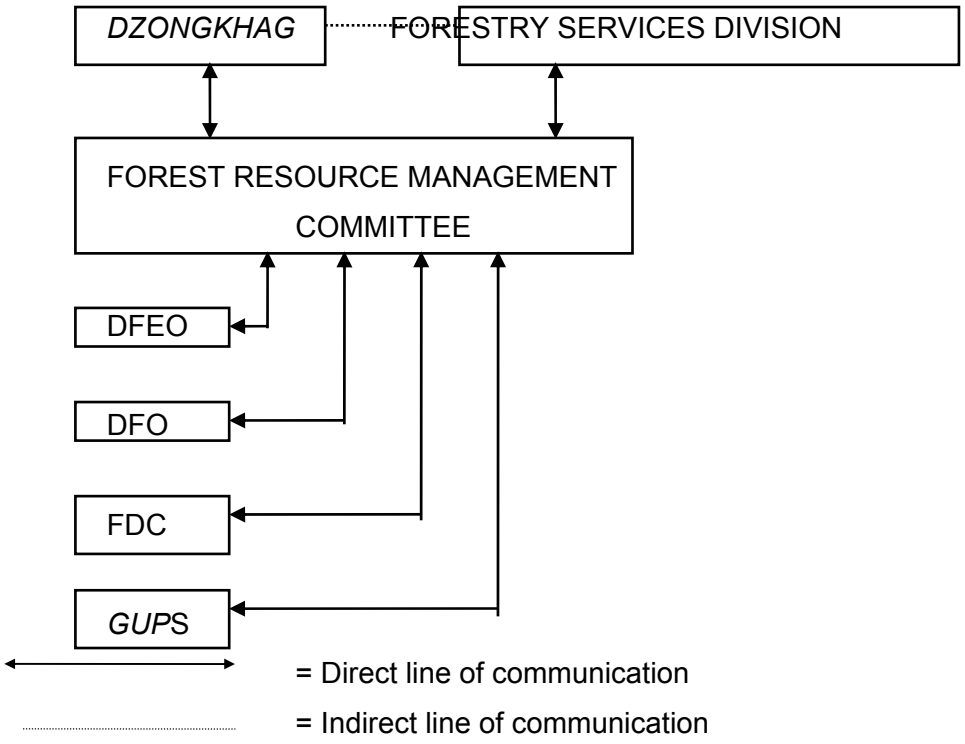


Source: Author's construction, 1997.

The revision of the Forest and Nature Conservation Act 1995 has to take place, to make the process of decentralisation effective. For instance, the forest product allotment procedure could be simplified, by granting the Range Officer the authority to issue permits, and eventually by granting the GFRMC the responsibility to handle the entire forest product needs of the *Gewog*. Forest product movement procedures must be revised to accommodate the forest product use from the FRMC and GFRMC units, and their movement within, and outside, their administrative jurisdiction. The technical training requirements of the FRMC and GFRMC may also form an integral part of the national human resource development programme. For full legitimacy, all these revisions are to be authorised by the National Assembly, or by an agency which is not below the ministerial level of the government bureaucracy.

When the FRMC and GFRMC mature into effective forest resource management institutions, a process of coming to terms between the state and the local communities may set in. The pace at which this process takes place, and the direction it takes, will depend much on the sanction of the state. The legitimisation accorded by the National Assembly, could make the implementation of this proposal much smoother.

Figure 39: Proposed Forest Resource Management Chart



Source: Author's construction, 1997.

5.3 Role of Land Tenure Pattern and Legislation

5.3.1 Considerations with Regard to State Forest Tenure

The impact of land tenure and legislation on forest policy is discussed on the basis of the research findings in the three regions of the country. In Bhutan, forest resource abundance and the opportunities to acquire forest products through contractual services, make land tenure and legislation crucial variables for the success of a national forest policy. The government's policy of equitable distribution and decentralisation of the responsibilities of national resource management can only be sustained through tenure rights legitimised by legislation.

Legislation which facilitates the setting up of appropriate and reliable tenurial systems, is an important institutional prerequisite for sustainable forest management (Schmithüsen, 1996a, p. 37). Due to the lack of legal protection of their tenure, people renounce long-term benefits and have a tendency to move towards short-term and exploitative uses (ibid., p.39). The enactment of the first Forest Act in 1969, whereby all forests became the property of the state, had a profound impact on the tenurial system. However, this did not have an immediate effect on the mode of appropriation of forest resources by the local communities, as the state did not have adequate machinery to implement the provisions of the Forest Act. Therefore, the informal tenurial relationship continued. Over the years, as the relationship between the state and the communities has become more and more legalistic, the state's enforcement of the respective laws has increased. This process has led to the widening of the gap between the state who owns the resources, and the local communities who use the resources. It is felt that issues such as appropriate and reliable tenurial systems are pivotal factors that could address such a problem and encourage the local communities to manage their own

forest resources sustainably. Using the findings of the research, an effort is made to discuss how tenure and legislation could make the difference in the success of the policy of decentralisation and the evolution of local community-based institutions for the sustainable management of forest resources.

It is useful to analyse some of the events which led to the present status of the tenurial system regarding the forest resources. The enactment of the Forest Act in 1969, brought more than 95 percent of the forest land under state tenure. In actual practice, in most cases complete tenure rests with the state. The forest product needs of the local communities are met by the state through elaborate bureaucratic procedures. The reasons for the existence of this state tenurial system are considered by Schmithüsen (1986, pp. 127-128) and to quote :

" - *In some countries state forest ownership results from a national decision to consider the natural resources as exclusively owned by the nation as a whole. This principle is in particular advocated in countries that still possess large primary tropical forests.*

- Another current justification for state ownership results from the social importance of forests as a major element for maintaining a stable environment and an ecologically balanced pattern of land-use. The protective role of forests in erosion control and waterflow regulations as well as the complexity and long development cycles of forest eco-systems make it necessary to establish strong safeguards for their preservation. It is argued, that the maintenance and use of the forests is in the public interest, which can best be protected by maintaining the resource under direct state control and ownership.

- Forests can be an important source of income and the national forest policy may stipulate, that they should be utilised and managed principally for yielding public revenue. State ownership is thus maintained for financial reasons and the forests are treated as a fiscal asset of the country."

The main reason for the state tenure system, based on an analysis of government documents such as the Forest Act 1969, Master Plan for Forestry Development, 1991, and the 7th and 8th Five Year Plans, appears that forests have always been regarded as a source of direct cash income for the state and indirect valued for their benefits such as protection of the watershed and reducing soil erosion. Most of the reasons elucidated by Schmithüsen are relevant when put in the context of the logic used by Bhutan to bring forest resources under state tenureship. For instance, the value of forest products amounts to approximately 11 percent of the renewable natural resource sector (RGOB, 1996a). This does not include a large amount of forest products, such as firewood, fodder, non-wood products including mushrooms, bamboo, canes, and herbs and tubers used as medicine and food by the local communities. The role of forests in the context of hydro power development should also be considered. Furthermore, more than 26 percent of the country has been declared protected area, and the location of these areas is based on their biological representativeness. This has imposed certain restrictions on buffer and enclave residents, in their use of the forest resources around them.[118] Commercial logging or large-scale land conversion in protected areas, is banned by the Forest and Nature Conservation Act 1995, Chapter VI, Section 21 (c).

---

[118] Forest and Nature Conservation Act 1995. Chapter VI, Section 21 (c). -' *The Ministry may issue rules to regulate any activity within a Protected Area. Violation of such rules shall be an offence punishable with imprisonment which may extend to 5 months or a fine which may extend to an amount prescribed in the Rules which may be issued from time to time, or both, ...*'.

Wood-based industries are considered one of the sources of revenue due to the addition of value, and creation of employment for the local communities. Another argument is import substitution for many products that otherwise need to be imported. The state has a considerable interest to ensure that these wood-based industries continue to generate public revenue.

5.3.2 Effects of Present State Control on Local Forest Uses

Under the present tenure system, local communities are provided with all their forest product needs from the government forests[119]. Since 1969,[120] local communities view the state as the provider that has, over the years, only accentuated the state-client relationship. Such a process has contributed to a loss of most of the self-reliance that is inherent to the local forest resource management institutions. One argument in favour of the present tenurial system, is that the state provides forest products free of cost through a mechanism which ensures that subsidies are available to all rural communities. Today, however, forests must be managed in a much more interdependent way, and within the context of complex constellations. Equitable distribution of the benefit stream from forest resources, based on self-evolved institutions and legitimised by tenurial rights, is considered crucial for a forest resource management system to be stable and sustainable. Beyond the wide variety of policies and local situations, the most critical change required, is to pass from a negative to a positive posture by establishing a process of partnership in forest management among all the actors concerned (de Montalembert and Schmithüsen, 1994, p. 156). The forest users perceive of the forest resources in and around their communities as a resource that could be appropriated by anyone sanctioned by the state. For instance, in Chumey in 1995, as per records at the Beat Office, 17,056 trees were taken out of the *Gewog* and transported as far as Ura, Tang, Trongsa and Punakha. As a standard procedure, this is perfectly legal, as these trees have been marked and felled in accordance with the existing rules and regulations provided in the Forest and Nature Conservation Act 1995. This is why tenure is so crucial for the local communities. If they had tenure, with protection by legislation, the local communities would be able to negotiate with the state on the extraction of the timber that goes out of the *Gewog,* or on other uses sanctioned by the state from time to time. What makes it even more pertinent is that some of these trees are extracted from private land which has now become forest[121]. This has also contributed to the over-harvesting of some of the forests to meet the timber requirements from outside the *Gewog*. The situation is the same for the management of non-wood products. For instance, the collection of mushrooms, bamboo and cane shoots, which have a high market value, is sanctioned by the state through a permit system, and the local communities have little or no say in such decisions. Therefore, lack of tenure over forest resources has prevented the local communities from participating in forest management with the state.

---

119 All forest product need such as firewood, construction timber and minor forest products are supplied from the existing government forests.

120 The enactment of Forest Act 1969 can be termed as nationalisation of forests - a similar action that occurred in 1957 in Nepal and 1878 in India.

121 As per resolution reconfirmed in 1995 by the National Assembly trees beyond 12 years become state property irrespective of status of the land where they are growing.

To be eligible[122] for subsidised forest products, a person is obliged to show evidence that he has not constructed any house with subsidised timber for the last 25 years. The classification of forest products as timber, minor forest products, raw material for rural industries are different under the respective permit-system. In remote areas where there are no sawmills, house construction timber is allotted in the form of standing trees. Before the individual can finally fell the tree, complicated and lengthy procedures have to be undergone. The enforcement of such a mechanism is to ensure that ineligible persons do not get the benefit of such a high subsidy. The long-term implication has been that the rate of forest offences has increased, as most of the local community members, especially in the remote areas, can not complete the complicated process in time, and therefore commit the "offence". This may draw the local communities further away from involvement in forest management. Palit, S. (1996, pp. 210-229) describes the case of the Indian Forest Department in transition, where there is a move from the traditionally restrictive use, to the participatory use of forest resources by local communities.

Field research data show that the socio-economic change taking place has resulted in the emergence of a pattern of forest product appropriation, based on cash and contractual services. It has also changed the role of forest resources which is determined by the position one occupies on the transitional scale of change. This type of change is more prominent in Shaba and least so in Radhi. In Shaba, for example, direct contact with forest resources is diminishing for some of the households, as forest products are acquired through contractual services and are increasingly replaced by alternative sources and products. As discussed in the earlier section, there is a general trend towards a greater dependence on contractual services, and to investing time and effort to earn cash. Similar trends exist in Radhi and Chumey. Limiting factors, such as access to resources and the lack of opportunities, are all that is restraining them from moving forward on the transition scale.

A lack of tenurial rights over forests traditionally used by the local communities, has placed the confidence of the local communities at various levels. Some empirical evidence that emerged from the analysis of the field survey data, was the lukewarm response of the local communities to the social forestry programme. The assurance of tax exemption on the timber harvested from the social forestry areas, had only limited impact in encouraging the local communities to plant trees on their private registered land. One of the reasons for not planting trees, even in Radhi which experiences shortages of fuelwood, is the low confidence level concerning the tenure of the trees when they mature.

5.3.3 Considerations with Regard to Communal Forest Tenures

One of the objectives of managing forest resources has always been to increase the per capita income of the rural communities. This has been consistently stated in all the Five Year Plans. The creation of private nurseries by the local communities has been offered as one means of increasing the income at household level. For instance, one of the main activities foreseen in the on-going World Bank-Swiss Development Co-operation project in eastern Bhutan, is to encourage the households to establish private forest nurseries, so that the project can buy from them. The creation of a few

---

[122] The *Gup* of the *Gewog* has to certify the residency of the household member. This certificate is forwarded to the *Dzongkhag* Administration who endorses the eligibility for subsidised forest products and sends it to the Divisional Forest Officer (DFO). The DFO assesses the requirement in terms of quantity and sends the authorisation to the Range Officer. The Range Officer issues the permit and instructs the Beat Officer or Forest Guard to mark the trees. The timing for marking of the trees for rural use has to fit into the annual schedule approved by the FSD. It has proved more rewarding to hand carry the documents from one office to another personally.

community forests on a pilot basis is also planned, but the project does not envisage looking at the tenurial issues, as it is considered to be too complicated at this point in time. Many forestry development programmes (RGOB, 1996e) emphasise the need to increase the per capita income of the local communities, based on inputs from outside and on existing resources in and around the localities.

