

**Examining Small Millet-Based Food and Livelihood Security: A
case study of semi-arid mountain communities in Nepal**

by

Rinchu Doma Dukpa

**A Thesis Submitted to the Faculty of Graduate Studies of
The University of Manitoba**

in partial fulfillment of the requirements of the degree of

MASTER OF NATURAL RESOURCES MANAGEMENT

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ABSTRACT

The majority of households in the hill regions of Nepal are net consumers of their agricultural produce. The harsh geographical topography, low landholdings and uncertain weather make households in the hills more susceptible to food insecurity. This research examines the role of small millets in achieving food and livelihood security for the people of Dhikur Pokhari VDC in Nepal. As a project based on qualitative research, data was collected through semi-structured interviews, observations and focus group discussions. In addition, market and value chain analysis for small millets was conducted. The findings show that small millets have a significant role in ensuring food security, particularly for the marginalized households. The findings also show that, through their exchange properties, small millets contributed towards generating household livelihoods. Further, findings revealed the existing formal and informal markets for small millets and showed a direct correlation between small millets-based market, and food and livelihood security for the people of Dhikur Pokhari VDC.

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*“This world is a beautiful place, as long as you can help others”
Fr. Gerard Van Wallegem SJ*

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Last but not the least, Bhaiya, this would not have been possible without you showing me the way.

DEDICATIONS

They say that behind every successful man there is a woman, but in my case it was the opposite.

This thesis is dedicated to the following men

Baba, for always encouraging me to live my dreams

Fr. Van, for being my idol

Pro. Henley, for being my Guruji

Upen Da, for being my lifelong headache

&

My Mummy - Uma

(The iron lady)

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
DEDICATION	iv
List of Tables	ix
List of Figures	ix
List of Plates	ix
Kodanunai – <i>Kodo</i> Laments	xi
Glossary of Local Terms Used	xii
CHAPTER – I: INTRODUCTION	
1.1 Background	1
1.2 Markets	2
1.3 Entitlement, endowment and capability	5
1.4 Women	7
1.5 Research context	9
1.6 Purpose and objectives	11
1.7 Research design	11
1.8 Research significance	13
1.9 Organization of thesis	16
1.10 Limitations	17
CHAPTER– II: FOOD SECURITY - ENTITLEMENT, ENDOWMENT AND CAPABILITY	
2.1 Underutilized and neglected species	18
2.2 Millets	19
2.3 Food security	22
2.4 Entitlement, endowment and capabilities	26
2.5 Women- Endowments, entitlements and capabilities	30
2.5.1 Endowment failure	30
2.5.2 Capability failure	31
2.5.3 Entitlement failure	33
2.6 Livelihood	34
2.7 Markets	37

2.7.1 Market constraints	38
2.7.2 Market chains.....	40
2.7.3 Value chains	41
2.8 Chapter summary	44
CHAPTER – III: RESEARCH METHODS	
3.1 Introduction	47
3.2 Case study strategy	48
3.3 Case for “case study”	48
3.4 Study area	51
3.5 Market chain analysis	52
3.6 Data collection	53
3.6.1 Semi-structured interviews	53
3.6.2 Focus group	55
3.6.3 Observation.....	56
3.6.4 Review of secondary data	58
3.7 Validation of the data	58
3.8 Data analysis	59
3.9 Dissemination of findings.....	59
CHAPTER – IV: SMALL MILLET - CULTIVATION, SIGNIFICANCE AND USE	
4.1 Introduction	61
4.2 Socioeconomic profile of the study area	61
4.2.1 Administrative structure of Nepal.....	62
4.2.2 Administrative structure of Dhikur Pokhari VDC.....	63
4.2.3 Geographic profile of Dhikur Pokhari VDC	64
4.2.4 Social structure.....	66
4.2.5 Economic profile.....	68
4.3 Agriculture in Dhikur Pokhari VDC	69
4.3.1 <i>Kodo</i> in Nepal	70
4.3.2 Land and <i>kodo</i>	75
4.3.3 <i>Kodo</i> cultivation and consumption – the land connection.....	81
4.4 Role of women.....	95

4.5 <i>Kodo</i> and food security	107
4.6 Decline in <i>kodo</i> cultivation.....	118
4.6.1 High cost.....	118
4.6.2 Alternative income sources.....	121
4.6.3 Focus on education	122
4.6.4 Family size	123
4.6.5 Low status food	124
4.6.6 Transportation.....	126
4.6.7 Changing preferences.....	126
4.6.8 Farming practices	127
4.6.9 Asymmetric information	128
CHAPTER – V: SMALL MILLETS - MARKETS	
5.1 Introduction	131
5.2 Why markets exist?.....	131
5.2.1 Store of value	132
5.2.2 Medium of exchange.....	133
5.2.3 Mode of payment.....	135
5.2.4 Informal market	136
5.2.5 Formal market.....	137
5.3 Market chains	139
5.4 Value chain.....	144
5.5 Market enabling and constraining factors in Dhikur Pokhari VDC.....	151
5.5.1 Demand - arising from income/cash generation.....	151
5.5.2 Demand - as substitute food crop	152
5.5.3 Transportation facilities	154
5.5.4 Steady price in Dhikur Pokhari VDC.....	155
5.5.5 Constraints - Low price in Dhikur Pokhari VDC.....	156
5.5.6 Price dichotomy.....	157
5.5.7 Lack of information	160
5.6 Policies	160
5.6.1 Neglect by Government bodies.....	163

5.7 Endowment, entitlement, and capability: A discussion with reference to Dhikur Pokhari ...	170
5.7.1 <i>Janajati</i>	171
5.7.2 Upper caste	172
5.7.3 <i>Dalits</i>	173
5.7.4 Food security and livelihood	176
5.7.5 <i>Kodo</i>	178
5.7.6 Market.....	179
5.8 Woman – A classic case of endowment, entitlement and capability failure	182
5.9 Production dilemma	183
CHAPTER – VI: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	
6.1 Summary.....	185
6.2 Conclusions	187
6.2.1 The significance of small millets.....	187
6.2.2 Role of women	189
6.2.3 Markets – constrains and opportunities	190
6.2.4 Existing policies	191
6.3 Recommendations	192
6.3.1 Information leading to awareness	192
6.3.2 Opening of <i>sahakari</i> (cooperative) for <i>kodo</i>	193
6.4 Final thoughts	194
REFERENCES.....	196
APPENDIX – I: Interview schedule.....	211
APPENDIX – II: Nepali months with corresponding English months.....	215
APPENDIX – III: <i>Kodo</i> cultivation processes	216
APPENDIX – IV: Conversion table.....	218
APPENDIX – V: Ethics approval	219

List of Tables

Table 3.1: Government officers and community representatives interviewed	51
Table 3.2: Number of households interviewed and their occupation	51
Table 3.3: Household involvement in trading with <i>kodo</i>	52
Table 4.1: Geographic profile of Dhikur Pokhari	65
Table 4.2: Social profile of Dhikur Pokhari VDC	67
Table 4.3: Level of education of interview respondents within the VDC	68
Table 4.4: Economic profile of Dhikur Pokhari VDC	69
Table 4.5: Process involved in <i>Kodo</i> cultivation	74
Table 4.6: Households dealing in land for <i>adhya</i> and/or <i>thekka</i>	79
Table 4.7: Average landholding and relationships to <i>kodo</i>	82
Table 4.8: Gender-wise involvement in <i>kodo</i> cultivation	102
Table 4.9: Level of education of interview respondents	106
Table 4.10: Legend showing seasonal calendar	110
Table 4.11: <i>Kodo</i> cultivation and consumption	116
Table 4.12: Estimated cost of <i>kodo</i> cultivation	120

List of Figures

Figure 4.1: Administrative structure of Nepal	63
Figure 4.2: Dhikur Pokhari VDC within Kaski district	64
Figure 4.3: Seasonal calendar showing various crop cycles in the study area	110
Figure 5.1: Market chain for <i>kodo</i> within Dhikur Pokhari VDC	141
Figure 5.2: Value addition done to <i>kodo</i> locally	145
Figure 5.3: Value chain outside Dhikur Pokhari VDC	146
Figure 5.4: Market map relating to the movement of <i>kodo</i>	149
Figure 5.5: Agricultural administrative setup	166
Figure 5.6: Central triad	170
Figure 5.7: Exogenous factors affecting the central triad	175
Figure 5.8: Central triad determining food security	178
Figure 5.9: <i>Kodo</i> – Endowment, entitlement and capability	181

List of Plates

Plate 1: Finger millet	71
Plate 2: A woman making <i>raksi</i>	84
Plate 3: Roles of women with regard to <i>kodo</i> cultivation	96
Plate 4: Role of women – post harvest	97
Plate 5: Role of women – preparing food	98
Plate 6: <i>Raksi</i> making	99
Plate 7: Role of men	100
Plate 8: <i>Kodo</i> -based <i>khana</i>	114
Plate 9: <i>Kodo</i> -based <i>khaja</i>	115
Plate 10: High altitude products	134
Plate 11: Packed and labeled <i>kodo</i>	148
Plate 12: Value added product	148
Plate 13: <i>Kodo</i> from other districts	158
Plate 14: Wholesalers of <i>kodo</i>	158

कोदानुनय

गतिला गरछन् न कोई पूछ।

न भयो दरबारमा प्रवेश।।

दुखिया पनि ती मकै न खाने।

बबुरो मइले कता नि जाने।।

सब अन्नमहाँ म हीन अन्न।

टुहुरो बिचरो म छू नभन्न।।

गहुँ धान सखे, सहकालमा।

अति गर्व गरुन् दरबारमा।।

अनिकाल जहाँ परिआउँला।

मडुवा पनि आदर पाउला।।

अनिकाल कहीं सहकाल कहीं।

छ त घाम कहीं त सियाँल कहीं।।

सपना कहिको विपना छ कहीं।

विपना कहींको सपना छ कहीं।।

नयपाल कहीं गुजरात कहीं।

अनिकाल पर्यो गुजरातमहाँ।।

(८)

नयपाल निकै गुजराती पुगे।

सिरहामडुवा गुजरात लगे।।

गरिमा लधिमा लधिमा गरिमा।

गरने हुतिकार छ कालइमा।।

अह! जर्मन कैसर शानि कहीं!

अब जर्मन कैसर नाँनि कहीं?

यस तत्त्वमहाँ मडुवा, मन ला।

मनमा गम खा, गममा मन ला।।

बुझिनै सकिदैन छ यो अगम्य।

हरिको गजबै छ तारतम्य^१।

तर प्रेम छ ईशको तैमाथी।

गरि धैर्य सखे, रती नआती।।

पथ सत्य समाति निराश नहो।

हरिका पदको दृढ़ दास तँ हो।।

हरिले तँकनै निगहा गरनन्।

रब ताप^२ जती सब ती हरनन्।।

१ - बन्दोबस्त। २ - सन्ताप।

(९)

Kodanunai – *Kodo* Laments

Kavi Dharnidhar Koirala

Those who are well to do, those who speak for the administration, opportunists who stop
others from achieving are not noticing me right now
I am not allowed to enter the palace
Even those who are deprived pretend to be like the rich and do not eat corn
What hope is there for pitiful millet, where should I go?

Among all the pulses, I am the most despised
The ones who live in the palace believe that they will always have plenty
And think themselves worthy of the high-grade pulses like paddy and wheat
And are filled with arrogant pride at their palace

In case of famine, they will need to rub grains of millet together,
Drink the unappetizing water and throw the husk away
Only then will they understand and appreciate my value
There is no guarantee that they will always have plenty,
Excess and famine are a vicious cycle like light and shadow

The world is made up of light and darkness, day and night, pain and joy, dream and
reality
Nepal falls on one side and Gujarat on another
Once there was a famine in Gujarat, Nepal lent a helping hand
And sent bags of millet

Every dog has its day
Even the unimportant become essential
In the time of need the weak, the lame also come in use

At one time the thought of the Kaiser shook the world
The Germans lost the world war, who pays them any attention now
I understand and think and wait and pacify myself

There is no understanding the rules of the universe
Our minds cannot conceive the vastness of this thought
The rules made by the Lord Krishna are interesting
And I tell myself
“Look millet, the Lord loves you too, don’t be alarmed, be patient
When you walk the path of truth you will never be disappointed
You be a servant of the Lord for now and the Lord will reward you
He will heal the wounds and sorrows of your heart.”

[Translation By: Mrs. Pradhan, Loreto Convent School, Darjeeling, India]

Glossary of Local Terms Used

Anchal – zone

Anna – grain

Adhya – equal sharecropping

Bhaugolik simana – geographical borders

Byad – nursery

Bari – rainfed upland land

Chyang – fermented alcohol

Dhan – paddy

Dhido – pudding made from *kodo* flour cooked in water

Dharmik – religious

Gau – wheat

Gau Bikash Samithi – village development committees

Jat – caste

Janjati – indigenous nationalities i.e. “a tribe or community in the schedule having its own mother language, traditional rights and customs, distinct cultural identities, distinct social structure, and written and unwritten history” (Government of Nepal, 2002:32)

Katwal Pathi – caste-based service offering given once or twice a year to lower-caste household member for his/her service as a village informer.

Khetala – wage earning labourer

Kodo – finger millet

Krishi – agriculture

Machine – micro and macro mill for dehusking and grinding of cereal grains

Makai – maize

Mana – volume based unit of measurement of finger millet equivalent to 390 grams in weight

Mill – privately owned dehusking and grinding place with machines operating on electricity or diesel

Muri – volume based unit of measurement of finger millet equivalent to 62.4 kilograms in weight

Oda – ward

Pahko bari – slopy uncultivated land suitable for grazing animals

Parampara – traditions

Parma – practice of working on others' field in return for work on their own field

Pathi – volume based unit of measurement of finger millet equivalent to 3.12 kilograms in weight

Purush-pradhan – male dominated

Raksi – locally produced alcohol

Ropani – land area equivalent to 0.051 hectare

Sahakari – local cooperative

Sahu – moneylender

Seva Pathi – caste-based service offering given once or twice a year to lower-caste household member for his/her service as a tailor

Theka – fixed sharecropping

CHAPTER – I

INTRODUCTION

1.1 Background

Historically, human beings made use of approximately 40,000 to 100,000 plant species for various purposes like food, forage, and fuel, which over time have gradually declined to around 7,000 cultivable plant species (IPGRI, 2002). Although for generations humans have relied only on a few plant species for their survival (Prescott-Allen and Prescott-Allen, 1990), the increasing reliance on some thirty plant species – that have today become the basis of most of the world’s agriculture – has posed a threat to food security by constraining the existing food basket for people, especially the marginalized ones who have limited livelihood opportunities (IPGRI, 2002).

A previous assessment of food security by the Food and Agricultural Organization (FAO) indicated that in 2009, the incidence of undernourished people around the world was nearly 925 million, of which the developing countries accounted for an estimated 98 percent of the world’s undernourished people (FAO, 2010). Food security is a multifaceted concept that has “evolved, developed, multiplied and diversified” over time (Maxwell, 1996: 155). In the early 1970s, food insecurity was attributed to lack of food due to low food production. However, by the 1980s social scientists had started to argue that food insecurity arose not because of low production but because of lack of access to food (Sen, 1981; Maxwell and Smith, 1992). Today food security is realized when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life,” (FAO, 2010:8).

Current studies and research have shown that underutilized plant species have an important role to play in the lives of people, especially those belonging to the marginalized areas and marginalized sections of society (Giuliani, 2007). Some of the key characteristics of the underutilized and neglected plant species are their limited availability globally, and there is a dearth of information and knowledge regarding the economic potential of such plant species. In certain parts of the world these plant species are locally abundant and have a very high local use (Gruere et al., 2008). The uses of neglected and underutilized plant species by people, especially the poor, have social benefits (such as food), economic benefits (such as creating employment along the value chain) and environmental benefits (such as conserving biodiversity) (IPGRI, 2002; Will, 2008), all of which are capable of affecting their livelihoods and food security. However, the full potential of these plant species are yet to be realized (Jaenicke et al., 2006) because of numerous constraints associated with and concerning these plant species. These include: a lack of awareness amongst the producers and consumers of such plant species, a lack of markets and, even if markets exist, an absence of marketing facilities, a lack of policies, and information on the uses and benefits of these plant species (Jaenicke et al., 2006). Thus, an analysis of the potential of underutilized and neglected plant species in achieving food security and in generating livelihood becomes crucial.

1.2 Markets

There are various sources through which food can be acquired. Food can either be grown, bought through the medium of trade, acquired through the exchange of labour for wage, or through charity (Sen, 1981). Given this situation, markets can be seen to be playing an important role in providing access to food for people living in urban as well as

rural areas (Hebebrand and Wedding, 2010). But more often than not, in the context of food security markets are often not properly analyzed or reported (Bonnard and Sheahan, 2009).

For households producing their own food, the presence of markets enables them to purchase inputs, such as seeds and fertilizers essential for productivity growth from the markets. In addition, the existence of markets enables households to earn income by selling the produce in the markets (IFAD, 2003). For households that are not involved in producing their own food, the presence of markets enables them to buy their food requirements and other consumptive goods through incomes earned from agriculture as well as non-agricultural activities (IFAD, 2003). This situation could imply that the presence of markets contributes to enhancing food security and livelihood generation of the households in general.

A well-functioning competitive market is one where there are large number of buyers and sellers, where there is ease of market entry and exit, where there is availability of information about market conditions, absence of externalities and monopoly, where there is factor mobility and where the main objective is maximize profits (Ferguson, 1969; Koutsoyiannis, 1979). However, markets are not always perfectly competitive and they often fail to function as smoothly as theories suggest (DIDF, 2004). Numerous factors such as lack of information on market conditions of demand and supply, lack of market access, trade rules and government policies inhibit the efficient operations and functions of competitive markets (Albu and Griffiths, 2006). In a perfectly competitive market, the price for a commodity is determined by the existing demand and supply for that commodity in the market (Stigler and Sherwin, 1985) and reflecting on information

of demand and supply of these commodities, these prices are prone to fluctuate (DIDF, 2004). An increase in the prices of food may have a negative effect because of increased cost on those households that do not produce their own food but have to rely on markets for their food consumption, this may have a positive effect on the producers of food through increase in their income (Swinnen and Squicciarini, 2012). For the poor households in the rural and marginalized areas, lack of access to markets along with poor market structure, such as connecting roads, transportation facilities and store houses, have been a major constraint that affected their food and livelihood security (IFAD, 2003). In fact, the poor themselves have identified markets and market related issues as being critical factors that affected their livelihoods (Dorward et al., 2003).

In the case of the underutilized and neglected plant species, markets and market related problems, for example lack of market access, weak market demand, poor market structure, market incentives, and improper market chains have been identified as some of the many concerns that small-scale farmers face (Guiliani, 2007). All of these factors put constraints on the full utilization of such plant species by poor and marginalized households, thus affecting their livelihood and food security issues. An understanding of the markets and market relations concerning the underutilized and neglected plant species becomes imperative in examining the issues of food security and livelihood of the people associated with these plant species. This study focuses on the existing market for underutilized and neglected plant species – small millets – through a market chain analysis. Market chain is the link that connects all the actors and transactions involved in the movement of agricultural goods, giving us a “detailed understanding of the actors, activities, costs, and opportunities related to the flow of a particular product and

associated services, starting with farmer and ending with the targeted and/or consumers,” (Ferris et al., 2006: 78).

Small millets, also referred to as “coarse grains” (Gruere et al., 2007) are those plant species that can grow in some of the most unfavorable conditions such as infertile soil or with little rainfall, and are highly valued both as food crops for humans and fodder for animals (Ravi et al., 2010). To undertake such market chain analysis of small millets in relation to food security and livelihoods, a deeper understanding of the market actors, be it the primary producers, traders, sellers and consumers in terms of their entitlement, endowment and capability, is necessary because according to Sen (1987), it is not the lack of food but rather the access to food that determined food security, which in turn is a function of an individual’s entitlement, endowment, and capability as described below.

1.3 Entitlement, endowment and capability

Food insecurity does not necessarily arise from inadequate food production as had been thought earlier (World Bank, 1986). In 1987, Sen argued that although there is no one fundamental cause of food insecurity, the inability of the people, especially the poor, to access food is at the core of the food security problem (Sen, 1987). The access to food simply refers to the access to adequate resources by all individuals and households to obtain appropriate food for a nutritious diet (Stamoulis and Zezza, 2003). According to Sen (1987), the inability to access food by an individual or household can be looked at as a failure of the individual’s or household’s endowment and entitlement (Sen, 1987). Riely et al. (1999) added that the access to food was dependent on the “physical, social and policy environment,” as these, in turn, determined the ability of households to use their resources to the optimum for achieving food security (Riely et al., 1999:14).

An endowment is defined as a combination of resources or assets that an individual or household owns, i.e. the “original bundle of ownership” such as land, labour, or skill, and an entitlement is defined as “a set of different alternative commodity bundles” which an individual has command over (Sen, 1987:8). The distribution of endowments amongst the individuals or households depends on the “social relations of property, production and exchange,” (Bernstein, 1994: 4). An individual or household has the right to their resources (i.e. endowments) because they either own those resources, or have been bought by them through exchange, or have been given to them as inheritance, aid or charity (Sen, 1981). These resources, which are simply endowments that are then converted into commodities by what we call “entitlement mapping,” are further exchanged for other commodities (say food) either through the medium of trade or production or labor service, or transfer in a market economy (Sen, 1981). Entitlement mapping is the rate at which the resources of the endowment set can be converted into goods and services included in the entitlement set (Osmani, 1993: 4). Individuals or households that do not have enough endowments or have suffered loss of endowments are more vulnerable to food insecurity because of their entitlement failure (Bernstein, 1994). Thus, in the context of food security, the two important determinants influencing the level of access to food of the individuals or households are the endowment set and the entitlement mapping (Sen, 1981; Osmani, 1995).

Capability on the other hand comprises what individuals or households can effectively “do and be” (Sen, 1987), for example, to be well nourished, be respected, be educated (Sen, 1997). These “doings and beings,” what individuals or households manage to do or be, are termed as the “functionings” (Sen, 1990). An individual draws on

their bundle of endowment and entitlement in order to achieve the functionings. Thus, an initial poor set of endowments results in restraining the process of entitlement mapping, inhibits individuals' ability to functioning that they value, which leads to a capability failure. Therefore, failure in the endowment-entitlement relation of an individual or household severely affects their "capability to functionings."

But more often than not, the endowment set of marginalized communities and/or people belonging to marginalized and rural areas are almost non-existent. To enhance their capability for a better life can be a challenge in itself. In terms of small millets, individuals or households can access food by using their endowed resources either directly through production or indirectly through exchange and transfer. Here the presence of markets becomes crucial because the direct and the indirect processes of using the resources to acquire food by the individuals or households have to transpire through the medium of markets. The primary producers of small millets require inputs such as seeds and fertilizers for improved production, which can be obtained primarily through the markets. In addition, markets also serve as a venue for the producers to sell their produce and for consumers to buy the product. Hence, this research intends to focus on how markets acts as a medium to facilitate small millets-based livelihood and food security of the people of the proposed study areas.

1.4 Women

Women have played a significant role in the development of agriculture across the world. Women still continue to play a pivotal role in the expansion of the agricultural sector, especially in developing countries (Quisumbing and Meinzen-Dick, 2001). Women have a central role in managing households and can be considered guardians of

household food and nutrition security (Gittinger et al., 1990). Women are involved in generating income from farm sources and also generating alternative income from non-farm sources, such as livestock rearing, making hand loom and handicraft products or working as labourers during non-farm seasons (Gittinger et al., 1990). Their role in generating household livelihood – earning income, food production, managing natural resources and taking care of the household food and nutrition security is widely acknowledged in the literature (Gittinger et al., 1990; Quisumbing and Meinzen-Dick, 2001; Quisumbing and Pandolfelli, 2009; FAO, 2011). Given their role in the livelihood generation and given the current scenario of food security being looked upon as a subset of livelihood (Maxwell and Smith, 1992), understanding the complexities associated with food security is incomplete without a pre-understanding of the livelihoods in general and women in particular. Thus, a focus on women also becomes essential for this research.

However, more often than not, women's contribution to the household livelihood generation is ignored and they still continue to remain marginalized, especially in the developing countries. Further, women's role in the agricultural sector is still confined to more arduous and economically less productive activities (Quisumbing and Meinzen-Dick, 2001). The role and contribution of women towards household livelihood generation and provisioning of food and nutritional security has largely remained unreported. There are many factors such as traditional barriers and social and political norms which limit women's endowments, restrains their ability to enhance their capabilities, and most important of all, inhibits their entitlement (Quisumbing and Meinzen-Dick, 2001). These factors as mentioned above together are considered as the gender gap and, in order to achieve food security, it is imperative to address this gap.

Empowering women to enhance their own capabilities, develop their endowments and ensuring their right to access various resources through strengthening the entitlements is necessary to not just ensuring food security, but is also critical in promoting sustainable and equitable livelihood options (Quisumbing and Pandolfelli, 2009). For this study, understanding the role of women in terms of small millets-based food security, livelihood generation, endowments, entitlement, and capabilities will be critical to developing a general understanding of small millets-based food security issues in the study area.

1.5 Research context

Food security has been a major area of concern for Nepal for over three decades. Ranked as the poorest country in South Asia and the 13th poorest country in the world, Nepal is characterized as a low income, food deficit and a least developed country (FAO, 1996a). From being self-sufficient in food to a net exporter of food until the late 1970s, Nepal became a net importer of food after the early 1980s (Joshi et al., 2010). It was only post 1990s that Nepal saw some improvements in its total food production, where the aggregate food supply was regarded adequate enough to fulfill the requirement of the country's population (CBS, 2003). In spite of such stated improvements, out of the 75 districts that make up Nepal, forty districts still suffered from acute food shortages in the fiscal year 2008-2009 and 2009-2010 (MAC and WFP, 2010). One of the factors that aggravate the problem of food security in Nepal is its ecological setting that has led to poorly developed transportation network, higher prices, lack of market access and lack of irrigation facilities (Pyakuryal et al., 2005).

Agricultural crops in Nepal, whether they are major crops or underutilized and neglected plant species, depend on the geographic, climatic and socio-economic factors:

altitude, rainfall and temperature, irrigation, transport facilities, labour availability, and ethno-social behavior of the farmers. The significance of underutilized and neglected plant species in ensuring adequate and nutritious food source has been long recognized in various studies for over two decades (ARPP, 1985; IDRC, 1986; Padulosi et al., 2002; FAO, 2010). In Nepal, small millets such as finger millet are considered the fourth largest cereal crop grown in the hills and mountain regions (GoN, 2011). Small millets are a reliable source of food and fodder for households in the hill and mountain regions of Nepal (MAC and WFP, 2010). However, because they still fail to receive any priority as other dominant crops of Nepal such as rice, wheat and maize in the policies (ABTRACO, 2006), are considered to be lower caste food (Prasad et al., 2010). No systematic effort was made with respect to conservation and promotion (Bhandari et al., 2010) as well as in “research, extensions and market promotion activities” (Joshi and Thakur (2002) in Bhandari et al., 2010:171). The potential and the gains accrued from them in ensuring food security is limited.

Given this context, this research will examine the importance of markets for small millets in understanding food security and livelihood of the people of the proposed study areas in Nepal, and discuss the findings in terms of entitlement, endowment and capability. In addition, this research will focus on the existing agricultural policies, as understanding such policies would further enable understanding of factors directly or indirectly affecting small millet-based food and livelihood security, and the existing markets for small millets.

1.6 Purpose and objectives

Having briefly discussed the research context, the purpose of this study will be to understand the significance of small millets in strengthening the food and livelihood security for households, with focus on the existing small millets market and women in Dhikur Pokhari Village Development Committee, in Nepal.

The objectives of this research are:

1. To understand the importance of small millets in household livelihoods of the people in Dhikur Pokhari VDC.
2. To examine the role of women in achieving food and livelihood security through the cultivation of small millets.
3. To analyze the existing formal and informal market for small millet and understand the constraints and opportunities that influence this market.
4. To review the existing agricultural policies and examine their effect on small millet-based markets, food security and livelihood enhancement.

1.7 Research design

I undertook a qualitative research design, as it enabled me to work on the field site, closely with the participants in collecting data, and further enabled me to encourage participant involvement in the process (Creswell, 2003, 2009). A qualitative research allowed me to explore and understand the complex social and human problems associated holistically (Creswell, 2007). In order to examine the issues and complexities associated with understanding small millets-based markets, livelihood and food security, a qualitative research design suited my needs because this research design assisted me in getting people's perceptions, experiences and interpretations that they have on the issues mentioned above (Creswell, 2009).

As a strategy of inquiry, I adopted a case study approach, as it allowed me to focus on the issues of food and livelihood security of the selected study sites in-depth, with a better understanding of the “why and how” of the issues in context. Three study areas had been identified by the project partner – Local Initiative for Biodiversity Research Development Organization (LI-BIRD) – in Nepal, from which I selected the Dhikur Pokhari Village Development Committee as my case study site. A detailed criteria for the site selection has been listed in section 3.3 of Chapter III of the thesis.

For data collection, I conducted semi-structured interviews involving a set of open-ended questions that allowed for spontaneous and in-depth responses (Yin, 2009). The respondents included community households with community members such as farmers, and non-farmers such as middlemen, shopkeepers and mill owners, and government employees. I reviewed documents including policy documents and research publications, which together with the interviews, provided information on people’s perceptions, feelings, historical context and evidence (Creswell, 2009) on issues relating to small millets-based food and livelihood security.

I undertook an extensive market chain analysis, which included a value chain analysis of small millets in order to obtain a “detailed understanding of the actors, activities, costs, and opportunities related to the flow of a particular product and associated services, starting with farmer and ending with the targeted and/or consumers,” (Ferris et al., 2006: 78). I also examined in the context of markets, its significance, various activities associated with it, and the advantages and constraints that local people face with regards to production, consumption and distribution of small millets (Giuliani, 2007). The steps in conducting the market chain analysis involved collection of primary

and secondary data, and review of trends by interviewing the market chain actors (Ferris et al., 2006). In order to facilitate greater critical comments from study participants than interviews usually permit, I further conducted focus group discussions with the locals, in consultation and collaboration with LI-BIRD organization. This reinforced my choice of research paradigm, because focus group discussions can also be used as a tool to empower the research participants by making them a part of the research analysis (Kitzinger, 1995). Finally, I used secondary data sources such as books, reports, publications, local newspapers, and data from LI-BIRD organization for verifying and analyzing the collected data.

For any qualitative study to be considered credible, the collected data and the interpretations derived from the same need to go through a process of validation. Certain procedures had been established for the validation of this study: member checking, triangulation, peer reviews, and external audits (Creswell and Miller 2000; Creswell 2003). The validation of the collected data was done using: notes and observations from the field, focus group discussion that was conducted towards the end of my fieldwork, inputs from LI-BIRD, and from the numerous casual conversations with the community people throughout my stay in the field. I integrated my findings and analysis in terms of the endowment, entitlement, and capability of a household, and I have tried to use it to contribute to the existing body of literature.

1.8 Research significance

This research was a part of the greater Canadian International Food Security Research Fund (CIFSRF) project “Revalorizing small millets: Enhancing the food and nutritional security of women and children in rainfed regions of South Asia, using

underutilized species” (RESMISA). Given the major objective of the RESMISA project – “... to increase production and daily consumption of nutritious small millets, pulses, and oil seeds in rainfed regions of India, Nepal and Sri Lanka,” the findings from my research contribute by providing grassroots level information regarding endowments, entitlements, and capabilities of the local households engaged in the cultivation of small millets, and places this information in the unique context of their socio-economic, cultural and traditional background. To sum this up, my study draws the link between small millets, food security, livelihood generation, markets, the existing agricultural policies and the social context in the study area.

With regards to the specific objectives of the RESMISA project, this study directly links up to the specific project objective:

iv) to revitalize indigenous knowledge and sociocultural practices that augment cultivation, processing, storage, and utilization of small millets.

This study documents the significance of small millets in ensuring food security and livelihood generation in the study area and hence, it contributes in understanding the existing small millet-based agricultural and non-agricultural practices and, thus, livelihoods of the local households. This study directly highlights the “ecology of practice” in the study area and unravels the forces that are shaping or driving changes in the sociocultural, economic and livelihood scenario. The focus on women was included keeping in tune with the broader project objective, and contributes by providing in-depth information on the role of women in the socio-cultural, traditional, and agricultural context, which enriches the data on the “ecology of practice.”

This study also directly links to the specific project objective:

v) to enhance the consumption and social status of small millets as wholesome foods in rural and urban settings.

The findings related to the small millet markets, market constraints, and opportunities shed light on the existing small millet-based formal and informal markets, and the prevalent market conditions in the study area. The qualitative findings regarding the causes leading to the low production and low consumption of small millets, the traditional beliefs and practices associated with small millets among the households belonging to different castes, and the cultural significance of small millets could provide meaningful insights and information into the current status of small millets in the study area. In addition, findings from the market and value chain analysis could not only provide grassroots level contextual information regarding the existing market and value chain, but also information regarding the market actors through focus on the endowment, entitlement, and capability of the local participant households. These findings could provide useful background information that could aid in the achievement of Objective V of the RESMISA project in the long run.

This study used A. K. Sen's entitlement approach and capability approach as a theoretical basis for understanding the household's endowments, entitlement, and capability relationship to small millet-based food security and livelihood generation. The focus on the endowments, entitlements, and capabilities of the participant households could, in turn, provide a fair idea of what the local households have (endowments), what they can have (entitlements), and what they aspire to "be or do" (capability), especially while considering the second objective of developing sustainable agricultural kits – be it

in terms of technology or knowledge – and the third objective of developing appropriate post harvest technologies in the study area.

For the study area in general, the practical significance of this research is considerable as the hill regions of Nepal are rich in terms of socio-cultural diversity and bio-diversity. The findings from this study will contribute in understanding the role played by small millets in ensuring economic diversity. In the short run, this study will help to promote the dissemination of knowledge regarding small millets and its role in livelihood generation to these communities and promote/help the local communities, to develop marketing networks. In the long run, this study will help lay down the foundation for development of a framework by the greater project proponents for strengthening small millets-based livelihood options through strengthening the existing market networks.

1.9 Organization of thesis

The thesis has been organized into six chapters. Following the Introduction, Chapter II examines the literature on food security and Sen's endowment, entitlement and capability concepts. It briefly describes the concept of livelihoods and, in addition, focuses on the role and relationship of women and markets regarding small millets-based food security and livelihood generation. The chapter describes in detail various concepts and issues relating to rural markets and highlights the enabling or constraining factors that impact the market for small millets. Chapter III concerns the research methods, and includes discussions on data collection tools, the data analysis approach, data validation and the dissemination of data. Chapter IV begins with the description of the study area in detail and includes the "ecology of practice" relating to small millets production in the study area. Further, this chapter discusses the significance of small millets in food and

livelihood security in the study area. Chapter V discusses the existing markets relating to small millet, and various enabling and constraining factors relating to small millets have been discussed in detail with reference to the literature. Chapter VI summarizes the findings from the study and lays out possible roadmaps that could ensure promotion of small millets-based food and livelihood security.

1.10 Limitations

The main purpose of this research was to study small millet-based food security with focus on the women, and markets for small millets in the Dhikur Pokhari VDC located in the Kaski district of Nepal. However, understanding the issues relating to food security at the household level could not be undertaken without understanding the livelihoods of the concerned households. As mentioned in the literature review sections in Chapter II, this research has incorporated a small section on livelihoods for better understanding of the ability of households to access food. This research did not go into the details of livelihood approach analysis but has incorporated only those aspects as deemed suitable for this research. Further, the market for small millets outside Dhikur Pokhari was not explored in depth; hence the market complexities only refer to the issues that relate to Dhikur Pokhari VDC. Finally, the focus was on understanding food security, and issues pertaining to nutritional security were beyond the scope of this study.

CHAPTER– II

FOOD SECURITY - ENTITLEMENT, ENDOWMENT AND CAPABILITY

2.1 Underutilized and neglected species

Often referred to as “minor, orphan, neglected, underexploited, underdeveloped, lost, new, novel, promising, alternative, local, traditional and niche crops,” underutilized plant species have been defined and interpreted in many ways (Padulosi et al., 2002: 325). The term “underutilized” is used to refer to those plant species, which were widely grown in the past, but not at present for various reasons relating to economics and agronomics; the term “neglected” refers to those plant species that have created a special niche in the lives of rural farmers who still cultivate them, yet have received much less attention from a research and development perspective (Padulosi et al., 2002). Underutilized and neglected plant species are globally scarce but locally abundant because local people and local communities value such plant species as sources of food, income and nutrition (Gruere et al., 2006). Although scientific information and research regarding these plant species have been negligible, their uses have enormous social benefits (such as food security), economic benefits (such as creating employment along the value chain), and environmental benefits (such as conserving biodiversity), (IPGRI, 2002; Will, 2008), particularly in the poor and marginalized areas of developing countries. By “poor” we mean “members of particular classes, belonging to particular occupational group, having different ownership endowments, and being governed by rather different entitlement relations,” (Sen, 1981: 156).

These plant species habitually are grown in marginal areas where yields are severely reduced due to lack of irrigation facilities, climatic stress, fragile soils, and non-

existent or fragile infrastructure, where people continue to resort to traditional forms of agricultural practices in the absence of modern technology (McNeely and Schutyser, 2003). Their remarkable ability to adapt to agro-ecological niches and marginal areas make such plant species ideal for expanding the existing food basket for poor people, providing significant contribution to diet and nutrition, and contributing to their livelihood through their income and employment generating potential, both for rural and urban households (Williams and Haq, undated). However, despite these benefits, such plant species do not have high income-generating commercial value; in fact, they face weak demand in the market and thus lag behind in regional, national, and international trade (Gruere et al., 2006). Termed as “God’s Own crop,” millets are one example of underutilized and neglected plant species (MNI, 2008).

2.2 Millets

Millets are the most ecologically adaptable crop as they can withstand droughts and extreme heat, stress from moisture and temperature variation, heavy to sandy infertile soils with poor water holding capacity, degrees of soil acidity and alkalinity and precipitation variation (Sampath et al., 1989: 33; Weber and Fuller, 2006); thus, millets can be cultivated in a wide range of environmental conditions. Their high adaptability is primarily due to strong, deep root systems, which possess an incredible ability to extract moisture from the soil (FAO, 1996b). Despite these properties, millets are often referred to as a “poor man’s cereal,” (Mangay et al., 1957); they are not usually preferred over other cereals, such as rice and wheat, even though they have several advantages over other grains. The low preference for millets can be due to: a lack of awareness amongst the producers and consumers about their nutritional components, deep rooted social

perceptions about millets as low status food, a lack of policies oriented towards millets, and a lack of market (Weber and Fuller, 2006). Millets have never been looked upon as a primary food, even though their use and cultivation date back to prehistoric times (Weber and Fuller, 2006).

Millets can be separated into two categories, “major” millets and “minor” millets – depending on their commercial significance in terms of the area in which they are cultivated, the quantity produced and consumed, and on the degree of research (Nagarajan and Smale, 2006). This research will limit the focus on minor millets, also referred to as small millets. Typical to the characteristics of the underutilized and neglected plant species, the potential value of small millets is underestimated by its observed value (Gruere et al., 2006). Further, Gruere et al (2007) identified a weak demand due to various factors like incomplete information amongst the market actors, quality of the product, and cheaper substitutes. Other factors for this observed low value for small millets include inefficient supply due to lack of credit, physical infrastructure, and poor marketing channel and a combination of both weak demand and inefficient supply (Gruere et al., 2007).

