



\*RNR =  
Renewable  
Natural  
Resources

**Bhutan-German**  
**Sustainable RNR\*-Development Project (BG-SRDP)**  
Jointly implemented by Ministry of Agriculture/Royal Government of Bhutan  
and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH  
GTZ Project No. 2001.2045.1

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German  
Technical  
Cooperation

## **GTZ Project Document No. 51**

### **Report on Nahi Baseline Survey**

**Rapid Rural Appraisal (RRA) April-May 2001**

Nahi Geog; Wangdue Phodrang Dzongkhag

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November 2001

### **Acknowledgements**

First of all we would like to thank everyone involved in this exercise (directly or indirectly) for the various contributions and assistance provided at different stages that has its own importance and significance, without which this report would not have materialised.

We are grateful to NRTI Faculty and the Management for providing this opportunity by accepting the study proposal to collaborate the NRTI Rapid Rural Appraisal week with the GTZ Project to be conducted in Nahi geog.

The RRA team remains thankful to the GTZ Project for all the support provided during the preparatory and implementation stages through meeting and discussions, and of-course for the financial support for providing two decent working lunch to the farmers and the trainees during the data collection and also for the write up and publications.

We are also thankful to Dzongkhag Administration Wangdue Phodrang, for consenting the permission to conduct the RRA programme in Nahi and also for their administrative support. Thanks are also due to Gup, Tshogpas, maangaps and Chipons of the geog for their strong support and participation during the data collection, without which data collection would not have been easy. We are grateful to the farmers of Nahi geog for their remarkable cooperation and participation despite their busy schedule on the farm.

Much thanks and appreciation also goes to the geog's Agricultural extension Agent Mr. Ghaley for his tireless assistance to the RRA group during the two weeks data collection period. His support was marvellous and unforgettable especially for guiding the RRA team in ensuring a smooth contact and communication with the farmers.

Our thanks are also due to Miss Rekha Chhetri, Lecturer, Extension Communication Faculty (NRTI) for her assistance in sparing her valuable time for punching the data into the computer.

We are not only grateful to the National Project Manager and the Team leader BG-SRDP, GTZ, for accepting to go through the draft report but also appreciate their patience to go through the draft very carefully and providing with very useful and valuable comments for which we remain highly indebted and obliged.

We also wish to thank all the 9<sup>th</sup> batch trainees and other RRA team members for their sincere cooperation and active participation that made the RRA week an entertaining and interesting learning exercise. Our thanks also goes to our cook Pandara for the delicious food and for his untiring effort by ensuring the food being served on time throughout the whole two weeks of data collection.

## **Abstract**

Nahi geog under Wangdue Dzonogkhag is the pilot project area of Bhutan German Sustainable RNR Development Project (BG-SRDP). As such, in the past a series of studies have been conducted in the valley in collaboration with other institutes and individuals. In addition the construction of the 11.85 km new access road started in 2000 represents a significant contribution and an important landmark in the history of the valley's overall infrastructure development. Therefore, the idea to develop baseline information on the geog in order to monitor short-term changes during the Project implementation phase for future studies has obliged the Project to conduct this study.

Nahi valley has almost 90% of its total area under forest. The valley is home to about 622 people (95 households). Agriculture is the main occupation of the people providing direct employment to about 60% of the working population. In most cases whatever is produced is consumed or retained on the farm for production purposes.

The terraced irrigated wetland dominate the land use pattern in the valley followed by some dryland and tsheri. The paddy is the dominant summer crop in the wetland followed by wheat and barley during winter and early spring. The dry land crops include maize, wheat, barley and buckwheat.

The four main villages of the geog are Esawom, Hebisa, Nabisa and Esagom that are scattered over a large area. Most farmers do not have enough land (especially paddy land), landholdings range from households with no or little land to as high as 14 acres. As such, the wetland sharecropping is very common approximately accounting for 23% of the total wetland in the valley. The geog, though small, shows a high degree of social differentiation especially with respect to wealth where majority require some seasonal food arrangements.

Crop damages by wild animals, inadequate water for irrigation, and labour shortage during the peak season represent the three major problems in crop production. Although on an average each household has about 3.3 persons available on the farm irrespective of their age, only 2.2 persons are within the most active age group 16-49. About 87% of the total farm households practice labour exchange with neighbours and relatives.

Crops are the most important income source for the majority of the households with a score of 276 points, followed by vegetables (108), family contribution (88), livestock (72) and forest products (69). The forest and livestock are important components of the valley's farming system both as a source of income as well as inputs for production.

Household seasonal food shortages are generally met with some arrangement through relatives and neighbours or by purchasing from the market. For example, only 65% of the total respondents have sufficient rice while 35% need seasonal arrangements (22% meet the deficiency from market and 13% from neighbours and relatives).

About 86% of the total respondents traded some farm and non-farm products in the market. Based on the minimum prices obtained in the market, it is estimated that approximately a worth of Nu.4,35,113/- are marketed (Nu.5,274/- on an average by a single household in a year) by the farmers from Nahi. The farm products include rice, maize, wheat, vegetables (beans, chilli, sag) fruits and some livestock products like eggs, butter, cheese, and ferns, mushrooms, walnut, asparagus, etc. from the forest.

The commodities purchased from the market are mostly basic necessities like salt, cooking oil, tea leaves, sugar, meat, rice, vegetables, dryfish, kerosene, utensils, clothes, etc. Based on the survey the farmers in the valley purchase about a total of 4990 Kg of salt, 2950 kg of rice, 3836 kg of vegetables, 3133 kg of cooking oil, etc. approximately per year. Some commodities like rice, vegetables, cooking oil, butter etc. are mainly purchased to meet the seasonal food deficits while salt, tea leaves, sugar, meat, kerosene etc. are purchased on a regular basis by almost all the households. In general, approximately a worth of Nu.2,53,350/- products are purchased by the farmers.

The presence of the access road is also expected to increase the role of the market in the farming system as it provides opportunities for farmers to change their production choice on the farm. Already 72% of the total respondents have expressed of initiating some changes in their farm production plans like growing more horticultural crops (vegetables and fruits).

Despite the variation in views expressed by different respondents with regard to the access road, many however shared the feeling of satisfaction and gratefulness. The access road is an important landmark in the valley's history especially with respect to the infrastructure development. Moreover as a need oriented contribution, this aptly 'addresses the peoples' long time aspiration.

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The views and opinions expressed herein are those of the authors and not necessarily be those of the Institute (NRTI) or that of the GTZ Project. Therefore, the authors remain fully responsible and answerable for any query, and also at the same time would like to apologise if any views and opinions are misinterpreted or inappropriately expressed.

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## Chapter 1 Introduction

### 1.1 Background

The Bhutan – German Sustainable RNR Development Project (GTZ) has decided to develop a baseline information for documenting changes in Nahi geog during the project implementation period. The GTZ Project therefore wanted NRTI to conduct a baseline study on Nahi geog by incorporating it in the regular RRA training programme. This study therefore, is an outcome of collaboration between GTZ Project and NRTI.

The Rapid Rural Appraisal (RRA) programme, a common compulsory course work for the trainees of the different Faculties (AG/AH/FO), requires to undergo in the second semester during the specific course. Till date NRTI has conducted a number of PRA/RRA courses for the regular diploma courses including those of up-gradation and special additional courses in between.

To gain practical field experiences and make the training more realistic, NRTI in the past has always tried to collaborate with those Dzongkhags and Projects interested to use the findings and results of RRA exercises. Through such collaborations NRTI was able to fulfil dual objectives including Institute's and that of the collaborating partners. The RRA block week provides trainees the opportunity to acquaint and get trained in RRA concepts, principles and tools by practically involving in field based exercises.

### 1.2 Concept of the baseline study

Nahi is one of the fifteen geogs under Wangdue Dzongkhag administration. The geog consists of four main villages: Hebisa, Esawom, Esagom and Nabisa (divided into four chiwogs<sup>2</sup>) and about 94% of its settlements are found on the south-western mountain slope of the valley (Figure 1.1).

The geog has been selected as a pilot area under Bhutan-German Sustainable RNR Development Project (GTZ). In 1993, a FMU, was established, but not operationalised till date. The Project has carried out several studies in Nahi valley (Kievelitz 1995, Namgyel 1996, Richter 1997) and quite recently Project has started the construction of an 11.85 km motorable approach road to Nahi. The new approach road connects the valley to the national West-Central highway and is expected to contribute to the overall development of the valley in various fields. The road is a significant contribution of the project and an important landmark in the valley's history.

The construction of the new approach road not only fulfils the expressed intention of the Dzongkhag authority but very aptly satisfies one of the most urgent needs frequently expressed by the people of Nahi valley. The impact of such an approach road can be manifold both positive and negative. But it is clear that connection of Nahi valley to Wangdue-Thimphu road is expected to lead to substantial changes in the social and

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<sup>2</sup> Chiwog- A group of households under one chuepon (messenger)

economic life of Nahi people. This very fact has raised the Project's interest to document various changes during the implementation stage for future studies.

### **1.3 Objectives of the Baseline survey**

The overall aim of this baseline survey was to establish and document a baseline in order to later monitor some socio-economic changes and short-term impacts on Nahi geog as a result of the new access road. Nahi geog on some socio-economic indicators for future

The specific objective is;

- ❖ To build up a baseline data for future studies and for documenting changes and short-term impacts during project implementation (GTZ)

### **1.4 Research Methodology**

Prior to the RRA exercise two meetings were being conducted with project staff for identifying areas of interest for data collection. Through these successive meetings and discussions a tentative list of topics have been drawn for data collection during the RRA block week (Annex 1.1).

The participants for the two weeks RRA programme in Nahi valley included 61 trainees from Agricultural, Animal husbandry and Forestry Faculties including 2 teachers and the geog Agricultural extension agent (Annexure 1.4). For logistic reasons, Nahi geog was divided into upper and lower Nahi for the RRA programme. The first week RRA covered the lower part of the geog and the second week the upper valley.(for programmes refer Annexures 1.2 and 1.3).

The five and half days field programme included 2 days input and practice on the RRA and PRA principles/concepts and tools, 3 days of data collection and a half day feedback to farmers. The input on the RRA principles/concepts covered the basic definitions, reasons for evolution of RRA as a survey method, philosophy of RRA, key features of RRA etc. Some selected RRA tools like interview techniques, seasonal calendar, ranking, village and resource mapping, etc. were also introduced and group exercises were organised on the use of different RRA tools. The summary of the RRA theory input notes is presented in Annex 1.7. Along with a brief background information on the geog (Annexure. 1.5) some available literature (reports of the past studies on the geog) were circulated among the participants for reading.

During data collection, group presentations on the day's findings were organised every evening to share and provide feedback on the use of RRA tools. The group presentations and discussions in the evening and morning provided opportunities to the RRA team members to share their experiences and decide on interview topics for the next day. Everyday new interview teams were formed with different members to share the role and also to avoid monopolising the team by a single member for every interview.

### **1.5 Data Collection**

The field level data collection was mostly based on the use of RRA/PRA tools and techniques. The training as an important component of the programme, wherever possible

as many tools as possible were used for data collection. The ranking techniques were used for finding out the important farm families' income sources and areas for expenses. The different labour requirement and household food consumption pattern on the farm were found with the help of seasonal calendar.

However, considering the nature and type of data required, most data were collected with the use of semi-structured interview guided by a checklist. The checklists in the form of questionnaires have been prepared and used in-order to ensure that uniform data were collected especially on those specified topics on all households (Annexure 1.6). This uniformity was necessary to meet the Project's objective.

For the secondary data/information already available literatures (past reports) and the 2001 RNR Census records have been referred.

### **1.5.1 Data Analysis**

For data compilation and analysis the Excel programme is used. The data analysis is limited to descriptive and tabulations using percentages and averages. The geog consists of four main villages or chiwogs, with two villages each in upper and lower part of the valley. For most analysis geog is analysed as a whole except in few aspects the geog is divided into upper and lower valley.

### **1.6 General Limitations to the study**

In general, the RRA survey methodology is more suitable to get first hand general information of a farming system, place or activities carried out in an area. Therefore, when attempting to use RRA for a baseline survey. it was often found difficult to maintain the RRA mood because of the nature of data required for the survey. Thus the need to adjust the RRA programme in order to reach a balance between the training component and the socio-economic survey needs (keeping in view of the inexperienced participants) was a challenging task.

It is understandable that acceptance of a collaboration with other institutions requires NRTI to fulfil some objectives of the collaborating partners. But at the same time RRA as a training programme also becomes essential and necessary to ensure that the training objectives are not sacrificed, while trying to fulfil the research objectives/obligation. This demands much attention and care (especially in a baseline survey like the present one) to ensure that both the training and the research objectives are met without compromising one for the other.

The present socio-economic baseline survey has compelled the RRA team to adopt and use more structured method of data collection in order to ensure a uniform data. On the other hand, adoption of more structured method often limits the use of RRA tools and thereby providing lesser opportunities and inadequate practice of RRA tools by the trainees presenting more challenges to look for more innovation to suit the training and research need.

**Figure 1.1 A Sketch map of Nahi**

## **2 Description of the Farming System**

### **2.1 Introduction**

Understanding the nature of agriculture is fundamental to understanding development. In a sense agriculture is simply one industry among many but it is an industry with difference. In poor developing countries like Bhutan agriculture employs about 85% of its total population in contrast to 8-10% in developed economies. Therefore, agriculture's role in economic development is central because most people in poor countries make their living from the land. Farmers in developing countries must produce enough to feed themselves, as well as the urban population. Hence as the proportion of the urban population rises, the productivity of farmers must also rise presenting a challenge to the producers and the development agents.

This chapter therefore, presents a brief description of the farming system in Nahi valley. The farming system is defined as a decision making and land use unit, consisting of the components like the farm household, crops and livestock systems that produces crops and animal products for household consumption and use. The farming system in Nahi integrates and manages the crops, livestock and forest activities for the sustenance of the farm family.

In many cases, analysing a farm household system requires a good understanding of the wider structures or intra household processes that affect the agricultural production. In Nahi valley the structure of the farm household system appears relatively simple. The residential units are easily distinguished, and for most purposes they constitute both the consumption and production units.

### **2.2 The Household**

The household represents a social unit and as defined by Ellis, (1988) it represents the most typical feature "dual economic nature of peasant production: the peasant unit of production is both a family and an enterprise; it simultaneously engages in both consumption and production". The household is composed of a group of people who are related and who individually or jointly provide management, labour capital, land and other inputs for production crops and livestock. Most farm households contain a nucleus family with the parents of either the husband or the wife living in the same house. The survey has covered a total of 95 households (more appropriately gungs) in Nahi geog. As in most subsistence farms, the household represents the most important component around which all the farming activities are centred. The household therefore, represents the main source of resources required on the farm for most of the crop and livestock production activities. At the same time the household is also the main consumer for almost all the products produced on the farm.

#### **2.2.1 Household size and structure**

In simple terms the farm and the household are inseparable. The farm provides employment and income for the household members while the household provides the

resources. On an average each household in the valley has a family size of 6.6 persons, with a wide range going from 2 to 14. Though some disparities exist at the individual household level, in general each household has almost 50:50 male and female ratio, but with more female on the farm carrying out farm activities. There are about 135 male farmers while the number of female farmers is almost double 208 (Table 2.1). On an average 53% of all children are enrolled in School and 5% in monk with 2.23 child per household.

**Table 2.1 The occupational distribution of the population**

Details	Male (AN*)	Female (AN)	Total (AN)	% of total population
Kids	26	26	52	8.36
Not Students	9	6	15	2.41
Students	50	63	113	18.16
Farmers	135	208	343	55.15
Monk	41	3	44	7.07
Civil servant	34	2	36	5.79
Army	9	-	9	1.45
Business	5	1	6	0.97
Drivers	2	0	2	0.32
Painters	2	0	2	0.32
<b>Total</b>	<b>313</b>	<b>309</b>	<b>622</b>	<b>100 %</b>

Source: RRA May 2001 (AN\*= Absolute number)

### 2.2.2 The Farm House

The housing structure (especially size, type of roofing and stories) is an important indication of farmers' well being. Three different housing structures are discussed below.

Like in most parts of Bhutan, as quoted by Richter (1997) a farm house in Nahi is shared by the extended family comprising of at least two generations. Of the 95 households (gungs) covered in the survey about 11% shared the houses between two families with different gungs (registration).

Three types of houses (Figure 2.1) are found in Nahi; the baago (bamboo hut), dackcha Zhigom (mixture of mud, bamboo, stones and some timber) and the typical stone or mud walled houses built with large amount of timber (for details refer Annexure 2.2).

Some families live in baagos (bamboo huts) and this is the smallest among the three categories of houses found in the valley. These huts usually have rooms ranging between one to two with the kitchen inside. They are made of bamboo (almost 90%) with some timber being used as beams and support materials. The huts are generally raised from the ground almost a meter and half or so on stone pillars or on wooden supports at different corners.

A few farm families also live in houses made with a mixture of bamboo, mud and timber (commonly called as dakcha Zhigom). These houses are one storied, constructed with mud and bamboo by using some timber and stones usually raised on stone walls or wooden posts with rooms ranging between 2 to 3 per house with the kitchen inside.