Field research data shows that without a tenurial system that is protected by specific legislation, local communities may continue to avoid involvement in forest resource management. Factors such as the absence of tenure over the forests traditionally used by the local communities, the many bureaucratic procedures to be negotiated to appropriate forest resources for meeting forest product needs, the emergence of a cash and contractual service-based delivery pattern of forest products, have changed people's perceptions towards forest resources.

Tenurial rights and economic incentives can be used as instruments to encourage the local communities to participate in the management of forest resources traditionally used by them. This approach has been tried, on a pilot basis, in Trashigang and Punakha *Dzongkhag*s, but without tenurial rights and adequate economic incentives. Neither is there provision for the sharing of costs and benefits of the forests. This has resulted in the low level of participation by the local communities in such a programme. According to the draft Community Forestry Rules 1996, (Section 17.2) the ownership of the community forest still belongs to the state, and could be taken back any time the state considers it necessary[123]. *'In the event that the DFO and the Dzongkhag Administration jointly determine that a Community Forest Management Group (CFMG) is unable to manage the Community Forest according to its approved management plan, or that the group has done something which has resulted in significant adverse effects on the forests, or that the group activities do not comply with the act, rules, or management plan, the DFO and the Dzongkhag Administration shall suspend the rights and privileges of the CFMG to control, manage, and utilise the concerned forest area and shall inform the Ministry of Agriculture of the decision'*. Schmithüsen (1997, p. 214) states that the system of state supervision in communal forests has gradually been enlarged by relying on incentives which the owners are free to use at their discretion, and on supportive measures. Today, forest practices in communal forests need to be based increasingly on joint management systems and co-operation among different categories of tenure entitlements. This concept of sharing economic benefits and cost of the management of the forests seem to be the success factor as compared to other approaches.

The following organisational chart adopted from Schmithüsen,[124] is placed in the Bhutanese context (Figure 40). The public forest land owners are represented by the Forestry Services Division and *Gewogs*. Silviculture and management, timber harvesting and wood processing are regular forest management activities. The sale of wood on the open market is equivalent to the existing timber auctions carried out by the Forest Development Corporation (FDC). The wood-based industries such as Calcium Carbide and Chemicals, and Bhutan Particle Board Limited, have concessions leased out by the FSD for the supply of raw material, which is equivalent to the concept of stumpage sales and forest management contracts.

The various forest activities in Bhutan could be brought under such forms of timber allocation as they addresse two issues central to the evolution of institutions at the local community level - 1) the state can not carry the burden of the complete cost of the benefits going to the local communities 2) the local communities can not just see all

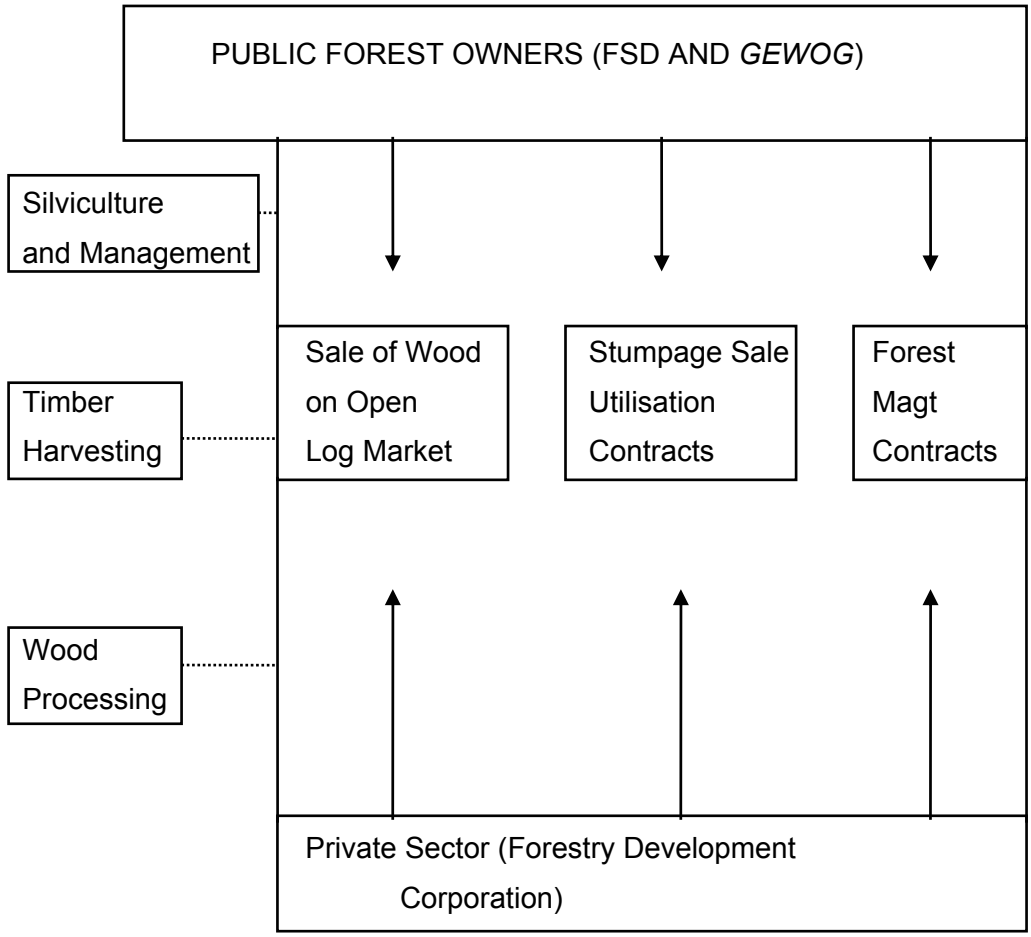
---

123 See RGOB, Community Forestry Rules, Ministry of Agriculture, 1996b.

124 See Schmithüsen, (1996a), Tenure and Joint Resources Management Systems on Public Forest Lands: Issues and Trends, p.44.

benefits being absorbed by the state and at the same time be expected to contribute to the management of the forest resources. An appropriate matching of the two issues may result in the gradual evolution of institutions in which both the state and the local communities can embark on sustainable forest management. For instance, a figure of 30 percent of cash income from the sale of forest products going to the local communities could be a starting point. Of course, one needs to fall back on the institutions to manage this fund, otherwise the state will have good reasons to annul such an arrangement. An analogy can be seen in the draft Community Forest Rules, 1996. One of the over-riding conditions for the operation of a community forest is that if the state has reason to believe that it is not functioning according to the agreement signed with the state, the particular forest will cease to be a community forest. There are no quantifiable measures as to how the term 'reason to believe' can be assessed or interpreted. Local communities will, therefore need to rely on legislation that will bring them to a level where they can also interpret the agreements and negotiate on terms agreeable to them.

Figure 40: Forest Resources Utilisation Involving Public Land Owners and Private Sector Activities



Adopted from Schmithüsen, 1996a, p.44.

5.3.4 *Gewog* Forest Resources Management Committee

The existing administrative unit, i.e. *Gewog Yargye Tshogchung* (GYT), can be used as the basic institution and substrate in the *Gewog,* for the evolution of any resource management institution. Figure 41 provides the outline of how this might be achieved. The selection of the *Reesup* could then be done, according to the norms adopted for the election of *Gup*s and *Chimi*s. The *Reesup* will be accountable to the *Gewog* Forest Resource Management Committee (GFRMC) and his terms of reference should be approved by the (GFRMC).

Two pivotal factors for the success of this approach are - self-evolved forest resource management institutions and the recognition and sanction of the state, on the authority of the GYT, GFRMC and the *Reesup* to manage the forest resources under their jurisdiction on their own terms. Presently, there are no effective institutions in the *Gewog* capable of managing the forest resources sustainably. This becomes even more relevant if the existing hierarchical structure is considered. Without an effective self-evolved institution, the temptation by a few to mis-use the trust of the state would be high and costly for the *Gewog*. Therefore, before any drastic change in the forest resource management policy is initiated, appropriate self-evolved local community-based institutions have to be in place.

For the institutions at the local community level to be effective, the state has to recognise their legal authority. This could be achieved by adding a clause to the existing Forest and Nature Conservation Act 1995, which could be legitimised by the National Assembly. For instance, the definition of the forest could be revised as *'-- forest means any land and water body, whether or not under vegetative cover, in which no person has acquired a permanent and transferable right of use and occupancy, whether such land is located inside or outside the forest boundary pillars, and includes land registered in a person's name as Tsamdog (grazing land) or Sokshing (woodlot for collection of leaf litter), except forests under GFMC which will be covered by the GFMC rules'*. This could be a first step towards the tenure and legitimisation of the forest resources used and managed by the local communities. This would engender and encourage the evolution of institutions at various levels of the society.

The Forest and Nature Conservation Act 1995, and the Land Act 1978, will provide the common ground, should there be a need for arbitration between the GFRMC and the Forest Management Unit of the FSD (Figure 42). The assumption is that appropriate revisions have been made in the legislation, incorporating the existence of the GFRMC and its legal authority[125]. An example is the forest fire case in which the people considered that the liability imposed on the local communities by the state legislation was too much. In response to this proposal, the National Assembly passed a resolution in 1995 (RGOB, 1995d) stating that should the culprit of the forest fire not be detected, the local community's liability extends to the replanting of the burnt area. This is in contrast to the earlier ruling which stated that if the culprit was not detected, the local community had to pay a monetary fine which could amount to thousands of Ngultrums.

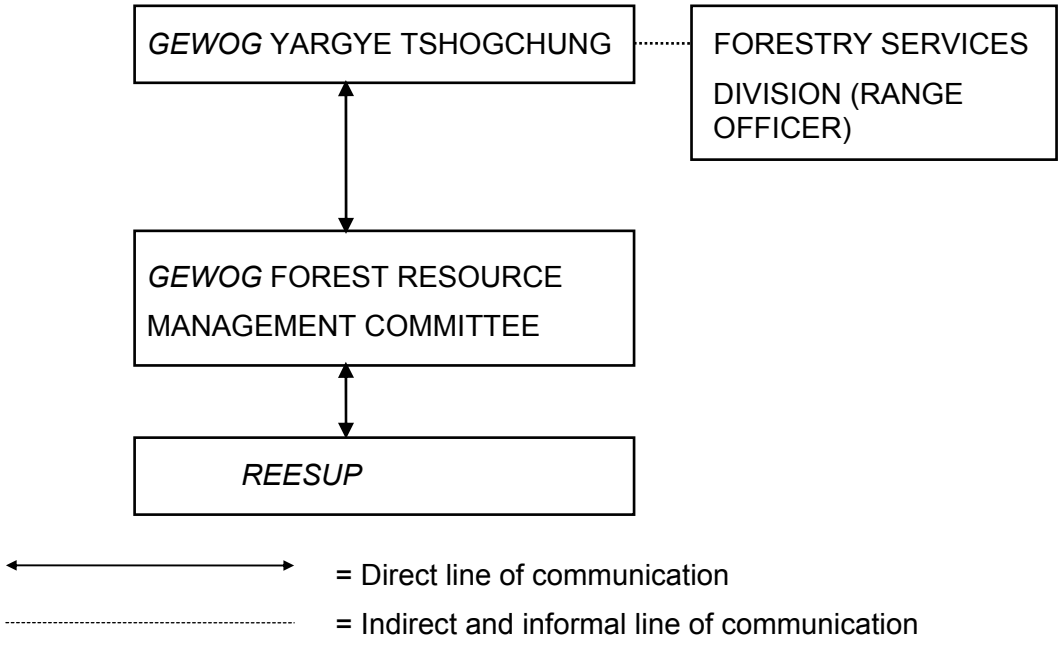
One of the likely outcomes of the *Gewog* Resource Management Committee is that as the committee matures, it may lead to the sharing of more responsibilities in the management of forest resources by the communities. This may also be a step towards demarcation of government and community forests where responsibilities of each are institutionalised. This process could have implications on the management of programmes and resources, other than those related to forests. The high economic

---

[125] Depending on the validity of the issue, such revisions have been made by the National Assembly. The concerned agency proposes such revision to the Cabinet of the RGOB who then puts in the agenda of the National Assembly. A *Chimi* can also put up an issue for consideration of the National Assembly through the respective *Dzongkhag*.