Largely grown by the poor under difficult conditions in marginalized areas of developing countries, small millets have several advantages over other grains (Sharma and Barthakur, 2006). Their short growth duration of three months paves the way for early maturity and encourages poor farmers to undertake multiple cropping. Millets’ wide adaptability to low rainfall and periodic drought as well as moisture and climatic variation makes them a reliable source of food for people (particularly during drought seasons) and fodder for animals (Ramprasad and Gowda, 2004). Millets are a rich source

of micro nutrition, the outer layer of the endosperm and the embryo of the seed containing high protein, fats, calcium and minerals; minor millets can thus help to alleviate the widespread prevalence of malnutrition (Sampath et al., 1989; Ramprasad and Gowda, 2004; Sharma and Barthakur, 2006). Millets are very robust and less prone to diseases and pests. In addition, millets require minimal use of chemical fertilizers and pesticides for their growth. As such, the significance of small millets for food security is undisputed in poor and marginalized households.

Nepal is home to major millets such as sorghum and small (minor) millets such as finger millet, proso millet and foxtail millet (Khadka, 1987). However, of the three small millets, finger millet holds the prominent place, ranking fourth in area, production and yield to paddy, maize and wheat in Nepal (GoN, 2011) with a contribution to Nepal's national cereal production by 4% (MAC and WFP, 2010). Grown as a major crop in the mountain regions of Nepal and as a relay crop after maize in the hill regions of Nepal, small millets have a significant role in ensuring food security to poor people living in marginalized areas of the mountain and the hill regions of Nepal (MAC and WFP, 2010). The remarkable ability in adapting to higher altitudes, temperature fluctuations, severe rain, droughts, and soil conditions (Ravi, 2004) makes small millets a reliable source of food, particularly for poor people living in marginalized areas of the hill and mountain regions of Nepal.

However, despite the potential and gains from small millets, they still fail to receive the same priority as other dominant crops of Nepal: rice, wheat, and maize in the governing policies (ABTRACO, 2006). In fact, even though it is the fourth cereal crop after paddy, maize, and wheat, not much research has been conducted with regards to

improving millets marketing and commercialization (Adhikari, 2012). Various factors such as lack of information, awareness about their nutritional components, proper transportation networks, organized markets are not well known to policy makers and other stakeholders in Nepal. Full appreciation and understanding of the importance of underutilized and neglected plant species such as small millets has not yet occurred (ABTRACO, 2006). In fact, amongst the four-cereal crop (rice, wheat, maize and millets), the most preferred crop in Nepal is rice; the increasing popularity can be attributed to changes in the consumption behaviors and increased purchasing power due to more income from sources other than agriculture (WFP, 2007). In Nepal, small millets are mainly used as *dhido* (pudding made from mixing small millet flour with water), *roti* (chapati), *khole* (thin porridge made of small millet flour with water or milk), *raksi* (local alcohol made from small millets) and animal feed (Adhikari, 2012).

2.3 Food security

The concept of food security gained momentum and importance mostly after the World Food Conference of 1974 (Maxwell, 1996; Ayalew, 1997). Initially, food insecurity was mainly looked upon as a problem of food supply at national and global levels, fundamentally due to the 1972-74-world food crisis (Maxwell, 1996; Frankenberger and McCaston, 1998). It was chiefly concerned with the availability of food and the stability of national and international prices of basic food (Clay, 2002). However, after the incidence of the mid-1980 African food crisis, the concept of food security saw huge paradigm shifts (Frankenberger and McCaston, 1998) from a supply-oriented focus to an emphasis on food access and other aspect of food security; thus, attention moved from global and national levels to household and individual levels

(Maxwell, 1996). This paradigm shift occurred after Sen's seminal work on poverty and famine in 1981 where he argued that famines were caused, not by low food production and lack of availability, but because of the lack of access to food. Today, the widely accepted definition of food security is when "all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life," (FAO, 2010:8). The core elements or components of this definition have been identified as food availability, food access and food utilization (Stamoulis and Zezza, 2003).

- Food availability refers to the availability of sufficient quantities of food to individuals supplied either through domestic production, commercial imports or food aid.
- Food access refers to the access to adequate resources by all individuals and households to obtain appropriate food for nutritious diets.
- Food utilization refers to the proper biological use of food that an individual consumes and is determined by various factors like knowledge, practices, beliefs, eating habits, hygiene, sanitation and health.
- Stability refers to being able to satisfy the above three elements or to be able to have access to food over a long period of time without being affected by climatic, political and economic instability (Maxwell and Frankenberger, 1992; FAO, 2008).

The concept of food security has been divided into two types; depending on how long a household cannot meet the above elements of food security. A household's inability to access food for a short period of time because of instability in food prices, food production or households incomes gives rise to transitory food insecurity (World Bank, 1986); a continual inability of households to access food over a sustained period of time gives rise to chronic food insecurity (Maxwell and Frankenberger, 1992). Maxwell

and Frankenberger (1992) further add that unforeseen and unpredictable events affecting the ability of households to access food cause food insecurity for a limited duration referred to as temporary food insecurity. The recurrence of food scarcity of specific durations on a regular basis gives rise to seasonal food insecurity.

It must be noted that there are many concerns, ambiguities and debates regarding the unit of analysis concerning food security on global, household or individual levels (Maxwell, 1996). For this study, the researcher will focus on the household as a unit of analysis of food security. McCalla (1999) has said that food production and supplies, even though sufficient at national and global levels, do not ensure food security at a household level. Analysis at a household level allows for finding out how members of a household produce or acquire food throughout the year, overcome seasonal food shortages, store and preserve their food, and distribute food (Callens and Seiffert, 2003). In addition, a household unit of analysis focuses on a “common set of preferences in terms of resource allocation” and the “maximization of collective welfare through pooled incomes and food resources” (Maxwell and Smith, 1992: 19). But more often than not, members of households may also have different preferences and priorities concerning production, distribution, consumption, utilization and acquisition of food and income. These varying attitudes give rise to inequitable and inadequate access to food by all members of the household (Maxwell and Frankenberger, 1992).

In taking the household as the unit of analysis for food security and livelihood, it is pertinent to understand the factors affecting a household’s ability to secure food and livelihood. Household food security is not only affected by the availability of food, but also by the ability of the household to access food as determined by household’s assets

such as land, income, and labour (FAO, 1997). Riely et al (1999) argued that the ability of households to maximize assets to achieve food security was further determined by the physical, social and policy environment, (Riely et al., 1999). Thus the focus of this research specifically will be on socioeconomic factors of endowment, entitlement, and capability of the households with small millet-based livelihood and food security. Researchers and development practitioners have accepted that food insecurity occurs in situations where the household's entitlement to food is eroded or reduced (Borton and Shoham, 1991). Entitlements are derived from endowments and transformed into capabilities. A brief discussion of these factors at a household level becomes relevant in order to understand a small millets-based livelihood and food security. Before discussing food security in terms of endowment, entitlement and capability, a brief look at Nepal and its food security scenario is necessary.

Nepal suffered from a food crisis in the early 1980s during which 50 out of the 75 districts were severely hit by food shortages (Khadka, 1985). The food deficit situation continues to prevail even today in Nepal with 40 districts still suffering from food shortages (MAC and WFP, 2010). The majority of Nepalese households dependent on agriculture are net consumers – what they produce is entirely consumed by themselves. Mostly it is the people in the hill and the mountain regions who suffer from food insecurity, especially during winter and early spring (ABTRACO, 2006). As compared to national levels, food insecurity is experienced by and large at household levels, especially in the hill and mountain regions (Pyakurel, 2010). Some researchers point out that the harsh geographic, climatic and topographical conditions of the mountain and hill regions constrained the introduction of green revolution technologies and irrigation facilities.

These systems were, in turn, largely confined to the *Terai* region (Cruz and Gibbs, 1990). According to Adhikari and Bohle (1999), households solely dependent on agriculture for their sustenance in Nepal are food secure from their own farm production for six to seven months and they have to depend on other sources of income for the remaining months (National Planning Commission, 2005). In addition, the overused and fragmented agricultural lands are continuously constrained by the increasing population of Nepal (Cruz and Gibbs, 1990). In fact, Nepal is considered the only country in South Asia where population growth surpasses the growth of cereal production. Consequently, Nepal faces difficulties in meeting its domestic demand for cereal requirement (IFPRI, 2010).

2.4 Entitlement, endowment and capabilities

Famines and hunger are seen as a result of the deep-rooted food insecurity (Ayalew, 1997). Prior to the seminal publication on poverty and famine by Amartya Sen, it was widely believed that famine and starvation occurred predominantly because of deficient food production, an inadequate supply of food, a shortage of income, or a low purchasing power (Toufique, 2001). Sen argued that the overriding determinant of famines and starvation was not food production or food supply, but access to food (Sen, 1981). In ensuring food security, access to food is dependent on physical, social and policy factors (Riely et al., 1999). Therefore, I will start with the introduction of the concepts of endowment and entitlement. These concepts provide a better understanding of the structure of resource ownership and the process by which it transforms into commodities that will further ensure food security and generate livelihood.

Sen coined the term “endowment” in his analysis of poverty and famine to signify a combination of resources or assets that an individual owns, in other words, the

individual's initial or the original bundle of ownership (Sen, 1987). A person's asset bundle includes both the tangible assets, such as land, equipment and animals, as well as intangible assets, such as knowledge, skill and labour power legally owned by the individual (Osmani in Clark 2006). Intangible assets include claims as well as access to tangible assets (Conway, 1998); this ownership of resources actually serves as the basis for entitlement. On the other hand an entitlement is defined as the set of different alternative commodity bundles that an individual – with their respective positions in the society or community – can obtain from numerous legal channels (Sen, 1981). It is a set of commodities over which individuals have command through their right, or possession, purchase, gift, or acquisition (Sen, 1981). In the words of Leach et al (1997: 15), entitlement refers to the range of possibilities that people can have. What a person can achieve with a given set of entitlement depends on personal and individual characteristics as well as the individual's immediate environment, such as customs, welfare transfers, and political conditions (Widiadi, 2008). Individuals can exchange the commodities that they own for other commodities through the medium of trade, production, their own labor, or through transfer in a market economy. Such sets of commodities, which an individual can acquire in exchange for what he owns, are called "exchange entitlements". The relationship between the endowment set and the entitlement set defines their "exchange entitlement mapping" (Sen, 1981). The exchange entitlement mapping shows "the rates at which the resources of the endowment set can be converted into goods and services" that are included in the entitlement set (Osmani, 1993:4) and depends upon the legal, political, economic and social characteristics of the society in question and the person's position in it (Sen, 1981).

Further, an individual's entitlement is determined by what an individual initially owns and what he/she can acquire through exchange (Dreze and Sen, 2006), in other words, their endowments and exchange entitlement mapping (Murugan, 2003). An entitlement failure occurs when the endowment set of an individual is reduced, when there is some adverse change in the entitlement mapping, or a combination of the two (Sen, 1981, Osmani, 1993, Dreze and Sen, 2006). Sen (1981) points out that the shrinking of endowments - especially in developing countries amongst the rural poor - leads to starvation because the reduction or loss of asset constrains the ability of the individual to exchange his/her asset directly with food and also limits the ability of the individual to borrow against his/her future earnings. Therefore, in the context of famine, Sen argues that an individual's ability to command food depends on his/her endowments and exchange entitlement mapping, and that decline in either of their endowment or exchange entitlement mapping will lead to starvation (Sen, 1981). Thus, the people's endowment and exchange entitlements reflect their ability to acquire food (Murugan, 2003). Therefore the main challenge that arises is to ensure people's access to food (Sen, 1981) and proper nutritional status in order to alleviate food insecurity.

In addition to issues relating to food insecurity in terms of entitlements and endowments, the focus has, in the recent years, turned to the concept of livelihood. Researchers observed that during the Darfur famine in the mid 1980s, people chose to go hungry in order to preserve their assets and livelihoods. This action strengthens the proposition that food security is only a part of livelihood strategy and it must be understood in the context of livelihood (De Wall, 1989; Conway, 1998). In the current scenario, food security is looked upon as a subset of livelihood (Maxwell and Smith,

1992); in order to understand the complexities associated with food security, a prior understanding of people's livelihoods is necessary. Sheddon and Adhikari (2003) add that an analysis of the livelihoods of households will give a better understanding of the constraints and opportunities that households face while considering different strategies for securing livelihood; accordingly they determine the household's ability to access food to achieve food security.

Nepal is predominantly an agricultural country with an agricultural sector that accounts for around 35% of the country's Gross Domestic Product (CBS, 2010). The geographical features that divide Nepal into three regions make agricultural cultivation difficult because the climatic conditions are not conducive and growing seasons are shorter than in the plains and fields both of which become more sloped with increasing altitudes (Agostinucchi and Loseby, 2008, CBS, 2006). Despite this difficulty, more than 88% of the Nepalese depend on agriculture for their livelihood (ANZDEC, 2003). This dependence of the Nepalese people on agriculture makes land one of the most important resources or assets in its agrarian economy, for possession of it offers the people economic and food security (Pyakuryal et al. 2005). However land available for agriculture and habitation is limited due to the harsh topography of rugged terrains, mountains, steep slopes, and increasing altitude (Shrestha, 2004). Thus, only about 17% of the total area of Nepal is suitable for agriculture (FAO, 2007). The average size of landholding in Nepal is small, around 0.80 hectares per household (CBS, 2003a). Land ownership and land distribution are highly uneven. The bottom 40 percent of agricultural households operates on nine percent of the total agricultural land area; the top 6 percent operates on more than 33 percent (Pant, 2003). This scarcity of arable land for cultivation

is considered to be one of the reasons for low agricultural performance in Nepal (FAO, 2007). An increase in the production of basic crops and other commodities from the limited arable land is possible through higher yields per unit of land and better post-harvest management (CBS, 2003b).

Accordingly, for households depending on agriculture for their sustenance, land can be considered the main endowment. Thus, every activity related to land determines households' entitlements and capabilities, both of which are then converted into achieving food and livelihood security.

2.5 Women- Endowments, entitlements and capabilities

The gender gap has been recognized as an impediment to promoting sustainable livelihood and ensuring food and nutritional security in developing countries (Ramachandran, 2007). Acknowledging the fact that gender “matters” there has been a widespread effort in internalizing gender issues in all developmental efforts (Ramachandran, 2007; Quisumbing and Pandolfelli, 2009). Nonetheless women in developing countries continue to face constraints that hinder their accessibility to productive assets, inputs and employment opportunities despite efforts from various quarters (FAO, 2011). These issues can be broadly categorized as failures of various kinds and have been briefly highlighted in the following sections:

2.5.1 Endowment failure

Women in the rural parts of developing countries are basically engaged in agricultural activities for their subsistence and the livelihood generated for their household. However, one of the major drawbacks that women in the rural parts of developing countries face is the lack of endowments or various assets and capital – such as human, natural, physical, and financial – which makes their gender more vulnerable to

shocks and stresses in comparison to men (FAO, 2011). For instance, land is one of the most important factors for ensuring food production and food security; is either owned or controlled by men. In such a case, a woman is prevented from accessing further endowments – such as financial assistance through a loan – even if it is sought to improve productivity on the said land (Quisumbing and Meinzen-Dick, 2001).

Moreover, in the context of a developing country, women's lack of access to productive resources may occur because of endowment failure in the form of a lack of financial autonomy; this situation often compels women to remain subjugated to the men in their family (Ramachandran, 2007). Furthermore, another classic example of endowment failure can be found in the case household decision-making. In the rural areas where the family is more patriarchal in nature, the decision-making power within a family on any aspect of household often resides with the men in the family and women are often not a part of any decision-making. A lack of involvement in the decision-making makes women more susceptible to various shocks and stresses and can affect their food and nutritional security status (Ramachandran, 2007; FAO, 2011). Over 80 percent of economically active women work in the agricultural sector in Nepal. However, they have very limited access to resources; in fact, their actual control over these resources that they can access is even more limited (Upadhya, 1993; NPC, 2005), which is another case of endowment failure.

2.5.2 Capability failure

In developing countries, one of the areas where gender bias is critically reflected is in terms of women's capabilities. A male dominated society as well as a lack of basic education, financial independence, technical knowledge, and information all contributes to capability failure in women (Gittinger et al., 1990). A lack of basic education

contributes negatively towards developing capabilities in women; it prevents women from accessing many opportunities from which they could benefit (Quisumbing and Pandolfelli, 2009). A lack of education leads to an incapability to understand modern farming practices. Technological know-how is also limited; not only does this disadvantage reflect poor farming practices, but it exposes women to food and nutritional insecurity. Further, this lack of capability inhibits women from accessing market information which can mark the difference between their getting a good price for their produce or getting some input at a fair cost/price. This limitation leads to the waste of an existing resource base, further impedes sustainable livelihood and can cause food insecurity (Quisumbing and Pandolfelli, 2009).

In the context of a developing country, more in a rural community usually get married at a very early age and are expected to take over family and household responsibilities, even before they attain maturity (Gittinger et al., 1990). This common practice marks capability failure on the part of the rural populace to understand the risks of exposing a young child to various forms of disease and reduction in agricultural productivity (Quisumbing and Pandolfelli, 2009). Tragically, this continues to threaten the majority of women in rural areas. That said, it is also important to acknowledge that, in the past two decades, there have been substantial improvements in terms of education for female children, and prevention of early childhood marriages (Quisumbing and Meinzen-Dick, 2001). These efforts have contributed towards improving livelihood opportunities across the rural parts of developing countries; however much remains to be achieved. Unless a concentrated focus is directed towards developing women's capabilities, ushering in sustainable agriculture as well as promoting equitable food and

nutritional security among the rural poor may continue to remain a distant dream (Quisumbing and Meinzen-Dick, 2001).

2.5.3 Entitlement failure

One of the most severe impediments towards promoting sustainable livelihood and ensuring food security for all is the fact that “gender gaps in entitlements —the resources that women can command through available legal means—continue to persist” (Quisumbing and Meinzen-Dick, 2001: 1). The existing legal, social, and political norms and practices are such that women’s right to various types of capital is not guaranteed by law. For instance, in many parts of the developing world, the right to land is often entrusted to the male children; meanwhile, usually women are deprived of inheriting any land (Gittinger et al., 1990; Quisumbing and Meinzen-Dick, 2001; Ramachandran, 2007; FAO, 2011). This circumstance acts as a serious impediment towards making women independent – figuratively and in practice as well. In the absence of land rights, the majority of women in rural parts of developing countries are dependent on men (in their family) for ensuring their livelihood, and food security (Ramachandran, 2007).

Further entitlement failure is also evident from the absence of legal precedent or recourse which would enable a female to have a say in how natural capital is accessed or used, thereby ensuring female participation in the household decision-making process (FAO, 2011). Due to entitlement failure, women are continually subjected to institutional discrimination in terms of accessing financial and other assets. Women are usually declined loans, based on the fact that they do not have any sort of assets such as land (which men primarily own). Consequently, they cannot attain financial autonomy through livelihood diversification; thus, they continue to remain subjugated to the male members of their family (Ramachandran, 2007; Quisumbing and Pandolfelli, 2009; FAO, 2011).

Therefore it is necessary to understand the endowments, capabilities and entitlements of a particular community in general and women in particular in order to understand the intricacies of sustainable livelihood and food security. Even though women may not be equally endowed, their capability may be curtailed and the entitlement matrix may continue to remain heavily tilted towards the men; the women of the household continue to be the guardians of food security.

2.6 Livelihood

‘A livelihood in its simplest sense is a means of gaining a living,’ (Chambers and Conway, 1991: 3). Livelihood is derived from the assets that individuals or households have access to and the institutional setup that influences the access to these assets rather than focusing solely on the consumption and income levels of individuals or households (Devereux et al. 2004). Livelihoods can be made up of a range of different activities, which can be both farm-based, and off-farm. Together, these activities provide individuals or households with various options for procuring food and cash (Drinkwater and McEwan, 1994). Individuals or households have secure livelihoods when they have a secure ownership of resources, access to those resources and activities that earn them income, including reserves to cushion shocks and stress (Chambers, 1988).

Thus, ‘livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living,’ and is sustainable if it ‘...can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation, without undermining the resource base...’ (Chambers and Conway 1991: 6). The addition of sustainability in the concept of livelihood allows for the inclusion of people’s

strengths (called capabilities and assets) and recognizes that for individuals or households, stress and shocks of various types shape the nature, source and their pattern of livelihood (Bebbington, 1999). Assets, formulated in terms of capital, not only allow people to earn their living, but also improve their capability to engage more meaningfully with others (Sen, 1987). Moreover, the concept of livelihood thinking arose with the introduction and development of Sen's concept of endowments and entitlements (Dorward et al., 2003)

Some of the capital is: human (e.g. knowledge, skills, ability to work, and the status of individual); physical (e.g. physical goods, infrastructure, and machinery); social (e.g. formal and informal social relations, networks, group memberships, social claims, associations, and affiliations); financial (e.g. savings, credit, and regular flow of money) and natural (e.g. natural resource stocks in water, land, air, as well as environmental services like hydrological cycles, and biodiversity) (Scoones, 1998; Frankenberger et al., 2000). These types of capital are not just resources that individuals or households rely on in constructing their livelihoods, but these means possess the capability to be something or do something (Kanji et al., 2005), i.e. in Sen's words, "capability to functionings". It must also be noted that these forms of capital can be substituted for each other to some extent (Farrington et al., 1999).

As we have already discussed, "capabilities" refers to what individuals or households can achieve, given a set of endowments and entitlements; "functionings" refer to what individuals or households actually achieve (Sen, 1981). Following Sen (1981), this capital can act upon as the endowments and sources of entitlements that individual or households may have. They further utilize these endowments and entitlements through

their capability for their livelihood generation (Kanji et al., 2005). The extent to which individuals or households are endowed with such capital, the rate at which capital can be transformed into entitlements and hence enhance or affect their “capability to functionings,” depends on several socioeconomic, political and legal factors. Further, individuals or households can have access to several entitlements, which constitute their livelihood, depending on the income-earning activities and how well each household is endowed (Drinkwater and McEwan, 1994). How individuals or households use these endowments and entitlements develops their capabilities; not only can that ability define their lifestyle, but it can also indicate how well they can or cannot access opportunities and respond to challenges available to them. In addition to this aspect, another key factor that plays into determining livelihood and its stability is the concept of shocks and stresses. “Shocks and stresses” refer to certain events that can have considerable impact on livelihood. Shocks can emanate from different sources, including nature (such as landslides, and droughts), economy (such as recessions, and unemployment) human (such as sickness, and death), agriculture (such as crop and livestock failure) and conflict (such as wars, and violent disputes).

Shocks and trends can often be interlinked and certain phenomenon or happenings at the regional, national, or international level may impact an individual or household severely. Hence, understanding the livelihood of an individual or a household also calls for understanding the stresses and shocks that might have shaped the livelihood pattern for that individual, household, or a particular village. Livelihood thinking focuses on highlighting the dynamic environment of individual households where aspects such as culture, social structure, education, power, control over resources, and gender influence

the ability of a household or individual within the household to meet their basic needs and develop survival strategies accordingly (Frankenberger and McCaston 1998).

This study seeks to undertake a conceptual application of livelihood context by relating it to food security issues in the specific context of millets in Nepal. As such, there is a definite gap in the literature in terms of assessing capabilities and endowments in the form of various types of capital as well as shocks and stresses and how they relate to small millets-based livelihood generation. Particularly so in terms of Nepal, there has hardly been any study, which seeks to understand the role of markets in promoting small millets-based livelihood and food security for semi-arid marginalized communities; hence, this study seeks to address this gap. Moreover, the role of markets and market relations has not been properly addressed in the analysis of livelihood which “can lead to failure to identify and act on livelihood opportunities and constraints arising from critical market processes and institutional issues that are important for the market development of the poor people” (Dorward et al., 2003: 1).

2.7 Markets

Markets are a key link that emerges in the understanding and discussion of the concepts of small millets, food security, entitlements and livelihoods. The role of markets is critical and undeniable, be it for the utilization of small millets, achieving food security, accessing endowments, transferring endowments into entitlements, or enhancing livelihood through capability.

Markets enable individuals or households to get access to different capital assets or capital, to get the returns on their assets or capitals and to meet their consumption needs (DFID, 2000). In developing countries, individuals or households from rural as

well as urban areas are net buyers of food and thus require food markets that are easily accessible, efficient, predictable and stable (Carney, 2002). Markets serve as a link that connects the local economy and beyond, and are considered critical in the development of livelihoods (ADB, 2003). But, on the whole, poor individuals or households face severe market-related constraints while pursuing their livelihoods and achieving food security. Markets are an efficient mechanism for organizing the exchange, coordination and allocation of many resources, goods and services in the economy (ADB, 2003:8). Markets serve as a primary medium where people, especially the poor, can participate in economic activities, either as producers (such as farmers), consumers (such as purchasers of goods and services) and employees (such as providers of labour) (Ferrand et al., 2004).

2.7.1 Market constraints

In the first place the constraint that households face is the absence of markets; this absence is felt through high transportation and transaction costs (IFAD, 2003). Absence of markets reduce the ability of primary producers to buy the input required and sell their products; it also prevents consumers from getting their regular food supplies, and intermediaries and processors from differentiating the products (Gruere et al., 2006). Even in cases where markets exist, marginalized communities or households face the constraint of the access to markets. The lack of market access could occur because of factors such as the physical distance to markets from the village, the absence of proper roads, a lack of transportation facilities, an inaccessible geographic location, or a remoteness of location and market incentives (Gruere et al., 2006). Thirdly, poor market structure may give rise to uncompetitive and inequitable market relations, leading to poor participation of people. This circumstance is further aggravated by peoples' lack of skill, organization and information (IFAD, 2003). Market structure is characterized by the

conditions prevailing in markets for the entry and exit of buyers and sellers, their number and size in the market and the degree of product differentiation (Clodius and Mueller, 1961). Fourthly, households in developing countries often suffer from a dearth of market information. Market information includes facts regarding the supply of products, the demand for them, the presence of substitutes, and current prices that are of utmost importance for individuals or households (Shepherd, 2011). Market information allows individuals or households to make decisions regarding their produce and related products, and enable them to decide on the appropriate time and location to sell their produce, whether or not to store their produce, to check whether the current price levels are in line with the market prices and to reduce risks associated with marketing (Shepherd, 2011). The fifth constraint that households face is the lack of market incentives for their products. This situation can exist even in cases where the producers have access to markets, thereby giving no economic incentives for producers or households to buy and sell their products (Gruere et al., 2007). According to Bourguignon and Pleskovic (2008), incentives are embodied in an institutional framework of changing incentives that induce markets to respond. Hence, an understanding of what drives changes in the supply and demand of small millets becomes necessary. Lastly, the households in developing countries face numerous constraints in marketing their products (Stiglitz, 1989). All of these market constraints are directly or indirectly influenced and facilitated endogenously by individuals or households “capability to functionings” acquired from their endowment sets and entitlement sets.

However, markets do not always contribute positively towards food and livelihood security. Some researchers have identified that markets also contribute to the

risk of food insecurity (IFAD, 2001). Markets by themselves do not favour poor people; in the absence of a proper enabling environment, the potential advantages or benefits of markets and market conditions accruing from small millets cannot be enjoyed by the people associated with small millets. Further, markets are usually unable to absorb a rapid increase in the production of any agricultural commodity. This phenomenon eventually leads to an oversupply of the product and ultimately a fall in the local prices of the product (Lundy et al., 2007). This drop in price directly impacts the livelihoods of concerned producers, in turn affecting their food security.

2.7.2 Market chains

One way to understand markets and market-related constraints is by analyzing the market chain. A market chain, also known as a production or supply chain, has been described as “the numerous links that connect all the actors and the transactions involved in the movement of agricultural goods from the farm to the final consumer” (Lundy et al., 2007: 12). These agricultural goods that are traded by one chain actor to another have been classified into three types: primary goods (ones directly harvested from the fields), secondary goods (ones derived from primary products) and tertiary goods (ones derived from secondary products) (Ferris et al., 2006). According to Ferris et al. (2006), as the goods are divided from primary to secondary to tertiary, the market moves from a general towards a niche market category. The producers and consumers of these agricultural goods include all those either directly involved as harvesters, traders, processors, retailers, or indirectly through their influence on marketing as policy makers, technical researchers, and environmental groups; thus, both producers and consumers fall as actors in the market chain of concerned agricultural goods (FAO, 2000) commonly known as market actors. Market chain analysis has been used in past studies to investigate how the

relationships of these market actors in the market chain affect their livelihoods along the chain (Giuliani, 2007). In addition, such analysis has been used to understand the difficulties and constraints faced by the market actors at each stage in the market chain through their production activities, such as cultivating, manufacturing and processing, and through their nonproduction activities, including design, finance and marketing (Giuliani, 2007). However, links in the market chain are frequently disjointed, leading to asymmetric information amongst other actors and encouraging some actors to exploit other market chain actors (Ferris et al., 2006).

2.7.3 Value chains

When the goods are traded between one market chain actor and another, those goods accrue in value (Hellin and Meijer, 2006) because costs of varying degree and form have been added at each stage along the market chain (Ferris et al., 2006). Thus, from the time the goods are conceived until it reaches the consumer, a series of activities is involved that adds value to the goods (Kaplinsky and Morris, 1999) and the value chain. In fact, Gereffi (1999) categorized value chains into two types – producer driven and buyer driven. A producer-driven value chain is one in which a single producer, generally a transnational company, determines and controls the chain by linking the various activities and aspects associated with production (backward linking) as well as the distribution and marketing of the final products (forward linking). A buyer-driven value chain is one where multiple producers, distributors, and retailers are combined together by their involvement in producing and selling a single commodity (Gereffi, 1999). Factors such as technological innovations, volume of production, and sales levels drive profit for producer-driven chains. However, for a buyer-driven value chain, the factors are a combination of unique demands in one part of the world – generally a developed country

– linked with specific production in another part of the world – generally a developing country –which derives profit for the players across the value chain (Gereffi, 1999). An interesting aspect of the buyer-driven, value chain-based profit is that the chain actors earn profits across the chain because every stage is linked to and dependent upon the activities of others in the chain (Gereffi, 1999). However, the value of the product in terms of the profit made by market actors along the value chain may not be equal because of the inability of market actors to bargain, especially those dealing with nondurable agricultural products (Kruijssen et al., 2009).

Markets in Nepal are an important source of food procurement as the majority of the populations with low landholding are dependent on markets for their food supply (WFP, 2010). As mentioned earlier, the three geographical regions of Nepal – *terai*, hills and mountains - not only give rise to different agricultural practices, climate, soil and ethnicity, but also shape the markets and market-related activities in each of these areas. According to Pyakuryal et al. (2005), better market and market facilities are found in the *terai* regions of Nepal, which makes the *terai* the main cereal-producing region of the country. The markets and market-related activities in the hill and mountain regions however, are not the same as that of the *terai* due to the difficult geographical topography of Nepal. Especially in the hills markets are generally characterized as less in number, located far apart in distance, having poor road connectivity and marketing knowledge, and lacking any market-oriented research and promotional activities (ICIMOD, 1989). Most of the mountain regions suffer from a lack of market access or market access failures (Pyakuryal et al., 2005), which could be due to the cost of high transportation, the absence of a market infrastructure, or bad road connectivity because of the difficult

geographical terrain (IFPRI, 2010). On the contrary, the development of roads and transportation did not bring about the much-needed development in hill markets because shortages in the supply of many agricultural products as well as the products in the hills were met by imports from the *terai* regions. Thus, the agricultural products fetched relatively lower prices than the *terai* products in the cities, and the fear of irregular and unreliable markets prevented farmers in the hills to undertake high value crops (ICIMOD, 1989; WFP, 2007). Regarding the market and value chain of agricultural products, there have so far been very few studies in Nepal (IFPRI, 2010). The small size of landholding by the majority of households in Nepal constrains their production of crops, which directly translates into a zero or low marketable surplus (IFPRI, 2010). In fact, the market for food grains has been considered as a tertiary market (WFP, 2007).

Markets have been identified as a crucial need or factor in understanding the concepts of food security and livelihood. Further, researchers have also identified markets and market-related issues as one of the many factors limiting the full utilization of small millets. Thus, the inclusion of markets in the analysis of small millet-based food security and livelihood is essential, given their varied and critical role in ensuring improvement in these two areas. Food security and related livelihood analyses would be incomplete and inadequate without a clear understanding of current and projected market conditions of small millets. Further, markets also help trace the effects and impact of stresses and shocks; more precisely, markets define needs and appropriate responses. Hence, this study will analyze the role of small millet-based markets through the in-depth study of the market-chain mechanism in order to trace its impact on the livelihoods and food security of the individuals or households in the study areas.

In addition, it also becomes pertinent to examine the existing policies and institutions that directly or indirectly address and support small millet-based markets and food and livelihood security in order to leverage the potential of small millets in ensuring food and nutritional security and increasing poor people's income. The policy is discussed in detail in Chapter V.

2.8 Chapter summary

There has been little research or understanding regarding the role of underutilized and neglected species in general and small millets in particular in building people's livelihoods and enhancing food security in the rural and marginalised areas of developing countries. The ability of small millets to adapt to some of the harsh climatic and geographically-challenging environments in the world makes these grains ideal for people, especially the poor living in marginalised and remote areas. In developing countries, small millets are the primary nutrient source for local people in marginalized communities and regions that can flourish in the absence of technological interventions (such as irrigation and fertilizers). Although, the high nutritional benefits of this crop have already been proven, as compared to major crops like rice, wheat and maize, small millets are yet to be looked upon as staple food crops. This situation is partly due to the existing government policies that are still directed towards the promotion and use of major crops. Numerous factors contribute to the marginalisation of small millets, including a lack of markets for small millets and small millet-based products, a lack of awareness about their nutritional components, and changing consumer preferences. Hence, the full potential of small millets in ensuring food and nutritional security has not

been exploited. Further, its prospect in improving people's livelihoods has also not been properly analysed.

As a concept food security has evolved over the decades. Various development practitioners and academics view food security as one of the most challenging issues facing the world today. The right to food has been recognized as a fundamental right in many countries across the globe. But even to this day, a large section of the world's population continues to starve, be malnourished or go hungry. The majority of these people belong to developing countries. It is widely accepted that food insecurity is not due to deficient production of food or inadequate food supply, but because of the lack of access to food. The recognition of food security as being primarily an access issue and not simply a supply issue led to the introduction of the concepts of endowments, entitlements and capabilities.

The livelihood approach presents an interesting context through which to study the phenomenon of food security at the household level. Instead of highlighting the drawbacks or weaknesses of marginalized people, sustainable livelihood thinking focuses on the strengths and assets that people have and use for their sustenance. It recognizes five fundamental forms of capital or assets with which people are endowed or to which they are entitled: human, natural, physical, financial and social. These capitals allow people to develop their capabilities and in turn can ensure not just food security, but also a higher standard of living and lifestyle.

Markets act as one of the mediums of access to food, endowments, and entitlements. The importance of the role of markets has also been identified in the livelihood framework, though there has not been much research on this subject. One of

the factors precluding the widespread use of small millets is the lack of markets and proper marketing chains for promoting millet use. This study seeks to understand the existing market/livelihood (food security) linkage for small millets in the Pokhara region of Nepal in order to ascertain the role of markets concerning small millets for the livelihood generation, and food security in the study areas.

CHAPTER – III

RESEARCH METHODS

3.1 Introduction

I undertook a qualitative research approach for the proposed study. Qualitative research is a process of exploring and understanding the meaning of complex social and human problems holistically (Creswell, 2007). Such research usually takes place in a natural setting (the local settings where they live), and thus enables the researcher to develop a deeper understanding of the people and the site (Creswell, 2003; Denzin & Lincoln, 2005). This approach places more importance on the participant's perceptions, experiences and meanings they held of a particular event or issue than on the meaning deduced by the researchers (Creswell, 2009). A qualitative approach encourages participants' involvement in data collection and relies on multiple methods of data collection (Creswell, 2009).

I felt that a qualitative approach was appropriate because the empirical data collection involved working with local people in their natural and local setting (Creswell 2003). The detailed perceptions and experiences of various stakeholders in such a setting served as a key to illuminating the existing relationship between small millets, markets, livelihoods, and social dynamics. The qualitative procedure, therefore, assisted in understanding the significance of small millets in livelihood generation for the people living in the study area. Further, the qualitative study enabled me to understand the relationship between existing power dynamics (entitlement, endowment and capability) and the (un) availability of adequate and nutritious food amongst people of the marginalized communities in the study area.

3.2 Case study strategy

I used a case study approach as the strategy of inquiry for conducting the qualitative research (Yin, 2003). Social phenomena are complex and a need for case studies arose out of a desire to understand such phenomenon (Yin, 2009). Yin observed that real life phenomena are embedded in some deep contextual conditions, so to understand the real life phenomena, it is essential to understand those underlying contexts.

The case study approach is “transparadigmatic” and “transdisciplinary” – meaning it is applicable regardless of the researcher’s paradigm and it does not have any disciplinary orientation (VanWynsberghe and Khan, 2007). A case study inquiry will give an understanding concerned with “how and why” things happen, thus allowing me to focus on a particular issue or feature in depth rather than breadth (Creswell 2009; Yin, 2003).

Following Merriam (2002), I purposefully selected a case in order to conduct the case study. One learns from a particular case (Merriam, 1988), so the findings from the case study can then be transferred to similar situations in communities that have similar settings (Erickson, 1986). Stake (1995) states that, a case study must always have boundaries, hence for this study, I have selected the lowest administrative unit in Nepal i.e. a Village Development Committee as my case study.

3.3 Case for “case study”

As mentioned in Chapter I, this research was part of the greater project under the Canadian International Food Security Research Fund (CIFSRF). The project had six sites selected in India, one in Sri Lanka and one in Nepal (Karthikeyan et al., 2011). My research was conducted in Nepal. The criteria for the selection of these sites in the three

countries have been given in the main proposal of the greater CIFSRF project. Reiterating again, the greater CIFSRF proponent selected these sites on the basis of: small millets cultivation, the local use of small millets, areas dependent mostly on rainfall for their agricultural production, and as areas that were marginalized and poor (Karthikeyan et al., 2011). It must be noted that as mentioned in the CIFSRF project proposal, the site in Nepal had been included to show the “agro ecological variability that exists in a mountain ecosystem,” (Karthikeyan et al., 2011: 22). For the Nepal site, the CIFSRF project worked closely with Local Initiative for Biodiversity, Research and Development (LI-BIRD) Organization, a nongovernmental organization (LI-BIRD, 2012). LI-BIRD worked as the implementing partner organization of the greater CIFSRF project in the field.

For the purpose of this research, three study areas – 1) Bhadaure Tamagi VDC; 2) Kaskikot VDC; and 3) Dhikur Pokhari VDC – had been selected by the LI-BIRD organization in Nepal. With the help and suggestions from the researchers of the LI-BIRD organization, I chose Dhikur Pokhari as the case study area. Given the purpose of this research, the choice of Dhikur Pokhari VDC had satisfied some of the selection criteria that I had developed prior to going for my fieldwork. The selection guidelines followed were:

- Sites where considerable populations relied on agriculture for their livelihood and sustenance.
- Sites where small millets constituted a major portion of agricultural production.
- Site that is accessible.

- Sites where there are possible markets that facilitated the exchange (buying/selling) of small millets and taking the distance of the market from the study site into consideration.
- Sites with people from different ethnic backgrounds.
- Sites with baseline data and government records on population, caste, gender, education status.
- A site where there was possible intervention by government organizations and/or other external agencies (NGOs) or community organizations to promote/facilitate production, consumption, and marketing of small millets.

From within the case study area, 48 households were interviewed. These included an array of local households that were in some ways associated with small millets, be it through cultivation, processing, trading, or utilizing small millets. I also interviewed an additional 14 households from other VDC's because some shared a common border with Dhikur Pokhari VDC and were involved in the market chain. Further, four individuals from the local government offices were also interviewed.

