


**THE STUDY
ON
AGRICULTURE AND FARM ROAD DEVELOPMENT
IN
THE LHUNTSE AND MONGAR DISTRICTS
IN
THE KINGDOM OF BHUTAN**

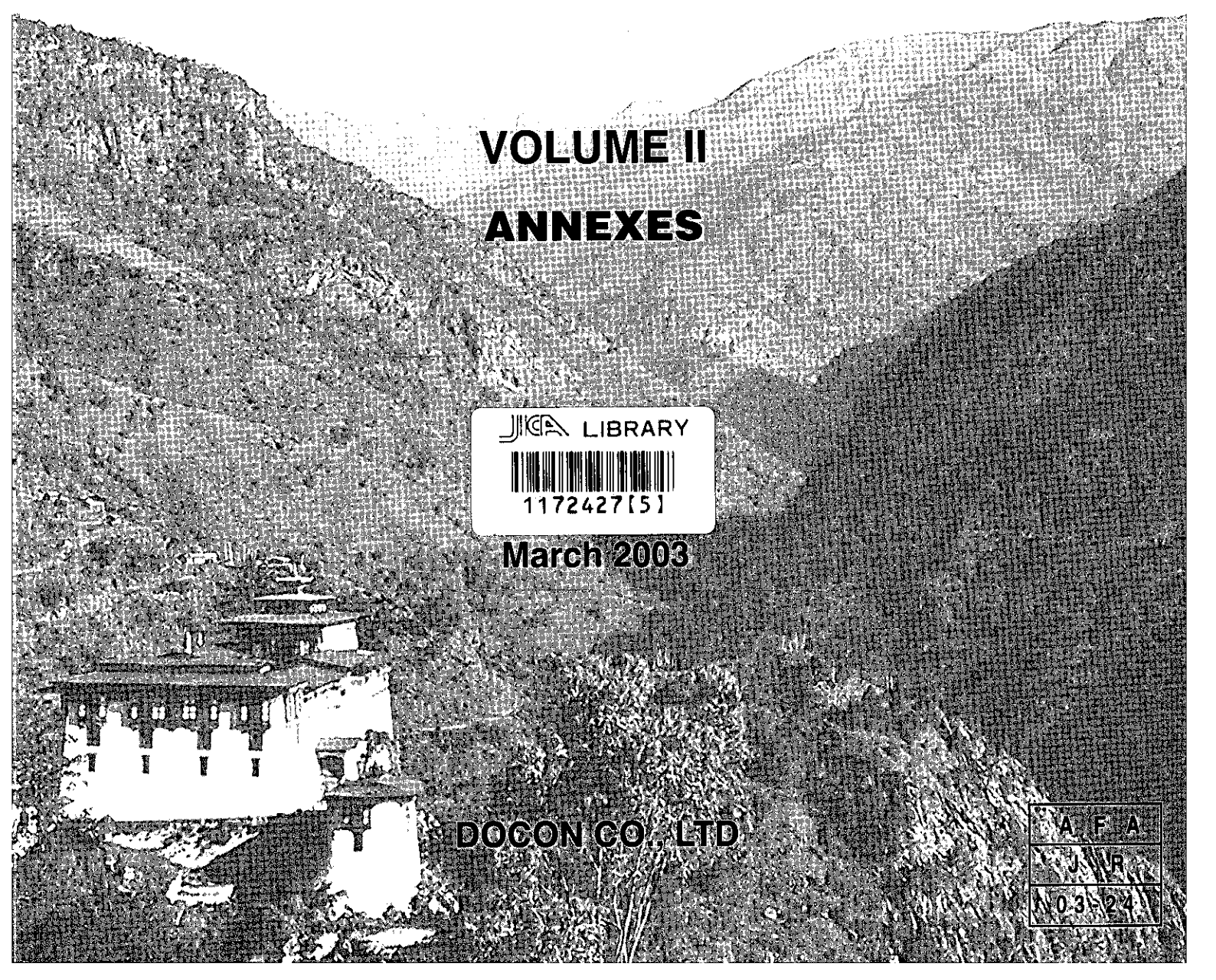
**VOLUME II
ANNEXES**

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**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF AGRICULTURE
THE KINGDOM OF BHUTAN**

**THE STUDY
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IN
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**VOLUME II
ANNEXES**

MARCH 2003

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ANNEX-I

RURAL SOCIO-ECONOMY

ANNEX-I

Rural Socio-economy

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ANNEX-I
RURAL SOCIO-ECONOMY

Chapter I-1 RAPID RURAL APPRAISAL (RRA)

I-1.1 Introduction

The "Rapid Rural Appraisal (RRA) Workshops" were held at four villages in the Study Area. Categories of "Informants" are shown below.

Categories of Informants for RRA Workshops

Dzongkhag	Gewog	Village	Key Informant	Individual Informant
Lhuntse	Khoma	Khoma	Gup, Mang Ap, Gewog clerk, EAs and village chief	70 years old woman Mang Ap
Lhuntse	Tsamang	Tsamang	Gup and Mang Ap	Astrologist Ex-monk
Mongar	Tsamang	Tsamang	Gup and Mang Ap	Monk apprentice Carpenter
Mongar	Mongar	Phosorong	Gup, Mang Ap and village chief	Woman Youngman

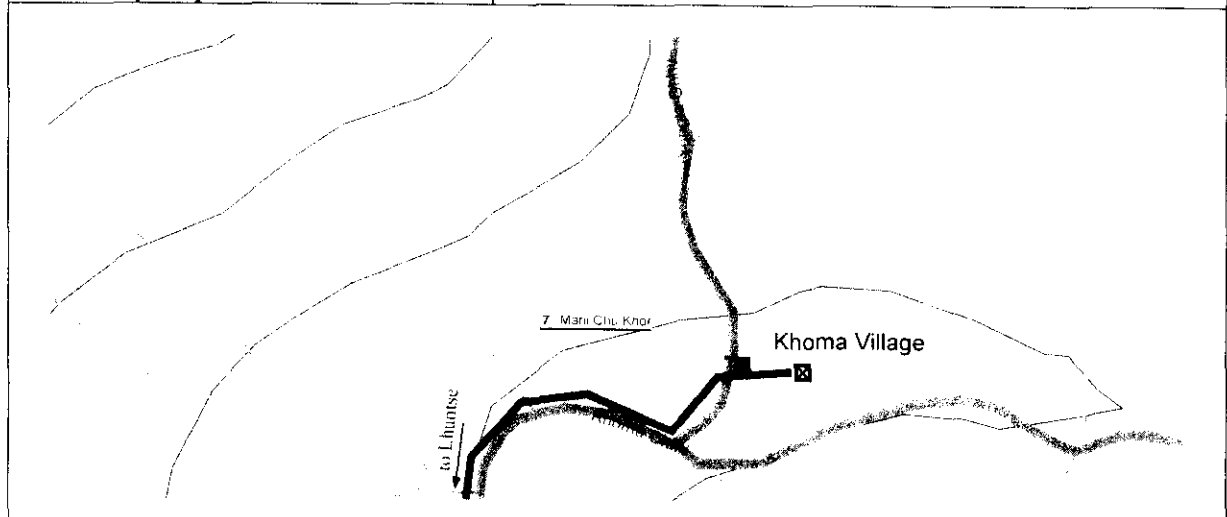
The results of the RRA workshops are summarized below.

I-1.2 Result of Key Informants Interview

I-1.2.1 Khoma Village (Lhuntse Dzongkhag)

(1) Topography and Socio-cultural Data

Interviewee:	Mr. Khando (Gup), Mr. Chhdo (Mang Ap), Gewog clerk, EAs and village chief
Date:	6 June 2002
Location for interview:	Gup's house
Location of interviewee's house:	Khoma village, Khoma Gewog, Lhuntse dzongkhag
Population:	200
Household:	25
Average family size	4 people/household
Female-headed household:	6 HH: Householder was dead.
Total area:	no data
Paddy field:	no data
Secondary crop field:	None



- Common disease isn't clear. Average life span is 70 years old.

Development Project:	Electrification is planned in Nov. 2002.
-----------------------------	--

Water resources for drinking:	Small-scale water-supply system
Fuel for lights and cooking:	Firewood
Other information:	<ul style="list-style-type: none"> ● Sex ratio: 50% : 50% ● 1 primary school in the village. ● 1 BHU (Basic Health Unit) ● Gewog center is in the village. ● It takes 1 hour to road point (5km). ● Khoma is famous for weaving. ● They have drinking water users' group. They had weaving group: the group was organized by the National Women Association (NWA). The NWA had contracted with weaver. ● Most of villagers want machine for milling and farm road.

(2) Agriculture, Livestock and Fisheries

Crops:	Paddy (JR64, 3 local variety: 1 white rice and 2 red rice, and improved red rice)
Cropping pattern:	Maize, Millet, Guava (16ha), Orange(16ha) and Vegetables
Average yield:	<ul style="list-style-type: none"> ● Average yield for paddy is 4.4 ton/ha. ● Average yield for maize is 7 ton/ha ● Average yield for millet is 2.7 ton/ha
Soils:	Fertility: moderate, Alluvial soil
Water source:	1 irrigation system from stream, water shortage in dry season
Livestock:	<ul style="list-style-type: none"> ● Bull: 1/household, Cow: 2 - 25/household ● Pig: 2 - 3 household have ● Poultry: 3 -4/household ● Horse: 15 heads in total by 4 households
Market:	Lhuntse town is one of market.
Fertilizers:	Chemical fertilizer and FYM
Problems:	Water shortage and small size of each plots
Agricultural Practices:	<ul style="list-style-type: none"> ● Maize and millet are planted rotationally in dry land. ● Paddy: transplanting in June, harvesting in October ● Maize: Seeding in April, harvesting in September ● Millet: Transplanting in June or July, harvesting in September or October. ● They borrow bull to cultivate as exchange labor system because most of household have one bull only.
Labor:	<ul style="list-style-type: none"> ● No labor shortage: They use exchange labor system. ● May to July is busy. ● Working days: 200days. Firewood collecting and going shopping thread in winter.
Land holding:	<ul style="list-style-type: none"> ● No landless farmer. ● Land is inherited to all children. Child living with parents is inherited more land than other children.
Fishing:	Sometimes fishing in Khoma-river (branch river of Kuri-river).

Others:

- EAs are for agriculture and livestock.
- Guava and orange are for self-consumption.
- Chili and potato are planted in dry land. Cabbage, beans radish and leaves are planted kitchen garden. Potato excess production is sold.
- Rice consumption: 310 kg/year/person
- They estimate one pair of cow cultivate 1 acre (0.4 ha) or dry land or 0.5 acre of paddy field per day.
- Milking: once a day for local cow (1.2 little/day), twice a day for jersey cow (4 - 5 little/day)
- They make batter and cheese once every two days.
- Batter is sold for 120 Nu/kg, 5 Nu/ball
- Weaving: It takes 2day - 1.5months/roll.
- A suit of Gho (male's national costume) needs 3 roll of cloth.
- Kira is made on business base. Gho is made for house-use in each household.
- A suit of Kira (female's national costume) costs 12,000 - 25,000Nu.
- Material of weaving (thread) is imported from India. It cost 250Nu/kg.
- 2 - 5 suits of Kira/HH are made in average.
- It costs 200Nu for road-horse and 100Nu for pack-horse driver to go to Shinge-zon (historical place, it takes 5 -6 hours). It cost 400Nu if the horse is used for riding. Average load is 40kg/horse.

