

**Transhumant agro-pastoralism in Bhutan:
Does it have a place in the 21st century?**

by

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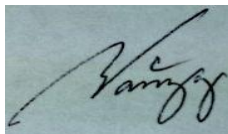
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Certificate of Authorship

I, Kuenga Namgay, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgment is made in the dissertation. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

I agree that this dissertation be accessible for the purpose of study and research in accordance with the normal conditions established by the Executive Director, Library Services or nominee, for the care, loan and reproduction of theses.

Signature:

A rectangular box containing a handwritten signature in black ink. The signature is cursive and appears to read 'Kuenga Namgay'.

Date: August 2014

Dedication

I dedicate this thesis to the memory of my late father Gangza and late brother Kinley Dukpa, whose souls untimely departed from this earth from a vehicle accident in Kungkha, Chukha, Bhutan in April 2006.

Disclaimer

The author certifies that opinions expressed in this dissertation do not necessarily reflect the positions of any Bhutanese Government or non-government officials. Nor do they necessarily reflect those of the Government of Australia, the members of the AusAID, and Charles Sturt University.

The author accepts full responsibility for the contents of this document.

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Ethics approval

The research proposal and field work schemes including methods used for data collection for this research were approved by the Human Research Ethics Committee, Office of Academic Governance, Charles Sturt University, Panorama Avenue, Bathurst, NSW 2795, on 10 June 2010. As shown below the protocol number issued for study was 2010/065.



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10 June 2010

Mr Kuenga Namgay
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Dear Mr Namgay,

The Human Research Ethics Committee has approved your proposal *"Transhumant Agro Pastoralist of Bhutan: Do they have a place in the 21st Century?"* for a twelve month period from 10/6/2010.

The protocol number issued with respect to this project is **2010/065**. Please be sure to quote this number when responding to any request made by the Committee.

Please note that the Committee requires that all consent forms and information sheets are to be printed on Charles Sturt University letterhead. Students should liaise with their Supervisor to arrange to have these documents printed.

You must notify the Committee immediately should your research differ in any way from that proposed.

You are also required to complete a Progress Report form, which can be downloaded from www.csu.edu.au/research/forms/ehrc_annrep.doc, and return it on completion of your research project or by 10/6/2011 if your research has not been completed by that date.

The Committee wishes you well in your research and please do not hesitate to contact the Executive Officer on telephone (02) 6338 4628 or email ethics@csu.edu.au if you have any enquiries.

Yours sincerely

A handwritten signature in black ink, appearing to read "Julie Hicks".

Julie Hicks
Executive Officer
Human Research Ethics Committee

Cc: Dr Joanne Millar Dr Rosemary Black Dr Tashi Samdup

English Language Editor Statement

This thesis has benefitted from professional English language editing work by Mrs Bev Lello of Yackandandah. The professional language editor did not alter the academic content of this thesis.

Publications arising from this study

Journal publications

1. **Namgay, Kuenga.**, Millar, Joanne., Black, Rosemary., & Samdup, Tashi. (2014). Changes in Transhumant Agro-pastoralism in Bhutan: A disappearing livelihood? *Human Ecology Journal*. doi: 10.1007/s10745-014-9684-2.
2. **Namgay, Kuenga.**, Millar, Joanne., Black, Rosemary., & Samdup, Tashi. (2013). Transhumant Agro-pastoralism in Bhutan: Exploring contemporary practices and socio-cultural traditions. *Pastoralism: Research, Policy and Practice Journal* 3(1), 13. doi:10.1186/2041-7136-3-13

Conference papers and proceedings

1. **Namgay, Kuenga.**, **Millar, Joanne.**, & Black, Rosemary. (2011). Transhumant agro pastoralism in Bhutan: An uncertain future. Paper presented at the 17th International Symposium on Society and Resource Management (ISSRM), Kota Kinabalu, Sabah, Malaysia.

Glossary of common Bhutanese terms used

<i>Bjop</i>	Alpine Yak herders, also referred to as Brokpa in the eastern Bhutan
<i>Boe</i>	An Official in the past sent by the king or regional governors to collect tax from locals.
<i>Chetrum</i>	Chetrum is the term used for coins in Bhutanese currency. 100 chetrum = 1Ngultrum.
<i>Chimi</i>	A village representative who represents local people's voice in the National Assembly, a system that existed prior to adoption of Parliamentary Democracy in 2008.
<i>Dasho</i>	Title or designation referring to an official in a senior position
<i>Dratshang Rabdey and Rabchub</i>	Monastic body. Dratshang refers to the main monastic institution in the capital city Thimphu. Alternatively Rabdey and Rabchubs are used for the same at Dzongkhags level.
<i>Drungkhag</i>	Sub district; a small branch of a Dzongkhag only present in some bigger Dzongkhags to ease administrative purposes.
<i>Drungpa</i>	The Chief Administrator of Drungkhag or sub-district
<i>Dzong</i>	A fortress functioning as Dzongkhag head quarters
<i>Dzongdag</i>	The Dzongkhag Chief Administrator. One in each of the 20 Dzongkhags
<i>Dzongkhag</i>	District. Bhutan is divided into 20 Dzongkhags
<i>Geog</i>	Sub district, lowest level of local governance. There are 205 Geogs in Bhutan. Sometimes spelled as Gewog.
<i>Gup</i>	The local Geog leader, elected as the chair to Geog Tshogde or local village development committee chair.
<i>Jabana</i>	Term used to refer to the number of villages under Naja geog of Paro Dzongkhag including Tshebji herders, extending to Nagu and Lingzhi at Haa Dzongkhag border.
<i>Jatsham</i>	A crossbred between Mithun (<i>Bos frontalis</i>) and a Thrabam cow. The male is referred to as Jatsha
<i>Lochoe or Choku</i>	The main annual religious activity of Buddhist families in Bhutan conducted by Buddhist monks, Lamas and Lay monks for the wellbeing and peace of the household members and their animals too in the case of pastoralists.
<i>Lyonpo</i>	Minister

<i>Maa Threy</i>	Butter tax
<i>Ngultrum</i>	Ngultrum is term for Bhutanese currency. Ngultrum is pegged at par with Indian Rupee. Used at 2010 average @ 1AUD = 46BTN.
<i>Norpon</i>	Official herders or herding job position in the past for which some sort of payment has been made. Norpons looked after royal herds, monastic body herds and later elite families' herds for payment until they ended up taking up pastoralism as their livelihood.
<i>Northue</i>	A form of partnership forged between two parties with equal rights over the animals being raised in joint ownership taking responsibility for looking after animals seasonally.
<i>Phazhing</i>	Ancestral land inherited through generations, crucial for survival of the household. Pastoralists refer to <i>tsamdros</i> as their phazhing as their transhumant cattle are heavily dependent on the <i>tsamdros</i> .
<i>Poen</i>	A term usually used synonymously, to refer to the king. In the villages it is also casually used sometimes to refer to a senior official.
<i>Sha Threy</i>	Meat tax
<i>Tanam Paathi</i>	Old term originating from the Nepali language. Refers to land lease rent paid in kind. Jabab pastoralists in the past leased some <i>tsamdros</i> land to Nepali immigrants settling in southern Bhutan for cropping purposes and collected rent from them.
<i>Thrabam</i>	Refers to local cattle breed of <i>Bos indicus</i> type indigenous to Bhutan. Other terms such as Nublang or Siri are also equally used in technical literature.
<i>Tsamdro</i>	Pasture or pastureland also referred to sometimes as <i>Tsadrog</i> or <i>Tsadrok</i> . Usually referred to forest grazing land categorised and registered as <i>Tsamdro</i> in land records. Of late, it is also used to refer to improved pasture which usually means growing exotic pasture grass varieties in an enclosed field.
<i>Tshogpa</i>	Referred here to a village representative elected by local people to a geog development committee (Geog Tshogde). However, the same term also refers to associations as it is currently used in the names of various farmer groups formed: fruits, vegetables, dairy, fish and bee marketing groups.
<i>Yak</i>	General term used for <i>Bos gruniens</i> .
<i>Zhung</i>	Central Government

List of abbreviations

MoAF	Ministry of Agriculture and Forests
RNR	Renewable Natural Resources. In Bhutan MOAF is also referred to as the RNR sector.
RNR RC	Renewable Natural Resources Research Centre
RGoB	Royal Government of Bhutan
GNH	Gross National Happiness
GDP	Gross Domestic Product
GT	Geog Tshogde
DT	Dzongkhag Tshogdu
HELVETAS	Swiss Association for Technical Assistance
ICIMOD	International Centre for Integrated Mountain Development
PPD	Policy and Planning Division
WWF	World Wildlife Fund
Kg	Kilogram
NLCS	National Land Commission Secretariat
DoFPS	Department of Forests and Park Services
DoL	Department of Livestock
DoA	Department of Agriculture
M	Meters above sea level
Nu.	Ngultrum or indicated as Bhutan Ngultrum (BTN).
NFFDP	National Feed and Fodder Development Program
FYP	Five Year (Development) Plans
CBS	Centre for Bhutan Studies
NSB	National Statistical Bureau
NEC	National Environment Commission
NGOs	Non-Government Organizations alternately the term Civil Society Organizations (CSOs) is used in Bhutan
SNV	The Dutch Development Organisation
UNDP	United Nations Development Programme
RSPN	Royal Society for Protection of Nature
BAFRA	Bhutan Agriculture and Food Regulatory Authority
BBSC	Bhutan Broadcasting Service Corporation
Kuensel	National newspaper
NCD	Nature Conservation Division

Abstract

This study explored the nature of transhumant agro-pastoralism (TAP) in Bhutan in the context of global changes to pastoralism. Despite the widespread practice of TAP in Bhutan, there has been limited research on the nature of the practice, associated socio-cultural traditions and drivers of change. The findings describe the history, origins and contemporary practices of TAP in Bhutan. Drivers of change were examined and various perspectives on the future of TAP elucidated. Impacts of policy decisions on livelihoods and resource management are discussed along with implications and recommendations for future policies and programs.