I began fieldwork with purposive random sampling. Initially, the households were randomly selected. Once I was familiar with the case study area and the local people, the random sampling was replaced with snowball sampling (especially for the market chain analysis). Thus, a total of 66 interviews were conducted that included households from within and outside of Dhikur Pokhari. These interviewees were both males and females (though the focus was on females) belonging to various age groups, caste and occupations. In addition, this study took into consideration diverse ethnic backgrounds (which is given in detail in Chapter IV). The following tables [Table 3.1 and 3.2] briefly highlight the total number of officials and households interviewed, and their primary means of livelihood.

Table 3.1: Government officers and community representatives interviewed

Government Organization/ Case study area	Regional Agricultural Research Station Lumle	Krishi Seva Kendra	Women's organization
Dhikur Pokhari	2 males	1 female	1 female

Table 3.2: Number of households interviewed and their occupation

Main occupation	Dhikur Pokhari		Neighbouring VDCs		Pokhara		Dhading		Mustang	
	M	F	M	F	M	F	M	F	M	F
Gender →										
Agriculture (only agriculture)	7	6	1				1	1		
Others (agriculture + poultry, foreign remittances, pensioners, etc.)	1	13	1							
Traders (middlemen)	2	0								
Mill owners	3	0	1	1	1					
Alcohol Business	0	4		1		1				
Wholesalers, retailers and shopkeepers	0	0			2	1				
Services (government and private sectors)	3	9							1	1
Total	16	32	3	2	3	2	1	1	1	1

Note: M= Male and F= Female

3.4 Study area

The field study for this research was carried out in one of the Village Development Committees (VDC) located in a hill district of Nepal – Kaski. Kaski was one of the 75 districts of Nepal, with its district headquarters based in Pokhara (DDC, 2008). There were currently 45 Village Development Committees (VDC) in Kaski district (DDC, 2008) and Dhikur Pokhari VDC was one of them, where small millets comprised one of the significant crops in the area. There has not been much study in Nepal regarding the use, promotion or marketing of small millets, whereas similar studies

have been carried out in the neighbouring country of India. The Dhikur Pokhari VDC study area is discussed in greater detail in Chapter IV.

3.5 Market chain analysis

Market actors were first identified from amongst the local households while conducting interviews. According to Lundy et al. (2007), the identification of market actors should be based on trust. In order to develop that trust, I started by living in Dhikur Pokhari VDC in the small village of Paudur Kot, in ward number six with the local households, and spent considerable time in the field before identifying the market actors. Once trust was established, the identification of market actors was done on the basis of their functional categories within the market chain (Lundy et al., 2007). The functional categories included direct actors associated with producing, harvesting, trading, processing, and retailing small millets; and at a later stage of the market chain analysis, the indirect actors such as policy makers influencing the marketing. Selection was made on the basis of their involvement in the small millet-based market and on the information they could provide to the researcher.

For convenience, I have categorized the market chain actors within the Dhikur Pokhari VDC into the following categories [Table 3.3]:

Table 3.3: Household involvement in trading with *kodo*

Producers selling <i>kodo</i>	Mill owners	Middlemen	Consumers
Those involved in the cultivation, harvest, threshing, winnowing and drying of <i>kodo</i> grains	Those involved in the collected of <i>kodo</i> from the producers in exchange for use of machine for grinding and dehusking	Those involved in the collection and transportation of <i>kodo</i> grains from the producers a mill owners	Those involved in buying <i>kodo</i> (grains or flour) from any of the producers or mill owners or middlemen.

I conducted semi-structured interviews to interact and collect data from the chain actors, tracing out the market chain. For the purpose of this study, I took farmers who are the producers of small millets as the point of entry. Usually, market chain analysis begins from the end point of sale to the farm (Lundy et al., 2007) but given the qualitative approach of this research, limited time and inexperience of the researcher in conducting rigorous market chain analysis, the analysis for this research began from the primary producers of small millets. Thus, the point of entry in this case was the farms. The analysis moved forward to harvesters, processors, traders, buyers and their customers, and backwards to input suppliers. In addition, along the market chain, I examined value addition at each and every point of transaction and, from each of those stages, gathered information on the opportunities and constraints faced by the chain actors (Lundy et al., 2007).

3.6 Data collection

To satisfy the objectives of the study, I drew on qualitative tools, i.e. semi-structured interviews, participant observation, and focus group discussion for data collection. In addition, I supplemented the literature review with reviews of documents, reports, and other published materials.

3.6.1 Semi-structured interviews

One of the most familiar strategies of collecting qualitative data is through interviews. A researcher undertakes qualitative interviews when what they need to find out cannot be answered simply and needs further explanation and elaboration (Rubin and Rubin, 2005). Researchers use semi-structured interviews for data collection because it is useful for exploring the respondent's perceptions and opinions on the complex social and human issues (Barribal and While, 1994). Semi-structured interviews are usually

scheduled in advance and are organized around a set of predetermined questions (DiCicco et al., 2006). Semi-structured interviews make use of sufficiently open-ended questions, allowing the researcher to keep the flow of interview going (Chambers, 1994). I collected data from people who were involved in the cultivation, consumption, and uses of *kodo*.

In order to identify key informants and knowledgeable respondents, I spent some time meeting with representatives from LI-BIRD organization. As mentioned earlier, once I familiarized myself with the place and the local households, I started interacting with the local people randomly, particularly the women. In this way I identified the interviewees from amongst them. The interview respondents included both farmers and non-farmers, i.e. traders, whole-sellers, businessmen, retirees. I also interviewed government officials, LI-BIRD organization representatives, and local members of other women's co-operatives for their views on issues relating to small millets. These interviews helped me understand the perspectives of the different respondents on small millet-based livelihood and food security. It allowed respondents to share their thoughts and concerns in private, allowing them to describe their personal concerns and perspectives regarding small millets, food, and livelihood security, the existing market structure, and the government policies.

Interviewing farmers who cultivated small millets – processors, traders, middlemen, or whole-sellers of small millets – presented information as to why they were associated with small millets in the first place; why they did what they did; how significant small millets were in their life as food and as sources of income; and, what advantages or constraints they faced in small millet-based production, processing,

distribution, and consumption markets. Interviews with government officials (especially agricultural) helped me to understand and examine the government's initiative or lack of it regarding small millets, the hurdles on their part, and the existing policies. And lastly, interviewing the local organizations and NGOs helped me to understand the institutional set-up of the study area and the triangulating and validating of the research findings.

3.6.2 Focus group

Focus group discussions are one of the most important tools for highlighting group dynamics. It helped in bringing out not just the group perspective on the issue being discussed, but also elucidating the existing socio-cultural and political relationships shared among the group (Kitzinger, 1995). One of the main advantages of focus group discussion is that it assists in understanding the significance of data generated by participants from their "interpersonal communication" of their daily interactions. Such communication can help the researcher to identify "group norms, cultural values, common and shared knowledge," though it could also inhibit individual voices (Kitzinger, 1995: 300). Further, group discussion can facilitate greater critical comments from the participants than interviews can. It can also be used as a tool to "empower" the research participants, as the participants can become a part of the research analysis. This would leave no room for discrimination against those who cannot read or write, or discrimination to those averse to isolated interviews (Kitzinger, 1995). Given this, a focus group as a tool for data collection fits well with the paradigm of "critical social science," as it can contribute in changing the existing system to improve and provide a platform for the marginalized to raise their voice. This is in accordance with the stated purpose of this study, as the majority of participants living in my study region are marginalized, but hard

workers who have their own personal and social obligations and issues; hence, I believed that this data collection tool ideally suited my research needs.

For this study, focus group discussions were particularly used to explain the third objective:

iii) to analyze the existing market for small millets and understand the constraints and opportunities that influence the market for small millets.

A focus group discussion was held for this objective, as I not only recorded the factors that impacted the market for small millets, but I also used the focus group to verify the data I had collected during my individual interviews. In the absence of a suitable local facilitator, a LI-BIRD associate assisted me by moderating the focus group discussion. I observed and recorded the discussion and proceedings and the insights I had gained in my journal. The final product of the focus group discussion, which summarizes the enabling and constraining factors that impacts the market for small millets, was presented to the participants. Once they approved the list, the same list was also used for semi-structured interviews in order to gain further insights from the community people. I conducted focus group discussions towards the end of my fieldwork, as I felt that the community was more responsive and comfortable with my queries after they had seen me living with them in their community.

3.6.3 Observation

Observations in the field assist with data collection for both quantitative and qualitative studies (Creswell, 2009). Observations can be done in three different ways depending on the nature and extent of the researcher's involvement: a) complete participant; b) participant observer; and, c) complete observer (Bernard 2006). This study required me to understand the linkages (if any) of small millets-based food and livelihood

security to the existing small millets market and the existing agricultural policies. It was not always possible to understand an issue using the insights of others (Becker, 1998). Participant observations allowed one to draw “insights that you derive from a community's values, dynamics, internal relationships, structures and conflicts best from their observed actions, rather than from their (normative) statements of what is” (Rennie and Singh, 1996:11). For this study, I undertook the role of a participant observer for data collection throughout my stay at the field. I observed the key informants, interview respondents, community settings, sociocultural aspects, local settings, and markets and kept a note of my observations in a field diary. I also took photographs throughout my stay at the study site. Because of the similarity in language, culture and tradition, ways of living and values and the study context, being a participant observer helped me to integrate my data with my observations as prescribed by Bernard (2006). Observation is an important tool for validating the collected data as: (1) observations help in expanding a researchers’ understanding of what one learns from interviewing; and, (2) people in their natural setting are less likely to change their behavior (Bernard, 2006).

In the context of this research, observation helped me in understanding the prevalent issues on caste, women, alcohol business and the market chain itself that households did not verbally mention. Some of the identification of market actors was done through observation first and interviews followed. In addition, observation that was recorded in field notes aided greatly in validating the data during the data analysis phase by enabling me to rationalize the data collected through interviews with my own field observations.

3.6.4 Review of secondary data

Besides collecting primary data, I also collected secondary data while in the field. This data was mainly collected from the LI-BIRD library and included the Village Development Committee profile, certain publications, books, and reports relating to small millets and food security in Nepal. The secondary data collected developed a better understanding of the study area of Dhikur Pokhari VDC, its socio-economic and geographical characteristics, and the status of small millets in Nepal in comparison to other cereal crops. Some of the secondary data were used for verification and triangulation of the primary data, crosschecking the reliability of the data and, by extension, the study.

3.7 Validation of the data

For any qualitative study to be considered credible, the collected data and interpretations derived from same need to go through a process of validation. Over the years, certain procedures have been established for validation of a study: member checking, triangulation, peer reviews, and external audits (Creswell and Miller, 2000). For this study, I triangulated my findings from the choices of multiple data collection methods of semi-structured interviews, participant observation, and document reviews to validate my study (Merriam, 2002). A focus group discussion was conducted towards the end of the fieldwork on 18th of February 2012, which validated my primary findings and also generated some useful insights and new data. In addition to this, I was part of the focus group discussion that LI-BIRD organization has conducted on 14th February 2012 at Dhikur Pokhari VDC, 10th February 2012 in Dhading VDC, 9th January 2012 at Dhikur Pokhari VDC, which further helped me to validate and confirm some of my own findings. Apart from this, I constantly interacted with households that were not

interviewed regarding small millet, food security, livelihood, and markets to check the comparison of what the interviewed households had reported. For the market chain analysis I applied the same procedure. In addition, inputs and suggestions from LI-BIRD organization helped in the validation of data collected in the field.

3.8 Data analysis

In qualitative research, data collection and data analysis must be undertaken simultaneously (Merriam, 2009). The first step for data analysis is “to transcribe the interviews and, from that, find, refine and elaborate concepts, themes and events. The second step is to categorize the interview responses about the identified concepts, themes and events” (Rubin and Rubin, 2005: 201).

Once in the field, I reviewed the first interview transcript and the first set of field notes. This enabled me to focus on what the interviewees said in order to prepare for the next interview (Rubin and Rubin, 2005). I took notes, observed, commented and made queries of information that emerged after several rounds of interviews and assigned themes; these themes helped construct the categories (Merriam, 2009). As the interviews progressed, I repeated this process of transcribing the interviews, reading and conducting content analysis, selecting specific themes, and categorizing the themes. The process of classifying, sorting and arranging information and examining relationships in the data was done with reference to the reviewed literature.

3.9 Dissemination of findings

As already mentioned, this research was a part of the greater CIFSRF project “Revalorizing small millets: Enhancing the food and nutritional security of women and children in rainfed regions of South Asia using underutilized species.” Hence, the findings, i.e. the thesis, through the greater project proponents will be shared with the

implementing partner, Local Initiative for Biodiversity, Research and Development (LI-BIRD) organization in Nepal. The Executive Summary of this thesis will be translated in the local language (Nepali) and will be distributed amongst those organizations and individuals who might be interested in the outcome of the research. Further, the thesis will be available online in the University of Manitoba website for the general populace to access. Finally, the findings from this thesis may be used to publish peer-reviewed journal papers for the greater scientific community.

CHAPTER – IV

SMALL MILLET - CULTIVATION, SIGNIFICANCE AND USE

4.1 Introduction

The purpose of this chapter is to provide a description of the study area focusing on the Dhikur Pokhari Village Development Committee (VDC). The chapter begins by providing a brief background of the location of the study area in general, followed by a detailed geographic, socio-economic and governance structure of Dhikur Pokhari VDC. The due processes associated with small millet (finger millet commonly known as *kodo* in this case) cultivation, processing, utilization and the socio-cultural significance associated with it are discussed. The factors responsible for the decline in small millet (*kodo*) production and the current status of the small millet *vis-à-vis* food and livelihood security in the Dhikur Pokhari VDC have been examined and discussed in detail. Further, this chapter documents the role of women in providing food security for sustenance through the cultivation of *kodo*.

4.2 Socioeconomic profile of the study area

I have described the study area in general in Section 3.4 of Chapter III. The following sections describe in depth the area chosen for the case study. In order to get an idea of the scale at which this study has been undertaken, it is important to understand the administrative structure of Nepal. One of the criteria for selecting the study site was that, the study focus would be at the grassroots level. Hence, this study was undertaken at the Village Development Committee level (VDC), which is one of the lowest administrative entities of Nepal.

4.2.1 Administrative structure of Nepal

Prior to the history of decentralization, Nepal had been under the monarchy rule of the Shah dynasty from 1769-1846 (Shah 1996 as cited in Dhungel, 2005) and under the oligarchy rule of the Rana from 1846-1950 (Dhungel et. al, 2011). The abolition of the Rana oligarchy in 1950 led to the formation of a democratic government "... with the representatives of the political party such as the Nepali Congress, the Ranas and some independent persons, and the promulgation of a Constitution..." (Dhungel, 2005:8). However, even after the formation of the Constitution of the Kingdom of Nepal in 1959, political unrest for power by the Nepalese political leaders, groups of people having their own personal interests and traditional forces such as the Ranas, forced King Mahendra to dissolve the democratic system of governance and introduce "monocratic *Panchayat* polity under the Constitution of Nepal" in 1962 or one-party rule, thus paving the way for the beginning of decentralization (Dhahal et al., 2001:40).

Administratively, Nepal has been decentralized from a large body known as *bikash chetra* (development region), *anchal* (zones) and *jilla* districts, to smaller local bodies such as *nagarpalika* (municipalities) and *Gau Bikash Samithi* (Village Development Committees). Post the introduction of multiparty democracy in early 1990s, Nepal continues to follow the decentralized form of governance as introduced under the monocratic *Panchayat* system which divided Nepal into five development regions, 14 zones (under Local Administration Act of 1965) with each zone being divided into numerous districts (under Local Administration Act of 1965) for a total of 75 altogether (Dhungel et al., 2011; CBS, 2006). Each of these districts has a local governance structure known as the *Jilla Bikash Samithi* (District Development Committee or DDC).

The District Development Committee is the highest tier of local governance, followed by lower grassroots level of governance structures, with 58 municipalities in the urban area, and 3,915 Village Development Committees (VDC) in rural/village areas (Ministry of Local Development, 2004). Within every municipality and Village Development Committee (VDC) is a third tier of governing structure identified as *oda* (ward). This ward is considered to be the last unit of local governance (Inlogos, 2009). The following figure (4.1) explains the administrative structure of Nepal.

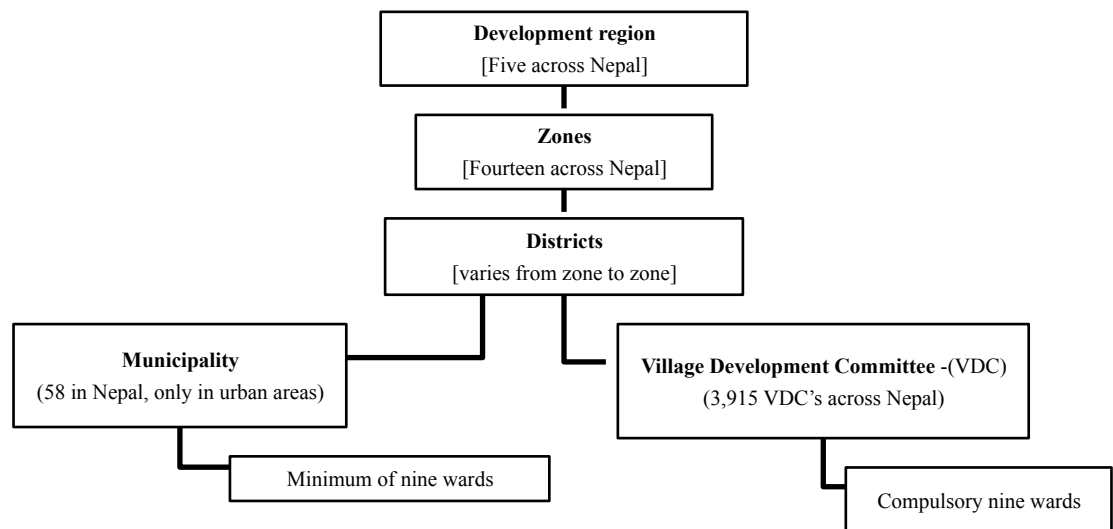


Figure 4.1: Administrative structure of Nepal

4.2.2 Administrative structure of Dhikur Pokhari VDC

A Village Development Committee (VDC) refers to a geographical area comprising of elected and nominated executive VDC committee representatives of that area, whose main functions are to implement developmental programs such as providing education and sanitation, developing local infrastructure such as irrigation canals, and providing livelihood and services to the local people in the concerned areas (Inlogos, 2009; Dhikur Pokhari, 2010). Every VDC has been further divided into nine wards or *oda*, and five

representatives elected from the community govern each *oda*. In addition, every *oda* has numerous small settlements or hamlets. The Dhikur Pokhari VDC shares its *bhaugolik simana* (geographical borders) with other VDC's in all the northern, southern, eastern and western directions (Dhikur Pokhari VDC, 2010).

The map below [Fig 4.2] shows the district of Kaski and the geographical position of the Dhikur Pokhari DVC.

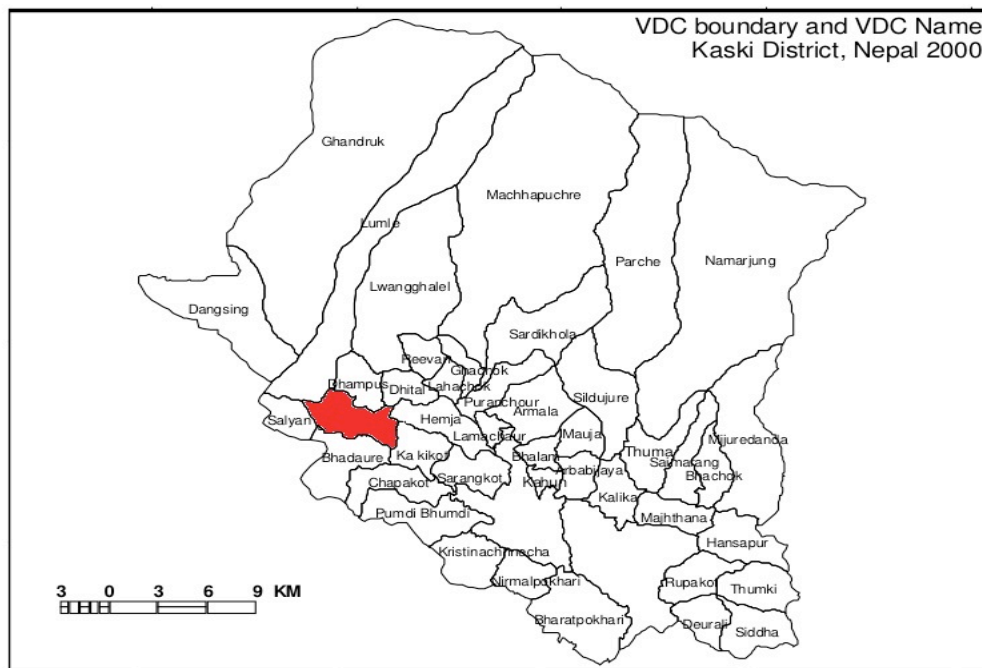


Figure 4.2: Dhikur Pokhari VDC within Kaski district [Source: DDC Kaski, 2008]

4.2.3 Geographic profile of Dhikur Pokhari VDC

This research took place in the hill region of Nepal, in the Gandaki *anchal* (zone). I conducted my research in nine villages and areas covered under the Dhikur Pokhari Village Development Committee (VDC). The Dhikur Pokhari VDC falls under the Kaski district in the western region of Nepal (Dhikur Pokhari VDC, 2010). The following table (Table 4.1) highlights the geographical profile of the research area.

Table 4.1 Geographic profile of Dhikur Pokhari

Geographical profile	
Latitude	28° 15' 20" N - 28° 18' 25" N
Longitude	83° 48' 12" E - 83° 53' 10" E
Total area	27.23 sq. kms
Height	841 m – 2074 m (above sea level)
Temperature	6°C - 33°C
Rainfall	3551 mm
Weather	Mild to cold

Source: Dhikur Pokhari, 2010

Table 4.1 shows one of the most striking geographical features for Dhikur Pokhari VDC – the altitudinal variation of around 1200 meters in an area that is only 27.23 square kilometers large causes significant disparity in the ecological, climatic and biodiversity features within the VDC region. On the basis of the variation in altitude, this VDC has been divided into three areas: “valley plain (841 meters to 1200 meters), mid-sloppy¹ land (1200 meters to 1400 meters), and hill region (above 1400 meters)” (Dhikur Pokhari VDC, 2010: 10).

Generally, the local people experience three seasons:

- Winter (*hiundo*) - from *mangsir* (mid-November to mid-December) to *magh* (mid-January to mid-February)
- Summer (*garmi*) - from *chaitra* (mid-March to mid-April) to *jeth* (mid-May to mid-June)
- Rainy season (*barkha*) - from *asar* (mid-June to mid-July) to *bhadau* (mid-August to mid-September) (Dhikur Pokhari, 2010) but the duration of seasons may vary with the altitude of the area.

Dhikur Pokhari VDC, being in the hill region, has subtropical climate in the lower region foothills, temperate climate in the upper or hill areas, and snowy alpine climate in the higher hills (Sharma, 2001). The lower region of the VDC has tropical

¹ This could be a case of typo or spelling mistake and they could have meant ‘slopy – inclined’ instead of ‘sloppy- watery.’ I did not find any tract of land that was watery/wet so I believe they meant to write ‘slopy’.

evergreen vegetation with “*domut*” soil; the higher hill areas have temperate mixed vegetation with clay loam and red gravel soils (Dhikur Pokhari, 2010).

4.2.4 Social structure

Dhikur Pokhari VDC, with a total population of 10,119 comprises people belonging to different *jath* (caste) and *jati* (race) such as: the Bahun, Chettri, Gurung, Kami, Damai and Sarki. For simplicity, I have divided households in the Dhikur Pokhari VDC into three categories: upper caste households, *dalit* households and *janajati* (indigenous) households. The Bahun and Chettri belong to the upper caste category; the Kami, Damai and Sarki belong to the *dalit* category; and the Gurung and the Mangars belong to the *janajati* category. The numerous hamlets in each ward showed the prevalence of caste-based settlements. Each hamlet was characterized by the majority of households of the same caste group, and the minority of households belonging to other caste groups. For instance, a hamlet in Marangche in ward number seven had a majority of the upper caste population and Paudhur Kot in ward number six had a majority of the *janajati* population. Dharapani in ward number four had a majority of the *dalit* population. The division of caste in these areas follows the hierarchical nature as prescribed in traditional Hindu practices. The caste of an individual is determined on the basis of his or her birth and caste cannot be changed at a later date. A child born in a brahmin family will continue to remain a brahmin throughout life; a child born in a *dalit* family will be categorized as being of a *dalit*.

In terms of infrastructure, Dhikur Pokhari VDC has only one main *pukka* (permanent) road connecting it with other VDC's and numerous *kuccha bato* (alleyways) connecting the wards and the hamlets. Water scarcity is an emerging problem for Dhikur Pokhari VDC, especially in the mid-slopy (watery) land and hilly region. Water scarcity

poses difficulty, even though 91.47% of the households reported water sources within a walking distance of 15 minutes (Dhikur Pokhari, 2010). Table 4.2 highlights the social profile of the Dhikur Pokhari VDC.

Table 4.2: Social profile of Dhikur Pokhari VDC (Dhikur Pokhari, 2010)

Social Profile		
Number of Households		1970
Population	Total population	10119
	Male	5191
	Female	4928
Population Density		371.16/sq. kms
Head of the Household	Male	1623
	Female	347
Educational Institutes	Graduate College	1
	Higher Secondary	1
	Secondary	4
	Up to Grade 8	1
	Primary	10
Literacy rate (6 years and above)	Total literacy rate	83.74%
	Male	90.04%
	Female	77.14%
Total number of teachers		154
Teacher student ratio		1:17 (only up to Secondary)
Health center		1

Table 4.2 indicates the literacy rate in Dhikur Pokhari VDC is much higher than the national average (54.1%) based on population census 2001 and 60.1% based on Nepal Living Standard Survey conducted in 2010/2011(CBS, 2011). In fact, the overall literacy rate at the district level for the district of Kaski stood at 72.1%, with the male literacy rate standing at 83.2% and the female literacy rate standing at 61.8%; which is the highest among the districts of the western region (CBS, 2005). However, the inadequate number of higher secondary schools, graduate/technical colleges and health centers compels the locals to travel to Pokhara city to access better education, health services and job opportunities (Dhikur Pokhari, 2010).

When we examine the data on education within Dhikur Pokhari (Table 4.3), we find that there is a definite and pronounced gender gap, with a greater number of males (90.04%) being literate as compared to females (77.14%), (Dhikur Pokhari, 2010). This trend is indicative of the fact that the majority of the households (around 82%) have a male as the head of the family and only a small portion of the households (around 18%) have a female as the head of their family. This is consistent with the fact that Nepal has been a predominantly patriarchal society (Dhungana, 2006; Neupane and Sharma, 2007; and Aguirre and Pietropaoli, 2008). Table 4.3 shows the educational status of the interview respondents within the Dhikur Pokhari VDC.

Table 4.3: Level of education of interview respondents within the Dhikur Pokhari VDC.

Level of education	Age level			
	18-30 years	30- 60 years	60 onwards	Total
No education	0	14	6	20
Primary (till class 5)	3	7	0	10
Secondary (till class 10)	2	9	1	12
Higher secondary (till class 12)	1	1	0	2
College	4	0	0	4

Although it was seen that amongst the 48 interviewees from Dhikur Pokhari VDC, approximately 41% of the respondents were uneducated, it is to be noted that none of the interview respondents below 30 years of age were uneducated. I also observed that all the children of school-going age were either enrolled in the primary, secondary, higher secondary or college level education. Hence, it can be safely inferred that even though the older generation of the population may have been uneducated, the younger residents of Dhikur Pokhari VDC attend some form of school.

4.2.5 Economic profile

Krishi (agriculture) is the main *pesha* (occupation) of the people of Dhikur Pokhari VDC, with 1104 household (out of 1970 households in total) depending on

agriculture for their livelihood. A brief discussion of the economic profile of the Dhikur Pokhari VDC according to the main occupation of various households has been summarized in Table 4.4.

Table 4.4: Economic profile of Dhikur Pokhari VDC

Economic profile		
Main household occupation	Agriculture	1104
	Permanent job	283
	Wage labour	228
	Trade and business	166
	Manufacture	11
	Others	155

Source: Dhikur Pokhari, 2012

The above table (Table 4.4) gives a brief highlight of the economic profile of the Dhikur Pokhari VDC. From the data we can infer that: 53% of the households are dependent on agriculture; 14% hold permanent jobs in the services sector; 11% are daily wage labourers; 8% are into trade and business; 0.5% are into manufacturing; and, 7% cite other income - such as main earner of the family working abroad and sending remittances – as their main economic source of sustenance. It is to be noted that agriculture continues to remain a significant occupation even for those who have other occupation sources in almost all the households.

4.3 Agriculture in Dhikur Pokhari VDC

The socio-economic fabric of people in Dhikur Pokhari VDC is closely intertwined with farming, with the majority being farmers. Those who do not specify farming as their main source of income generation rely on farming for their subsistence. From the data collected through interviews (Chapter III, Table 3.1), 13 households have cited agriculture as their only livelihood source; 14 households have cited agriculture as their main source of livelihood in addition to alternative income source, i.e. remittances

sent by family members, private services such as tailoring, poultry raising, or collecting firewood for sale. Further, nine households have indicated that they are indirectly dependent on agriculture – they trade in agricultural products, or sell *raksi* made from *kodo*, or operate mills that process products. Twelve households have cited services such as pensions from Indian Army, trade in non-agricultural commodities, and government services as their main source of livelihood.

Agriculture in the Dhikur Pokhari VDC is largely based on the cultivation of cereal crops such as *dhan* (paddy), *makai* (maize), *gau* (wheat) and *kodo* (finger millet). *Tarkari kheti* (vegetable farming) of seasonal vegetables is also practiced on a relatively smaller scale in this VDC. The locals informed me that the agricultural practices across the VDC were affected by climatic variations in the altitude and the distinct topography of this area. This change in altitude of the Dhikur Pokhari VDC from the lower valley plain (841 meters to 1200 meters above sea level) to the hilly region (above 1400 meters) affected agriculture in terms of the land availability, the types of agricultural crops cultivated, the period of cultivation, the duration of crop maturity, the availability of water resources, and soil fertility. For the households that are dependent on agriculture as their primary source of sustenance, one of the most critical and primary determinants of the socio-economic standing of a family originates in the number of landholding that a household owns.

4.3.1 Kodo in Nepal

In Nepal, the term *kodo* is commonly used to refer to finger millet (*Eleusine corocana*) as discussed by Sherchan (1989). I discovered that the local people continue to refer to finger millet synonymously as *kodo* even to this day in almost all the VDC's, including Dhikur Pokhari, which only grow finger millet.



Plate 1: Finger millet (kodo) in Dhikur Pokhari VDC

Kodo is an important food crop and people in the study area have stated that *kodo* continues to remain an important part of their diet, with primarily *dhido* and *raksi*, and *kodo* stalks also being an important feed source for livestock. This is consistent with the findings highlighted by Adhikari (2012), wherein he mentions that small millets are important sources of food and animal feed in Nepal. *Kodo* is an equally important cash crop; it has multiple uses. First and foremost, some households use *kodo* as a cash crop and sell it outright, whereas some households use *kodo* to make *raksi*, which in turn brings in cash. *Kodo* is used as a medium of exchange for high altitude products brought from the distant districts of Mustang, or for services involving grinding and dehusking of crops at local mills. *Kodo* is also used as a means of payment for daily wage labourers, or traditional services such as “*katwal pathi*” or “*seva pathi*” usually performed by the *dalits* in Dhikur Pokhari VDC.

Data collected from the nine *dalit* households indicate that all nine households had received *kodo* either in exchange for their labour or for the traditional services they performed. All 12 households belonging to the Gurungs, Mangars and Rais were involved in the production of *raksi*, both for personal consumption and for business purposes. Of the 27 households belonging to the upper caste, eight households were

involved in the consumption of *raksi*. The remaining 19 households refrained from consuming *raksi*. None of the upper caste households produced *raksi*. In addition, it was discovered that when the need for grinding or dehusking of crops arose, people found it convenient to exchange a small portion of their crop for using the grinding and dehusking machine instead of paying in cash. In case of *kodo*, too, it was discovered that almost every household made use of the local mill to grind *kodo* in exchange for a small portion of *kodo* as payment.

This is consistent with the findings of Gruere et al., (2006) wherein it was observed that underutilized and neglected plant species are globally scarce but locally abundant because of the high use value by the local communities on plant species as sources of food, income, and nutrition (Gruere et al., 2006). *Kodo* in the Dhikur Pokhari VDC is valued: as a source of food – *dhido, roti, pua, raksi*; as a source of income – which local people sell for instant cash to the alcohol producers, middleman; and, as a medium of exchange.

4.3.1.1 The ecology of practice: *Kodo* cultivation

Kodo is generally cultivated as a monocrop in the Terai regions of Nepal, and as a relay crop (generally grown along with maize) in the mid-hills region (Adhikari, 2012). Similarly, in the Dhikur Pokhari VDC *kodo* is grown mainly as a relay crop, with maize in the hilly region; in the mid-slopy and the valley plain regions as a monocrop. Relay cropping is defined as “planting one or more crop within an established crop in a way that the final stage of the first crop coincides with the initial development of the other crop(s),” (Leihner, 1983:3)

This dual practice of *kodo* could be due to the altitudinal variation that directly affects the regional climate. In the hilly region of the VDC, *kodo* is mainly transplanted

in the month of *jeth* (mid-May to mid-June) and is commonly referred to as *jethey kodo*, whereas in the mid-slopy and valley plain region it is transplanted in the month of *jeth* and *sawan* (mid-July to mid-August) and is referred to as *sawanay kodo*. The variation in *kodo* cultivation – time (*jeth* vs *sawan*) and practices (*relay* vs *mono*) was further discussed with the focus group at the meeting on the 14th February, 2012. *Kodo* cultivation started from *byad* preparation in two different seasons – the end of *chait* and from the end of *jeth* – and was dependent on the altitude where a village was located.

Planting *sawanay kodo* is a new phenomenon in the area informed an elderly man:

“We started cultivating *sawanay kodo* around 10 years. Earlier we had only *jethey kodo* that required a long time to mature... it’s good for cold places. But in the lower areas like this, which is relatively warmer than the higher areas, *sawanay kodo* not only matures very fast but the yield is also very good. It is tasty, we like to eat it, and the animals also like the green *nall*. So we continue to cultivate it.”

The following table summarizes the activities associated with the cultivation of *kodo* in brief along with the calendar months activities. I constructed this table from the data gathered through interviews and focus group discussions that I conducted on the 14th February 2012, in consultation and with the technical assistance of LI-BIRD organization. The months mentioned in the table are from the Nepali calendar, which is different from the English calendar. The months of the Nepali Calendar and its corresponding English months have been described in Appendix II. Because *kodo* is generally grown as a relay crop with maize, the field for *kodo* is already prepared during the cultivation of maize. So that the entire process of *kodo* cultivation is understood, I am grouping land preparation, clod breaking and land leveling as part of the activities of cultivating *kodo*. These processes have been briefly summarized in the following Table 4.5.

Table 4.5: Process involved in *Kodo* cultivation

Activities	Practices and processes	Months for <i>Jethay kodo</i> as a relay crop	Months for <i>Sawanay kodo</i> as a mono crop
Land preparation	Usually plough the field	Early <i>Chait</i>	Early <i>Sawan</i>
Clod breaking	Break the big clods left after ploughing manually	Early <i>Chait</i>	Early <i>Sawan</i>
Land leveling	Leveling the field using level harrow	Early <i>Chait</i> *	Early <i>Sawan</i>
<i>Byad</i> (nursery) raising	Enriching a small plot of ploughed leveled land with nutrient and broadcasting <i>kodo</i> seeds	End of <i>Chait</i> to beginning of <i>Baishak</i> (almost three weeks)	End of <i>Jeth</i> to beginning of <i>Asar</i> (almost three weeks)
<i>Byad</i> weeding	Taking out weeds from the <i>byad</i> manually with hands	End of <i>Baishak</i> (after 15 to 20 days).**	End of <i>Asar</i> (after 15 to 20 days)
Transplanting	Manually uprooting the <i>kodo</i> plant from the <i>byad</i> and replanting them into the maize field	Beginning of <i>Jeth</i> to first week of <i>Asar</i> (at higher elevation areas)	Middle of <i>Sawan</i> (at lower elevation areas)
Weeding	Removal of weeds from <i>byad</i> manually by hands	End of <i>Asar</i> or Beginning of <i>Sawan</i> ***	Weeding is not done
Harvesting	Use sickle and collect it in <i>thunse</i>	Last week of <i>Asoj</i> to first week of <i>Kartik</i>	Last week of <i>Kartik</i> to second week of <i>Mangsir</i>
Curing	Optional process. Keeping the harvested <i>kodo</i> wrapped in a tarpaulin for few days to make it soft for the next process	For 8 to 9 days after harvest	For 8 to 9 days after harvest
Threshing	Removing the grain by beating the <i>kodo</i> heads manually with <i>latthi</i> (sticks). In case of curing, threshing involves rubbing <i>kodo</i> heads with feet	<i>Kartik/Mangsir</i>	<i>Mangsir/Poush</i>
Winnowing	Dehusking the <i>kodo</i> millet grains from the straw	<i>Kartik/Mangsir</i>	<i>Mangsir/Poush</i>
Drying	Drying in sun	<i>Kartik/Mangsir</i>	<i>Mangsir/Poush</i>
Storing	<i>Kodo</i> grains in plastic or tin drums, <i>bhukari</i> as grains	Stored after 3 to 4 days of sun drying	Stored after 3 to 4 days of sun drying

Note: * = Maize seeds “broadcasted” in the prepared field after this process.

Generally requires two weedings before it can be harvested - the first one being after one month.

**= Second weeding in the field for maize.

***= Maize harvested.

It was reported by the majority of households that no chemical fertilizers are used in the cultivation of *kodo*. However, I could not verify this personally, as I had reached the field when the sowing of the seeds phase was already over. It was found that the majority of households did not rely on outside sources for their *kodo* seeds. Every individual household saved the seeds in the traditional way, where the locals select the best grain of *kodo* as seed, save the seed, and use it during *byad* raising process. Rarely do locals purchase *kodo* seeds from elsewhere and in case they do, it is usually from their neighbours.

4.3.2 Land and *kodo*

Kodo cultivation is very important for the livelihood and food security of the majority of the households in Dhikur Pokhari VDC. A better understanding of the significance of *kodo* in the livelihoods of the people of Dhikur Pokhari VDC came from examining the access and ownership of land by the local people. The agricultural land in the hill region is classified into three distinct terrace categories (Upadhaya, 1993; Shrestha and Neupane, 2002; Regmi and Zoebisch, 2004):

- *khet* (irrigated lowlands) – characterized by levelled and flat terrace, having irrigation facilities even in dry seasons; mostly suitable for rice cultivation;
- *bari* (rain-fed upland) – characterized by outward sloping, unlevelled and slopy terrace without irrigation facilities, depending mostly on seasonal rainfall and suitable for the cultivation of maize, millet and vegetables; and
- *pakho bari* - slopy uncultivated land suitable for grazing animals.