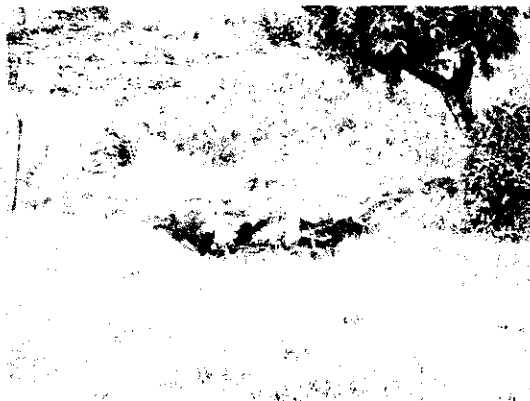
(3) Photographs



Key informants



Weaving



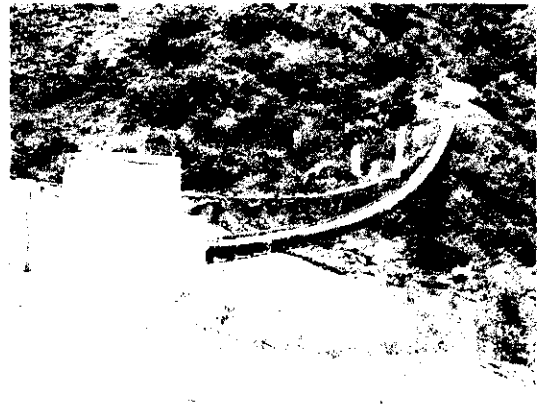
Nursery for millet



Sun-drying of rice



Loaded farmer on foot path



Suspended bridge connecting to District road



Distillation equipment for local wine (ARA)

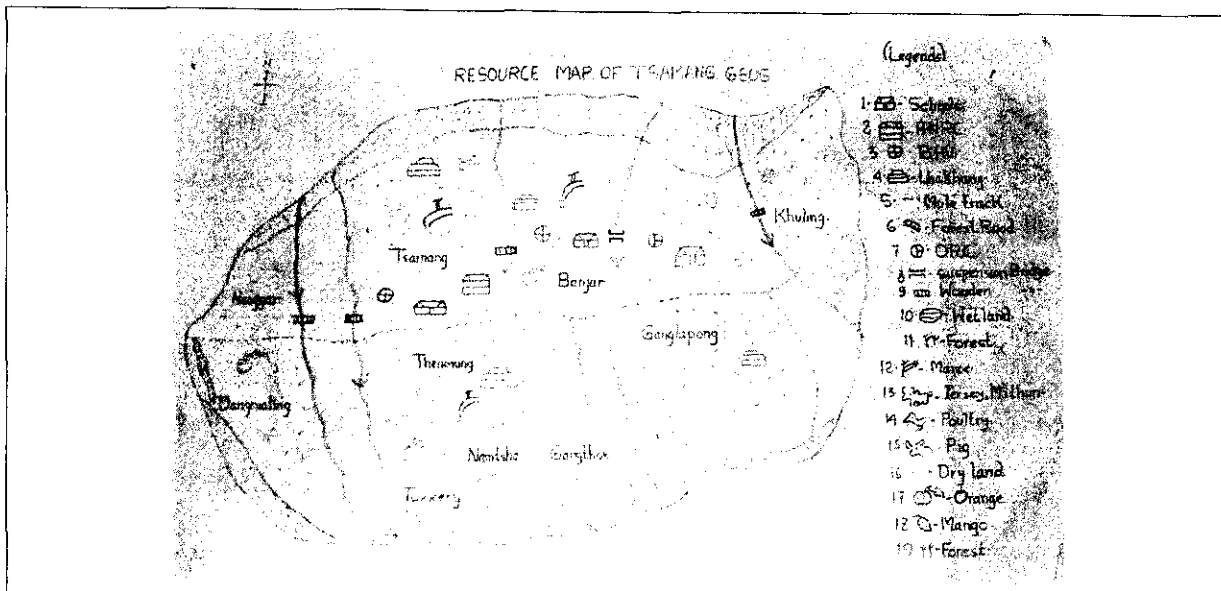


Gup's house

I-1.2.2 Tsamang Village (Lhuntse Dzongkhag)

(1) Topography and Socio-cultural Data

Interviewee:	Mr. Sonam Tenzin (Gup) and Mr. Nagsila (Mang Ap)
Date:	30 May 2002
Location for interview:	RNR extension center
Location of interviewee's house:	Tsamang village, Tsamang gewog, Mongar dzongkhag
Population:	about 440
Household:	63
Average family size	7
Female-headed household:	5 (40's and 50's, husband was dead): they are poor
Total area:	No data
Paddy field:	4.4ha
Secondary crop field:	Dry land: 47ha, Tseri: 65ha, Kitchen garden: 1.2ha and others: 6.4ha



	<ul style="list-style-type: none"> ● 1 elementary school: 7 teachers and 200 students. 80% of village children go to the school. ● Other 3 elementary schools in the Gewog. ● Junior high school is in Gelpshing. 100% of villagers go to junior high school. It costs 250Nu/year.
History of the village:	Nobody know
Festivals:	Once every two years: 1 week festival, June or May
Development Project:	<ul style="list-style-type: none"> ● RNR extension center (1999) ● Small-scale water-supply system (by UNICEF)
Water resources for drinking:	<ul style="list-style-type: none"> ● Small-scale water-supply system ● Other household use pond water: quality isn't good.
Fuel for lights and cooking:	Branch of tree: No electrification.
Other information:	<ul style="list-style-type: none"> ● Villagers eat rice mixed with maize three times per day. ● Land is inherited to all daughters equally. ● Powerful-men in the village are Chimi (national assembly member), Gup, Mang Ap ad village chief. ● They go to Mongar dzongkhag hospital after BHU in the village first. Some old villagers believe fortune taller. ● 3 drinking water users' group: 12 household each. 80% of households are covered by small-scale water-supply system. ● Inter-village marriage is dominant. ● 1 monk in the village. 5 monks from the village is under training at India and Bhutan.

(2) Agriculture, Livestock and Fisheries

Crops:	<ul style="list-style-type: none"> ● Paddy, maize, potato, foxtail millet, wheat and vegetables ● Vegetables: radish, pumpkin, beans, cabbage and leaves.
Cropping pattern:	Other than vegetables are planted once a year.
Average yield:	<ul style="list-style-type: none"> ● Paddy: 1,730 - 1,980 kg/ha ● Maize: 2,720 - 2,970 kg/ha ● Foxtail millet: 1,240 - 1,480 kg/ha ● Wheat: 1,240 - 1,730 kg/ha ● Potato: 8,400 kg/ha
Soils:	Sandy loam: good fertility
Water source:	80% of household have covered by small-scale water-supply system.
Livestock:	<ul style="list-style-type: none"> ● Local cattle are used for plowing, milk, butter, cheese and compost. Cost 6,000 - 12,000Nu/head. Cattle milk: 1

	<p>little/day with 6% of fat.</p> <ul style="list-style-type: none"> ● Selling price: 120Nu/kg (Butter) and 5Nu/ball (Cheese) ● 1 - 2 head of pig: Cost 670Nu/head (45days). They sell 100Nu/kg (150kg/head, 1 - 2 years later) inside the village. ● 5 - 6 of chicken, cost 66Nu/chick from Linmetan. They sell egg 4Nu/egg.
Market:	Vegetables are sold for construction worker at Gelpshin and Yongkara, and teachers at Kurizampa.
Fertilizers:	Urea (20kg/ha) and compost
Problems:	<ul style="list-style-type: none"> ● Labor shortage ● Pest and insects damage. ● Seed quality: High quality seed is expensive. Supply is enough.
Agricultural Practices:	<ul style="list-style-type: none"> ● Villagers work 5AM to 7AM, 8AM to 12PM and 13PM to 19PM at busy season. ● Paddy (local): transplanting (June - July), harvesting (Oct. - Dec.) ● Maize: seeding (April), harvesting (Sep. - Oct.) ● Potato: transplanting (Jan.), harvesting (June) ● Busiest season: May - July ● Labor exchange system: 1 day work of buff = 2 day work of villager. ● Feed for animals is enough.
Labor:	They have labor exchange system
Land holding:	1.2ha/HH, no landless farmer. Maximum is 6ha
Others:	<ul style="list-style-type: none"> ● Variety of paddy: Local (50%) and IR64 (50%), IR64 is introduced this year. Rice production is balanced in the village. Paddy variety was 100% local before last year. Seed was distributed by EA with free of cost. ● Mustard was given up because of pest damage. ● Off-farm activities: Pine resin collection (28 households, Income: 20,000Nu/HH/year), Investment for stock (500Nu investment comes 1,400Nu/year as interest: some farmer) and Lemon grass (1 household) ● Pine resin collection is controlled by forest management unit. The forest management unit buys resin from farmer with 100Nu/17kg, and sells to Tashi cooperation for 130Nu/17kg. ● One each of extension Agent (EA) for agriculture and livestock take care the Gewog.

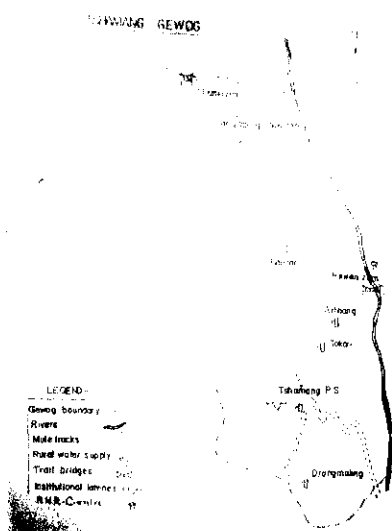
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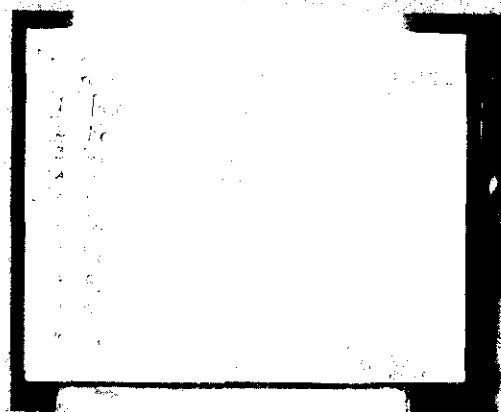
Key informants, individual informants and EA



Porters (villagers)



Gewog map



Crop yield compiled by EA

I-1.2.3 Phosorong Village (Mongar Dzongkhag)

(1) Topography and Socio-cultural Data

Interviewee:	Gup, Mr. Neiten (Mang Ap) and Mr. Dorji Waangchuk (village chief)
Date:	8 May 2002
Location for interview:	Village chief's house (1,940m above sea level)
Location of interviewee's house:	Phosorong village, Mongar gewog, Mongar dzongkhag
Population:	about 175
Household:	25
Average family size	7
Female-headed household:	No data
Total area:	No data
Paddy field:	No paddy field.
Secondary crop field:	70% is forest and 30% is dry land.
<ul style="list-style-type: none"> ● No school in the village. ● There are 3 routes from Mongar town to the village. All routes are foot path. ● It takes 1 hour from Mongar town. ● It takes 1 more hours from the village chief's house to other village boundary (mountain side). ● No hospital in the village: they go to dzongkhag hospital, diarrhea and cold is common symptom. ● No landless farmer. 	
History of the village:	No body know
Festivals:	No village festival: they join other village's festival.
Development Project:	None

Water resources for drinking:	Water supply: 95% (small-scale water-supply system founded by UNICEF). Water source is surface water. 4 months is not enough. They use tank because water volume isn't enough.
Fuel for lights and cooking:	Electrification: 100%, villagers use for lights, rice-cooking and radio.
Other information:	<ul style="list-style-type: none"> ● Lands are inherited to daughters equally. ● They want road for vehicle: they promised to work without payment for road construction. ● No villagers' meeting. ● The village chief was selected by election. ● No typical high-powered households. ● Inter-village-marriage is dominant. ● All villagers are Bhutanese, no Nepali and Indian. ● Cost for education is highest among expenditure, and other expenditures are clothes, rice and tax.

(2) Agriculture, Livestock and Fisheries

Crops:	<ul style="list-style-type: none"> ● No paddy field. Maize is main crop. ● Wheat, barley, buckwheat, mustard, millet and potato are planting in dry land.
Cropping pattern:	<ul style="list-style-type: none"> ● Maize: seeding (Feb. - March), harvesting (Aug. - Sep.) ● Potato: seeding (Dec. - Jan.), harvesting (July) ● Wheat: seeding (Sep. - Oct.), harvesting (May - June)
Average yield:	No data
Soils:	Loamy: upper area, Clay: lower area
Water source:	No water source
Livestock:	<ul style="list-style-type: none"> ● Cow: 9 - 10 heads/HH (including horse) ● 4 - 5 household have horse.
Market:	<ul style="list-style-type: none"> ● Mongar market (Villagers sell maize, potato, local rice wine and dairy products) ● Income from market: 13,000 - 14,000 Nu/year
Fertilizers:	No data
Chemicals:	No data
Problems:	50% of household have debt from BDFC with 13%/year as interest. They sell products to repay.
Agricultural Practices:	<ul style="list-style-type: none"> ● They have labor exchange system. ● Busy season: March - June ● Spare time: Oct. - Nov.
Land holding:	Land holding is 1.2 - 3.2 ha/household
Others:	<ul style="list-style-type: none"> ● 7 households organize to purchase maize processing machine. ● Most of villagers sell potato to buy rice.