A mixed method was used for this study. Qualitative methods were used to interview 24 migrating households from six villages in central east and west Bhutan and nine agency staff in 2010. A semi-structured survey of 75 TAP households from the same villages gathered background quantitative data. Seven focus groups were conducted in 2011 with herders from upstream and downstream villagers residing adjacent to migratory cattle herders' winter encampments, and with livestock extension staff.

Households practicing TAP migrate with their cattle to lower elevations during winter to access pastures and gain employment. Migration takes place in April/May and September/October, and may take four to 30 days. There are five main reasons for migration 1) avoiding production reduction and mortality of animals from cold weather 2) shortage of forage 3) off-farm-income opportunities 4) avoiding parasites infestation in the south 5) and vacating grazing areas for yaks in the winter.

Among the six study sites the study found there has been a 31% decline in the number of households practicing TAP between 1990 and 2010 due to: farm labour shortage, alternative livelihood choices, government policies and climate change. Nevertheless, TAP practice persists due to heterogeneity in inter-household capability and preferences to adapt to socio-politico, economic and environmental changes, forming the mainstay of many families. The findings revealed TAP is an important part of the living cultural heritage in Bhutan. TAP herders have not only adapted their livelihoods to ecological niches at different altitudinal levels but used resources

sustainably, while synchronizing their socio-cultural activities with seasonality of the transhumant practice. However, the system is under increasing pressure. Today, TAP communities are faced with family labour shortages due to increasing participation of children and adults in education and alternative livelihood options as well as changing policies and climate change making their TAP practice more difficult. TAP is likely to continue to decline as Bhutan develops, however, the pace of change cannot be ascertained as there is a high level of inter and intra household and community resource endowment, capability and personal preference. The transition needs to be carefully handled lest weaker sections of the society, especially the poor and remote citizens like TAP households with marginal holdings, are disadvantaged.

Policies should facilitate transition through education, training, technical extension services and micro credit finance services. There is also a need to provide platforms where TAP and other herders can participate in decision making. Policies need to be designed in such a way that any alternatives suggested are evidence-based, within the pastoral communities' means and with government support.

On a broader scale it appears advocates of both modernity (modernisation and sedentarisation) and mobility paradigms need to acknowledge that these two paradigms need not be exclusive. Whilst with ever increasing populations, extension of cropping land, urbanisation, and climate change, mobility of pastoralists will continue to be reduced; however, intensification is not an option for some places owing to bio-physical and climatic conditions. The way forward needs to increasingly understand local situations and adopt suitable technologies, through inclusive participatory approaches.

CHAPTER 1

Introduction

1. Introduction

This research explored the nature of transhumant agro-pastoralism (TAP) in Bhutan in the context of changes to global pastoralism. The findings describe the history, origins and contemporary practices of transhumant agro-pastoralism in Bhutan. Drivers of change were examined and various perspectives on the future of TAP elucidated. Impacts of policy decisions on livelihoods and resource management are discussed along with implications and recommendations for future policies and programs.

1.1 Research issue

Transhumant agro-pastoralism (TAP) is the seasonal migration of livestock and humans from one agro-ecological zone to the other and back, from an established permanent home base with some cropping (Evans, 1940; Rota & Sperandini, 2009; Waters-Bayer & Bayer, 1992). Mobility is key to transhumant pastoral systems, enabling herders to move their livestock at different points in time, exploring ecological niches provided by microclimates at different agro-ecological zones, efficiently utilizing available resources, averting risks and producing food. It is one of the main strategies used by pastoralists to access natural resources such as pasture and water (Dyson-Hudson & Dyson-Hudson, 1980; Fernandez-Gimenez & Le Febre, 2006; Niamir-Fuller, 2005).

Globally, the practice of transhumant pastoralism and TAP has been on the decline since the mid-19th century owing to the introduction of better yielding crops, irrigation, use of chemicals, off farm employment, education of younger generations, rural to urban migration and improved communication (Davies, 1941; Lees & Bates, 1974; Meir, 1986; Montero, Mathieu, & Singh, 2009). Mobile pastoralists today are faced with a number of challenges and opportunities as a result of changing political

scenarios, economic development, land tenure and availability and climate change¹ (Nori & Davies, 2007).

There is a growing concern that inappropriate policies, unequal power dynamics and resource competition in pastoral environments have contributed to a number of conflicts relating to resource governance and access, making pastoralists more vulnerable to environmental issues such as climate change (Nori & Davies, 2007). Pastoral systems and pastoralists have also attracted the attention of governments and development agencies due to the predominant notion that transhumant pastoralists' animals cause overgrazing, deforestation, erosion and environmental degradation (Behnke, 2011; Carr-Hill & Peart, 2005; Scoones, 1993).

Government authorities often favour sedentarised systems for ease of governance and tax collection whilst enabling better outreach and access to social services such as health and education (Dyson-Hudson & Dyson-Hudson, 1980; Fratkin, Roth, & Nathan, 2004; Watson, 2010). Policies that encourage pastoralists to sedentarise, reduce herd size, adopt exotic breeds, reorient their production systems and change land use patterns, necessitates them to change their lifestyle (Dyer, 2001; Lesorogol, 2003; Nori & Davies, 2007; Shaoliang et al., 2007). While sedentarisation, especially near urban areas has opened up economic employment opportunities and improved access to health and education, the benefits are not evident for all as there are incidences where sedentarisation can lead to poor nutrition and increased health risks for women and children (Eneyew, 2012; Fratkin, Roth, & Nathan, 1999; Fratkin, et al., 2004).

In Bhutan, TAP is a traditional system of raising local cattle and migrating with them to warmer areas in the winter to access pastures and find employment. Forests and rangelands provide grazing areas and water holes for livestock, however, ownership of these grazing resources resides with the government. Cattle herders have grazing rights only. TAP is facing challenges as a result of land tenure policy changes. Recent

¹ This thesis uses IPCC's definition of climate change, that is, "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Available at: https://unfccc.int/essential_background/convention/background/items/2536.php

land reforms and land use policies have been introduced such as the Land Act of Bhutan 1979, Draft Pasture policy of 1989, and the Land Act of Bhutan 2007 (LA 2007). These policy changes aim to nationalise grazing areas (known as *tsamdros*), incorporating them under forests as Government Reserved Forest (GRF) land, and distribute grazing rights to those residing in the area. The recent land law – Land Act of Bhutan 2007 (hence referred to as LA 2007) has foreseen complete cessation of inter-Dzongkhag (district) cattle migration by 2017/18.

Section 239 of LA 2007 states:

After 10 years from the date of enactment of this act, *Tsamdro* shall be leased only to a lessee who is a resident of the Dzongkhag where the *Tsamdro* is situated.

This section of the act affects cattle based transhumant agro-pastoralists. The act maintains the status quo for yak based alpine herders to preserve their livelihood and recognise the important security role they play in border protection. This means that transhumant agro-pastoralists who migrate seasonally to different districts with their cattle will have to cease by 2018. This legislation has placed the agro-pastoralists in a predicament, threatening their livelihood and way of life which has been practised traditionally for centuries.

Livestock grazing, particularly cattle in the forest is a common practice in Bhutan but it is a practice often criticized by the foresters as damaging the environment (Moktan et al., 2008; Norbu, 2002; Roder, 2002; Roder, Gratzner, & Wangdi, 2002; Tshering, 2005). However, the livestock specialists feel that forest grazing has a symbiotic relation between livestock and the forest (Roder, Wangdi, Gyamtsho, & Dorji, 2001).

TAP is a widespread practice in Bhutan where cattle play a crucial role in the livelihoods of the many rural households. However, there has been limited research on the nature of the practice, the actual migration routes or issues facing these communities. There is limited literature on cattle TAP in Bhutan including government reports or unpublished records. Many government and non-government agency staff view TAP as a ‘backward’ and dying culture. This attitude, and lack of knowledge about TAP, means that most available literature on livestock in Bhutan is on yaks and crossbreeding Thrabam cattle with European dairy breeds. The lack of

literature and research indicates that the TAP system has not received sufficient attention from scholars. As a consequence, little is known about the TAP cattle system, including its historical origins, contemporary practices, trends and challenges. This lack of knowledge has implications for development planning and government policy making, as a poor understanding of TAP could result in potential marginalisation of pastoralists' livelihoods.

This gap in literature prompted this study which is designed to explore the nature of TAP and the drivers of change in Bhutan that will contribute to global literature on pastoralism. The study also contributes to historical accounts of pastoralism, an area identified as lacking in the global pastoralism literature (Montero, et al., 2009).

1.2 Research aim and questions

This research aimed to explore the past history and present practices of TAP together with drivers and impacts of change and people's perceptions about the future of TAP. The following research questions were used to guide the study:

1. What is the origin and contemporary nature of transhumant agro-pastoralism in Bhutan?
2. What are the recent changes in TAP practice and what are the factors driving these changes?
3. What are the current perceptions regarding land use and the future of transhumant agro-pastoralism in Bhutan?
4. What are the implications of the research findings on future policies concerning transhumant agro-pastoralism as a livelihood?

1.3 Research design and methodology

1.3.1 Country background

The Kingdom of Bhutan is a landlocked country located in the eastern Himalayas sharing borders with India to the east, west and south and China to the north (Figure 1.1, p 5). Bhutan lies between longitudes 88°45' and 92°10'E, and latitudes 26°42' and 28°15'N. The nation is comprised mostly of mountainous country, with a land area of 38,394 sq km. Bhutan measures approximately 350 km east to west, and 150 km north to south (Gyamtsho, 1996; Wangchuk, 2008).