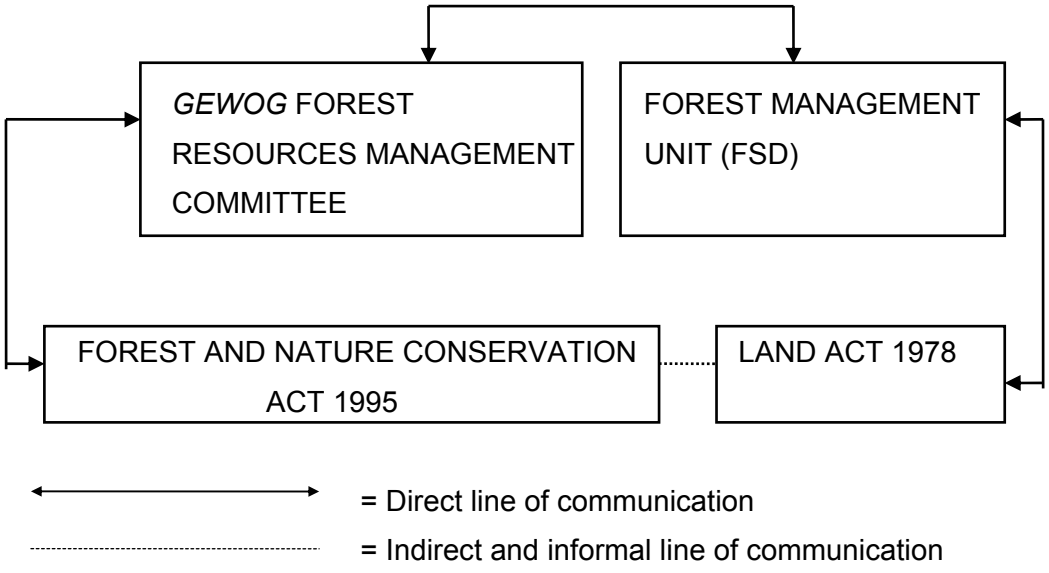
returns from forestry activities, and the tenurial entitlements could encourage the genuine participation of the communities in forest resource management. This could eventually engender and enhance the effectiveness of the *Gewog* Resource Management Committee.

Figure 41: Forest Resource Management Committee



Source: Author's construction, 1997

Figure 42: Institutional Linkage between the *Gewog* Forest Resource Management Committee and Forestry Services Division, Forest Management Unit



Source: Author's construction, 1997

The other likely outcome from an institution such as the *Gewog* Forest Resource Management Committee would be a simplification of the present procedure for appropriation of forest resources by the villagers. The rationale is based on the findings from the research sites, where substantial time and energy is expended by the households in the process of being able to legally appropriate basic forest products and where the limited infrastructure of the government makes it difficult to cover all the remote parts of the country.

The present system has emerged in response to the complexities inherent in the use and misuse of forest resources. This is reflected in the forest offence data analysis results. It is also important to be aware of the locality factors, such as hierarchy, resource use patterns and local power structure, before dwelling on the simplification of administrative structure. For example, a simplified access will not be adequate to deal with forest product use in urban areas, where, given the opportunity, economic considerations could lead to a contravention of rules. Complicated rules are meant to address complicated forest resource utilisation and access problems in the country. These complicated problems are localised and are characteristic to urban areas and wood-based industries, which use large quantities of raw material. However, rules are applicable at the national level and affect urban and industrial consumers, as well as the communities in the remote areas. Therefore, there is no reason why some of the rules for appropriation of forest products could not be simplified in rural areas, for example in Laya, Lingshi, Merak and Sakteng as pilot areas. Such an arrangement will draw the local communities closer to the self reliant management of their forest resources and reduce their exposure to state clientelism. This may perhaps reduce the cases of pilfering of subsidised timber to urban areas, thereby reducing the administrative personnel needed for enforcing the rules. This is an important issue, as forestry records show (FSD, 1995f) that misuse of rural timber (subsidised) in the urban areas, is one of the major offences committed in the category of the misuse of forest products. The forest product movement rules have to be amended to be compatible with the coming of any new structure. The level of decentralisation of authority has to be carefully analysed before a full scale decentralisation can take effect. The high variability in the extent of knowledge of the Forest Act, could make this a useful exercise.

Under the new approach, the Range Officer would issue the permits, after going through the normal verifications of eligibility for forest products, at the recommendation of the *Gup*. The authority of the Forestry Services Division could be delegated to the Range officer, and the *Gewog Yargye Tshogchung* could asume the responsability of the Dzonkhag Administration. The present location of the Forestry Services Division offices makes it convenient for the proposed new approach to be less disruptive administratively. There is, for instance, a Forest Beat Office in all three research *Gewog*s, therefore the proposed approach could blend into these existing office structures. It could prepare the ground for the *Gewog* Forest Resource Management Committee to assume the general administrative responsibilities for forest resource management in the *Gewog*. The Committee will be responsible to the concerned *Dzongkhag* Administration and the Forestry Services Division that will evaluate the functioning of the Committee from time to time.

A mechanism however, has to be built into the system to ensure that there is no unnecessary demand for the forest products, and that misuse is controlled. The issue of the timber pricing policy, in which there is more than 50 percent difference in

royalties between rural and urban forest products, may subject the proposed approach to abuse. Therefore, flexibility has to be built into the approach so that it can sometimes be modified by the government, to suit a particular situation.

5.4 Summary of Important Aspects for Policy Development

Social Performance: The concept of social performance and the locality factors are useful tools for the evaluation of resource management policy options. Local communities reflect their performance in a manner influenced and permitted by the locality factors, such as the social energy flow regime, resource access-differential, existing norms and customs and social elasticity. These maintain the stability of a community. Any outside intervention disturbs the line of interaction among the community members and may sometimes lead to a state of instability.

There is a need to take stock of the locality factors, in addition to the regular inventory of physical resources, when contemplating interventions aimed at improving the quality of life of the local communities. In many countries, where such a process has been by-passed, it has taken a high toll on the sustainability of the forest resources and the stability of the communities. Some of the international agencies and bi-laterally assisted projects in the developing countries have demonstrated this need. Therefore, a resource management strategy that has evolved from the local entities may be more appropriate for the local communities, and make the partnership between the state and the local communities more meaningful. For instance, local community-based forest resource management institutions can act as the link for a fruitful partnership between the state and the local communities. The performance of the institution will be a reflection of the needs and aspirations, based on local factors, that are perceived by the communities themselves. This in itself may contribute to social stability.

Role of Government for Promotion of Local Participation: Most of the social organisational capabilities have changed, local resource management institutions have either been replaced by national laws or have become inadequate in relation to their functionality in the present socio-economic environment: These reasons and the differing role of forest resources in different regions have increased the urgency to have a locally appropriate national forest policy. Forest resource management issues are at diverging points. To transfer any responsibility of the state to the local communities, a substrata is necessary to accommodate and sustain this responsibility. The most efficient substrata are local community-based institutions. To create favourable conditions for the institutions to grow, the decentralisation of management control over resources and initiatives, must be part of the process.

The strength of this policy lies in its approach, whereby local communities would be encouraged to share in the responsibility of distributing the wealth of RNR at the local level. The FRMC at the *Dzongkhag* level will only act as a facilitator, and will rely on the *Gup*s, *Chimi*s, DYT and community members to evolve forest resource management institutions of their own accord. A pilot study using the FRMC concept, can be implemented in the three regions of the country. Detailed terms of reference of the FRMC members, legal status, the day-to-day functioning of the FRMC, the preamble of the FRMC and financial management must be documented and the approval of the National Assembly obtained.

The policy option offered may or may not work in engendering and encouraging the community members to accept forest resource management responsibilities in the long run. However, it is felt that this option has the potential to eventually usher in a stable and sustainable forest management scenario with clear-cut property rights over forest resources, as in the case of drinking water or irrigation water and agricultural land.

Impact of Land Tenure: Self-evolved, local community-based forest resource management institutions are a prerequisite for tenurial entitlements of economic benefits. An analysis of field data shows that presently there are no local community-based forest resource management institutions that can absorb any additional responsibility without the risk of unbalancing access to the resources. The community forestry approach provides limited room for purposeful participation (lack of tenure security and economic incentives), as the strategy is based on mechanical, rather than organic, involvement between the state and the local communities. Therefore, processes that encourage and enhance the evolution of forest resource management institutions at the local community level must be initiated, corollary to dealing with legal and economic incentive issues. Thrusting responsibilities on the local communities without proper institutions, may lead to unsustainable forest resource management. It may also result in a situation where some may not have access to the forest resources, by virtue of not being a member of a certain group. At least under the present system, the state ensures that everyone gets the basic forest product needs, albeit through a long and complicated process.

6. Conclusions

6.1 With Regard to Sustainable Forest Management

The National Resource Base: The present comfortable forest resource-base (64 percent of the country under forest cover) is an asset for the evolution of a well functioning forest policy and an effective management strategy. The combination of low population pressure and limited access infrastructure into most of the forests, favours such a development. Strict legislation on the use of, and access to, forest resources at an early stage of economic development, and comparatively high prices of forest products may also contribute to the successful functioning of the forest policy. Very little forest land has been lost to agriculture, although this can be a generic problem of many other developing countries. However, one needs to look deeper and further into the future state of the forest resources. Like the socio-economic environment, the role of forest resources is changing in a manner that demands compatible management strategies and policies. This makes it even more pertinent to have research data to support these strategies and policies.

There are indications that this comfortable situation is in transition. The population is increasing at a rate of nearly 3 percent; at this rate, by 2020 Bhutan's population will double the present figure of 600,000. This will impose an extra demand on resources, particularly forest resources. There are numerous examples of countries who lost their forest resources because of inappropriate policies. People at various levels in society will aspire to have more access to forest resources, and may become less altruistic towards others, including the state. Furthermore, the government will increasingly need resources to fund development programmes, and forest resources will play an important part in this process.

Better Information on Forest Resource Potential and Future Demand: There is a need for better information on forest resource potential and on future demand, in order to make realistic plan projections. For instance, the number of operable and inoperable forest areas makes a considerable difference to policy and investment decisions. The methodology and the criteria used by the FMP (RGOB, 1991) to distinguish between operable and inoperable areas has not been documented. It is clear from the criteria used to demarcate areas on the maps (very little ground truthing was carried out) that they only considered commercial and industrial harvesting of forest resources, and that local and rural requirements were not accounted for. However, more than 85 percent (1.2 million cum. for firewood, and 250,000 trees and 120,000 poles for construction, FSD, 1996) of forest products are consumed in the rural and semi-urban areas. This highly distorts the figures, and it is not surprising to obtain a figure of more than 90 percent, with regard to the amount of the country's forest resources located in inoperable areas. A study to revise the criteria for classifying operable and inoperable areas in the context of forest resource use, and their location in relation to the rural areas, could yield useful information for making forest policy decisions, especially policies relating to forest use by the local communities.

Changing Perception and Role of Forest Resources: The changing environment has caused local communities to change their perception of forest resources, to a large extent, along the lines of social stratification within the communities. The role of forest resources has changed from the traditional view that forest resources are primarily meant for meeting firewood needs, to being increasingly perceived as a source of monetary income and potential source of land for other forms of use. This perception has been largely influenced by the heavy demand for forest products and high financial

returns. It is also influenced by some of the inappropriate natural resource use strategies. For instance, the policy of forest product use whereby the state takes the responsibility of complete management and generates state revenue, encourages the local communities to explore other forms of income generation. This issue becomes more relevant when one considers that Bhutanese forest products fetch one of the highest returns in the region, when exported to India.

Sustainable Use and Production of Firewood: Rationalisation of the present landuse could make some impact on the sustainability of forest resources. The extraction of firewood in the rural areas will increasingly become an issue of sustainability. The rural population should not suffer from a shortage of firewood, nor should the nearby forest areas be degraded. A firewood extraction policy, whereby firewood is supplied from logging areas on a cost-sharing basis, until the village forests have recovered, could contribute to sustainabilty at the national level. In this context, the reclassification of forest areas which are classified as operable and inoperable could make more forest areas available for use by the local communities. The present classification of the forests will cater only for commercial harvesting and may not be able to take advantage of the forest resources available beyond a certain distance from the motor roads, or higher up the steep mountain slopes.

Evolving Practices of Shifting Cultivation: The impact of landuse policy on the socio-economic aspects of the local communities, needs to be looked at more closely, such as the decision to phase out the practice of shifting cultivation. The practice of shifting cultivation is widely considered to be a social phenomenon, and its practice linked to the socio-cultural aspects of the cultivators. The practice allows the households concerned to adjust their life-style to suit their needs. Moreover, such land can not usually support any form of intensive landuse practice. Any change in the use of shifting cultivation land, unless completely left fallow, may perhaps not be achieved without further environmental degradation. The search for alternatives to shifting cultivation should therefore continue, and could perhaps emerge from the existing landuse practices of the local communities. There are possibilities that it may merge into the transforming socio-economic constellation of the social structures which may be a much smoother process. One possible alternative could be the provision of plant species with a high potential for value-addition, for planting on shifting cultivation land.

Alternatives to Shifting Cultivation: The Ministry of Agriculture and Home Affairs is in the process of collecting data (to be completed in 1997), on the extent of shifting cultivation in the country. The data base is considered to be reliable, as one hundred percent ground truthing of the shifting cultivation areas was carried out, in the presence of the land owner. Based on this, a pilot study could explore the socially acceptable and economically feasible alternatives to shifting cultivation. Possible alternatives could include the raising of high value tree and bamboo plantations. The study could also incorporate an assessment of environmental damage, if any, resulting from shifting cultivation, and the latitude of social elasticity afforded by such a practice in the shifting cultivators' daily life. The result will be useful, as some of the studies carried out in Southeast Asia show an increase in biodiversity as a result of shifting cultivation.