(3) Photographs



Scattered houses



Key informants



Electrification and potato field



Villagers house (stone-build)



Cow's shed (stone-build)



Small-scale water supply

I-1.2.3 Jang Village (Mongar Dzongkhag)

(1) Topography and Socio-cultural Data

Interviewee:	Mr. Jimbala (village chief) and Gup, Mang Ap and other 4 villagers
Date:	10 May 2002
Location for interview:	Temple (is constructed 37 years ago)
Location of interviewee's house:	Jang village, Gangzur gewog, Lhuntse dzongkhag
Population:	200 (60% is increased compared with 50 years ago)
Household:	37
Average family size	5.4 people/household
Female-headed household:	no data
Total area:	no data

Paddy field:	None: Although some paddy fields are in the village, these are belonging to Lhuntse dzongkhag temple. Villagers work the paddy field and get 50% of production. Maize is stable crop.
Secondary crop field:	Potato, mustard leaves and vegetables.
<ul style="list-style-type: none"> ● Elementary school and junior high school are inside the village. ● Dzongkhag hospital is close to the village. ● Altitude difference is 500m from road point to interviewed household. ● 3 foot paths are connected from district road. 	
History of the village:	All participants don't know
Festivals:	2 times (religious festival in May and festival to cultivate mutual friendship in August)
Development Project:	<ul style="list-style-type: none"> ● Drinking water supply: UNICEF in 1994 ● Irrigation system: SEZAP
Water resources for drinking:	Small-scale water-supply system
Fuel for lights and cooking:	Electrification: 100% Tree branches are used for cooking
Other information:	<ul style="list-style-type: none"> ● All villagers are farmer. ● 60% of villagers marry the villager. ● Sex ratio: 49% (male) : 51% (Female) ● Life span: 67 years old. Half of them die at hospital. ● 6 village monk (Gomtshen). ● Land usually succeeds to daughters equally.

(2) Agriculture, Livestock and Fisheries

Crops:	<ul style="list-style-type: none"> ● Maize, potato, vegetable, rice and soybean ● Maize and vegetable are sold. ● 120ha for dry land, 25ha for paddy field.
Cropping pattern:	<ul style="list-style-type: none"> ● Paddy: Nursery (April), Harvesting (October) ● Potato: Seeding (January), Harvesting (May-June)
Average yield:	<ul style="list-style-type: none"> ● Paddy: 4.5 ton/ha ● Maize: 4.5 ton/ha
Soils:	Good
Water source:	They have irrigation system. Although they maintain every year, canal located 2.5km ahead was broken by land slide.
Livestock:	<ul style="list-style-type: none"> ● Cow: 5 - 6 heads/household, (Milking: Jersey variety, Plowing: Mithum cow and local variety) ● Pig: 1 - 2 head/household for self-consumption ● Poultry: 3 - 4 heads/household for egg ● Horse: 20% of household have
Market:	Lhuntse town, no middleman
Fertilizers:	Compost only, no chemical fertilizer
Chemicals:	Pesticide for cut-worm

Problems:	Damaged by pest (wild pig, monkey and hedgehog), wind and insects (cut-worm)
Agricultural Practices:	Plowing using couple of cow for big field, one cow for small field.
Labor:	Busy season: May - July (paddy transplanting and potato harvesting)
Land holding:	<ul style="list-style-type: none"> ● 1.6 - 2.0 ha/household ● No landless farm household
Others:	<ul style="list-style-type: none"> ● Villagers work for 300 day/year (never work on day of full-moon and new-moon) ● Paddy varieties: local, IR11 and Indian variety ● Cow: grazing in mountain in summer, feeding inside shed in winter. ● Villagers buy seed from commission agent (CA). ● They have exchange labor system. ● They use BDFC loan. ● They sometimes borrow and lend small money inside village without interest.

(3) Photographs



Paddy field (terrace)



Villagers



Key informants



Children



Jang village



Mithun cow

I-1.3 Result of Individual Informants Interview

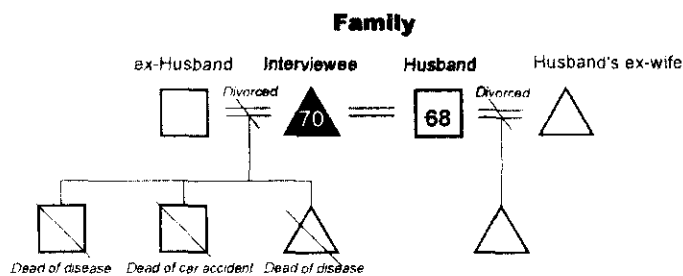
I-1.3.1 70 Years Old Woman (Khoma Village/Lhuntse Dzongkhag)

■ Interviewee



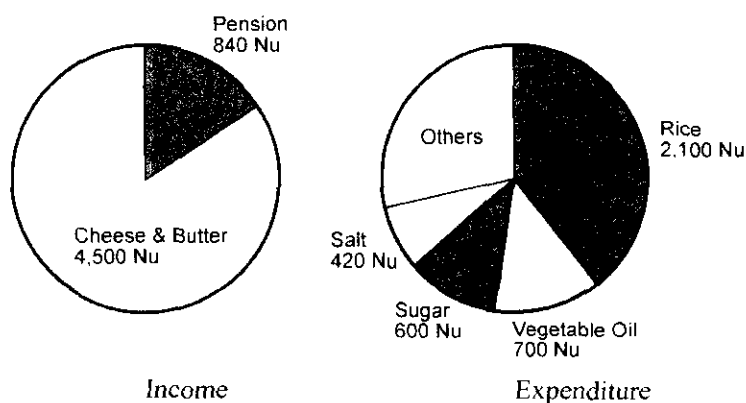
- 70 years old woman.
- Khoma village, Khoma Gewog in Lhuntse Dzongkhag.
- Poor health condition: Giddiness and backache, taking medical herb from Dzongkhag hospital and tablet from BHU. The medicine is free of charge.
- Workforce: Husband only.

■ Family Structure



- Marriage with present husband in 40 years ago.
- Present husband is adopted by her family.
- They are second marriage together.
- All of children with ex-husband were dead.
- Present family members are only two.

■ Annual Income & Expenditure



- Pension: Husband was soldier. 70 Nu/month as public employees' pension.
- Cheese & Butter sell to villagers like EA.
- Rice consumption is 150 kg/year.
- Vegetables receive from villagers and nature.
- Saving: 5,000 Nu for emergency as cash.
- No debt.

■Agriculture

- Main activity: Animal husbandry (selling cheese & butter), only 1 head of 12 years old mithum cow, 1 little/day of milk.
- No agricultural land: 0.25 acre paddy field was sold to villager with free of charge. The villager will help her if she suffers from lack of money. Operated additional 0.5 acre paddy field rented from villager with free of charge. All production from the rented land belonged to her.
- Husband care cow at common pasture land in 1 km away. They have fencing and hut at the pasture.

■Others

- Making decision with husband. She is slightly influential.
- Hoping electrical lamp after electrification. The Khoma village will be electrified in few months.
- They eat pure rice generally, sometimes mixed with maize (75 % rice with 25 % of maize).

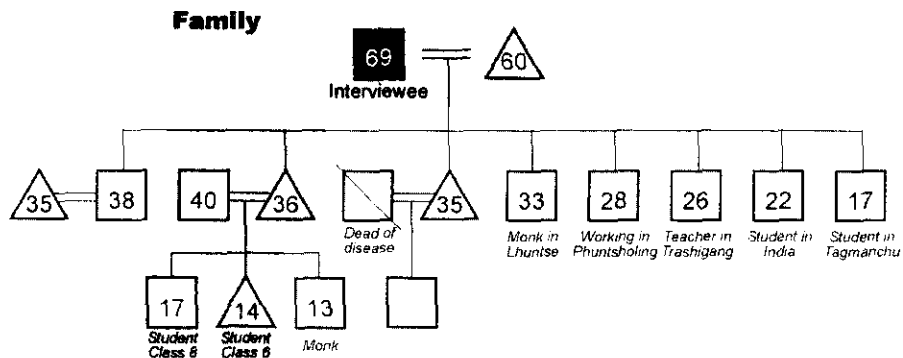
I-1.3.2 Mangmi (Khoma Village/Lhuntse Dzongkhag)

■Interviewee



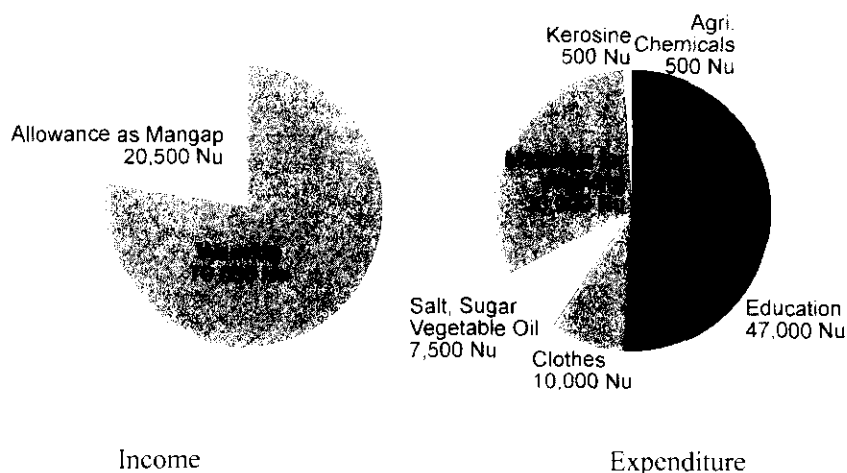
- Mangmi of Khoma Gewog.
- Mr. Chhdo, 69 years old.

■Family Structure



- They have 8 children: one of them live together, eldest daughter married and lives in same village.
- One of son and grandson are monk.
- Labor force is only 2 people.

■ Annual Income & Expenditure



■ Agriculture

- Land holding: wet land (3 plots, 1.0 acre in total), dry land (2 plots, 2.0 acre in total) and sokshing (1.0 acre).
- Land utilization: Maize (1.7 acre, soy bean as intercrop), millet (0.3 acre) and paddy.
- Yield: paddy (1,800 kg/acre), maize (565 kg/acre), millet (1,600kg/acre) and soy bean (60 kg/acre).
- All products for self-consumption except soy bean. Soy bean is exchanged for salt.
- Land distribution: all lands are located near their house.
- No horticulture crop.
- They have kitchen garden: chili and vegetables.
- Inputs: urea for maize (44 kg/acre), herbicide for paddy (10 kg/acre).
- Urea and herbicide are supply by EA. EA bring from Dzong. Dzong bring from Phuntshling (Western international port, Government's storage).
- Livestock: 3 Jarcy cross, 2 calf, 2 bull, 1 mule and 10 poultry.
- Dairy production: 3 litter/cow/day (milking in morning).
- Vaccination is free by governmental support.
- Maize and soy bean is mix cultivation.

■ Others

- Problems: No surplus for agricultural production, No market for agricultural products, Labor shortage.
- Decision maker is husband.

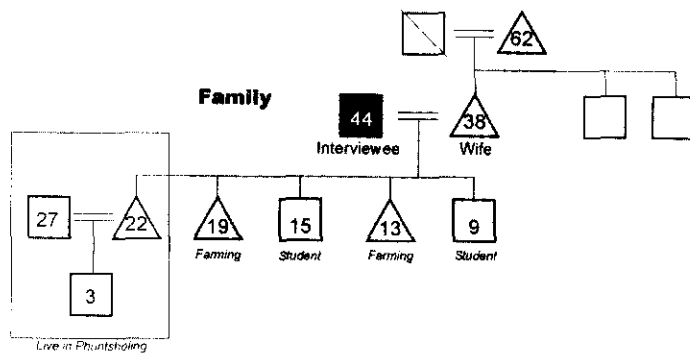
I-1.3.3 Astrologist (Jang Village/Lhuntse Dzongkhag)

■ Interviewee



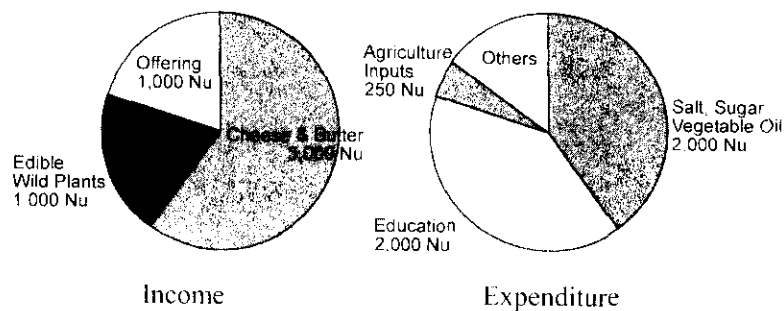
- Astrologist, 44 years old.
- He comes from other village nearby (Tangmanchu village).
- Jang village, Khoma Gewog in Lhuntse Dzongkhag.
- He was a monk. He becomes an astrologist to marry, and lives the village.
- All family members are good health condition.
- Some of villagers with an illness ask him what they should do.
- Some of villagers don't trust him.
- Astrologist called locally *Gomchen* wear national dress (*Gho*) with different way from others.

Family Structure



- He thinks no need education for daughters.
- He married into wife's family.
- His eldest daughter has married and lives in other place.
- They support wife's mother.

Annual Income & Expenditure



- Agricultural inputs: Seed of maize (every 3 years) and vegetables.
- Education: Shoes and clothes for two students.
- Others: Tax for land and livestock, Insurance for house and life, and fuel for kerosene lamp.
- Electricity charge will be charged from next month.
- No debt, no saving.