The third type or more appropriately the typical Bhutanese house is the most common house found in the valley. These houses have solid stone or mud walls on the one side

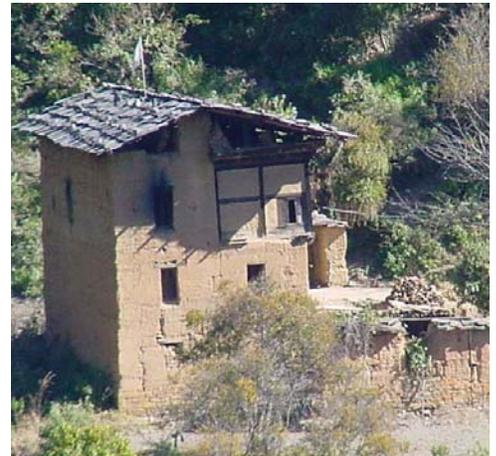
**Figure 2.1 Types of houses in Nahi geog**



“Baago” house



“Dackcha Zhigom”



“Typical mud/stone” house



“Typical improved mud/stone” house

with massive amount of timber being used. Considering the ground floor, most houses have two stories while a few have three or more stories mostly with rooms ranging between four and eight or sometimes more. A careful consideration of the quality, condition and the time of construction of some houses in this category may be necessary before one conclude them as better housing. Some are built long time back and are very old, while some are built recently with more modifications and improvements in many respects like separate kitchen, no cattle in the ground floor, etc. The distribution of the houses in the upper and lower valley with different number of rooms, stories and types of roofing the houses have are shown in the Table 2.2.

**Table 2.2 Number of rooms, stories and type of house roofing.**

Number of rooms	Upper Nahi (No. of houses)	%	Lower Nahi (No of houses)	%	Total	Total %
	Actual Number		Actual Number			
1 – 2 rooms	9	9.7	11	11.9	20	21.6
3 – 4 rooms	24	26	20	21	44	47
5 – 6 rooms	5	5.4	12	13	17	18.4
7 – 8 rooms	4	4.3	4	4.3	8	8.6
9 – 10 rooms	1	1.1	1	1.1	2	2.2
12 – 13 rooms	2	2.2	0	0	2	2.2
Total	45	49	48	51	93	100
<b>Number of stories</b>						
1 story	11	12	14	15	25	27
2 stories	27	29	29	31	56	60
3 stories	6	6.5	6	6.5	12	13
Total	44	48	49	52	93	100
<b>Roofing of the house</b>						
Bamboo	1	1.1	3	3.2	4	4
Zinc Sheet	6	6.5	5	5.4	11	12
Planks (Shingleps)	35	38	41	44.3	76	82
Slate	1	1.1	1	1.1	2	2
Total	43	46	50	54	93	100
<b>Plans for zincs</b>	<b>7</b>	<b>8.5</b>	<b>4</b>	<b>4.9</b>	<b>11</b>	<b>13.4</b>

Source: RRA Survey May 2001

Approximately, about 68 houses (including 2 and 3 storied) are recorded in the third category and about 25 in the other two categories. The number of rooms reflected in the Table 2.2 are mainly based on the different partitions a single house has. Therefore, it is likely that some rooms in some houses may be a simple partition without windows or ventilations unsuitable for use as living or bedrooms.

From 93 houses the majority have plank roofings (76 houses) while about 11 houses have zinc sheet a few with bamboo and slate. The majority of the houses in the valley (44)

have rooms ranging between three to four, while about 20 houses have one to two rooms, 17 houses with five to six rooms and about 12 houses with rooms above 7 on an average.

The houses with zinc roofing are comparatively better in quality and condition, and also usually self-sufficient and relatively well off. In all about 11 households (13%) respondents (from 82 houses without zinc roofing) have expressed their interest to go for zinc roofing in future.

### 2.2.3 Household Income

There are about eight different sources of income for farm households in the valley. The income here refers to the overall annual income including both cash as well as in kinds. Of the farm household in the survey 50% rated the crops as the most important income source, while for 14% of the respondents contribution from family members working outside is considered important and vegetable by about 17% of the total interviewed households. This estimation is based on the ranking of income sources done by farmers during the survey (Table 2.3). While it is possible to have a 100 percent rating on the most important income source, similar response was not received from all the households for second, third, fourth, etc. important sources of income. Therefore, only about 6%, 35% and 18% of the households have indicated their second, third and fourth sources of income respectively.

**Table 2.3 Farm Household Income sources as ranked by the farmers**

Ranking	R1 <sup>3</sup> (5*)	R2 (3)	R3 (2)	R4 (1)		
Source of Income	Total respondents (95)	Total respondents (60)	Total respondents (33)	Total respondents (17)	Total score	Rank
Crops	47	12	2	1	276	1
Vegetables	11	12	7	3	108	2
Family contribution	13	5	3	2	88	3
Livestock	4	11	8	3	72	4
Forest products	6	10	3	3	69	5
Fruits	7	9	7	4	66	6
Business	3	1	2	0	20	8
Others	4	0	1	1	23	7
Total (%)	100%	(63.15%)	(34.7%)	(17.9%)	-	-

Source: RRA Survey May 2001

Family contribution refers to the remittances from family members working outside, either in civil service, business or in other sectors not living on the farm. While, the other

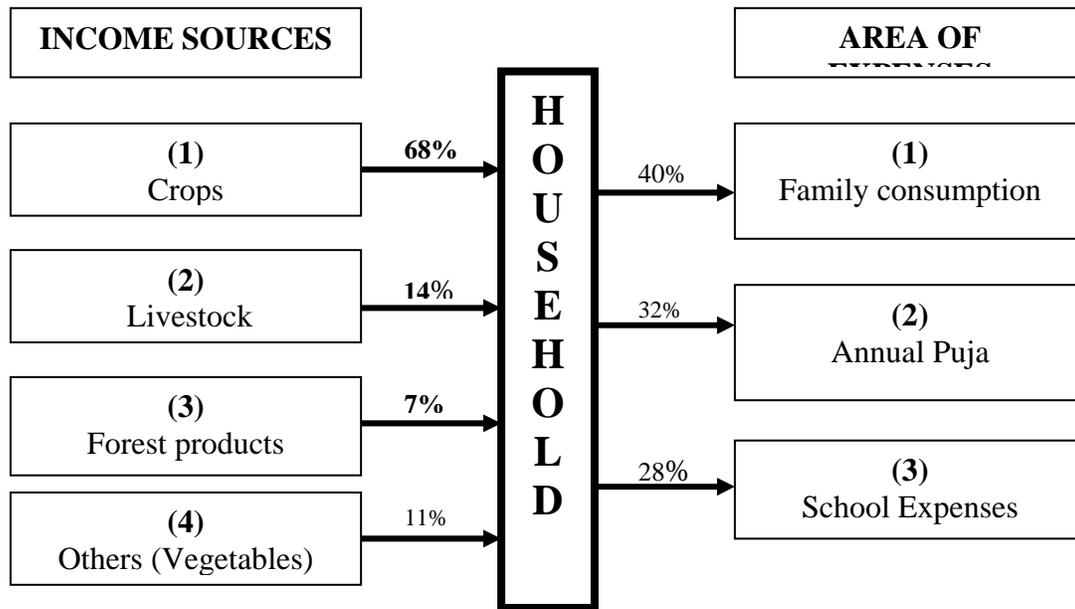
<sup>3</sup> (\*)The numbers in bracket in the first row represents the score, (R= Rank; R1=Rank 1, etc.) R1= 5, R2=3, R3=2 and R4 =1;

sources refer to income generated by family members engaged in carpentry, religious and off-farm activities.

Since the respondents were not able to remember and provide information on income received from different sources the quantification of different source in terms of contribution to the total household income was not possible. Moreover, whenever farmers were asked about the household income or expenses, often most farmers tend to refer to cash income and expenses only, and usually do not include the un-traded crop and livestock products as income or otherwise as expense if spent.

The Figure 2.2 presents a case study of a single farmer’s (Ap Dorji in Nabesa) household income sources and the area of expenses. The figures in bracket present the ranking of the income sources and expense areas, while the percentage shows the amount received from different income sources and areas of expenses respectively. The Annexure 2.1 presents the annual cash income and expenses of Ap Dorji, according to which his household income is much lower than his expenses. It is assumed, that the figures for his income and expenses are mostly limited to the direct cash transactions and thereby have not included the income and expenses received or spent in kinds.

**Figure 2.2 Ap Dorji ’s cash income sources and areas of expenses**



The structure of Ap Dorji’s annual income and expenses shows the crops (68%) as the main income source followed by livestock (14%), vegetables (11%) and forest products (7%) respectively. While on the other hand family expenses (40%) was expressed as the major area of expenditure followed by Annual puja (32%) and School expenses (28%).

**2.2.4 Household Expenses**

The expenditure of farm households in the valley could be classified into seven different groups: family living expenses; Annual puja; School expenses, crop expenses; livestock

and forest expenses, and others. The family living expenses is rated as the most important area of expenditure by 33%; as second by 29% and third by 19% of the total households interviewed. While 22% of the farm-household mentioned the annual puja as the most important area of expenditure the school expenses appears to be the most important expense area for 10% of the total respondents.

In general the family expenses is being mentioned as the most important area of expenses followed by the school and annual religious puja (Table 2.4). The family expenses include the expenses on the basic food items, clothes, repair of houses and travel expenses.

For many households, school expense is the second most important area of expenditure. This is because most farmers expressed the difficulty to meet the cash expenses for the purchase of school uniforms and some other personal items required by the school going kids. They require cash since most of these items are only available from the market.

**Table 2- 4 Farm household Expenses as rated by the farmers**

Details	R1 (5*)	R2 (3)	R3 (2)	R4 (1)	Total score	Overall expenses (Rank)
Family expenses	31	28	18	6	241	1
School expenses	9	18	22	3	168	2
Puja expenses	21	8	7	1	144	3
Crop expenses	1	13	15	12	86	4
Others	2	8	4	3	45	5
Livestock expenses	1	2	3	5	22	6
Forest expenses			2	4	8	7

Source: PRA Survey 2001.

As mentioned above, for most of the farmers, their perception or comprehension on the household income and expenditure is generally limited to the areas where usually the cash is involved. The ranking of expenses in Table 2.4 clearly reflects the farmers' notion of expenses on the farm. The crop and livestock as the main activities on the farm and as a major source of income is expected to be an important area of expense at least second or third if not first. Even in the case study on income and expenses of Ap Dorji in Nabesa, the expenses for crop and livestock production are not reflected.

However, as pointed out earlier, for most of the farmers expenses are often referred to those where payments needs to be made in cash (purchase of school uniforms, books, shoes, meat for puja, other household utilities like pots, plates, mugs, payment for tax, etc.) where payment in kind is not acceptable. The cash is necessary to buy these items, often the amount of cash required may not be very high, but acquiring the required amount is not easy mainly due to the limited source of cash on the farm. Quite often they have to sell some amount of crops or livestock products for acquiring the required cash.

(\*) Numbers in bracket are scores, R1=Rank 1, R2=Rank 2, etc

Other categories of expenses on the farm include the annual taxes for land, livestock, house and other assets, contributions and donations for communal activities and ceremonies.

### 2.2.5 Household consumption pattern

Basically whatever is produced on the farm is practically consumed or retained on the farm itself. Through out the valley rice provides the mainstay of the diet. As the main staple food crop, rice not only remains as the single most important and preferred food crop, but also socially occupies an important place among the family's dietary system. Therefore, for major part of the year, most households in the valley consume rice especially during autumn, winter and early part of the spring season. However, since paddy is not sufficient for most households, the consumption of rice throughout the year is not possible for majority of the households.

Only 65% of the total farm households have sufficient supply of rice from their farm. About 22% of the total households meet their rice deficiency by purchasing from market and 13% from neighbours and village lenders. Most households therefore, make necessary arrangement by other available food crops grown in the area so as to meet the overall food requirement of the family. The other food crops that form the part of the households' dietary system include maize, wheat and barley, which are usually consumed in seasons when households run out of rice stock or at different intervals to prolong the consumption of the available rice stock.

The seasonal consumption pattern of food items (Table 2.5) in the valley reflects rice as the most preferred crop and it is consumed throughout out the year by all the households (100%) with some wheat, barley and maize at different intervals or seasons. For example, more wheat and barley are consumed in summer by a larger number of farmers, more imported butter in winter and cooking oil in winter and autumn by some households.

**Table 2-5 Seasonal consumption patterns of food items by the households**

	<b>Rice</b>	<b>Wheat</b>	<b>Barley</b>	<b>Maize</b>	<b>Local butter</b>	<b>Local Cheese</b>	<b>Cooking oil</b>	<b>Imported butter</b>
No of farmers	95 (100%)	64 (67.2%)	33 (34.7%)	46 (48.3%)	69 (72.5%)	66 (69.3%)	76 (79.8%)	54 (56.7%)
<b>Season</b>	0							
Whole year	95	11	7	6	41	34	33	13
Winter		6	4	9	5	8	12	3
Autumn		4		9	6	6	12	3
Spring		5	3	4	6	6	5	6
Summer		34	17	9	8	6	5	7
Sometimes		3	2	9	3	6	9	22

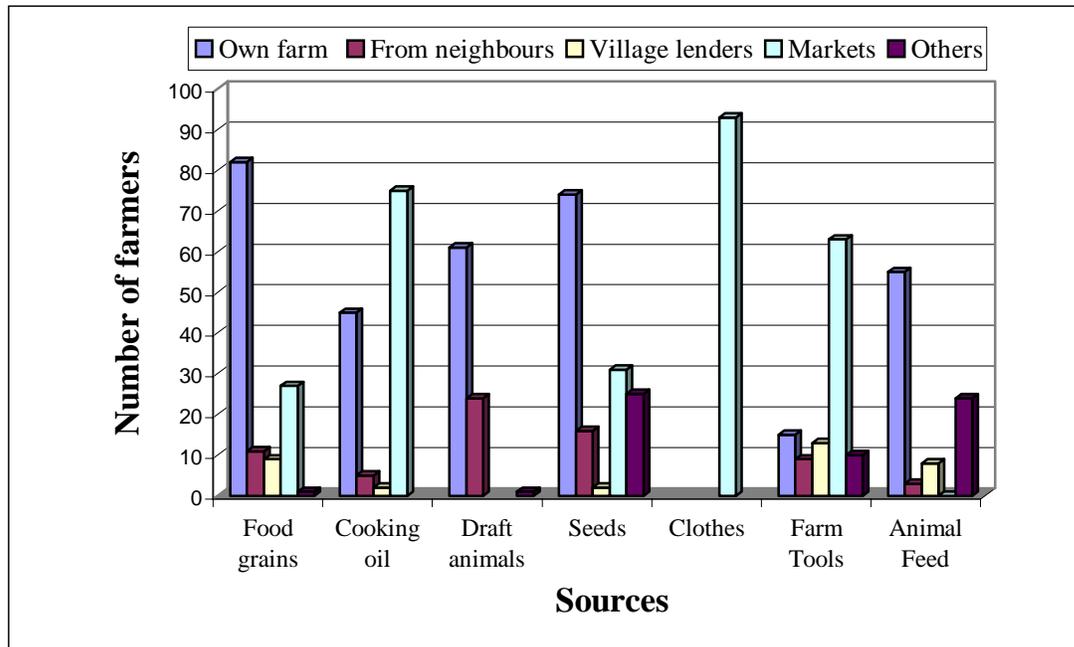
Source: RRA Survey May 2001

Since whatever produced on the farm is not sufficient, some seasonal arrangements are necessary for most of the households to ensure food supply for the farm family. Besides food needs, households also requires inputs like seeds, tools, equipment and others for carrying out farm activities on time. These are arranged from different sources notably

from their own farm, market, neighbours and other sources like RNR Extension centre and Commission Agent especially for some farm inputs.

The household requirements like food items, draft animals, clothes, farm tools, seeds etc. are met from different sources (Figure 2.3) like own farm source, neighbours, village lenders, markets and others.

**Figure 2.3 The Supply of food and other essential items for the farm household**



The farm among many sources is the major supplier of all food crops for consumption and most inputs required for production purposes, for example inputs like draft animals, seeds, animal feed, etc. The neighbours and relatives are also an important source especially for labour but market provides most of the cooking oil, clothes and the farming tools to the households while for some the Commission Agents, Extension Agent, AMC and R.N.R Research Centre at Bajo are also an important source for some households. The RNR-RC Bajo may have been reflected as a source of input especially by those farmers who have received some inputs (like seeds, fertilizer, etc.) for conducting some on farm trials or research activities by the Research center.

**2.3 The Farm**

The farms in Nahi are characterized by being subsistence in nature, mostly producing crops and raising livestock for the household purpose. The household, crops, livestock and forest activities are so well integrated that absence of one is likely to hinder the success of the others. The farm is the main source of food and employment for the household members. The crops are grown in the irrigated wetland, dry land and in the kitchen garden. The livestock, especially cattle are grazed in the forest and on crop residues and other available fodder in the agricultural fields.

### 2.3.1 Crop Activities

The crop production is the principal activity of the households in the valley. The cereal crops grown in association are paddy, wheat, barley, mustard, maize and some buckwheat cultivated in the wetland and dry land. As the staple food crop, paddy is the main summer wetland crop grown by all the households in the valley.

Five different land use types were identified (Table 2.6) in the valley with wetland as the most dominant land use type that covers about (70%) followed by dry land (17%), kitchen garden (6%), Tsheri (4%) and orchard (4%). The winter wetland crops include wheat, barley, mustard, some buckwheat in the autumn cultivated by a few households. In the dryland mostly maize, barley, wheat and some buckwheat are cultivated.