Across the Dhikur Pokhari VDC from the lower plains to higher mountains, people still resort to traditional ways of cultivation using animals to till their fields. This

requires more manual labour. *Kodo* in this area is generally cultivated in *bari* where the soil generally does not support the cultivation and growth of other crops. This is consistent with the findings of McNeely and Schutyser (2003) wherein it was observed that millets habitually grow in marginal areas where yields are severely constrained by water availability, climatic stress, fragile soils and non-existent or fragile infrastructure. People continue to resort to traditional forms of agricultural practices in the absence of modern technology in these areas.

It must be mentioned that a few Gurung women informed me that in the earlier days *kodo* was cultivated in *pakho bari* – a sloped land without *khar* (grass). Referring to such practices in the past, an elderly Gurung woman said:

“... but now we have moved on from *pakho bari* to *bari* because we cannot plough the steep *pakho bari*... it’s hard and difficult to plough. Earlier *bari* was used only for maize cultivation, that was followed by wheat cultivation...”

Agreeing to this, another middle-aged female respondent, wife of the former village *mukhiya* (head) of the Gurung community, says:

“In the older days, *kodo* was grown in *khali thau* [empty areas, almost barren land] like the *pakho bari* where one could not grow maize. Maize in the older days was grown in *bari* only. Today, things have changed and we grow *kodo* in *bari*. We cannot take our animals on the steep slope to plough... the land becomes hard even if we plough every season and requires too much hard work.”

This practice of cultivating *kodo* in *pakho bari* or *khali thau* must have risen out of necessity among the locals in the earlier days, primarily because agriculture was their only livelihood source, and people wanted to make use of all their landholding. However, this practice of growing *kodo* in *pakho bari* was highlighted only by some Gurung women and not by any interviewee belonging to the upper caste and the *dalit* households. This could indicate that, historically only the Gurungs had enough surplus land to be able

to grow *kodo* in their *pakho bari* plus other crops such as wheat, maize and vegetables in *bari*. Other communities had to grow *kodo* in their *bari* itself as they did not have any *pakho bari* where they could grow *kodo* like the Gurung households. In addition, low employment opportunities outside of the agricultural sector, low level of education, lack of transportation facilities, lack of information on agricultural practices and uncertain weather conditions must also have contributed towards the Gurungs making use of all available land. Agriculture, in the earlier days, meant utilizing all available resources as a hedge against the uncertainties of time.

In terms of my theoretical framework, endowment, entitlement and capability, it can be inferred that the Gurungs, being indigenous to the place, are endowed with more land and hence they are entitled to grow *kodo* in lands that they considered to be marginalized and unsuitable for growing other crops. People belonging to the upper caste, or the *dalit* households, could not afford such luxuries in the past. However, with changing economic opportunities and declining reliance on agriculture as sole source of livelihood, even the Gurung community has stopped using *pakho bari* for *kodo* cultivation. These days they cultivate *kodo* in *bari* while *pakho bari* is used only for livestock grazing. This could indicate that, over time the Gurung households have strengthened their endowments, entitlements and capabilities to avoid using *pakho bari* for cultivating *kodo*, as their food and livelihood security are not as dependent on agriculture as it used to be in earlier days.

4.3.2.1 Land tenancy

Land is one of the most important forms of endowments for the households dependent on agriculture. The size of landholding can have a direct correlation to the entitlement and capabilities of the household. In Dhikur Pokhari VDC, the size of

landholding varies amongst the people, and land size has a significant role to play in the cultivation and utilization of *kodo*. I found that the *dalit* households were endowed with a lower average landholding as compared to the upper caste and the *janajati* households. Households with zero or small landholding in Dhikur Pokhari VDC resort to two forms of land tenancy practices: *adhya* (equal sharecropping) and *theka* (fixed sharecropping). *Adhya* refers to sharecropping practice where the tenant and the landowner share the total produce equally, with the tenant contributing few inputs and the entire labour for the cultivation of the concerned crop; the land owner providing only varying degree of inputs such as seeds, fertilizers, and animals for ploughing. *Theka* refers to the practice of giving a fixed quantity of produce to the landowner by the tenant with the entire cost of labour and inputs being borne by the tenant (Wily et. al, 2008).

In the case of *kodo* cultivation, *adhya* was particularly seen as a common practice among the local people in the Dhikur Pokhari VDC, whereas *theka* was a common practice for paddy cultivation. Highlighting the different forms of land tenure system a 50-year-old man says:

“In *adhya* we give half of the total produce together with half the *paral* [hay if it is Paddy] and *naal* [if it is *kodo*] to the landowner. In *theka* we give only a fixed amount of predetermined produce. The owner rarely shows sympathy or pity towards the tenant in case of crop failure. *Adhya* is usually given for non-irrigated land as well as irrigated land whereas *theka* is mostly given for irrigated land.”

The only input that the landowner provided to the tenants in the Dhikur Pokhari VDC for undertaking *adhya* or *theka* was seed for the cultivation of crop the tenant wanted to cultivate, be it *kodo* or paddy. The *mal* (farm yard manure), labour for plantation, harvest and post-harvest processes, and wages for hired workers had to be covered by the tenants themselves. Since *kodo* cultivation is more labour intensive than

any other cultivation, it was found that the households with smaller landholding found it difficult to bear the high cost of labour while undertaking *adhya*. So instead of hiring labourers and paying them daily wages, such households offered to work on the other's field (including both the owned field or the land taken in *adhya* or *theka*) in exchange for the same on their own field. This practice of exchanging labour usually amongst neighbours, friends, or relatives is called *parma*.

Data analysis shows that five out of the nine *dalit* households, and three out of the 27 upper caste households take *adhya* from the landowners for *kodo* cultivation. In addition, two *dalit* households and five upper caste households had taken *theka* from the landowners for the cultivation of paddy. No *janajati* households had taken any *adhya* or *theka*. Amongst the landlords who rented out their land to the tenants for *adhya* or *theka*, seven out of the total eight households were that of the Gurungs and five belonged to the general caste household. Table 4.6 briefly summarizes the profile of *adhya* and *theka* practices of the sample population of the Dhikur Pokhari VDC.

Table 4.6: Households dealing in land for *adhya* and/or *theka*

Castes	Number of households of tenants taking <i>adhya</i> for kodo cultivation	Number of households of tenants taking <i>theka</i> for paddy cultivation	Number of households of landowners either giving <i>adhya</i> or <i>theka</i>	Total number of interviewed households
Dalit households	5 out of 9	2 out of 9	0	9
Upper caste households	3 out of 27	5 out of 27	5 out of 27	27
Janajati households	0	0	7 out of 8	12*

* Includes the remaining 4 households belonging to Rais and Mangars, although with zero landholding primarily because they were not native to Dhikur Pokhari and had come to Dhikur Pokhari in search of better job opportunities, depended solely on alcohol business for their livelihood.

It must be mentioned that acquiring land from the landowners for *adhya* or *theka* is not an easy task for the local households as can be understood from the following quotes. A mother of three belonging to the *dalit* household stated:

“These days getting land for *adhya* for *kodo* cultivation difficult in the first place and has only worsened by the high cost of labour that we [tenants] have to incur.”

A man who lives in a different hamlet says:

“Here in my village, when we take someone else’s land in *adhya*, it is not guaranteed that we will get the same land next year. We have to keep looking for other’s land and every year we undertake *adhya* from different people. The difficulty that we face is acquiring the land for *adhya* as people prefer to give it to their relatives than us... Sometimes the owners themselves want to cultivate after we have cultivated in their land for the previous year... so in those cases we do not get any *bari* for *kodo* cultivation.”

I observed that households with the smaller landholding resort to *adhya* and *theka* for their sustenance from those who have surplus land and additional alternative sources of income. Such practice affords them a little relief in terms of food security in the short-run; however, a continued and prolonged participation in such a system (of sharecropping) has rendered these people - a majority of them belonging to the *dalits* and a few belonging to the general caste - more marginalized. Such practices only increased their dependence on land and the landowners for their sustenance. Under such circumstances, where the primary need of the small or zero landholders is to feed their family throughout the year, any focus towards education is secondary. This lack of education in the long run renders such households incapable of finding alternative sources of income and almost makes it impossible for the sharecroppers to switch from an agriculture-based livelihood to a service-based livelihood. This makes it difficult for such sharecropper households to come out of the vicious circle of landlessness,

unemployment, lack of education, and food insecurity. Households with zero or small landholding, large families and no alternative sources of income were found to be the most dependent on *kodo* for their sustenance.

In this context, where people are heavily reliant on agriculture for their sustenance, the most common endowment (i.e. the initial or the original bundle of ownership) is in the form of land and labor. Those households that are endowed with surplus land are entitled to either grow food on their own land or lease out their land, or collect the benefits in terms of produce. On the other hand, those who do not have land of their own, use their capacity for labour as their endowment and, therefore, become entitled to the practice of *adhya* or *theka*. What use a marginalized household makes of their endowment (in the form of skills, labour) and entitlement (in the form of *adhya* or *theka*) is dependent on their capabilities. However, for the households that have been practicing *adhya* and *theka* for decades, the capability to “do or be” seems to have been rendered useless. Lack of education, technological know how and sociocultural practices continue to reduce the landless and marginalized farmers to an object for exploitation. In absence of a real choice, the landless and marginalized farmers continue to remain devoid of endowment, entitlement, and capability

4.3.3 *Kodo* cultivation and consumption – the land connection

I found that one of the most important factors affecting the cultivation and consumption of *kodo* in the Dhikur Pokhari VDC was the size of landholding. The following section discusses the landholding and tenancy practices in the Dhikur Pokhari VDC, with focus on each of the three groups – the *janajati*, the upper caste, and the *dalit* households, according to the decreasing size of their landholding.

4.3.3.1 Landholding

The size of landholding plays a significant role in determining a household's cultivation and consumption of *kodo* in the Dhikur Pokhari VDC. Households with smaller landholding of *bari* or *khet* generally had lower cereal crop production, be it *kodo*, wheat, paddy, or maize. The households with smaller landholding reported that they could not cultivate sufficient *kodo* to meet the needs of their family. They were generally compelled to resort to *adhya* to cultivate *kodo* for their sustenance. However, households that could not undertake *adhya* and/or in case where the need for *kodo* was not met despite undertaking *adhya*, buying *kodo* from neighbours and mills was a common practice.

Table 4.7: Average landholding and relationships to *kodo*

Castes	Average irrigated land (<i>Khet</i>) holding (in hectare)	Average non-irrigated (<i>Bari</i>) holding (in hectare)	Average <i>kodo</i> production (in kilogram)
Dalit households	.20	.04	79.9
Upper caste households	.56	.17	130.6
Janajati households	.81 *	.31*	202.8*
	0**	0**	0**

Note: * = Gurungs
**= Mangars and Rais

4.3.3.1.1 Janajatis

As can be seen from Table 4.7, amongst those that were interviewed in Dhikur Pokhari VDC, the Gurung households on an average had the highest landholding as compared to the upper caste or the *dalit* households. This could explain the high cultivation and use of *kodo* among the Gurung households. This greater production-use connection was further enhanced by their traditional practices that they continue to follow even today. From the data it was found that all the eight Gurung households cultivated *kodo* in their *bari*, and generally did not have to purchase *kodo* from their neighbours or local mills.

In Dhikur Pokhari VDC, *kodo* has a strong socio-cultural and traditional significance attributed to it, especially by the Gurung community. Interestingly, this practice corroborates the findings of McNeely and Schutyser (2003), who had observed that species such as small millets also have strong cultural identity, traditional customs, and beliefs associated with them. These socio-cultural and traditional attributes accorded to *kodo* shaped the perception of *kodo* as a traditionally significant food item for the Gurung community.

Kodo was considered to be a staple food of the Gurungs in Dhikur Pokhari VDC in the earlier days, and even though over the past two decades the use of *kodo* as a staple food had been largely reduced, the use of *kodo* as a *raksi*-producing crop was reported to have steadily increased. The *raksi* making practice has been observed to be one of the factors that have enabled continued cultivation of *kodo* amongst the Gurung people. In fact, I observed that *kodo* is by far the only cereal crop that has high religious, economic, and sociocultural significance among the Gurung people in Dhikur Pokhari VDC. Referring to the significance of *kodo* for the Gurung community, an elderly female respondent said:

“*Kodo* has been a part of our tradition since old days. We make alcohol from *kodo* and have been doing so since our great grandfather’s time. I remember my parents doing it and today I continue it. Gurungs, Thakali, Mangars, Newars and Bhotay have been traditionally associated with *kodo*.”

Highlighting the significance of *raksi* made from *kodo* in terms of their socio-cultural traditions and practices, another Gurung woman states:

“Being a Gurung, *kodo* alcohol is a part of our tradition and culture. It is used as an offering to our ancestors during our *pitri puja* [ceremony for ancestors]. Also in Gurung tradition, the best way to honour a guest who comes to our homes or a host whose homes we visit is by offering *kodo* alcohol. We also show a mark of respect to our elders by offering them home-made *kodo* alcohol.”

It was found that, apart from one household which was involved in producing a large amount of *raksi* for sale and required more *kodo*, none of the remaining seven households had, so far, purchased *kodo* from external sources. These households had sufficient *kodo* production to cater to their food and alcohol requirements. It must be noted that the consumption of *kodo* in a Gurung household is more in the form of *raksi* and less in the form of food, though its overall use cannot be underplayed, as is shown below (Plate 2). In fact, all the eight households produced *raksi* from *kodo* for their household's consumption, of which six were involved in selling *kodo* as food grain and for *raksi* production to others.



Plate 2: A woman with cooked kodo for making raksi. Left side alcohol making pot

Thus, significance of *kodo* both as a food crop and alcohol for a Gurung household is well acknowledged by people from the Gurungs and other communities. An elderly Gurung female asserts:

“We have quite a lot of land so we are good in both paddy as well as *kodo* production. However, we consume more rice and less *kodo*. I am old so if my daughter makes *dhido*, we eat *kodo dhido*. If not, we eat rice only. In a month we roughly consume *kodo* about 10 times. My daughter makes *raksi*, so most of our *kodo* production goes on that.”

Agreeing with the statement above by the elderly Gurung female, an upper caste elderly man states:

“I am a *bahun*. Regarding consumption, it’s a tradition that the Gurungs make more use of *kodo*, be it for alcohol or for *dhido*. Have you seen Gurung children? They are very strong. Ours are thin like sticks. We *bahuns* do not consume much *kodo*.”

It was further discovered that apart from being considered a food crop and a cash crop (because of *raksi*), consumption of *kodo* in the Gurung households was also because of the numerous medicinal benefits that Gurungs associated *kodo* with, i.e. relief from cold, asthma, allergies, gastric, joint aches, controlling blood sugar, and many more as mentioned in the interviews. Referring to the appropriateness of *kodo* as a high altitude diet, a 55-year-old Gurung woman says:

“*Kodo* is good for high altitude places. If we go further up in the mountains then, it becomes difficult to cook rice and *kodo* becomes handy. *Kodo* is the only crop that is digestible with sheep milk in the higher altitude...”

The Gurungs referred to the medicinal properties of *kodo* as being the key factor for the continued production and consumption of *kodo*. The medicinal properties as perceived by a 70-year-old man are:

“When people suffer from blood stool, *kodo* is the best natural cure. *Kodo* can relieve body aches and *haija* (diarrhea) prevention. It also prevents altitude sickness that people in the mountains face while climbing up the mountain peaks in search for wood and grazing animals.”

I personally experienced the consumption of *kodo* for health benefits in a Gurung household when I suffered from a cold. I was given *fado* (*kodo* boiled in salted water and some turmeric) to cure my cold and running nose. However, even though the majority of Gurung people spoke about the traditional significance and health benefits of *kodo*, on the consumption level it was found that five out of eight Gurung households consumed rice

as their staple. The remaining three households consumed both rice and *kodo*. All eight Gurung households produced *raksi*, consumed it, and sold the excess. This low utilization of *kodo* as a food crop and high utilization for *raksi* could be because the Gurung households are relatively better off than the rest of the community in terms of land ownership and alternative sources of income. Their alternative source of income mainly came from foreign remittances. Out of the eight Gurung households interviewed, five households had at least one member (son or husband) of their family abroad, sending them money. The remaining three households had members who were retired from the Indian Army and had a monthly pension.

Apart from Gurungs, who are indigenous to the study area, I discovered that there were households belonging to other *janajati* category such as Mangar and Rai in Dhikur Pokhari VDC. Unlike the Gurungs, the few Rai and Mangar households that I interviewed had come from other parts of Nepal in search of work and better opportunities, and had settled in that area. Because they are not the original inhabitants of Dhikur Pokhari VDC, they do not own land and are mainly involved in small businesses, i.e. running roadside restaurants that primarily sell *kodo raksi* and other alcohol, snacks, cigarettes, cooked meat items. A 46-year-old businesswoman says:

“We are originally from a place called Purna. We came to Dhikur Pokhari area in search of work and settled here... So we do not own land in the literal sense... We do get *adhya* but we do not take them... because the *bari* or *khet* that we get for *adhya* usually are far away... so it's not feasible for us to travel to fields that are far away and work ... and also monkeys eat our crops in those lands as they are near the forest areas, so we are not engaged in farming.”

Another female respondent who also belongs to the Mangar community states:

“Actually I am not from here. I came with my husband around four to five years from Katmandu, Panante. At first we stayed at Pokhara for a few years

and then we came here... Pokhara was too hot for my child... this place is cold. I do not have any land here so I have this small shop where I sell everything from tea to alcohol.”

It was found that the Mangars and Rais were some of the highest consumers of *kodo* because of the alcohol business that they were involved in. *Raksi* and *chyang* were mainly produced and sold in their roadside shops for their livelihood. As they did not own land, they purchased large quantities of *kodo* for alcohol production from the upper caste and the Gurung households throughout Dhikur Pokhari VDC. A 30-year-old woman comments:

“As, I told you, I do not have any land, I have to buy *kodo* from others... and I buy it from all around the village here in Paudhur Kot. I also have to go to other villages when I don't get *kodo* from here... in that case I go to Naudara, Marangche, Lumle, Laxmi Deurale... I go to mills in these places too. Sometimes people bring *kodo* to my door too... it is mostly from the people of Royale, Simpali, Adhikari Dara, Serra Chour, a lot from here.”

Another woman also involved in making and selling *raksi* states:

“I make *raksi* from *kodo*. I get my *kodo* from everywhere: Serrah, Dhikur Pokhari, Marangche, Kade, nearby local mills and Lumle. For my business, I mostly buy it from the *bahuns* [general caste] ... they come to my house only to sell... but even I go and look for *kodo*... not all time do I get people coming to my door and selling *kodo*.”

Among the Mangar and Rai households, the consumption of *kodo* for business purposes was very high, and consumption for food purposes was low. Reasons such as lack of time for preparing *kodo*-based food and the presence of readily available substitute such as rice were cited as reasons for the low consumption of *kodo* as food. Most of the *raksi* shops were along the national highway that ran across Dhikur Pokhari VDC, giving them easy access to trucks that transported rice to other VDC's. I believe that this could be because of the fact that *raksi* made from *kodo* was so widely consumed

by the locals as well as the travelers that, such families had a good income source that was not farm-based. These families may not have land, but business in *raksi* gave them a better livelihood and standard of living as compared to the *dalit* households. In fact, I observed that they indeed were better off than the local *dalits*.

Referring to easy availability of alternatives, one of the respondents who owns a small roadside restaurant stated:

“See rice we buy from here only... most of the time the trucks carrying load to nearby mills or shops, they drop it at our door only... these days we have small trucks just selling stuffs right on our door... so rice, we mainly buy *chitwany* rice from the transportation trucks... other shops items we buy from the other smaller trucks that come here.”

Thus, it is seen that *kodo* continues to remain an integral part of the *janajati* households of Dhikur Pokhari VDC either as their food or as a source of their livelihood. At this point one can say that the original bundle of ownerships, i.e. the endowments, are different even amongst the *janajati*. The local indigenous Gurung community own land as their main endowment, whereas those who have migrated to Dhikur Pokhari VDC from outside have their skills and business acumen as their endowment.

4.3.3.1.2 Upper caste

The majority of upper caste households, too, had been traditionally associated with the practice of cultivating *kodo* as their main staple food in the earlier days, but had gradually reduced their cultivation as well as their consumption over the years due to several factors that are discussed in section 4.5 of this Chapter. Unlike the Gurung households where *kodo* was an integral part of their *parampara* (tradition), the upper caste households considered *kodo* as a *jutho khana* (impure food) from *dharmic*

(religious) as well as *paramparagath* (traditional) point of views. Says an old man who operated a mill:

“If you see from the *dharmik dristikone* [religious point of view], *kodo* is a *ku anna* [bad grain]... *jutho* [impure]. To this day and age, we continue to go by these religious belief and practices. I don’t know why *kodo* is *jutho*. It’s a belief passed down from one generation to the next I guess.”

This traditional and religious belief influenced the consumption pattern of upper caste people as they abstained from consuming *kodo* on auspicious days of the months, such as *ausee* (new moon day) and *purne* (full moon day), on auspicious weeks (16 days) of *solah sarad*, auspicious months of *swasthani*, religious fasting, and mourning periods (one year). The religious belief that *kodo* was an impure grain, was not only prevalent among the older generations, but has been passed on to the younger generations. For instance, a young woman aged 22 years said:

“As compared to other castes, upper caste people have more days where they have to refrain from eating food stuffs such as *kodo*, *lasun* [garlic], and *bhatta* [soyabean]. We are Hindus so we have to follow all these... The Gurungs or Mangars... they are Buddhists, they don’t have to... it’s not there in their religion.”

The production of *raksi* from *kodo* grains as well as its consumption was considered to be a religious taboo by the upper caste households. The religious taboo of refraining from producing or consuming *raksi*, or in general any alcohol, continues to be practiced by upper caste households even to this day. However, the locals, including a few upper caste participants, mentioned that the *raksi* consumption by the upper caste people from the local *raksi* shops was on the rise. To some, the economic potential of selling *raksi* seems to have loosened the grip of religious taboo in some cases, as alluded to by a 45-year-old man who is involved in alcohol business:

“If you consider our caste [general caste] we are not supposed to produce alcohol. Earlier we didn’t even drink. But today people are slowly drinking. Even I drink these days. However, I do not produce alcohol; instead I buy alcohol from others and sell in my shop.”

Despite this, the majority of the upper caste households continue to practice the religious taboo even to this day. It was found that, out of the 27 upper caste households only four households have reported that they purchased *raksi* from *raksi* producers (mostly the *janajatis*) and consumed it. A 45 year old from Serra Chour (ward IX) where majority of households were that of the upper caste says:

“See ours is a *bahun* [upper caste] community. Though people may not say directly say it on your face, but we do not encourage alcohol production or consumption. We look down upon alcohol producers in our village as majority here are *bahuns*.”

In terms of landholding of the upper caste households, from the Table 4.7 it is seen that, on an average they have the second highest landholding. Unlike the Gurungs households where greater landholding (*bari*) meant greater usage of *bari* for *kodo* cultivation, many upper caste households preferred to convert their *bari* into *khet* if water resources could be channelled for irrigation to grow more paddy than *kodo*. In case of failure to convert their *bari* into *khet*, these households continued to grow *kodo* in their *bari*. Relating to such practices, a 40-year-old woman from ward number 7, Laxmi Deurale states:

“I did not have any *bari* when I separated from my in-laws. I added it slowly after my husband went to work abroad. I purchased a small plot of *bari* and was cultivating *kodo*, when everyone around me started converting their *bari* into *khet* for more rice cultivation. I had to follow their path.”

I observed that some upper caste households with large *bari* holdings were of the opinion that, if given a choice, they preferred to leave their land barren instead of

growing *kodo*. Due to the fear of how society would view them if they did so, they continued to grow *kodo* on their non-irrigated lands. Worrying about being perceived as lazy, a woman states:

“Here almost everyone grows *kodo*. In this mountain area with changing climate all the time agriculture is difficult especially on *bari*. *Kodo* cultivation is very hard especially with no one in the house apart from my mother and me. If we could, we would leave the field barren instead of cultivating *kodo*, but then people will start talking so we continue toiling for *kodo*.”

Despite the religious taboo and the preference for *khet* by the upper caste households, the majority of the upper caste households continued to cultivate *kodo*. This is partly due to the prevailing geographical and climatic conditions in the Dhikur Pokhari VDC. This VDC being in the mountainous area, not much *bari* could be converted into *khet*. It was found that 26 out of 27 upper caste households cultivated *kodo* in their *bari* in varying quantities depending on the size of their *bari*. Out of the 26 upper caste households cultivating *kodo*, seven households reported that their *kodo* supply was less than what they actually required. It is also to be noted that not all the upper caste households consumed *kodo*. Given the traditional belief and religious taboos associated with *kodo*, along with the taste and preferences, it was found that consumption of *kodo* was much lower than the production amongst the majority of the upper caste households. *Kodo* may not be a daily staple of the majority of upper caste households, but it continues to remain an important part of people’s diet. From the analyzed data, I found that 13 out of the 27 households reported consuming only rice, three households reported consuming mainly rice and *kodo* (occasionally) and the remaining 11 households reported consuming both rice and *kodo* equally. A younger respondent belonging to the *Bahun* community says:

“Today people eat more rice but *kodo* is a staple as rice, in this house. We eat *kodo* everyday... sometimes we eat both in the morning and night... sometimes it’s only during the day. I like *dhido* made of *kodo* more than rice... and I can eat more than a plate of *dhido*...”

This, in turn, gave the upper caste households enough surplus, which gave them the impetus to either sell or use *kodo* as animal feed. It was, in fact, discovered that these households sold the excess surplus to a few *janajati* households (those involved in alcohol business) and mostly to the *dalit* households. Referring to the practice of selling surplus *kodo*, an upper caste respondent said:

“In our area, the majority of households are that of *bahuns*. Here nobody buys *kodo*. Every household has their own production of *kodo*. We get lots of buyers who are alcohol producers coming from different ward, but in our village, we sell it mostly to the few *dalit* [lower caste] households as most of them do not have much *bari*...”

It was found that 18 out of 27 upper caste households sold *kodo*. This in itself indicates the significance of *kodo* as an economic tool. It must also be mentioned that although the majority of upper caste households did mention the health benefits associated with *kodo*, a few of them were oblivious to such health benefits and preferred pharmaceutical medicines to cure their ailments. The following response is from a woman belonging to the upper caste household who, when asked if she was aware of the medicinal properties of *kodo*, responded:

“We are not aware of the health benefits of *kodo*... so that could be one reason why we easily resort to other ways of farming. In fact, some *kodo* like *asaray* [monsoon] *kodo* dries the milk of our goat and water buffaloes and, in addition, gives our eyes a burning sensation when we consume it.”

Weber and Fuller (2006) had observed that low preference for millets could be due to various factors such as lack of awareness amongst the producers as well as the consumers about its nutritional components and the deep-rooted social perception of low

status food. It was quite true in the case of Dhikur Pokhari VDC, wherein I discovered that, people who were economically better off and those who belonged to the upper caste, believed that *kodo* was low status food and thus did not consume it during certain religious and traditionally significant days.

4.3.3.1.3 Dalits

Similar to the Gurung and the upper caste households, the *dalit* households, too, had been traditionally cultivating *kodo* since very early times. As can be seen from Table 4.7, the *dalit* households have the lowest average landholding. Most of them cultivated *kodo* on *bari* rented from big landowners in *adhya*. I discovered that low landholding not only restricted their cultivation of *kodo* in *bari*, but also of other crops such as paddy, maize, and wheat in *khet*. Lamenting the loss of their family land, one of the female respondents belonging to the *dalit* household states:

“We do not have land. We are like *sukumbasi* [nomads]. It is believed that earlier our grandfathers had land but they kept on selling it, and eventually we ended up having no land... and in this day and age we cannot afford to buy land. The last patch of land was sold by my father-in-law and we have nothing now.”

It was evident that, on one hand, low *bari* holdings restrained their *kodo* cultivation, and on the other, low *khet* limited the cultivation of other crops such as paddy, and wheat. Thus, the need for *kodo* in the *dalit* households was significantly higher than in the upper caste or Gurung households. I observed that the dependence of *dalit* households on *kodo* as well as other crops that they grew was only magnified by their poor economic conditions with no alternative income sources. Apart from a few households that were engaged in the tailoring business (a caste-based occupation), the majority of the *dalit* households were farmers or daily wage labourers. However, in most cases, what they grew was not enough to sustain their families throughout the year.

Hence, if they had to buy, *kodo* being the most widely available and most affordable, and was often sought by them as compared to other crops such as paddy or wheat. A *dalit* male respondent referring to this fact says:

“To be honest my family prefers rice only, but I do not always get it. But more often than not, I have to use *kodo* as it is very filling. I am a daily wage earner. What I earn, I feed my family with that, but it is not sufficient. Unlike others, who buy *kodo* once in a while, I have to buy *kodo* quite frequently to feed my family. I buy wherever I get it cheap, mostly the Gurung households. But rice we buy from shops only.”

The *dalit* households generally bought *kodo* from both the Gurung as well as the upper caste households. Out of the nine *dalit* households, seven households that was dependent solely on agriculture and labour consumed *kodo* and rice alternately, while two households that had tailoring as their alternative source of income in addition to farming consumed only rice. One *dalit* woman stated:

“We face difficulty every month *mainia pachi garo huncha* (every month is difficult) *nirva chalcha* (somehow we manage)... Our state is so bad that we go in debt just to take care of our food. We cannot afford rice all the time so *kodo* is our main food. We eat rice and *dhido* side by side.”

The lack of land, be it *bari* or *khet*, forced many *dalit* households to resort to *adhya* from big landholders for the cultivation of *kodo*. However, the quantity of *kodo* produced through *adhya* when divided between the landowner and the tenant would result in half the produce being shared with the landowners, despite all the hard work and majority of inputs put in solely by the tenant. The lack of land, especially *bari*, handicapped these households so much that despite the hardships and high labour cost associated with *kodo* cultivation, they were forced to undertake *adhya* of *bari* for *kodo* cultivation to sustain their families. However, as mentioned earlier, getting *adhya* from landowners was not always possible for the *dalit* households. In addition to no permanent

alternative sources of income they were compelled to buy *kodo* from their neighbours or local mills to feed their families all year long.

Thus, it can be inferred that, in general the households that were economically better off relied more on paddy, wheat, and maize for their sustenance, whereas the poor and marginalized households characterized by small landholding, large family and limited sources of income, relied on *kodo* as their main food source. This finding is in agreement with the observations made by (Mangay et al., 1957; Weber and Fuller, 2006) where they have stated that in the developing countries like India, Nepal, and some parts of Africa, millets are the source of food for people, especially the poor in the marginalized areas.

4.4 Role of women

Keeping in mind the broader project objective, the focus of this research was to understand the various activities that women undertake with regards to *kodo* cultivation. Through in-depth household interviews, observations, and focus group discussions, I have outlined the entire activities that men and women are involved with the cultivation of *kodo*. It was found that women played a crucial role in the cultivation of *kodo* in Dhikur Pokhari as well as the neighbouring VDCs. For a better understanding of the role of women in *kodo* cultivation, I have divided the processes involved in the cultivation of *kodo* into three phases. The first phase included the processes of ploughing the field, clod breaking, levelling, nursery raising, weeding, and transplanting. The second phase included the process of harvest, curing, threshing, winnowing, drying and storing. Third phase involved the utilization of *kodo* grains.

It was found that women, irrespective of their caste, were involved in the majority of the first and the second phase processes. Only the process of ploughing the field using animals such water buffaloes or ox and nursery raising was undertaken by the male members, as these processes were reported to require more physical strength. A detailed description of these activities has been given in the Appendix III of this thesis. The role of women does not end with the end of the second phase processes. Rather it continues until *kodo* reaches the mouths of their family members as *dhido* or *roti* or *pua* or *raksi*. In fact, for some women their role in achieving food security and for generating livelihood began with the end of the second phase processes.

Before going to the third phase, a few pictures highlighting the involvement of women in *kodo* cultivation is shown in Plates 3 and 4 below, as I witnessed during my field stay.



Plate 3: Roles of women with regard to *kodo*,
Left shows women breaking clod in their field,
Right shows women harvesting *kodo* ear heads.



Plate 4: Roles of women with regard to kodo.
(Clockwise from top left) A woman cutting *nall* for fodder; a woman carrying the harvested *kodo* in *thunse*. a woman rubbing *kodo* after the curing process; a woman threshing *kodo*; a woman winnowing the threshed *kodo* and a woman drying the winnowed *kodo*.

The third phase includes the processes of grinding the *kodo* grains into *kodo* flour, making food items from *kodo* grains such as *dhido* or *pua*, making *kodo raksi* and procuring *kodo* grains by those who do not cultivate their own *kodo* or for those who do not have sufficient *kodo* of their own. The grinding of *kodo* grains into flour to be used for food purposes was done either in their own homes using a traditional stone grinder called *jathe*, or at the local mills using a micro-machine that operated on electricity or diesel. It was found and also observed that in both the cases, it was women who were mainly engaged in undertaking the grinding processes. However, it must be mentioned that although it was mainly women who carried the *kodo* grains to the local mills to be ground, the grinding of the *kodo* grains inside the mills were usually done by the men because the men were also involved in the dehusking and grinding of other crops such as paddy, wheat, and maize. Because the majority of women were homemakers responsible for the day to day running of the household, preparing food from *kodo* was also a part of their responsibility, which in the case of *janajati* women, also included *raksi* making. In all of my observations, I noted that, the process of making *raksi* from *kodo* and selling to customers was entirely undertaken by women. The following plates show the processes that are undertaken by women.



Plate 5: Left - a woman grinding *kodo* in *jathe*; Right - A woman preparing *kodo dhido*



Plate 6: A woman filling *kodo raksi* in bottles

Although the majority of households held the view that women had more involvement in *kodo* cultivation, a few were of the opinion that men were equally involved in *kodo* cultivation. Speaking on the involvement of men in *kodo* cultivation, one male respondent put it in perspective thus:

“See for the cultivation of *kodo*, the person who ploughs is a male, our sons. The women are engaged in planting, weeding, harvesting which require less physical labour. But that does not mean that women play a greater role in the cultivation of *kodo*. We too are engaged in *jhar farnay* [grass cutting] just as they are engaged in *jhar gornay* [weeding]. During the time of harvest if women cut the *kodo bala* [heads], who do you, think carries it to the house? We... I must say that men and women have equal contribution. If women are doing some tasks so are men. Men also help in the *chutney* [threshing with stick] process... and for *marnay* [threshing with feet], I really cannot recount if anybody in my family has asked me to do such stuff. If they would have asked me, I would do it but the fact is that they don't. Women believe it's their job and do it. We take equal part but because, women perform the less physical - more tedious work, when we are asked who has more role, we simply say “them.” But the fact is that we take part in the process that has been socially carved for us by women themselves.”

Another male respondent says:

“See it's a need-based task. If there are no men, then women can plough as well and likewise if we don't have women, we men can do the transplanting and harvesting job.”

Agreeing with this view, one female respondent added:

“The interesting thing in my house is that Uncle is as efficient a worker as I am. He is in fact better than me in transplanting as well as harvesting. He does it more efficiently and fast. For *kodo*, he is the hardest worker.”

Some of the activities that men are associated regarding *kodo* cultivation are shown in the following picture plates.



Plate 7: (Clockwise) A man tilling the fields using traditional plough; a boy about to take *kodo nall* as fodder; a man grinding *kodo* at a mill using micro machine; a man grinding *kodo* in a *ghatta* run by water turbine.

Since both men and women have been reported to be involved in the cultivation of *kodo* grains in some way or the other, I have tried to summarize all the activities in terms of gender involvement in Table 4.8.

However, despite their involvement in all the farm related activities, it must be mentioned that women in general did not seem to have much knowledge regarding the size of their family's landholding and the varieties of *kodo* they were growing. This phenomenon – of women lacking knowledge regarding basic information such as the size of their landholding to actual control of resources - is very well documented in previous literature (Gittinger et al., 1990; Upadhy 2004, NPC, 2005; and FAO 2011).

Regarding the landholding some women said:

“The land is in my father-in-law's name, so I don't know how much land we own. It is just this much area below our house.”

Another two respondents also answered on similar lines:

“I don't know how much *ropani* of land we have in the exact figures. My husband will know that but he is not here. I can roughly estimate it if you want it.”

“Wait for Uncle to come. He will tell you how much land we have. I have no education so I don't know much about landholding. Uncle knows all these details.”

The majority of men knew the exact landholding size as well as the variety of *kodo* – *urso*, *okhlay*, *kalo ghoray* – that they cultivated. Women on the other hand used terms like *agauthe* (earlier harvested) or *pachauthe* (late harvested) and didn't know the exact variety of *kodo*. This inability of women to properly name the different varieties of crops they were cultivating or know the size of their landholding could be attributed to the fact that Nepal being a patriarchal country and women do not privy themselves to such information and decisions. Only the male members of a household seemed to have such information. As can be understood by the following response:

“My husband takes all the decisions. *Puruspradhan desh ma mahila haru le ke sallah garnay* [in a male dominated country, who would care about women's opinions].”

Referring to decision-making in her family a 30-year-old woman says:

“My husband is a teacher in Campus [in a college]. Earlier my father-in-law used to take the decisions, but now he is really old. My mother-in-law is there, but now my husband takes all the decisions. I guess he is just doing what a son has to do... son is taking father’s place.”

“Household stuffs from cooking to cleaning are all done by my daughter-in-law and wife, but in the business that I am involved, what can women say? So I make all the decisions regarding my business and anything that it affects.”

Table 4.8: Gender-wise involvement in *kodo* cultivation

Processes	Gender	Difficulties
Ploughing	Male	Hard physical labour. Backache Making arrangement for bulls High labour and bull cost
Clod breaking	Female	Backache
Levelling	Female	Backache
Nursery raising (<i>Byad</i>)	Male & female	Difficult and hard process involving physical labour
Nursery weeding	Female	Rigorous and backache
Transplanting	Female & male	Backache. High labour cost Time consuming
Weeding	Female	Backache. Snake bite Work in bad weather condition such as rain.
Harvesting	Female & male	Physical work Monkey attack
Curing	Female	Spoilage due to over curing
Threshing	Female	Hard physical work Sore or blistered feet Body ache
Winnowing	Female	Labourious Respiratory problems because of husk
Drying	Female	Physical work - Tiring
Storing	Female	Physical work - Tiring

The Table 4.8 indicates the difficulties that both men and women face while cultivating *kodo*. As can be seen from the table (Table 4.8) above, the main task of ploughing and nursery raising were mainly undertaken by men. Apart from this a few

men were also involved in the transplanting and harvesting processes of *kodo*. However, the majority of women in Dhikur Pokhari VDC reported that for *kodo* cultivation, unlike their male counterparts who mainly undertook only specific tasks like ploughing or nursery raising, women had to undertake all the other tasks and continuously work on the fields, irrespective of harsh weather conditions or bad health conditions. In addition, women earn lower wages than men. It was widely believed that this was so, because men were involved in more demanding tasks than women and, as a result, men were given almost double the wages.

It is evident from the above discussions that women play a significant role in the cultivation of *kodo* and her role expands further in ensuring food security and generating livelihood. However, women's dependence on agriculture for sustenance in general, and *kodo* in particular is determined by her endowments, entitlements, and capabilities. Nepal being a patriarchal society, the ownership of the land, i.e. original endowment, in the majority of cases rests with the male members of the households rather than female members. This corroborates what Gittinger et al., (1990), Quisumbing and Meinzen-Dick (2001), Ramachandran (2007) and FAO (2011) have stated earlier, that: in many parts of the developing countries, the right to land is often entrusted to the male and women are more often than not deprived from inheriting any land. The general belief in Dhikur Pokhari VDC that female members would eventually marry and move to her husband's house gave rise to the common practice of excluding female members from the allocation and distribution of land. Which was observed among all three categories of households. Thus, under such practice where women have little or no initial landholding (i.e. endowments) to begin with, coupled with no education and no alternative sources of

income (i.e. entitlements), the endowment of her husband in the form of landholding gives women their entitlement. This supports what Ramachandran (2007) has earlier said that, in the absence of land rights, the majority of the women in the rural parts of developing countries are dependent on the men (in their family) for ensuring their livelihood and food security. The employment of her husband further expands her entitlements and determines her “capability to functionings,” which is nothing but what women can achieve to “do or be” (Sen, 1981).