Agriculture

- He never works for agriculture. Monk never works for agriculture.
- Land holding: 4 acre (0.7 acre for dry land, 0.15 acre for paddy, and others)
- Share cropping: 3 acre for shifting cultivation and 0.75 acre for paddy (2/3 of production belong to him).
- Maize and soybean in dry land, vegetables in kitchen garden.
- Products are only for self-consumption.
- No agro-chemicals because of religious sentiment.
- No chemical fertilizer. Compost and manure are used.
- Yield: 400 - 500 kg for maize, 30 kg for soybean and 150 kg/acre.
- Maize is cultivable 3 years among 10 years.
- Market for dairy products (butter and cheese) is Lhuntse town.
- 1 jersey cow and 9 mitten cattle (3 adult bulls, 2 adult cows and children).
- 3 chickens (2 cocks and 1 rooster).
- Livestock is in good condition.

Others

- Problems: labor shortage for agriculture.
- Making decision with wife.
- He hope motorable road. He will provide some portion of his land without any compensation.
- Land loss for road construction should share with beneficiaries.
- He will work for road construction without payment.

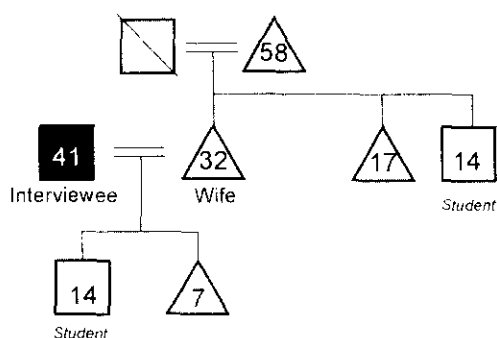
I-1.3.4 Ex-monk (Jang Village/Lhuntse Dzongkhag)

■ Interviewee



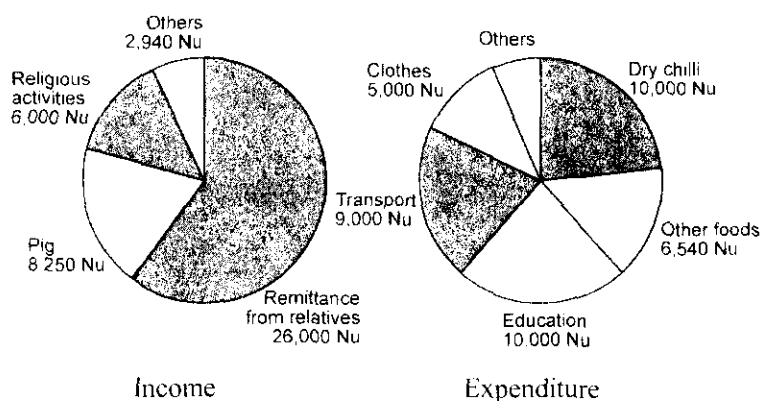
- Interviewee is left. Jang village, Gangzur Gewog, Lhuntse Dzongkhag.
- 41 years old, he was taking holy order as monk for 20 years (17 years old to 37 years old, or 1978 to 1998) at Lhuntse Datsang, and he does not work.
- He is all the time idle.
- He sometimes prays and recites a sutra for villagers.

■ Family Structure



- The first son (14) is at Class-5, while the second son (7) does not go to school. Sister in law (17) does not go to school. Brother in law (14) is at Class-7.
- All in good condition.
- His wife is from Jang village. Husband (interviewee) married into wife's family.
- Marriage in 1998 (4 years ago).
- 2 children are his children. While he was serving as monk at Datsang, he got two of his children with his wife.

■ Annual Income & Expenditure



- They got money from relatives in Thimphu.
- Other foods: Rice (2,250 Nu), Oil (1,800 Nu), Salt (150 Nu) and Dried fish (2,340 Nu).
- They have surplus of maize, but they can not sell.
- Others of income: Vegetables (640 Nu), and Rice and maize milling (2,300 Nu)
- No expenditure for agricultural inputs.
- No debt and no saving.

■ Agriculture

- Land holding: Dry land: 1.0 acre, Wet land: 0.5 acre, Forest: 1.0 acre, Tseri: 1.0 acre
- Crop: Maize (Yantsipa 50%, local 50%), paddy rice (Kalpfa), mustard (local)
- Chemicals: None
- Fertilizers: Some (only manure), no fertilizer for mustard
- Seed: He purchases paddy rice seeds. He purchases maize seed of Yantsipa every three years (DSC). Seeds of local varieties are reproduced.
- Production: Paddy rice: 450 kg/acre, Maize: 1,050 kg/acre, Mustard: 15 kg/0.3 acre
- Work inputs: Two (wife and sister in law)
- Water availability for agriculture Rain-fed
- Other information: She transplants by 2 months old nursery. She had no information about credit for

fertilizer.

- Cattle: Cow 5, Ox 1, (all Mithun-cross, milk product for self consumption), Pig (1), Chicken (1)
- Feed: Feeding with natural pasture
- Other information: Horse 3

Others

- Decision maker is husband.
- No migrant work.

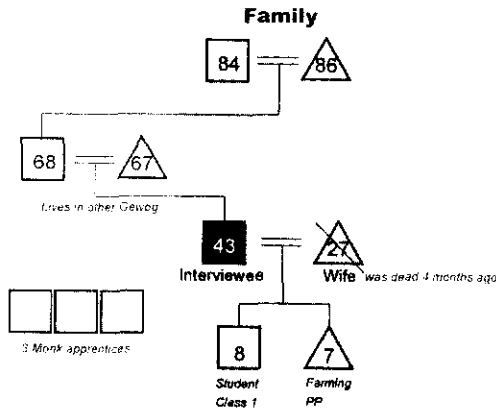
I-1.3.5 Monk Apprentice (Phosorong Village/ Mongar Dzongkhag)

Interviewee



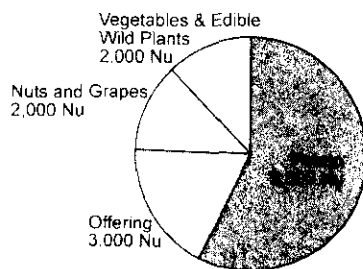
- 43 years old, Monk apprentice.
- Phosorong village, Mongar Gewog, Mongar Dzongkhag.
- He comes from Drepong Gewog 9 years ago.
- Good health condition

Family Structure

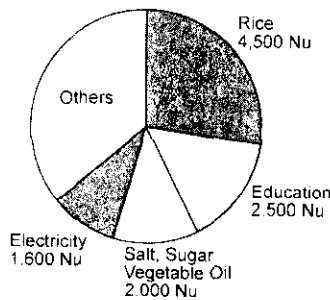


- Living with grandparents.
- Grandfather was top of Mongar lama.
- Living with 3 monk apprentices.
- Husband (interviewee) came from other Gewog to be monk, training by grandfather.
- Husband parents are living in other Gewog.
- Wife was died 4 months ago from disease.
- Grandfather is in sick.
- They married 8 years ago.

Annual Income & Expenditure



Income



Expenditure

- They mainly ate maize mixed with rice.
- Others of expenditure are agricultural inputs, insurance and tax.

■ Agriculture

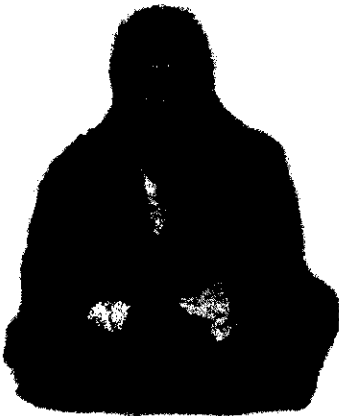
- They have 7 acre farm land: 4 acre for maize and potato, and 3 acre for fallow.
- No irrigation (Rain and surface water)
- Grandmother never works for agriculture and housework: work force is only interviewee.
- Labor shortage: villagers help him with free of charge because his grandfather was great lama.
- Vegetables at kitchen garden: Radish, cabbage, onion and herb.
- He sometimes comes to Mongar vegetable market to sell vegetables.
- He uses compost as fertilizer.
- He uses urea 50 kg/year.
- No agricultural chemicals.
- 2 cows and 3 young cattle (Milk is for self-consumption).
- 2 chickens for egg.
- He collects sometimes edible wild plant including mushroom.
- Agricultural inputs: Urea 270 Nu/year, Vegetable seed 150 Nu/year.

■ Others

- Electricity use for lamp, heater and rice cooker.
- Making decision by himself with his grandfather's advice.
- One of children goes to pre-primary school (PP), 1 hour to go, 1.5 hours to come back on foot.

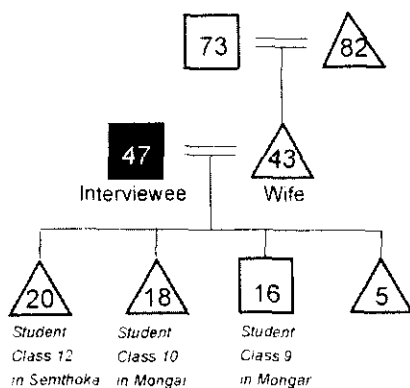
I-1.3.6 Carpenter (Phosorong Village/ Mongar Dzongkhag)

■ Interviewee



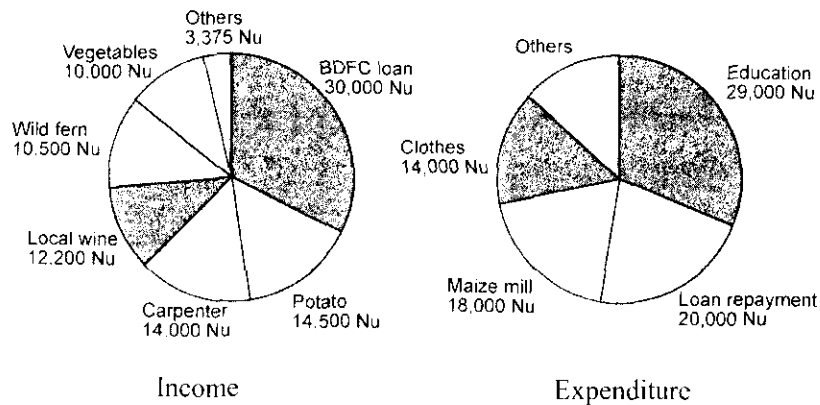
- 47 years old, Carpenter.
- Phosorong village, Mongar Gewog, Mongar Dzongkhag.
- Main activity is upland crop cultivation.

■ Family Structure



- Wife's parents live together.
- All family members are in good health condition.
- Eldest daughter lives in Semthoka, high school.

■ Annual Income & Expenditure



- He borrowed 30,000 Nu from BDFC with 13%/year of interest to purchase maize mill. 20,000 Nu is repay
- He sells vegetables to Mongar guest house and high school.
- Others in expenditure are Agricultural inputs, food, electricity, house repairing, tax, insurance and donation.

■ Agriculture

- Land holding: Agricultural land 5 acre (dry land), Pasture, forest, etc. 6 acre
- Crop: Maize, Potato, Barley, Cabbage, Chili, Vegetables
- Chemicals: Some
- Fertilizers: Urea 60 kg / 2 acre (for maize), SSP 90 kg / 3 acre (for potato), Farm Organic Manure (FOM) some at initial stage
- Seed: They purchase maize seed from DSC every three years. They purchase potato seed from Agricultural Commission Agent every three years.
- Production: Maize = 3 ton / 2 acre, dried, Potato = 3.9 ton / 2 acre, Barley = 225 kg / 2 acre
- Work inputs: Husband and wife
- Water availability for agriculture: None (rain-fed)
- Other information: They apply exchange labor system.
- They sell potato 2.9 ton (1.0 ton for seed and self consumption)
- They sell 70 % of vegetable production
- They gather wild fern 300~400 kg (dry) /year and sell at the market
- Cattle: 10 (cow 5, ox 5), Horse: 5, Chicken: 1
- Feed: Natural pasture around the house (enough for feeding)

■ Others

- Decision maker is wife.
- Rich farmer with food surplus and cash income source.