Altitude ranges from about 100 m to above 7000 m, creating a range of micro climates suitable for diverse species. The variety of ecosystems at different altitudes makes Bhutan one of the 10 global hotspots in terms of species diversity (Myers, 1988). Similarly, the agricultural practices – the crops and animals raised – are also adapted to different environmental niches available at these diverse agro-ecological zones.

Bhutan had a population of 634,982 people in 2005 which is estimated at 695,822 in 2010 and is projected to be around 720,679 in 2012 and 886,523 by 2030 (NSB, 2007c, 2008). The populace is largely agrarian with 69% of the population living in rural areas, engaged in agriculture (NSB, 2008; PPD, 2008). In Bhutan, livestock forms an integral part of the agricultural system, contributing not only to the diet but also to soil fertility and draught power. Overall, about 90% of the rural Bhutanese population keep livestock of one kind or another (MoA, 2009b).

The main sources of revenue are hydropower, tourism and the mining industry. Bhutan produces green energy from its rivers and exports this commodity, mainly to India. It has been estimated that the rivers of Bhutan have the potential to generate up to 23,760 MW of electricity (RGoB, 2009a).

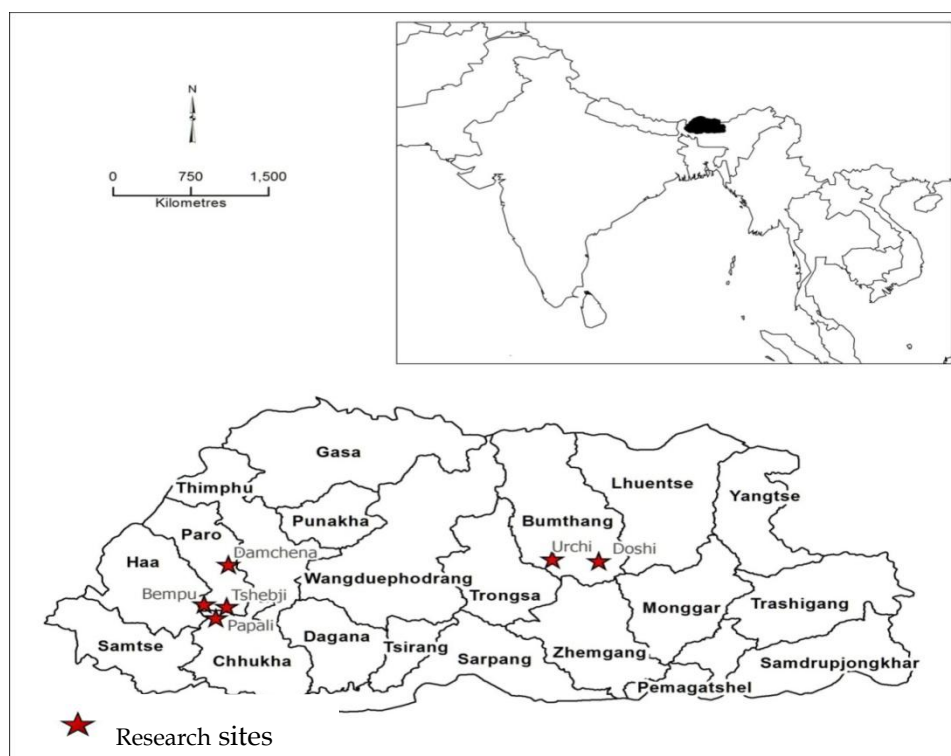


Figure 1.1 Research sites covered during interviews and household surveys

Bhutan's per capita GDP in US dollars at current prices in 2012 was one of the highest in the South Asian Association for Regional Cooperation (SAARC) region. International Monetary Fund's (IMF) World Economic Outlook (WEO) database in October 2012 places Bhutan with GDP per capita of USD 2288.21 as third highest amongst the SAARC countries (Figure 1.2, page 6) after Maldives and Sri Lanka, with USD 6336.08 and 2823.69 respectively (IMF, 2012).

The country's economy has grown steadily over the last 20 years, especially post commissioning of the Chukha Hydropower plant in 1987. During the government's Ninth Plan Period (2003 - 2007) the real GDP grew nine per cent on average annually. The trend is expected to grow further once all the hydropower projects that are underway become operational. In recent years the country has experienced structural changes taking place in the economy with industry replacing agriculture as the main sector. In the early eighties, the share of the agriculture sector accounted for over half of GDP, while in 2005 it was under a quarter. During the Ninth Plan Period the share of the primary sector dropped from 29% of GDP at the start of the Ninth Plan to 20.3% in 2007 (RGoB, 2009a).

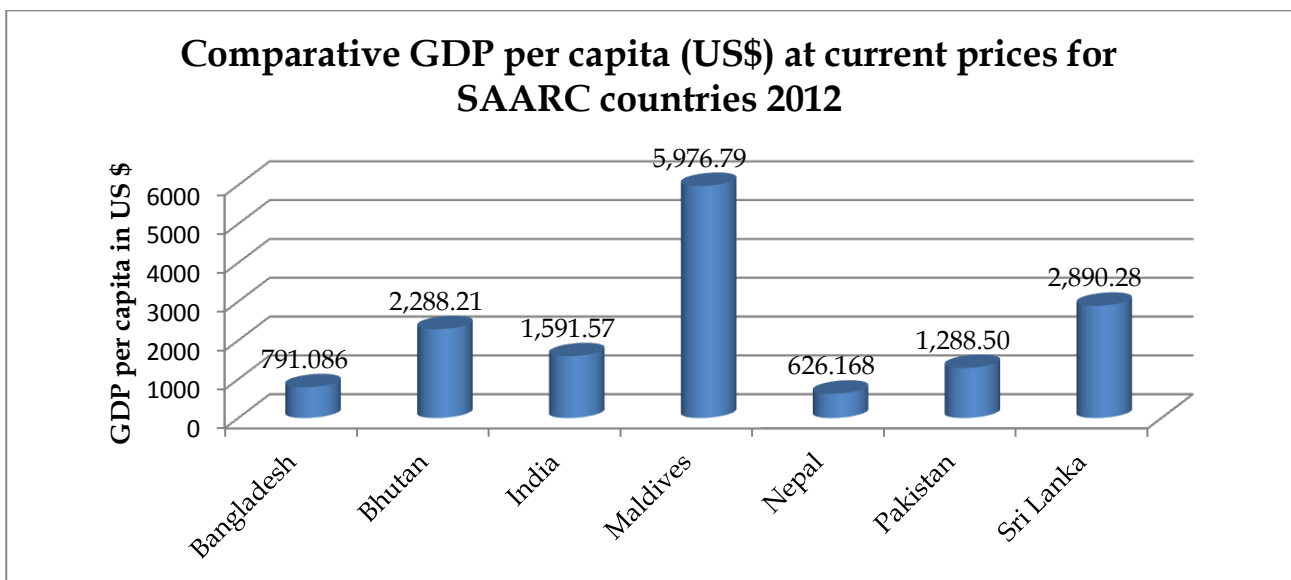


Figure 1.2 GDP per capita at current prices of SAARC countries 2012 in US Dollars

Source: IMF's WEO database, October 2012

Despite the decline in its share in GDP, the agricultural sector continues to play a crucial role in the economy contributing 16.80% to the overall GDP (NSB, 2012), whilst providing employment to over 60% of the population (MoLHR, 2012). Additionally,

the private sector is emerging as one of the important sectors for generating employment opportunities for the growing active labour force (NSB, 2012). The national unemployment rate is at around two per cent with lower unemployment rates (1.5%) amongst the rural than urban (3.5%) population (MoLHR, 2012).

1.4 Land use and agriculture

Notwithstanding the fact that the major portion (72.5%) of the country's land area is comprised of forest, and only 7.8% of the nation's land is arable, agriculture continues to be the major source of livelihood in Bhutan (NSB, 2008; PPD, 2008).

Farming systems in Bhutan are mixed, typical of small subsistence farms. In most parts of the country mixed farming is commonly practiced, whereby livestock are integrated with crop cultivation. However, the generally unfavourable climatic and soil conditions in the alpine region mean that cropping systems are not practiced in that part of Bhutan. As a consequence, the alpine communities tend to live exclusively on the proceeds of yak farming.

Mixed farming systems are dominant in the temperate and sub-tropical areas of Bhutan, whereby livestock farming is integrated with arable agriculture. In these two regions livestock provide the households with milk, meat, butter, cheese, eggs, hide, manure and draught power. Given that the terrain in Bhutan is quite steep and landholdings are rather small, with the average farm size being only 1.74 ha, owning a tractor is neither logical nor economically feasible (MoA, 2009b). Therefore, bullocks are used by farmers on small landholdings to plough their fields. The bullocks are also used during migration as a means of transportation to carry rations and logistics for the herder families. In some areas a small degree of farm mechanization takes place with the use of power tillers and some tractors where the slopes are gentle and land holdings slightly above average in fertile river valleys, mostly in warm temperate rice growing areas.

1.5 Study site description

The study was conducted in six different TAP villages, four in the west and two in the central-east region of Bhutan (Figure 1.1, p 5). These villages were selected because the majority of people in these villages are heavily dependent on their transhumant cattle

system. The six villages studied were Papali, Bempu, Tshebji and Damchena in the west, and Urchi and Doshi in central-east Bhutan. The study sites were located at altitudes between 2812 m to 3227 m. However, some summer grazing areas in alpine meadows were over 4000 m whilst the winter grazing areas in sub-tropical forests are at much lower altitudes (around 300m).