Some of the research findings may be used as contributions to the decision taken during the 7th FYP, and further pursued in the 8th FYP, to phase out shifting cultivation. It could throw some light on the complexities, both social and economical, inherent in a farming system which developed in response to capabilities of the local environment and social performance.

6.2 With Regard to Forest Policy

Transformation of Local Management Institutions: The local forest management institutions and social organisational capability for acquiring basic forest products, and the local communities perceptions of forest resources, are in a process of transformation.

Lack of Functional Partnership: At present, as there is little functional partnership, the state has to carry on the responsibility of the management of forest resources for the time being. Social units are either too small or too loosely formed to be considered as effective local community-based institutions. In some cases, access to forest resources based on hierarchical structures could also be a limiting factor to assuming the role of local community-based institutions. Therefore, a partner, who is capable of negotiating forest resource management issues with the state, will need to be in place. This may only happen with the sanction of the state, and a willingness by both parties, to come to terms with each other.

Improvements in Resource Management Systems: The present mode of appropriation of forest resources affords little incentive for resource management systems to improve. The client-patron system of acquiring forest products in some regions, an abundance of resources in other parts, and the use of contractual services for delivery of forest products in yet other regions, provide little incentive to consider an approach involving the creation of local institutions. In the context of Bhutan, a metaphor in the form of a 'spark plug' is essential to start the process of evolution of local level institutions. Some possible elements contained in the 'spark plug', can be decentralisation of responsibilities of forest resource management, allocation of tenure entitlements and economic incentives from the forest resources, and the revision of certain clauses of legislation that will legitimise the use of, and access to, forest resources by the local communities. These institutions will eventually become the substrata for the growth of a partner of the state to participate in any forest resource management and development programme. The missing link between the state and the local communities, for the successful shift of property rights of forest resources from that of the state to the community, may eventually become visible. Such a scenario will provide ample opportunity for both partners to negotiate on terms agreeable to each other. It is likely that from this point onwards, the advantage one derives from the other will depend on the negotiation capability on equitable grounds. The state will also need room to adjust, should such an arrangement fail to deliver the expressed objectives. Therefore, a link between the local community-based institutions and the state has to be maintained for a longer period of time.

Promotion of Local Management Institutions: One viable option that could enable both partners to reach agreeable terms, is the evolution of local community-based forest resource management institutions. As a result of this process, the state could rely on these institutions as partners to negotiate forest resource management.

In a wider context, for successful transformation of any natural resource property rights, local community-based institutions are essential. It is only through such institutions, that the state has a partner with whom it can negotiate forest resource management or, for that matter, any resource management with the local communities. This process engenders genuine participation and also makes the patron-client relationship more mutually agreeable.

Establishment of Community Forests: The need for research into forest property rights was recognised in 1984, when the Forest Department (now Forestry Services Division) was instructed by the Royal Government to start a community forest in Paro. The impact of creating a community forest from the existing state forest in Bhutan, and the conditions necessary for establishing community forests were unknown, as no research

had been conducted on these issues. However, the political will to transform the property rights of some of the forest resources is still there. This is reflected in the various policy documents of the Royal Government of Bhutan. In response to such a need, the conditions required for the successful establishment of community forests in Bhutan have been discussed with respect to cross-sectional research sites in the country, and taking regional variability into consideration.

Towards a New Balance of Responsibilities between Local Communities and Government: Decentralisation or transfer of some of the responsibilities of forest resource management has been a consistent policy of the government. However, at the sectoral level, this has not resulted in an applicable strategy. The initiation of local community-based forest resource management institutions could be assessed as an option which could eventually act as a substrata necessary for a decentralisation policy to grow and prosper. This assessment should be carried out in relation to an on-going forestry project. For example, a decentralised firewood supply study could be carried out in one or two *Dzongkhag*s. This would have to be co-ordinated by the concerned *Gewog*s, *Dzongkhag* Administration and the Forestry Development Corporation. A detailed project proposal would need include specific terms of reference for the concerned agencies involved, a well-defined benefit and cost sharing strategy and a foreseeable time-frame for the project. If found to be an effective institution, it could be extended to the national level.

Use of Incentives: It is becoming increasingly clear that without additional incentives in spite of the already existing subsidies for forest products, local communities are not interested in expending any extra effort and time for forest management. A programme concerning this issue could be a useful policy instrument, given that one of the government's consistent policies is to involve the local communities in the management of the country's forest resources. The on-going community forestry project in eastern Bhutan could be used as a pilot project to examine this concept. The findings could be used to improve the draft of the Community and Private Forest Rules, 1996. Initially, the draft Community and Private Forest Rules should be kept in abeyance until the results of the pilot project have been analysed.

6.3 With Regard to Forest Research Requirements

The Need for a National Forest Research System: Within the RNR sector, forests have been subjected to the least research, in comparison to agriculture and livestock. The immediate need to concentrate on the protection of forest resources has limited the activities such as research, whose outputs are, by nature, mostly long-term. If one is to take stock of forestry research, very little research data is available - both basic and applied. This has a direct bearing on policy formulation and implementation. As forestry programmes become more complex, the need for research will grow. A sound foundation of forestry research must include documentation, and cover specific subjects. This will also entail human resource development necessary to implement the research programmes. There has to be a concurrent human development programme linked to the research programme. Initially, one option for addressing this problem is to establish links with universities and research institutes dealing in subjects that could be useful for Bhutan. This will enhance the research process and take advantage of research carried out in other areas.

Institutional Aspects of Forestry Research: The major client of the forest research is still the FSD, in contrast to agriculture and livestock where the main clients are the farmers. The strategy of forestry research must therefore be considered from this point of view. The RNR Sector Research Strategy for the 8th FYP has recognised this contextual difference while projecting forestry research during the plan period and further development. The other contextual issue is that forestry research is with another

agency (Research, Irrigation and Extension Division), but under the RNR sector. This calls for a high degree of co-ordination between the client and the researcher, which will become even more demanding, when issues such as institution building at the local-level, and property rights of forest resources are dealt with. It can be expected that the recently formulated forestry research programme may, to a large extent, address this issue.

Forest Research Priorities: Prioritisation of research subjects will ensure that the resources required are not over-burdened at the initial stage. This has to be done in relation to the policy objectives and needs in the field. The diverse nature of forestry science demands that research subjects also be integrated with each other as far as possible. For instance, preparation of management plans must integrate access to, and entitlements over, forest resources by the local communities. Initially, scientific data, such as growth and yield can be drawn from other similar eco-systems, but experience of social performance and its impact on forest policy, from similar areas in other regions, may not be compatible with the Bhutanese situation.

Expand International Research Co-operation: The Royal Government of Bhutan has adopted a cautious approach as far as the association of research programmes with foreign institutes or agencies is concerned. This approach stems from the recognition of the reality that Bhutanese researchers were not yet adequately prepared to participate in a manner that was meaningful for both sides. The need for personnel at the operational and functional level to run the government machinery, was in short supply. This has resulted in a lack of research into many aspects of forestry, inspite of the need for data and information. However, a new scenario is emerging in which more and more academically qualified Bhutanese, are interested in carrying out research. There is also a realisation of the need to support government policy with research data. Within this setting, the role of international research institutes and donor agencies becomes relevant to Bhutan. Bhutan's association with external research institutes with similar interests can develop into a rewarding relationship for both partners. The RNR sector has already adopted this approach, and it is expected that this will continue to grow in future.

Research as an Integral Part of Development Projects: So far, research funds have not been the main hindrance to forest research, although the absence of a well thought out research strategy has not encouraged the donors to invest in long-term forestry research programmes. International research institutes and donors can play an important role in establishing a forest research strategy that generates both applied and basic research data. Furthermore, making it mandatory to have some applied research components built into projects financed by the donors could be a valuable contribution to the research agenda of Bhutan and may lead to the strengthening of the existing research centres.

Multilateral, bilateral and non-governmental organisations such as the World Bank, FAO, UNDP, ADC, SDC, Helvetas, GTZ, SNV have made some efforts to include specific research components on forestry in the ongoing programmes. However, since most of the programmes are implemented within a given time frame and on a project basis, the need for continuity is not met. Moreover, research results are often inadequately co-ordinated to ensure full benefits. A few agencies, who have expressed longer term involvement and have also committed funds to implement forestry research programmes, are exceptions. A policy that makes research part and parcel of any forestry development programme, seems imperative.

International Research Partners: Bhutan is now in the process of expanding its association with relevant institutes and international organisations, beyond the issue of forestry research. For instance, as a result of the United Nations Earth Summit in Rio de Janeiro in 1992, Bhutan has embarked on a research programme that will lead to a

sustainable use of biodiversity in the country. The research programme will result in the documentation of biodiversity, and establish links between the local communities who are affected by biodiversity restrictions and the conservation interest groups who are interested in conserving it. An agreement known as the “Sustainable Development Agreement” has been signed between Bhutan and the Netherlands to collaborate with each other on the conservation of biodiversity and community development in and around the protected areas. This agreement is currently being implemented.

The RNR sector has benefited from the link established with the Swiss Federal Institute of Technology. The fact that researchers, drawn from existing government organisations have been systematically associated in common projects has made these efforts rewarding for Bhutan. The research results may provide findings that support the policy decisions of the government. It also compliments the government intention to ensure that researchers have some field experience before embarking on long term research programmes. The maturation of this association can contribute to shaping the RNR’s capability to make appropriate policy decisions.

Bibliography

General References

Beattie, John, 1989: Other Cultures: Aims, Methods and Achievements in Social Anthropology. Routledge, London/New York.

Bromley, Daniel W., 1991: Environment and Economy: Property Rights and Public Policy. Blackwell, Oxford.

Bromley, Daniel W. and Cernea, Michael M., 1989: The Management of Common Property Natural Resources: Some Conceptual and Operational Fallacies. World Bank Discussion Papers Series No. 57., The World Bank, Washington D.C.

Bromley, Daniel W., 1989: Economic Interests and Institutions. Blackwell, Oxford.

Burch, William R. and DeLuca, Donald, 1984: Measuring the Social Impact of Natural Resource Policies. University of New Mexico Press, Albuquerque.

Cernea, Michael M., 1989: User Groups as Producers in Participatory Afforestation Strategies, World Bank Discussion Papers Series No. 70, The World Bank, Washington D.C.

Cernea, Michael M., 1987: Farmer Organisations and Institution Building for Sustainable Development, World Bank Reprint Series No. 414, The World Bank, Washington D.C.

Cernea, Michael M. (ed.), 1985: Putting People First: Sociological Variables in Rural Development. Oxford University Press, Oxford.

Cernea, Michael M., 1985: Alternative Units of Social Organisations Sustaining Afforestation Strategies. In: Michael M. Cernea (ed.), Putting People First: Sociological Variables in Rural Development, pp. 267-293. Oxford University Press, Oxford.

Conklin, Harold, 1967: *Some Aspects of Ethnographic Research in Ifugao*. Transactions of the New York Academy of Sciences, 2nd session (30), pp. 99-121, New York.

Conklin, Harold 1954: *An Ethnoecological Approach to Shifting Agriculture*, Transactions of the New York Academy of Sciences, 2nd session (17), pp. 133-142, New York.

Dasgupta, Partha, 1993: Poverty, Resources, and Fertility: The Household as a Reproductive Partnership, The World Bank, Washington D.C.

Goodland, Robert, 1982: Tribal Peoples and Economic Development: Human Ecologic Considerations, The World Bank, Washington D.C.

Gosden, Christopher, 1994: Social Being and Time. Blackwell, Oxford.

Hecht, Susanna and Cockburn, Alexander, 1989: The Fate of the Forests. Verso, London/New York.

Hein, L.G. and Kruijf, H.A.M., 1997: Monetary and Non-Monetary Valuation of Biodiversity for the Countries of the Sustainable Development Agreement: Functions, Values and Techniques. University of Utrecht.

Jodha, N.S., no date: Common Property Resources: A Missing Dimension of Development Strategies. World Bank Discussion Paper No. 169. The World Bank, Washington D.C.

Kaufman, Harold F. and Lois C. Kaufman, 1990: Toward the Stabilisation and Enrichment of a Forest Community. In: Lee, R. G. et al. (eds.), Community and Forestry, pp. 27-39. Westview Press, Boulder.

Kingsbury, Benedict, 1995: Indigenous Peoples as an International Legal Concept. In: Barnes, R.H. et al. (eds.), Indigenous Peoples of Asia, pp. 13-34. University of Michigan, Ann Arbor.

Lee, R.G. / Field, D.R. / Burch William R., 1990: Community and Forestry : Continuities in the Sociology of Natural Resources. Westview Press, Boulder.

Lynch, Owen J. and Talbott, Kirk, 1995: Balancing Acts : Community-Based Forest Management and National Law in Asia and the Pacific. World Resources Institute, Washington D.C.

McNeely, Jeffrey, no date: Conserving Cultural Diversity: How the variety of human experience can help promote sustainable forms of using natural resources. IUCN, Gland.