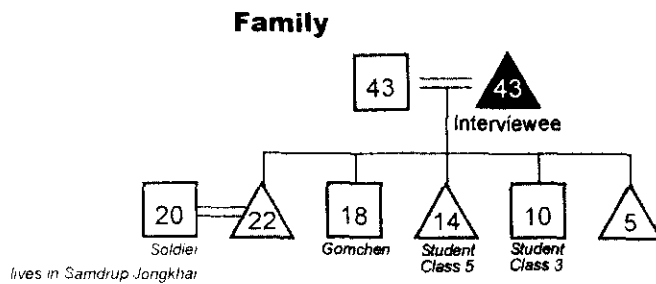
I-1.3.7 Woman (Tsamang Village/ Mongar Dzongkhag)

■ Interviewee



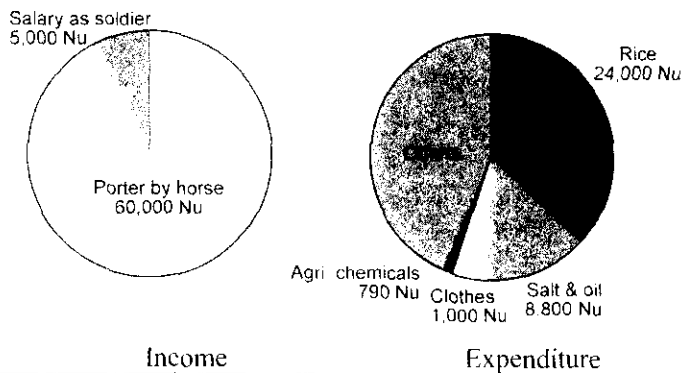
- 43 years old.
- Health problem: Stomach, heart and breathe.
- Tsamang village/ Tsamang Gewog/ Mongar Dzongkhag

Family Structure



- Eldest son is village monk (Gomchen).
- Eldest daughter's husband lives in Samdrup Jongkhar.
- Two students sometimes work for agriculture.

Annual Income & Expenditure



- Daughter's husband sends money from Samdrup Jongkhar 5,000 Nu/year.
- Farming is only for self-consumption.

Agriculture

- Livestock: 3 horses (for porter), 1 pig (from the village). Chickens are killed by wild animal.
- They take medicine for horses.
- Land holdings: Dry land (1.0 acre), Tseri (0.66 acre).
- Dry land is used for maize (1.0 acre) and wheat (0.5 acre after maize).
- Tseri land is used every 5 - 6 years.
- Tseri land is used for foxtail millet and dry land paddy.
- Yield: maize (700 kg/acre), wheat (630 kg/acre), foxtail millet (730 kg/acre) and dry land paddy (225 kg/acre).
- They have three orange trees: 80 kg of oranges.
- They have kitchen garden for self-consumption.
- Seed: maize (Government supply with free of charge last year, own seed this year), wheat (barter their products for villager's seed).
- They use chemical fertilizer for maize: urea 50 kg/acre (divided into 2 times).
- They bought a piglet with 500 Nu.

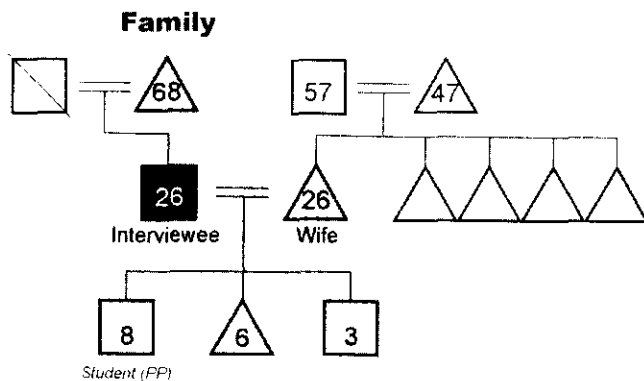
I-1.3.8 Youngman (Tsamang Village/ Mongar Dzongkhag)

■ Interviewee



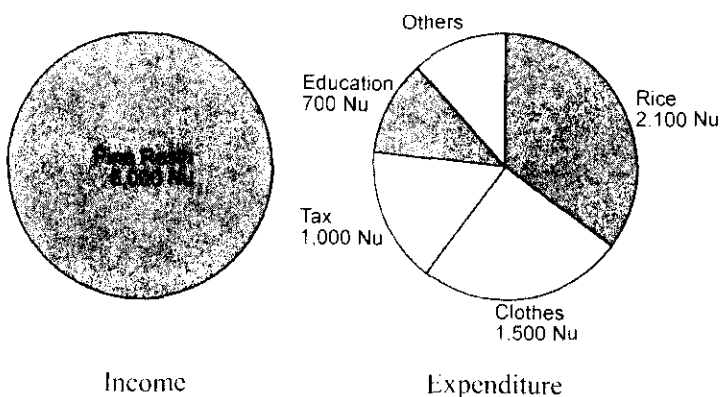
- 26 years old.
- Member of pine resin collection group.
- Tsamang village/ Tsamang Gewog/ Mongar Dzongkhag.

■ Family Structure



- Living with husband's mother.
- Husband's father died 6 month ago.
- Wife's family live in same village.
- Wife has 4 sisters.
- Wife's mother has 6 sisters.
- Wife's parent has only 0.7 acre farm land.
- 8 years old son does to pre-primary school (PP) in the same Gewog.
- Good health condition for all family members.
- First marriage for both.

■ Annual Income & Expenditure



- Cash income source is only pine resin collection.
- Others: Salt, Doma and Tobacco.
- Taxes for land and house.
- Vegetables from kitchen garden and villagers.
- No expenditure for agricultural inputs.

■ Agriculture

- Land holding: In total 4 acre.
- 2 acre for maize (shifting cultivation)
- 0.1 acre of forest for compost.
- 1.9 acre of dry land for maize.
- All lands were inherited from husband's parents.
- No irrigation.
- Maize is for self-consumption.
- As he uses rented bull for cultivation of his land using exchange labor system, he works himself at other's land two time-days of bull-rented days.
- Only he works for agriculture. No labor shortage.
- Having spade and hoe, no bull for cultivation.
- Having 1 cow and 3 children oxen.
- Having 2 pigs (1.5 months).
- Having 2 hens and 1 cock.
- All animal with good condition.

■ Others

- He sells the pine resin for 5.9 Nu/kg to the forest management unit. The forest management unit sells it to the Tashi cooperation with 7.6 Nu/kg.
- They pay 250 Nu/year for lunch to community school.
- They eat maize usually except special day.
- He hopes road and electrification.
- He will work for road construction for long term without any payment.
- He hopes to eat rice instead of maize if possible.
- He goes to Mongar once a month, Yongkara (nearest road point) more than once a week as porter.
- No income from porter usually.
- Making decision by himself with his mother's advice.

CHAPTER I-2 INTERVIEW SURVEY

I-2.1 Introduction

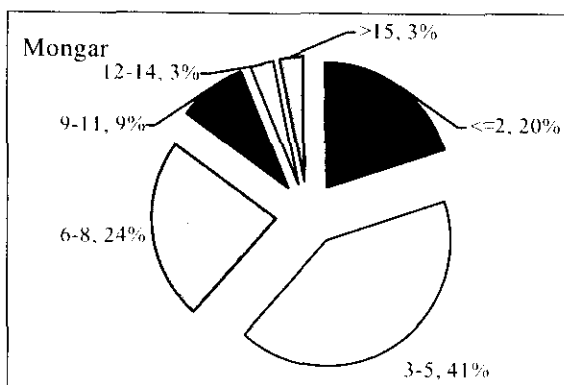
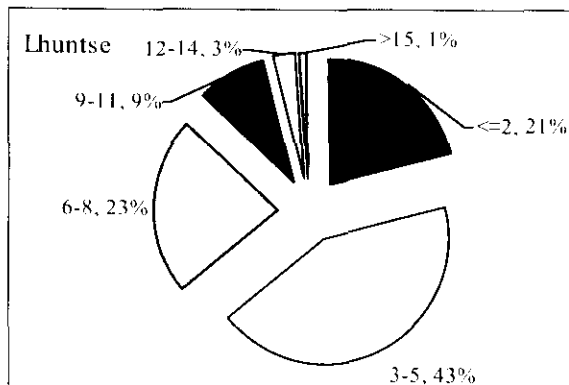
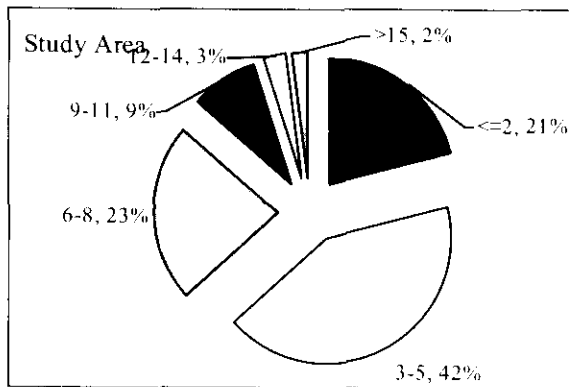
This survey was designed to grasp rural, social and agricultural characteristics, and conducted as part of "The Study on Agriculture and Farm Road Development in the Lhuntse and Mongar Districts in the Kingdom of Bhutan", JICA. The survey was conducted in all gewogs in Lhuntse and Mongar Dzongkhags in May and June 2002.

Sampling size was planned 4 % of total household in each gewogs. The survey was conducted by Extension Agents (EAs) who are trained.

The questionnaire was attached as Attachment I-1.

I-2.2 Results of Survey

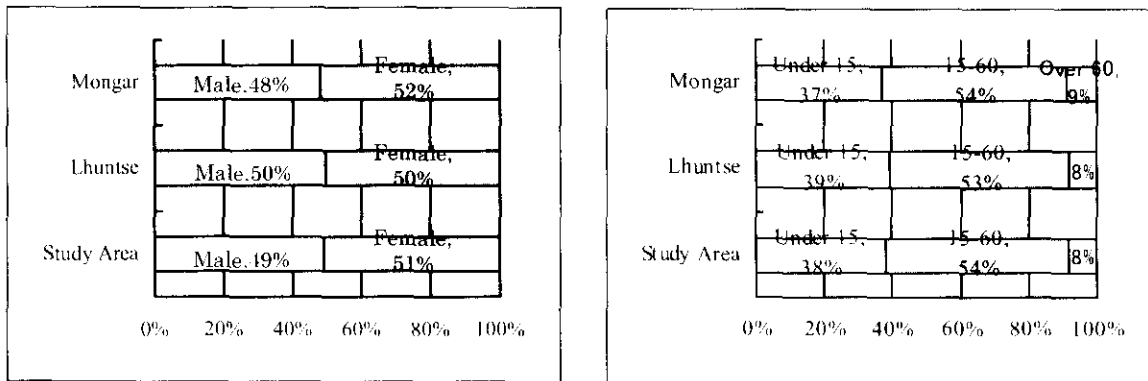
I-2.2.1 Family Size



Family Size

Average family size is 7.8 persons/household in both Dzongkhags, 8.0 persons/household in Lhuntse Dzongkhag and 7.7 persons/household in Mongar Dzongkhag.

I-2.2.2 Sex Ratio and Age Structure



Sex Ratio and Age Structure

Although national average¹ for sex ratio is 52:48 (Male: Female), percentage of female population slightly exceeds male in both Dzongkhags.

Percentage of over 65 is double of the national average. The national average¹ is 40 % (under 15), 56 % (15 - 60) and 4 % (over 65).

I-2.2.3 Farmers' Group

Most of head of family (including some female) and wife don't belong to any farmers' group: 77 % in both Dzongkhags, 86 % in Lhuntse Dzongkhag and 72 % in Mongar Dzongkhag. And most of wives also don't belong to any farmers' group: 80 % in both Dzongkhags, 88 % in Lhuntse Dzongkhag and 75 % in Mongar Dzongkhag.

Percentages that belong to farmers' group in Mongar Dzongkhag is high compared with Lhuntse Dzongkhag: Production Group (13 %: head of family), Religion Group (15 %: head of family, 12 %: wife) and Drinking Water Users' Group (17 %: head of family).

I-2.2.4 Living Standard

	Study Area	Lhuntse	Mongar
Drinking water	61%	73%	55%
Electricity	12%	11%	13%
Toilet	78%	71%	82%
Gas	8%	9%	7%

Percentage of having drinking water-supply and toilet is high. Small-scale drinking water-supply system is installed by international aid to each household or group, and toilet with roof outside of house is spread by outcome of hygiene campaign. Percentage of having electrification and gas for cooking is low.

	Study Area	Lhuntse	Mongar
Drinking water	26%	20%	28%
Electricity	56%	63%	52%
Toilet	8%	12%	5%
Gas	38%	36%	39%

Although percentages of having electricity and gas are low, expectation of having gas is low

¹ The World Factbook 2002. CIA

compared with electricity.

I-2.2.5 Constraints and Needs for Living Condition

Constraints for Living Condition (Study Area)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	42%	28%	31%	23%	34%	31%	30%
Serious	15%	17%	16%	8%	10%	13%	15%
Some	15%	14%	12%	8%	9%	10%	13%
Little	9%	7%	7%	10%	8%	11%	9%

Constraints for Living Condition (Lhuntse)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	45%	37%	23%	22%	38%	38%	32%
Serious	17%	21%	14%	8%	10%	14%	16%
Some	10%	10%	10%	7%	8%	8%	12%
Little	7%	6%	10%	11%	10%	13%	9%

Constraints for Living Condition (Mongar)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	41%	23%	36%	24%	32%	28%	29%
Serious	14%	14%	18%	7%	10%	13%	15%
Some	17%	17%	12%	9%	9%	12%	13%
Little	11%	8%	6%	9%	6%	10%	9%

Food shortage is serious constraints. 79 % of households have been bought.