In the context of Dhikur Pokhari VDC, the Gurung households and upper caste had more landholding. It can be inferred from this that women belonging to these households in general had wider entitlements, i.e. they can cultivate food crops in their own field and feed their families, can sell their surplus, can give *adhya* or *theka*, or can even sell their land. The Gurung women, in addition to the above-mentioned entitlements, were also found to have additional entitlements – can produce *kodo raksi*, can sell it or can consume it – considered a big taboo for the upper caste households. The *dalit* households had a low number of landholding as compared to the Gurungs and the upper caste households; therefore *dalit* women had limited entitlements. Unlike the Gurung women who could make *raksi* and earn their living, the prevailing lower caste status associated with the *dalit* households prevented *dalit* women from undertaking such business. *Dalits* are still considered to be untouchables and the members from the upper caste or *janajati* households usually do not consume water or food items touched by the *dalits*.

Thus, given the existing sociocultural and religious context, the Gurung, Rai and Mangar women, despite having low education, were found to be making use of their land

(as endowment as well as entitlement), had the ability to make *raksi* (as entitlement), and had business acumen (as their capability) to achieve food security as well as a living. For women who were engaged in large scale *raksi* business, making *raksi* and selling it was their only source of income. For these households, because they had a large family, or because their income from other sources was not sufficient, some of the *janajati* women were forced to be involved in *raksi* business. Although *raksi* making may seem lucrative, generally many failed to account for the personal hardships as well as the cost involved in the production of *raksi*. Says a 42-year-old Mangar woman:

“My husband left me and went with another woman and does not give even a single rupee for me or for my children. I have one son and four daughters and they are all young. My eldest is around 17 years old and leaving her out - as she married a guy from Korea last year, all my three children are studying. So this is my business and this is how I sustain my family. I am not educated, that is why I force my children to get their education. Earlier, I had a very small *bari* and was taking *adhya* from others but being dependent on agriculture was too time consuming and uncertain. My children were small and so I left it and got into this business full time.”

Speaking along similar lines another woman who sells *raksi* stated:

“I have this shop where I sell *raksi*. I have two sons studying in Campus [college]. My husband left me and married another woman. I do not have any brothers and my mother is dead, too. I am practically alone here as both my sons are studying in Pokhara. So my main source of livelihood to support my sons is this shop. The little *bari* I had, I converted it into *khet* for my rice. All the *kodo* that I require for *raksi*, I buy them.”

It was found that one of the main drawbacks that women faced in general was their lack of education. Lack of education forced women to be heavily dependent on their husband for their sustenance. The following table (4.9) shows the educational status of interview respondents.

Table 4.9: Level of education of interview respondents

Education level	Dalit		Upper caste		Janajati			
					Gurung		Mangar	
	Males	Females	Males	Females	Males	Females	Males	Females
No education	1	4	2	6	1	4	0	2
Primary	2	1	3	3		1	0	2
Secondary	0	0	4	4	1	1	0	0
Higher Secondary	0	1		1	0	0	0	0
College	0	0	2	2	0	0	0	0
Total	9		27		8		4	

As can be seen from Table 4.9, out of the 12-janajati households interviewed, half of the women were uneducated. For the upper caste women although the socio-cultural and religious practices and beliefs forbade them from making *raksi* (considered an entitlement loss), they were relatively more educated (entitlement gain) than women from other communities. Hence, with land either as endowment or entitlement and education as their entitlement, they enhanced their “capability to functioning” that impacted food security and livelihood generation. For the *dalit* women, prevailing sociocultural practices in the form of the caste system eroded their entitlement to sell *raksi* for a living, like the *janajati* women. This, coupled with the fact that half the *dalit* women were uneducated, negatively affected their “capability to functioning,” which, in turn, reflected on their inability to ensure food security for their families or to make a living. This corroborates Quisumbing and Pandolfelli (2009) who had asserted that the lack of basic education contributes negatively towards developing capabilities in women; it prevents women from accessing many opportunities.

Thus, it can be concluded that amongst the women belonging to different castes, the most marginalized were the *dalit* women. For women in general and the *dalit* women in particular, low or zero landholding coupled with lack of alternative income sources,

compelled them to resort to *adhya* for *kodo* or *theka* for paddy cultivation. These women had to work longer and harder while undertaking *adhya* or *theka* on someone else's land. Hence, it would be safe to assume that women who belong to the marginalized sections of the society are required to work harder and longer, whereas women who belong to economically well-off households tend to have a much easier life; they can afford to hire other women to work for them. It can also be inferred that women in economically well-endowed households with greater resources at their disposal used these resources to create entitlements for themselves that also included more leisure time for themselves. Those women who belonged to the economically marginalized sections of the society did not have any endowment other than their ability to labour, which made them further marginalized and vulnerable.

4.5 *Kodo* and food security

Corroborating with Sen (1981), Murugan (2003) and Osmani (1993) food security in general is determined by a household's endowments and entitlement, and that decline in either of their endowment or entitlement will lead to food insecurity. From the analyzed data, it can be inferred that the access to food was largely determined by two factors in Dhikur Pokhari VDC— size of landholding (i.e. seen as endowment) and alternative permanent employment (i.e. considered an entitlement). The agriculture-dependent households with greater landholding (i.e. more initial endowment) derived a major portion of their main food crops and vegetables from their own field whereas agriculture-dependent households with smaller landholding (i.e. low initial endowment) had to depend more on other sources. They either have to buy food, receive food in aid, or exchange labour for food (Sen, 1981). The households with low landholding but an

alternative source of income (i.e. considered as an entitlement), such as foreign remittances, government, and private services easily resorted to buying the required cereal crops from the local market, local mills, or city markets throughout the year. On the other hand, households with no alternative permanent employment source, and low or zero landholding, faced difficulty in accessing food throughout year.

Other than their land, another common source of cereal crops such as rice or wheat for the households in Dhikur Pokhari VDC was the local markets. These local markets were also the main source for durable commodities that were not cultivated by the locals, for example sugar, salt, tea leaves, spices, oil, and pulses. In the absence of local bazaars, the household's members would have to be dependent on distant city markets in Pokhara city. In fact, the majority of the households reported that their reliance on local markets was more during the months of *sawan* (mid July-mid August), *bhadau* (mid August-mid September) and *asoj* (mid September-mid October). This was primarily because during these months, their major cereal crops, i.e. paddy and *kodo*, were in the fields and could not be harvested. As a result, the local households generally resorted to local markets for procuring their food. For a well-endowed and entitled household in terms of land and alternative jobs, access to local market was convenient. For households with low or zero endowments of land and thus less entitlement, they were faced with more months of food insecurity. Although the incidence of starvation was neither observed nor reported, it was evident from the analyzed data that the households with low landholding and no alternative income sources continue to survive literally from hand to mouth and experience food insecurity.

In order to gain a better understanding of the months during which the households were likely to be food insecure, I tried to capture a year-round household cultivation pattern of the major cereal crops and vegetables through a focus group discussion. The findings were used to construct a seasonal calendar as shown in Figure 4.3.

I have used different colours in the seasonal calendar to highlight the activities involved in the cultivation of the major four crops grown in the Dhikur Pokhari VDC. The calendar includes the growing phase of each of these crops in yellow and dark blue. Given the topographical and altitudinal variation across the VDC of Dhikur Pokhari, the seasonal calendar shows a generalized crop cultivation pattern representing the entire VDC. Corroborating what many households reported, it can be seen from the calendar that the months from mid-July to mid-October happen to be the months during which both paddy and *kodo* are on the field. Therefore, without a buffer stock in the form of older harvest grains, or without the ability to buy cereal crop from the market, ensuring food security during these few months could be difficult for those who do not own land or may not have alternative sources of income. During these months, the households with low buffer stocks of their own cereal crop production, low income, or no alternative income source could face transitory food insecurity. Any fluctuations in their cereal crop production, due to uncertain weather conditions or market prices could further elevate their food insecurity situation.

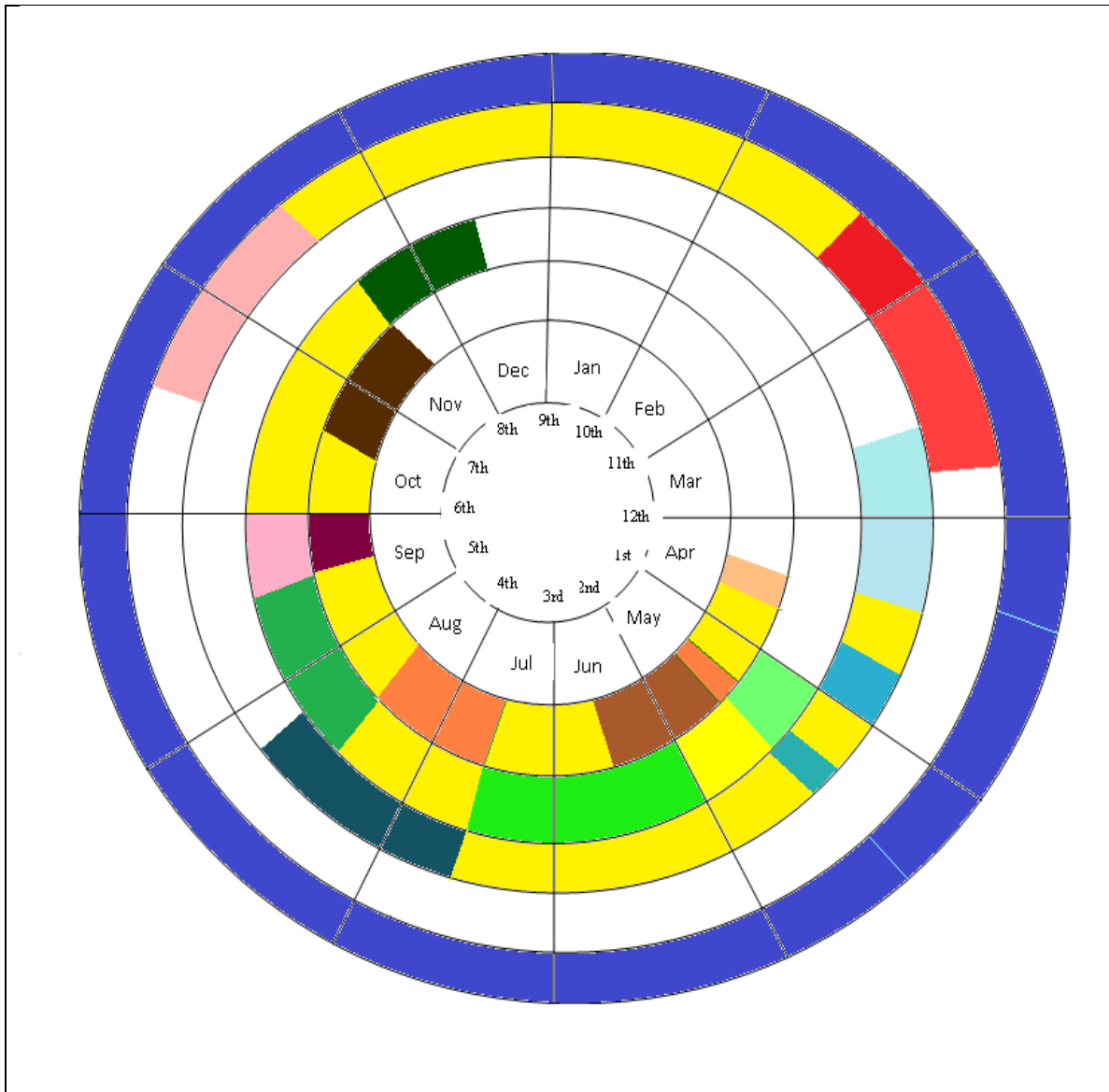


Figure 4.3: Seasonal calendar showing various crop cycles in Dhikur Pokhari VDC

Table 4.10: Legend showing seasonal calendar

Crops/ Activities	Kodo Millet	Paddy	Maize	Mustard	Vegetables
Nursery	Light Orange	Light Green			Blue
Weeding	Orange	Green	Cyan		Blue
Transplant	Brown	Light Green	Cyan	Pink	Blue
Harvest	Brown	Dark Green	Dark Teal	Pink	Blue
Growth	Yellow	Yellow	Yellow	Yellow	Blue

The vegetable cultivation is shown by blue color, indicating the seasonal growth of vegetables throughout the year. It can be inferred that seasonal vegetable cultivation

continues throughout the year, giving households access to vegetables from their own field. For households that practiced commercial vegetable farming, the cultivation of seasonal vegetables gave a steady income; thereby not only enhancing their livelihood, but also affecting their food security by expanding their entitlement to other food.

From among all the cereal crops cultivated in Dhikur Pokhari VDC, paddy was considered to be the dominant crop, followed by maize, *kodo*, and wheat for cultivation as well as consumption. In addition, households also cultivated mustard and seasonal vegetables such as cauliflower, cabbage, potatoes, and tomatoes. It was observed as well as reported that rice was the staple of the majority of households of this VDC, so much so that even the local *bazars* (markets) were flooded with rice coming from as far away districts as Chitwan in the *terai* region of Nepal. On the other hand, even though *kodo* was cultivated by almost all the households in Dhikur Pokhari VDC (in varying quantities), only a certain percentage of the households reported *kodo* to be a staple. For households that did not consider *kodo* to be their staple, they mentioned that *kodo* continues to be a part of their diet. An upper caste farmer said:

“I was raised eating *kodo dhido*, and I still continue to consume *kodo* either as *dhido* or *roti* or *pua* or *kholay*. I consume rice, too, but *kodo* is very much a part of my household diet as rice. It’s been many months that we have been consuming *kodo dhido* once a day. You can say we consume *kodo dhido* six days in a week. So naturally it’s like our main food.”

Concurring with the above statement, a respondent belonging to the Gurung community responded:

“See I am alone right now as all my three children are down in Pokhara studying. I cannot make *dhido* only for myself but, whenever they come back, I make *kodo dhido*. I eat more rice, but I do consume *kodo dhido* sometimes, though most of it is mainly used for *raksi* in my household.”

Speaking along similar lines a woman belonging to the *dalit* community also agreed:

“If I would get *kodo dhido* daily, I could eat it daily. I like it better than rice... In fact I don't find rice tasty. I find *kodo dhido* tastier than rice.”

The reasons given by majority of the households as to why *kodo* continued to be a part of the local diet are because the locals: consider *kodo* to be *adilo* (filling); view *kodo* as the only cereal crop that can be stored for numerous years; and, believe that *kodo* will help them tide over *anikal* (famines). Stressing this fact, a 54-year-old man recollects an old Nepali saying “*bhat khayay mela ma... dhido khaya bella ma,*” implying that rice consumption will sustain an individual only until he reaches a fair, where as *dhido* consumption will sustain him until he returns back home from the fair. These two characteristic of *kodo* – being filling and its capacity to be stored for a long period of time without worrying about the grains going bad - makes *kodo* most attractive to the households that are working long hours in the field, as well as for the households having less land and low production. One of those farmers who has very little land agrees:

“My parents used to constantly tell us that for the people living in mountains and for those having very less land like us, *kodo* is the most important crop amongst all other crops. It is very filling and is the crop that will help us tide over *anikal* (famine) Today *kodo* may not be our primary food, but it is very much a part of our diet.”

Another characteristic that locals commonly attached to *kodo* is that, *kodo* as a food crop can feed many mouths with a relatively small portion as compared to rice or maize. This makes *kodo* a reliable crop. It must be mentioned that the locals of Dhikur Pokhari VDC commonly used volume-based measuring units such as *mana*, *pathi* and *muri* for their cereal crops. I have decided on weight-based units for convenience and have converted volume-based units such as *mana*, *pathi* and *muri* into kilograms using the conversion table provided by LI-BIRD Organization. I have included the conversion

table in Appendix IV of this thesis with respect to this food property a male respondent says:

“*Kodo* is very important to us... it is more important than *dhan*. If we have one *manna* of *kodo peetho* [flour], it is good enough to feed a whole family of five but the same is not possible from one *manna* of rice.”

Another respondent who also agrees with the fact that *kodo* is more filling than *dhan* states:

“If you compare one *pathi* of *kodo* to one *pathi* of *dhan* [paddy], *dhan* will get over in no time. The family can tide over the difficult time only by *kodo*. Here I must say there is a relation between the *jaat* [variety] of the *kodo* and the quantity required to feed the family... one *mana* of *asaree kodo* can feed more family members whereas two or three *mana* of other *kodo* variety is required to feed the same number of family members.

In addition to these characteristics, it was widely mentioned that the majority of households considered *kodo* as a major substitute for rice when the production of paddy was low or when production failed. Referring to this, one respondent said:

“I have experienced that *kodo* is the best crop for people who have less land. It is the best substitute for rice. When the *dhan* [paddy] production is low, we consume more *kodo* and save our rice. Although you will find that *dhan* production in every household is more than *kodo* production, *kodo* is way more efficient than *dhan* for feeding our large families or for its excellent storage ability. So, I personally believe that if anything, uncertain changes happen to our weather here, like this year’s hailstorm that affected our *dhan* production badly, we at least have *kodo* to help us tide the hard months.”

Another respondent advised:

“I personally like *dhido* but our home consumption of *kodo* is lower than rice. But this year our *dhan* production was poor because of the hailstorm so my wife has been feeding the whole family with *kodo dhido* for the past one and half months.”

A third respondent informed me that:

“We don’t have much *khet* because of which our rice production is very low. If we consume *kodo*, we are not only full, but we also save our rice.”

The food consumption pattern of the local households in general was that the locals had three meals a day: *khana* (major meal) in the morning; followed by *khaja* (snack) during the day; and, another *khana* (major meal) at night. The major meals consisted of either rice or *dhido*, or both (small amount of rice and small amount of *dhido*) together with vegetables and pulses. The following picture plates show two major *kodo*-based *khana*, one comprising only *kodo dhido* and the other comprising a small portion of rice together with *kodo*.



Plate 8: *Khana*, Left- *Kodo dhido*; Right - *Kodo dhido* served with rice

From the total of 48 households interviewed in Dhikur Pokhari VDC, it was found that 43 out of 48 (89.5%) cultivated *kodo*. From the data analyzed, 24 out of the 48 (50%) households consumed only rice as their *khana*. Six out of 48 households (12.5%) consumed mainly rice and occasionally consumed *kodo* as their *khana*. Eighteen households out of 48 (37.5%) consumed an equal portion of rice and *kodo* in their *khana*. Household members generally consumed *kodo roti* (pancakes), *pua* (*kodo* flour cooked in butter and sugar), and roasted maize grains (popcorns) as a minor snack during the day. Some snacks made from *kodo* flour have been shown below (Plate: 9).



Plate 9: Khaja - Kodo made food items (clockwise from top right), roti, pua and lito as snacks

I mentioned earlier in Section 4.3.1 that *kodo* grains were widely used for making *raksi* (alcohol) and was consumed by the local households (mainly *janajatis*). Logically, the consumption of *kodo raksi* does not ensure food security, however, the business of producing *kodo raksi* enabled households to earn money by selling *raksi*. This income enabled them to purchase their food requirements from other local market sources as was reported by all the Mangar and Rai households.

This strong existence of the practice of making *raksi* locally was one of the major reasons to why households that did not consume *kodo* grains continued to cultivate *kodo* to sell their grains. Precise data on the production of *kodo*, how much is allocated for food and how much for sale was impossible to obtain but on an average, from the

analyzed data, it was calculated that annually the *dalit* households produced 79.9 kilograms of *kodo* and the upper caste households produced 130.6 kilogram of *kodo*. Among the *janajati*'s, the Gurungs produced 202.8 kilograms of *kodo* annually where as the Mangars and Rais did not cultivate any *kodo* as shown in the following (Table 4.11).

Table 4.11: *Kodo* cultivation and consumption

	<i>Dalit</i> (total 9 households)	Upper caste (total 27 households)	Janajati		Total	%
			Gurung (total 8 households)	Mangar/Rai (total 4 households)		
Households cultivating <i>kodo</i>	9	26	8	0	43	89.5%
Average <i>kodo</i> production annually in kilograms	79.9	130.60	202.8	0		
Households consuming only rice	0	13	5	4	24	50%
Households consuming mostly rice and occasionally <i>kodo</i>	2	3	3	0	6	12.5%
Households consuming both rice and <i>kodo</i> equally	7	11	0	0	18	37.5%
Households making <i>raksi</i>	0	0	8	4	12	100%
Households selling <i>kodo</i> grains	0	18	7	0	25	52%
Households buying <i>kodo</i> grains	7	7	1	4	19	39.5%
Households neither buying nor selling <i>kodo</i> grains	2	1	0	0	3	.06%

It can be summarized from Table 4.11 that, *dalits* have the lowest production of *kodo* but have high *kodo* consumption as their staple and resort to buying *kodo*. The Gurungs have the highest *kodo* production but no intake of *kodo* as their staple, allowing them to sell their surplus. However, because they have high intake of *kodo raksi*, they sometimes resort to buying *kodo* for their *raksi* production. The Mangars and Rais have

zero *kodo* production and zero intake of *kodo* as their staple. Because their main source of living comes from selling *kodo raksi*, they resort to buying *kodo* grains. The upper caste households have relatively high production of *kodo* grains. For some upper caste households *kodo* remains their staple while, for the majority, rice is their staple. The buying of *kodo* grains from others or the selling of *kodo* grains depends on the size of the landholding and production.

It is evident from Table 4.11 that *kodo* is cultivated, consumed and exchanged by households regardless of their caste in the Dhikur Pokhari VDC, and continues to play a definite role in their lives irrespective of their social and economic status. People continue to grow *kodo* for varied reasons, continue to consume it, use as medium of exchange, trade with others, use as cash crop, or as a backup to other crops. Thus, it can be inferred that, on one hand *kodo* is directly ensuring food security for many if not for all, either as their main staple along with rice or a substitute for rice, for households with low landholding. During hard times arising out of crop failure or uncertain weather, and for producing *raksi*, *kodo* indirectly contributes to achieving food security for many households.

However, increasing pressure to change people's food habits, particularly the perceived status of the food as being low status and easy availability of substitutes, have lead to a decline in *kodo* cultivation and consumption. The next section will look in greater detail at the causes for decline in *kodo* cultivation and consumption of *kodo*.

Lastly, it must be mentioned that almost every household domesticated livestock (mostly in small numbers and not for business) such as water buffaloes (most common), cows, bulls, goats, and chicken. I observed that almost every household, be it *dalit*, or

upper caste or *janajati*, were endowed with one water buffalo, which contributed towards their sustenance and income. Water buffaloes and cows are mainly domesticated for dairy products, that is milk, butter, yogurt and whey. Household members not only consume these items, but some sell them if they have a surplus or if they need instant cash. Likewise, goats and chicken (poultry) are raised and sold once in every five to six months by a few households. In its own way the domestication of animals, irrespective of their numbers, contribute to some extent towards achieving food security. Here it must be mentioned that, domestication of animals in small numbers is one of the reasons cited by households for the continuation of *kodo* cultivation. After the harvest of *kodo* heads, the remaining stalk called *nall* (in local language) is used as cattle feed, especially during the lean winter periods when the availability of grass is low.

4.6 Decline in *kodo* cultivation

Apart from the traditional practices and beliefs, land distribution, tenure system, distinct climate and peoples preference that shape the cultivation and consumption of *kodo*, many other influencing factors have emerged as well. I have started with the most pertinent factors and then proceeded according to its relevance as stated by the interviewed households. I found no official record or data regarding the decline of *kodo* production in Dhikur Pokhari VDC. The little information that was obtained was primarily from the interviews with the local households. The main reasons cited leading to decline in *kodo* cultivation as reported by the interview respondents have been discussed as follows:

4.6.1 High cost

The most common reason cited by the many households, in particular the households with small landholding, is the high cost associated with cultivation. High cost

primarily implies cost such as labour and manure. The high labour cost was due to more labour hours and *lagani* (hard work) involved in the cultivation of *kodo* as compared to other food crops. The following table shows the estimated cost of cultivating *kodo* on .051-hectare *bari* land. The data was obtained during the focus group discussion organized by LI-BIRD Organization on the 14th of February 2012. Because *kodo* is mainly cultivated as a relay crop, cost arising from ploughing, clod breaking, and field enrichment (which is normally looked upon as cost towards cultivating maize) has been excluded from the table. However, if included, it would significantly increase the total cost by more than double. Table 4.12 shows the estimated cost of cultivating *kodo* as reported by the people during focus group discussions.

In terms of *kodo* cultivation, the cost-benefit ratio was less than one, implying that cultivation was not feasible given the high cost of inputs (Table 4.12). It is to be noted that the calculations regarding the total cost and the cost benefit ratio was arrived calculated on the assumption that households were paying for all the input cost in cash. However, in actual practice this does not happen and households do not pay for all the inputs in cash, which disguises the fact that cultivation is actually not profitable in a technical business sense. Households with high land endowment can lower their cost of *kodo* cultivation by giving out their land for *adhya* and getting half of the produce without having to contribute anything towards labour fee.

In addition, the practice of *parma* by many households greatly reduces the cost incurred for labour. It was observed that every agriculture-dependent household in Dhikur Pokhari VDC had some livestock, either water buffaloes or cows or goats or poultry, which reduced the input cost towards manure procurement.

Table 4.12: Estimated cost of cultivating *kodo* in .051-hectare (1 *ropani*) *bari* as a relay crop

Process	Inputs		Unit	Cost/unit (Nepali Currency)	Required unit	Total cost in Nepali Currency
<i>Byad</i> (Nursery) preparation	Seeds		<i>mana</i>	20	2 <i>mana</i>	40
	Manure (<i>mal</i>)	Farmyard manure	<i>bhari</i>	50	15 <i>bhari</i>	750
		Other manure from goat and poultry	<i>pathi</i>	250	10 <i>pathi</i>	3750
	Labour		wage	500	1 Man Day	500
<i>Byad</i> weeding	Labour		wage	200	2 Women Day	400
Transplanting	Labour		wage	200	4 Women Day	800
Weeding	Labour		wage	200	4 Women Day	800
Harvest	Labour		wage	200	4 Women Day	800
Threshing	Labour		wage	200	2 Women Day	400
Drying	Labour		wage	200	2 Women Day	400
Storing	Labour		wage	200	1 Woman Day	200
Total Cost	8840					
Maximum yield from 1 hectare <i>bari</i>	124.8 kilogram (2 <i>muri</i>)					
Current prices	3.12 kilogram (1 <i>pathi</i>)= Rs. 100/-					
Total income	4000					
Cost Benefit Ratio	0.45					

The presence of disguised unemployment in developing countries is well documented in the literature, and the case in Dhikur Pokhari VDC with regard to *kodo* cultivation was no different. Because households share labour, a causal observer might note that the input cost is greatly reduced. However, in reality, the majority of the people are disguised unemployed; therefore, they do not get the actual value of their labour

input. If an alternative source of income was available and if people actually had to pay for all the input costs, the majority of households would prefer to grow paddy rather than *kodo*.

4.6.2 Alternative income sources

The households in Dhikur Pokhari VDC reported that, in the earlier days, they were more dependent on agriculture for their income, as there were very few alternative sources of income generation. However, over the years, with the development of roads, opening up of a traditionally closed society, and with exposure to the globalized world and improved transportation facilities, people have numerous alternative income generating options such as working abroad, working in government services, as daily wage labourers, or in private jobs in other VDCs. The availability of non-agricultural income sources has significantly lowered the dependence on agriculture in general. Even within the agricultural sector itself, the practice of *tarkari kheti* (vegetable farming) brought empowerment, especially, to women. Further, women earn higher income from *tarkari kheti* as compared to what they previously earned from producing *kodo*. Many households were motivated simply by profit generation through alternative crop or vegetable cultivation instead of *kodo*. This, in turn, affected the cultivation of *kodo* in Dhikur Pokhari VDC and in the neighbouring VDCs. Comments of two of the respondents were:

“Today we have varieties of crop such as ginger, tomatoes, and potatoes that give us more economic benefit. I still have small school-going children whose education and maintenance require money. So, I resort to ginger farming on my *bari* to take care of my basic needs.”

“*Tarkari kheti* is booming here as it is more profitable. During winter I grow cauliflower, *saag*, *gajar*, and during monsoon grow tomatoes, *gheraula*, *kakra*, *lauka*, *fursee* and sell it in the neighbouring local markets. For winter vegetable

cultivation, we have to forgo growing *kodo* during the *kodo* cultivation season, as we need the land much before *kodo* can be harvested. In fact, we keep the land barren throughout *kodo* cultivation season so that we can grow cauliflower in the next season.”

I observed that the presence of alternative sources of income gave people higher flexibility in their consumption choices. It generally increased their consumption of other crops such as rice and lowered their consumption of *kodo*. The majority of the households were of the opinion that alternative income sources made their life easier and less strenuous.

4.6.3 Focus on education

Another factor contributing to the gradual decline of dependence on agriculture in general and *kodo* in particular was the focus on education in Dhikur Pokhari VDC. Education seemed to be given top priority by most of the households. Referring to the importance on education as put by one local woman:

“In our days we never got a chance to go to school. Households and field work was all that we had to do. Today’s children are lucky because the whole focus of today’s parents is to send their children to school. And once you are educated, who wants to sit at home and do farming? They go out and look for better jobs that pay them better. Education makes them look for alternative jobs.”

Concurring with the statement made above, another woman states:

“I think that these days all of us have become very conscious about giving our children good education. So we are in constant search for the kind of source that gives us more money with which we can take care of the needs of our children.”

We have already discussed the educational status of the interviewees in Table 4.3 of this chapter. Contrary to the educational status of the adults, it was discovered that all the households that had children of school-going age, irrespective of the caste background or the economic status of the households, were enrolled in the local schools and colleges. From of the 48 households that I interviewed, a cumulative total of 69

children were enrolled in schools (primary, secondary and higher secondary). Many households reported that their children (who are young adults) were enrolled in colleges, and a few were just too young to start going to school. This data itself is an indication of the focus given on education by the parents. However, this could also mean that in the long run, these children could be capable enough, through their education, to find employment in service sectors and be less dependent on agriculture. This would further diminish *kodo* cultivation.

4.6.4 Family size

I discovered that many households considered the declining family size to have played a significant role affecting the cultivation and consumption of *kodo*. The people of Dhikur Pokhari generally related that even though large family sizes meant feeding more mouths, family size was a source of more labour. Given this, *kodo* perfectly fits the bill as a crop suitable for large households with small landholding. *Kodo* feeds more family members from a small quantity, but it requires more labour during cultivation. However, the exodus of people from Dhikur Pokhari VDC to other areas for purposes of employment opportunities, accessing higher education, or marriages (especially the daughters) directly affected the family size by lowering the number of members.

In addition, I observed that many households that had children pursuing higher degrees were living in Pokhara city to avail themselves of better education. On one hand, this naturally lowered the manpower present in the VDC. On the other, with the high labour cost and more labour requirement for the cultivation of *kodo*, the decreasing family size affected the *kodo* production. Further, in terms of consumption, households generally associated larger family size with greater need for food grains, and because *kodo* is considered to be very filling, families with limited alternative sources of income

automatically had greater consumption of *kodo*. One respondent commented on the declining family size as follows:

“Firstly unlike our olden days... the size of family is very small... children from majority of households go down to Pokhara for higher education... men from most of the household are abroad or are engaged in some other work for income generation... so because there is less people at home... less labour force is available... and thus people prefer to grow *dhan* which is less laborious.”

Another respondent says:

“Earlier when the kids were small, the consumption of *dhan* as well as *kodo* was low. So we used to have some surplus that we used to sell it. But now they have grown up... one are married and have a wife and children... Our family size has gone up, so these days we consume all of our *kodo* at home only. We have stopped selling as now we don't have any surplus.”

On the basis of the data collected, the average family size of the 48 interviewed households was six individuals per household.

4.6.5 Low status food

Traditionally, people belonging to the general caste held the belief that *kodo* was *ku anna* or *jutho khana* as discussed in the Section 4.4.1.2. A low status food in general refers to a food item perceived to be inferior and impure to other foods, such as rice or wheat or maize in the religious and traditional context. The belief that *kodo* is a low status food still seemed to prevail in some of the households in the Dhikur Pokhari VDC.

Indicating this, a local elderly man says:

“You are taking my interview. If you come to my house can I give you *dhido*? No!! It is too shameful to feed you *dhido*... this is why we have sort of condemned *dhido* and keep it only within the households.”

This belief regarding *kodo* as a low status food seemed to be generally accepted, as many other people have indicated that they would not offer *kodo dhido* to their guests.

Other respondents said:

“If you come to my house and I feed you *kodo dhido*, people are going to laugh at me. In fact, we are so conscious that we hide the pot that we use to make *dhido* away, whenever we have guests at home.”

“When we have *pauna* [visitors], we hide the pot where we made *kodo dhido* and we continue to do so even to this day and age. Well, earlier we used to do more... people think it’s embarrassing that we are consuming *kodo*.”

Even those who lived in the cities or who have studied outside the Dhikur Pokhari VDC also perceived *kodo* as a low status food. One such city dweller said:

“In my house I do not consume *kodo*... instead I consume *faffar* [buckwheat]... see people’s *nazariya* [perception] also matters I think... *kodo* is cheap so people think it is poor man’s food... when a family that consumes *kodo*, others could think that they do not have enough money or enough grain so they are eating *kodo*...”

The younger generations blame this perception on traditional thinking, and they assert that this perception is still very prevalent. Another younger respondent replied:

“Traditional belief that *kodo* is a low status food is still very much in the air... people say that in earlier days they used to hide the pot where they made *dhido* when guests or outsiders arrived. Even today we do that in my house because we still feel embarrassed to let people know that we are consuming *kodo*.”

From the data collected, it was found that the majority of upper caste households (22 out of 27) strongly held the view that *kodo* was a low status food and staunchly refrained from consuming it on all the traditional and auspicious days irrespective of their consumption needs. The concept of low status food was not prevalent among the *janajatis* (although they were aware of it). In fact they used *raksi* made of *kodo* in their religious ceremonies. I observed that a few Gurung households do refrain from consuming *kodo* as food (not as liquor) during religious ceremonies or fasts. The *dalit* households refrain from consuming it on the religious and auspicious days but not as strongly and staunchly as the upper caste households.

4.6.6 Transportation

Many households in the Dhikur Pokhari VDC are of the opinion that the development of infrastructure, in particular roads that improved transportation, has contributed to the decline in cultivation as well as consumption of *kodo*. Improvements in the roads and transportation facilities gave people easy access to rice from *terai* that was less costly as compared to the rice produced in the hill region. A young college boy stated:

“These days people do not produce or consume *kodo* because they have access to rice... earlier we had no roads to connect us to the products of terrain... now we can get the *terai* rice right outside our house.”

Many roadside households have mentioned (and I observed this as well) that vehicles transporting rice coming from *terai* districts usually stop by their small tea stalls or restaurants and, in the process, sell a few sacks of every product that they were delivering. Often this was rice. Hence, improved transportation facilities have enabled people access to cheaper products like rice and wheat from the *terai*. This has reduced a household's (with more land and income) dependence on *kodo*, and thus, has also affected the cultivation of *kodo*.

4.6.7 Changing preferences

Changes in food preferences seemed to affect the consumption of *kodo*, and additionally, as preference towards economically more lucrative agricultural practices – *tarkari* (vegetable) farming – became widespread, it was asserted that *kodo* cultivation would be affected negatively. The household's taste and preference for *kodo* consumption as food was shaped by numerous factors: individual tastes, prices of other commodities, presence of substitutes, weather conditions and, more importantly, income. This reason for the decline of *kodo*, though underreported, could be one of the critical reasons that

affect the demand for *kodo*. Agreeing to the fact that preference does matter when it comes to consumption choices, one female respondent stated:

“My husband likes the taste of *makai* [maize] *dhido* and prefers *makai dhido* (maize pudding) over *kodo dhido* (*kodo* pudding). He cannot swallow *kodo*.”

So the husband’s “taste factor” affects the consumption decision for this family.

This was not an isolated case, as a woman from Pokhara city and Dhading VDC have respectively reported that:

“My family consumes *fappar* rather than *kodo* because it is tastier and more variety of food items can be made from it.”

“Here we don’t eat *kodo dhido* only, we mix *kodo petho* [flour] with *makai petho* [flour] and then make *dhido*. Having *kodo dhido* alone will give us a running stomach.”

The consumption of *dhido* made from maize was found to be more prominent in Dhading VDC. Households in that VDC focused more on maize cultivation as compared to *kodo* cultivation. The preference regarding cultivation of *kodo* for other crop or vegetable cultivation has been more clearly discussed in Section 4.5.10 of this chapter.

4.6.8 Farming practices

The types of intercropping – be it relay or mixed, row or strip intercropping – that is common for any crop has advantages as well as disadvantages. Though it is a type of multiple cropping, as mentioned earlier, *kodo* is mostly grown as a relay crop with *makai*. Few interviewees reported that this practice inhibited the growth of *kodo* as compared to *kodo* grown as a monocrop. Says one 40-year-old woman:

“I am into vegetable farming. What I have observed is vegetables cannot grow well on the same field where I have earlier grown *kodo*. I think the *kodo* creates more *baishelo* [worms], which hampers vegetable growth. Hence, I don’t grow *kodo* and grow only vegetables as vegetables give me more profit.”

It was observed that more and more people are moving away from growing *kodo* to growing vegetables as they give higher return and generate more revenue than *kodo*. Vegetable farming is much less strenuous and less labour intensive than *kodo*. All of these issues, in turn, have started to make *kodo* cultivation seem less lucrative as compared to other crops and vegetables. Thus, the trends indicate that *kodo* cultivation may decline with the increase in cultivation of other crops and vegetables.

4.6.9 Asymmetric information

It was found (as well as observed) that knowledge regarding its use, health benefits including the nutritional value of *kodo*, seed varieties of *kodo*, different food forms of *kodo*, and diseases associated with *kodo* were not consistent among the households in Dhikur Pokhari VDC. This lack of knowledge about the health and economic benefits of *kodo*, greatly showed the need for information regarding farming practices and marketing avenues in the study area. The most pressing need for information was for the varieties of *kodo* and improved agricultural practices that gave higher yields of *kodo*. Referring to a need for such information for everyone, an older female respondent mentioned:

“Our production is already low, but with every passing year, it is going down. We should be given information on how to do better cultivation of *kodo*, either by better agricultural practices or improved seeds. Earlier, the same amount manure [manure] used to give us a good yield, and today, the same amount and most of the time even more, does not give us much yield. So something is wrong either with the soil or our seeds or our climate. So we should be given information from reliable sources about better farming practices or better quality seeds that will increase our yield.”

Agreeing to this need for greater information sharing, a younger respondent who is pursuing his Masters degree states:

“We are *bahun*s [upper caste] but *kodo* is our main diet. If you go inside, we have *kodo dhido khana* [main meal]. People should firstly understand and secondly acknowledge the importance of *kodo*. And for both these, information about *kodo* is very crucial because not many people know its true value. Here majority of the people only see *kodo* as a filling crop that is good for health, but not many know why it is good for health. This is why information is necessary for people to understand the importance of *kodo*. Information acts as a medium of creating awareness here because the real desire should come from within us and not from others. Then only the status and, hence, the production of *kodo* will really pick up. Why is it that some areas like Hetauda has more *kodo* and is even exporting it to our districts? You make a *sahakari* or bring seeds from outside or do what you may, but unless we want it, nothing will happen.”