Montalembert, M.R. de, and Schmithüsen, F. 1994: Policy, Legal and Institutional Aspects of Sustainable Forest Management. Readings in Sustainable Forest Management; FAO Forestry Paper, Volume 122, p. 153-171, FAO, Rome.

Murphy, Raymond, 1994: Rationality and Nature: a Sociological Inquiry into a Changing Relationship. Westview Press, Boulder.

Myers, N., 1988: Threatened Biotas: ‘Hot Spots’ in tropical forests. *The Environmentalist* 8, pp. 187-208.

Ostrom, Elinor, 1992 a: Crafting Institutions for Self-Governing Irrigation Systems. Institute of Contemporary Studies Press, San Francisco.

Ostrom, Elinor, 1992 b: The Rudiments of a Theory of the Origins, Survival, and Performance of Common-Property Institutions. In: D. Bromley, et al. (eds.), Making the Commons Work: Theory, Practice and Policy. Indiana University.

Redclift, Michael and Benton, Ted, 1994: Social Theory and Global Environment. Routledge, London/New York.

Sarin, Madhu, 1996: From Conflict to Collaboration: Institutional Issues in Community Management. In: Poffenberger M. and McGean, B., (eds.), Village Voices, Forest Choices, pp.165-203, Oxford University Press, Delhi.

Schmithüsen, Franz, 1997: Communal Forests - A Modern Form of Public Land Management. In: I Forum de Politica Forestal 1996, pp. 207-215; Centre Tecnologic Forestal del Solsones, Solsona/Spain.

Schmithüsen, Franz and Siegel, William C. (eds.), 1997: Developments in Forest and Environmental Law Influencing Natural Resource Management and Forestry Practices in the United States of America and Canada. IUFRO World Series, Volume 7, IUFRO Secretariat, Vienna/Austria.

Schmithüsen, Franz; Kazemi, Yves and Seeland, Klaus, 1997: Perceptions and Attitudes of the Population towards Forests and their Social Benefits: Social Origins and Research Topics of Studies Conducted in Germany, Austria and Switzerland between 1960 and 1995. IUFRO Occasional Paper Nr. 7, IUFRO Secretariat, Vienna/Austria.

Schmithüsen, Franz, 1996a: Tenure and Joint Resources Management Systems on Public Forest Lands: Issues and Trends. In: Experiences with Public Forest Ownership and Joint Management Systems. Forstwissenschaftliche Beiträge der Professur Forstpoilitik und Forstökonomie Nr. 17, pp. 35-55, ETH Zurich.

Schmithüsen, Franz, 1996b: The Meaning of Forests in a Perspective of Social and Political Development. In: L'Uomo e la Foresta - Secc. XIII-XVIII. Serie II - Atti della "Ventisettima Settimana di Studi". Istituto Internazionale di Storia Economica Francesco Datini, Prato, pp. 79-97. Le Monnier, Firenze.

Schmithüsen, Franz (ed.), 1996: Forest Law and Environmental Legislation - Contributions of the IUFRO Research Group, Report VI. Forstwissenschaftliche Beiträge der Professur Forstpolitik und Forstökonomie Nr. 16, ETH Zurich.

Schmithüsen, F., 1993: *Forest Policy Development in an International Perspective*. In: Nederlands Bosbouw Tijdschrift 65 (3), pp. 150-159.

Schmithüsen, Franz, 1986: The Impact of Land Tenure on Rural Forestry Development. In: Forestry Legislation - Report of the IUFRO Working Party S. 4.06-04. Forstwissenschaftliche Beiträge der Professur Forstpolitik und Forstökonomie Nr. 4, pp. 121-140, ETH Zurich.

Seeland, Klaus, 1997: What is Indigenous Knowledge and Why Does it Matter Today? In: Seeland, K./Schmithüsen, F. (eds.): Local Knowledge of Forests and Forest Uses among Tribal Communities in India. Forstwissenschaftliche Beiträge der Professur Forstpolitik und Forstökonomie Nr. 19, pp. 12-21, ETH Zurich.

Seeland, Klaus (ed.), 1997: Nature is Culture. Indigenous Knowledge and Socio-Cultural Aspects of Trees and Forests in Non-European Cultures. Intermediate Technology Publications, London.

Seeland, Klaus, 1989: Checklist in Cultural Ecology, ETH Zurich. (unpublished)

Seeland, Klaus, 1988: Ecology and the Comeback of Religiousness. In: Das, Ch. (ed.), Comparative Religion and the Challenges of the Present. Cuttack: Institute of Oriental and Orissan Studies, pp. 1-12.

Singh, Katar, 1994: Managing Common Pool Resources : Principles and Case Studies. Oxford University Press, Delhi.

Soper, Kate, 1995: What is Nature? Blackwell, Oxford.

Talbott, Kirk and Lynch, Owen J., 1994: Workshop on Strategies for Effectively Promoting Community-Based Management of Tropical Forest Resources: Lessons from Asia and other Regions. World Resources Institute Centre, Washington D.C.

Wade, Robert, 1987: The Management of Common Property Resources: Finding a Co-operative Solution. The World Bank, Washington D.C.

Wade, Robert, 1988: Village Republics. Cambridge University Press, Cambridge.

Whyte, Anne V.T., 1977: Guidelines for field studies in environmental perception. UNESCO, Paris.

References Related to Bhutan

Aris, Michael, 1980: Bhutan: The Early History of a Himalayan Kingdom. Vikas Publishing House, New Delhi.

Aris, Michael, 1994: The Raven Crown: The Origins of Buddhist Monarchy in Bhutan. Serindia Publications, London.

Bajracharya, Deepak, et al., 1987: Village Voices in Rural Development and Energy Planning: Participation Action Research in Nepal, Bangladesh, and Bhutan. East-West Centre, Resource Systems Institute, Hawaii.

Bhutanese Indigenous Knowledge Newsletter, Volume I, No.I, Agricultural Practices. March 1995, pp. 2-10.

Bhutanese Indigenous Newsletter, Second Issue, March 1995: Institutional: Community Winter Pastures of Cattle in Ura, Bumthang, pp. 27-29.

Bhutanese Indigenous Newsletter, Second Issue, March 1995: Natural Dyes: The Vegetable Dyes and Mineral Dyes, pp. 30-34.

Chogyal, Jampa, 1995: Reciprocity: A Buddhist point of view. Paper Presented at the International Workshop on Reciprocity at Paro in Oct. 1995 (unpublished).

Collester, Peter, 1987: Bhutan and the British. Serindia Publications, London.

Cynthia, Caron, 1994 a: Introduction to Jigme Dorji National Park: Research Rationale and Methodology for Socio-economic Surveys. Nature Conservation Section, Forestry Services Division, Thimphu.

Cynthia, Caron, 1994 b: Society, Culture and Economy: The Lifestyles and Livelihoods of Jigme Dorji National Park's Resident Population. Nature Conservation Section/WWF Bhutan Programme, Thimphu.

Desmond, Dennis F., 1995: Community Forestry: Some Current Concepts on What it is and How to Do It. Thimphu (unpublished).

Dorjee, Kinlay, 1995: An Analysis of Comparative Advantage and Development Policy Options in Bhutanese Agriculture. Doctoral Thesis, Swiss Federal Institute of Technology, Zurich (unpublished)

Fischer, F., 1976: Bhutan: The Importance of the Forests for a Continuous Development of Human Ecology in High Mountain Conditions. Swiss Federal Institute of Technology, Zurich.

Forest Development Corporation, 1996: Progress Report 1996, Thimphu.

Forest Development Corporation, 1995: Progress Report 1995, Thimphu.

Forest Development Corporation, 1994: Progress Report 1994, Thimphu.

Gansser, A., 1983: The Geology of Bhutan Himalaya. Birkhäuser Verlag, Basel.

Gibson, T., 1991: Forest Grazing Study. Department of Forest, Royal Government of Bhutan and FAO, Thimphu.

Grierson, A.J.C. and Long, D.G., 1994: Flora of Bhutan. Vols. I(i), I(ii), I(iii), II(i) and III(i). Royal Botanic Garden, Edinburgh.

Gupta, Anil, 1995: Reciprocity: Making Development a Two Way Street. Paper Prepared for the International Workshop on Reciprocity held at Paro, 1995 (unpublished).

Gyamtsho, Pema, 1996: Assessment of the Condition and Potential for Improvement of High Altitude Rangelands of Bhutan. Doctoral Thesis, Swiss Federal Institute of Technology, Zurich (unpublished).

Hasrat, Bikrama Jit, 1980: History of Bhutan. Land of the Peaceful Dragon. Education Department, Royal Government of Bhutan, Thimphu.

Johari, Radhika, 1993: Review of Findings and Recommendations of Rapid Socio-economic Surveys Conducted in and Around Jigme Dorji National Park. WWF Bhutan Programme, Thimphu.

Karan, P.P., 1990: Bhutan: Environment, Culture and Development Strategy. Intellectual Publishing House, New Delhi.

Karan, P.P., 1967: Bhutan: A Physical and Cultural Geography. Lexington, Kentucky.

King, Gary C., 1991: Social Forestry Plan for Bhutan. Department of Forestry/FAO, Thimphu.

Kuensel, 1997, vol. 10, No.12 (March).

Magno, V.C., 1994: Implementation Strategies and Operational Guidelines for the Village Forest Management Subcomponent and Training Programmes. Royal Government of Bhutan/World Bank/FAO, Thimphu.

Mehra, G.N., 1974: Bhutan: Land of the Peaceful Dragon. Vikas Publishing House, New Delhi.

Miller, Daniel, no date: Yaks and Grasses: Introductory Notes on Pastoralism in the Himalayan Kingdom of Bhutan and the Potential for Development. Department of Animal Husbandry, Thimphu.

Myers, Diana K. et al., 1994: From the Land of the Thunder Dragon: Textile Arts of Bhutan. Serindia Publications, London.

Namgyel, Phuntsho, 1996: Local Participation in Forest Management Planning, GTZ - Royal Government of Bhutan Project, Ministry of Agriculture, Thimphu.

Negi, G.S., 1983: Forestry Development in Bhutan. Report on Remote Sensing, Landuse and Vegetation Mapping, UNDP/FAO, Rome .

Norbu, U., 1993: Indigenous Forest Management Systems in Bhutan. Country Paper for Presentation at the Fourth Common Property Conference, Manila (unpublished).

Rose, Leo E., 1977: The Politics of Bhutan. Cornell University Press, Ithaca and London.

Royal Government of Bhutan (RGOB), 1996 a: Eighth Five Year Plan (1997 - 2002), Ministry of Planning, Thimphu.

- 1996 b: Draft Social Forestry Rules, 1996. Forestry Services Division, Thimphu.

- 1996 c: Marking Rules, Forest Resources Development Section, Forestry Services Division, MOA, Thimphu.

- 1996 d: Rapid Rural Appraisal for Community Forestry Site Selection. Forestry Services Division, Thimphu.

- 1996 e: Renewable Natural Resource Policy and Strategy. Ministry of Agriculture, Thimphu.

- 1996 f: Survey of Bhutan. Report to the National Assembly. Thimphu.

- 1995 a: Forest and Nature Conservation Act of Bhutan, 1995. Forestry Services Division, Thimphu.

- 1995 b: Land Cover Figures for Bhutan. Ministry of Agriculture, Thimphu.

- 1995 c: Livestock Development Policy. MOA, Thimphu.

- 1995 d: Minutes of the 72nd Session of the National Assembly. Thimphu.

- 1995 e: A Natural Resources Inventory of Zhemgang *Dzongkhag*. Zhemgang.

- 1995 f: Progress Report of Divisional Forest Office, Thimphu Division, Forestry Services Division, MOA, Thimphu.

- 1994 a: Government Orders and Circulars: Vols. I, II and III. (1992 -94). Forestry Services Division, MOA, Thimphu.

- 1994 b: Statistical Yearbook of Bhutan, Ministry of Planning, Thimphu.

- 1992: Bhutan Fishing (Amendment) Rules. Department of Forestry, Thimphu.

- 1991: Master Plan for Forestry Development. Department of Forestry, Thimphu.

- 1990 a: Land Tenure, Farmer Managed Irrigation System Research Project. Department of Agriculture, Thimphu.

- 1990 b: Rules on Supply of Timber, Transit of Timber by Land, Resin Tapping, Land Allotment and Fishing. Department of Forestry, Thimphu.

- 1987: Government Orders and Circulars, Department of Forests, MOA, Thimphu.

- 1986: Draft Pasture Policy. Department of Animal Husbandry, Thimphu.

- 1985: Fir Epidemic Report in Bhutan, Technical Advisory Services Project, Bhu/85/022, FAO, UNDP, Thimphu.

- 1980: The Livestock Act and By-Laws. Department of Animal Husbandry, Thimphu.

- 1978: The Land Act. Law Committee, Thimphu.

- 1969: The Bhutan Forest Act. Ministry of Trade, Industries and Forests, Thimphu.

- 1959: Thrimshung Chenmo, Clause Chha 1-1 - Nya 1-19. Thimphu.