Needs for Living Condition (Study Area)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	45%	31%	32%	27%	41%	31%	36%
Serious	13%	12%	10%	5%	10%	14%	10%
Some	15%	13%	12%	10%	11%	13%	15%
Little	8%	6%	5%	7%	5%	7%	8%

Needs for Living Condition (Lhuntse)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	46%	34%	19%	24%	48%	40%	41%
Serious	13%	11%	6%	5%	7%	13%	10%
Some	15%	14%	15%	10%	11%	14%	18%
Little	5%	5%	8%	5%	4%	6%	6%

Needs for Living Condition (Mongar)

	Food shortage	Health condition	Work opportunity	Debt	Drinking water	House	Education
Very Serious	44%	29%	39%	28%	37%	27%	34%
Serious	12%	12%	12%	5%	11%	14%	11%
Some	16%	13%	10%	10%	11%	13%	13%
Little	9%	6%	3%	9%	6%	7%	9%

Food shortage, drinking water and education are expected to improve.

I-2.2.6 Income

	Income					
	Study Area		Lhuntse		Mongar	
	Nu	%	Nu	%	Nu	%
Food crop	3,400	12%	7,700	26%	1,200	5%
Horticulture crop	4,600	16%	1,900	6%	5,900	22%
Livestock	6,100	22%	6,200	21%	6,000	22%
Agriculture/livestock total	14,100	50%	15,800	53%	13,200	49%
Off-farm income	14,100	50%	14,100	47%	14,100	51%
Total income	28,200	100%	29,900	100%	27,300	100%

Average total income in the study area is Nu 28,200/year. Income from agriculture and livestock is half of total income. Income from food crop in Mongar Dzongkhag is lower than Lhuntse Dzongkhag in exchange that income from horticulture crop is higher.

I-2.2.7 Expenditure

	Expenditure					
	Study Area		Lhuntse		Mongar	
	Nu	%	Nu	%	Nu	%
Production cost	9,300	33%	8,400	28%	9,800	36%
Living expenditure	18,900	67%	21,500	72%	17,500	64%
Staple food	3,200	11%	4,800	16%	2,300	8%
Other food	2,200	8%	2,600	9%	2,000	7%
Food total	5,400	19%	7,400	25%	4,300	16%
Other living expenditure	13,500	48%	14,100	47%	13,200	48%
Total expenditure	28,200	100%	29,900	100%	27,300	100%

Expenditure for living expenditure account for more than 60 %: most of living expenditure is other living expenditure. Other living expenditures are medicine, expenditure to go school, clothes, shoes, electricity, transportation and religious rites.

I-2.2.8 Investment

Percentage of Household Invested and Amount of Investment

	Percentage of household invested	Amount of investment
Study Area	52%	Nu 23,000
Lhuntse	56%	Nu 26,100
Mongar	50%	Nu 22,200

Fifty-two percent of household invest in some productive and/or fixed assets in the last two years. Average amount of investment is Nu 23,000/two years. 34 % of the investors invest in livestock and 25 % invest in house.

Investment for Livestock and House

	Percentage of household invested	Amount of investment
Study Area	Nu 8,200	Nu 21,000
Lhuntse	Nu 8,000	Nu 27,500
Mongar	Nu 8,300	Nu 17,500

Amount of investment for livestock is Nu 8,200/two years and for house is Nu 21,000/two years. Although investment in livestock is almost same in both Dzongkhag, investment for house in Lhuntse Dzongkhag is 157 % of that in Mongar Dzongkhag.

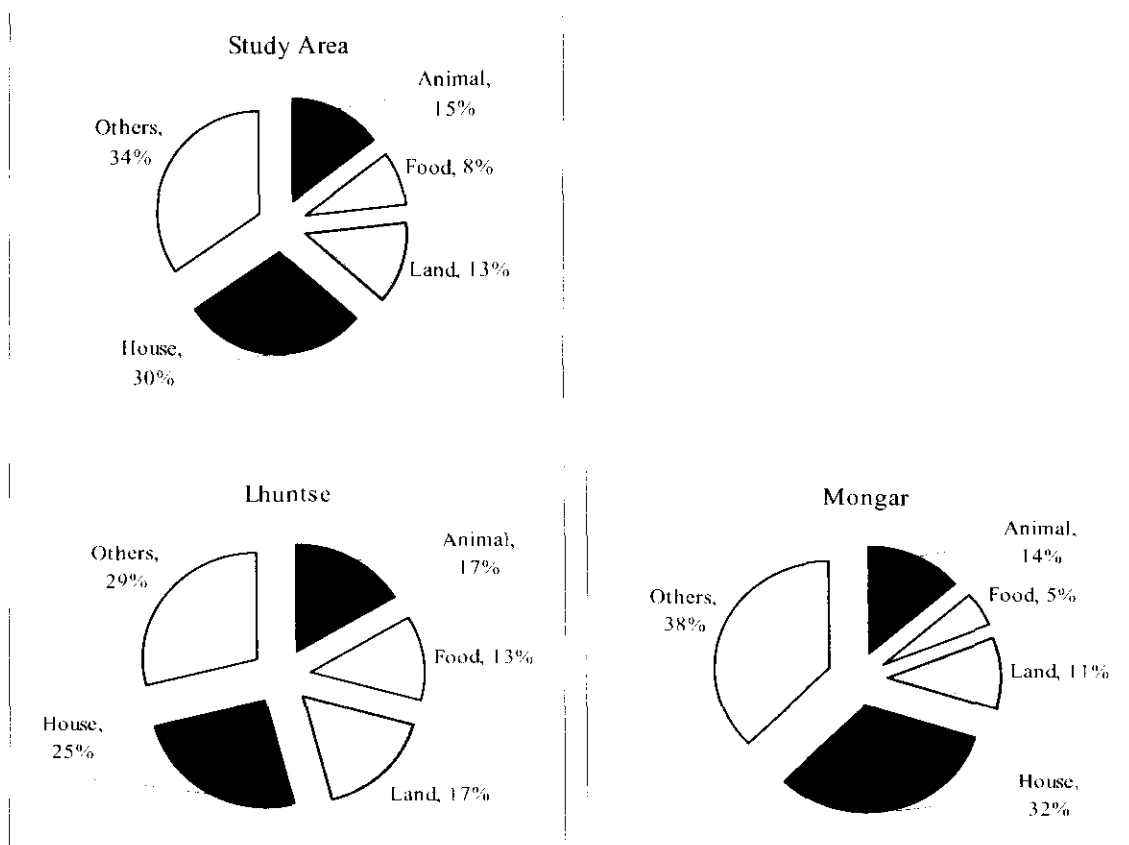
Most of money source for investment is own money, around 10 % of household borrowed from bank, friend, and/or money lender.

I-2.2.9 Debt

Debt

	Study Area	Lhuntse	Mongar
% of having debt	21%	25%	19%
Average of debt (Nu)	17,000	18,500	16,100
Less than Nu 5,000	19%	24%	16%
More than Nu 20,000	37%	44%	32%

Twenty-one percent of households have debt at present. Average debt is Nu 17,000. 37 % of households have debt more than Nu 20,000.



Purpose of Debt

Purposes of debt are expenditure or investment for house, animal, land and food. Most of the households borrow money from national bank or friend/relatives. Interest rate of national bank is around 14 %. Collateral for debt is dispensable.

I-2.2.10 Constraints and Needs for Agriculture

Constraints for Agriculture

Constraints	Study Area	Lhuntse	Mongar
Irrigation system	45%	56%	39%
Labor shortage	46%	40%	49%
Credit	29%	28%	29%
Agricultural extension	45%	44%	45%
Shortage of landholding	49%	61%	43%
Productivity	42%	49%	37%
Accessibility to farmland	38%	40%	36%
Pest/disease/rat damage	46%	48%	45%
Equipment & agricultural machinery	44%	41%	45%
Accessibility to market	44%	45%	44%
Market information	31%	30%	31%
Disease of livestock animal	41%	42%	41%
Low price of agricultural products	44%	48%	42%

Constraints for credit and market information are low.

Although constraint for irrigation system in Lhuntse Dzongkhag is high (56 %), constraints for irrigation system in Mongar Dzongkhag isn't so high (39 %).

Although constraint for shortage of landholding in Lhuntse Dzongkhag is high (61 %), constraints for shortage of landholding in Mongar Dzongkhag isn't so high (43 %).

Needs for Agriculture

Constraints	Study Area	Lhuntse	Mongar
Irrigation system	48%	63%	40%
Labor shortage	46%	46%	46%
Credit	31%	30%	31%
Agricultural extension	42%	49%	37%
Shortage of landholding	52%	62%	47%
Productivity	47%	48%	47%
Accessibility to farmland	38%	37%	39%
Pest/disease/rat damage	53%	58%	51%
Equipment & agricultural machinery	48%	48%	47%
Accessibility to market	48%	41%	51%
Market information	36%	33%	37%
Disease of livestock animal	37%	40%	35%
Low price of agricultural products	43%	43%	43%

Needs to improvement for irrigation system, shortage of landholding and pest/disease/rat damage are high in Lhuntse Dzongkhag.

Needs to improvement for pest/disease/rat damage and accessibility to market are high in Mongar Dzongkhag.

Needs to improvement for credit is low compared with other items.

I-2.2.11 Livestock

Holding and Number of Livestock

	Study Area		Lhuntse		Mongar	
	Holding (%)	Ave. holding	Holding (%)	Ave. holding	Holding (%)	Ave. holding
Cattle/Oxen	90%	8.1	89%	8.0	91%	8.1
Yak	0%	3	1%	3	0%	-
Horse	43%	2.8	47%	2.2	41%	3.1
Sheep	1%	4.5	2%	4.5	0%	-
Mule	8%	1.3	5%	1.4	10%	1.3
Pig	51%	2.0	55%	2.0	50%	2.0
Poultry	77%	5.4	79%	6.1	75%	5.0
Goat	6%	2.1	2%	1.0	7%	2.2

Most of household (around 90 %) have cattle. Average number of cattle is 8.1 heads/HH.

Most of household (less than 80 %) have poultry. Average number of poultry is 5.4 heads/HH.

Yak and sheep aren't popular in the study area. Mule and goat are novelty in Lhuntse Dzongkhag.

More than 50 % of household have pig. Average number of pig is 2.0 heads/HH. More than 40 % of household have horse. Average number of horse is 2.8 heads/HH.

Food Sufficiency (Cattle)

Cattle		Sufficient	Just enough	Short	Very short
Summer	Study Area	53%	36%	8%	3%
	Lhuntse	35%	51%	13%	1%
	Mongar	62%	28%	6%	4%
Winter	Study Area	11%	35%	40%	13%
	Lhuntse	11%	33%	41%	15%
	Mongar	11%	36%	40%	13%

Although most of household (around 90 %) have enough feed for cattle in summer, more than 50 % of households are felt short for feed in winter.

Food Sufficiency (Horse)

Horse		Sufficient	Just enough	Short	Very short
Summer	Study Area	60%	37%	2%	1%
	Lhuntse	41%	53%	3%	3%
	Mongar	69%	29%	1%	0%
Winter	Study Area	18%	44%	34%	4%
	Lhuntse	6%	56%	32%	6%
	Mongar	24%	38%	35%	3%

Few households are felt short for horse feed in summer. Less than 40 % of households are felt short for horse feed in winter.

Food Sufficiency (Pig)

Pig		Sufficient	Just enough	Short	Very short
Summer	Study Area	61%	35%	2%	2%
	Lhuntse	33%	67%	0%	0%
	Mongar	73%	22%	2%	3%
Winter	Study Area	44%	44%	9%	3%
	Lhuntse	15%	62%	21%	3%

	Mongar	57%	36%	3%	3%
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Although most of household have enough pig feed throughout the year, more than 20 % of households in Lhuntse Dzongkhag are felt short pig feed in winter.

Poultry		Sufficient	Just enough	Short	Very short
Summer	Study Area	56%	38%	4%	2%
	Lhuntse	38%	62%	0%	0%
	Mongar	65%	26%	7%	2%
Winter	Study Area	46%	39%	12%	3%
	Lhuntse	30%	59%	8%	3%
	Mongar	55%	29%	13%	3%

Although most of households have enough poultry feed throughout the year, more than 10% of households are felt short poultry feed in winter.

I-2.2.12 Land Use

	Study Area		Lhuntse		Mongar	
	%	Area (ha/hh)	%	Area (ha/hh)	%	Area (ha/hh)
Wetland	58%	0.39	81%	0.50	46%	0.29
Dry land	89%	0.85	79%	0.62	94%	0.96
Tseri	27%	0.63	14%	0.66	33%	0.63
Kitchen garden	40%	0.12	31%	0.14	44%	0.12

Five percent of households are landless farmer (6 % of Lhuntse Dzongkhag and 4 % of Mongar Dzongkhag).