Agreeing with the fact that lack of information regarding the health benefits of *kodo* is also an impediment towards improving the status of *kodo*, a respondent belonging to the Gurung community said:

“*Kodo* has immense medicinal benefits but how many people know that? So information should be given from one village to another... The *swastha sangh* [health organization] had earlier informed us about the medicinal value of *sisnu* [*Urtica dioc*]. So for *kodo* too, whoever is taking the initiative should collaborate with the *swastha sangh* and inform people about the medicinal properties of *kodo*.”

It is seen that there are many factors that have contributed towards the decline in *kodo* consumption and production. One of the reasons could in fact corroborate what Gruere et al. (2007) say about the observed and potential value of underutilized and neglected plant species. Observed value basically refers to how much people think a certain product is worth; whereas potential value refers to how much the same product would be worth if people knew all its positive properties. These factors presented here are in line with the findings of Gruere et al. (2007) wherein they have observed that typical of the characteristics of underutilized and neglected plant species, the potential value of small millets is underestimated by its observed value.

The findings from this study corroborate most of the findings from Gruere et al. (2007). What Gruere et al. (2007) said with respect to the demand for underutilized species being generally low, I found that the demand for *kodo* in Dhikur Pokhari VDC, as well as Pokhara city, was much higher than previously assumed. In fact, in and around the region, in order to keep up with the high demand, *kodo* was being brought in from other districts of Nepal. There is a well-established market chain for *kodo* coming from other districts. People in Dhikur Pokhari VDC are gradually moving away from producing *kodo* for their sustenance as well as for using it as a means of cash crop.

CHAPTER – V

SMALL MILLETS - MARKETS

5.1 Introduction

It is evident from the previous chapters that the households in Dhikur Pokhari VDC are not only engaged in the cultivation and consumption of *kodo* but are also engaged in its trade. This chapter describes the local markets and *kodo* market, in particular, in Dhikur Pokhari VDC and its significance in providing food security and in maintaining livelihoods for people. The factors that enable or constrain *kodo* markets have also been examined and discussed in detail. This chapter also includes a brief discussion on the policies that govern and influence *kodo*-related activities, such as production, consumption, and marketing. Lastly, this chapter ends with a section on the overall discussion that includes an analytical framework that I developed from the reviewed literature, and my findings.

5.2 Why markets exist?

The Dhikur Pokhari VDC has two local markets commonly referred to as bazars: one at Kade in Ward VII and one at Naudara in Ward III. These two bazars are characterized by numerous shops that sell items of daily needs including clothes and stationery materials. These bazars were also characterized by the presence of several roadside restaurants (that sold food items and alcohol in particular *kodo raksi*), local banks, a few local lodges, a pharmacy, and tailoring shops. I found that all the 48 households that were interviewed heavily relied on these two bazars for commodities of daily needs such as sugar, salts, spices, meat, legumes and oil (i.e. commodities that are usually not cultivated by them). In addition, the local households also relied on these bazars for cereal crops such as rice, maize and wheat flour imported from Pokhara city as

well as Chitwan, another district of Nepal. The dependence on these bazars by the local households was primarily because both the bazars were located at the heart of the study area and could be conveniently reached on foot. For *kodo*, all the interviewed households in Dhikur Pokhari VDC asserted that there was no history or tradition of procuring *kodo* from the local bazars. This turned out to be true, because I observed that none of the shops in the two bazars in Dhikur Pokhari VDC dealt with *kodo* grains or *kodo* flour which could give us the impression that there is no market for *kodo*.

However, given the fact that 25 out of 48 households that I interviewed in Dhikur Pokhari VDC reported to selling *kodo* and 19 out the same 48 households reported to buying *kodo*, it was evident that there was definitely a market for *kodo*. The following section discusses why market for *kodo* exists in the first place, followed by the description of the existing *kodo* market in Dhikur Pokhari VDC. *Kodo* is an important crop that is exchanged and has an exchange value. From the analyzed data, this exchange value is primarily because of the following properties that the locals households associate *kodo* with.

5.2.1 Store of value

Unlike other cereal crops such as rice, wheat or maize, *kodo* can be stored (after the post harvest processes of threshing, dehusking and drying) for long durations, in fact several years without being infected by insects, without going bad or without losing much of its nutritional properties as reported by the locals. This property of *kodo* makes it attractive to buyers as well as sellers who are looking forward to buy or sell *kodo*, respectively. It gives the local households the choice to store *kodo* as an asset or wealth, and use (consume it themselves, or sell) it later at their convenience whenever the need arose. One 48-year-old man states:

“This year’s harvest I sell next year or the year after that. *Kodo* can be stored for many years. I even had *kodo* that was 17 years old. Nothing happens to the quality but regarding taste, I must say that for upto 6 years there is change in taste. But after 6 years, the taste changes a little but apart from that, it will be in good condition. On the contrary, *dhan* can be hardly be kept for more than a year.”

Some households that had surplus *kodo* chose to hold onto their *kodo* grains during the period of abundance and sold it when the supply of *kodo* was low in order to fetch a better price. Indicating this, one of the respondents said:

“I do not sell my *kodo* immediately. I wait and sell it later. Also I do not go out and sell it myself. I sell it to the collector [middleman] who takes *kodo* down to Pokhara for Rs. 70/*pathi*... he also takes *dhan* for Rs. 100/*pathi*.”

5.2.2 Medium of exchange

The Dhikur Pokhari VDC has traditionally been an important travel route for people travelling from the mountain districts, such as Mustang, on their way to other districts of Nepal and back. This VDC had been one of the stops for the people coming down to the lower valleys from the high mountain regions to tide over the extreme winter cold. They generally travel for three to four months and return back to the mountains only when the summer begins. I had the privilege of meeting one such traveller who had come from a very high mountain region of Nepal – Mustang. During the course of their travel to lower valleys they sustain themselves by engaging in business, which involves selling or exchanging various products that they bring down from the high mountains such as *yarsagumba* (*Cordyceps sinensis*), *silaje* (asphaltum), *bikhuma* (*Aconitum violaceum*) and *zimbu* (*Allium wallichii* or Himalayan onion). It was discovered that they were also engaged in the trade of other items such as coconut, dates, and clothes that they purchased from other districts during their travel.



Plate 10: High altitude products *shilaje*, *zimbu*, *yarsagumba* and *bikhuma* from top left (left); and coconut, dates, black sea salt and *fidkiri* (alum) from top right (right)

Dhikur Pokhari being a rural VDC where majority of the household members were farmers, most of their business was done through exchange (similar to barter system) of commodities and only in rare cases was exchange done in cash. As a 55-year-old trader who had been in this trade for approximately 10 to 15 years puts it:

“Since we go from one village to another, from door to door, people in the villages usually do not have instant income, so we get paid through *kodo*. This exchange in *kodo* happens only in villages in Dhikur Pokhari and nearby villages in Kaskikot and Bhaudauri. Once we go down to Pokhara or other parts of Nepal, we get paid in cash only. Also, apart from *kodo*, we do not use any other medium of exchange such as *dhan* or *gau* [wheat].”

It was found that while conducting their business, *kodo* was the only crop that was bartered with their products. The locals reported that barter in *kodo* had been a traditional practice and so far, no other crop was used in such barter. In addition, as compared to rice and wheat, *kodo* being the most disposable crop, households readily bartered in *kodo*. According to a 55-year-old Gurung woman:

“ We give them *kodo* only because rice and wheat are expensive than *kodo*... *kodo* is cheap... in addition there is no history of giving them maize... they don’t take maize.”

Barter in *kodo* could mean two things: either *kodo* is the most disposable of all crops and locals were more inclined to trade *kodo* for other commodities; or, because *kodo* is so abundant that people have been trading in *kodo* since time immemorial. Whatever the reason, because of the existing *kodo* market and high exchangeability of *kodo*, such barter continues in the region.

Travellers who were interested mentioned that *kodo* was not significant to them because they neither consumed *kodo*, nor were they involved in *raksi* production. Hence, the only rationale behind accepting *kodo* was that they exchanged *kodo* grains for cash in the local bazars from the alcohol producers, where the demand for *kodo* grains for *kodo* alcohol (*raksi*, *chyang* and *jarh*) was high. This same trader further commented:

“Once we have collected a reasonable amount of *kodo*, we sell it to the local people here in Kadee and get cash in exchange for *kodo*. *Kodo* is always sought after by people who make *raksi* so, it becomes convenient for us also to sell it. We do not take *kodo* back to Mustang, as we do not want to carry its load in the first place. Even if we do take it for the sake of *koseli* [gift], we just take one or two kilograms. Back in Mustang we are used to crops like *faffar*, *gau* and *uwa*, so our alcohols and *dhidos* are made from these crops and not *kodo*.”

5.2.3 Mode of payment

In addition to *kodo* having a store of value and used as a medium of exchange, *kodo* also was found to be an easy alternative for wage and was used as a mode of payment by certain households. Even though very few households reported the use of *kodo* as a mode of payment, these few households in Dhikur Pokhari VDC nonetheless practiced it. The use of *kodo* as a mode of payment implied that instead of paying wages to the daily labourers, households, mainly belonging to the upper caste and the Gurung communities, chose to pay those who worked in their fields in *kodo*. Referring to this practice one female belonging to the upper caste responded:

“I do not use *kodo* for household consumption. Rather I use it to pay to the *khetala* for their work instead of money.”

Corroborating the above statement, a *dalit* man remarked:

“My father mostly works under the Gurung households. He helps them with manual work such as making of the haystack after *dhan* harvest, repairing their buffalo shed, ploughing their field, or carrying the load. Sometimes he gets cash and sometimes he gets *kodo* in return...depends what they give in return.”

The multiple uses of *kodo* – store of value, medium of exchange, and mode of payment – make *kodo* a readily tradable crop that justifies the existence of market *kodo*.

The following section describes the market of *kodo* in Dhikur Pokhari VDC.

5.2.4 Informal market

The most prevalent source of *kodo* procurement was from the neighbours and households in other wards. This practice highlights one of the most typical characteristics of markets in a developing country context. The gap that exists due to the absence of a formal market is more often than not filled by the presence of an informal market structure (Jagannathan, 1987). People may not necessarily have to go to a market place to buy and sell their food articles; rather they could be buying one item or other from their neighbours to fulfill their need (Jagannathan, 1987). Referring to the existence of informal market set up as a traditional practice, an older female respondent said:

“*Pouranik challan anusar* [in traditional practice] *kodo* was never sold in the markets. Whoever needed *kodo* comes to us or goes to neighbour’s house. Whichever house has surplus, they sell it. In our days we did not have mills or even transportation facilities that the people enjoy today.”

With the majority of households depending on agriculture, this informal market setup for *kodo* continues to remain so even to this day. This practice of buying and selling *kodo* at the household level was observed in other VDC’s such as Kaskikot, Dhading, and Lumle. However, it is important to note that this was not the case in the Pokhara city and

the areas close by. The rationale for the existence of such informal market for *kodo* in agriculture-dependent VDCs could be due to the absence of formal markets in the first place. From the data collected, it was found that 22 out of the 48 households that were interviewed reported that they were engaged in selling *kodo* informally from their houses. From Table 4.11 in Chapter IV, it was mainly the Gurung and upper caste households that were engaged in selling *kodo* from their houses, while the *dalits*, Rais and Mangars bought the *kodo*.

5.2.5 Formal market

Another source of procuring *kodo* in Dhikur Pokhari VDC were the local mills. A mill, commonly referred to as a “machine” by the locals is a place where people take their grains - be it that of rice or maize or wheat or *kodo* - to be dehusked and/or processed into flours by heavy machines run by electricity or diesel engines. In Dhikur Pokhari VDC, I observed that there was at the least one mill in every ward. These local mills can be considered as the formal market where *kodo* is exchanged. These mills are reported to be reliable procurement sources for *kodo* because the local households who made use of the mill facilities throughout the year for grinding or dehusking of their grains traded in those very gains instead of using cash. This paved the way for consistent supply of grains in the mill which local people could have access to throughout the year. Speaking on the significance of mills in helping the local people, a 68-year-old mill owner said:

“I have been operating this mill for the past 14 years. I sell crops such as rice, *kodo*, *makai*, *gau*, *jau*. I am not a crop seller by profession, but because of this mill I get a chance to do so. This mill helps people to dehusk their *dhan* into rice and grind their *makai*, *gau*, *kodo* into *petho* [flours] etc. I invested in these machines to contribute toward my community people here. When people come to

dehusk their *dhan* or grind their *kodo*, I do not take in money as payment but take a small portion of their crop. For example, to dehusk one *pathi* of *dhan*, I take one dehusked *mana* of *dhan*... And to grind one *pathi* of *kodo*, I take one *mana* of unground *kodo*. It's the same for *makai*. To grind one *pathi* of *makai*, I take one *mana* of *makai*. This way I have extra rice, maize, *kodo* which then I sell to those who come looking for it.”

Referring to similar practice, another mill owner also agrees:

“It has been 20 years now that I have been engaged in this mill business. I sell *dhan*, *kodo*, *gau* and *makai*. To dehusk one *pathi* of *dhan* I take four *mana* of *dhan* and to grind one *pathi* of *kodo*, I take one *mana* of raw *kodo* grains.”

The households resort to local mills for purchasing grains including *kodo* because the prices of grains usually remained the same throughout the year in the mills. Even if the price varied, it was mentioned that the variation was small. The *kodo* prices in local mills not only remained steady, but also lower as compared to buying *kodo* from individual households. This low price for *kodo* at mills was because when locals gave a their portion of *kodo* to mill in exchange for using the facilities of the mill, all the collected *kodo* was stored together in a drum irrespective of their variety and quality. This was the main reason why the price of *kodo* at mills was low. This perhaps made it easy for those wanting to buy *kodo* during lean seasons to do so from the mills rather than from individual households. One respondent said, referring to the steady and low of price at the mills throughout the whole year:

“In *machines* [mills], prices do not fluctuate much throughout the year. I can say that *kodo* prices are almost stable. An increase or decrease in the prices of *kodo* is very reasonable, say just by Rs.10.”

Another respondent explains:

“This year our *dhan* production has gone down because of *asina*. Our *kodo* and *makai*, which we use as substitutes, are low too. So I know this year we will have to buy. We will go to mills as they have lower price than our neighbours.”

I had interviewed three mill owners based in wards - I, III, and VI in the Dhikur Pokhari VDC and all the owners were found to be selling *kodo* from their respective mills. In addition, two more mill owners outside Dhikur Pokhari VDC, one from the neighbouring VDC of Kaskikot and another from Pokhara city, also confirmed selling *kodo* from their mills. From the interview with these mill owners, it became evident that the market for *kodo* was not only confined to Dhikur Pokhari VDC, but it expanded to other VDC's as well, which further led me to focus on the households involved in the expanded market of *kodo*, identify them and finally establish market chain for *kodo*.

5.3 Market chain

Reiterating again, the exchange of *kodo* (for cash) was not only limited to the formal market setup (few local mills) and the informal market setup (several households) of Dhikur Pokhari VDC, but it extended outside the VDC to the neighbouring municipality of Pokhara city. Following the category of agricultural goods as developed by Ferris et al., (2006), *kodo* grains was the primary goods that was exchanged. Apart from the local *raksi* (secondary goods) produced from the purchased primary *kodo* grains by those households involved in alcohol business, there was not much diversification of *kodo* grains into further secondary or tertiary goods at the VDC level.

Trading *kodo* outside Dhikur Pokhari VDC was not a common trend; however, there were quite a few households that were involved in this practice. For those households depending on such a trade as their primary means of livelihood and income generation, such trade involved collection and selling not only of *kodo* grains but also other food grains such as rice, wheat, and maize to the Pokhara city. The proportion of other grains exchanged was by far much larger than *kodo*. I interviewed two households

who were involved in such trade at a large scale. Relating to involvement in such a business, a 68-year-old trader from ward number IX stated:

“I and one more person from Serra Chour only are the only people who are involved in this trade from this area... In the whole nine ward too... Him and I are the only one doing this trade. We both trade in all the *dhan*, *kodo* and *makai*, *mass* and *bhatta* sometimes. I take crops directly to Pokhara bazar [market]. I have been involved in this trade for the past 15 to 20 years and have my network of regular contacts [buyers]. I take my own household surplus as well as the collected ones to Pokhara but mostly the collected ones. I go to all the places if there is a possibility of finding crops that people want to sell, but I make sure that there is a transportation road. This is my business and I collect it from everywhere... Let me tell you of the *kodo* only - all the houses/mills of Serra Chour, almost all the nine wards of our VDC including houses/mills, Lumle from where I bought 100 *muri* of *kodo* last year, Lhachuk and Ghachuk where I have a monthly contract there and yearly I buy around 30 *muri* of *kodo* and few from Baglung too. Monthly I trade in at least 200 *muri* of *Dhan* and 15 to 20 *muri* of *kodo*. I collect it together with other crops and sell in shops/mills in Pokhara (Srijanachowk), to Mustangay, Bhotay, Pokhara (Lake side mill). I give it to them *jhappay* [all together]. I do not go selling my stuff from one home to another... no I don't do that...”

A 51-year-old trader from ward number IX advised:

“My primary source of income is this business... I collect crops from here and sell it in Pokhara. I am a farmer and I grow crops like *makai*, *kodo* and paddy. From my own field I have very less surplus so I collect the people's surplus and sell them. This has been my business. I roam around and collect it from this area and sell it in Pokhara. Earlier I used to have many contacts, but now I have reduced the volume of my business so I go from door to door, especially of those who produce *raksi*.”

In addition, the households that owned mills were involved in selling *kodo* directly to Pokhara when they had surplus *kodo* in their mills as asserted by a mill owner:

“I sell *kodo* both from my house as well as from my mill. Roughly it is one *muri* a month. It may be more but not less. Sometimes take to Pokhara myself when the quantity is good, usually take to Baglung Bus Park and try to sell on the footpath. Other times, few of my contacts call me when they need *kodo* and if I have the required quantity, I take it down. Some of them could be *raksi* producers.”

For some households selling of *kodo* was mostly choice-based and was undertaken when they faced the urgency and need for instant money to take care of their necessities. In such cases, they took their *kodo* grains and sold it elsewhere. A female respondent from near Pami said:

“I do not sell *kodo* as my households need is more and I have no surplus but some of my neighbours sell their *kodo*. We are very near to Pokhara and they take it to Pokhara and sell it from door to door because they need to buy sugar or tea leafs.”

It is evident that exchange of *kodo* exists in Dhikur Pokhari VDC and even extends outside of it. This existence thus establishes the market chain for *kodo*, which I have tried to show in the Figure (5.1) below. It is a generalized market chain showing the flow of *kodo* grains within Dhikur Pokhari VDC and extends to other VDC’s outside of the Dhikur Pokhari VDC. It highlights both the formal and the informal market of *kodo* including the market actors involved.

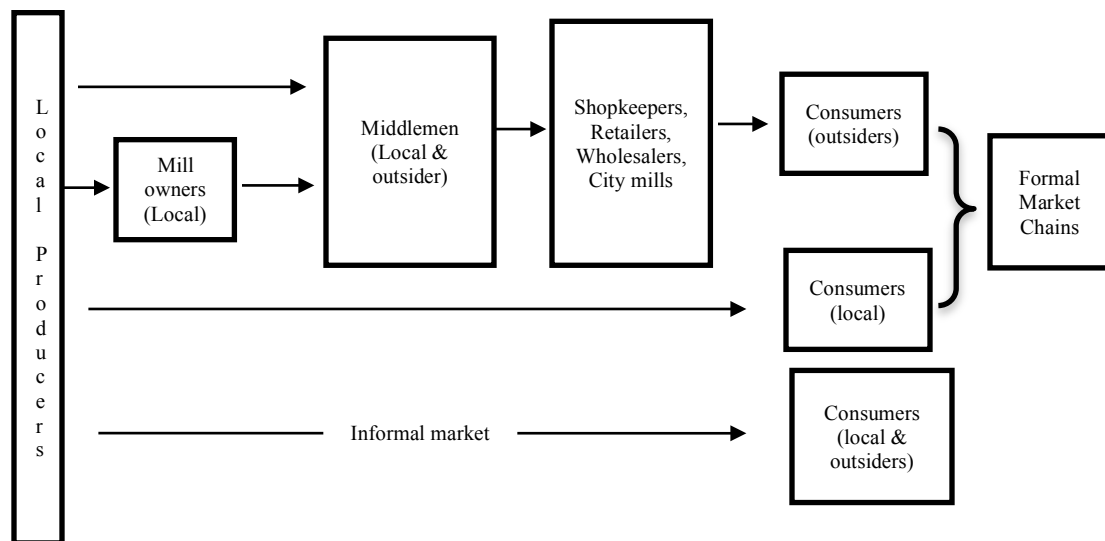


Figure 5.1: Market chain for *kodo* within Dhikur Pokhari VDC

The various actors involved in the transaction of *kodo* were identified as the producers, the mill owners, the middlemen, the shopkeepers, the retailers, the wholesalers and finally the consumers. The producers are generally the local farmers who cultivate *kodo* in their fields. The middlemen - local as well as outsiders are those who collect *kodo* from the local farmers and sell it elsewhere. Shopkeepers and retailers are generally outsiders in this case running private shops, department stores, or wholesale shops in Pokhara. The consumers include both the locals as well as outsiders who ultimately buy *kodo* from any of the above-mentioned chain actors for their self-consumption. Outsiders in this case refer to those people residing outside of Dhikur Pokhari VDC, i.e. the neighbouring VDCs and the Pokhara city.

As shown in Figure 5.1, in the first market chain middlemen played the main role of collecting *kodo* grains from the local producers and carried them to Pokhara to sell to shops, mills, wholesalers, and retailers. The middlemen generally had regular and consistent sources of buyers and sellers and did not face much difficulty in either buying or selling. It was reported that in the entire Dhikur Pokhari VDC there were only two prominent local middlemen involved in such trade of *kodo*. A round of focus group discussion that I conducted on the 18th February, 2012 with the key informants not only acknowledged the presence of these two middlemen, but also revealed the presence of another middleman from a different VDC, who collected *kodo* from Dhikur Pokhari VDC. As stated by one of the middlemen:

“Well, you see there is definitely a market for *kodo*. I purchase *kodo* from others and sell it... There are quite a number of sellers... I have been involved in this trade for the past 15 to 20 years so all these years I have my contacts... so if I don't get *kodo* from here... I go there... if not from there ... somewhere else... There is definitely a demand for *kodo* in Pokhara... a high one. I can easily sell 100 *muri* of *kodo* in Pokhara.”

In the second market chain, local mill owners played an important part in trading *kodo* grains with the local middlemen, who in turn sold the collected *kodo* to shopkeepers or retailers. The local mills were also the source of *kodo* for the local households of Dhikur Pokhari VDC as well. As mentioned earlier, the main sources of grains for the mill owners came from the use of machines. Thus, it must be noted that the mill owners sold *kodo* to locals or outsiders only when *kodo* grains were in surplus. Because every individual ward in Dhikur Pokhari VDC had at most one mill (or two in some), the local households relied heavily on these local mills for dehusking and grinding their cereal grains throughout the year, thereby securing the mill's supply of grains through the year. One such mill owner said:

“Mostly it is the local people who come for *kodo* at my mill. Alcohol makers from Kade come, the Gurung community as well few from Pokhara. I have my contacts in Pokhara and I call them when I have the surplus amount of *kodo*. Also at times they call me over the phone and ask me for *kodo*. If I have the required amount, I ask them to collect it, and if I don't have, I ask them to wait until I manage the requested quantity of *kodo*. I must mention that to my Pokhara contacts, I sell *kodo* maybe two to three times a year... four to eight *muri* at a time.”

For the last market chain, households informed me that when the need arose the local farmers took their *kodo* grains to the city and sold them in order to earn instant cash. However, this was only done in extreme cases of urgent need as reported by some of the interview respondents. Confirming this assertion, a shopkeeper in Pokhara, who deals in *kodo* (referring to such occasional sellers who did come down) said:

“Generally people from villages in the mountains do not come down to sell their *kodo*. Women who do not have income or cash in hand, they come with their *kodo* and sell it and with the money they earn, they buy items such as oil and salt.”

A respondent who acknowledged selling *kodo* for generating instant cash indicated:

“It's a traditional *chalan* [practice] to grow *kodo*. We have been growing even today. Though we face difficulties as our field is very far, still we cultivate *kodo*.”

After our household consumption is met, I sell *kodo* sometimes because we need money for oil, salt, etc. From the money obtained from selling *kodo*, I buy other stuffs but irrespective of the whether the whole family is there or not, we consume *kodo* along with rice.”

It is evident that markets for *kodo* not only exist within Dhikur Pokhari VDC but also extend to Pokhara city. In the five random interviews that I took in Pokhara (three shopkeepers, one wholeseller and one mill owner), the shopkeepers and the mill owner reported that *kodo* from the mountain areas like that of Dhikur Pokhari VDC did reach their shops and mill either through middlemen or through individuals themselves. However, their business in mountain *kodo* was low as compared to their business in *kodo* from other districts.

5.4 Value chain

It is evident from the above discussions that the market and market chain for *kodo* exists in and out of the Dhikur Pokhari VDC. The following section describes the activities that the market chains actors are involved in while conducting their exchange of *kodo*, i.e. value addition.

According to Kaplinsky and Morris (1999) goods accrue value from the time it is conceived until it reaches the consumer. I found that the value addition for *kodo* began with the primary producers themselves: the farmers. In the context of the study area, as mentioned earlier, a farmer is an individual who is involved in the cultivation of *kodo* on their own or rented (*adhya*) field. At the producer’s level, the matured panicle (harvested ear head) of *kodo* was converted to fine grains after the process of drying, threshing, and winnowing followed by an additional drying. As shown in the market chain [Figure 5.1] the producers sell the *kodo* grains to the consumers – either local farmers (with low

landholding or low production) or to the local alcohol producers. The *raksi* is further sold to the alcohol consumers.

Several households that resorted to selling *kodo* directly to Pokhara city mainly sold *kodo* grains and not the flour. At the local mills, the mill owners sold *kodo* grains to the local alcohol producers as well as the local households. Even exchange with middlemen was mainly in *kodo* grains, be it from the mills or from the producers. Apart from this, some value addition occurred at the local mills in the form of grinding the *kodo* grains. The grinding of *kodo*, as mentioned earlier, was done in exchange for *kodo* grains. The trade of *kodo* with the middlemen by the local households also was primarily in *kodo* grains. The middlemen simply collected the grains from the primary producers and the mill owners, transported them and distributed them in the Pokhara city. Value addition in this case occurs when *kodo* grains are transported from the VDC level to the city (Figure 5.2).

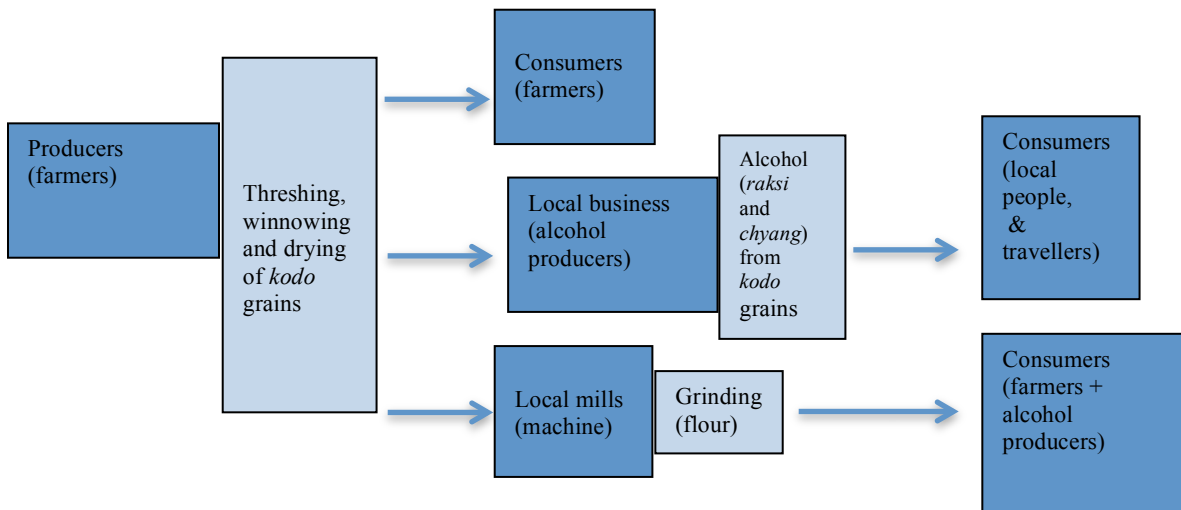


Figure 5.2: Value addition done to *kodo* locally within Dhikur Pokhari VDC

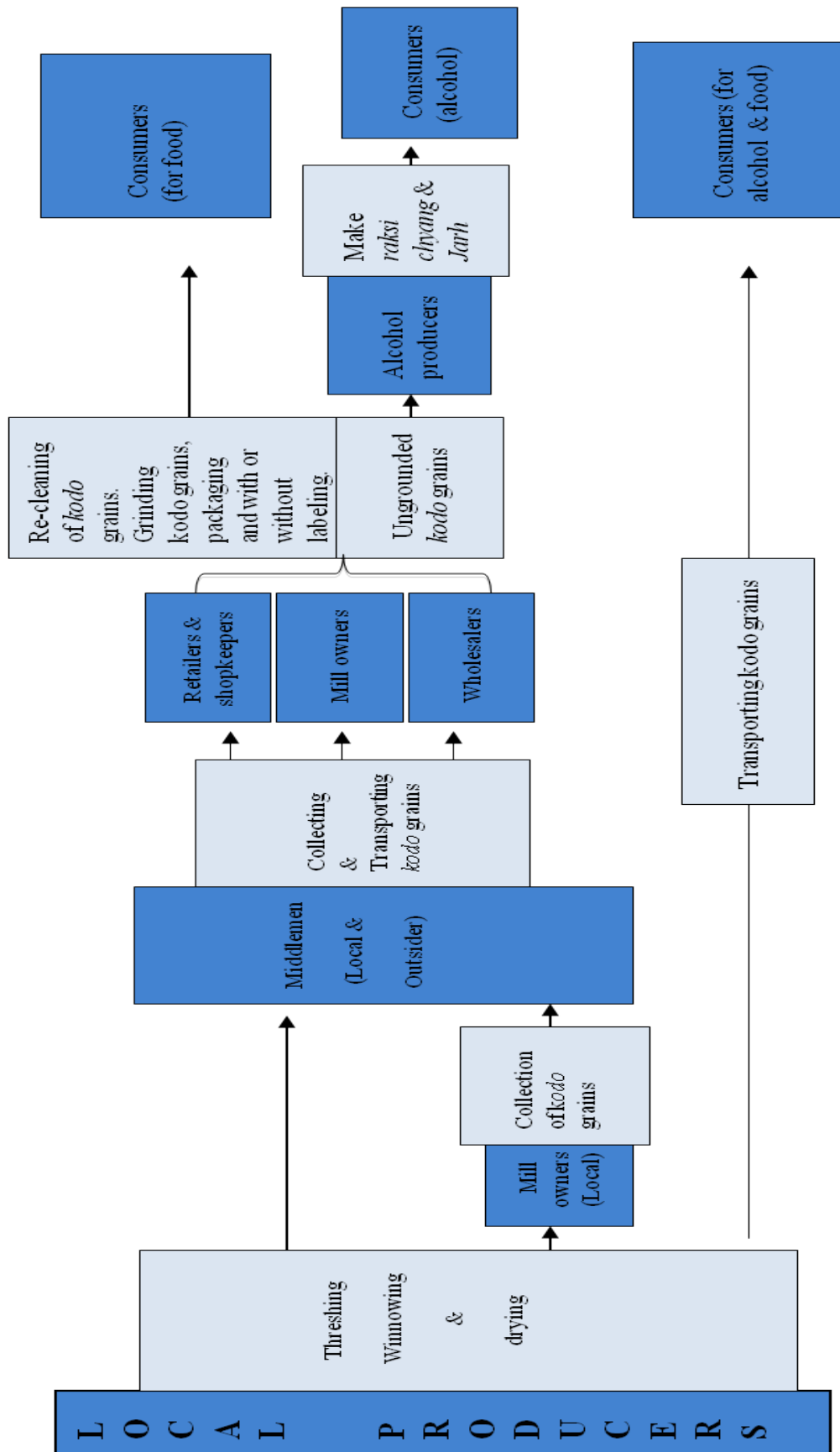


Figure 5.3: Value chain outside Dhikur Pokhari VDC

Once the *kodo* grains reach the retailers or shopkeepers, another set of value addition takes place in the form of re-cleaning of the *kodo* grains, grinding them, packaging them and even labeling them. Figure 5.2 and 5.3 show the value addition chain of *kodo* in and out of Dhikur Pokhari VDC. Each chain shows the market actor as well as the activity involved.

It is evident that major value adding activities were undertaken outside of Dhikur Pokhari VDC. I observed that, there was a huge increase in the prices of *kodo* products after value addition in urban areas like Pokhara city. Speaking on the value addition done outside of Dhikur Pokhari VDC, at the city level, a mill owner in Pokhara said:

“We clean the *kodo* and then grind it in our machine that we bought from the wholesalers or middlemen. After than we pack in small half a kg packs and sell. We do not label them because labeling cost us a little more and we do not want to charge people additional just for the labeling. We started packing only five years ago as it made it easier for us to give *kodo* flour. In the market today everyone has started packaging their *kodo* and this has increased our competition, so we started packing. The cost of per one kg pack is Rs. 40 after processing whereas our buying cost is Rs. 24/kg and just grains are Rs. 30/kg.”

Referring to the value addition he does, a shopkeeper responded:

“Here in my shop, I do not pack my *kodo* flour. I first take out the *bhuss* [husk] and then get it grinded here at my shop only but sell it open. It does not spoil or get bad because people are all the time taking it. So I have to constantly grind the *kodo*. I don't feel the need the pack it. I give them in plastics though and here in my shop, people buy more *kodo* flour than *kodo* gains. I sell *kodo* flour at Rs. 40/Kg and *kodo* grains at Rs. 28/kg.”

Some of the value added products that the researcher came across at Pokhara city is shown in the following plates.



Plate 11: Packed and labeled *kodo* and *raksi*, *chyang* and *tongba* made from kodo

Additional value added products that the researcher came across.



Plate 12: Ground, packed and labeled *kodo* malt (left) at the 5th National Diversity Fair held at Pokhara on 55 and *kodo* bread at LI-BIRD workshop on 877.

It must be mentioned that collecting crops, adding value to it and then selling it was a business for a few people in Pokhara city. These were people who neither cultivated the crops but collected it from the hill and mountain VDCs such as Dhikur

Pokhari, undertook all the value added processes (cleaning, grinding, and packing) and then selling in their shops or in the markets in Pokhara city for their livelihood. While attending the Fifth National Fair in Pokhara city, I observed that numerous stalls had packed and labeled *kodo* on display. On inquiring about the *kodo* packed as ‘*gaunle kodo ko petho*’ (village *kodo* flour) one participant of the fair responded:

“I live in Pokhara so I do not cultivate *kodo*. I bring *kodo* from other districts, clean them and pack them well. I do this for other products as well. My whole business is about collecting grains from different sources packing and labeling them and selling them, and I have been associated with this for the last three years.”

The exchange of *kodo* outside Dhikur Pokhari VDC, though small in scale has a definite extended market, market chain, and market actors. In addition, below is a map portraying the movement of *kodo* within the different wards of Dhikur Pokhari VDC as well as outside of this VDC below (Figure 5.4).

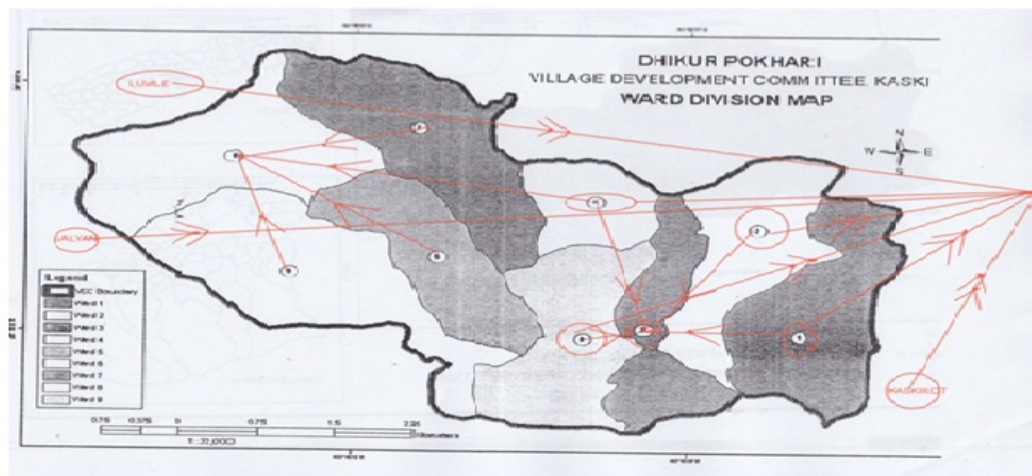


Figure 5.4: Market map relating to the movement of *kodo* in and outside Dhikur Pokhari VDC

In Figure 5.4 the arrows indicate the movement of *kodo*, mainly the procurement of *kodo*. The single red arrows imply the movement of *kodo* within the wards of Dhikur Pokhari VDC, i.e. local households buying *kodo* from the neighbouring villages in the

different wards of Dhikur Pokhari VDC. The double arrows imply the movement of *kodo* from the wards as well as the neighbouring VDCs to Pokhara city. The most important fact that needs to be taken into consideration from the above map is that *kodo* as a produce has a very strong market despite not being formal or the majority of the transactions being inter-household exchanges.

Therefore, the presence of this strong and robust formal and informal market for *kodo* catered to the wants and needs of numerous households that required *kodo* either for food purposes or for income/instant cash generating purposes. For households that were low on land endowments and had no alternative income source, the presence of *kodo* market helped them to secure *kodo* and take care of their food needs. Similarly, for the Mangar and Rai households that had zero landholding and heavily depended of *kodo* grains for making *raksi* to earn their living, the existing *kodo* market was their only source to procure *kodo*. With the income earned from the *raksi* business, such households took care of their basic food needs. However, their access to food in the absence of their own land and hence own production was primarily through the two local markets – one at Kade and the other at Naudara. The upper caste households that were well endowed with land as well as alternative employment, selling *kodo* was an additional means for instant cash. The very presence of the formal and informal markets provided them the incentive to cultivate *kodo* in order to sell. In addition, although the majority of households were dependent on agriculture and cultivated most of their cereal crops and vegetables, these households had to rely on other sources to fulfill their other basic needs of oil, salt, sugar, tea leaves, spices, and pulses. And, the presence of the two local markets as mentioned

above thus served as their main source for commodities that were generally not grown by them.