**Table 2-6 Land use types in langdos in the geog**

	Hebisa	Esawom	Esagom	Nabisa	Total Langdos	% of coverage
Land use (Langdos)						
Wetland	143.3	100	136.63	136.5	516.43	70
Dryland	38	20.5	16.5	50.8	125.8	17
Tsheri	13.5	8	6.5	3.6	31.6	4
Kitchen garden	12.9	6	10.05	13.85	42.8	6
Orchard	8.4	2.01	1.14	8.4	19.95	3
Total	216.1	136.51	170.82	213.15	736.58	100

Source: RNR Census 2001

The Sokshing (village wood lot) from where they collect the leaf litter is not common in the valley, only 16 langdos is recorded in Nabesa and about 3.4 langdos in Esagom. The upper valley (Esagom and Nabesa) has about 333 acres of forest grazing land (tsamdruk) and about 300 acres by the lower valley (Esawom/Hali)

The estimated annual production (Table 2.7) of five major crops cultivated in the valley based on the information collected during RNR Census 2001 (83 households were covered) indicate the yield to be much lower than the average yield obtained from one acre or hectare. For example, the annual yield of paddy and wheat, the two most important cereal crops in the valley 18.20 tonnes and wheat 2.2 tonnes respectively are much below the average yield.

**Table 2-7 Annual production of five different crops**

Crops	Quantity	Land Type	Season
Paddy	18.20 tonnes	Wetland	Summer-Autumn
Wheat	2.2 tonnes	Wetland / Dryland	Winter-Spring
Barley	1.6 tonnes	Wetland/Dryland	Spring-summer Autumn-winter
Mustard	9.66 quintal	Wetland	Winter –spring
Maize	3.36 quintal	Dryland	Spring-summer

Source: RNR Census 2001

### 2.3.2 Importance to the Household income

The crop production is the most important activity and also the main source of income for most households in the valley. Irrespective of household and landholding size paddy is grown by all households as the summer wetland crop followed by wheat, barley and mustard in winter. Almost all crops produced on the farm are retained for the household consumption and use.

The cash resources are scarce on the farm therefore, often some farmers generate cash income by selling some quantities of cereals to acquire the cash required for various reasons like buying basic household necessities or for other payments (taxes, school expenses, etc.). In most cases the cereal crops sold in the market are usually not the surplus products but it is an adjustment into the money economy to acquire the needed cash for purchases or repayment of credits where kinds are unacceptable. Some of the most commonly traded farm and forest products, and commodities purchased from the market by the households are briefly described under marketing section (Tables 2.12 and 2.14).

### 2.3.3 Problems in Crop production

A wide range of village wise problems in the crop production expressed by different respondents, (Table 2.8) are insufficient irrigation water, crop damage by wild animals, insects and diseases, labour shortage, etc.

**Table 2.8 Problems in Agricultural production as ranked by the farmers**

Agri- problems	Hebisa				Esawom				Esagom			Nabisa			Total				Total Score
	*R1	R2	R3	R4	R1	R2	R3	R4	R1	R2	R3	R1	R2	R3	R1	R2	R3	R4	
Insufficient irrigation	9	3	3	1	4		1	1	9	4	1	10	2	1	32	9	6	2	<b>50</b>
Labour shortage	4	7	1		1	2	3		4	4	1	2	2	2	11	15	7	0	<b>33</b>
Crop damage by wild animals	9	9	3		4	6			5	10	3	8	12		26	37	6	0	<b>69</b>
Crop damage insects/diseases		2	6		1				2		3		3	7	1	5	16		<b>22</b>
Drought													1				1		<b>1</b>
Excess rain		1				1									2				<b>2</b>
W/A attack on livestock	1		1		1		1				1		2	2	2	2	5		<b>9</b>
Livestock diseases		2													2				<b>2</b>
Lack of feed & fodder supply	1		5											1	1		6		<b>7</b>
Shortage of land					1		1					2	2	3	3	2	4		<b>9</b>
Limited access to market		1				1	1				1				2	2			<b>4</b>

Source: RNR Census 2001

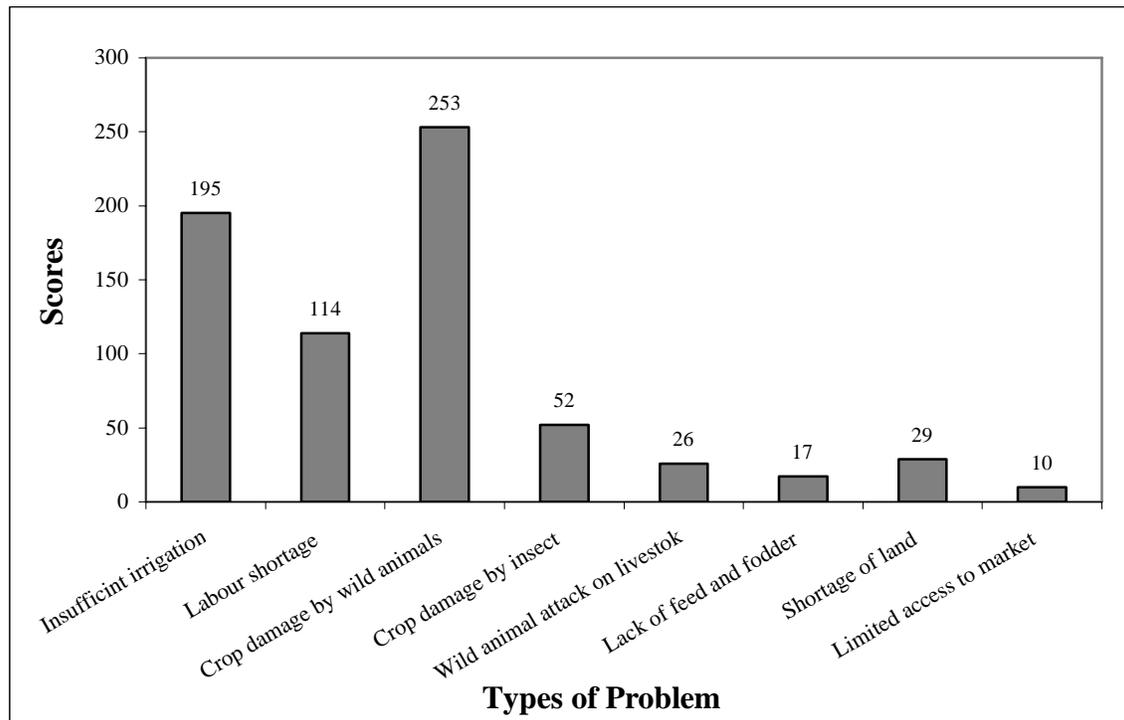
\* R1=Rank 1, R2=Rank 2, etc. (W/A=Wild Animal)

The village wise overall problem ranking done by farmers presented (Table 2.8) and the scores received by different types of problems (Annexure 2.4), although with some variation from village to village, clearly indicates the wild animals damage on crops as the common major problem in the valley.

The wild animals damage on crops remains the major problem followed by insufficient irrigation water, labour shortage and insect damage on crops respectively (Figure 2.4). The Table 2.9 presents the ranking of different wild animals based on the damages caused by them on crops.

Among wild animals, wild boar and deer are reported to be the most prominent animals causing damages to the crops grown in the valley. As known to all, the wild boar problem is not localised to the valley nor it is today’s problem but it is a nationwide problem for the last 15-20 years. This therefore, has led to a series of studies on wild boar problem conducted by Ministry of Agriculture through different institutions and organisations. However, till date no solutions are offered, and it is understood for long-term benefit an exploration and development of an appropriate solution is a necessity but in the process of exploration for the right measures the wild boar problem has almost become a stalemate as an accepted common problem.

**Figure 2.4 Problem ranking based on farmers’ response**



**Table 2.9 Farmers response to crop damage by different wild animals**

Wild animals types	Hebisa	Esawom	Esagom	Nabesa	Total
Wild pig	20	11	15	18	64
Deer	11	9	9	13	42
Monkey	1	3	1	5	10
Bear	0	3	0	1	4
Others	2	1	0	3	6

Source: RNR Census 2001

The paragraph presented below in italics is an excerpt from the report “Wild Boar Management Action Plan Overdue” submitted to the Ministry of Agriculture by a study team led by Dr. Sangay Wangchuk, NCD, MoA (2001).

*“There is no single strategy to find solution to the wild boar problem, which has besieged the Bhutanese farmers for the last 20 years. Inaction and inertia on the part of the policy makers and natural resource managers to the wild boar problem have caused farmers untold hardship and despair for a long time now. There is currently a feeling of resignation prevailing with the farmers and thus look at issues of conservation with great skepticism. Conservation of the environment and its rich bio-diversity is ultimately about people. With little wisdom, imagination and science approach, people and wild life can benefit one another”. ....*

Though most professionals in every field agree the wild boar as a serious problem in crop production throughout the country for a long time appropriate measures are delayed despite several studies conducted on the problem. The action on wild boar is delayed too long and further delay will only help farmers loose trust in development workers and even leave some farm land uncultivated (which is already happening). Consideration for some immediate actions are highly required and for that thoughts may be also given to the four different options suggested in the report on “Wild Boar Management Action Plan Overdue” (Dr. Wangchuk S. & et. el).

The second most important common problem across the valley is the insufficient irrigation water problem, but comparatively it is more critical in Hali village under Esawom Chiwog. Already a few acres of farmland are kept fallow due to insufficient irrigation water. For Hali, irrigation channel is a problem, but more importantly the unavailability of a reliable and adequate water source in and around or nearby appears to be a more serious problem for the village.

#### **2.4 Livestock Activities**

The livestock is an important component of the valley’s farming system and as such plays a multiple role on the farm. They are an important source of power and manure for the crop production activities, food and cash for the farm family and also assets for sale during the time of emergencies for some households. Most commonly found animals are cattle, horses, pigs and poultry mostly dominated by the local breeds (Table 2.10).

**Table 2.10 Livestock and breeds found in Nahi valley**

Sl No	Villages	Cattle		Horse		Pigs		Poultry	
		Local	Improved	Local	Improved	Local	Improved	Local	Improved
1	Nabisa	170	3	23	-	10	5	54	6
2	Esagom	145	-	7	-	23	-	87	1
3	Hebisa	169	5	18	2	17	15	103	42
4	Esawom	80	3	6	-	12	1	44	-
<b>Total:</b>		<b>564</b>	<b>11</b>	<b>54</b>	<b>2</b>	<b>62</b>	<b>21</b>	<b>288</b>	<b>49</b>

Source: RNR Census 2001

Since cattle are the most important animals among the livestock on the farm, few number of cattle are owned by most households in the valley. On an average, each household owns about 6 cattle heads mainly consisting of local breed. Besides their products, cattle are an important element in the crop production activities on the farm both as a source of draft power and manure. Therefore, one cannot ignore the role of the cattle in studying and understanding the farming system of the valley.

At present not many improved cattle breeds can be found in the valley. However, many farmers have expressed their interest to acquire and raise more improved breed in future representing an opportunity for livestock development intervention.

#### 2.4.1 Cattle and milk yield

In cattle, local siri is the most dominant breed in Nahi consisting of 71.8% of the total milking cows, while jersey pure and cross consist of 18.8% and mithun about 9.4%. At the time of the survey, a total of 65 milking cows (28 in upper Nahi and 37 in Lower Nahi) consisting of different breeds (Table 2.11) are being recorded.

The average milk yield per cow/day is found to be 2.2 bottles irrespective of the breed. However, local breeds are reported to be producing 1-2 bottles per day while the improved breeds produced about 4-6 bottles per day. Also most farmers reported 6-8 months as the lactation period for the local and 10-12 months for improved breeds. On an average all breeds are milked for a period of 9.6 months in a year.

**Table 2.11 Milking cows, breed and average milk yield/day/year**

	•UN1	UN2	UN	LN1	LN2	LN	Grand
Village	Nabesa	Esagom	Total	Hebisa	Esawom	Total	Total
Types of cow (breed)	0	0	0	0	0	0	0
Local	9	13	22	14	11	25	47
Jersey	1	0	1	4	1	5	6
Mithun	2	0	2	1	3	4	6
Jersey cross	2	1	3	1	2	3	6
Milking period (months)	124	136	260	192	172	364	624
Average milking period (months)	18.7	18.91	37.61	19.88	20.22	40.09	77.71
Total Milk (bottles/day)	33.5	25	58.5	43.5	43.5	87	145.5
Average milk (bottles/day/cow)	2.39	1.79	4.18	2.18	2.56	4.73	8.91
Total milk (bottles/yr)	10370	68250	78619	12673	13172	25845	104465

Source: RRA Survey May 2001

#### 2.4.2 Feed and Fodder

The farm is the most important source of fodder for the livestock supplemented by grazing in the forest. The most commonly available fodder on the farm is crop residues and grazing in the field after harvest. However, a few farmers also grow some wheat and maize especially for feeding their milking cows, the bulls and horses during the working hours. At present no improved pasture are found in the valley.

About 22 farmers (23%) from the total interviewed households collected some fodder from the forest especially during the winter season. Namgyel (1996) has identified about 13 different fodder trees that are commonly used by the farmers in Nahi valley. The quantification of fodder collected in a year is not possible as the farmers are not able to remember and provide the number of back loads collected in a year.

The forest is the most common place where they graze their cattle. Grazing of cattle in the forest is necessary especially during the seasons when the fields are under crops. Considering the abundant forest coverage grazing in the forest is not a problem especially at the moment.

The use of market feed is not common among farmers. Approximately about 9% (8) of the total respondents purchased cattle feed from the market, seven farmers from the upper and one from the lower valley. The quantification is not possible as the respondents are not able to provide the information except one farmer mentioned of purchasing about 2-3 bags (100kg/bag) in a year.

• [UN = Upper Nahi; UN1- Nabesa, UN2-Esagom; LN=Lower Nahi, LN1-Hebisa, LN2-Esawom,].1 bottle =750 ml.

### **2.4.3 Importance to the household income**

Livestock is an important component of the farming system in Nahi. Among livestock cattle is the most important animal on the farm for crop production purposes and for their products. The products are an important source of nutrients for the family and an important source of cash income for some households.

The horse on the other hand is an important means of transport for most households. Most commodities going out or coming in are transported by horse and on human back. Considering the scattered settlement of farm households in the valley the horse will continue to play an important role in the farming system especially as an important means of transport for the farmers.

### **2.4.4 Problems in Livestock production**

The labour shortage, unavailability of feed and fodder, wildlife attack on livestock and unavailability of improved breeds are some of the problems expressed by the farmers. Many farmers expressed the shortage of supply of improved cattle breed as a critical problem in acquiring improved breeds. Since improved cow breeds are not readily available the Gup and some farmers expressed the need to purchase a good breeding bull by sharing the bull cost among themselves.

Some common problems in livestock production are attack on livestock by wild animals, shortage of feed and fodder and labour.

At the time of survey the livestock extension services are covered from the Dzongkhag headquarter due to the untimely demise of the livestock extension person posted in the geog.

## **2.5 Forest Activities**

The geog is virtually covered by forest (90%), which provides a variety of resources that supports the agricultural production activities. Therefore, forest is an important component of the valley's farming system playing a vital role in the crop and livestock production activities. The forest provides a wide range of products or resources like; fuel wood for cooking purposes, fodder and grazing area for cattle, tools, implements and fencing materials for crops, timber for construction, leaf litter for animal bedding, medicinal plants for carrying out local treatment, some wild vegetables, for consumption and sale, etc.

Namgyel (1996) has made a comprehensive presentation of different uses and role of the forest in the valley's farming system. In his report he has identified a wide range of forest products categorised into five different uses; as home use; food and nutrition, for farm use, medicine and for generating cash income. For example, about 11 different cash generating NTFPs have been identified among which included mushroom (about 22 species identified), asparagus, ferns, walnut and orchids (*cymbidium hookerianum*) are considered as the most important by some of the households.

The forest is the principle source of fuel wood for all households although some houses own gas stove. About 12 different tree species have been identified by Namgyel (1996) which are commonly used as the firewood. The amazing variation in the total quantity of firewood collected and the average consumption among villages (Table 2.12) raises many questions as to what could be the factors leading to these differences and also even to the validity of the information gathered. The average back load of 57 and 54 per year are too low especially in a place where other fuel alternatives are almost nil without electricity except few gas stoves in some households.

**Table 2.12 Back load of fuel-wood collected by the households in year 2000.**

SL.No.	Village	Households	Total Collected	Average
1	Hebesa	22	2962	134.6
2	Nabesa	22	1330	60.45
3	Esagom	17	1757	103.35
4	Esawom	17	583	57.9
5	Tshokothang	5	272	54.4
	Total	83	7305	88.01

Source: RNR Census 2001

Many construction materials, tools, and other resources for the household use and crop production purposes come from the forest. The farming system is very much depended on the forest for many reasons and activities. In simple terms a farmer going into the forest will never return home empty handed, one can see the farmer carrying some firewood or fodder or handles for tools or some fencing materials, etc. These resource flows from the forests are critical especially in a subsistence farm to assure the smooth operation of the farming system.

### 2.5.1 The Importance of Forest

The role of forest and its importance in the valley's farming system cannot be ignored. As mentioned earlier forest provides a wide range of resources that supports the farming system directly or indirectly. The forest is rated as the 5<sup>th</sup> most important source of income for some households, while about 6 households rated it as the number one source of income another 10 households rated it as the second most important source of income.

The utility of the forest and its importance to the farming system is comprehensively explained in Namyel's report 1996. He has identified a wide range of NTFPs that are used by the households for consumption or for sale, and has even clearly specified the different utilities of the timber and other forest resources.