Fifty-eight percent of households have paddy field. Average landholding for paddy field is 0.39 ha. Percentage of farmers operated paddy field in Lhuntse Dzongkhag is more than Mongar Dzongkhag (46 % : 81 %). Average operated land size of paddy field in Lhuntse is more than that in Mongar (0.29 ha : 0.50 ha).

Eighty-nine percent of households have dry land. Average landholding for dry land is 0.85 ha. Percentage of farmers operated dry land in Lhuntse Dzongkhag is less than Mongar Dzongkhag (79 % : 94 %). Average operated land size of dry land in Lhuntse is less than that in Mongar (0.62 ha : 0.96 ha).

Twenty-seven percent of households have Tseri. Average landholding for Tseri is 0.63 ha. Percentage of farmers operated Tseri in Lhuntse Dzongkhag is less than Mongar Dzongkhag (14 % : 33 %). Average operated land size of Tseri in Lhuntse is almost same as that in Mongar (0.66 ha : 0.63 ha).

Forty percent of households have kitchen garden. Average landholding for kitchen garden is 0.12 ha. Percentage of farmers operating kitchen garden in Lhuntse Dzongkhag is less than Mongar Dzongkhag (31 % : 44 %). Average operated land size of kitchen garden in Lhuntse is almost same as that in Mongar (0.14 ha : 0.12 ha).

I-2.2.13 Production

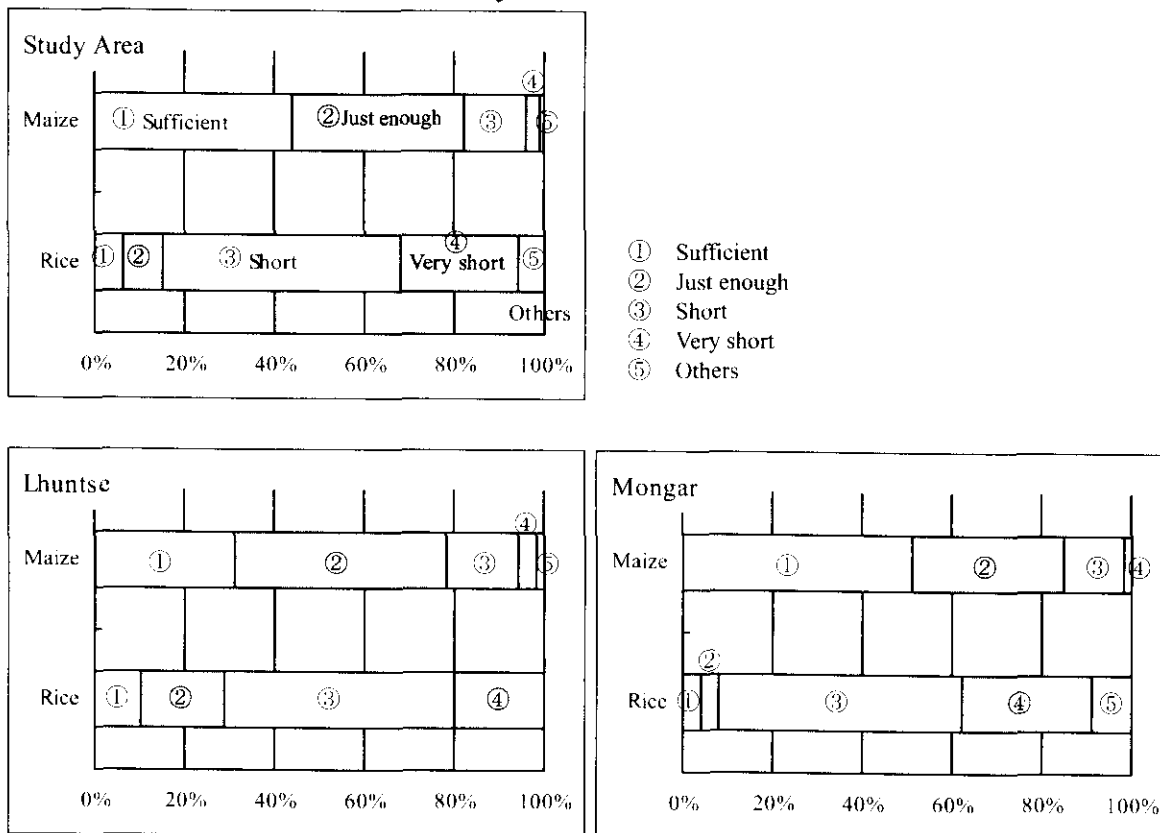
Study Area	Lhuntse	Mongar
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3,270 kg/ha	3,305 kg/ha	3,240 kg/ha
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Paddy production is 3,270 kg/ha. 16 % of households sell rice. Average sold rice was 378 kg/year.

Eighteen percent of maize cultivated farmer sell maize.

I-2.2.14 Food Condition and Availability



Food Condition and Availability

Although percentage of "sufficient" or "just enough" for rice is 29 % in Lhuntse Dzongkhag, only 7 % of households are "sufficient" or "just enough" in Mongar Dzongkhag. 9 % of households answered "others" in Mongar Dzongkhag because most of them eat maize only.

Around 80 % of households are "sufficient" or "just enough".

I-2.2.15 Production Cost

Production Cost		
Study Area	Lhuntse	Mongar
Nu 9,300	Nu 8,400	Nu 9,800

Average production cost is Nu 9,300/year. Production cost in summer is higher than that of in winter.

I-2.2.16 Agricultural Machinery

Twenty-five percent of households have threshed by manual with conventional tools. Engine thresher or pedal thresher is rare.

Most of households dry paddy with air-dry.

I-2.2.17 Storage and Post-harvest

Average storage period for rice is 8.7 months (9.1 months in Lhuntse Dzongkhag and 8.4 months in Mongar Dzongkhag). Half of households use bamboo basket and 21 % of households use wooden box for rice storage.

I-2.2.18 Processing Losses

Constraints	Processing Losses Ratio		
	Study Area	Lhuntse	Mongar
Harvesting	28.4%	25.2%	30.6%
Threshing	29.1%	33.9%	25.6%
Drying	8.0%	15.7%	2.5%
Cleaning	7.6%	7.0%	8.1%
Storage	22.5%	18.3%	25.6%
Others	4.4%	0.0%	7.5%

Processing losses at harvesting, threshing and storage are thought dominant loss.

	Percentage of Loss by Constraint					
	Harvesting	Threshing	Drying	Cleaning	Storage	Others
Study Area	5.5%	5.0%	2.9%	4.0%	11.1%	9.0%
Lhuntse	5.0%	5.6%	2.5%	2.0%	9.1%	-
Mongar	4.4%	4.7%	4.7%	4.8%	12.2%	9.0%

Farmers estimated that 11.1 % of total rice processing loss is occurred at storage stage

CHAPTER I-3 INTERVIEW SURVEY AT PRIORITY GEWOGS

I-3.1 Introduction

The interview survey was conducted at three of the priority Gewogs in the Study Area. The aim of the survey was i) to confirm acceptability of the development approaches of the Master Plan and ii) to confirm beneficiaries' contribution/ participation planned in the Action Plan. The selected Gewogs are Chaskhar Gewog (Mongar Dzongkhag) Drepong Gewog (Mongar Dzongkhag), and Gangzur Gewog (Lhuntse Dzongkhag). Criteria of selected Gewogs are accessibility as summarized below.

Interviewer had visited each farm household and conducted the survey using attached questionnaire (Attachment I-2) in October - November 2002. Name of interviewee with photograph and coordinate (latitude, longitude and land height) are marked by GPS for the purpose of trainability.

Basic Data			
Gewog (Dzongkhag)	Chaskhar (Mongar)	Drepong (Mongar)	Gangzur (Lhuntse)
Gewog population	401 Households	214 Households	459 Households
Nos. of sample	40	40	31
Distance to nearest road point	0km	(2 hours on foot)	(4.5 hours on foot)
Distance to Dzongkhag capital	50km	36km	(1 hour by vehicle)
Distance to Gewog center	0km	(25 Households are around the Gewog center and the others are 1~2 hours on foot)	(4.5 hours on foot)
Distance to Trashigang	60km	100km	160km
Distance to Samdrup Jongkhar	240km	285km	340km
Distance to Thimphu	490km	450km	535km
Profile	Good access with road	Good access without road	Poor access without road

Forty households are interviewed in the Chaskhar Gewog. The households are concentrated around Gewog center. Motorable farm road is connected from the Gewog center to District road.

Forty households are interviewed in the Drepong Gewog in total. 25 households are concentrated around Gewog center and the others scattered around the Gewog center. The Gewog center is facing to national highway.

Thirty-one households are interviewed in the Gangzur Gewog. The households locate remote villages from the Gewog center. No motorable road connected to the villages.

I-3.2 Results of Survey

I-3.2.1 Female Headed Household

Female Headed Household	
Gewog	
Chaskhar	45%
Drepong	53%
Gangzur	42%

More than 40% of households are female headed household. The "Female Headed Household" isn't synonymous with "Widow". Causes of the "female headed household" in the interviewed Gewogs are summarized below.

- Husband is working away from the home: long-term absentee (more than one month) isn't added up.
- Childbirth without marriage.
- Divorce
- Bereavement

I-3.2.2 Family Size

Family Size, Sex Ratio and Age Structure

Gewog	Total			Over 60		Under 15	
	Total	Male	Female	Male	Female	Male	Female
Chaskhar	5.28	2.53	2.82	0.28	0.28	0.98	0.93
Drepong	5.25	2.82	2.50	0.35	0.30	1.35	0.88
Gangzur	5.13	2.63	2.58	0.26	0.48	1.23	0.97

Note: Long-term absentees (more than one month) are not included.

Long-term absentees (more than one month, working and studying away from the home) are not included in the sum. Percentage of old people (60 years old and more) is less than 15 %. Percentage of children under 15 years old is around 40 %.

Family Size Including Long-term Absentee

Gewog	Total			Over 60		Under 15	
	Total	Male	Female	Male	Female	Male	Female
Chaskhar	10.09	5.27	4.81	0.63	0.27	1.90	0.90
Drepong	10.33	5.41	4.91	0.75	0.33	1.83	1.75
Gangzur	6.77	3.50	3.27	0.11	0.16	1.16	1.11

Source: Interview Survey conducted by the JICA Study Team, May and June 2002.

Note: Including long-term absentee.

Samples are different from the additional interview survey.

Absentee less than six months are included in the sum. Difference of average total household member in Gangzur Gewog between Chaskhar and Drepong Gewogs is about three. Especially, working population (sixteen and over, and less than sixty) is fewer.

Long-term Absentee

Gewog	Total			Over 60		Under 15	
	Total	Male	Female	Male	Female	Male	Female
Chaskhar	4.81	2.74	1.99	0.35	-0.01	0.92	(-0.03)
Drepong	5.08	2.59	2.41	0.40	0.03	0.48	0.87
Gangzur	1.64	0.87	0.69	(-0.15)	(-0.32)	(-0.07)	0.14

Source: Interview Survey conducted by the JICA Study Team, May and June 2002.

Note: Samples are different from the additional interview survey.

More than half of total household members are long-term absentee in Chaskhar and Drepong Gewogs. Most of the long-term absentees in Chaskhar and Drepong Gewogs are working population.

I-3.2.3 Working Population

Working Population

Gewog	Total	Male	Female
Chaskhar	3.23	1.40	1.83
Drepong	2.03	0.85	1.18
Gangzur	2.06	0.94	1.13

Sufficiency of Working Population

Gewog	Enough	Just enough	Shortage
Chaskhar	0.0%	35.0%	65.0%
Drepong	10.0%	20.0%	70.0%
Gangzur	9.7%	16.1%	74.2%

Working population in Chaskhar Gewog is highest; more than 1 person is higher than others. Labor shortage is most serious among the Gewogs.

I-3.2.4 Prospective Expenses of Cash Income

Prospective Expenses

Gewog	1	2	3
Chaskhar	House (27.5%)	Debt (22.0%)	Animal (18.7%)
Drepong	Education (31.5%)	House (28.8%)	Animal (27.0%)
Gangzur	Education (27.9%)	Animal (23.3%)	Others (17.4%)

Note: Others: Rice mill is dominant.

Although prospective expenses of cash income against debt in Chaskhar Gewog is high, results of interview survey mentioned in Attachments show that average cash income in Chaskhar Gewog is ranked third among the all Gewogs in the Study Area, and household having debt is fewer than other Gewogs.