5.5 Market enabling and constraining factors in Dhikur Pokhari VDC

Even though *kodo* does not have a huge formal market like that of rice, wheat or maize, it is quite evident from the above-mentioned data that *kodo* in the Dhikur Pokhari VDC has a strong niche market of its own. A niche market is a specialized market that caters to the specific needs of limited consumers by producing limited goods (Ferris et al., 2006). Hence, the niche market for *kodo* and *kodo raksi* within the Dhikur Pokhari VDC makes *kodo* vulnerable to many factors, some of which are discussed in the following section. The main enabling factors for *kodo* markets, either formal or informal, in Dhikur Pokhari VDC is the existing demand for *kodo*. Some of the reasons for the existing demand are as follows:

5.5.1 Demand - arising from income/cash generation

It was discovered as well as observed that the utilization of *kodo* existed in almost every household within the wards of the Dhikur Pokhari VDC, the neighbouring VDCs, Pokhara city, or even other districts, such as Dhading. The households used *kodo* as part of their main diet or as a main income-generating source through the production of alcohol and as a cash crop to be sold inside and around the Dhikur Pokhari VDC. *Kodo* is also used as a medium of exchange, be it commodity exchange, labour exchange, or as a staple food crop. These myriad uses of *kodo* establish the existence of a demand for *kodo* in and around the Dhikur Pokhari VDC. Initially, locals reported that the demand for *kodo* within the Dhikur Pokhari VDC was mainly derived from those households that made *raksi*; however, it was found that this was not the only case. The demand for *kodo* was high from those households that were producing *raksi*, closely followed by those

households that did not own any land, or had very low landholding, or no alternative income sources like the *dalits* or the Mangars. This situation can be gauged from the following statement made by a person whose family holds a small plot of land:

“I do not have a proper source of income. I am a daily wage labour. I worked abroad for years and came back and built this house and bought some *khet*. I do not have *bari* and *adhya* is not possible because people usually give only those *bari* that are really far away from here. It is very difficult to cultivate on far away *bari*. So we have to buy our *kodo*. Right now our children are small so we are *managing* but once they grow big, we will need more *kodo*. I buy my *kodo* from the big landholders and from those who do not consume *kodo*. My monthly requirement for my wife and me is 6 to 8 *pathi* per month.”

Another respondent also added:

“I have 2 *ropani bari* and the *kodo* from it is not sufficient to feed my family. I have two households, one that of my first wife and one that of my second wife. I have to usually buy *kodo* from the mill and neighbours.”

A deeper understanding of this demand for *kodo* led me to examine the cash generating property of *kodo*. Each of the market actors, be it an alcohol producer, a trader, a farmer, a middleman, or a mill owner, is associated with *kodo* and *kodo*-related activities primarily because *kodo* ensures monetary returns to them. In the context of Dhikur Pokhari VDC, households that received monetary returns from *kodo* were mainly the majority of upper caste households and the majority of *janajatis*. Initially, it had seemed that the highest monetary benefit was accrued by households involved in the business of alcohol production, which led to a high demand on their part. However, I observed that this phenomenon it was only partially true. The benefits accrued by the upper caste and Gurung households were also worth noting.

5.5.2 Demand - as substitute food crop

As was mentioned earlier, *kodo* is considered the main substitute for rice by many households, in particular those with low landholding, or no alternative job opportunities

and those that cannot afford rice throughout the year. The climatic uncertainties such as hailstorms, drought, and price inflation, which affect rice or maize production, in turn, increases many households' reliance on *kodo*. Accordingly, the common belief that *kodo* is the most reliable crop to survive famines sustains the demand for *kodo*. It was reported that a hailstorm that hit the Dhikur Pokhari VDC as well as other neighbouring VDC just before my fieldwork began had affected the rice production. Therefore, the majority of households were of the opinion that the demand for *kodo* would increase and so would *kodo* prices. In the context of the Dhikur Pokhari VDC, the demand for *kodo* as a food crop primarily came from agriculture-dependent households with low landholding and no alternative employment i.e. the majority of *dalits* and a few general caste households. This demand was conveniently met from both the formal *kodo* market – the local mills, as well as the informal market – local households, the informal market being the most common source for *kodo*. Therefore, it was quite evident that the supply was met from within the local households of the Dhikur Pokhari VDC itself despite households facing cultivation-related constraints primarily due to low or zero landholding and having a low or insufficient *kodo* supply. When the exchange of *kodo* extended outside of the Dhikur Pokhari VDC to Pokhara city, the *kodo* supply for such trade was primarily met by their domestic production within the Dhikur Pokhari VDC. However, local middlemen were the major *kodo* collectors in terms of the quantity they dealt in. Their trade requirement for *kodo* was met from the numerous wards within the Dhikur Pokhari VDC as well as the wards of the neighbouring VDCs. Highlighting this fact an upper caste elderly male says:

“The main problem here is less production... this is the truth. We have trucks full of wood going out of this place but if we have to, we will not be able to fill trucks

with *kodo* and take it down, as our production is very low. Less and less people are getting involved in agriculture with every passing years and now the education of our children only makes them look for alternative jobs.”

It can be inferred that the formal and informal *kodo* markets of the Dhikur Pokhari VDC were robust and functioning. Thus, the domestic *kodo* production took care of *kodo* needs arising among different categories of households. In addition, it can also be inferred that the major middlemen had to rely on other wards outside Dhikur Pokhari for their *kodo* supply, when this *kodo* market extended outside Dhikur Pokhari VDC, apart from the few upper caste households that sold their households *kodo* in Pokhara city for instant income to take care of their urgent pressing needs. This situation implies that the *kodo* supply for large-scale trade was not met by the current production of Dhikur Pokhari.

5.5.3 Transportation facilities

As we know, the topography of the Dhikur Pokhari VDC is such that the wards and their numerous hamlets are scattered at different heights. Thus, the availability of transportation facilities in the form of permanent and gravel roads helped in the movement of *kodo* in and around the Dhikur Pokhari VDC easily. It was found that people could move more efficiently from one place to another. An older male respondent asserts:

“Earlier there was no *motor bato* [vehicular road]... before 30 to 40 years ago. Today, we have permanent road connection that goes all the way through this VDC to other *jillas*. We have every kind of vehicle running on this road today, buses, trucks, cars and motorbikes. I think this road connection led to the growth of *dokans* [shops] in this area as earlier we only had very few *dokans*.”

Another farmer also agrees that transportation has indeed made life both easy and difficult as can be gauged from his response:

“Earlier I used to manually carry *kodo* on my back and take it to different wards. I used to go to Tekhidunga, Hillay, Channay. Now we have proper road and I do not have to carry. Roads also make *kodo* from others to reach those places much before mine.”

However, the development of roads and related transportation made the process of procuring *kodo* from far-away wards easy, and also gave the households access to markets in Pokhara, including access to *terai* crops such as rice from Chitwan. This circumstance in turn gave households with surplus *kodo* the option to personally take their *kodo* grains to city markets or city households without having to resort to a middleman; as a result, the *kodo* market expanded outside the Dhikur Pokhari VDC. In fact, the Mangar and the upper caste middlemen who dealt in *kodo*-related business seemed to benefit more by the presence of transportation facilities. Consequently, procuring and transferring *kodo* has now become much easier compared to earlier times.

5.5.4 Steady price in Dhikur Pokhari VDC

The buying and selling prices of *kodo* throughout the Dhikur Pokhari VDC as well as the neighbouring VDCs were almost the same (currently at Rs. 100/*pathi* for both buying and selling). Even if prices varied, they differed only marginally (some households sold for Rs. 90/*pathi*). The steady price of *kodo* may not directly act as an enabling factor to the existing *kodo* market, but it surely contributed to a stable market for *kodo* within the wards of the Dhikur Pokhari VDC as well as within the nearby hamlets. Therefore, for marginalized *dalit* families and a few upper caste families with low landholding, and for Mangar and Rai households whose main livelihood is based on selling *kodo raksi*, this steady price of *kodo* enabled them to conveniently procure *kodo* locally all through the year and thereby help in sustaining the existing *kodo* market. The steady price also assured sellers such as the majority of upper caste households and the

Gurungs of a return from *kodo* in monetary terms, ensuring sustained cultivation.

Highlighting the steady price of *kodo*, a participant who sold *kodo*, *dhan* and maize says:

“I do not face any problem regarding selling of my *kodo* because the prices are almost fixed. This non-oscillating price gives me steady buyers through the year. And here in this Dhikur Pokhari VDC nothing can influence price. It is pretty much the same so no problem selling *kodo* through the year. You can say price is almost fixed. *Kodo* be it in large quantity or small price is the same... its fix”

The non-fluctuating prices of *kodo* could be attributed to the fact *kodo* was grown by almost every household in the Dhikur Pokhari VDC. Thus the VDC level need for *kodo* as a food, a grain or for *raksi* was conveniently met by the surplus of *kodo* within the Dhikur Pokhari VDC. This surplus supply could be one of the reasons for the steady price of *kodo* in the absence of any regulating government or private institutions for *kodo*.

5.5.5 Constraints - Low price in Dhikur Pokhari VDC

Although the prices of *kodo* were steady, a widely reported difficulty faced by the majority of households involved in the exchange of *kodo* was found to be its low price. Almost every household that was engaged in the cultivation of *kodo* revealed that the price of *kodo* was very low compared to the *lagat lagani* (expenses and investment) and the physically demanding hard work associated with the cultivation of *kodo*. Hence, steady prices for *kodo* gave some benefit to the *kodo* buyers and producers; however, the steady low price of *kodo* within the Dhikur Pokhari VDC gave a very small profit margin to the *kodo* sellers. On the other hand, this steady low price made it possible for households with low or zero landholding and no alternative employment to buy *kodo* for food and livelihood purposes. For this reason, many upper caste households that had owned land resorted to diversify their crops to something other than *kodo*, such as vegetable cultivation. As highlighted by a young female respondent:

“The main issue with *kodo* is it’s pricing. Setting high price for *kodo* is very difficult and because of this, people prefer marketing of other crops... even *mass* and *bhatta* fetch higher price than *kodo*. If *kodo* can come to power with Rs.200 or Rs. 300 per *pathi* people will be more attracted to it.”

Thus, given the backbreaking work in the cultivation of *kodo*, its low price was a common complaint among all the *kodo*-selling households. However, if the prices of *kodo* were to increase and/or stay high by better marketing of *kodo* products, then no doubt *kodo*-producing households would be better off. But given the fact that most of these households in the Dhikur Pokhari VDC are already well off in terms of land, alternative employment and education or in other words endowment, entitlement and capability, these households will continue to be richer, while the poor and needy, such as the *dalits* and a few upper caste households will become more marginalized.

5.5.6 Price dichotomy

As mentioned above, the households in the Dhikur Pokhari VDC that sold *kodo* considered their selling price to be low and most of the households engaged in buying *kodo* did so without much bargaining. When I conducted my research, the price of *kodo* stood at Rs.100/*pathi* and had started to increase to Rs. 110 or Rs.120 per *pathi* as an effect of the decreased *kodo* as well as paddy production that had been destroyed by a hailstorm before the harvest period. However, it was found that as the market chain for *kodo* extended to Pokhara, the shopkeepers, retailers and wholesalers in the city considered the price high even though it was considered low by the households engaged in selling *kodo* in the Dhikur Pokhari VDC. This problem occurred mainly because the *kodo* market in Pokhara city was flooded by the presence of low priced *kodo* procured from the *terai* districts. I found that most of the *kodo* being sold in Pokhara city came from the districts of Makwanpur (Hetauda VDC), Dhading and Trishuli. The picture

below shows two shopkeepers from Pokhara city selling *terai kodo* grains as well as ground *kodo* flour.



Plate 13: *Kodo* from other districts being sold in shops either as grains (right) or flour (left) in Pokhara city



Plate 14: Wholesaler of *kodo* imported from other districts of Nepal (left); *Kodo* from Makwanpur

The price of *terai kodo* in Pokhara stood at Rs. 80/*pathi*. Thus, with almost Rs. 20 difference per *pathi*, *kodo* from high mountain and hill areas (commonly referred to as

pahari kodo), such as Dhikur Pokhari VDC, faced stiff competition from *terai kodo*.

Verifying this situation, a local middleman claimed to be involved in the business of collecting *kodo* from Dhikur Pokhari VDC and selling it in Pokhara city says:

“The one difficulty that I face with *kodo* is its price... as I told you there is demand for *kodo* and I can supply to but the prices are a problem... there is the presence of trucks full of *terai kodo* ... the prices of these *kodo* are low as compare to the one I take from the mountains... If my selling price is as low as Rs.100/*pathi*... the *terai kodo* is sold for Rs. 80/*pathi*... because of this it become difficult to get my price... and the effect goes all the way down to the people who produce it.”

Another retailer in Pokhara also agrees that in terms of profit, the margin is greater in dealing with *terai kodo* than the *pahari kodo*:

“I actually prefer *pahari kodo* but there is no profit in it. The *kodo* coming from *terai* that we buy from the wholesalers is more profitable. I know *pahari kodo* is better but even if we sell it for Rs. 120/*pathi* it is not profitable. On the other hand selling *terai kodo* for Rs. 80/*pathi* is much more profitable.”

Thus, for the middlemen as well as the households involved in selling *kodo* in Pokhara city, given their additional costs incurred in transportation (vehicle fee) and labour, the total selling price of *kodo* at Pokhara city becomes higher than the prevailing price at the Dhikur Pokhari VDC. This could be one reason why the majority of households in the Dhikur Pokhari VDC are not physically engaged in selling *kodo* out of the VDC. However, the additional cost incurred while collecting and selling *kodo* are negligible or zero as the middlemen are engaged in the bigger business of collecting rice. This occurrence explains why the *kodo* business is profitable for middlemen and why some of them are still continuing business in *kodo*.

5.5.7 Lack of information

As was previously discussed in Chapter IV, asymmetric information was one of the main factors that affected the cultivation of *kodo* in the Dhikur Pokhari VDC. A lack of information regarding the existing demand for *kodo* and the consumer base outside of the Dhikur Pokhari VDC was also found to be an important factor that prevented households with surplus *kodo* from entering the *kodo* market in Pokhara city and selling their crop in the absence of middlemen. In the words of a younger farmer who annually sells roughly 4 quintals of *kodo* and is a teacher by profession said:

“Marketing for *kodo* is not a problem outside this place as long as you know you have a definite buyer. But yes, one should have information about the buyers or consumers demand for *kodo* in Pokhara. I do not want to go down to the city with my *kodo* and come back home with it. If I had information about the consumers demand, I would take it down and sell it but I just don’t want to take it for a mere 10 rupee profit... the transportation cost will not let me have that 10 rupee profit too. Our production level can always be increased but only if we have a good consumer demand facts. Hence, I prefer selling it from home rather than going down because unlike paddy, people buy *kodo* in minimum and not maximum.... There is no market for *kodo*. If people know that there is demand or even a market for *kodo* in the city or elsewhere, may be people would engage more in marketing. But at the end of the day, we don’t want to return back home with our product. Some people have *kodo* saved for years and years...”

5.6 Policies

Even though Nepal incorporated the right to food into its Interim constitution (FAO, 2011), food insecurity continues to prevail in many districts of Nepal even to this day. Nepal has experienced a series of food deficit situations since the 1980s. According to the Central Bureau of Statistics, Nepal (CBS 2003) the gap between the supply and demand for cereal crops resulted in 46 out of 75 districts in Nepal having a food deficit in the year 2001. There has not been much improvement in this regard as 40 districts continued to suffer from acute food shortages in the fiscal years 2008-2009 and 2009-

2010 (MAC and WFP, 2010). As well, various factors contribute to this food deficit situation, such as the physical geography of the country itself, a lack of market access in the hill and mountain regions, uncertain weather, and a lack of irrigation facilities.

Because food insecurity has been prevalent in Nepal since the 1980s (Khadka, 2003; Joshi et al., 2010), the government of Nepal has tried to prioritize food security in various policies and plans. However, the fact that population growth continues to surpass food production, food insecurity remains endemic in Nepal (Pyakuryal et al., 2005; NARC, 2010). A twenty-year plan called the Agricultural Perspective Plan (APP) was chartered in 1995 with a long-term focus on the “growth of agriculture through increased factor productivity... to transform subsistence based agriculture into commercial through diversification and widespread realization of comparative advantage...” (ADB, 1995:5). The emphasis of the APP was to bring about development in agriculture by modernizing farming practices, such as improving irrigation facilities and the use of fertilizers; not only would these measures increase agricultural production, but also through commercialization, they would enable common farmers to earn higher incomes (Khadka, 2003; WFP, 2007). However, APP has still not been able to fully realize its plan objectives; in fact, APP suffered a major drawback when the government had to reduce the subsidies on factor inputs of chemical fertilizers and small tube wells (Banskota, 2006). In addition to the APP, issue of food security, agricultural growth and development have been included as major objectives in other policies and plans such as the National Agricultural Policy (2004) (FAO, 2010) and the Ninth Plan (1997-2002) (Pant, 2003). In fact, the presence of the National Food Corporation under the Ministry of Commerce and Supplies (WFP, 2012) provided assistance by distributing food gains

(mainly rice) procured from the surplus regions of Nepal to food deficient, remote, and inaccessible districts of Nepal via helicopter providing some relief to the needy districts (Banskota, 2006). However, success was limited only to city areas like Katmandu; thus, food deficient areas continued to suffer from food insecurity (Khadka, 2003; Joshi et al., 2010). In addition, the NFC focus was more on the households of civil servants and less on poor households in greater need of food security assistance (FAO, 2003).

The main cereal crop of Nepal is rice, followed by maize and wheat. *Kodo* generally ranks fourth in the cereal list (GoN, 2011). Thus, extensive research work and policies have been directed towards the first three crops as compared to *kodo*. *Kodo* is considered a low status crop that is looked down upon by the majority of households (Prasad et al., 2010), particularly by the upper caste households. This may be one of the main reasons why *kodo* has not been included in cereal-related plans and policies for decades. In Nepal the focus on *kodo* has come only through research conducted by the National Agriculture Research Council (NARC) under the National Hill Crop Research Program at Kabre in Dolakha.

The Nepal Agricultural Research Council (NARC) is an autonomous agricultural research institution (NARC, 2012) which was established in 1992 as “an apex body for agricultural research in the country with the ultimate goal of poverty alleviation with sustainable growth of agriculture production through the development of appropriate technologies in development aspects of agriculture,” (GoN, 2007). Some LI-BIRD and RARC members had mentioned that research on *kodo* had begun under the National Hill Crop Research Program in Kabre, Dolakha in the 1990s, but continued in only a few selected VDCs of other districts in Nepal. Under the 22nd National Summer Crops

Research Workshop conducted at Lumle research station in 2000, NARC released some trial varieties of *kodo* (NARC, 2000). In addition, NARC conducted a collaborative research with the M. S. Swaminathan Research Foundation, a nonprofit government organization based in Chennai, Tamil Nadu, India on the project “Enhancing the Contributions of Nutritious but Neglected Crops to Food Security and to Incomes of the Rural Poor: Asia Component-Nutritious Millets” that was funded by IFAD through IPGRI (NARC, 2003). This project was a “multi-country initiative on underutilized crops” undertaken during the period 2002-2005 (Minor Millets in South Asia, 2010:vii) and NARC focused on *kodo*. This document indicates that research and work on *kodo* has been going on in Nepal under NARC, but unlike the major cereal crops such as rice and maize, any development occurring through such research is limited only to the area of research. Apart from these developments, there are no specific policies under the Government of Nepal on *kodo* regarding “research, development and extension,” (Prasad et. al., 2010:143).

5.6.1 Neglect by Government bodies

It was found that Dhikur Pokhari VDC had the presence of three government bodies: the Regional Agricultural Research Station (RARC) in Lumle VDC under NARC; *Krishi Seva Kendra* (Agricultural Service Centre) under the District Agricultural Development Office (DADO); and *Mahila Bikash Sanstha* (Women’s Development Organization), under the regional Women’s Development Centre, Kaski.

5.6.1.1 Regional Agricultural Research Centre

The Dhikur Pokhari VDC is geographically surrounded by eight other VDCs (Salyan, Bhaudaure, Kaskikot, Hemja, Dhital, Dhampus and Lumle). Interestingly, the Regional Agricultural Research Station (RARS) is located at the Lumle VDC.

Established as the Lumle Agriculture Centre (LAC) in 1968 by the British Government under the Department of International Development (DFID), this research station was handed over to the Nepal Agricultural Research Council (NARC) in 1998 (NARC, 2012). The Regional Agricultural Research Station (RARC) Lumle in the western development region is one of the four regional research stations under NARC in Nepal. Currently, RARC Lumle has eleven hill districts, two mountain districts and three *terai* districts under its belt.

It was reported by local households that no research or work had been conducted on *kodo* despite this grain being one of the major crops that people grew; the RARC research focused mainly on crops such as maize, rice, vegetables and fruits. One of the respondents had previously worked in the Lumle RARS as a daily wage labour for the past 45 years:

“Here in this hill region our main crops are *dhan*, *makai* and *kodo*. There has been intensive research on *dhan* and maize as well as on fruits but not on *kodo*...*kodo* has been neglected in the earlier days and remains to be so even now.”

A research scientist working at the RARC, Lumle stated:

“Here the major research has been on maize. We do not have a separate programme or research for *kodo*. In fact, everything *kodo* related is done in Kabre in Dolkaha under NARC. That’s the headquarters of the Hill Crop Research Programmes, so mainly they undertake the main programme or projects relating to *kodo*. This year though, I saw some trials for *kodo* being conducted here but the person who is doing that is not here.”

This disregard for any sort of research on *kodo* by the RARC, Lumle is highlighted by the fact that the RARC, through its Crops Research Program, is involved in developing new varieties or hybrid varieties under plant breeding of food crops with the aim of improving food, nutrition and livelihood security (RARS Lumle, 2011). The

RARS Lumle has released numerous varieties of maize (Manakamana-5, Manakamana-6, Poshilo Makai-1 and Ganesh-2), rice (Chhomrong Local, Machhapuchhre-3, Lumle-2 wheat, Lumle tori-1, and grain legumes such as soybean (Lumle 1) in the past years. In addition, all the new and ongoing projects funded by the NARC at the research station at Lumle included only wheat, maize, horticultural crops, livestock and soil (RARS Lumle, 2011) and not a single one on *kodo*. The consequence of such research was that the RARC Lumle directly affected the cultivation of crops in the Dhikur Pokhari VDC. Highlighting the significance of the RARC, one respondent said:

“Earlier, Lumle [RARC] gave us seeds of wheat, maize and potatoes for trial. They also kept trial for different varieties of paddy *Khupal 4*, *Khupal 9* and *Khupal 7*. Of these they discovered that *Khupal 4* grew very well as compared to the local ones of this very place. The local landrace varieties of paddy such as *Marsee* and *Jaiwari* ceased, and today we are growing bumper *Khupal 4* rice.”

Another respondent has further corroborated this pattern:

“Here in Serra Chour [ward number 9], many people have converted their *bari* into *khet* particularly after the introduction of *Khupal dhan* [a paddy variety] most. So earlier we used to all grow *kodo* but slowly we stopped as there were other crops that did better in yield as well as in profit.”

5.6.1.2 *Krishi Seva Kendra (Agricultural Service Centre)*

In addition to the regional research station at Lumle, the Dhikur Pokhari VDC had a *Krishi Seva Kendra* (Agricultural Service Centre), operating directly under the *Jilla Krishi Bikash Karalaya* (District Agricultural Development Office, DADO). For better understanding as to where *Kishi Seva Kendra* stood in terms of the agricultural setup of Nepal, I have shown a modified flowchart below:

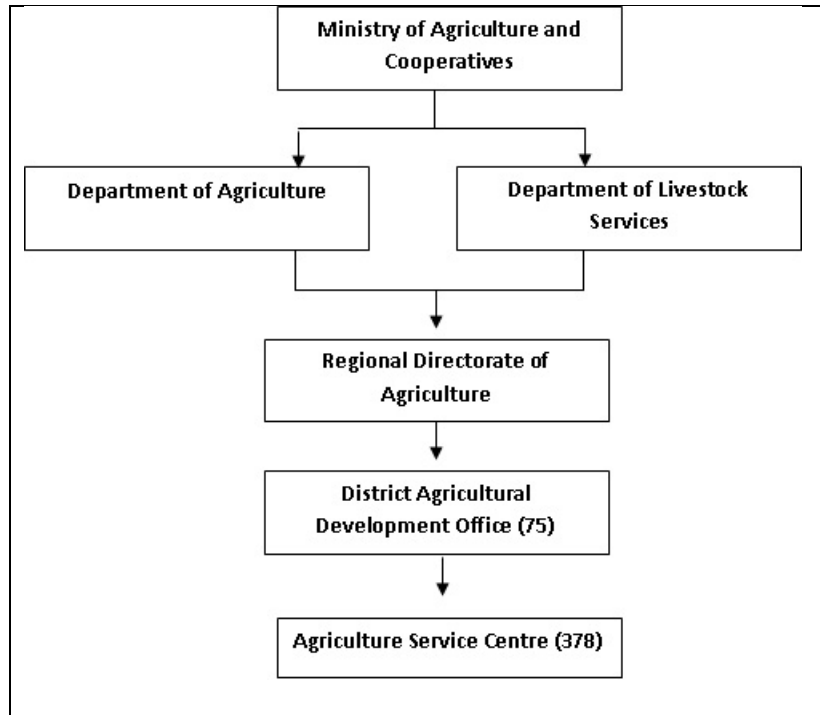


Figure 5.5 Agricultural administrative setup in Nepal. Source FAO, 2010

A *Krishi Seva Kendra* is a grassroots level “public extension office located at a sub-district level,” for providing assistance to the local households through advice, information sharing and practical demonstrations. There are 378 such centres all over Nepal (FAO, 2010:12). The following comments by junior technician working at the *Krishi Seva Kendra* in Dhikur Pokhari VDC strengthens my findings regarding the neglect of *kodo* by local government bodies:

“I am working as a junior agricultural technician (*zilla adhayaksh*) for the past one and half a year here in Dhikur Pokhari. My work involves the grass root level farmers with regard to ‘agriculture extension’ i.e. I give information about ‘new technologies’ to the local farmers, talk to them and ask them if they have any problem regarding seeds or crops; listen to their problems; do field work if we have kept trials, keep trials on the farmers field if they give us permission, take farmers problem and suggestions to the regional heads including teach them how save their seeds. In addition, we are also involved in training people to grow commercial crops. We focus and work on all the crops that are produced in this area. We check the suitability of the crop given this mountainous height, teach people how plantation is done when new seeds arrive and we also work on how to

protect seeds or plants from diseases. However, till date we have not worked on *kodo*.”

Excluding *kodo*, the *Krishi Seva Kendra* was involved in the distribution of free or low priced seeds for crops such as maize; the organization also provided mini-agricultural kits and training to some selected local households. A mini-kit consisted of climber seeds as well as seeds of paddy, wheat, maize, mustard, and vegetables. A few locals reported that the previous year, *Krishi Seva Kendra* had distributed half a kilogram of maize to some farmers for free. The same junior technician agrees with the assertion and explains why only a few farmers received mini-kits or training;

“We provide mini tool-kit only to chosen farmers i.e. farmers who have had success previously growing new seeds that we gave them or farmer who is fulltime into agriculture. Since the mini kit comes in small package, we have to make criteria’s for selecting farmers who can accrue the benefit of mini kit... The criteria could be as simple as a trust worthy person with a history of good farming... Some one who is very enthusiastic about using this kit and setting up trial... If the farmers do well with their mini kit and their trial, then we ask Zilla Krisi to get more seed and then distribute it to the farmers only... we have had some success regarding “arundoi *makkai* in Dhampus area, bramful dhan in Thula Khet in Dhikuppokhari”

Another reason why all the farmers did not receive mini-kits could also be due to the fact that each *Krishi Seva Kendra* had the responsibility of seven VDCs, including 63 wards in total. Thus, given the large area that a single *Krishi Seva Kendra* had to cover, it seems apparent that not all the desired households could be covered.

5.6.1.3 Sahakarīs

Furthermore, the Dhikur Pokhari VDC also had numerous *sahakarīs*. *Sahakarīs* are independent and autonomous bodies created by local people to fulfill their “economic, social and cultural needs as a mechanism to contribute in community development and service delivery,” (DEOC, 2011). Its objectives included the collection

of resources in small amounts from its members and investing them commercially (DEOC, 2011). In other words, *sahakaris* are village level cooperatives formed by local people through their own initiative and based on their own needs. Such cooperatives are formed, managed and run by local people. As reported by the majority of households of the Dhikur Pokhari VDC, *sahakaris* do not receive any kind of support from the government whatsoever apart from the registration and membership with the Department of Co-operatives under the Ministry of Agriculture and Co-operatives. For local households, the *sahakaris* not only acted as mediums of local employment for some people, but also as an income sources for others. The most common *sahakaris* were for dairy produce such as milk, *tarkari kheti* (vegetable farming) such as tomatoes, cauliflower and ginger as well as savings and credit. In addition, there were also *sahakaris* for coffee, honey, fruits and vegetables. However, for *kodo*, there were no *sahakaris* because the locals thought that *kodo* cultivation was too costly. These people also felt that there was no tradition of marketing *kodo* and there were far more lucrative food crops and vegetables.

However, it was found that the onus of neglecting *kodo* and *kodo*-related research was not only attributed to these government bodies, but also to the locals of the Dhikur Pokhari VDC itself in terms of priority and local enthusiasm. As reported by the junior technician from *Krishi Seva Kendra*:

“The thing is that what people tell us over here during our meetings with them, we go and tell the same thing to our heads at an immediate higher level at *Zilla Krishi* [District Agricultural Development Office (DADO)]. But people here have not demanded any sort of assistance for seeds or research regarding *kodo*. We cannot go and inform *Zilla Krishi* that *kodo* is good for people and we should do something about it... the talks, the initiatives, the demand should come from the local people here. Here the people have an easy way to acquire seed from

neighbours, so they don't tell us. Also, in my opinion, I think they believe that *kodo* is not high-income generating crop, so the demand is limited as compared to other crops that have very good commercial value. So far, people here mostly demand *makai*, *tori* and *dhan* and priority is given to what farmers say and not what NGOs or as a matter of fact even what we say.”

Agreeing to the above, the regional director of the RARC, Lumle adds the following:

“Three times a year, we have Regional Agricultural Technological Working Group Meeting. In *bhadau* the meeting is mainly organized by the livestock's organizations, in *magh* by the *krishi* [agriculture] organizations and in *barkha* we organize it. We hold this meeting where farmers, NGO representatives and entrepreneurs from 16 districts get together and participate. They bring problems that they face in their respective districts and give us guidelines. We listen to all of them, identify and discuss their problems but choose only the most pertinent issues. We then send it to the Kendralay [Centre] and the Kendralay provides it to other stations. We then suggest our findings to the NGO's, farmers and the entrepreneurs. We work on these and prioritize the main issue and then develop projects. Regarding *kodo*, if farmers or entrepreneurs come with *kodo* related issues or needs, then definitely it will be forwarded up to the higher levels but it rarely comes.”

Irrespective of the neglect of *kodo* by government bodies in general and the low priority given to *kodo* by the locals, almost all the households in the Dhikur Pokhari VDC cultivate *kodo* and use it either as food, fodder, or a cash crop. While attending the Diversity Fair conducted by the LI-BIRD organization at the Dhikur Pokhari VDC, I observed that every ward of the Dhikur Pokhari as well as the Kaskikot VDC had numerous varieties of *kodo* displayed. A careful analysis revealed that a minimum of four different varieties of *kodo* and a maximum of seven were found in each of these wards. The very presence of these many varieties indicates the prevalence and significance of *kodo* among the local households.

5.7 Endowment, entitlement, and capability: A discussion with reference to Dhikur Pokhari

As mentioned in Chapter II, endowment can be broadly summarized as a combination of resources or assets that an individual or household owns i.e. the “original bundle of ownership” such as land, labour, and skills (Sen, 1987; Sen, 2007). Given that the majority of the households in the Dhikur Pokhari VDC depended on agriculture for their sustenance, the findings and discussions in section 4.3.2 and section 4.3.3 of Chapter IV indicate that land is the most crucial endowment that households possess. On the other hand, entitlement is “a range of possibilities that people can have,” (Leach et al., 1997:15) such as food and education, and capability is what individuals or households can effectively do or be (Sen, 1987). True to what Sen (1981), Osmani (1993), Murugan (undated) and Kanji et al. (2005) argue, the ownership of endowments are the basis for entitlements; both endowments and entitlements are then the basis for capability. These three concepts are interdependent; achievement of one can then lead to the achievement of others. The relationship between these three concepts can be summarized in Figure (5.6) below:

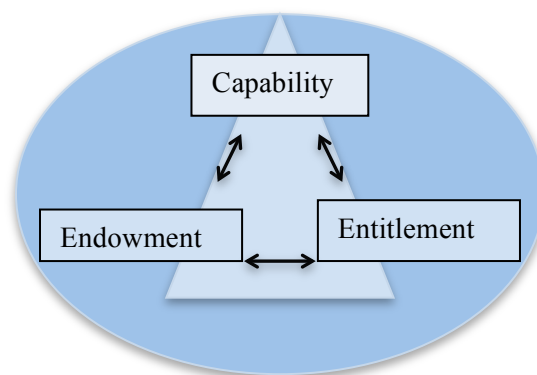


Figure 5.6: Central Triad – Endowment, entitlement and capability

In the following sections, I have discussed how these elements in the triad relate to each section of the community – the *janajati*, the upper caste and the *dalits* in Dhikur Pokhari VDC.

5.7.1 *Janajati*

As mentioned in section 4.3.2 and 4.3.3 of Chapter IV, the Gurungs are richly endowed with land - both in terms of *bari* and *khet*, which gives them a wide range of possibilities (Leach et al., 1997), such as a wider entitlement bundle to grow cereal crops and vegetables, to rent or lease the land, or to sell the surplus. Although the Gurungs are low in education (an entitlement), their land endowment gives them the capability of sending family members to work abroad, which in turn further expands their entitlement bundle. Thus with the highest amount of land (i.e. endowment) and the highest number of family members the Gurungs can easily “convert their endowments into goods and services included in the entitlement” bundle (Osmani, 1993:4) i.e. exchange entitlement according to Sen (1981). Furthermore, because Gurungs and *janajatis*, in general, have been traditionally and culturally associated with the production and consumption of alcohol, society does not look down on them when they produce and sell *raksi*. Social acceptance enables them to continue producing alcohol and even expand it into a business that contributes towards their livelihood. As seen explicitly in the case of the Mangars and Rais, their capability to produce *kodo raksi* and engage in business by selling *raksi* expanded their entitlement set, even with zero landholding. Thus, even in the absence of education, the Gurungs, primarily with their land endowment as well as capability, and the Mangars and Rais with their capability could convert their

endowments and capability into entitlement that included a “wide range of possibilities that people can have” (Leach et al., 1997:15) such as food.

5.7.2 Upper caste

With high land endowments, the upper caste households also had a wide entitlement possibility to begin with, like the Gurungs. However, for the majority of upper caste households, their entitlement bundle largely included education. As was seen in Table 4.9, the upper caste households had the highest number of educated individuals. Education enabled them to acquire alternative employment outside agriculture and to earn their living; in other words, education enhanced their capability. The dependence on alternative sources of income for sustenance outside agriculture was the highest among the upper caste, as the majority was either engaged in government or private services. For this reason, very few upper caste households resorted to going abroad for employment despite having land. As mentioned earlier, only five out of 27 upper caste households depended on foreign remittances.

However, true to what Widiadi (2008) argued, what an individual can achieve (i.e. capability) with a given set of entitlement also depended on personal and individual characteristics. Verifying this circumstance, an upper caste household member, remembers how he was duped by a recruiting agency for foreign jobs:

“See I went abroad thrice, Qatar, Saudi and Malaysia for labour work and each time it did not work out for me, I was paid pittance and could not even support myself forget alone supporting my family, on top of it all I had taken loan to go abroad in the hopes that once I start earning abroad I will be able to pay back, as that’s what they [recruiting agency] had told me... Now I am three times foreign return but have nothing to show for it other than debt which I have to pay back.”

However, another upper caste household member whose husband had previously gone abroad stated that:

“When I left my in-laws place I did not have anything, then my husband went out to Qatar for a year and to Saudi for another four years and I bought little bit of land – *bari* - from the remittances he sent. This had enable us to live a life better than what we previously had and now we are into poultry farming business which brings us steady income... so my husband going abroad did help us... indeed it was tough but we managed.”

Corroborating with Widiadi (2008) again, capability in addition to endowments, entitlements and personal characteristics of individuals, also depends on an individual’s immediate environment such as customs, welfare transfers and political conditions. The prevailing sociocultural, religious beliefs and practices of upper caste households put a taboo on producing and consuming alcohol. Thus, unlike the *janajatis* with limited land and education, capability of upper caste households that are endowed with limited land and have less or zero education to indulge in such business is severely curtailed. However, given the fact that majority of upper caste households are educated, alternative government or private employment compensates for the loss of capability in the alcohol business.

5.7.3 Dalits

From the findings and discussion throughout Chapter IV, the *dalits* are poor i.e. “members of particular classes, belonging to particular occupational group, having different ownership endowments, and being governed by rather different entitlement relations,” (Sen, 1981: 156) and thus, the most marginalized. To begin with, the *dalit*, have less or zero landholding, which greatly curtails the range of possibilities for them. Thus, getting alternative jobs outside agriculture or going abroad are next to impossible.

The fact that out of the nine *dalit* households, only two households depended on foreign remittances could be attributed to their lack of endowment, which lead to entitlement and capability failure. Even in case where *dalits* have gone abroad, capability

failure is reflected in the fact that they could not make use of the opportunities they got and instead incurred debt in the process. This could happen because the lack of endowment in land and lack of entitlement in education forces the *dalits* to accept the terms and conditions as set by recruiting agents, who, in most cases, are exploitative. On the other hand, those endowed with land, like the Gurungs and upper caste households, are capable of bargaining for better wages before going abroad as they do not have the same compulsions that are faced by *dalits*. As highlighted by a *dalit* woman:

“*Dai* [elder brother] had gone to work in Dubai for 6 years but came back with nothing... now he is still unemployed, we do not own much land and we are still struggling to make our ends meet.”

Even for those *dalit* households with a family member currently working abroad, they are unable to raise their standard of living because they are busy paying off debt incurred to send a family member abroad in the first place. Says an old mother of two sons:

“Though two of my sons are abroad, one in Dubai and the other one in Qatar, the benefit of foreign income is still far away as we first have to pay the debt to the local moneylenders from whom we borrowed money from to send them... the borrowed money is basically used to pay those people or companies who takes them abroad.”

Thus in such circumstances, a major endowment for the *dalits* comes from their labour. The existing social custom in Dhikur Pokhari VDC continues to consider *dalits* as a lower (in fact, the lowest) caste community. This low caste status makes the majority of the upper caste household members and the *janajati*'s look down on the *dalits*. It was observed that upper caste and the *janajatis* refrained from consuming water in a *dalit* household or when water was given to them by a *dalit*. Given this social caste stigma,

dalits did not have the option of producing alcohol and sustaining their family. Thus, they become more marginalized.

The above discussions of the three categories of households in Dhikur Pokhari strongly established the relationship between the three concepts: endowments, entitlements and capabilities. Summarizing Sen (1981), Osmani (1993), Muruggan (2003) and Kanji et al. (2005), endowments serve as the basis for entitlement, and both of these serve as the basis for capability. However, the above discussions also infer that endowments serve as the basis of capability, which, in turn, serves as the basis for entitlement and endowment. In addition, from the above discussion, it seemed apparent that sociocultural and religious context including the caste system largely determined the capability of households, which influenced their entitlements and thus, their endowments.