### 2.6 Off-farm Activities

In most subsistence farms, quite often the off-farm activities play an important role especially as a cash income source to the farm households. However, in Nahi valley as of now the off farm activities are not an important component of the farming system. As such not many households are engaged in off-farm activities and because of which identification of off farm activities during the survey was not possible. The marketing of

farm produce and buying of commodities from the market if considered then is the most common off-farm activities in the valley. A very few farm households from the lower valley reported working in some renovation works at Wangdue Dzongkhag. But in general off farm activities are not very significant in the valley's farming system at present but remittances from family members working outside is third most important source of income among the total respondents while it is number one source of income for 13 respondents.

However, with the new approach road the frequency of the people's movement are expected to increase and thereby one can assume that more households getting engaged in off-farm activities as the chances are high for households to come in contact with more rewarding and cash generating jobs.

## **2.7 Marketing Activities**

Marketing is defined as the physical and economic processes whereby the goods are transferred from the producer to the consumer (Tander 2000). Further he quotes Bohannan and Dalton, where "marketing" is defined as selling ones' own produce and buying one's needs while "trade" as buying in order to resell. Though no such distinctions are made in this report but the above marketing definition is considered more appropriate. The marketing activities are an inevitable practice connected to introduction of stimulation of cash generating activities.

As mentioned by Beck, et al.; the opportunity to increase incomes and living standards of the rural population depend on increased production combined with improved access to markets. But market in Bhutan remains a critical constraint especially in agriculture. However, with the onset of economic development (cash economy) increased market integration of farming systems are expected which thereby will also increase access to cash keeping in mind that the process of integration concerns farming households as producers as well as consumers as this influences the local market.

At the moment the marketing system is quite simple where in most cases there exists only one channel (producers → Consumers) for the sale of farm products. In most cases all farm products are marketed directly to consumers by the producers themselves mainly during the local Sunday markets either in Wangdue or Thimphu. However, sometimes a few farmers sell some products especially chilly and fruits on a wholesale basis to some retailers in the local Sunday market that is when the quantity is more and the price is acceptable to the farmer.

The market represents an important component of the valley's farming system. Though most food items are produced on the farm, many farm families depend on the market for selling their farm products and also for various essential household items that are not available on the farm. The local Sunday markets in Wangdue Phodrang and Thimphu are two most important markets for selling the farm products from the valley and Thimphu market is mostly used by farmers from the upper valley. The role of market is expected to increase with the opening of the motorable approach road in addition to the continuous

transition of rural economy from a traditional exchange system (in kinds) to a more money based/oriented exchange system.

### 2.7.1 Goods Marketed Out

A wide range of commodities including farm and forest products (Table 2.13) are marketed by most of the households (86%) from upper and lower valley. The commodities commonly marketed include some cereals (rice, maize, wheat), livestock products (butter, cheese, eggs), Vegetables and fruits (green sag, chilli, potato, apples, walnut) and forest products (asparagus, ferns, mushrooms).

**Table 2.13 Commodities marketed out from the valley**

	Upper Nahi (UN) No of farmers	Total Quantity per year	Lower Nahi (LN)No of farmers	Total Quantity per year	Total No of Farmers	Total Quantity supplied	Market Value (As per Unit) Nu.
<i>Types of products</i>							
Rice ( <sup>2</sup> Dre/yr)	17	1926	23	4708	40	6634	30-35
Maize (Kg/yr)	1	15	2	70	3	85	5
Wheat (Kg/yr)	1	240	0	120	1	360	10
Butter (Kg/yr)	2	314	3	139	5	453	160
Cheese (Balls/yr)	4	1605	7	1586	11	3191	8-10
Eggs (Dozen/yr)	1	33	1	500	2	533	60
Beans (Kg/yr)	2	80	6	540	8	620	15
Chilli (Kg/yr)	2	200	13	2200	15	2400	10-35
Sag (Bundles/yr)	2	90	1	100	3	190	2
Pani (*Bangchung/yr)	1	50	2	150	3	200	5
Fruits (Kg/yr)	7	2440	15	3150	22	5590	10-25
Fern (Bundles/yr)	2	460	8	240	10	700	3
Mushroom (Kg/yr)	7	220	8	250	15	470	25-30

Source: RRA Survey May 2001.

The survey's findings reflected the rice as the most common commodity marketed by the majority of the farmers (42%) supplying a total of 6634 drey/yr, of which 71% comes from lower and 29% from the upper valley. According to a few respondents they sell rice mainly to acquire cash required on the farm for purchase of essential household items from the markets or making necessary payments like taxes. Fruits are the next major commodities being sold in the market where a total of 5590 Kg are being marketed by about 23% of the total respondents.

### 2.7.2 Goods Marketed in

Many items of household use are purchased by the farmers from the market including from the basic necessities to more luxury in nature. The common commodities that are

<sup>2</sup> Changdrey is a cereal-measuring unit standardised by the Government. One Changdrey = 1.75 Kg.

mostly purchased by the farmers are cooking oil, clothes, cookeries and utensils, kerosene, food stuff like dry fish, rice, vegetables, etc. The wide of range commodities (Table 2-14) imported into the valley by the farmers clearly reflect the growing dependence of the farming system on the market both for selling its products as well as for purchasing inputs and other necessities.

**Table 2.14 Commodities marketed in by the farmers**

	No of farmers (UN)	Total Products (UN)	No of farmers (LN)	Total products (LN)	Total No. of farmers	Total Products brought in	Market Value as per the
<b>Goods traded in</b>	34		48		82		
<i>Types of products</i>	0		0		0	0	
Salt (Kg/yr)	29	2284	38	2706	67	4990	5-8
Sugar (Kg/yr)	5	71	14	378	19	449	19 – 25
Cooking oil (Liter/yr)	24	816	23	2317	47	3133	45-60
Jari (rolls/yr)	12	493	24	440	36	933	8
Tea leaves (kg/yr)			25	167	25	167	55
Vegetables (Kg/yr)	6	2680	5	1156	11	3836	10-15
Rice (Kg/yr)	3	950	8	2000	11	2950	14-20/kg
Chilli (Kg/yr)	15	984	8	682	23	1666	10-15
Butter ( <sup>4</sup> Kg/yr)	4	72	3	70	7	142	130
Eggs (dozen/yr)	0	4.5	0	0	0	4.5	25
Kerosene (Liter/yr)	1	98	7	730	8	828	12
Meat (Kg/yr)	7	726	3	150	10	876	45/100*
Dryfish (Kg/yr)	2	55	4	177	6	232	60
Cheese (balls/yr)	10	70	7	70	17	140	10

Source: RRA Survey May 2001

In general most respondents (86%) purchased some commodities from the market either on seasonal or regular basis with variation from household to household. Some farm inputs and food items are purchased from the market to meet the seasonal food shortages on the farm. Based on the survey findings the geog purchases approximately about 4490 Kg of salt, (47Kg/household/year for household use and animals), 3133 liters of cooking oil, 3836 kg of vegetables, 2950 kg of rice, 1666 Kg of chilli per year, etc. The quantity of salt consumed also includes the amount given to the livestock especially cattle.

### 2.7.3 Means of transportation

The commodities either going out or coming into the valley are mostly transported by the horses and on human back. With the new approach road some farmers already mentioned using the vehicle at least one way, mostly while coming back from the market. Some farmers from the upper valley going to Thimphu market also use vehicles in transporting

<sup>4</sup> \*The price for meat includes Nu.45 for beef and Nu.100 for pork, while the price for vegetables is taken as an average.

their produce or commodities from the market. However, in general maximum farmers still depend on horses and their back for transportation of commodities.

#### **2.7.4 Market constraints**

In general the new approach road has partially improved the market access for almost all the households in the geog. However, in contrast to the findings of RNR Census, some farmers still consider limited access to market as a critical constraint in marketing their farm produce. For example, farmers in the upper Nahi still continue to use the market in Thimphu as it is much easier and nearer as well, while some farmers even from the lower valley especially in Tshokothang village reported of still using the old route and their horses for transporting their products from farm and commodities from market.

### **2.8 Farm Labour and source**

The labour represents an important input for various production activities carried out on a subsistence farm. As in most subsistence farms, household is the single most important source of labour for any farm and non-farm activities for the households in Nahi valley complemented by the labour exchange system with neighbours and relatives.

The farm family is the main source of labour for all the households in the upper and lower Nahi. Although there are 3.3 persons on the farm consisting of all age groups, but on an average each household has only 2.7 members (between the ages of 16-59) permanently available on the farm for carrying out various farm and off farm activities.

The relatives and the neighbours represent an important source of labour (for exchange system) for almost all the households (87%) in the valley especially for the crop production activities. The labour exchange system commonly practiced by the farmers is the only way to meet their labour requirement during the peak seasons.

To assess the household labour availability, the farm family members are divided into six different age categories (Table 2.15). The age 6 and below, age 10 and below and age 60 and above categories are considered as the dependent group while the group with age 15 and below are considered as a potential growing labour source if they are farmers and if students some contributions are expected while they are on the farm. The 16-49 category is considered as the most active and fit group, while the 50-59 category is an important but considered as declining source of labour on the farm. In general in all the categories, there is almost a 50:50 male female ratio with slight variations in some groups.

Irrespective of occupation in the 16-49 age category, there are about 333 persons (167 men and 166 female) almost with an equal male female ratio. About 64% (213) of the total people in this category are farmers with 75 male and 138 female farmers, clearly indicating less availability of male labour on the farm compared to the female counterpart.

From the total male population of 167 men, only 45% are available on the farm while 18% are in monk, 20% are in civil service, 7% in School and about 5% in the armed force respectively. On the other hand from the total women population of 166 female, about

83% (138) are available on the farm of which only 14% are in School and 3% in other occupations like nun, civil service and business.

**Table 2.15 Age Composition and occupational distribution of the household members**

Occupation	6 & below		10 & below		15 & below		16 - 49		50 - 59		60 & above		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Kids	26	26											52
Not students			9	6									15
Students			15	16	23	24	12	23					113
Farmers			1	4	6	11	75	138	23	24	30	31	343
Monk			3		6	1	30	2	1			1	44
Civil servants							33	2	1				36
Army							9						9
Business							4	1	1				6
Painter							2						2
Driver							2						2
Total	26	26	28	26	35	36	167	166	26	24	30	32	622
% of total population	4.2	4.2	4.5	4.2	5.6	5.8	26.9	26.8	4.2	3.8	4.8	5	
Total Male	313											Total Male %	50.2
Total Female	309											Total Female%	49.8
Total	622											Total	100

Source: RRA Survey May 2001

Looking at the number of younger generations coming up, the supply of male labour is likely to be even more acute and serious in future. The male farmers under the age of 15 and 10 are only 7 while the female number is just the double, about 15 in the same category. Also within the same age group there are about 50 male students and about 9 monks and a few not students

### 2.8.1 Labour exchange system

The labour exchange between the neighbours and relatives is a typical characteristic of Bhutanese farming system. This customary exchange system not only solves the problems of farm labour shortages during the peak seasons but also helps to maintain the communal harmony by creating the dependence on each other. For those poor farmers who cannot afford to hire labour the exchange system is very important especially to ensure that the farm production activities are being carried out on time.

Most farm households (87%) in Nahi practice and depend on exchange labour since the family labour is inadequate and in many cases hiring is not possible. Labour hiring is not

common among the majority of the farm households only 16% of the total households hired labour while the majority of households depend on exchanged labour. The labour hiring is only done by those households who are either comparatively well off or by those with less manpower.

### **2.8.2 Labour Problems**

The farm labour shortage is a common problem throughout the country. The recent labour study in five western and central Dzongkhags by RNR-RC Bajo clearly reflects the mismatch between the household labour availability (3 persons) and requirement to be 4.27 persons. (Kuensel Issue September 18-24, 2001). The situation is no better in Nahi as already mentioned, on an average each household has only 2.7 labour available on the farm. Therefore, many respondents have expressed labour shortage as a critical problem on the farm for crop and livestock production activities. Among problem ranking farm labour shortage has been rated as the third serious problem in the valley.

The shortage of labour is a problem but more importantly the yearly increasing rate of decline of farm labour availability, especially male labour (in most active age group) is a serious concern in the valley whereby more female and young and old people may be left behind to do the farm works which is likely to lower the farm productivity in the long run. As reflected in the Table 2.15 already the male labour on the farm is much less than female and considering the male female composition and occupations in different age groups the situation is not likely to improve in future. Therefore, this low male labour input in agriculture will prohibit any labour demanding intensification and also affect the productivity.

## **2.9 Extension Services**

One key aspect for rapid rural progress is the introduction of new inputs and techniques to the farmers. Therefore, those institutions usually called as Extension services, responsible for speeding the transfer of these new techniques are said to provide key link between the research laboratories or experimental farms and the rural population that must ultimately adopt what the laboratories develop. For this extension agent's role becomes crucial and the dialogue between farmers and extension workers can only be successful when both speak the same language, that is when both the farmer and the extension worker listen to each other; accepting the farmer as the expert since he knows more than anyone else about his farm and the extension worker on the other hand knows more about new technologies that can be possibly introduced in a given area and at the same time he knows the farmers' practices; so that he can assess whether the proposed technology can be introduced to solve the farmers problem or not.

### **2.9.1 Farmers' attitude towards extension services**

It is important to understand how farmers think of extension services, what for and how often they contact them are very useful information but often requires careful judgement because not all answer are positive and it is likely to attribute the responsibility of the poor services to the extension agent. As rightly put by Guenat (1991) it should serve as a basis for deeper reflection on how to reorganise these extension services more effectively

concerning content, approach and methodologies. The interpretation of farmers' answers requires to be cautious as their criteria may well not be the same as ours.

Nahi has a RNR center from where agricultural and livestock extension services are availed, a primary School for basic education and four village health workers (VHW) trained from farmers, two each in the upper and lower valley for rendering basic health services.

The RNR extension centre is located in the lower valley and at the moment provides agriculture and livestock extension services. However, at the time of the survey only agriculture extension services are available from the centre and not livestock services. Due to the untimely demise of the livestock extension agent the extension services are covered from the Dzongkhag headquarter including the forestry extension services.

The Table 2.16 presents the different RNR extension in the geog, contact made in a year by the farmers from the upper and lower valley and the reasons for their contact. About 82 (86%) farm households contacted the agricultural extension for inputs like chemical and pesticides, fertilizer in some cases and for advices during the outbreak of pests and diseases. For 44 households their contact with the agricultural extension agent ranged between one to three times a year, while 22 visited only sometimes when needed, while 11 visited about 1-2 times in a month. (Annexure 2.5)

**Table 2.16 No of farmers contacting the extension**

Details	Upper Nahi (UN)	Lower Nahi (LN)	Total
Livestock Extension	33 (35%)	31 (33%)	64 (67%)
Agricultural Extension	45 (47%)	37(39%)	82 (86%)
Forestry Extension	30 (32%)	28 (29%)	58 (61%)
Health Services	30 (32%)	25 (26%)	55 (58%)

Source: RRA Survey May 2001

About 67% of the total households have visited livestock extension agent for various reasons like animal treatment and medicine (by 56 farmers), vaccination (9 farmers) and castration (6 farmers) purposes. The frequencies of farmers visits to the Livestock extension varied ranging between 1-3 times a year for 34 farmers while 19 farmers visited about 1-2 times in a month and 17 visited only when required.

At the time of the survey about 58 (61%) of the total respondents have reported for having contacted forestry sector for various services. Since the forest services are available only from the Dzongkhag headquarter, therefore farmers have to come to Wangdue for any activity or service related to forest. Based on the farmers' feedback, the number of visits made by the different RNR extension agents at different time periods is presented in the Table 2-17.

**Table 2.17 Frequency of visits by the extension personals**

	Livestock			Agriculture			Forestry		
	UNT	LNT	Total	UNT	LNT	Total	UNT	LNT	Total
Extensions visit to the farm	34	28	62	40	34	74	23	24	47
<b>Frequency of visit</b>									
Sometimes/when in need	4	2	6	8	9	17	5	3	8
1-3 times in a year	19	7	26	23	14	37	16	13	29
1-2 times a month	5	9	14	8	12	20	2	7	9
Above 4 times	0	3	3	1	0	1	0	2	2

Source: RRA Survey May 2001

In general many farmers have mentioned having received visits from all three RNR extension personals with varying frequencies. About 62 (65%) respondents have mentioned having received visit from the livestock extension person, 75 (79%) from Agriculture and 47 (50%) from the forestry respectively.

### 2.9.2 Health Services

At present the geog do not have any health service centre in the valley. Therefore, almost all health activities and services are covered from Wangdue. For basic health problems and medicines farmers approach village health workers and sometimes BHU in Gaselo for emergencies. Some of the basic health facilities and treatment mostly availed or approached by the farmers are presented in the Table 2.18.

**Tables 2.18 Health information in the valley**

	Upper Nahi Total	Lower Nahi Total	Total
<b>Available facilities</b>			
BHU clinic (Gaselo)	8	14	22 (23%)
Village health worker	20	19	39 (41%)
<b>Local treatments</b>			
Rimdo	39	30	69 (72%)
<b>Hospital approached</b>	33	42	75 (78%)
<b>Source of medicines</b>			
Neighbours	1	1	2
Village health worker	7	13	20
Hospital (bajo)	24	28	52
Thimphu	18	5	23

Source: RRA Survey May 2001

The majority of the farmers (78%) reported for having approached the hospitals either in Thimphu or Wangdue for treatment. The treatment through religious pujas is also pursued respectively by about 72% of the respondents. In most cases for treatment and medication, the BHU in Gaselo and hospitals in Wangdi are approached by farmers especially from the lower valley. In absence of health facilities in the geog, the monthly

clinic visits from Wangdue hospital is found to be very helpful and useful for minor treatment and references.