Royal Society for the Protection of Nature, 1995: A Report of the Fuelwood Workshop Held at the Banquet Hall on the Occasion of World Environment Day. Thimphu.

Sargent, Caroline, 1985: *The Forests of Bhutan*. AMBIO, Vol. 14(2), pp. 75-80.

Singh, Nagendra, 1972: Bhutan: A Kingdom in the Himalayas. S. Chand and Company, Delhi.

Sinha, A.C., 1991: Bhutan : Ethnic Identity and National Dilemma. Reliance Publishing House, New Delhi.

Tegbaru, Amare, 1991: Sociological Dimension of Livestock Grazing in Gidakom Forest Management Unit and Its Immediate Environs. FAO, Thimphu.

Tjerkstra, Elizabeth, 1990: Farmer Managed Irrigation System Research Project : Land Tenure. Department of Agriculture, Thimphu.

Upadhyay, K.P., 1988: Shifting Cultivation in Bhutan: Present Situation and Alternatives. Department of Forests, Ministry of Agriculture and Forestry/Food and Agriculture Organisation of the United Nations, Rome.

Ura, K., 1995: The Hero With a Thousand Eyes. Allied Printers, Bangkok.

Ura, K., 1993: The Nomads Gamble. A Background Paper for Bhutan's National Environmental Strategy, National Environmental Commission, Thimphu.

Wagner, John, 1995: The Ethno-Botany of Four Villages in Zhemgang *Dzongkhag*. Save The Children, Zhemgang.

White, Claude J., 1909 (repr.1996): Sikkim and Bhutan : Twenty-one Years on the North-East Frontier, 1887-1908. Asian Educational Services, New Delhi.

Wollenhaupt, H., 1989: Nature Conservation and Wildlife Management Aspects in the Dute Khola Watershed. WWF, Thimphu.

References Related to South and South-East Asia

Barnes, R.H. et al. (eds.), 1995: Indigenous Peoples of Asia. University of Michigan, Ann Arbor.

Bates, Crispin, 1995: Lost Innocents and the Loss of Innocence: Interpreting Adivasi Movements in South Asia. In: Barnes, R.H. et al. (eds.), Indigenous Peoples of Asia, pp. 103-119. University of Michigan, Ann Arbor.

Bromley, Daniel W. and Chapagain, Devendra, P., 1984: The Village Against the Centre: Resource Depletion in South Asia. American Journal of Agricultural Economics, vo. 66, 5, pp. 868-873.

Cernea, Michael M., 1992: The Privatisation of the Commons: Land Tenure and Social Forestry Development in Azad Kashmir. In: Dove, M. and Carpenter, C. (eds.), 1992: Sociology of Natural Resources in Pakistan and Adjoining Countries, Vanguard, Lahore.

Chakraborty, Manab, 1995: An Analysis of the Causes of Deforestation in India. In: Pearce, David W. and Katrina Brown (eds.), The Causes of Tropical Deforestation: The economic and statistical analysis of factors giving rise to the loss of the tropical forests, pp. 226-239. UCL Press Limited, London and New Delhi.

Champion, H.G. and Seth, S.K., 1968: General Silviculture for India, New Delhi.

Chhetri, Ram and Pandey, Tulsi, 1992: User Group Forestry in the Far-Western Region of Nepal. International Centre for Integrated Mountain Development, Kathmandu.

Colchester, Marcus, 1995: Indigenous People's Rights and Sustainable Resource Use in South and Southeast Asia. In: Barnes, R.H. et al. (eds.), Indigenous Peoples of Asia, pp. 59-76. University of Michigan, Ann Arbor.

Dahal, Dilli Ram, 1994: A Review of Forest User Groups: Case Studies from Eastern Nepal. International Centre for Integrated Mountain Development, Kathmandu.

Dove, M. and Carpenter, C. (eds.), 1992: Sociology of Natural Resources in Pakistan and Adjoining Countries, Vanguard, Lahore.

Fisher, James F., 1978: Himalayan Anthropology : The Indo-Tibetan Interface. Mouton Publishers, The Hague.

Gilmour, D.A. and Fisher, R.J., 1992: Villagers, Forests and Foresters: The Philosophy, Process and Practice of Community Forestry in Nepal. Sahayogi Press, Kathmandu.

Gilmour, D.A., 1990: *Resource Availability and Indigenous Forest Management Systems in Nepal.* Society and Natural Resources, Vol. 3, pp. 145-158.

Goldstein, Melvyn C. and Beall, Cynthia M., no date: Nomads of Western Tibet : The Survival of a Way of Life. Serindia Publications, London.

Gray, Andrew, 1995: The Indigenous Movement in Asia. In: Barnes, R.H. et al. (eds.), Indigenous Peoples of Asia, pp. 35-58. University of Michigan, Ann Arbor.

Guha, Ramachandra, 1989: The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya. Oxford University Press, Delhi.

Gurung, Sumitra Manandhar, 1988: Beyond the Myth of Eco-Crisis in Nepal: Local Response to Pressure on Land in the Middle Hills. Ph.D. Thesis, University of Hawaii (unpublished).

Hoffpauir, Robert, 1978: *Subsistence Strategy and its Ecological Consequences in the Nepal Himalayas.* Anthropos. 73, pp. 215-252.

Hooker, Joseph D. 1855 (repr.1974): Himalayan Journals : Notes of a Naturalist in Bengal, Sikkim and Nepal Himalayas, the Khasia Mountains. Vol. 1. Today and Tomorrow's Printers and Publishers, New Delhi.

Hoon, Vineeta 1986: Living on the Move : Bhotiya Transhumance and Nomadism in the Kumaon Himalayan. Ph.D. Thesis, University of Madras, Madras.

Ingles, Andrew, 1994: The Influence of Religious Beliefs and Rituals on Forest Conservation in Nepal. Discussion Paper : Nepal Australia Community Forestry Project, Kathmandu.

Ives, Jack D. and Messerli, Bruno, 1989: The Himalayan Dilemma : Reconciling Development and Conservation. Routledge, London and New York.

Jodha, N.S., 1986*: Common Property Resources and Rural Poor in Dry Regions of India*. Economic and Political Weekly*,* pp.1169-1181.

Karki, Madhav, 1994: Sustainable Management of Common Forest Resources: An Evaluation of Selected Forest User Groups in Western Nepal. International Centre for Integrated Mountain Development, Kathmandu.

Kathirithamby-Wells, Jeya, 1995: Socio-Political Structures and the Southeast Asian Ecosystem: An Historical Perspective of the Mid-Nineteenth Century. In: Bruun, O. and A. Kalland (eds.), Asian Perception of Nature: a critical approach, pp. 25-47, Curzon Press, London.

Kaul, Minoti Chakravarty, 1992: Forest Rights and Forest Laws in the Indian Himalayas during the Second Half on the 19th Century. In: Schmithüsen F. (ed.), Forest Law and Environmental Legislation. Chair of Forest Policy and Forest Economics, ETH Zurich.

Kawakita, J. (1984): A Proposal for the Revitalization of Rural Areas, based on Ecology and Participation. Through the experiences of ATCHA in the Nepalese hill area. Association For Technical Cooperation To The Himalayan Areas, Tokyo. In: Seeland, Klaus, 1991: Sanskritization and Environmental Perception Among Tibeto-Burman Speaking Groups. Arbeitsberichte Internationale Reihe No. 91/1. Professur Forstpolitik und Forstökonomie. ETH Zurich

Miller, Daniel, 1995: Herds on the Move: Winds of Change among Pastoralists in the Himalayas and on the Tibetan Plateau. ICIMOD, Kathmandu.

Miller, Daniel, 1995: *Management Options for Rangelands*. In: HKH. ICIMOD Newsletter, Number 23, (Dec.), pp. 4-5.

Palit, S., 1996: Indian Forest Departments in Transition. In: Poffenberger, M. and McGean, B. (eds.): Village Voices, Forest Choices, pp. 210-229. Oxford University Press, Delhi.

Pathak, Akhileshwar, 1994: Contested Domains. The State, Peasants and Forests in Contemporary India. Sage Publications, New Delhi.

Poffenberger, M. and McGean, Betsy (eds.), 1996: Village Voices, Forest Choices: Joint Forest Management in India. Oxford University Press, Delhi.

Rangarajan, Mahesh, 1996: Fencing the Forest: Conservation and Ecological Change in India's Central Provinces 1860-1914. Oxford University Press, Delhi.

Seeland, Klaus and Schmithüsen, Franz (eds.), 1997: Local Knowledge of Forests and Forest Uses among Tribal Communities in India. Forstwissenschaftliche Beiträge der Professur Forstpolitik und Forstökonomie Nr. 19. ETH Zurich.

Seeland, Klaus, 1996: Sociological Remarks on 'Community Forestry' in Nepal. Arbeitsberichte Internationale Reihe No. 96/1. Chair of Forest Policy and Forest Economics, ETH Zurich. To appear in: Stellrecht, I./Winiger, M. (eds.). Perspectives on History and Change in the Karakorum, Hindukush, and Himalaya, pp. 305-323, Köln: Köppe Verlag.

Seeland, Klaus, 1991: Sanskritization and Environmental Perception Among Tibeto-Burman Speaking Groups. In: Joshi, M.P./ Fanger, A.C./ Brown, C.W. (eds.). Himalaya: Past and Present, vol.III (1992 - 1993), pp. 121- 139.

Seeland, Klaus, 1990: Environment and Social Erosion in Rural Communities of South Asia. In: Werner, W.L. (ed.), Aspects of Ecological Problems and Environmental Awareness in South Asia, p. 21-39, Manohar Publ., New Delhi.

Seeland, Klaus, 1986: Sacred World View and Ecology in Nepal. In: Seeland, K. (ed.), Recent Research on Nepal, pp. 187-198, Köln: Weltforum Verlag.

Sharma, Prem and Wagley, Mohan, 1996: Case Study of People's Participation in Watershed Management in Asia. Part I : Nepal, China and India. UNDP/FAO/NET, Kathmandu.

Shengji, Pei, 1995: *Ethnobotany and Sustainable Use of Plant Resources*, ICIMOD Newsletter, Number 23, (Dec.), p.7.

Shiva, Vandana, 1995: Staying Alive. Crescent Printing Works, New Delhi.

Singh, Usha K., 1971: Arunachal Pradesh : A Study of the Legal System of Adi Tribe. Har-Anand Publications - Vikas Publishing House, New Delhi.

Skar, Harold O., 1995: Nepal, Indigenous Issues, and Civil Rights: The Plight of the Rana Tharu. In: Barnes, R.H. et al. (eds.), Indigenous Peoples of Asia, pp. 173-193. University of Michigan, Ann Arbor.

Tamang, Devika, et al., 1992: Indigenous Management of Natural Resources in Nepal. His Majesty's Government, Ministry of Agriculture/Winrock International, Kathmandu.

Troup, R. S., 1921: The Silviculture of Indian Trees. Clarendon Press, Oxford. 3 Vols.

UNESCO, 1983: Swidden Cultivation in Asia Vol. I and II. UNESCO Publ., Bangkok.

Annexure I: Glossary of *Dzongkhag* Terms Used in the Report

(S) = Sharchogpa

All other terms in *Dzongkha*

Most of the terms adopted from Eighth Five Year Plan (1997-2002), Vol. I, Main Document, Ministry of Planning, 1996 and Ura, K. 1995. The Hero with a Thousand Eyes.