1.6 Methodological design

A mixed method was used for this research. Qualitative research methods were used to conduct in-depth interviews with a total of 24 migrating households from the six villages and nine agency staff (six government and three non-government staff) over a three month period in 2010.

A semi-structured household survey of 75 migrating households gathered background quantitative data. The nine government and non-government agency informants were chosen based on their knowledge of livestock development in Bhutan, experience and knowledge in forestry policies and rules, and direct or indirect involvement with livestock development policies. In 2011 seven focus groups were conducted with TAP herders from Bempu, Tshebji, Doshi and Urchi, as well as downstream villages (Kungkha and Brokser) residing adjacent to migratory cattle herders' winter encampments, and with livestock extension staff (Lhuntse Dzongkhag) to triangulate some of the issues that emerged from the interviews undertaken in 2010 (Fig 3.3. page 89).

1.7 Thesis structure

This thesis is structured around eight chapters. **Chapter 2** reviews literature on the characteristics of pastoral systems and societies and the challenges they face, followed by current debates on the management and governance of common pool resources (CPR). The chapter concludes with background information on the importance of livestock and related resources in Bhutanese society. It also provides some information on the approaches to livestock development in Bhutan. **Chapter 3** describes the methodology followed for this study, with more detailed description of the study sites, research design, data collection and analysis techniques applied.

Chapter 4 presents findings on the origins and contemporary practice of transhumant agro-pastoralism in Bhutan (research question one). **Chapter 5** describes the changes among TAP communities and factors driving changes in transhumant agro-pastoralists' society and livelihood practices (research question two). **Chapter 6** presents interviewee's perceptions on the future of cattle based transhumant agro-pastoralism in Bhutan (research question three). The chapter also explores the issues and processes relating to the introduction of the LA 2007.

In **Chapter 7** the findings from chapters four, five, and six are discussed in conjunction with the issues and policies surrounding pastoralism globally. Finally, all chapters converge in the conclusions chapter [**Chapter 8**] highlighting policy implications and areas needing further research.

CHAPTER 2

Pastoralism, CPR Governance, Pastoral Development and Livestock Systems in Bhutan

2.1 Introduction

This chapter begins with a background review of pastoralism, focusing on global pastoral distribution and the characteristics of pastoral systems and societies. The main emphasis of the chapter is on issues and challenges facing pastoralism due to economic development, war and conflict, government policies on sedentarisation and conservation, environmental degradation, as well as climate change and disasters in developing countries. As transhumant pastoralism occurs in remote rural areas, utilising grazing areas that are often held communally or owned by the state, literature on common property resources (CPR) governance is also reviewed. This is followed by a short discussion on approaches to improving pastoral livelihoods, including the role of livestock development and citizen participation. The final section of the chapter provides information on livestock systems, resource management and environmental policies in Bhutan.

2.2 Characteristics of pastoral systems and societies

2.2.1 Types and distribution of pastoral systems

Pastoralism refers to the lifestyle of people whose main sources of livelihood are domesticated animals that live on natural pastures; hence people are referred to as pastoralists and the system as pastoralism (Waters-Bayer & Bayer, 1992). Nori and Davies (2007, p.7) provide the following definition:

Pastoralism is the finely-honed symbiotic relationship between local ecology, domesticated livestock and people in resource-scarce, climatically marginal and highly variable conditions. It represents a complex form of natural resource management, involving a continuous ecological balance between pastures, livestock and people (Nori & Davies, 2007).

Agro-pastoralists are those who cultivate some crops but depend largely on animals. Transhumance or transhumant pastoralism is the seasonal movement of people and livestock from high mountains (summer) to lowland valleys (winter), and/or between their villages and pastures annually, regardless of whether herders own the livestock

or not (Akasbi et al., 2012; Arnold & Greenfield, 2006; Bohanan, 1963; Salzman, 1967). In contrast, nomadism is a continuous movement with the herd (Table 2.1).

Table 2.1 Classification of livestock keepers*

Occupation	Mobility		
	No home base; year round movement of animals	Home base; seasonal movement of animals	Home base; local movement or confinement of animals
Full-time livestock husbandry	Nomadic pastoralists	Transhumant pastoralists (TP)	Sedentary pastoralists
Livestock husbandry with subsidiary cropping	-	Transhumant agro-pastoralists (TAP)	Sedentary agro pastoralists
Cropping with subsidiary livestock husbandry	-	-	Livestock-keeping farmers
Livestock husbandry subsidiary to non-cropping activities	-	-	Landless livestock keepers

Adapted and modified from Waters-Bayer & Bayer, (1992, p.5). * In many cases pastoralists engage in other livelihood activities as well cropping and/or livestock.

Transhumant pastoralists have an established permanent home base where they return seasonally, whereas pastoral nomads and their families move with their animals constantly (Evans, 1940; Salzman, 1967). Nomads and nomadism in generic term transcends all forms of mobile people constantly on move in search of livelihood. For the purpose of this thesis nomadism strictly refers to pastoralists that practice little cropping but depend on their livestock which are moved constantly in search of pasture (Koocheki & Gliessman, 2005; Salzman, 1995).

Transhumant agro-pastoralism commonly refers to a system whereby people move with livestock but also do some cropping as they own or rent some cropping land in their villages (Farooque, 1996; FAO, 2011; Davies, et al., 2010). Transhumant agro-pastoralists (TAP) have a home base and seasonally migrate with their animals (Rota & Sperandini, 2009; Waters-Bayer & Bayer, 1992).

Transhumant movements may cover ten to hundreds of kilometres allowing livestock to cope with seasonality of forage availability and enabling conversion of low-value ephemeral forage to high value livestock and its products (Boone, Burnsilver, Worden, Galvin, & Hobbs, 2008). Diversification of pastoral livelihoods (i.e doing some other business or engaging in Off Farm Activities) is now common practice so any term that

typifies pastoralists or any rural livelihood does not rule out their engagement in non-farming activities.

The term pastoral systems is used throughout this study to mean the system within which all types of pastoralism operates and is often used synonymously with pastoralism. Transhumant pastoralism, as Davies (1941) indicates, is an economy of marginal areas which has been in major decline since the mid-19th century as nations began to change and develop more industrialised societies. Pastoralism covers about 25% of global land areas, mostly rangelands (Nori & Davies, 2007), and provides livelihoods for an estimated 20 million pastoral households (Blench, 2001) with 200 million individual pastoralists (Rota & Sperandini, 2009).

Livestock reared in these areas, often in transhumant pastoral systems, provide people with food (milk, butter, cheese, meat, and blood), manure (as fuel and fertilizer), wool, hides, draft power, transportation, added security and possibilities to build assets (Lund, 2007). The most commonly domesticated animals of pastoralists are cattle, camels, sheep, goats, horses, yaks, llamas, alpacas, vicunas and reindeer (Farooque & Nautiyal, 1999; McVeigh, 2004; Mulder et al., 2010; Namgail, Bhatnagar, Mishra, & Bagchi, 2007; Rota & Sperandini, 2009; Shaoliang, et al., 2007). For example, in Yunnan province of China, Tibetans keep small numbers of small ruminants at the homestead and only yellow cattle and yak herds are involved in transhumance (Shaoliang, et al., 2007). This is different from most practices in the Himalayan range where a small number of large ruminants are kept at home and transhumance is carried out with small ruminants (Nautiyal, Rao, Maikhuri, & Saxena, 2003; Tucker, 1986). In India, pastoralists keep buffaloes, sheep, goats, camel, cattle, donkey, yaks and ducks (Fratkin, 1997; Sharma, Köhler-Rollefson, & Morton, 2003).

The majority of pastoral activities occur in the rangelands, making them one of the most important resources for pastoralists. Rangelands and pastoral systems are important to global society as they support herders' subsistence, play a role in ensuring food security and contribute significantly to developing countries (Fratkin, 1997; Lund, 2007; Nori & Davies, 2007). Range resources including grasslands, shrublands and tundra cover huge parts of the world; from the outback of Australia to muskegs and tundra of Arctic, to the savannahs of Africa, to the cerrados of Brazil, to

sagebrush land of United States, to the plains of Mongolia and the mountains in the Himalayas. These rangelands have a crucial function providing most (70%) of feed resources for ruminants raised in traditional livestock rearing systems in many parts of the world (Lund, 2007). The soil, water and temperature conditions of these areas inhabited by pastoralists often do not permit alternative conventional land use practices other than mobile livestock systems (Blench, 2001; Negi, 2007; Nori & Davies, 2007; Ura, 2002).

The African continent has the largest land area under extensive pastoral systems covering 66% of the whole continent but mostly in arid and semi-arid lands (Nori & Davies, 2007). In Asia, Mongolia has 79% of its land area under pasture, forming the largest area of common grazing land in the world. It is home to about 25 million animals raised under pastoralism. In the 1980s, pastoralism provided over half of Mongolia's GDP and 40% of total exports. Milk and meat consumption of Mongolians are also amongst the highest in the world (Fratkin, 1997). About 35-40% of Mongolia's 2.8 million population practise mobile pastoralism as their main livelihood choice (Upton, 2010a). In India, pastoralism represents a sub-sector in itself and is integrated into the caste system representing endogamous social groups with professional specialization in animal husbandry. Pastoralism exists in arid regions of Thar Desert of Indo-Pakistan border, and sub-alpine and alpine zones above 3000 m in the Himalayas. In most parts of India, pastoralism and agrarian systems are spatially integrated and interdependent within a particular landscape. Pastoralists also take up herding of land based farmers, easing the labour pressure of farmers (Farooquee & Rao, 1999; Namgail, et al., 2007; Negi, 2007; Tambe & Rawat, 2009).