**Table 2.19 The frequency of Health extension visists**

	<b>Upper Nahi</b>	<b>Lower Nahi</b>	<b>Total</b>
Farmers' Visit Health extension	30	25	55
<b>Frequency of visits</b>			
Sometimes/rarely/when in need	11	14	25
1-3 times/yr	9	3	12
1-3 times a month	6	1	7
Above 4 times/yr	2	1	3
<b>Reasons for contact</b>			
Vaccination/immunisation	6	10	16
Treatment/medicines	19	12	31
<b>Health extension's visit</b>	<b>13</b>	<b>14</b>	<b>27</b>
<b>Frequency of visits</b>			
Once a month	9	10	19
1-3 times a year	4	1	5
Sometimes/on request	3	3	6
<b>Quality of extension</b>			
Reliable (Y/N)	36	35	71
Unreliable	0	1	1
Fairy reliable	0	1	1
Not much readily available	0	3	3

Source: RRA Survey May 2001

The visits to BHUs and hospitals are common among farmers. Besides the traditional practices of performing local religious rites and remedies many respondents also at the same time visited hospitals and BHUs for treatment and medication every year (Table 2.19).

The farmers also mentioned for having received visits from health personals for treatment. Many farmers appear to be happy with the visits and the services they have received from the hospitals and BHUs. The health services are said to be reliable and satisfactory by about 71 interviewees from the total survey respondents.

## **2.10 Farmers Feedback and suggestions**

On an average about 75% of the total respondents seems to be satisfied with the present services availed by the farmers from the different sources (Annexure 2.2). Very few expressed their dissatisfaction with the some services especially for not availing on time when required.

Few farmers (8%) expressed the need for the agricultural Extension agent's visit especially during the paddy nursery sowing and raising, to assist them in controlling damages from insects and diseases.

The farmers also wish that the extension centre is well equipped with the basic facilities for animal health care like good quality chemicals, tools and equipment, better seed supply in agriculture, etc.

Though insignificant, some farmers (5%) feel that the extension personals need to visit the villages more frequently than they do now, while about (7%) feel that extension needs to provide better response when approached or informed.

About 13% of the total respondents also feel that the health services needs to be improved by constructing a BHU in the valley.

### **2.11 Conclusion**

Throughout the valley, farm households are small and relatively uniform. Both women and men play an important role in food production and processing activities but in general more female are found on the farm doing the farm works. The paddy based cropping pattern followed by some wheat and mustard dominates the wetland production system while livestock and forest form an integral part of the valley's farming system.

The farm household provides labour and management inputs to the cropping and livestock system, and the labour inputs varied from household to household with respect to their composition. In most cases whatever produced on the farm is mostly retained on farm for family consumption or production purposes.

The farmers look forward for initiating changes in their farm production plans especially with the opening of the approach road into their geog. Many respondents expressed the interest to produce more market oriented crops like vegetables and fruits, while some are interested to raise improved dairy cows for producing butter and cheese.

### **3 The Approach Road and the valley**

#### **3.1 Introduction**

The nearest village is about three hours walk from Wangdue Tsangchu Bridge, and until recently Nahi is only accessible by foot or on horseback. But with the construction of an 11.85 km motorable approach road in 2000 by GTZ project, the access has been made much easier for the valley dwellers as well as for the outsiders. Indeed like any other rural development program the approach road to Nahi, encompasses a series of positive expectations including that of the valley inhabitants, Project and the Royal Government of Bhutan. The road in particular is an important contribution from the GTZ Project significantly upgrading the overall infrastructure of the valley.

#### **3.2 The Road**

For any economic development to take place anywhere, the road in every respect remains one of the most important development factor especially for enhancing the transportation of goods and services and better mobility of the people. From this perspective, Nahi approach road represents a significant change in the valley's infrastructure addressing the much-desired need of the valley's people. The road not only links the valley to the national highway and other parts of the country but also provides opportunities to the farmers of the valley to take up more market oriented crop and livestock productions.

#### **3.3 People's Opinion**

Despite the fact, that there exists some mixed feelings among few farmers with regard to the alignment of the road, but in general the majority of the farmers including the upper and lower valley are happy for finally having the road in their geog because of which according to 63% of households, not only the transportation (of goods and people) has been made easy but their mobility has improved. Therefore, people of the valley remain grateful to the Royal government of Bhutan and the GTZ Project for the road though some farmers do repent and argue the road to be in Nahi much earlier than 2000.

In general most farmers share the same feeling of satisfaction, but however, there are few respondents/households who feel that they have not really benefited from the road as they have expected. This may be true, especially considering the alignment of the road and the scattered location of the villages, but it is also true attaining a pareto-optimality may not be possible at the same time.

The farmers in the upper valley are optimistic that one day the road will come into their village and they feel it should come. However, according to them any future extension of the road should consider the location of their villages that is the road should pass through their villages or at-least close by for more effective use by them.

Some farmers also feel that, with the access road, now they expect more frequent visits from the foresters as compared to the past. Although hesitant to express openly, many farmers seems to be uncomfortable about such frequent visits.

While some expressed that more destruction to forest will take place due to the opening of the access road, since more outsiders are expected to come and extract the forest resources especially the timber. Most views and assumptions related to the road and its impact and maintenance as expressed by the different respondents during the survey are (Table 3.1) are simple and self-explanatory.

**Table 3.1 Different views as expressed by the respondents**

<b>Views</b>	<b>UNT</b>	<b>LNT</b>	<b>Total</b>
No benefits	1	4	5
Frequent visit of the forester	3	2	5
High fares during transportation	2	2	4
Destruction to land & forest	4	1	5
<b>Road maintenance</b>			
<b>Community will maintain</b>	<b>24</b>	<b>5</b>	<b>29</b>
People will maintain if govt. provides fund	2	1	3
Road need to come to their village	6	0	6
Road passed through his field	0	2	2
Provide labour force	9	19	28
Improve road by constructing stone walls and drains	4	9	13
If govt order them then we will do	0	5	5
Govt. will take care	2	1	3
Enlarge the turnings	0	1	1

Source: RRA Survey May 2001

### 3.3.1 Road maintenance

In general, any rural access road like Nahi's access road represents an important infrastructure (facility) for any place and as such, its maintenance becomes a critical issue for its effective use in the long run. The community participation for maintenance is not an alternative but its seen as a necessity for long term benefits and use for such rural access roads. Therefore, an attempt to find out farmers' interests and views regarding the approach road maintenance has resulted into different views and opinions (Table 3.1).

It is interesting to note that despite the absence of road in the upper valley a significant number of respondents (24) from the upper valley have expressed that the road will be maintained by the community compared to only 5 from the lower valley. However, with regard to the supply of labour force for road maintenance a good number of respondents (19) from the lower valley have expressed their interest to provide labour force as compared to only 9 from the upper valley.

### 3.3.2 Alignment of the road

Most farmers are happy to have the road in their valley but not satisfied with the present alignment of the road. Many respondents mentioned that their initial expectation of the road to pass through their villages or atleast close by have been miss-fulfilled by the

present road alignment. Therefore, some farmers are skeptical about the usefulness of the road to them due to the mismatch between the alignment of road and the location of villages.

Some farmers in the lower valley especially from Tshokothang village, mentioned of not using the road since their village is located away from the road. A few farmers even stated the road as insignificant for them since they still use the existing old route that is much shorter and faster for them.

### **3.3.3 Benefits**

There are many direct as well indirect benefits to the farmers from the road. One direct benefit according to most of the respondents is the transportation of goods in and out is made relatively much easier and faster compared to the past where everything has to be transported by horse or labour.

Access to hospitals and other facilities have been made much easier and faster. According to one respondent from the lower valley, ... “the road has gone at the base of our village, but still it is a blessing for us to have the road from every respect, especially when we have to go to hospitals with sick family members the road has made life much easy where sick person can be easily reached to the hospital with less hassle unlike in the past where the situation becomes too complicated and difficult both for the sick and those persons trying to carry the sick person to the hospital.... ”

Some farmers who own power tiller are already able to make use of them for transporting goods and people in and out of the valley.

The access road also have relieved the farmers from contributing labour for carrying the stationeries and other items for the primary school from Wangdue which they have to do occasionally prior to the construction of the road.

### **3.4 Changes in farmers' activities**

About 72% of the total respondents from the upper and lower valley have expressed their interest to go for some changes in their farming and other activities. More number of farmers (41%) from the lower valley is interested to go for changes as compared to the farmers (32%) from the upper valley.

The road may be an important infrastructure change in the valley, but not many farmers are in a position to share what exactly they plan for a change in their cropping activities, livestock compositions, and other areas. In other words many farmers are unable to share any information or express their visions and expectations they have as a result of the motorable road facility. Many respondents remained silent while some simply said “no idea”.

On the other hand there are also some farmers with clear visions as what they are going to take up or initiate in future. The views (Table 3.2) expressed by some of the respondents are; increase the production of vegetables and fruits, purchase farm

machineries, take up more cash crops and develop orchards. The influence of the road is already reflected in the desire and plans of some farmers to go for a change in their farm production practices. Approximately a total of 27 households (28%) from the upper and lower valley expressed the interest to grow more vegetables and fruits for trading in the market.

**Table 3.2 Farmers' visions and different activities to be taken up**

<b>Farmers vision</b>	<b>Nabisa</b>	<b>Esagom</b>	<b>Total</b>	<b>Esawom</b>	<b>Hebisa</b>	<b>Total</b>	<b>Grand Total</b>
Produce more vegetables & fruits	7	6	13	5	10	14	27
Purchase farm machinery	0	2	2	1	3	4	6
Cultivate more cash crops	3	3	6		2	2	8
Plans for orchard	2	0	2	2	7	9	11
Walnut plantation	3	0	3		2	2	5
Enlarge potato cultivation	1	0	3	4	1	5	8
No change (labour shortage)	1	0	1	3		3	4
Construct a house near the road	0	1	1			0	1

Source: RRA Survey May 2001

### 3.5 Forest and the road

Like for any place Nahi's motorable road is an important infrastructure development bestowing much hope and expectations by the farmers for the overall development of the valley. The road provides hope to the people for changing their farm activities, but at the same time some negative impacts are also unavoidable in some areas. For example as many feel and perceive, the use and extraction of the forest resources from the valley is expected to increase with the opening of access road into the valley. However, farmers responded diversely when they are asked to comment on the road and its impact on the valley's forest resources. Many are unable to share any views while some replied, "I have no idea" or "I have never thought about it" and with some good reasons from some respondents as well.

Some farmers with better and clearer outlook expect the intensity of forest resource extraction like timber and other products to increase with the road. As mentioned earlier, since Nahi valley is virtually covered with forest it is rich in timber and non-timber forest resources. Therefore, some farmers feel that with the road many outsiders may come and start extracting forest resources especially timber from their valley.

In the past, beside the people from the valley, not many outsiders extracted timber from Nahi valley, except a few households from Gaselo. Nahi has a good forest coverage but the potential to contain a huge volume of high quality timber for harvest and ensuring a long term economic viability is questionable. Therefore, it is assumed that this very reason may keep away the interested of the FDC. However, with the access road it is

obvious that more outsiders are expected to come into the valley for timber unless some measures are taken to restrict or limit the rate of extraction or find alternative management plans. At the time of the survey, already some trucks are transporting timber from the valley to Gaselo geog.

### **3.6 Land price**

Land is an important and essential resource for any kind of economic development to take place due to its scarcity and limited supply the value of land is always on the rise year after year. Other factors like location, topography, fertility, nature of development for which land is to be procured, accessibility, etc. also affect the value of land in any region or area. The improvement of accessibility by constructing access roads like Nahi's further raises the value of land where higher prices are obtained for land with better accessibility and vice versa.

Similarly it is assumed that land prices in the valley are expected to change as a result of the new approach road. The buying and selling of land is not common in the area, as such not many respondents are able to provide reliable information on the land prices. However, according to some of the respondents the prices for different land categories are expressed as; Nu. 10,000/- to 18,000/- for one langdo of wetland and Nu. 9000/- to 10000/- for one langdo of dry land.

## **4 Discussions and Comments**

### **4.1 The Road and the Village**

The road is a necessity and critical physical infrastructure to initiate any kind of developmental activities in any area. Similarly Nahi access road is an important development which is expected to make the life of the valley's residents much easy. The advantages are enormous, where presence of an all weather road not only provides a good linkage to the outside but also improves the transportation of goods and services, and the mobility of people in and out of the valley and thereby increasing the contact with the outside world. Like language is important for the society for communication equally the road is an indispensable infrastructure for modern economic development to take place. Nahi's access road is an important landmark in the history of the valley's infrastructure development where people bestow a lots of hope as well.

As correctly put by Richter (1997) it is a road with hope, where every development partners look forward and wish for a positive and beneficial changes to take place in the social and economic life of the people in the valley. Although many negative impacts are likely to arise but one cannot ignore the importance of Nahi's road especially considering some of the socio-economic advantages that people will enjoy in future.

### **4.2 The Socio-economic Changes**

It is clear that when once an access road is constructed a linkage is created with the outside world and such a contact is eminent to bring both positive and negative socio-economic changes. For example, with improved mobility many family members are able to move out and in with increased frequency within a short period and even expect visitors from outside. These contacts and experiences are likely to broaden people's outlook and change their view on development and thereby motivate their participation in improving the rural life.

With the access road in the valley setting up of a general shop appears to be a promising enterprise. Already one farmer from lower valley has expressed his interest to open a general shop near the School. However, this is being delayed for not being able to compromise over price of the plot. There are few more farmers with similar interest but it has been observed that they are more careful and reluctant to share their ideas openly may be because they fear that their ideas may be hijacked before they are able to start.

### **4.3 The crop Activities**

The paddy based cropping system is the main activity in the geog and that will continue in future as well. However, with the arrival of the road (expected to increase the mobility of people) in combination with other factors some changes may be expected over the years in the varieties of crop grown by the farmers in the valley.

Like in most parts of Bhutan, the cash requirement on the farm is increasing the pressure on some households to even sell some of their food stock to acquire the cash. This increasing household demand for cash household may also lead to changes in the selection and combinations of crop enterprises and also force some family members to take up some off-farm activities. The interest of some farmers to produce more horticultural crops that generates cash income may be partially due to the increasing cash requirement on the farm and partly due to the other reasons.

The wild boar problem is not only confined to Nahi valley but it is a commonly known nation wide problem for the last 15-20 years. This demands not only the attention of the policy makers and development workers, but more importantly immediate and appropriate actions based on the findings of the past studies are very much desired if hopes and trusts of the rural farmers are to be maintained.

Irrigation was a commonly expressed problem in the past (Kievelitz 1995) and it is still one of the main problem in the valley. The water users associations are there but they carry out only minor maintenance once a year and rely more on government. As rightly pointed by Kievelitz, it is felt that there exists limited form of cooperation among farmers and this very factor may also be responsible for the poor maintenance of the existing irrigation channels. Therefore, strengthening of already existing water users association through farmers training on group cooperation and dynamism may be an area of intervention to assist the farmers.

#### **4.4 Livestock Activities**

Livestock in general is important for crop production and for meeting household dietary requirement. For some households livestock products represent a potential source of cash income for the households in the valley. Some farmers generate cash income by selling livestock products like meat, butter, cheese and eggs.

Among livestock, cattle remain the most important animal on the farm especially as the main draft power for crop production and for their products for food or generating cash income. With the growing cash requirement of the households and the dairy products seen as a potential source of cash, the role of cattle is expected to increase in future. The interests to raise improved cattle breeds by the farmers clearly reflect the growing importance attached to the cattle for production.

Over the years, considering the interest of the farmers to acquire and raise improved cattle breeds complemented by the growing labour shortage on the farm, it is assumed that the cattle number and breed composition are expected to change, that is raise few but more productive cattle.

#### **4.5 Forest Activities**

The forest is the most important source of fuel-wood and construction materials for the households besides being the grazing ground for the livestock. The forest also provides a wide range of resources for crop production including the leaf litter for manure, fencing materials, water and tools and implements as well. For some households, the forest is an

important source of cash income where they are able to earn some cash by selling the NTFP. Therefore, the role of forest in the valley's farming system cannot be ignored now or in future, as the forest will continue to play the important role in the valley's farming system. Considering this fact and also the expected increase in the outsiders as mentioned in section 3.5, it may be necessary to look for more appropriate forest management alternative, for example, the involvement of local communities.

The valley possesses good forest coverage with a wide range of useful timber species. Therefore, as foreseen and expressed by many farmers with the construction of the approach road the extraction rate of forest resources especially timber is likely to increase over the years. This will not only pose threat to the valley's forest resources but some also expect more frequent visits from the forest authorities due to the increased forest activities. The possible frequent visits by the authorities due to road is a worry for some as this is likely to limit the use of forest by them.

#### **4.6 Labour Situation**

The labour shortage is a problem on most Bhutanese farms especially during the peak seasons. In Nahi, the permanently available able labour is only 2.7 of which only 2.2 are in the most active age group (16-49) while .5 is in 49-59 age group whose labour is on decline. More female labour is available (1:2 male female ratio) on the farm compared to the male. Further this available household labour on the farm is often shared by other activities by requiring participation in development activities usually initiated or assisted by Government and Projects.

The labour shortage is the third most critical problem on the farm. According to many respondents labour situation is not expected to improve but only deteriorate in future as many young family members either join Schools or Monk hood. And at some stage most of them are expected to leave the farm and join Government, Private or other service sectors. Even among those left behind on the farm female members are likely to increase. The occupational distribution in different age groups of the family members clearly shows that more female members will be left behind compared to very few male labour.