Aikarpo	Cloth woven from raw silk with traditional patterns (generally from the east)
Bangchung	Bamboo basket
Bongkhay (S)	Share cropping
Cheuyok	Assistant to the village informant
Chilgi dumra	Thatch garden land
Chimi	Member of the National Assembly
Chipon	Village informant
Choghu	Annually performed ritual
Chorten	Stupa (Skt), Buddhist monument
Chokidar	Watchman
Chusup	In charge of drinking and irrigation water in a village
Chuopen	Village functionary (village informant)
Chuzhing	Paddy land
Drudom	One form of labour conscription
Drongsep ngagtshel	Village/Community forest
Dungkhag	Subdivision of a district
Dungpa	Administrator of a Dungkhag
Dzong	Fortress
Dzongda	Civil administrator of a district
Dzongkha	National language
Dzongkhag	District
Dzongsel Woola	Annual maintenance of Dzong
Gewog	Administrative unit (block)
Gomchen	Lay priest
Gungda woola	Obligatory labour services to be rendered by households
Gup	Headman of a block
Kamzhing	Dry land where non-irrigated crops are grown
Kasho	Court circular or Royal Decree

Khimsa	House compound land
Lhakhang	Temple
Mang	Inhabitants of a village/Gewog
Mang Rimdo	Village/community ritual
Mangap	Village elder (also assistant to Gup)
Meesup	Forest fire guard
Mencha (S)	Mithun bull/domesticated breeding bull
Mingchang	A form of ritual practiced in some parts of the east
Ngul thok dumra	Tree/cash crop garden land
Ngye (S)	Exchange of work for grains (practised mostly in the east)
Palang	Alcohol container made of bamboo
Pakshing zhing	Land under bamboo cultivation
Pangoleng garpa	Men from eastern Bhutan called to work in the buckwheat fields of the royal estates in Bumthang
Pangzhing	Barren land for shifting cultivation
Reeshing	Shifting cultivation land (Bumthang)
Reesup	Village forest guard
Rimpoche	Term of respect for a high lama
Saphang (S)	Share cropping where tenant keeps two thirds of the output
Saunam (S)	Annual offering to religious persons
Sharchogpa	Language spoken in eastern Bhutan
Shabdrung	Term used to refer to the founder of Bhutan and his reincarnations
Shingsungpa	Agricultural crop damage arbitrator
Sokshing	Government forests registered in individual’s name for collection of leaf litter
Thrimshung Chenmo	Supreme Laws
Thram	Land register
Thrimpon	District judge
Trelpa	Household paying tax
Trulku	Reincarnate lama
Tsadrog	Grazing land
Tsarin	Payment for using someone's pasture
Tseri	Forest land registered in an individual’s name for shifting cultivation
Tshechu	Festival which normally begins on the 10th of a lunar month - (there are mainly two types: religious activity

	performed in a house; celebrated where religious dances are performed during specific time of the year)
Tshesa	Vegetable garden land
Yak	High altitude domesticated animal (*Bos gruniens*)
Yathra	Colourful woollen textile of Bumthang
Zhapto lemi	A form of labour tax
Zow	Architect/carpenter

Annexure II: List of Important Tree Species in Bhutan

I ***Subtropical zone (300-1000 masl)***

Species	***Local name***	***Family***
Acacia Catechu	khair	Leguminosae
Acrocarpus fraxinifolius	mandane	Leguminosae
Adina cordifolia	haldu, karan	Rubiaceae
Aesandra butyracea	chiwari, yika,pinshing	Sapotaceae
Ailaenthus integrifolia	gokul	Simaroubaceae
Albizia lebbeck	kalo siris	Leguminosae
Albizia procera	seto sisris	Leguminosae
Amoora wallichii	lali, amari	Meliaceae
Anthocephalus cadamba	kadam	Rubiaceae
Bauhinia purpurea	tanki	Leguminosae
Boehmeria rugulosa	dar, dongtsong	Urticaceae
Bombax ceiba	simal, pemageysershing	Bombacaceae
Canarium sikkimense	gokul dhup, dhuna	Burseraceae
Carpinus viminea	rutoshing, lungshing	Betulaceae
Cassia fistula	rajbrikha, dongkashing	Leguminosae
Castanopsis hystrix	katus, tseshing	Fagaceae
Chukrasia tabularis	chikrasi	Meliaceae
Cinnamomum Tamala	tazpat	Lauraceae
Dalbergia sissoo	sissu	Leguminosae
Duabanga grandiflora	lampate	Sonneratiaceae
Ficus auriculata	chongma,nebharo	Moraceae
Garuga pinnata	dabdabe	Burseraceae
Gmeliana arborea	khamari, kholomshing	Verbenaceae
Holopteleia integrifolia	kanju	Ulmaceae
Kydia calycina	kubinde, chamaktangshing	Malvaceae
Litsea monopetala	kutmeri,seychhangloshing	Lauraceae
Mangifera indica	am, aumchukuli	Anacardiaceae
Michelia champaca	aule champ	Magnoliaceae
Morus macroura	kimbu, tshende	Moraceae
Phoebe hainesiana	bonsun	Lauraceae
Pinus roxburghii	thaetong	Pinaceae
Quercus glauca	thomp	Fagaceae

Schima wallichii	chiluane, puyam,zalashing	Theaseae
Shorea robusta	sal	Dipterocarpaceae
Sterculia villosa	odal, phrangshing	Sterculiaceae
Terminalia alata	pakasaj	Combretaceae
Terminalia myriocarpa	panisaj, hollock	Combretaciae
Tetrameles nudiflora	maina	Datiscaceae
Toona ciliata	tooni	Meliaceae
Trewia nudiflora	pitali	Euphorbiaceae

II ***Temperate zone (1000-2000masl)***

Species	***Local name***	***Family***
Acer campbellii	chalam, kapase	Aceraceae
Alcimandra cathcarti	tite champ	Magnoliaceae
Alnus nepalensis	gama,utis	Betulaceae
Beilschmiedia gammieana	goloshing, tarshing	Lauraceae
Betula alnoides	sour,tap	Betulaceae
Castanopsis indica	sokey, aule katus	Fagaceae
Cinnamomum zeylanicum	dalchini	Lauraceae
Daphniphyllum himalayense	lal chandan	Daphniphyllaceae
Elaeocarpus varunna	bhadrse	Eleocarpaceae
Eurya cavinervis	jhingni	Theaceae
Exbucklandia populnea	pipli, chenjushing	Hamamelidaceae
Ficus neriifolia	dudhilo	Moraceae
Juglans regia	tashing, okhar	Juglandaceae
Lithocarpus pachphyllus	sungare katus	Fagaceae
Lynonia villosa	lek angere	Ericaceae
Macaranga denticulata	malata	Euphorbiaceae
Magnolia campbellii	goghe champ	Magnoliaceae
Michelia doltsopa	rani champ	Magnoliaceae
Nyssa javanica	lekh chilaune	Nyssaceae
Persea fructifera	lapche phal	Lauraceae
Prunus cerasoides	paiyun	Rosaceae
Quercus lamellosa	bangka, bajranth	Fagaceae
Quercus lineata	gum, banj	Fagaceae
Symplocos lucida	kharene	Symplocaceae

III ***Temperate zone (2000-4000 masl)***

Species	***Local name***	***Family***
Abies densa	dungsing	Pinaceae
Betula utilis	bhojpatra, latap	Betulaceae
Cupressus corneyana	chendenshing	Cupressaceae
Juniperus pseudosabina	shup	Cupressaceae
Juniperus recurva	shup shing	Cupressaceae
Larix griffithii	zashing	Pinaceae
Picea spinulosa	seshing	Pinaceae
Pieris formosa	-	Ericaceae
Pinus bhutanica	tongphu	Pinaceae
Pinus wallichiana	tongphu	Pinaceae
Populus ciliata	kashing	Salicaceae
Populus rotundifolia	kashing	Salicaceae
Quercus griffithii	sisi	Fagaceae
Quercus semecarpifolia	jhishing	Fagaceae
Rhododendron arboreum	etimetog	Ericaceae
Salix babylonica	chamashing	Salicaceae
Taxus baccata	keyrangshing	Taxaceae
Tsuga dumosa	bashing	Pinaceae

IV Other Relevant Species

Species	***Local name***	***Family***
Cymbopogon sp.	-	Gramineae
Emblica officinalis	-	Euphorbiaceae
Grevillea sp.	-	Proteaceae
Kydia sp.	Tshoshing	Malvaceae
Melia sp.	-	Meliaceae
Oroxylum sp.	-	Bignoniaceae
Rhus sp.	-	Anacardiaceae
Strobilanthes sp.	-	Acanthaceae
Woodfordia sp.	-	Lythraceae
Ziziphus sp.	Khanglayshing	Rhamnaceae

Annexure III: List of Questions and Coded Answers of Structured Interviews[126]

Part A: Forests

1.1. Are forests important for you and why?

1.1a 1 - Yes, 2 - No.

1.1b. 1 - Firewood, 2 - Construction timber, 4- Needs in the house, 5- Firewood and timber, 6- Conservation, 7- Firewood for cremation, 10- For everyone

1.2. Who do you think owns the forest of Radhi?

1.2. 1- Government, 2- Community, 3- Private

1.3. Why should we plant trees?

1.3. 1- Wood products, 2- Conservation, 3- Firewood and timber, 4- Firewood and grazing, 5- Increase existing forests, 6- For children's benefit, 7- Firewood, 10- To supplement other sources

1.4. Why is there less forest in Radhi as compared to other *Gewogs*?

1.4. 1- Population increase, 2- More agricultural conversion, 3- Bigger houses, 4- Maybe, 5- Selfish motives, 6- More agriculture and more people, 7- More population and larger houses, 10- Outsiders, 11- Consume more than other *Gewogs*, 11- overuse

1.5. Should Government hand over some of the forests to the people?

1.5. 1- Yes, 2- No

1.6. If yes to No.5, should the forests be handed over to individuals, community, etc.?

1.6. 1- Private, 2- Community, 3- Village, 4- Individuals, 5- May be, 6- Neighbourhood

1.7. Do you think that handing over forests to the people, will improve sustainability of the forest?

1.7. 1- Yes, 2- No, 3- with strict rules, 4- May be

1.8. What is the main cause of high casualty of planted trees?

1.8 1- Damage by cattle, 2- No fencing

1.9. What do you think of the present rules and regulations concerning forest resource utilisation by the people - are they too stringent, just right or too lenient?

1.19. 1- Too stringent, 2- Just right, 3- Too lenient

1.10. Do you think that there is a relationship between forests and religion?

1.10. 1- Yes, 2- No, 3- May be

---

[126] Profile of Radhi. Similar profiles were followed for Shaba and Chumey except in the sequence of the questions which were adjusted to suit local conditions. The system of coding is an empirical one. It categorises the various possible answers as became apparent from different respondents.

1.11. Do you think it is sin to cut down trees?

1.11. 1- Yes, 2- No

1.12. If yes to No.12. why do people continue to cut trees?

1.12. 1- Basic forest product needs, 2- No alternatives, 3- Firewood for cooking, 4- Firewood and construction timber, 5- For future generations, 6- Greed

1.13. Do you think that plants have lives?

1.13. 1- Yes, 2- No.

1.14. Why are Skoshings important?

1.14. 1- Firewood, 2- Firewood and leaf litter, 3- Firewood, leaf litter and construction timber

1.15. Is the attitude of your neighbour changing towards your *Sokshing*?

1.15. 1- Yes, 2- No, 3- May be

1.16. Are *Sokshing* theft cases increasing and if so, why?

1.16a. 1- Yes, 2- No, 3- May be

1.16b. 1- More consumers, 2- Forest reduced outside, 4- Free for-all attitude, 5- People do not want to travel far, 6- More construction of houses, 7- Less attached to forms of life, 10- Population increase and no proper rules, 11- Jealousy, 12- Greed

1.17. Is there a relationship between soil erosion and forest cover?

1.17. 1- Yes, 2- No, 3-May be

1.18. Do you think exotic tree species are better than local species?

1.18. 1- Yes, 2- No.

1.19. If so, why?

1.19. 3- Escapes cattle damage faster

1.20. Are you self-sufficient in firewood?

1.20. 1- Yes, 2- No

1.21. Should government supply firewood to people who do not own *Sokshing* or can not get adequate supply?

1.21. 1- Yes, 2- No, 3- May be

1.22. Has the forest cover decreased or increased as far as you can remember?

1- Increased, 2- Decreased, 3- No change

1.23. Why do you think the forest cover has increased or decreased?

1.23a. 1- Yes, 2 - No

1.23b. 1- Bigger houses, 2- Over harvesting, 4- More people, 5- More population and bigger houses, 6- More agricultural land conversion, 10- Bigger houses and more agricultural conversion

1.24. Do you think there is a relationship between deforestation and nutritional values?

1.24. 1- Yes, 2- No, 3- May be

1.25. Do you think there has been a change in the attachment towards plants/trees and why?

1.25. 1- Yes, 2- No, 3- May be

1.26. Do you think there has been a change in the attachment toward plants/trees and why?

1.26a. 1- Yes, 2- No, 3- May be

1.26b. 1- Economic reasons, 2- Selfish motives, 3- Not specific, 4- Less honest and more greedy, 5- May be, 6- Scarcity of forest products, 7- More needs, 10- No "Nging Jay" (Compassion), 11- Over harvesting)

Part B: Forest Resources Use

2.1. Should customary social sanctions be superseded by new government laws?

2.1. 1- Yes, 2- No, 3- Not all, 4- May be

2.2. Which type of forest would be most useful to you: private, community or government forest and why?

2.2. 1- Private, 2- Community, 3- Government, 4- Village, 5- All types, 6- Community-government, 7- Not sure, 10- Neighbourhood

2.3. Do you object to people coming from outside to collect forest products from your *Gewog*?

2.3. 1- Yes, 2- No, 3- Depends on products, 4- Sometimes

2.4. Which are some of the most useful species in your *Gewog*?

2.4a. 1- Exotics, 2- Local

2.4b. 3- Eupclyptus, 4- Melia, 5- All species, 6- Bamboo, 7- Fast growing, 11- Other species

2.5. Have you planted any trees under social forestry or any other programmes?

1.5. 1- Yes, 2- No

2.6. What are the main constraints in planting trees for you?

2.6a. 1- Cattle damage

2.6b. 2- No fencing, 3- Damage by human, 4- Shade to agricultural crops

2.7. Do you think sustainability of forest utilisation will improve if forest management is handled by the *Gewog*?

2.7. 1- Yes, 2- No, 3- With strict rules, 4- may be, 5- Depends on management systems, 6- At community level

2.8. Do you think the people of the *Gewog* are capable of managing the forests themselves?

2.8. 1-Yes, 2-No, 3- Village level, 4- With proper rules, 5- May be, 6- Villagewise, 7- community, 10- Smaller units

2.9. Do you think the need for forest resources are uniform in the whole *Gewog*?

2.9. 1- Yes, 2- No, 3- May be

2.10. Which is the most important use of forest resources for you: firewood, construction timber, fodder, etc.?

2.10. 1- Firewood, 2- Construction timber, 3- Fodder, 4- All forest products, 5- Firewood and construction timber

2.11. Do you use any plants as medicine, food, vegetables, etc.?

2.11. 1- Yes, 2- No, 3- Medicine, 4- Food, 5- Vegetables, 6- Medicine and vegetables, 7- All products

2.12. Do you consider people who use wild plants and tubers as a source of supplementary food, inferior to you in social status and if so, why?