In the Himalayas, where Bhutan is located, rangelands cover about one-third of the land area, where grasses and alpine shrubs are the dominant vegetation types concentrated mostly at elevations above 3000m. With various forms of nomadic and transhumant pastoralism, including agro-pastoralism, Himalayan herders transform these extensive but physically marginal environments, which otherwise are almost of no economic value, into economically productive areas. Human populations have lived and even prospered for hundreds, and in some cases thousands of years, in these Himalayan rangelands (McVeigh, 2004).

Evidence from Tibetan Autonomous Region (TAR) of China and Nepal suggests pastoralism has been widespread in the Himalayas from as early as the 8th century. For centuries pastoralists in these countries have successfully used multiple species and traditional rotational grazing systems to maintain productivity and prevent over grazing (Miller, 1995). Some recent evidence suggests pastoralism in TAR started around 8.8 ka cal BP during the mid-Holocene climatic optimum (Miehe et al., 2009). Based on a palynological study with observations of sudden disappearance of juniper and rhododendron pollen, the immediate onset of pollen input from cereals and a clear pattern of over-grazing, trampling and peat deterioration, it is suggested pastoralism could have arrived sometime over 4000 years ago into Bhutan (Meyer et al., 2009).

The uniqueness that identifies Himalayan pastoralists from African and central Asian pastoralists is that, in Himalayan pastoralism, altitude and temperature, as opposed to availability of water, separates pastoral grazing lands from cropping land (Miehe, et al., 2009; Miller, 1995). Pastoralism and transhumance in the Himalayan region occurs in areas that are remote and forested and in open highlands where cropping lacks comparative advantage. Additionally, rangelands in TAR (Miehe, et al., 2009) and Bhutan (Ura, 2002) are said to have been created by people through bush clearance, as opposed to nature given in other areas. Pastoralism and the nature of rangeland creation in Nepal also resemble that of TAR and Bhutan (Banjade & Paudel, 2009; Goldstein, 1974; Macfarlane, 1989).

The FAO and the World Bank estimated about 21 million out of 27 million people living in arid and semi-arid regions in south Asia live through pastoralism (Dixon, Gibbon, & Gulliver, 2001). However, this estimate does not differentiate transhumant systems from general pastoralism and also includes irrigated cropping within this group which is generally uncommon among mobile pastoralists. Therefore, these figures may have to be taken with caution. Similarly, there are no recently published figures on pastoral populations in the Himalayas. However, an estimated population of around ten million livestock dependent people are known to inhabit the Himalayan mountain grazing lands, along with a unique population of wild ungulates (McVeigh, 2004; Miller, 1995).

2.2.2 Rangelands and definitional issues

In spite of wide usage of the term and its implied contribution to pastoral societies there is no agreed definition of rangeland, let alone understanding the dynamics and interactions between human, rangeland, livestock and pastoralism (Bayer & Bayer, 2002). There is often an overlap in definition of rangelands and forests, with possible double counting or under estimation as a result (Lund, 2007; Ura, 2002).

Lund (2007) in an effort to compose a clear definition for rangelands (including grasslands, shrublands, savannahs, etc.) defines it as:

Any dry land at least 0.5 ha in size and 20m in width having at least 10 per cent vegetation cover, at least 2 months of the year and less than 10 per cent tree cover and that is not used for growing crops. A tree is any woody perennial at least 5 m tall (Lund, 2007).

This definition attempts to separate forest from rangeland. While defining rangeland Lund (2007) drew heavily on forest definition of by the Food and Agriculture Organization (FAO) of the United Nations that defines:

Forest includes natural forests and forest plantations. The term is used to refer to land with a tree canopy cover of more than 10 per cent and area of more than 0.5 ha. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5m. Young stands that have not yet reached, but are expected to reach, a crown density of 10 per cent and plant height of 5m are include under forest, as are temporarily unstocked areas. The term includes forest used for purposes of production, protection, multiple use or conservation (i.e. forests in national parks, nature reserves, and other protected areas), as well as forest stands on agricultural lands (e.g. wind breaks and shelter belts of trees with a width of more than 20m) and rubber wood plantations and cork oak stands. The term specifically excludes stands of trees established primarily for agricultural production, for example fruit tree plantation. It also excludes trees planted in Argo forestry systems (Lund, 2007).

Later, (Lund, 2014) provided an exhaustive list of 361 definitions for rangeland gathered from how the term has been defined in different countries, inter alia, Australia, Canada, New Zealand, Iran, Nepal, USA and several international organizations such as IFAD, ICIMOD, IPCC, IUCN, NASDA, OECD, etc. According to Lund (2014), rangelands include grasslands, shrublands, woodlands, savannahs, tundra, most deserts, and riparian and wetland plant communities including marshes and wet meadows used extensively by pastoralists (nomadic, transhumant, transhumant agro-pastoralists) for grazing livestock.

For the purpose of this thesis, rangeland is defined as a kind of land, either revegetated naturally or artificially, on which the vegetation is predominantly grasses, grass-like plants, forbs, or shrubs that are managed like native vegetation and are suitable for grazing by domestic livestock and wildlife alike.

Rangelands, therefore, include grasslands, shrublands, woodlands, savannahs, tundra, most deserts, and riparian and wetland plant communities including marshes and wet meadows used extensively by pastoralists (nomadic, transhumant, transhumant agro-pastoralists) for grazing livestock (Lund, 2014).

This lack of agreed definition on rangeland eschews the estimation of rangeland area globally as well as nationally. Estimates ranging from 18% to 80% have been recorded as the coverage of rangelands in proportion to global earth's land area (Lund, 2007).

2.2.3 *Tsamdros*

In Bhutan, as it appears to be the case globally, rangelands are poorly defined. The term is used synonymously with the Bhutanese term *tsamdros*, which literally translates to pasture (Dorji, 2011a), and covers alpine and sub-alpine meadows (Gyamtscho, 1996), to temperate and sub-tropical grasslands, shrublands and forests' understorey (Gyaltshen & Bhattarai, 2000). There is much ambiguity in the words *tsamdros*, rangeland and forest with no clear definition. The Forest and Nature Conservation Act of Bhutan 1995 defines forest as:

"Forest" means any land and water body, whether or not under vegetative cover, in which no person has acquired a permanent and transferable right of use and occupancy, whether such land is located inside or outside the forest boundary pillars, and includes land registered in a person's name as *Tsamdrog* [also spelt as *tsamdros*] or *Sokshing* [woodlot for collection of leaf litter] (RGoB, 1995).

This definition of forest includes all types of land that are not used for crop cultivation whether or not it has a tree cover, and all grazing resources held either with private or communal grazing rights. Literally, all *tsamdros* then fall under forest category. Therefore, when forest and pasture areas are cited as 72.5% forest cover and 3.9% pastureland (PPD, 2008), there is either double counting or under counting. Considering that yaks graze in alpine and sub-temperate pasture and cattle graze in temperate and sub-tropical open areas as well as forests, all falling under *tsamdros*

classification, accounting pastureland as 3.9% of the total land area (PPD, 2008) is highly underestimated (Ura, 2002).

Forest use and agricultural systems, particularly cattle based systems, have evolved as an inalienable part of a holistic agricultural system in Bhutan (Giesch, 2000; Guenat, 1991). The livestock professionals believe forest grazing has a symbiotic relation between livestock and the forest (Roder, et al., 2001). However, this age old integrated system is often criticized by the foresters who view it as a livestock management system that is damaging to the environment (Moktan et al., 2006; Moktan, et al., 2008; Norbu, 2002; Roder, 2002; Roder, et al., 2002; Tshering, 2005).

Interestingly, *tsamdros* in Bhutan are very difficult to separate from forests by definition and attract many user stakeholders. The *tsamdros* are indeed in the forest and cattle grazing are not restricted to a forest identified as *tsamdros* alone. In fact, forests are an important grazing resource for transhumant agro-pastoralists and other livestock keepers in Bhutan. About 20% to 24% of the total dry matter requirement for cattle in Bhutan is estimated to come from forest grazing (Roder, et al., 2002). Whether *tsamdros* are overtaken by forest or forests are claimed to be *tsamdros* is a separate issue, but there is a conflict of interests between foresters and the livestock keepers.

Forest grazing has been criticized by the foresters and blamed for forest degradation and poor regeneration even in other areas (Carr-Hill & Peart, 2005). Generally, forest grazing is not necessarily detrimental to forests, unless excessive or over grazing occurs. Forest grazing, especially the seasonal grazing as practiced by transhumant agro-pastoralists, can be not only an efficient use of natural resources, but removal of grasses, sedges, bamboos and shrubs by cattle grazing facilitate better regeneration of tree species and help reduce incidences of forest fires (Buffum, et al., 2009; Carr-Hill & Peart, 2005; Waters-Bayer & Bayer, 1992).

2.2.4 Pastoral societies: Livelihoods, social structures and norms

A livelihood is a composite of capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers & Conway, 1991).

A livelihood is said to be sustainable when:

... [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; and which contributes net benefits to other livelihoods at the local and global levels, and in the short and long term (Chamber & Conway, 1991, p.26).

Pastoralism as a livelihood is a highly complex system in terms of the animals they keep, household self-sufficiency, migration strategies, and diversification into alternative livelihood options (Davies & Bennett, 2007; Mearns, 2004b; Mulder, et al., 2010). This diversity, according to Davies and Bennett, blurs the distinction of pastoralists from non-pastoral production systems. Transhumant pastoralists and sedentarised croppers coexist, based on their relationships built on mutual benefit and exchange systems, such that any attempt to separate these two groups is nothing more than contextual. Yet, pastoralists exist as a society in their own right with ideological, ethnographical, social and economic identity separate from sedentarised cropping groups (Meir, 1986). However, pastoralists are also known to grow small amounts of crops and develop trade interdependence with the cultivators in a symbiotic manner, such that they become indistinguishable with their settled neighbours (Fratkin, 1997; Fratkin, et al., 2004). The relative importance of each sector, livestock and crops, to pastoralist households differ significantly and is determined by the size of landholding, available family labour and access to seasonal pastures at different agro ecological zones. Additionally, individual preferences, abilities, opportunities, and constraints also differ thus setting heterogeneity in households' coping strategies (McVeigh, 2004).