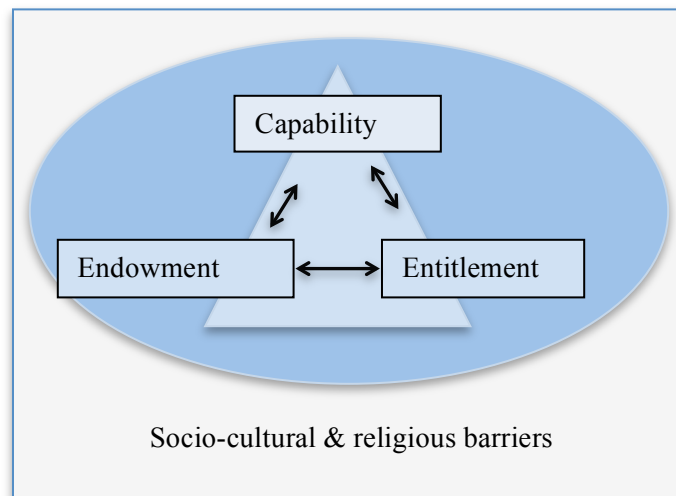


Figure 5.7: Exogenous factors affecting the central triad

I have considered these sociocultural and religious barriers as exogenous factors affecting the central triad as shown above (Figure 5.7). It is noted that the sociocultural factors become exogenous to the system and anything relating to it is beyond the control of individuals and their central triad. Further, anything relating to the households – for

example food security, employment, and education need to be understood in the given sociocultural background.

5.7.4 Food security and livelihood

From the various findings discussed in Chapter IV and the beginning sections of V, it is evident that the household's ownership of endowments, their range of entitlements and their capability were the overriding determinants in ensuring their food security. However, from the same findings, it was also evident that the household's endowment, entitlement and capability relation also determined a household's livelihood. This evidence corroborates Maxwell and Smith (1992) who emphasized that food security was a subset of livelihood and also echoes similar thoughts of De Wall (1989) and Conway (1998).

As mentioned earlier, household livelihoods can be farm-based and nonfarm-based (Drinkwater and McEwan, 1994). These farm and nonfarm-based livelihood activities are determined by the endowment, entitlement and capability of the households (Sen, 1987; Chambers, 1988). Thus in the context of Dhikur Pokhari VDC, the endowment (i.e. land and labour), entitlement (i.e. education and skills and land for women) and capability (ability or acumen) generally determined the livelihoods of local households. In fact the endowment, entitlement and capability relation determined whether a household had farm or nonfarm-based livelihoods. Households with large landholding i.e. the Gurung households and those of the majority of the upper caste were more dependent on their own land and had the choice of leasing it to small landholders i.e. the majority of *dalits* for sharecropping as well as to a few upper caste households members who had less landholding.

The households with other nonfarm-based livelihoods were of two different kinds: those who used their endowments, entitlements, and capabilities to look for opportunities outside agriculture such as those who go abroad to work, or those who joined government or private sector jobs like the majority of the upper caste households, or started their own business such as poultry farming or selling *raksi* like the majority of the Mangars and Rais; and those who were forced to work as daily wage labourers like the *dalits*. Thus it can be inferred that those who owned the land and had better economic opportunities are more secure in terms of food availability and access, and those who do not own the land are sharecroppers, and daily wage labourers with no permanent alternative sources of income.

This concept can be illustrated with the help of figure 5.8. The endowment-entitlement-capability triad at the centre largely determines the food security and livelihood of the households as already mentioned, in particular of the Dhikur Pokhari VDC. The double-headed arrow indicates that after achieving food security, the household can automatically enhance its “capability to functioning.” Functioning, according to Sen (1981), is the actual achievement of the individual, commonly referred to as the doings and beings of an individual. Thus, individuals from food secure households could be well fed, need not worry about the next meal and hence can devote more time and effort to enhance their “capability to functioning.” On one hand this mode of thinking enabled the household to expand its entitlement bundle and hence achieve food security. On the other hand, this notion also enhanced their livelihood, which would further improve their food security.

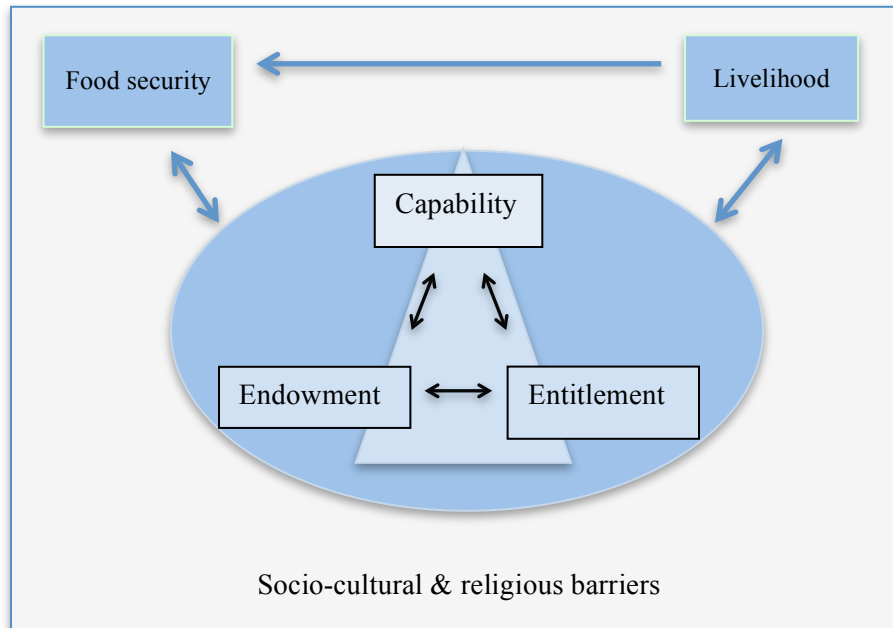


Figure 5.8: Central triad determining food and livelihood security within the socio-cultural boundary

5.7.5 *Kodo*

It is evident from my findings and previous discussions in Chapter IV that the cultivation and consumption of *kodo* in Dhikur Pokhari VDC was mainly determined by the endowments, entitlements and capabilities of the households. The Gurungs and the upper caste households with large land endowments obviously cultivated more *kodo* than the Gurungs who consumed most of their *kodo* as *raksi*. The majority of the upper caste sold most of their *kodo* to those households that had low *kodo* production and that were engaged in the business of *raksi* production.

The large land endowment of the Gurungs and upper caste households gave them the option of leasing or renting out their land to those households endowed with less land. The *dalits* with low or zero land endowments, along with a few upper caste households members generally resorted to taking *adhya* from the households with large landholding for *kodo* cultivation. *Kodo*, as mentioned in Chapter IV, has many uses as a food crop, a fodder crop, an alcohol-producing crop, and a cash crop. For the *dalits* and the few upper

caste households with zero or less landholding, in addition to no alternative employment, *kodo* was the most reliable food crop for such families because of its ability to feed large families and be very filling.

The significance of *kodo* in terms of food security has been well documented in Chapter IV. Thus, from among all the three categories of households, the *dalits* being the most marginalized are found to be the most dependent on *kodo* for their sustenance, in the absence of alternative employment. Also, the different socio-cultural beliefs, religious taboo and traditions practiced by the households greatly shaped the household's attitude and perception towards *kodo* and *kodo*-related food and business. *Kodo* was considered a low status crop and was believed to be impure. Hence, I have placed *kodo* inside the bounded framework (Figure 5.9).

However, such was not the case with the Mangar and Rai households; neither had landholding, nor were they engaged in practicing *adhya* for *kodo* cultivation. For them *kodo* was not a *ku anna*. For such households, producing *raksi* from *kodo* was their main livelihood. Thus, these households took care of their food need from the income earned from selling *kodo raksi* to local community members and the travellers. In the absence of land and *adhya*, these households had to procure *raksi* from other sources. The absence of land also implied that these households had to take care of their food need from sources other than land.

5.7.6 Market

Herein, lies the significance of the existing local market in general and the market for *kodo* in particular. The characteristics of *kodo* as a store of value, a medium of exchange, and a mode of payment give *kodo* an exchange value, which contributes

towards the existence of formal as well as informal market for *kodo* in and beyond the Dhikur Pokhari VDC. Thus, for the Mangar and Rai households as well as a few Gurung households that are engaged in large-scale *raksi* businesses, *kodo* was mainly procured from the existing formal and informal markets in Dhikur Pokhari VDC, from neighbours and local mills. With the existing demand for *kodo raksi*, these households could easily make a living that took care of their basic needs such as food, by selling *raksi* made from *kodo*. In addition, for food procurement, they relied on the existing local market - one at Kade and the other at Naudara. These local markets were not only their source of cereal crops such as rice and wheat, but were also their main source of durable commodities. In fact, these local markets were the main source of durable commodities for the majority of households of Dhikur Pokhari VDC, irrespective of their caste. Thus, it is evident from my findings and discussions that local markets in general and *kodo* market in particular serve as a crucial link in providing *kodo*-based food security and livelihood, as seen in Figure 5.9.

Furthermore, I have included institutions in the form of local government bodies as exogenous factors affecting *kodo*-based food and livelihood security. This relationship is reflected in the figure below (Fig 5.9), which shows how small millet-based food and livelihood security, including its market are interrelated with endowments - entitlements - capability being at the crux of it all. The livelihoods of households, their food security/insecurity, their cultivation of small millets, and the existing markets are shaped and bound by age-old, traditional/cultural beliefs and the caste system that exists in Nepalese society even to this day. In the framework below, these concepts have been considered as exogenous factors that have been a part of the village communities of

Dhikur Pokhari VDC for many generations, influencing small millet-based food and livelihood security of households, including the local markets

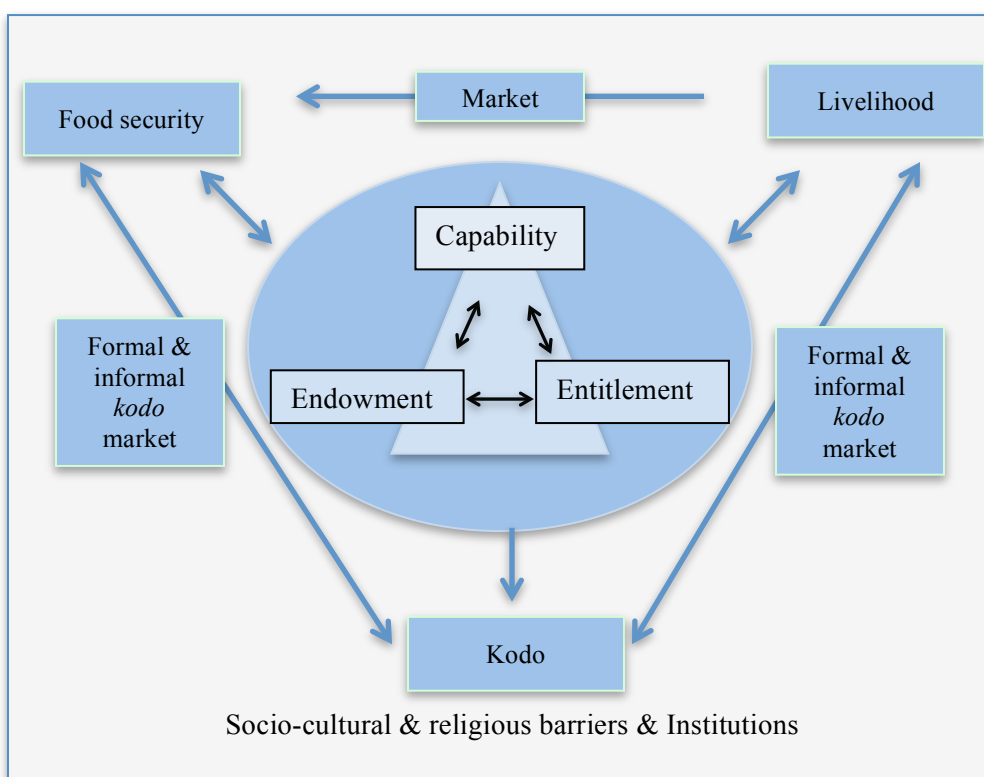


Figure 5.9: Kodo – endowment, entitlement and capability

Furthermore, people who lack basic endowments in the form of land, enter a vicious circle of poverty from which they seem to be unable to escape. This problem is a classic case of “entitlement failure,” arising from the absence of endowment (Sen, 1981, Osmani, 1993, Dreze and Sen, 2006), as those who are marginalized seem to be unable to generate much exchange value for the only endowment they have – labour. Thus, a closer analysis of the “entitlement mapping” of economically marginalized households in the Dhikur Pokhari VDC shows that their exchanges have affected them negatively in most of the cases, making it more difficult for them to extricate themselves from the vicious circle of poverty.

The role of market in terms of *kodo*-based food and livelihood security is immense. The importance of *kodo* as a store of value, medium of exchange and mode of payment gives it an exchange value, which contributes towards the existence of formal as well as informal markets for *kodo* within and beyond the Dhikur Pokhari VDC. This presence of formal and informal markets for *kodo* directly contributes toward the generation of livelihood security by those households capable of trade in *kodo* grains and *kodo raksi*. In particular, women with less land and education have been found to be heavily dependent on the *raksi* business for their livelihoods; this would not have been possible without the presence of local markets for *kodo raksi*. Thus, the income generating capacity of *kodo*, because of its exchange value, then can be used to procure food supplies by local households from available local markets to meet their food security needs.

5.8 Woman – A classic case of endowment, entitlement and capability failure

As I have discussed in my findings, women in general suffered from the failure of their central triad – i.e. a failure of their endowment, entitlement and capability, particularly in the case of Dalit women, who lack their share of land, as do their husbands and fathers. The absence of endowment automatically leads to entitlement failure, which severely leads to capability failure in the long run. As can be understood from a response given by a 54-year-old woman:

“I never got a chance to study. I had to take care of my younger siblings and had to work on field. We had more family members and less land then. Today I have some things [from her husband] but I always feel handicapped. With no education, apart from working in kitchen and field, I cannot do much. I cannot even help my grandchild.”

Because endowment and entitlement enhance a households' capability (Leach et al., 1997), failure of either one or both of them severely affects the ability of that household to be food secure or do alternative work to strengthen their livelihood. A classic case of capability failure could be witnessed in a case in which a local women's group Marga Joyoti Power Group of Kalabang and Community Development Group of Ralmare was endowed with a micro-mill as part of a pilot project to increase the consumption of *kodo* grains (Prasad et al., 2010). However, the operation of that mill was limited for as long as the project lasted (Prasad et al., 2010). In fact a baker based in Pokhara said:

“In a place called Pumdi, after the *kodo* processing machine which was given by some NGO broke down, the locals stopped using it as they did not know how to fix it and did not know how to maintain the machine... the machine is lying there without being used... before one gives poor people machine, they should understand the mind set and the capability of the local farmers.”

Hence, the lack of endowment and entitlement and the resulting capability failure had further marginalized weaker sections of society, especially women and poorer families in the study area. Thus, the endowment, entitlement and capability matrix must be strong because failure in any aspect directly affects the households.

5.9 Production dilemma

As previously stated, *kodo* production within Dhikur Pokhari VDC seemed sufficient for the needs of local households to the extent that they did not have to rely on sources outside Dhikur Pokhari VDC. However, for the marketing of *kodo* outside Dhikur Pokhari VDC, production was not sufficient, given the fact that middlemen who dealt in large quantities of *kodo* resorted to collecting the grain from other VDCs as well. A dilemma arises, given the assumption that if production for *kodo* is increased by

improved technology, agricultural practices or information sharing, then the law of supply and demand suggests the prices of *kodo* will fall. The price of *kodo* is already considered low in the Dhikur Pokhari VDC, so this situation could act as a disincentive for the households to continue their production of *kodo*. If we assume that the price of *kodo* increases in the Dhikur Pokhari VDC and the market outside is flooded with less expensive *kodo*, then the high price in Dhikur Pokhari could detract the local buyers as households in need of *kodo* would prefer to buy the less expensive *kodo*.

CHAPTER – VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

This research was part of the project ‘Revalorizing small millets: Enhancing the food and nutritional security of women and children of rainfed regions of South Asia using underutilized species,’ under the Canadian International Food Security Research Fund (CIFSRF). It fits into the greater CIFSRF project by documenting the significance of small millets in ensuring food security and livelihood generation, particularly for women, with a focus on existing markets for small millets in the semi-arid mountain community of Dhikur Pokhari, Village Development Committee (VDC). Thus, this research “Examining Small Millets-Based Food and Livelihood Security: A case study of semi-arid mountain communities in Nepal,” links to the specific CIFSRF project goal to: *iv) revitalize indigenous knowledge and socio-cultural practices that augment cultivation, processing, storage, and utilization of small millets and v) to enhance the consumption and social status of small millets as a wholesome foods in rural and urban settings.*

The purpose of this research was to understand the significance of small millets in ensuring food security and generating livelihoods with a focus on markets and women in Dhikur Pokhari VDC in the Kaski district of Nepal. The objectives of this research were to: 1) understand the importance of small millets in the household livelihoods of the people of Dhikur Pokhari VDC; 2) examine the role of women in achieving food and nutritional security through the cultivation of small millets; 3) analyze the existing formal and informal market for small millets and understand the constraints and opportunities

that influence the market for small millets; and 4) review the existing agricultural policies and examine their effect on small millet-based markets, food security and livelihood enhancement.

The fieldwork was undertaken in the Dhikur Pokhari VDC of Nepal. Lying between the elevations of 841 meters to 2074 meters above sea level, Dhikur Pokhari VDC is located in the hill region of the Kaski district in Nepal and is comprised of households belonging to diverse communities and ethnic backgrounds. Agriculture is the mainstay of the people of this VDC, where 53 percent of the households are dependent on agriculture alone for their livelihoods. However, their dependence on agriculture for sustenance and livelihood is influenced by numerous endogenous factors such as landholding, alternative income sources, and education, as well as exogenous factors such as traditional beliefs and practices, the prevalent caste system, uncertain weather conditions, political uncertainty, and government bodies. In addition, the majority of households in the hill regions are net consumers of their own agricultural products. Thus, households in the hills and mountains are more prone to food shortages, leading to food insecurity.

The fieldwork for this study was undertaken from November 2011 to March 2012. In all, I interviewed 66 different households, including 48 households from Dhikur Pokhari VDC and 14 individuals from the nearby and distant VDCs. In addition, four individuals from local government bodies were also interviewed. The data for this study was collected using qualitative tools, such as semi-structured interviews, focus group discussions, and observations, and secondary data were collected from published materials and reports. Analysis of the collected data had begun while the field interviews

were conducted. The emerging trends were verified for accuracy with new interview respondents and were probed in detail; in addition, trends were examined for verification during the focus group discussions. Upon completion of the field research, the collected data was analyzed through content analysis, starting with the transcription of interviews. From the analysis of the transcribed interviews as well as the observational fieldnotes, numerous emergent trends were categorized into different themes, each of which was developed into categories and sub-categories.

6.2 Conclusions

This study provides a detailed description of the significance of small millets in ensuring food and livelihood security, and particularly provides critical insight into the role of small millet-based markets and women in provisioning food security and livelihood. This study seeks to understand the significance of small millets for the local people in general, and the women in particular of Dhikur Pokhari VDC. The analysis is based on key factors, such as the significance of small millets in livelihood generation for the local populace, economic, social and traditional aspects of small millets in the study area, existing markets and market-related constraints and opportunities, including the role of women in achieving household level food security. This analysis shows that small millets are critical for ensuring food security, and for generating livelihood opportunities for people in the study area. In addition, a market for small millets exists and plays a pivotal role in generating livelihood and thus achieving food security. The specific conclusions that relate to the study objectives have been detailed below.

6.2.1 The significance of small millets

Finger millet (a type of small millet) - locally known as *kodo* – in general significantly contributes toward ensuring food security and livelihood generation in

Dhikur Pokhari VDC. Traditionally, *kodo* has been an important crop and it continues to remain so, not just for feeding, but also for various social, economic and empowerment issues associated with its cultivation and use. Despite being labour intensive and involving backbreaking work, *kodo* is widely cultivated in Dhikur Pokhari VDC. *Kodo* is considered to be very filling and thus, even with smaller quantities, *kodo* is believed to fulfill the dietary needs of households as compared to other crops such as rice, wheat, or maize. *Kodo* can be safely stored for a much longer period of time without fear of the grains spoiling – in fact, a well-cured *kodo* grain could be stored for more than ten years. These properties make *kodo* an ideal food crop, especially for economically marginalized households.

In particular, for households with low land endowments, few possibilities of entitlements and a lack of capability like the *dalits* of Dhikur Pokhari VDC, *kodo* is necessary for their food security, given the fact that the *dalit* households are engaged in the practice of taking *adhya* and cultivating *kodo*. *Kodo* is once again necessary for households that neither have land endowment nor are engaged in the cultivation of *kodo* through the practice of *adhya* such as the Mangar and Rai households; these households generate their livelihood by selling alcohol made from *kodo - raksi*, and thus take care of their food security needs. Apart from these two categories of households, *kodo* was found to be significant for the Gurungs as well, but not as a food crop but for the production of *raksi*, mainly because the Gurungs have traditional, cultural and religious values attached with *kodo raksi*. However, because the majority of Gurungs also have large land endowments, a few Gurung households are in the business of selling *raksi* like the Mangar and Rais and earning income. Furthermore, for the majority of upper caste

households with high land endowments, high education and alternative income sources, the significance of *kodo* is less as a food crop but more as a cash crop, for the majority of those households are engaged in selling *kodo* grains to alcohol producers such as the Mangar and Rais, needy *dalits*, or a few upper caste households that need *kodo*. Thus, it can be concluded that irrespective of different household categories, *kodo* and *kodo raksi* have great significance as a food crop as well as a cash crop. *Kodo* and *kodo raksi*: together contribute to enhancing the food security and livelihood generation of the households in Dhikur Pokhari VDC.

6.2.2 Role of women

Women play a central role in ensuring food security, not only through the cultivation of *kodo*, but also through the utilization of *kodo*. Women belonging to the upper caste, Gurung and *dalit* households are actively engaged in the cultivation activities of *kodo*, from field leveling to storing of the dried *kodo* grains. Women, irrespective of their caste, undertake all the drudgery processes involved in the cultivation of *kodo*, such as transplanting, weeding, winnowing, and grinding. Women's role in the cultivation of *kodo* is immense but not limited to the cultivation of *kodo* alone. In addition to the field activities of women - which not only include the cultivation of *kodo* but also other crops and vegetables - the women in Dhikur Pokhari are primarily the caretakers of their households whose responsibility includes cooking, cleaning and washing. Therefore, after the cultivation of *kodo*, women also undertake the task of grinding and making food items such as *dhido*, *pua* and *raksi*. Although men are responsible for grinding the *kodo* grains in micro-machines at the local mills, it is primarily women's task to take their *kodo* grains to the mills. For, a household not engaged in the cultivation of *kodo* and whose livelihood is based on selling *kodo raksi*, the procurement of *kodo* grains from the formal

and informal market of *kodo* is again a woman's task. In addition, the task of making *kodo raksi*, and selling the product to customers also mainly belongs to women (as in all the Mangar households and a few Gurung households). The alcohol-making property of *kodo* not only provides households with a livelihood but also empowers them. Hence, the role of women is immense in providing food security and livelihood generation through *kodo* for the sustenance of their households.

6.2.3 Markets – constrains and opportunities

Prior to this study, it was believed that any type of formal market structure and linkage relating to *kodo* was nonexistent. However, this study found that markets for *kodo* exist both inside and outside the Dhikur Pokhari VDC. In fact, the informal *kodo* market plays a critical role in linking households that need *kodo* (such as the *dalits* and the Mangar households) to households that have surplus *kodo*. This ensures that marginalized households – with low land endowments, lower education level, no alternative employment, and a low status in the society – who are vulnerable to food insecurity like the *dalits* are served by this informal *kodo* market. Both the formal and informal *kodo* markets also serve as important sources of *kodo* procurement for households that have low *kodo* production - like the few upper caste households and zero *kodo* production like the Mangar and Rai households. The majority of *dalits* and a few upper caste households that purchase *kodo* from the formal and informal *kodo* markets mainly use *kodo* as a food crop. On the other hand, the Mangar and Rai use it for making *raksi*, which they sell. This practice in itself establishes a subsidiary market for *kodo*-based products. For example, *raksi* in Dhikur Pokhari VDC provides primary income to the Mangars and Rais who may otherwise not have any other income sources, and additional income for the Gurungs. Apart from the *kodo* markets, local markets in Dhikur

Pokhari VDC and in Pokhara city are the main sources of food that are not produced locally. Thus, markets in general are essential for the households of Dhikur Pokhari VDC in achieving food security and generating livelihood. Regarding the enabling and constraining factors affecting the existing *kodo* market, the foremost and the most crucial enabling factor is the demand for *kodo* within Dhikur Pokhari VDC – for cash/income generation and as a substitute for rice. The steady prices as well as the transportation facilities also aid the marketing of *kodo*. Low pricing of *kodo* and a lack of information emerge as factors that constrain the market for *kodo*.

6.2.4 Existing policies

The agricultural policy in Nepal does not refer to *kodo* promotion or propagation; as such no specific policies on *kodo* exist to date. Although the Hill Crop Research Program under autonomous Nepal Agricultural Research Council (NARC) has been gradually incorporating research on *kodo*, the benefits are confined to the research sites and are yet to reach the majority of households cultivating and depending on small millets in Dhikur Pokhari VDC. A severe neglect of *kodo* in terms of research, information sharing and promotion by the local government bodies in Dhikur Pokhari VDC has contributed towards more desertion of *kodo*. In addition, a low prioritizing by the local households themselves has added to this neglect and desertion of *kodo* in Dhikur Pokhari VDC. In fact, the presence and promotion of profitable vegetable farming, dairy businesses, and coffee farming, through *sahakarīs* have contributed greatly to this low priority for *kodo* by expanding alternative choices for households that provide more income.

6.3 Recommendations

The fact that the majority of households in Dhikur Pokhari VDC cultivate *kodo* - although in different proportion given their endowments, entitlements and capabilities, and the prevailing sociocultural, religious and traditional context - and utilize it either as food and/or fodder and/or *raksi* indicate that *kodo* does hold some significance for the majority of households in Dhikur Pokhari VDC. However, having conducted a thorough examination of the existing situation relating to *kodo* in the Dhikur Pokhari VDC, I am of the opinion that there are some key issues that need to be addressed in order to promote and strengthen *kodo*-based foods and livelihood security. Two major recommendations are as follows:

6.3.1 Information leading to awareness

It is evident from the previous discussions in Chapter IV and Chapter V that a lack of knowledge and information as reported by the majority of households affects the cultivation, utilization, marketing, and social perception of *kodo* in Dhikur Pokhari VDC. Thus, the sharing of information and knowledge is crucial for better understanding of *kodo* and *kodo*-related activities of cultivation, utilization and marketing. Dhikur Pokhari being a VDC, the administrative setup is such that it is comprised of numerous villages in all nine wards. However, in the Dhikur Pokhari VDC, generally the workshops, seminars, or training involving crops, agricultural practices, women's issues or health, are conducted at the VDC level. The events are either organized at the VDC office or in local primary schools, and are mainly attended by the elected representatives of the different wards and/or a few ward members. I observed that information shared or gained at these workshops, training sessions, and seminars conducted at the VDC level did not seem to reach the larger population at the hamlet level.

Thus, the information sharing or awareness creation relating to *kodo* and *kodo* related activities could in general begin at the ward level, thus allowing for a greater participation of people residing in numerous hamlets under a particular ward. Every ward has an elected ward member who is able to mobilize the locals from the surrounding households within their respective wards. If such seminars, meetings and training sessions were conducted at the individual wards, then the level of participation of the local populace could go up dramatically. In many of the meetings and workshops conducted by the LI-BIRD organization, I observed that after the meeting or workshop was over, not much information reached the general populace that the elected ward member was supposed to inform. This situation occurred because it was not humanly possible for a single member or a few representatives of the ward to share the information with scattered households in different hamlets. For this reason the sharing of information should be done at the grassroots level, rather than at the VDC level where only a few educated people participate. Promotion through innovative community radio programs, and street plays have the potential to reach a greater crowd.

6.3.2 Opening of *sahakari* (cooperative) for *kodo*

Dhikur Pokhari VDC has numerous *sahakari*'s such as the *tarkari sahakari* (*vegetable cooperative*), the *doodh* (dairy) *sahakari*, as well as credit and savings *sahakari*. Given the significance of *kodo* for the majority of the households for their food security and livelihood generation and its significant exchange potential, the development of a *sahakari* for *kodo* would not only provide a consistent source of *kodo* and resulting income throughout the year, but would also contribute towards food and livelihood security for many households. Given the higher demand for *pahari kodo* in Pokhari city, this *sahakari* could undertake value addition processes such as the cleaning, grinding, and

packaging of *kodo* and sell the products locally or in Pokhara city without the involvement of any middlemen, under the brand name of the VDC itself. Any profits generated could be extended as credit to economically and socially marginalized households in the VDC as well as to those who face the constraint of limited land availability and the high cost of *kodo* production. In addition, establishing *kodo sahakari* with the mandatory involvement of women from the Dhikur Pokhari VDC to run the *sahakari* would not only help them financially, but it would also go a long way towards empowering them.

6.4 Final thoughts

This research was conducted mainly in Dhikur Pokhari VDC. However, the findings and recommendations from this study can be generalized across the *Kaski* district. As Merriam (1988) and Erickson (1986) pointed out, one can learn quite a lot from a particular case, so the findings from a particular case study can then be transferred to similar situations in communities that have similar settings (Erickson, 1986). This study, though important, is only a small glimpse into a very large phenomenon and hence could not possibly address all of the issues. However, every challenge presents an opportunity; hence I realize that there are certain research avenues that could be pursued by future students to add to the body of literature to which I have hopefully made some small contribution. There are two very important issues that I could identify and wanted to address, but did not do so due to the fact that they were beyond the scope of this research. One of the possible research avenues could be to explore the existing market for *kodo* in Pokhara city. The research would trace the backward linkage to a few major *kodo*-producing village development committees outside of Pokhara, in order to

understand how improved infrastructure and resulting movement of *kodo* is changing the markets, livelihood and life of people associated with *kodo* trade. Another important topic that I wanted to address relates to the agricultural policy of Nepal in terms of promoting, preserving and expanding small millets – *kodo* in other hill regions of Nepal. However, I could not do so due to the scope and time constraint imposed by a Masters thesis. Thus, an in-depth study into the ongoing research and development program conducted by the National Hill Crop Research Program in Kabre as well as the areas it covers, could provide some insight into the agricultural policies of Nepal that relate to small millets and the promotion of small millet-based food security and livelihood generation across Nepal.

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APPENDIX – I: Interview schedule

Small millets, livelihood, markets

1. How many members are there in your family?
2. Can you give me a brief history of agricultural pattern in this area?
3. What were/are the traditional crops grown in this area
 - a. How have these crops - that used to be grown earlier - changed (if any)?
4. What role does small millets play in terms of livelihood for your family –could be small millets are the primary food source for them or maybe it is their primary cash source, etc?
5. Can you describe for me your primary source of income/sustenance (may be agriculture, government service, livestock rearing, labouring for others etc.)?
 - a. If agriculture, what portion of your income is derived from small millets?
6. What is the size of your landholding?
7. Have you changed your crops or cropping pattern over the years?
 - i. If yes, can you describe for me those changes and describe why you adapted these changes?
 - b. If no, what makes you continue to grow the crops you have been growing for so long (could be s/he is earning enough from those sets of crops, could be that's the only crop that can be grown in her/his fields)
8. What portion of your income is derived from your own field/crops?
9. Is the crop that you grow in your own field enough to feed your family for a whole year?
 - a. If no, how do you supplement your income (could be rearing livestock or working for someone else, expatriation from other family members etc.)?
 - b. If yes, do you also sell some of your produce (also followed by Question #10)?
 - i. If yes, where or to whom do you sell your produce?
 - ii. What is the average income you derive by selling your crops/produce?
 - iii. Do you know anyone else who sells their produce as well?
10. How far is do you need to travel to sell small millets (in most mountain communities, middlemen come to the fields to buy agriculture produce by bulk, so this question is to ascertain if the middlemen come to buy small millets on the field itself or if the farmers need to travel to sell small millets)
 - a. If the farmers need to travel,
 - i. Is there any other agricultural product for which middlemen come to your village to buy?
 - ii. Is the market accessible by road?
 - iii. Is it a government regulated market (where minimum prices at which the farmers can sell their products are fixed)

1. If yes, who are the buyers, where do they come from?
2. Does the government buy small millets directly off of you?
3. Is there any organization that buys small millets from you?
- iv. If no, who are your customers?
 1. Do they come to a particular place to buy small millets or do you need to carry it to the customers?
11. Are you aware of the role of government in ensuring market accessibility - The Indian government guarantees a minimum support price - for crops such as wheat and rice and certain pulses - is there any such mechanism in terms of ensuring minimum support prices for these small millets?
 - a. If yes, can you describe for me the government department that deals with this and what role it plays for marketing small millets?
12. Are there any other agencies or organizations that have or continues to provide support in terms of marketing small millets?
 - a. If yes, can you describe for me the organization and what role it plays for marketing small millets?
13. What role do you think the government or other organizations should be playing in order to promote markets and uses for small millets?
14. What role do you see yourself playing for promoting small millets – may be ready to participate in developing market chain or add value (say make a product from small millet flour) etc?

Note: If there is an individual or organization that sells or markets or buys small millets from farmers in the study area, follow up questions on the specific individual, agency or organization etc. will be asked in order to ascertain the market/value chain

Food Security

1. How many times a day do you eat (may be three major meals a day or two)?
2. Do you think you and your family members get enough to eat?
3. What constitutes your primary diet- say rice, *dal*, vegetables or may be *dhedo* (a porridge like food made from small millet flour)?
 - a. If small millet based food then, what other uses do you have for small millets in terms of food?
 - b. How important is small millets for your diet?
 - c. Is there any other use of small millets [say they might be producing certain products like *nigar*, *chyang*, *tongba* (local drinks) for consumption by self or to sell to others.
 - i. If they sell, on an average how much do you earn daily by selling these small millet based products?

4. Where do you derive your primary diet from – grow by self or buy from the market (this will be easier to identify as the respondents would have already answered questions relating to their primary income source etc).
5. What are the main products that you need to buy from the markets – say cooking oil, lentils, vegetables, meat products or may be rice and wheat etc?
 - a. What portion of your income goes towards procuring these products?
 - b. Do you have enough left over after spending on food to provide for other life provisions – health care, school fees for children, clothes etc.
6. Do all your family members eat at the same time – to understand the family power dynamics – may be the male members eat before the female members or may be the female members eat before the male members?
 - a. Is there always enough food for all your family members?

Human capital

1. What is your level of education?
2. How far have other members of your family studied?
3. Do you think that the level of your or your family members' education contributed positively towards livelihood generation for your family?
 - a. If no, move to the next question
 - b. If yes, can you please describe for me how education has contributed towards livelihood generation for you or your family (could be a family member is working in the services sector, or may be education enabled some farmers to adapt to changing agricultural scenario better than those who are not educated, or may be educated farmers are better off than those who are not educated) ?
4. Do you use any modern technology to assist you with farming (could be use of tractors for tilling, or sprinklers for irrigation, or use of HYV seeds, fertilizers, pesticides, insecticides etc.)?
5. If yes, how did you start using this/these technologies (could be they learned about it from government agencies or maybe they saw someone else use it etc.)?
 - a. Did you have any external assistance (say concerned Government departments, NGO, Universities or international agencies such as World Food Program, NABARD etc. initiative) for the introduction of these modern techniques or crops that you have introduced in recent years?
6. Do you think you are moving in the right direction – if someone has continued to grow traditional crops then they might give me a reason as to why they think they are moving in the right direction, if someone changed their crops or cropping pattern etc. then they might also give me reasons as to why they think they are moving in the right direction.

7. Given chance/choice would you continue to farm the way you do and why-say with same crops or same techniques etc.?
 - a. If no, what changes would you like to introduce?

APPENDIX – II: Nepali months with corresponding English months

Month No.	Nepali months	English months
1	Baishak	mid-April to mid-May
2	Jeth	mid-May to mid-June
3	Asar	mid-June to mid-July
4	Sawan	mid-July to mid-August
5	Bhadau	mid-August to mid-September
6	Asoj	mid-September to mid-October
7	Kartik	mid-October to mid-November
8	Mangsir	mid-November to mid-December
9	Pus	mid-December to mid-January
10	Magh	mid-January to mid-February
11	Fagun	mid-February to mid-March
12	Chait	mid-March to mid-April

APPENDIX – III: *Kodo* cultivation processes

As compiled from the interviews, the processes involved in the cultivation of *kodo* have been discussed in brief as follows:

- Ploughing: This is the process of preparing the land by ploughing, mainly by an individual (*latte*) with the use of two *goru* (bull).
- Clod breaking: This is the process of breaking down big clods of soil left on the field after ploughing. The soil clods need to be broken down into fine soil with the use local tools such as *kuttay* or *khannay* and is manually done by the farmers.
- Leveling: This is the process of leveling the field and making it even. It is manually done using a wooden harrow or simply *kuttay*.
- Nursery raising: Also known as *Byad* preparation, this process involve manually preparing a small plot of ploughed leveled land by enriching it with nutrient using farmyard manure for the sowing of *kodo* seeds. The *kodo* seeds are usually broadcasted on the *Byad*.
- *Byad* weeding: Weeding is the process of removing unwanted grass growth from the *Byad*. Such grass growth usually inhibits the *kodo* growth and hence needs to be hand removed after 15 to 20 days after the seeds have been broadcasted.
- Transplanting: It involves manually uprooting the *kodo* plant from the *Byad* and replanting them into the ploughed leveled fields. In mixed crop farming, the *kodo* is planted on the foot area of the maize crop.
- Weeding: The second weeding is done almost after one month of transplanting *kodo* in the field manually by hands.

- Harvesting: This is the process of manually cutting down the full-grown *kodo* using local tools such as sickle and collecting the cut *kodo* heads in *thunse* (basket).
- Curing: This is the process of keeping the harvested *kodo* wrapped in a tarpaulin for around 15 days. It is usually done to make the harvested *kodo bala* (head) soft for threshing by feet. Curing is not a necessary step and people may or may not undertake this step, though in the region concerned, many were involved in the process of curing.
- Threshing: This is the process that removes the grain from the harvested *kodo* head usually by beating the millet heads manually with *latthi* on a tarpaulin or strong plastic sheets sticks repeatedly until the grain is detached from the head or by manually crushing the *kodo* heads repeatedly by feet.
- Winnowing: The finer process of dehusking the *kodo* grains from the straw. The separation is usually done manually by *nanglo* (flat tray like object woven from bamboo).
- Drying: This process requires keeping the fine-grained *kodo* on tarpaulin in the sun to dry.
- Storing: This process involves storing the dried *kodo* grains in plastic or tin drums, *bhukari* (traditional bamboo drums).
- Grinding: This is done to turn the *kodo* grains to flour by processing it in: *jato* (traditional manual stone grinder) or *ghatta* (traditional water turbine run stone grinder) or mills (machines imported from India).

APPENDIX – IV: Conversion table

Weight conversion tool

1 <i>muri kodo</i> = 62.4 Kilogram
1 <i>muri kodo</i> = 20 <i>pathi kodo</i>
1 <i>pathi kodo</i> = 3.12 Kilogram <i>kodo</i>
1 <i>pathi kodo</i> = 8 <i>mana</i>
1 <i>mana</i> = 390 grams

(Source: LI-BIRD, 2012)

APPENDIX – V: Ethics approval



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APPROVAL CERTIFICATE

November 3, 2011

CIFSRF

TO: Rinchu Doma Dukpa
Principal Investigator

(Advisor T. Henley)

FROM: Wayne Taylor, Chair
Joint-Faculty Research Ethics Board (JFREB)

Re: Protocol #J2011:122
"Strengthening Small Millets based Livelihoods and Food Security: An
Analysis of the Role of Markets in a Semi-arid Mountain Community in
Nepal"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- If you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to the Office of Research Services, fax 261-0325 - please include the name of the funding agency and your UM Project number. This must be faxed before your account can be accessed.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.

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