2.12a. 1- Yes, 2- No

2.12b. 2- All are same

2.13. What are in your view, attributes of high or low social status?

2.13. 1- Clean heart, 2- Good neighbour, 3- One who does not kill animals, 4- Clean heart and good neighbour, 5- One who does not exploit others for own benefit, 6- One who can help, 7- One who is good to all, 10- One who settles dispute among neighbours

2.14. Is the forest cover increasing, decreasing or the same?

2.14. 1- Increasing, 2- Decreasing, 3- Same

2.15. Do you think that floods, landslides, etc. are as a result of cutting down trees in the *Gewog*?

2.15. 1- Yes, 2- No, 3- May be

2.16. Is social forestry programme useful for you?

2.16. 1- Yes, 2- No, 3- May be

2.17. How can traditional knowledge in forest management and utilisation be preserved?

2.17. 1- Cash incentives, 2- Hand over ownership, 3- Should be allowed to plant in the *Sokshing*, 4- Marketing assistance, 5- Awareness of importance of indigenous knowledge, 6- Respect social customs, 7- Allow change of ownership of *Sokshing*

2.18. Do you think government support is required to maintain/preserve traditional knowledge of forest management and utilisation? If so, what type of concessions and support would be useful?

2.18. 1- Yes, 2- No, 3- May be

2.19. Do you know of any religious forests in your *Gewog*?

2.19. 1- Yes, 2- No

2.20. Do you believe that if you cut religious forest some harm will come to you?

2.20. 1- Yes, 2- No

2.21. Should religious forests be managed by the *Gewog*/community?

2.21. 1- Yes, 2- No

2.22. Are you aware of Forest Act and some of its contents?

2.22. 1- Yes, 2- No, 3- Some parts

2.23. Should the rules and regulations to control forest use be made more stringent or less stringent and why?

2.23a. 1- Yes, 2- No, 3- May be

2.23b. 1- To control more loss of forest, 2- Everyone will have chance to get forest products

2.24. Should *Sokshing* ownership be transferred to its owners and if so, why?

2.24a. 1- Yes, 2- No, 3- May be

2.24b. 1- Can protect better, 2- Can use as per need

2.25. What do you collect from *Sokshing*?

2.25. 1- Firewood, 2- firewood and leaf litter, 3- leaf litter

2.26. How is the decrease in forest cover affecting your day-to-day life style?

2.26. 1- Longer distance to walk, 2- More expensive forest products, 3- More effort required to protect *Sokshing*, 4- Less time for agricultural activities, 5- Can't say

2.27. Who do you think is responsible for the decrease in the forest cover?

2.27. 1- Yes, 2- No

2.28. What factors are responsible for the decrease in forest cover?

2.28. 1- Population increase, 2- Construction of bigger houses, 3- More conversion into agricultural land, 4- Over-use by local people, 5- Can't say

2.29. Do you think that the restrictions for the use of forest products have any impact on the socio-economic development?

2.29. 1- Yes, 2- No, 3- May be

2.30. What do you think is the cause of land slide in Tongling?

2.30. 1- Local deities are disturbed, 2- Forest cut above the land slide, 3- People of Tongling kill bulls

2.31. What do you think is Radhi's indigenous knowledge and alien knowledge?

2.31. 1- Weaving

2.32. Do you think economic change that is taking place is affecting the institutions, social norms, and cultural values and if so, how?

2.31. 1-Yes, 2- No, 3- May be

Part C: Socio-economic Aspects

3.1. Who is the wealthiest person in Radhi?

3.1. 1- Kezang Tshering, 2- Not in particular, 3- Tashangkharpas, 4- Chador Wangdi, 5- Pema Wangdi

3.2. Do you think that the wealthiest person has also highest social status?

32. 1-Yes, 2- No

3.3. What is your main source of cash income?

3.3. 1- Agriculture, 2- Weaving, 3- Agriculture and weaving, 4- Off farm, 5- Agriculture and off farm, 6- Weaving and off farm, 7- Agriculture, weaving and trading, 10- Livestock, agriculture and weaving, 11- No particular source, 13- Dependent on parents, 15- Livestock, agriculture, weaving and government service, 16- As *Gomchen*

3.4. Do you buy agricultural products from the market or neighbours?

3.4. 1-Yes, 2- No, 3- Sometimes

3.5. Do you sell agricultural products to your neighbours?

3.5. 1-Yes, - No, 3- Sometimes

3.6. Do you have any contact persons in Merak or Sakteng for business?

3.6. 1- Yes, 2- No

3.7. Do you travel out of the *Gewog*, e.g., Arunachal Pradesh for business?

3.7. 1- Yes, 2. No, 3- Sometimes

3.8. Does any one in your family weave and where do you sell the woven products?

3.8a. 1- Yes, 2- No

3.8b. 1- Thimphu, 2- Arunchal Pradesh, 3- Other *Gewogs*, 4- Own use

3.9. Would you prefer a son or a daughter and why?

3.9. 1-Son, 2- Daughter, 3,- No preference

3.10. Would you prefer your child to go to school or a Shedra and why?

3.10. 1- School, 2- Shedra, 3- No preference

3.11. Do you think that Lopons, tshozens and *Gomchen*s have higher social status than common people and if so, why?

3.11a. 1- Yes, 2- No

3.11b. 1- Can read religious scripture, 2- Can perform religious ceremonies, 3- Can guide soul to heave after death, 4-Closer to God, 5- Know inner life of human, 11- Can find their way after death, 13- Will have to depend for rituals, 14- They know what ordinary people don't know

3.12. What do you think of the *Shingsungpa* system- useful or a burden?

3.12. 1-Useful, 2- Burden, 3- May be useful

3.13. Which irrigation system is better - old or new?

3.13. 1- old, 2- New

3.14. How do you manage the irrigation system?

3.14. 1- Community, 2- User group, 3- Neighbourhood level, 4- Land owners, 5- Old system, 6- *Mang*, 7- Village

3.15. Is the "*Ngye*" system declining and if so, why?

3.15a. 1- Yes, 2- No, 3-May be

3.15b 1- More cash to buy grains, 2- people don't like to work under some one else, 3- Better options elsewhere

3.16. Do you practice "*Ngye*"?

3.16. 1- Yes, 2- No,

3.17. Do you employ your neighbours on "*Ngye*"?

3.17. 1-Yes, 2- No

3.18. Are the "*Bongkhay*" or "*Saphang*" systems declining and if so, why?

3.18. 1- Yes, 2- No, 3- May be

3.19. Would you mind if your agricultural crop is damaged by your neighbour's cattle?

3.19. 1- Yes, 2- No

3.20. Would you take compensation from your neighbour if his/her cattle damaged your crop?

3.20. 1-Yes, 2- No

3.21. Would you differentiate between your relatives and neighbours when accepting compensation for crop damaged by cattle? If yes, what are some of the factors you will consider?

3.21a. 1- Yes, 2- No

3.21b. I- Better relationship, 2- Attitude of opponent, 3- Past experience, 4- relationship and attitude, 5- Case by case

3.22. Do you normally accept the decision/verdict given by the *Shingsungpa* on crop damage?

3.22. 1- Yes, 2- No

3.23. Do you think there should be more stringent rules regarding crop and tree damage by cattle?

3.23. 1- Yes, 2- No

3.24. Would you take someone to court if his/her cattle damaged your tree plantation - if yes/no why?

3.24. 1- Yes, 2- No

3.25. What do you think of people of Merak bringing their *Yak*s to the pasture adjacent to Radhi *Gewog*?

3.25. 1- Should not be allowed, 2- Government should stop it, 3- They are destroying the forest of Radhi, 7- Pasture should be handed over to Radhipas

3.26. Do you think that the tradition of weaving is slowly dying or becoming more prominent and why?

3.26a. 1- Yes, 2- No

3.26b. 1- Cost of thread has increased, 2- Less market,

3.27. How many acres of land do you own?

3.27. 1- Less than 1 acre, 2- 2-3 acres, 3- 3 and above acres

3.28. How often do you offer grains to *Lopons*, *Gomchen*s?

3.28. 1- Once a year, 2- Twice a year, 3- As and when approached

3.29. Are there *Lopons, Gomcehns*, that you have special relationship to whom you make special grain offerings?

3.29. 1- Yes, 2- No

3.30. Do you make special offerings/prayers to local deity to improve your crop production?

3.30. 1- Yes, 2- No

3.31. Do you believe /think that special offerings/prayers help improve crop production or protect crops from damage by wind, animals, etc.?

3.31. 1- Yes, 2- No

3.32. Do you believe that if dead bodies are cremated in the village during summer that storm and rain will destroy crops?

3.32. 1- Yes, 2- No

3.33. Is social ties among neighbours/communities increasing or decreasing as a result of increasing scarcity of forest and forest products?

3.33. 1- Yes, 2- No

3.34. Do you think there is any change in the material culture of the local people?

3.34. 1- Yes, 2- No

3.35. What do you think is a good and desirable life style?

3.35. 1- Clean heart, 2- Don't cheat, 3- Help your neighbours

Part D: Religious Practices

4.1. Who is the most venerable lama in Radhi?

1- Garab *Rimpoche*, 2- *Lopon* Chada, 3- *Lopon* Chanda and *Lopon* Ugyen, 3- All of the above

4.2. Which is the holiest temple in Radhi?

4.2. 1- Radhi *Lhakhang*, 2- DuNgyee *Gonpa*, 3- Jonla, 4- Pakaling, 5- All the above, 6- Bongmen

4.3. Is the temple in your village in the right location?

4.3. 1- Yes, 2- No,

4.4. Do you think it should be relocated?

4.4. 1- Yes, 2- No

4.5. Are the virtues of the religious persons changing?

4.5. 1- Yes, 2- No

4.6. If so, why?

1- Economic factors, 4- Becoming more independent

4.7. Are *Tshechu*s important for you?

4.7. 1- Yes, 2- No

4.8. If so, why?

1- Watch religious performances, 2- Pray for next life,
3- Pray for all the living beings, 5- Purification of sins,
10- To learn what happens after death, 11- To meet religious persons,
14- it is a holy event

4.9. Is the amount of grains you offer equivalent to your perceived virtues of the concerned religious persons?

4.9. 1- Yes, 2- No

4.10. Do you offer more grains to religious persons that you are familiar with than ones you are not and why?

4.10. 1- Yes, 2- No

4.11. Do you think that the religious persons are protecting the well-being of Radhi adequately?

4.11. 1- Yes, 2- No

4.12. Do you think the quality of *Tshechu*s in your village is better than the neighbouring villages?

412. 1- Yes, 2- No

4.13. Do you have any preference for religious persons for performing religious activities? e.g. Radhipas, outsiders, etc. and if so, why?

4.13a. 1- Yes, No- 2

4.13b. 1- Better relationship, 2- Will have to depend on him later

4.14. Do you think it makes any difference in which sequence that religious persons sit during formal ceremonies?

4.14. 1- Yes, 2- No

4.15. If yes to No.14. cite some of your experience?

4.15. 1- Sitting arrangements at *Tshechu*s, 2- Sitting arrangements at general gatherings, 3- Meeting places, 4- It is always like this in all the places

4.16. Which is the most important religious ceremony for you?

4.16. 1- Radhi *Tshechu*, 2- Dungyee *Gonpa*, 3- Jonla, 4- *Mang Rimdo*, 5- Any *Tshechu*

4.17. Do you think that rituals help in reducing natural calamities in your *Gewog*?

4.17. 1- Yes, 2- No

4.18. Do you think that the disturbances in the mountains cause natural calamities to your *Gewog*?

4.18. 1- Yes, 2- No

4.19. Do you think that the more you offer, the more blessing you get and if, so, why?

4.19. 1- Yes, 2- No

4.20. Do you consult *tshipa/lopon*/*Gomchen*/elders before starting the first cultivation of the year?

4.20. 1- Yes, 2- No

4.21. Do you believe that certain animal behaviour predicts some auspicious or inauspicious future?

4.21. 1- Yes, 2- No

4.22. Do you have any taboos relating to forest product use?

4.22. 1- Yes, 2- No

4.23. Do you think hunting is a sin and therefore people should not hunt wild animals?

4.23. 1- Yes, 2- No

4.24. Do you think it is sin to set forests on fire and if so, why are there frequent forest fires?

4.24a. 1- Yes, 2- No

4.24b. 1- Economic reasons, 2- Ignorance, 3- Better grass growth