It is recognized that successful pastoral herd management is a composite of material, relational and embodied (both physical and knowledge based) capital (Mulder, et al., 2010). Material capitals akin to the sustainable livelihoods framework, in the form of physical (roads, shelter, water supply, livestock), financial (money to buy more cattle or replacement stocks), natural capital (land, water, forest, rights, entitlements and access to grazing areas) are important for pastoral societies (Chambers & Conway, 1991; Namgail, et al., 2007; Pretty, 2008). Perhaps one of the most important assets is land, the issues over access and entitlements of which are often heavily contested (Lesorogol, 2003).

Considering that mobility is crucial for survival and growing livestock wealth, the pastoralists have adopted a highly portable material tool kit (Mulder, et al., 2010). For pastoralists in Afar region of Ethiopia, wealth constitutes two kinds; ownership of livestock and support provided to the poor. In their tradition, a man is not rich simply by owning more livestock, if he hasn't accumulated enough obligations through his support and services rendered to the affected families during times of crisis (Davies & Bennett, 2007).

Embodied wealth, in the form of pleasing physical appearance of women and masculinity in men, is as important as knowledge of conditions for successful pastoral production, grazing ecology, weather patterns and migration routes, particularly in East Africa, West Africa and southwest Asia (Mulder, et al., 2010). Intangible assets and knowledge, such as chant songs and prayer sticks, are also equally important for some pastoralists. Embodied wealth occupies eminent importance in some pastoral societies to attract more numbers of the opposite sex where a man may marry several women as in most African pastoral societies (Mulder, et al., 2010) or several brothers may marry a single woman as in pastoralists of Tibetan origin in the Himalayas (Namgail, et al., 2007). Both polygyny and polyandry are prevalent in pastoral societies and fertility is also an important embodied asset.

2.2.5 Gender roles and intergenerational patrilineal wealth transfer

Pastoralism is traditionally a family enterprise and family labour is often supplemented by labour from other families hired temporarily or employed on a long term basis. Many pastoralist societies are characterised by a patrilineal system with men typically taking primary ownership of cattle in many pastoral societies (Mulder, et al., 2010; Namgail, et al., 2007). However, there are separate gender roles in pastoralists' life (Mulder, et al., 2010; Namgail, et al., 2007) with livestock often left for women and children to tend (ILRI, 2007; Lesorogol, 2003; Mulder, et al., 2010). In semi-sedentarised systems, milking cows are left at home with women while men migrate to other regions with the general stock in search of better pastures (Davies & Bennett, 2007).

Wealth usually changes hands in family lines, with bequests being the main intergenerational wealth transmissions mode and wealth accumulation in a particular family lineage (Mulder, et al., 2010). This wealth transfer contributes to the rich getting richer and the poor getting poorer. Most pastoral societies follow patrilineal inheritance of family wealth (Mulder, et al., 2010; Namgail, et al., 2007). Amongst the pastoral society in Ethiopia, besides the patrilineal inheritance, men usually take decision on disposal of their cattle and handle cash while women decide on milk sales and its conversion to products (Watson, 2010).

In the Hindu Kush Himalayas, women in patrilineal communities have limited access, ownership, and control over critical assets such as land and livestock (ICIMOD, 2013). A case study from Bhutan, China and Nepal found customary institutions undervalue women's knowledge, and decision making power in rangeland governance and policies leaving their needs unheard with little access to development resources, trainings, extension services, credit, and inputs (ICIMOD, 2013).

Owing to these gender biased cultural norms, women face more political and economic marginalisation, with institutions and norms favouring men (Watson, 2010). Distorted divisions of labour in pastoral livelihoods disadvantage women, affect their health, cause work-life balance and limit their opportunity to participate in community development and governance institutions (ICIMOD, 2013).

Although women have very limited leadership roles in the community, they can have a strong influence through their husbands or male household members. Pastoral women are known to have strong networks among themselves in communities and influence men's decision making significantly (Watson, 2010).

2.2.6 Egalitarianism amidst wealth inequality

Pastoral societies are generally viewed as egalitarian based on the volatility of livestock herds and presence of institutions that ensure wealth redistribution (Mulder, et al., 2010). However, existence of extreme wealth inequality and differential preferential treatment bequeathing wealth to children in pastoral societies makes the egalitarian theory strongly contested (Lesorogol, 2003). The differential treatment even within a family, among siblings, preferring first born sons to inherit family wealth in

Rendille pastoralist societies in Kenya, not only deprives the other sons, but even outcasts them by sending them to different tribes, thus creating huge inequality (Roth, 2000). These systems create social strata including forms of hereditary slavery where specific castes or ethnicities live and work in pastoral households without owning livestock (Mulder, et al., 2010).

Although herders in some pastoral societies are known to buffer unexpected shocks to their wealth by subscribing to institutions that ensure wealth redistribution, economic inequality exists because such systems are not present everywhere. Perhaps the notion of egalitarianism arises where livestock to human ratios exceed 1:1, as it hinders any person from monopolizing production, and the perception that wealth inequalities do not necessarily imply status differences (Mulder, et al., 2010). In African societies the occasional cattle rustling may also play a role in maintaining balanced wealth and ownership of cattle, as larger herd sizes are subject to rustlers, and the rustled becomes a rustler in the event of losing his cattle to disasters to build up his herd (Kaimba, Njehia, & Guliye, 2011). In Bhutan, the TAP herders that appropriate communal grazing resources (CPRs) assign winter-summer pasture combinations to households through a lottery, thereby establishing a local rule which is based on equity and egalitarian principles (Ura, 1993).

2.2.7 Indigenous knowledge, culture and customary institutions

Pastoralists' socioeconomic livelihood patterns are shaped by the agro-ecological conditions and physical characteristics of these range resources (Rota & Sperandini, 2009). Through their lived experiences of generations, utilising rangeland resources, they have acquired substantial knowledge of their environments, such as, plants and their usefulness, pasture management, location of water sources and weather patterns. They are known to have become repositories of vast indigenous knowledge (Bayer & Bayer, 2002; Ura, 1993). Transhumant pastoralists in the Himalayas are known to possess a rich and complex pool of knowledge concerning health, behaviour and productivity of their livestock as well as their range ecosystem and climatic conditions (Farooquee & Rao, 1999; Nautiyal, et al., 2003; Ura, 2002).

Building and sustaining a strong supportive social network through relations within and outside the community is key to securing access to resources, water, pasture and

labour, necessary for successful management of livestock in pastoral societies (Davies & Bennett, 2007). These relations not only create social ties that contribute to labour and defence but are also crucial in supporting each other during times of ill health (Mulder, et al., 2010). These networks, ties, bonds, and relations are together termed as social capital. Putnam (1993) defines social capital as “... *features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefits*” Putnam (1993, p1). Social capital has immense significance in pastoral societies, compared to other contemporary societies, owing to the nature of their production systems that require excellent cooperation and joint management of their shared resources (Watson, 2010). Social capital enables pastoralists to make connections and gain physical access to crucial resources in an increasingly fragmented landscape as well as enabling navigation through broader societal changes brought about by development and modernity (Galvin, 2008).

For example, in Mongolia, the *khot ail* acts as a social safety net for poorer rural households, providing forms of mutual assistance and pooling risk between households, including sharing food resources as well as long-term loans of livestock (Fratkin, 1997). *Khot ails* are pre-revolutionary herding groups of two to ten households, related by kinship that act as a basic social and economic group in Mongolian society. In China, in some places under the household responsibility system individuals have, at varying levels, fenced their individual pastures with private usufruct rights (Shaoliang, et al., 2007). However, in Maqu county in southwest Gansu province, pastoralists, through their social capital networks, have reportedly kept the pastures together (Galvin, 2008). Following their traditional norms these pastoralists have together fenced only the outside periphery to exclude others’ animals, while inside they follow their local set of rules to allocate pastures for grazing (Galvin, 2008). Social capital also plays a crucial role in African pastoral societies including the Maasai pastoralists of east Africa and the Fulani herders of western Africa. However, Galvin (2008) makes an important point that not all social capitals are equal and traditional pastoralism tend to favour the wealthy, such that wealthy elders control access to pastoral resources. As pastoralists increasingly diversify their livelihood choices through education and modernity; past experiences, networks, and

customary rules may not be sufficient and new alliances may need to be forged (Galvin, 2008; Lesorogol, 2003).

In conclusion, pastoralists for hundreds of years have had to adapt continuously to changing environments through transhumance mobility either continuously or seasonally. They have developed sophisticated resilient societies based on their long experience that generated deep knowledge of their animals and the resources upon which they depend. Their rich socio-cultural systems, including ways of forging alliances for stronger social security through network systems, played considerable importance in sustaining pastoral societies.

Contemporary pastoral societies are subject to challenges of resource competition from growing populations and socio-economic changes. Public policies have also directed interventions that either affects transhumant pastoral systems directly through restrictions imposed on their movement or cause conflict with policy-induced sedentary cropping systems and conservation projects. The following section explains these major challenges for pastoral societies in developing countries and how that has affected their livelihoods.