On the other hand with the construction of road, the frequency of family members moving out and in are expected to increase. This increased mobility will further increase farmers' contact with the outside world and come across with better job opportunities offering relatively higher income compared to farm activities. The prospect of getting a urban based job and earning a higher income and the attraction of urban life is likely to entice more and more active farm labours to move out leaving behind the much younger or older family members to do the farm works.

As understood by all, this is a common problem in most of the developing countries of the world where the economy is under transition. This therefore, demands the attention of all concerned authorities to initiate programs to improve the rural life and make it more attractive for the rural population to live and work and stop from migration to urban areas.

#### **4.7 Off-farm Activities**

As of now, the off farm activities does not represent an important component of the farming system. However, considering the limited landholdings of the households and the growing family size is likely to force some of the family members to look for and engage in new income generating activities either on the farm or outside the farm. As mentioned above, the access road provides the opportunity to the household members to move out and look for better opportunities to earn income especially during the off-season when activities are less on the farm. The recent decision of the Government to restrict the import of labour from outside the country increases the opportunities for the farmers to get engaged in some off-farm activities and earn income if working conditions are acceptable to them and the individuals for the companies employing them.

#### **4.8 Marketing Activities**

The farmers of Nahi sell a wide range of farm and forest products in Thimphu and Wangdue Phodrang markets and at the same time many essential household items are purchased. The lack of access to market or other facilities (hospitals, family members outside, communication) mentioned as a major constraint for the improvement and expansion of the village life (Richter 1997) has been partially improved with the construction of the new access road. As such, most farmers feel and have even expressed their interests to change their farm production plans by growing more cash crops like vegetables and fruits. In general the road has improved the farmers' access to the market especially in transporting products from the farm and commodities from the market and also their mobility.

#### **4.9 The Future Extension of Road**

For people of all background including the Government and Project officials, be it professionals or other staff, the farmers in the valley and other local officials, the expansion of the road and getting it connected to the road from Thimphu behind Jeyla is seen as a big potential. Many believe that if connected, Wangdue to Thimphu via Nahi will be much shorter than the present Dochula route. According to some this very advantage is strong enough for Authorities to expand and link to Thimphu road above Semtokha that has already reached on the mountain top that overlooks Nahi valley.

As mentioned in the previous chapter the expansion of road if at all pursued in future may need to consider the alignment of the road if it is to provide maximum benefit to the farmers i.e. considering "if the road is a means of hope for change toward a better life". However, alignment of road according people's need or atleast considering a closer match between the villages and road is likely to result into damages to the cultivated land that may or may not be acceptable to some owners. For example, the present road has minimum destruction o farm land, but still a few farmers in the lower valley see the road passing through their field as a negative impact. On the other hand there are farmers who are even ready to sacrifice part of their field if road is aligned through their village. Therefore, the presence of such mixed views demand for a careful analysis of future expansion and alignment.

**4.10 Development potential**

Nahi with a good forest coverage has many wide range of forest products (NTFP) are either consumed by the household or sold in the market. For some households forest products represent an important source of food and cash income. Like most farm products the forest products are seasonal and but usually available in smaller quantities and involves much time for collection. Therefore, some forest products brought in the market are highly valued by the customers and as such prices offered are often attractive. Further with the health concern on the rise forest products possess much better opportunity for its acceptance by the customers as it is 100% chemical free and tastes natural.

Therefore, possibilities may be explored for growing some of the high value crops like orchids, mushroom, asparagus and walnut in the farmers' field. If successful, this will not only increase the farmers' income but also reduce the pressure on the forest and help conservation of the species as well.

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## 1. Annexure 1.1 Topics for the Rapid Appraisal

Topic compulsory for all the Households

- ❖ Farm Labour
  - House hold members (permanently working on the farm)
  - Labour hiring (source, wage rate, etc.)
  - Farm activities for which labour is hired
  - Labour shortage (season, how they solve it, etc.)
- ❖ Housing
  - Size of the house (number of rooms, stories, etc.)
  - Roofing (what materials)
  - House hold equipments
- ❖ Human Health
  - Health care (facilities available, medicines, treatments)
  - Local treatments
- ❖ Household Income
  - Sources (crops, livestock, forest, others)
  - RNR contribution to household income (increasing/decreasing)
- ❖ Tradable Goods
  - Types of goods (identify goods)
  - Goods going out (types, where, how, quantity)
  - Goods coming in (types, source, how, quantity)
- ❖ RNR Service
  - Contacts at present (for what, how frequent, and who visits you or EA)
  - Quality of service (reliable, readily available or not, what is good/bad?)
- ❖ Farmers Visions
  - Expectations (what they expect with the road)
  - Ideas ahead (plans for change in farm activities, housing, others, etc.)
  - Farmers expectation and participation in road maintenance
- ❖ Consumption pattern
  - Food (type)
  - Source (Farm, market, neighbours,)
- ❖ Fodder Collection
  - Do you collect fodder from the forest?
  - Which plants are mostly collected/quantity/when?
  - Which part of the year do you depend too much on the fodder resources from the forest?
- ❖ **Forest activities**
  - Timber (species available now)
  - Specie endangered (which, why, how)
  - What changes do you expect in forest due to road

Topics not compulsory for all the households

- ❖ Land prices
  - Present prices (dry land, wetland, others)
- ❖ New Settlements
  - Social background (from, how, when, why, etc.)
  - Settlement composition (who all, dialects spoken, relationships, etc.)
- ❖ As an important access to Thimphu in the past
  - Route to Thimphu in the past (who uses it, for what, time taken, frequency of use, etc.)
  - Present use of the Route (who, for what, how frequently)
  - Difference (past and present)
  - Farmers outlook (with the motorable road to Nahi what could b the use of the old route)

**Annexure 1.2 The RRA Field Programme**

NRTI 9<sup>th</sup> Batch Rapid Appraisal Block Week Programme  
at Nahi, Wangdue Phodrang Dzongkhag.

For group A: **29<sup>th</sup> April to 5<sup>th</sup> May 2001 (Week 1)**

For Group B: **6<sup>th</sup> – 12<sup>th</sup> May 2001 (Week 2)**

<b>Date/Day</b>	<b>Activities</b>	<b>Responsible Person</b>	<b>Remarks</b>
29 <sup>th</sup> April 2001 (Sunday)	Travel to Nahi	TW/TS Trainees (reps)	After Lunch the group will move
30 <sup>th</sup> April 2001 (Monday)	Input on RRA/PRA Concepts, Principles and Tools	TW TS	Whole Day
1 <sup>st</sup> May 2001 (Tuesday)	Practice on RRA/PRA tools Interview Preparation Few Interview of nearby farmers	TW/TS Trainees	Morning practice on RRA/PRA tools Agenda discussions Interview
2 <sup>nd</sup> May 2001 (Wednesday)	INTERVIEW Group presentations in the evening	Farmers, RNR & RC Staff, Trainees, TW, TS, GTZ	Evening group presentation will follow
3 <sup>rd</sup> May 2001 (Thursday)	INTERVIEW Group presentations in the evening	Farmers, RNR & RC Staff, Trainees, TW, TS, GTZ	Evening group presentation will follow
4 <sup>th</sup> May 2001 (Friday)	Compilation and Feed Back Session with the farmers	Farmers, RNR & RC Staff, Trainees, TW, TS, GTZ	Morning - Prepare for feedback Afternoon - feedback
5 <sup>th</sup> May 2001 (Saturday)	RRA Evaluation Camp area cleaning Back to NRTI	ALL	ALL

**Annexure 1.3 Day wise Programme**For Group A **29<sup>th</sup> April to 5<sup>th</sup> May 2001 (Week 1)**For Group B **6<sup>th</sup> – 12<sup>th</sup> May 2001 (Week 2)**

<b>Date/Day</b>	<b>Time</b>	<b>Activities</b>	<b>Responsible Person</b>
30/04/ 2001 (Monday)	8:00 a.m. – 9:30 a.m. 9:45 a.m. – 11:45 a.m. <b>12:00 a.m. – 1:00 p.m.</b> 1:00 p.m. – 2:30 p.m. 3:45 p.m. – 5.00 p.m.	Input on RRA/PRA Concepts and Principles Introduction to RRA/PRA Tools .....LUNCH..... Practice on RRA/PRA Tools Practice on RRA/PRA Tools	T/TS/ TW TS/TW  TS/TW TS/TW
1/05/ 2001 (Tuesday)	8:00 a.m. – 9:30 a.m.  9:45 a.m. – 11:45 a.m.  <b>12:00 a.m. – 1:00 p.m.</b> 1:00 p.m. – 4:00 p.m. 4:30 p.m. – 5:30 p.m. 5.30 p.m.	Introduction to RRA and PRA Topics and GTZ Labour questionnaires. Interview Tips, Field Preparation (Group formation) Reporting and evening presentation .....LUNCH..... Interview nearby households Group presentation preparation Group presentation and discussion for next day's interview	TW/TS  TS/TW  ALL ALL ALL
2/05/2001 (Wednesday)	8:00 a.m. – 3:00 p.m. 4:00 p.m. – 5:30 p.m. 5.30 p.m.	INTERVIEW WITH FARMERS Group presentation preparation Presentations/ discussions/ programme for next day/ group formation	ALL ALL ALL
3/05/2001 (Thursday)	8:00 a.m.-3:00 p.m. 4:00 p.m. – 5:30 p.m. 5.30 p.m.	INTERVIEW WITH THE FARMERS Group presentation preparation Presentations/ discussions/ programme	ALL ALL
4/05/2001 (Friday)	8:00 a.m. – 12:00 p.m.  1:30 p.m.	Compilation and preparation for feedback session Feed Back Session with the farmers	ALL  ALL
5/05/2001 (Saturday)	8:00 a.m.-9:30 a.m. 10:00 a.m. – 11:00 a.m. <b>11:30 A.M.</b> 1:00 p.m.	Final round up and Evaluation Camp area cleaning .....LUNCH..... Back to NRTI	T/TS/TW

\*T – Trainees; \*TS – Thubten Sonam; \*TW – Thrinang Wangdi; \*ALL – Includes NRTI Trainees, RNR Field staff, Dzongkhag/ GTZ / RNR-RC Bajo staff and Nahi Farmers.

**Annexure 1.4 List of RRA Participants**

List of participants for Group “A” RRA 1<sup>st</sup> Week (29<sup>th</sup> April 12<sup>th</sup> May 2001)

FO Sector	AG Sector	AH Sector
Wangchuk	Tshering Pem	Sangay Wangmo
Ugyen Lhendup	Thuji Penjor*	Singye Dorji
Pema Dendup (A)	Sonam Norbu	Tashi Norbu
Leki Tshedup	Sonam Dema	Thinley Jamtsho
Kelzang Dawa	Leki Dema	Thering Penjor
Karma Wangdi	Pema Dawa	Wangchuk
Dori Wangdi	Namgyel	Yeshye Dorji
Dorji	Sangay Wangmo	Pasang Wangdi
Dophu	Gembo Dorji	Nidup Tshomo
Doley		
Damcho Lhamo		
Chophel		
Chimi Delma		

Thuji Penjor\* will be responsible for organizing the mess for the Block Week 1. He will also assist the teacher(s) for coordinating the different activities during the block week.

List of participants for Group “B” RRA 2<sup>nd</sup> Week (6<sup>th</sup> – 12<sup>th</sup> May 2001)

FO Sector	Ag Sector	AH Sector
Pema Dendup (B)	Chimi Lham	Dal Bhadur Mishra
Pema Tshewang	Chojay Lhendup	Kinley Rabgay
Phuntsho Wangdi	Dechen Om	Kuenga Thinley
Singye Wangchuk	Dhendup Wangchuk	Leko
Sonam Thinley	Karma Yangzom	Namgyel Chenko
Sonam Tshomo	Kencho Pelden	Wangchuk Namgyel
Sonam Wangchuk	Tshering Wangmo	Phuntsho Wangmo
Tashi Gyelpo	Tshewang Dorji	Sonam Tshering
Tashi Tshering*	Rinchen Wangmo	
Tashila		
Tshering Tashi		
Tshencho Tshering		
Tshering Wangchuk		

Tashi Tshering\* will be responsible for organizing the mess for the Block Week 2. He will also assist the teacher(s) for coordinating the different activities during the block week.

Teachers:

1. Thrinang Wangdi (Lecturer AG Faculty)
2. Thubten Sonam (E&C Faculty)

## **Annexure 1.5 Brief Background note on Nahi geog for RRA participants**

### **Information on Nahi geog**

Nahi is one of the geogs under Wangdue Dzongkhag Administration. The nearest village is about three hours walk from Wangdue bridge, and now with the opening of a motorable road (11 Km in length) links the geog to the Wangdue Tsirang and Thimphu highway making the life for the people more easier. However, a web of small footpaths and mule tracks still remains the main linkage to the most of the villages in the valley.

Nahi valley is quite steep with most of the settlements on the northern slopes. The Hindey Rongchu is the main river going through the valley, and it divides the valley almost exactly into two halves. The geog has almost 91% of its area covered with forest. Thus forest plays an important role in the geog's agricultural system.

The geog approximately covers an area of about 65 square Km with 104 households spread widely over the area. The geog ranges from an altitude of 1200 meters at the easternmost corner to an altitude of 3600 m in the west.

### **Land Use**

The farming system prevalent in the geog presents a combination of crops, livestock and forest activities with strong integration among these components. Therefore, the wetland is the main dominant land use (144.0 acres) followed by dry land (60 acres), shifting cultivation (47.9 acres), kitchen garden (8.1 acres), apple orchard (4.2) and 2.7 acres of orange orchard as of 1995. The crops cultivated in the valley include paddy, barley, wheat, millet, mustard, maize, buckwheat, etc.

The animals include cattle, pigs, chickens and horses mostly of local breeds. The cattle is the most important domestic animal which is essential for crop production as well as a source of nutrients for the family members and also as a source of cash income.

Forest is an important component of the farming system not because it provides inputs for livestock and crop production activities but also serves as an important source of cash for the farmers by selling some non timber forest products. The most commonly collected forest products include mushroom, ferns, bamboo, wild asparagus, xangthozylum, etc. which are usually taken to the markets for sale. The other forest products include walnut, champ, blue pine, chirpine, and oak, etc. mostly used for construction purposes and firewood as well.

### **Developmental Institutions**

The geog has a primary School and a RNR Extension centre. At the moment due to the untimely demise of the AH extension staff only AG extension is available. However, as per the village gup, AH extension post is expected to be filled up by one of the NRTI trainee passing out in July 2001.

With regard to human health facilities, nearest hospital is Bajo and Army Hospitals in Wangdue. At the village level Village Health Workers (VHW) are the main source of services for basic treatment or provision of medicines, besides the traditional measures.

### **Main Problems and Developmental Priorities**

The common problems include;

- ❖ Lack of access to market and other facilities (partially improved at the moment)
- ❖ Irrigation problem mainly in Hali and insufficient irrigation water
- ❖ Lack of additional land for share croppers
- ❖ Lack of manpower during the peak seasons
- ❖ Wild animals problems
- ❖ Unproductive cattle breed

**Annexure 1.6 Formats for recording information**

**1. GENERAL HOUSEHOLD INFORMATION**

1. Name of the Interviewee: ..... Male  Female
2. Thram Number :.....House No.....
3. Village:.....

**2. HOUSEHOLD MEMBERS**

	TYPE	AGE	SEX	EDU	OCC	TIME		TYPE	AGE	SEX	EDU	OCC	TIME
1							11						
2							12						
3							13						
4							14						
5							15						
6							16						
7							17						
8							18						
9							19						
10							20						

Type: HH =Head of Household; W=Wife; S1, S2, etc. =Son 1, Son 2; D1; D2, etc.=Daughter 1, 2;  
 EDU = Education level (class); Literacy (Read and write Dzongkha).  
 OCC = Occupation (CS=Civil Servant; M=Monk; F=Farmer, S=Student; B=Business, etc.  
 TIME: Amount of time working on the farm (in months per year) if other units are used please specify).

**3. LABOUR INFORMATION**

	Season (When?)	For which Activities	Male / Female	Total No. of days	Daily Wage rate (Nu.)	Source (from where?)
Labour Hire						
Bullocks hire						

**4. RNR and Health Extension Service**

Types of Extension Service	Do you contact (Y/N)*	How frequent?	For what reason?	Do they visit you? (Y/N)	How frequent?
AH Extension					
AG Extension					
FO Extension					
Health Extension					

\* Y =Yes; N=No.

4.1 How is the quality of the extension service (Reliable/Unreliable and not readily available)

4.2 What needs to be improved?

## 5. HOUSING INFORMATION

Details	Descriptions/figures	Remarks
Number of rooms		
Stories		
Roofing (bamboo/CGI/planks/slate, others)		
Others		

## 6. HUMAN HEALTH INFORMATION

Details	Description	Remarks
Available Facilities		
Local treatments		
Source for medicines		
Hospital approached		

## 7. HOUSEHOLD INCOME

Details (Sources of Income)	Rank sources*	Approximate amount (kg)	Remarks
Crops			
Livestock			
Forest products			
Fruits			
Vegetables			
Family member contribution			
Business			
Others			

\* Ranking should be – 1 for highest, 2 for next highest, and so on.

## 8. HOUSEHOLD EXPENDITURE

Areas of expenditures	Rank expenses*	Approx. Annual expense (Nu.)	Remarks
Family expenses			
Crop expenses			
Livestock expenses			
Forest activity expenses			
Expenses on fruits			
Vegetable expenses			
Expenses for family members			
School Expenses			
Religious Pujas			
Others			

\* Ranking should be – 1 for highest, 2 for next highest, and so on.