I-3.2.5 Prospective Products to Get Cash Income

Prospective Products

Gewog	1	2	3
Chaskhar	Animal (41.4%)	Vegetables (20.0%)	Maize (14.3%) Others (14.3%)
Drepong	Vegetables (37.0%)	Animals (27.8%)	Maize (25.0%)
Gangzur	Vegetables (29.1%)	Paddy (24.4%)	Fruits (14.0%)

Present Landholding and Animals Breeding

Gewog	Wet Land	Dry Land	Cow
Chaskhar	0.24ha	0.92ha	4.1 heads
Drepong	0.00ha	1.04ha	0.8 heads
Gangzur	0.64ha	0.78ha	5.6 heads

Source: Interview Survey conducted by the JICA Study Team, May and June 2002.

Note: Samples are different from the additional interview survey.

Vegetables are prospective product to get cash income in all Gewogs.

Although vegetables and other crops are prospected products to get cash income in Chaskhar and Drepong Gewog, it might be that wet land potential is low compared with Gangzur Gewog.

I-3.2.6 Shipping of Agricultural Products

Demand of Shipping

Gewog	Yes	No	don't know
Drepong	100%	0%	0%
Gangzur	93.5%	3.2%	3.2%

Contribution of Road for Shipping

Gewog	Yes (Increased)	No (Same or decrease)	don't know
Chaskhar	82.5%	5.0%	12.5%

Most of household want to ship agricultural products if farm road is connected. In fact, most of household in Chaskhar Gewog which road is connected recently shows increase of

shipping.

1-3.2.7 Frequency to go outside of village

Frequency to Go Outside of Village (Dzongkhag Capital)			
Gewog	Chaskhar	Drepong	Gangzur
Never or rarely	35.0%	0.0%	25.8%
Once a several year or once a year	25.0%	0.0%	9.7%
Several times a year	22.5%	10.0%	48.4%
Often	17.5%	90.0%	16.1%

Purpose of Visit (Dzongkhag Capital)			
Gewog	Chaskhar	Drepong	Gangzur
Selling products	7.9%	33.3%	2.6%
Purchase commodities	5.3%	55.6%	23.1%
Hospital	28.9%	1.6%	23.1%
Visit friend or relatives	10.5%	0.0%	12.8%
Meeting	7.9%	0.0%	10.3%
Business	23.7%	6.3%	20.5%
Tax	2.6%	0.0%	0.0%
Others	13.2%	3.2%	30.7%

Frequency to visit Dzongkhag capital varies widely with Gewogs. Farmers in Drepong Gewog visit the Dzongkhag capital quite often.

Frequency to Go Outside of Village (Gewog Center)			
Gewog	Chaskhar	Drepong	Gangzur
Never or rarely	7.5%	0.0%	16.1%
Once a several year or once a year	7.5%	2.5%	25.8%
Several times a year	35.0%	2.5%	41.9%
Often	50.0%	95.0%	16.1%

Purpose of Visit (Gewog Center)			
Gewog	Chaskhar	Drepong	Gangzur
Selling products	0.0%	0.0%	0.0%
Purchase commodities	1.1%	1.1%	0.0%
Hospital	39.1%	36.3%	24.6%
Visit friend or relatives	1.1%	4.4%	0.0%
Meeting	29.9%	42.9%	36.8%
Business	4.6%	0.0%	17.5%
Tax	9.2%	15.4%	0.0%
Others	15.0%	0.0%	21.1%

Visit to Gewog center is high frequency in all Gewogs. Main purposes of visit are hospital and meeting.

Frequency to Go Outside of Village (Trashigang)			
Gewog	Chaskhar	Drepong	Gangzur
Never or rarely	85.0%	90.0%	96.8%
Once a several year or once a year	7.5%	7.5%	3.2%
Several times a year	2.5%	2.5%	0.0%
Often	5.0%	0.0%	0.0%

Purpose of Visit (Trashigang)			
Gewog	Chaskhar	Drepong	Gangzur
Selling products	14.3%	0.0%	0.0%
Purchase commodities	14.3%	0.0%	100%
Hospital	14.3%	0.0%	0.0%
Visit friend or relatives	28.6%	100%	0.0%
Business	14.3%	0.0%	0.0%

Trashigang is larger town than both Dzongkhag capitals. Most of farmers never or rarely visit Trashigang.

Frequency to Go Outside of Village (Samdrup Jongkhar)

Gewog	Chaskhar	Drepong	Gangzur
Never or rarely	92.5%	85.0%	100%
Once a several year or once a year	7.5%	12.5%	0.0%
Several times a year	0.0%	2.5%	0.0%
Often	0.0%	0.0%	0.0%

Purpose of Visit (Samdrup Jongkhar)

Gewog	Chaskhar	Drepong	Gangzur
Selling products	33.3%	0.0%	0.0%
Purchase commodities	33.3%	66.7%	0.0%
Visit friend or relatives	33.3%	33.3%	0.0%

Samdrup Jongkhar is nearest port for trade. Most of farmers never or rarely visit Samdrup Jongkhar

Frequency to Go Outside of Village (Thimphu)

Gewog	Chaskhar	Drepong	Gangzur
Never or rarely	92.5%	77.5%	100%
Once a several year or once a year	5.0%	20.0%	0.0%
Several times a year	0.0%	2.5%	0.0%
Often	2.5%	0.0%	0.0%

Purpose of Visit (Thimphu)

Gewog	Chaskhar	Drepong	Gangzur
Hospital	33.3%	0.0%	0.0%
Visit friend or relatives	66.7%	100.0%	0.0%

Thimphu is capital of Bhutan. Most of farmers never or rarely visit Thimphu.

I-3.2.8 Participation to Road Construction Works

As a feeder road has been already constructed to Chaskhar Gewog, this question was asked only for Drepong and Gangzur Gewogs.

In Drepong Gewog, half of households are available to work for half to one month, and 30 % are same as others, and the rest are following Gup's instruction. Off-season for farmers is October - January.

In Gangzur, 30 % are available to work for ten days to one month, the rest are following Gup's instruction or any days until road construction is finish. Off-season for farmers is January - February.

I-3.2.9 Participation to Road Maintenance Works

Workable day per year for road maintenance was confirmed in Drepong and Gangzur Gewog.

In Drepong Gewog, same day with others are 20 %, following Gup's instruction are 12 %, the rest are any days if necessary.

In Gangzur Gewog, one to three weeks are 39 %, the rest are following Gup's instruction or any days if necessary.

I-3.2.10 Group Activities

Group Activities for Ship/Transport Agricultural Products

Gewog	Yes	No	don't know
Chaskhar	15.0%	85.0%	0.0%
Drepong	95.0%	2.5%	2.5%
Gangzur	93.5%	6.5%	0.0%

Group activities for ship/transport agricultural products aren't active in Chaskhar Gewog although farm road is connected. Farmers in Drepong and Gangzur Gewog are ready to participate in group activities.

I-3.2.11 Production Techniques/Technology Advice

Production Techniques/Technology Advice

Gewog	Chaskhar	Drepong	Gangzur
Extension Agent	82.5%	80.0%	93.3%
Progressive farmer of neighbors	7.5%	12.5%	6.7%
Specialist of research center	0.0%	0.0%	0.0%
Others	10.0%	7.5%	0.0%

Most of farmers want to be advised by EAs.

I-3.2.12 Job Allocation

Job Allocation (Plowing)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	100.0%	100.0%	93.5%
Adult (Female)	0.0%	0.0%	0.0%
Boy	0.0%	0.0%	3.2%
Girl	0.0%	0.0%	0.0%

Plowing is men's job.

Job Allocation (Transplanting & Planting)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	70.0%	75.0%	0.0%
Adult (Female)	97.5%	75.0%	96.8%
Boy	2.5%	45.0%	0.0%
Girl	25.0%	42.5%	6.5%

Transplanting and planting is men and women's job in Chaskhar and Drepong Gewog. Some of children are help parents. Transplanting and planting is women's job in Gangzur Gewog.

Job Allocation (Harvesting)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	77.5%	87.5%	38.7%
Adult (Female)	95.0%	97.5%	83.9%
Boy	12.5%	17.5%	3.2%
Girl	32.5%	17.5%	3.2%

Harvesting is men and women's job. Percentage of men's participation in Gangzur Gewog is lower than others.

Job Allocation (Post Harvest Processing)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	80.0%	72.5%	58.1%
Adult (Female)	95.0%	100.0%	80.6%
Boy	10.0%	7.5%	0.0%
Girl	25.0%	10.0%	0.0%

Post harvest processing is almost same tendency with harvesting.

Job Allocation (Livestock Feeding)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	70.0%	45.0%	61.3%
Adult (Female)	90.0%	92.5%	41.9%
Boy	7.5%	12.5%	3.2%
Girl	27.5%	17.5%	3.2%

Livestock feeding is men and women's job.

Job Allocation (Shipping & Selling Products)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	50.0%	47.5%	64.5%
Adult (Female)	75.0%	92.5%	38.7%
Boy	0.0%	2.5%	0.0%
Girl	0.0%	5.0%	0.0%

Although shipping and selling products is men and women's job, percentage of female is low at Gangzur Gewog. Long distance to market from Gangzur Gewog may decrease women's percentage.

Job Allocation (Labor at Construction Site)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	60.0%	67.5%	9.7%
Adult (Female)	15.0%	2.5%	0.0%

Labor at construction site is men's job in Chaskhar and Drepong Gewog. Men in Gangzur Gewog rarely work as labor at construction site.

Job Allocation (Village Meeting)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	67.5%	45.0%	77.4%
Adult (Female)	87.5%	90.0%	45.2%

Village meeting is men and women's job. Percentage of female participation is lower compared with others Gewogs in Gangzur Gewog.

Job Allocation (Cottage Industry)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	27.5%	7.5%	0.0%
Adult (Female)	35.0%	10.0%	3.2%
Boy	0.0%	0.0%	0.0%
Girl	7.5%	0.0%	0.0%

Most of villagers in Gangzur Gewog rarely work for cottage industry.

Job Allocation (Drinking Water Supply)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	62.5%	12.5%	3.2%
Adult (Female)	80.0%	37.5%	3.2%
Boy	20.0%	12.5%	0.0%
Girl	27.5%	10.0%	0.0%

Drinking water supply is men and women's job in Chaskhar Gewog cooperate with children. Percentage of drinking water supply in Drepong and Gangzur Gewog is low. Water source is shortage in Drepong Gewog. Percentage of introduction of small-scale water-supply system is quite high (more than 90 %) in Gangzur Gewog. Percentage of introduction of small-scale water-supply system in Chaskhar and Drepong Gewog are 50 % and 0 %, respectively.

Job Allocation (Cooking)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	35.0%	17.5%	9.7%
Adult (Female)	95.0%	100.0%	100.0%
Boy	2.5%	0.0%	0.0%
Girl	17.5%	12.5%	0.0%

Cooking is almost women's job.

Job Allocation (Accounting)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	35.0%	20.0%	22.6%
Adult (Female)	72.5%	87.5%	80.6%

Accounting is almost women's job.

Job Allocation (Washing Clothes)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	47.5%	25.0%	6.5%
Adult (Female)	92.5%	100.0%	90.3%
Boy	5.0%	10.0%	0.0%
Girl	12.5%	27.5%	0.0%

Washing clothes is women's job in Drepong and Gangzur Gewog. Half of male in Chaskhar Gewog cooperate with washing clothes.

Job Allocation (Shopping)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	80.0%	50.0%	80.6%
Adult (Female)	87.5%	85.0%	29.0%
Boy	5.0%	2.5%	0.0%
Girl	10.0%	2.5%	0.0%

Most of villagers go to shopping at the same time with shipping of agricultural products. Tendency of shopping is almost same as shipping and selling products.

Job Allocation (Care of Children)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	30.0%	27.5%	41.9%
Adult (Female)	77.5%	90.0%	93.5%
Boy	5.0%	0.0%	0.0%
Girl	0.0%	0.0%	0.0%

Care of children is mainly women's job.

Job Allocation (Firewood Collection)			
Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	95.0%	87.5%	87.1%
Adult (Female)	87.5%	85.0%	80.6%
Boy	5.0%	12.5%	3.2%
Girl	10.0%	15.0%	6.5%

Firewood collection is men and women's job.

Job Allocation (Decision Making)

Gewog	Chaskhar	Drepong	Gangzur
Adult (Male)	62.5%	45.0%	48.4%
Adult (Female)	57.5%	77.5%	58.1%
Boy	0.0%	0.0%	0.0%
Girl	0.0%	0.0%	0.0%

Decision maker is men and/or women.

I-3.2.13 Present Feeling of Satisfaction on Present Circumstances

Present Feeling of Satisfaction

Chaskhar	Drepong	Gangzur
90.0%	95.0%	95.0%

Most of villagers feel satisfy with present circumstances.

I-3.2.14 Expected Occupation for Children

Most children were not in their home, because of school at the interview survey. Most of remains hoped to be farmer, and the others hoped to be teacher. There was no clear difference with boy and girl.

I-3.2.15 Children's Respectful Person

Most of children respect mother and/or grandmother. Father and/or grandfather isn't respected by their children.

I-3.2.16 Expected Goods for Children

Children want to have clothes and shoes.