2.2.8 Challenges and opportunities for pastoral societies

Pastoralists globally today are faced with a myriad of challenges and opportunities arising from economic development, social change, climate change, conservation and sedentarisation policies, population growth and war or conflicts (Behnke, 1983; Ellis & Swift, 1988; Fratkin, et al., 2004; Galvin, 2009; Nori & Davies, 2007). Some of these challenges can have a catastrophic impact on pastoralists' livelihood either temporarily or in the long term (Moritz, 2008; Scoones, 2008). It can constrain them from employing their adaptive strategies and deny them support for their sustainable development. As a consequence, pastoralists today are moving into the twenty-first century with less ability to maintain their subsistence livestock economies than at any time in the past (Bonte, Guillaume, & Zecchin, 1996; Fratkin, 1997; Ning & Richard, 1999; Nori & Davies, 2007). However, other changes can provide opportunities to improve their livelihoods.

2.2.9 Increased competition for land for conservation, development and cropping

Land is a much contested area where exclusions of all forms and conflicts arise from state and donor sponsored conservation projects declaring protected areas with varying levels of exclusion for use by people, corporate capture and exclusion by neighbours. Some degree of exclusion is present even in community-based resource management (CBNRM) regimes that are pro-community in terms of cohesion, inclusion of local inhabitants, collective action and common property, as well as corporate projects with their triple bottom line (financial, social and environmental) goals. It is the local communities that are often subjected to certain restrictions or outright emigration (Hall, Hirsch, & Li, 2011). CBNRM regimes face problems as to where to draw the community boundaries in undefined clusters of villages with loose boundaries such as grazing areas, as well as different social classes like immigrants and minorities that are categorised as 'second class' and their access restricted (Hall, et al., 2011).

Despite the fact that pastoralism is a finely adapted production system, suited to highly variable environmental conditions thus presenting potential compatibility with wildlife conservation, production is highly compromised owing to reduced access to grazing resources, civil unrest and climate change (Gerber, Mooney, & Dijkman, 2010). The creation of national parks and growing numbers of people taking up cropping, either because it generates cash or because governments support it, have largely reduced grazing areas of pastoralists and are outcompeting them (Gerber, et al., 2010; Maitima, Rakotoarisoa, & Kang'ethe, 2010; West, Igoe, & Brockington, 2006). In other places, such as Nepal, authorities allegedly declared areas, deemed to be under threat, as protected areas, imposing restrictions that deny native inhabitants access to resources, and often removed them from their place with use of force against their will, making them worse off afterwards (Agrawal & Redford, 2009; Dhakal, Nelson, & Smith, 2011; McLean & Straede, 2003).

The dominant view amongst policy makers of developing nations that local people are to blame for environmental degradation is a perceived notion rather than evidence based (Leach & Mearns, 1996). Their view developed through western education, and

supported and reinforced by donor agencies, influences the image of the environment and the urgency to protect areas for conservation. These exaggerations of environmental degradation, supposedly caused by the herders and local people's access to natural resources, have become a common belief among some foresters and environmental agencies (Chambers, 1997). These crisis narratives have helped shape the mind set of some policy makers (Leach & Mearns, 1996).

With the emerging political ecology, aside from the dominant pro conservation discourses, there is often no scientific data on the effects of degradation or the main reasons causing degradation (Chambers, 1997; Leach & Mearns, 1996). Yet there are repeated portrayals of pastoralists and rural people (especially ones located between state created protected and conservation areas) as agents of environmental destruction in public discourse through media and policy discussion circles that has changed the frame of public perception (Brower, 2008; Lakoff, 2004). These trends that Lakoff calls '*ignoring the fact and accepting the frame*', has led to an increase in the number of protected and conservation areas in developing countries, resulting in an upsurge in wildlife populations causing increased incidences of human-wildlife conflicts, leaving rural populace including TAP herders worse off (Blench, 2005).

The creation of protected areas, conservation areas and biosphere reserves have resulted in reduction in grazing areas in the Indian Himalayas thereby increasing stocking density per unit areas (Nautiyal, et al., 2003). The competition for land from commercial croppers in lowland areas growing cardamom in agro-forestry systems has also outcompeted and driven pastoralists to higher pastures necessitating change in animal species from small ruminants to large yaks and yak-cattle crossbreds (Tambe & Rawat, 2009). Competition and exclusion through enclosures has also occurred in Ladakh where military enclosures has reduced grazing areas and caused an increase in stocking density per unit areas (Namgail, et al., 2007).

This attenuation of pastoralists grazing resources is further exacerbated by land grabs by national commercial cropping firms and foreign ownership of land by capital rich nations, with governments of poor nations giving concessions to attract investment (Cribb, 2010; Robertson & Pinstруп-Andersen, 2010; Zoomers, 2010). This trend is

likely to have food security implications for the marginalised groups including pastoralists (Robertson & Pinstrup-Andersen, 2010; Zoomers, 2010).

2.2.10 Social and economic changes

Economic growth presents opportunities but also risk. For example, rapid economic growth in Southeast Asia and the rising demand for and price of land for non-agricultural purposes (industrial, urban and tourist places) are motivating farmers to leave agriculture and are desiring alternate livelihoods for their children (Hall, et al., 2011). In Southeast Asia, the portion of land used for agricultural purposes decreased substantially owing to 1) decreasing importance of agriculture as a vocation and source of income for rural people, 2) “social re-identification” as people increasingly identify themselves with professions other than farming, 3) high interaction between urban-rural areas, and 4) “spatial interpenetration” as rural-urban land uses becomes fuzzier. As younger generations move out to work in tertiary sectors, primary sectors like agriculture have substantially lost appeal and are left to the elderly. However, selling land and moving out also has varying results like crop booms and busts. While some benefit others lose out within a few years, going into debt and destitution (Hall, et al., 2011).

Changes are also occurring in pastoral societies with increased exposure to western material culture, and ideological shifts as a result of education and exposure to urban lifestyles (Meir, 1986). In some African tribal and Middle Eastern pastoralists’ societies, younger generations with some education are challenging their chiefs, weakening traditional lineage, losing tribal identity and assuming new identities with a new set of values. Younger generations that increasingly settle are adopting individualism in a monetised economy, preferring private land over communal ownership, and vying for government jobs (Lesorogol, 2003; Meir, 1986).

The process of modernisation is having a profound effect on people residing in rangeland areas in Asian regions and is part of the process that leads to degraded ranges. However, pastoralists’ reaction and coping mechanisms adopted towards these changes vary. People in some areas have been more successful in making adjustments and coping with the changes than others (Farooquee, 1998; Miller, 1995). For example, Mongolia’s Dukha reindeer herders of the Taiga region are almost at the

brink of disappearance because of the scale of challenges arising out of unregulated mining, forest logging, loss of access to natural resources, tourism and climate change. The Dukha are now the smallest ethnic minority in Mongolia with less than 200 herders said to be practising reindeer pastoralism (Johnsen, Alfthan, Tsogsaikhan, & Mathiesen, 2012). Overall, there is less than 1000 active reindeer herders left in the Taiga region of Mongolia, Russia and China combined (Johnsen, et al., 2012). A good example to illustrate the varying degree of adaptability and coping ability of pastoralists can be seen among the Taiga reindeer herders. While the 1000 Taiga reindeer herders still thrive despite the increasing challenges they face, Johnsen et al., (2012) reported similar Soyot herds in the Republic of Buryatia (Russian Federation) have completely disappeared.

In Himalayan pastoral societies, some children regard their parents' profession as 'backward' and move to urban areas. Young herders of Tibetan origin, and younger generations of African and Middle Eastern pastoralists that settle, are abandoning traditional polyandry and polygyny practices and are adopting nuclear families (Meir, 1986; Namgail, et al., 2007). They now own television sets and their food habits have also changed (Namgail, et al., 2007). Border restrictions and road infrastructure developments have also had influence on pastoralists' way of life (Nautiyal & Kaechele, 2007; Negi, 2007). For example, the Changpas in Ladakh, India, are experiencing significant socio-economic changes because of government subsidy on pashmina production that has enhanced the pashmina wool producing goat population. Transhumance in these areas is increasingly conducted by truck as opposed to walking (Namgail, et al., 2007). In TAR, particularly in the Amdo region of Sichuan province of China, Tibetan pastoralists are modernising and increasingly using motorbikes instead of horses as modes of transportation (Iselin, 2011). More roads are being built and herding as well as other movements, especially by men, are conducted on motorbikes rather than horses. However, Iselin (2011) mentions that horse still finds their place in these herders' way of accessing pastoral space particularly in summer pastures where rugged terrain and absence of roads renders motorbikes unsuitable. Young men and women reportedly show an increased preference to urban (modern) life style and young men choose motorbikes over horses. Motorbikes are seen as a sign of change, of modernity and a new means

through which pastoralists access modernity (Iselin, 2011). This adoption of motorbikes as the preferred mode of transport with increasing urbanisation, and the ease with which it connects pastoralists to market or social services, is also an indication of pastoralists' adaptation to social and economic changes.

2.2.11 Pressures to sedentarise and its implications on pastoralists' welfare

Many pastoralists are now leaving pastoralism and adopting a more sedentarised form of livelihood owing to both endogenous and exogenous factors. While sedentarisation, especially near urban areas, has opened up economic employment opportunities, improved access to health and education, benefits are not evident for all (Fratkin, 1997; Fratkin, et al., 1999; Fratkin, et al., 2004).

For pastoralism and sustainable rangeland management, mobility is crucial. Development planners often fail to understand that pastoralism is among the most viable forms of production and land-use in the rangelands. Instead they advocate and implement lesser sustainable forms of livestock husbandry - sedentary forms of production restricting mobility (sedentary farming), privatization pastoral land, and transformation - often wrongly associating with intensification and modernization (WISP, 2008).