## 9. GOODS TRADED OUT

Types of Products	Quantity	Means	To (place)	Used for

## 10. GOODS TRADED IN

Types of Products	Quantity	Means	From (place)	Used for

## 11. FAMILY CONSUMPTION PATTERN

Food items	Source	Season/When?	Why
Rice			
Wheat flour			
Barley			
Local butter			
Local datze			
Maize			
Cooking Oil			
Imported butter			

## 12. FARMERS' VISIONS

- a) Any plans to change in your farm activities with the new road in your village?
  
- b) What benefits and negative impacts do you see that the new road would bring to you and the village as a whole?
  
- c) How do you think the road should be maintained?

## 13. How do the household assure the family food supply and the inputs for farm activities?

	Own farm production	From Neighbours	Village lenders	Markets (From)	Other Sources
Food grains					
Cooking oil					
Clothes					
Farm tools					
Seeds					
Draft animals					
Animal Feeds					

## 14. MILK PRODUCTION

Sl. No	Description of milking cows (Breed)	Milking period	Quantity of milk per day	Total milk production
1				
2				
3				
4				
5				
6				
7				
	Total			

**Annexure 1.7 Some RRA Field Photos**

## **Annexure 1.8 Training notes for the participants**

### **Rapid Appraisal Concepts and Definitions (*James Beebe and Robert E. Rhoades*)**

#### **The Problem**

Decision makers need information that is relevant, timely, accurate and usable. In rural development, a great deal of the information that is generated is, in various combinations, irrelevant, late, wrong and/or unusable anyway. It also often costs a lot to obtain, process, analyse and digest. Although many professionals have given thought to improving information gathering it remains a remarkably inefficient activity. Criteria of cost-effectiveness do not appear often to have been applied, and manifest inefficiency is sometimes met by demanding not better information, or less, but simply more.

The challenge is to find ways for outsiders to learn about rural conditions which are more cost-effective – which lead to information and understanding which are closer to the optimal in trade-offs between cost of collection and learning, and relevance, timeliness, accuracy, and actual beneficial use.

In the context of rural development projects, RRA appears especially relevant for identification and appraisal. Information is needed quickly; decisions are pre-empted by the passage of time. Commitment to projects and to details of projects sometimes becomes irreversible early on, setting a premium on timely information. But RRA is also relevant to implementation, monitoring and evaluation. Its relevance is enhanced by the works, with engineering blueprints, which precisely predetermine what will be done, but rather like voyages into un-chartered seas where direction and steering will change with new soundings and sightings. Techniques of RRA are hardly a new radar to prevent shipwreck; but they may at least reduce the dangers by showing more clearly and more quickly what is happening.

Two sets of inappropriate methods;

#### **i) Quick-and-dirty**

The most common form of quick-and-dirty appraisal is rural development tourism (Chambers 1979)- the brief rural visit by the urban-based professional. This can be cost effective but exerts biases against perceiving rural poverty, reinforcing, in my view, underestimates of its prevalence and failures to understand its nature. These antipoverty biases are;

Spatial – Urban, tarmac and roadside biases. But the poorer people are often out of sight of the roadside, having sold out and moved away and other otherwise tending to be concentrated in the regions remoter from urban centres.

Project - Outsiders link in with networks, which channel them out from urban centres to those rural places where there are projects, where something, in short, is happening or is meant to be happening, to the neglect of non-project areas.

Biases of personal contact. Those met by rural development tourists tend to be the less poor and the more powerful, men rather than women, users of services rather than non-users, adopters rather than non-adopters, the active rather than the non-active, those who have not had to migrate, and (inevitably) those who have not died. In all cases the bias is against perceiving the extent of deprivation.

Dry season bias. In many tropical environments the wet season is the worst time of year especially for the poorer people (with hard work, food shortages, high food prices, high disease incidence, high indebtedness, etc.) but urban-based professionals travel most in the post-harvest dry season when things are better.

Biases of politeness and protocol. Courtesy and convention may deter rural tourists from enquiring about and meeting the poorer people. The rural development tourist is also usually short of time and the poorer people stand at the end of the line.

These biases interlock. The prosperity after harvest of a male farmer on a project beside a main road close to a capital city may colour the perceptions of a succession of influential officials and foreigners. The plight of a poor widow starving and sick in the wet season in a remote and inaccessible area may

never in anyway impinge on the consciousness of anyone outside her own community. The biases pull together towards those who are better off, and away from those who are poorer and more deprived.

Many of the other quick and dirty investigations are well known, but a list can serve as a warning:  
misleading replies (deferential, prudent, hoping to avoid penalties or to gain benefits)  
Failure to listen (thinking the month is an organ of hearing)

Reinforced misperception and prejudice (those old hands who 'know-it-all' but who are projecting and selecting their own meanings)

Visible as against invisible: things and activities are seen, but not relationships— indebtedness, interest rates, low wages, patron-client relations, intra-family relations, etc.  
Snapshot, not trend: a moment in time is seen, and trends, which may be much more significant for rural development purposes, are not seen.

This list could be lengthened, but the point is made: quick appraisal can be seriously misleading, especially when there is a concern with the poorer people. Rapid is often wrong.  
Long –and-dirty

The solutions preferred by many well-trained professionals are longer and more costly. Social anthropologists perpetuate their ritual immersions in alien cultures; sociologists and agricultural economists plan and perpetuate huge questionnaire surveys; and scientists map soils, vegetation, land use and rainfall. All have their uses but most of them do not generate much information in their early stages. Some are academically excellent but useless: the social anthropologist's fieldwork published ten years later; the detailed soils map which sits on the shelf; the social survey which asked questions which were interesting but of no use to planner. Others are never processed: the extensive questionnaire survey with the 30 pages of questionnaire (multidisciplinary, each discipline with its questions), which if asked are never coded, or if coded never punched, or if punched never processed, or if processed and printed out, never examined, or if examined, never analysed or written up, or if analysed and written up, never read, or if read, never understood or remembered, or if understood or remembered, never actually used to change action. Rural survey must be one of the most inefficient industries in the world. Benchmark surveys are often criticised and yet the science of evaluation, pre-empting scarce national research resources, and generating mounds of data and papers which are likely to be an embarrassment to all until white ants or paper-shredders clean things up.

Some investigations are long and clean. The point here though is that long, however respectable professionally, is often inefficient. Moreover, the longer research takes, the longer and less useable the report tends to be and the carpet. Often the useful information from social anthropologists and from extensive questionnaire surveys comes coincidentally and informally during fieldwork, and not through the formal process at all.

#### **ii) Fairly-quick-and fairly-clean**

The question is, then whether there is a middle zone between quick-and-dirty and long-and dirty, a zone of greater cost effectiveness. People in many disciplines and professions have been converging on this question, but may have been deterred from writing it up because the activities are not quite proper. They have a sense of responsibility to their professional training, or more crudely they have been brainwashed by their professional conditioning and reward systems. And yet in natural resources and environmental appraisal, health and nutrition appraisal for agricultural research and the field socio-economic stratification – in these fields and others there is an active search for shortcuts with trade-offs between timeliness, accuracy, relevance and actual use of information. The cost-effectiveness has its own rigour and should generate its own values. Two-linked principle can be suggested:

Optimal ignorance. This refers to the importance of knowing what is not worth knowing. It requires great courage to implement. It is far, far easier to demand more and more information that it is to abstain from demanding it. Yet in information gathering there is often a monstrous overkill.

Proportionate accuracy. Especially in surveys, much of the data collected has a degree of accuracy, which is unnecessary. Orders of magnitude, and directions of change, are often all that is needed or that will be used.

At least eleven issues face practitioners of Rapid Rural Appraisal. Resolutions of these issues determine what will be discovered and how results will be used. These issues are:

Definition of the concept; 2) Duration of the Study; 3) Participation on the Rapid Appraisal Team; 4) Research Orientations; 5) Structuring the research time; 6) Information to be collected in advance; 7) Use of Interviews; 8) Use of direct observation; 9) Preparation of the Report; 10) Getting results factored into decisions and 11) Potential Problems

### **1. DEFINING THE CONCEPT**

Rapid Appraisal is a way of organising people and time for collecting and analysing information where time constraints demand decisions before local situation can be fully understood. Sometimes these decisions concern additional research such as the content of a formal survey or the focus of long-term ethnographic research.

One of the strength of Rapid Appraisal is the flexibility to adjust it to specific objectives. While much greater rigour in the use of the standard social science methodologies is needed, rapid Appraisal cannot and should not have a single standardized methodology. Local conditions, available resources and specific research objectives should always determine how Rapid Appraisal is implemented. Some of the definitions are;

Any systematic activity designed to draw inferences, conclusions, hypotheses, or "assessment", which includes the acquisition of new information, in a limited period of time.

A study used as the starting point for understanding a local situation; carried out by a multi-disciplinary team; lasting at least four days but not more than three weeks; and based on information collected in advance, direct observation and interviews where it is assumed that all relevant questions can not be identified.

Rapid Appraisal has been described as:

"Modified survey" (Hildebrand 1982)

"Survey undertaken without questionnaires" (Haner et al. 1982)

"Informal," "exploratory," "largely unstructured interviews combined with observation" (Honadle 1979)

"Organised common sense, freed from the chains of inappropriate professionalism" (Chambers 1980)

"A form of appropriate technology: cheap, practical and fast" (Bradfield 1981).

### **2. DURATION OF THE RAPID APPRAISAL**

The most common problem is too much rushing and haste. The key to good rapid appraisal is allowing enough time to be observant, sensitive and eclectic and to follow up on leads (Carruhters and Chambers 1981). Anything less than four days is inadequate for carrying out discussions, and for identifying, discussing and rejecting ideas that emerge from these discussions, and for putting these ideas together in a usable form (Chambers 1983). An appraisal that is too long may waste project time and cause participants to view the Rapid Appraisal as an end itself instead of as a new development tool. Anything less than four days is probably "Development Tourism," and anything more than three weeks probably puts too much emphasis on Rapid Appraisal. The flexibility inherent in Rapid Appraisal must extend to the definition of the term "rapid" even if a minimum and maximum time is stated. Likewise defining a minimum and maximum time does not preclude a series of rapid appraisal. Field experience under different conditions should provide guidance on whether there is a need for an explicit minimum and maximum time.

### **3. PARTICIPATION ON THE RAPID APPRAISAL TEAM**

#### **Team Size**

Smaller team are preferred to larger teams. Members of large teams are more likely to talk to one another and less likely to listen and learn from others than members of small teams. (Rhoades 1982).

#### **Team Composition**

RRA is usually carried out by a Multidisciplinary team. Complex systems are more quickly understood by a team consisting of several disciplines. Teams should be formed based on the type of study. For example Rapid Appraisal focusing on agriculture will often have a mix of biological and social

scientists, and may include plant breeders, plant pathologists, economists, general agronomists, anthropologists, sociologists, agricultural economists and engineers (Hildebrand 1982). The disciplinary especially of team members is not critical as long as several disciplines are represented. Both men and women should be included on the team (Shaner et al 1982) and all team members should have some familiarity with all aspects of the system being investigated (Chambers 1983). And all system

Teams should be composed of mix of insiders and outsiders. It is assumed that some team members are already familiar with the area (may even be from the area and are likely to remain there) and will provide an insider's perspective to the problem. Other team members will be able to share experience and knowledge from the outside. The outsider's participation can be extremely valuable to the insiders in identifying possible options and in noting constraints that might otherwise be overlooked. Outsiders also gain insights and knowledge that can guide

#### Prior training and Experience

The effectiveness of Rapid Appraisal is improved by including as participants individuals who have already participated in another Rapid Appraisal (Hildebrand 1982). Opinions differ on the need for team training before going to the field. Rhoades (1983) argues that because Rapid Appraisal is more art than science there is no substitute for experience as the teacher. On the other hand, Collinson (1982) argues that need for pre-Rapid Appraisal training. Specific pre-Rapid Appraisal training based on simulating Rapid Appraisal through the use of slides and the Farming Systems Support Project at the University of Florida has suggested role-playing.

(Rhoades 1982 – anyone can do it – agronomists, extension workers, biologists, and social scientists as long as they have a little time, pencil, paper, common sense, and a down-to-earth approach to farm people).

#### 4. RESEARCH ORIENTATION

Implicit assumptions often to a large extent what happens during Rapid Appraisal and how the results are interpreted. The important research orientations with implications to Rapid Appraisal include;

1) Whether questionnaires and guidelines should be used and if guidelines are to be used, how long they should be; 2) Whether the team should seek averages or emphasize variability; 3) whether to focus on problems or opportunities; 4) Whether to focus on problems or opportunities; and 5) Whether to focus only on individuals or also look at groups and the community.

#### 5. STRUCTURING THE RESEARCH TIME

Opinions differ considerably on how to structure the time of a Rapid Appraisal, but there is almost universal agreement on the importance of dividing time between collecting data and team interaction to make sense out of the collected data. Interaction between researchers at the end of each day and at the fieldwork is essential in determining the success of the Rapid Appraisal.

Scheduling Rapid Appraisal time is necessary to ensure that time for group interaction will be adequate and that a variety of different activities can be covered in a short period of time.

#### 6. INFORMATION TO BE COLLECTED IN ADVANCE

Quite often there already exists a lot of secondary information of the study area. Therefore, collection of basic available data in advance from the relevant sources may be useful for the Rapid Appraisal. A Rapid Appraisal uses interviews and direct observation to build upon information collected in advance. Information collected in advance will (1) save time and suggest additional factors of inquiry for the Rapid Appraisal; (2) be more valid of the local system; (3) be determined by the objectives of the study; and (4) often should include maps or aerial photos.

#### 7. INTERVIEWS

An important way of learning about local conditions is to ask participants what they know. Individual's knowledge, however, varies greatly. People also differ greatly in their willingness and verbal capabilities for expressing information. Some are widely knowledgeable, whereas others depend on their friends for routine information. It is assumed that Rapid Appraisal interviews do not use a formal questionnaire but at most a checklist of questions as a flexible guide. The interview is usually the most important research methodology used by the Rapid Appraisal.

Seven related issues concern interviews as part of Rapid Appraisal:

#### Selection of Respondents

Two types of individuals ('individual respondents' and 'key informants') are usually interviewed. The "individual respondents" can tell about what they actually do with special attention to their role in the system being investigated, while the "key informants" with their more extensive knowledge can talk about the system beyond their own participation.

Interviews are conducted with an opportunity sample of purposely-selected "individual respondent" who are likely to be beneficiaries of any program being planned or implemented. They should be chosen because they represent a cross section of the expected target population. An opportunity sample of farmers would include farmer leaders, farmers who have tried recommended technologies, innovative farmers who have successfully developed improved technologies, women farmers who are both members and heads of households, farmers who represent major cropping systems in the area, very poor farmers with very limited resources, traditional farmers who have resisted new technology.

Key informants on the other hand are expected to be able to answer questions about the knowledge and behaviour of others and especially about the operations of the broader system. Key informants are accessible, willing to talk, and have great depth of knowledge about the area, certain crops, credit, marketing and other problems. Key informants relevant to Rapid Appraisal focusing on agriculture might include Creditors, landlords, local government officials, traders, village headman, extension agents, buyers of agricultural products and suppliers of inputs, etc.

#### Interviews ('Individual' verses 'Group')

Farmer interviews can be conducted in groups and individual. Group interviews can be extremely useful in collecting information such as (1) natural resource information (traditional names for soil types and their location) (2) local histories (age of community, and (3) depending on the culture, certain sensitive information (land quality and size of landholding).

The number and length of interviews are assumed to be determined by common sense and local conditions. Relatively homogenous populations require fewer interviews than highly heterogeneous populations.

The group interviews are useful in collecting certain information and in providing important leads for further investigation. Many topics taken up in-group interviews will also need to be covered in individual interviews. The Rapid Appraisal team should (1) note the possible influence on responses of the presence of others; (2) where possible conduct some interviews without the presence of others; and (3) limit interviews to between one and two hours.

Scheduling interviews, (Timing of interview can be extremely important and the interviewer has to be aware of the daily work schedule, seasonal activity, work habits, climate and their effect on respondents' willingness to talk.

Strategies for getting the most out of interviews, (The Rapid Appraisal team should get people to talk on a subject and not just answer direct question. The interview should be a dialogue or process where important information develops out of casual conversation. The key to successful informal interviewing is to be natural and relaxed while guiding the conversation to a fruitful end. Talk with people and listen to their concerns and views.

Use of Interpreters, (Ideally all members should speak the local language. But in the real world one or two members may not speak the local language and an interpreter will have to be used. So Interpreters have to be chosen carefully to ensure that they understand the questions. Before the interview, the team should go over the interview strategy with the interpreter, emphasizing that the team is interested in more than just "answers" to "questions".

Note Taking (Opinions differ over the desirability of recording information in front of respondents. Some believe that writing down the information during the interview restricts the spontaneity of respondents' reactions. Others recommend writing down everything and keeping complete field notes. Rhoades points the obvious. "Whether one should take notes.... Depends on the situation". Experience

with different subjects under different conditions should provide guidance on whether notes should be taken.

Appropriate locations for interviews. As a general rule interview should be conducted under conditions most relevant to and revealing about the local system being investigated. For example for agriculture, wherever possible, interviews should be carried out in farmers' fields with visible evidence of farmers' management before the rapid Appraisal Team. The Rapid Appraisal Team should always note where interviews are conducted.

#### 8. USE OF DIRECT OBSERVATION

Direct observation is an important Rapid Appraisal tool that can be used to validate data collection in advance, provide multiple checks on data collected from interviews, and suggest additional topics for interviews. Direct observation of "key indicators" often provides more valid and less costly information than other research methods. Examples of key indicators would be like; soil colour to indicate particle size distribution; fertility, and drainage properties, birth weight of children to indicate health and nutrition in an area, housing to indicate poverty to prosperity, farm tools and implements, cattle breeds, forest coverage, drinking water facilities, etc.

Direct observation can be as important as interviews for Rapid Appraisal. Thus the Rapid Appraisal team is encouraged to use special techniques that can improve direct observation such as: "key indicators" as proxy measures and cameras. Finally, to improve observational skills, the Rapid Appraisal team is encouraged to maintain carefully written field notes.

#### 9. PREPARATION OF REPORT

Rapid Appraisal is not complete until the report is finished. The team members are usually assigned a certain portion of the report to be written at the end of the survey. Each member drafts and reads the part written by him for group discussion. In the process the team approves or modifies the individual sections of the report. Even additional trips and interview if necessary are made for collecting the missing information. The individual sections of the report are reread to the group and the recommendations from the team are then recorded. As the report will be rewritten later, in the field the team should not worry too much about grammar and style. It is important to get the information down while still fresh on everyone's minds. The goal is to write a report that reflects interdisciplinary nature of Rapid Appraisal.

#### 10. GETTING RESULTS FACTORED INTO DECISIONS

According to Chambers "good rapid appraisal will be bad rapid appraisal unless it leads to better performance". Chamber makes three recommendations to increase the chances of Rapid Appraisal influencing decisions: Full involvement of project staff; Meshing with current programs including budget allocations, Priority to what can be done soon.

The most important element in ensuring the use of the Rapid Appraisal results is not to let the report be shelved away "only to gather dust". Rapid Appraisal should be the guide for the future and should constantly be upgraded as the activity progresses.

#### POTENTIAL PROBLEMS

If Rapid Appraisal is to be a useful research tool, several pitfalls must be avoided. These include over reliance on the initial findings, too much focus on the Rapid Appraisal as an end in itself, insufficient time and effort resulting in "Development Tourism", failure to recognise the differences between rapid Appraisal and baseline study, and lack of agreement on what constitutes Rapid Appraisal resulting in serious questions about the confidence that can be placed in the data.

#### Diagnosticism

The belief that a quickly done Rapid Appraisal at the outset of a project can provide a sufficiently valid understanding of the situation to serve as bases for all future interventions is dangerous. The Rapid Appraisal is best used as a heuristic device to initiate additional formal studies and interventions.

#### *Inappropriate focus*

Investing too much time and effort in Rapid Appraisal can delay a project. It can also confuse the uses of Rapid Appraisal as a tool and as an end product. Recognise the limits of Rapid Appraisal and it can

prevent inappropriate focus. The objective should not be to produce good Rapid Appraisal reports, but rather to do a good Rapid Appraisals that will produce information for better decisions.

*Development tourism*

Biases: roadside bias, - project bias, bias of personal contacts, - dry season bias, - bias of politeness and protocol

Too much attention to observed things and activities, but not enough to the relationships, (seeing the indebtedness but failing to see the relationship of interest rates, wages, patron client relations, etc.)  
Failure to recognize that what is seen is a “snapshot”, a moment in time and not trends that may be more significant;

Failure to recognize gaps left by disciplines, which are not represented among the team and the less obvious gaps which lie between the disciplines themselves and their traditional territories and concerns.

*Baseline studies*

Since Rapid Appraisal collects limited quantifiable data, and since the sample size is an opportunity sample, purposely chosen and not a random sample, its future use for project is limited. Even though it is a mistake think Rapid Appraisal can replace a baseline survey, the Rapid Appraisal provides an important first step for considering the difficult questions of evaluation on impacts, trends and causality.

*Checklists and confidence in the data produced*

Flexibility in adapting Rapid appraisal to specific study needs and available resources is the most important strength of the methodology. The same flexibility that is so critical to making the study relevant to the local situation, when abused permits individuals to do anything, on almost nothing, and call it “Rapid appraisal”. The lack of agreement on what constitutes Rapid Appraisal and the lack of discussion on methodology in most rapid Appraisal reports make it difficult to estimate the degree of confidence that can be placed in the data. (Honadle).

Group Exercises carried out during the training include;

Conduction and preparation of transects maps

Village and Resource mappings

Execution of Group and individual interviews among participants and later with farmers

Pair-wise bean and wealth ranking

Seasonal calendar and historical transect interview

## WHY RRA AND PRA

### INTRODUCTION

The earlier RRA was more extractive. Professionals go to the rural areas and obtained data from them, brought away and processed it, more or less to see what we thought would be good for them. RRA still remains valid and useful. But now in addition more and more practitioners are adopting participatory approaches as learners, conveners, catalysts, and facilitators. In PRA mode, we enable rural people to do their own investigations to share their knowledge and teach us to do the analysis and presentations to plan and to own the outcome. PRA has been described as a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, to plan and to act.

In PRA the key is personal behaviour and attitudes. This includes critical self awareness and embracing error, sitting down, listening and learning, not lecturing but handing over the stick to villagers, who become the main teachers and analysts; having confidence that they can do it; and an open-ended inventiveness.

Why Rapid Rural Appraisal (RRA) Originally in the Late 1970s and 1980s?

Need: accelerating rural change, and the need for good and timely information and insights.

Recognising “us” and our confidence in our knowledge as much of the problem, and “them” and their knowledge as much of the solution.

Rural development tourism – anti-poverty biases (spatial, project, person, seasonal,) and being rapid and wrong.

Survey slavery – questionnaire surveys which take long, mislead, are wasteful, and are reported on, if at all, late.

The search for cost-effectiveness, recognising trade-offs between depth, breadth, accuracy, and timeliness, assessing actual beneficial use of information against costs of obtaining it.

Why Also PRA Now?

A confluence of approaches and methods – applied social anthropology, RRA, agro ecosystem analysis, farming system research, participatory action research.

The discovery that “they can do it” (mapping, diagramming, analysis,)

The relative power and popularity of the open against the closed, the visuals against the verbal, group against individual analysis, and comparing against measuring.

The research for practical approaches and methods for decentralisation, democracy, diversity, sustainability. Community participation, empowerment...

Principles Shared by RRA and PRA

Rapid progressive learning – flexible, exploratory, interactive, and inventive.

Reversals – learning from, with and by rural people, eliciting, understanding and appreciating ITK(indigenous technical knowledge).

Optimal ignorance and appropriate imprecision – not finding out more than is needed, not measuring more accurately than needed, and not trying to measure what does not need to be measured. We are trained to make absolute measurements, but often trends, scores or ranking are all that are required.

Triangulation – using different methods, sources and disciplines, and a range of informants in a range of places, and crosschecking to get closer to the truth through successive approximations.

Principle investigations direct contact – face to face in the field.

Seeking diversity and differences

### THE CORE OF PRA

PRA as it is evolving, is all this and more. Some of the “more” is

*Facilitating* – they do it: empowering and enabling villages to do more or all the investigation, mapping, modelling, diagramming, ranking, scoring, quantification, analysis, presentation, planning... themselves and to share and own the outcome. Analysis by them, shared with us.

*Our behaviour and attitudes* - for this, the primary of our behaviour and attitudes, and of rapport, more important than methods, -- asking villagers to teach us respect for them, confidence that they can do it, handing over the stick.

*A culture of sharing* – of information of methods, of food, of field experiences (between NGOs, Government and villagers).

Critical self-awareness about our attitudes and behaviour, doubt; embracing and learning from error; continuously trying to do better, building learning and improvement into every experience.

### SOME PROBLEMS AND DANGERS

How to find the poorer, and learn from and with them.

Lecturing instead of listening and learning- in this problem worse with men than women, worse with older men than younger, and worst of all with those who have retired? Who holds the stick? Who wags the finger? Who teaches? Who listens? Who learns?

Senior people (and also younger ones) who do not want to spend time in the field let alone camp or night halt in a village.

Rushing (rapid and wrong again)

Imposing "our" ideas, categories, values, without realising we are doing it, making it difficult to learn from "them" and making them appear ignorant when they are not.

Normal professional pressures, including the tyranny of (bad, not good) statisticians, the desire for formal statistical respectability, and the compulsion to measure things rather than just compare, rank, score, identify trends...

Wanting to be snug and safe in the warm womb of a preset programme and method.

Finding the questions to ask. (We assume we know what to ask. The beginning of wisdom is to realise how often we do not know, and to recognise that we need "their" help).

Male teams and neglect of women (again and again and again)

Lecturing instead of listening and learning. Yes it has to be repeated. This can be a personal problem, which we do not recognise in ourselves. It is best treated as a joke, and pointed out to each other when we err. Which we will do.

### Approaches and Methods

"Approach" is basic. If our attitudes are wrong, many of these methods will not work or not work as well as they should. Where attitudes are right and rapport is good, we can be surprised by what villagers show they know, and what they can do.

Don't be put off by the length of this list. Probably no person in the world has used all of these methods. The purpose of listing them is to show that the menu is varied. There is much try out and explore, and much to invent for yourself.

Some of the approaches and methods are,

Offset the anti-poverty biases of rural development tourism (spatial, project, person, seasonal, courtesy.)

Find and review secondary data. They can mislead. They can also help a lot.

Observe Directly (see for yourself)

Do-it-yourself supervised and taught by them (levelling a field, transplanting, weeding, lopping tree fodder, collecting common property resources, herding, fishing, cutting and carrying fodder grass, firewood, etc.)

Find key informants

Semi-structured interviewing (has a mental or written checklist, but be open to new aspects and to following up on the new and unexpected.

Group Interviews are often powerful and efficient. (Casual/encounter/focus deliberately structured, etc.)

Sequences or chains of interviews

They do it

Participatory mapping and modelling (social, health or demographic maps, resource maps of village lands or forests, maps of fields, etc.)

Transect walks (systematically walking with key informants through an area, observing, asking, listening, discussion, identifying different zones, local technologies, etc.)

Time line (a history of major remembered events in a village or community with approximate dates.

Local histories (peoples accounts of the past, of how things close to them have changed, ecological histories, histories of cropping patterns, etc.)

Seasonal Diagramming (rainfall distribution, cropping calendar, farm labour, etc.)

Livelihood Analysis – (seasonality, crises and analysis bar diagrams, pie diagrams, Venn diagrams, etc.  
Well-being or wealth ranking (ranking household according to well-being or wealth, including those considered poorest or worst off.

Scoring and Ranking – especially using matrices and seeds to compare through scoring.

Local indicators – for examples what are poor people’s criteria of well-being and how do they differ from those we assume for them? Also indicators like soil colour, plant indicators, birth weight, housing, etc.

Key probes – questions which can lead direct to key issues as “what do you talk about when you are together?” “What new practices have you or others in this village experimented with in recent years?” etc.

Case studies and stories - a household history and profile, a farm, coping with crisis, how a conflict was or was not resolved.

Team Contracts and interactions – contracts drawn up by teams with agreed norms of behaviour modes of interaction within teams, including changing pairs, evening discussions, mutual criticisms and help, etc.

Shared presentations and analysis – where maps, models, diagrams, and findings are presented by villagers and outsiders.

Contrast comparisons

Short questionnaires – if at all, let questionnaires be late, light and tight to dummy tables. Not long questionnaires, and not early in the process, unless for a sharp and narrow purpose.

Immediate report writing

#### PRACTICAL TIPS

Don’t lecture. Look, listen, and learn. Facilitate. Don’t dominate. Don’t interrupt. When they are mapping modelling or diagramming, don’t interfere: let them get on with it. When people are thinking or discussing before replying, give them time to think or discuss. So listen, Learn, Facilitate. Don’t dominate. Don’t interrupt!

Spend night in villages

Embrace error. We all make mistakes, and do things badly sometimes. Never mind. Don’t hide it. Share it. When things go wrong, treat it as an opportunity to learn. Say “Aha”. That was a mess. Good. Now what can we learn from it?”

Ask yourself who is being met and heard, and what is being seen, where and why; and who is not being met and heard, and what is not being seen, and where and why?

Relax (RRA = relaxed rural appraisal). Don’t rush.

Meet people when it suits them, and when they can be at ease, not when it suits us. (Well, compromises are often needed, but it is a good discipline, and good for rapport, to try to meet at their best times rather than ours); and don’t force discussions to go on for too long. Stop before people are too tired.

Be around in the evening, at night and in the early morning. Stay the night in villages if you can.

Allow unplanned time, walk and wander around.

Ask about what is seen.

Probe: This sounds easy, but is one of the most neglected skills, often driven out by actual or supposed lack of time. All too often we accept the first reply to a question, much more to be learnt, and people know more, much more, than we supposed.

Notice, seize on and investigate diversity, whatever is different, the unexpected.

Use the six helpers – who, what, where, when, why, and how.

Ask open-ended questions

Show interest and enthusiasm in learning from people

Have second and third meetings and interviews with the same people.

Allow more time than expected for team interaction (I have never got this right) and for changing the agenda.

Enjoy it! It is often interesting, and often fun.

**Annexure 2.1 Ranking of income and expenses of Ap Dorji**

Source of cash income	Rank of sources	Approximate Income (Nu.)
Crops	1	9600
Livestock products	2	2000
Forest products	4	1000
Vegetables	3	1500
Areas of expenditure	Rank of expenses	Approximate Amount (Nu.)
Family Expenses	1	10,000
Crop Expenses		
Livestock expenses		
School Expenses	3	7000
Religious Pujas	2	8000

**Annexure 2.2 Housing information of the geog**

	UN1	UN2	UN	LN1	LN2	LN	Grand
Villages	Nabisa	Esagom	Total	Hebisa	Esawom	Total	Total
<b>Number of rooms</b>							
1 room	2	0	2	2	1	3	5
2 rooms	4	3	7	4	4	8	15
3 rooms	6	3	9	8	5	13	22
4 rooms	6	9	15	3	4	7	22
5 rooms	1	0	1	5	0	5	6
6 rooms	2	2	4	6	1	7	11
7 rooms	0	2	2	3	0	3	5
8 rooms	1	1	2	0	1	1	3
9 rooms	0	0	0	0	1	1	1
12 rooms	0	1	1	0	0	0	1
13 rooms	0	1	1	0	0	0	1
<b>Number of stories</b>							
1 story	7	4	11	7	7	14	25
2 stories	12	15	27	20	9	29	56
3 stories	2	4	6	4	2	6	12
<b>Roofing (B/Zs/P/Sl, etc.)</b>							
Bamboo	1	0	1	3	0	3	4
Zinc Sheet	3	3	6	4	3	7	13
Planks	18	17	35	26	15	41	76
Slate	1	0	1	1	0	1	2
Plans for zincs	3	7	10	1	0	1	11

Source: RRA Survey May 2001 [ B=Bamboo; Zs=Zinc sheet; Sl= Slate, etc.]

**Annexure 2.3 Farmers' feedback and suggestions on Extension services**

	Villages	UNT	LNT	Total
<b>Reliable (Y/N)</b>		<b>36</b>	<b>35</b>	<b>71</b>
Unreliable		0	1	1
Fairly reliable		0	1	1
Not much readily available		0	3	3
<b>Suggestion for improvement</b>		<b>0</b>	<b>0</b>	<b>0</b>
Extension Centres with good Facilities (More seed supply, insecticides, good animal health care)		3	1	4
Improved quality of chemicals		3	0	3
Ext Agents visit when needed		2	0	2
EAs should visit the village frequently		3	2	5
Ext. Agents should visit during paddy nursery sowing to prevent insects		3	5	8
Health services needs to be improved		5	7	12
Village health worker should be educated		1	0	1
Extension Agents should give quick response		2	5	7
Teach about spraying		1	0	1

**Annexure 2.4 Problem Ranking by farmers**

Agri- problems	Total				Points obtained by different problems				Total points
	1 (5)	2 (3)	3 (2)	4(1)	R1 points	R2 points	R3 points	R4 points	
Insufficient irrigation	32	9	6	2	160	27	6	2	195
Labour shortage	11	15	7	0	55	45	14		114
Crop damage by wild	26	37	6	0	130	111	12		253
Crop damage insect/diseases	1	5	16		5	15	32		52
Drought			1		0	0	2		2
Excess rain		2			0	6	0		6
Hail storm					0	0	0		0
Wild animal attack on livestock	2	2	5		10	6	10		26
Livestock diseases					0	0	0		0
Lack of feed and fodder supply	1		6		5	0	12		17
Shortage of land	3	2	4		15	6	8		29
Limited access to market		2	2		0	6	4		10

**Annexure 2.5 Frequency of farmers visit to RNR Extension Agents**

RNR Extension Services	Livestock Extension			Agriculture Extension			Forestry Extension		
	UNT	LNT	Total	UNT	LNT	Total	UNT	LNT	Total
No of farmers	31	31	62	45	37	82	30	28	58
<b>Frequency of farmers' contact</b>									
Sometimes/when in need	8	7	15	6	12	22	4	8	12
1-3 times in a year	18	15	33	27	17	44	21	17	38
1-2 times a month	7	11	18	4	3	11	3	2	5
Above 4 times a year	0	0	0	2	3	5	2	0	2
Reasons for contact	0	1	1						
Castration	4	2	6						
Treatment/medicines	26	31	57						
Vaccination	4	5	9						
Pesticides and insecticides				12	16	28			
Diseases outbreak and damages				15	13	28			
Inputs (seeds, seedlings, fertilizers, etc)				18	8	26			
Firewood pass/marketing							27	24	51
Flagpoles/timber							3	4	7