The major factors shifting the balance in the nomadism-sedentism continuum are generally considered to be related to government policies. Policies tend to persuade transhumant pastoralists to sedentarise their farms, reduce herd size, adopt exotic breeds, reorient their production systems and change land use pattern, in a drive to transform and modernise livestock husbandry (Dyer, 2001; Farooquee & Rao, 1999; Lesorogol, 2003; Nori & Davies, 2007; Shaoliang, et al., 2007). Land reform policies too appear to favour sedentary systems and crop farming groups (Maitima, et al., 2010).

However, when pastoralists see the benefits that are made possible through enabling policy environments, they increasingly settle and adopt sedentary farming practices. For example, in China after the introduction of household responsibility system, where it was made possible for pastoralists to settle at road heads with government subsidies for housing, private pasture paddocks, and improvement with fencing materials, more transhumant herders settled and reduced transhumance (Ning &

Richard, 1999; Shaoliang, et al., 2007). Under the household responsibility system, each household gets a certain area of winter pasture with a private lease near their settlement which they can develop and exclude others, while the summer pastures in high country areas are held in common.

Sedentarisation is expected to reduce animal numbers, which in turn will reduce grazing pressure which is expected to bring positive environmental effect. However, other studies have shown contradictory results on sedentarisation. Continuous sedentary grazing, particularly in the wet season, may result in lower palatability and productivity of forage, higher soil compaction and lower water infiltration, leading to pasture degradation (Niamir-Fuller, 2005). Simultaneously, removal or under grazing in remote and protected areas can lead to invasion of unpalatable species, reduced vegetation cover, and lower plant diversity, and can result in more serious problems than overgrazing. Many areas that have been inhabited by pastoralists for centuries are now considered as 'grazing dependent' indicating transhumant pastoralism can be 'bio-friendly'. Mobility contributes to pasture sustainability² and improvement since transhumant pastoralists can modify herds and access alternative areas while allowing degraded areas to regenerate (Niamir-Fuller, 2005). In contrast, it has been said that anthropogenic land degradation is more common and severe around permanent settlements than in open rangelands (Niamir-Fuller, 2005).

These pressures from governments to abandon pastoralism and encourage sedentary, small scale commercial farms, has necessitated some pastoralists to diversify and combine livestock keeping with agriculture and trade, while others depend on remittances from relatives living abroad. Sedentarisation, and the trend of young pastoralists migrating to towns to look for work, has resulted in older generations being left behind to tend to animals (Maitima, et al., 2010).

Several problems can be associated with sedentarisation including poorer nutrition, inadequate housing, lack of clean drinking water, and malnutrition (Fratkin, 1997;

² Sustainability for the purpose of this thesis is defined generally as systems that aim to make the best use of environmental goods and services while not damaging these assets (Pretty, 2008). Sustainability in pastoral systems implies achieving equilibrium, between producers of the first trophic level (the fodder plants), consumers at the second trophic level (herbivores), and consumers at the third trophic level (human appropriators) (Casimir & Rao, 1998).

Niamir-Fuller, 2005). While some human diseases are indicated to have varying incidences in both pastoral and settled populations, higher incidences of AIDS among settled pastoralists are also being increasingly reported. However, settling near small towns opens up new economic opportunities, particularly for women, like selling milk, or working as maids and cooks. Yet urban employment may also mean taking up illegal or low-status employment, such as, charcoal making, beer brewing, and prostitution (Fratkin, 1997). These choices, made under economic pressures, have profound impacts on the social and psychological wellbeing of pastoralists in the long term.

While abandonment of pastoralism may be the only option for some pastoralists, it is suggested that policies should identify diversified income-generating options that are not rainfall dependent, while keeping the possibility of re-establishing pastoralism in future (Greenough, 2007). For example, some pastoralists in Niger have settled on a temporary basis to participate in projects or moved to urban centres during severe droughts to find jobs but have returned to pastoral life after these events (Greenough, 2007). It becomes of immense importance to ensure that exiting pastoralism for reasons including, but not limited to, environmental and biodiversity conservation, do not contribute to poverty or destitution (Agrawal & Redford, 2009; Scoones, 2008). Moritz (2008) notes that pastoralists that diversify into mixed farming, combining transhumant pastoralism with cropping and homestead cattle keeping, are doing so, not to increase output, but rather to save animals from dying owing to lack of forage. Pastoralists were feeding cotton seed cakes in winter so that animals survive the feed shortage crunch before the next rainy season arrives. This adoption of expensive technology in the face of shrinking resources as per Moritz (2008), borrowing from Boserup's (1965) model of agricultural intensification, is a case of embracing expensive technologies due to lack of choice. Intensified settled herds in the villages are also more labour intensive and have a higher cost of production than transhumant herds (Moritz, 2008).

Rather, development of pastoral economies through strengthening market integration for diverse goods and services and strengthening pastoralists' rangeland management capacities are needed as modern informed approach (WISP, 2008).

2.2.12 Perceptions that pastoralists cause environmental degradation

Pastoralists are often blamed by governments and environmentalists for environmental problems such as deforestation, erosion, and over grazing. Forest grazing has often been criticized by foresters and blamed for forest degradation and poor regeneration (Carr-Hill & Peart, 2005). However, studies (Buffum, Gratzler, & Tenzin, 2009; Carr-Hill & Peart, 2005) indicate that forest grazing is not necessarily detrimental to forests, but excessive or over grazing is a problem. Forest grazing, especially seasonal grazing as practised by transhumant agro-pastoralists, is not only an efficient way of utilising the natural resources, but according to some researchers removal of grasses, sedges, bamboos and shrubs by cattle grazing facilitate better regeneration of tree species and help reduce incidences of forest fires (Buffum, et al., 2009; Carr-Hill & Peart, 2005; Waters-Bayer & Bayer, 1992).

Grazing and conservation researchers in Australia have highlighted that there are environmental and biodiversity conservation benefits to be gained from grazing cattle if managed strategically (Fischer et al., 2009; Lunt, Eldridge, Morgan, & Witt, 2007; Lunt, Jansen, Binns, & Kenny, 2007; Schultz, Morgan, & Lunt, 2011). These scholars have provided frameworks to assess area specific characteristics and shown how livestock grazing can be a better option than burning as disturbance regimes, to boost species regeneration and diversity. One key message from the literature on grazing is the historical context that if a place has historical exposure to grazing, the negative effects are less likely, unless, there is abrupt increase in cattle density (Homewood & Rodgers, 1984, 1987; Lunt, Jansen, et al., 2007; Schultz, et al., 2011) and sudden abiotic calamities like drought (Behnke, 2011).

In the Himalayas, in spite of their important role in environmental conservation and biodiversity protection, the ecological services that herders provide are not sufficiently understood and thereby have not received an adequate level of support (Miller, 1995; Ning & Richard, 1999). Moreover, rather than appreciating the value of mountain pastoralism, including the ability of herders to sustain the natural environment, and range of environmental services they provide, they are the subject of scrutiny by scientists, natural resource managers, and policy makers (McVeigh, 2004; Miller, 1995; Ning & Richard, 1999). According to Miller (1995), there exists a misconception that all

Himalayan region pastures and ranges have degraded. Lack of understanding of the complexity and ecological and economic efficiency of indigenous practices and poor information may lead to inappropriate public policies that question the very sustenance of pastoralism (Farooquee & Rao, 1999; Miller, 1995, 2008).

When the system under which pastoralism operates is not properly understood by policy makers and development partners, policies and interventions generally do little to help pastoral societies as discussed in the next section. Rather, these policies and interventions, designed to favour sedentary systems, disadvantage transhumant pastoral systems and often place them in conflict, either directly with such policies or with agents implementing such interventions.

2.2.13 Inappropriate policies as an outcome of poor understanding of pastoral practices

In spite of a long history of pastoralism worldwide, ecosystem dynamics and pastoralist production strategies remain poorly understood (Bayer & Bayer, 2002; Nori & Davies, 2007). The significant contribution pastoralists make to the world by inhabiting land less suitable for other purposes, often enduring very harsh environmental conditions, and contributing to the natural resource protection and biodiversity conservation, often goes unnoticed (Nori & Davies, 2007). The contributions they make in terms of their livestock include:

- controlling weeds and shrubs thereby preventing risks of forest fires
- manuring plants, disturbing soil affecting germination of some dormant seeds, and encouraging growth of some plants (an accepted silvicultural practice)
- adding ecological and biological values by associating some wild predators, birds, insects, parasites which thrive on animals
- preservation of age old culture and tradition

These contributions are generally undervalued by policy makers and development agencies. The traditional systems do not fit the knowledge system and approaches learnt in formal pedagogy settings of these development practitioners and decision makers. Hence, the problems pastoralists face remains of less interest to development

agencies and policy makers (Bayer & Bayer, 2002; Bonte, et al., 1996; Nori & Davies, 2007).

However, there are some positive indications that some countries have started recognizing the significance of the pastoralists' role and are allocating resources to compensate pastoralists for their environmental services. Legislation is slowly beginning to favour transhumance and common pool resource management (Rodriguez, 2008). Human-livestock-land interactions are now understood less in terms of the natural science reductionist way of carrying capacity or desertification (Moritz, 2008). More scholarly attention on pastoralism and the people-livestock-land interactions are in terms of loss of common property rights, increased economic differentiation and social stratification, and incorporation and domination of tribal pastoral groups by larger state systems (Fratkin, 1997). Pastoral development is now viewed more in terms of treating pastoralism as a complex and integrated system, as opposed to focusing on livestock and livestock development alone. This indicates a shift from a technical sectoral commodity approach to a more integrated and holistic approach encompassing several sectors towards broader socioeconomic goals (Moritz, 2008). Pastoralists are now viewed less as creators of deserts, but rather as conservators of the range environment and their extensive land-use management systems are considered to be well suited to semi-arid environments and an effective means of managing common property (Lesorogol, 2003).

However, such positive understanding and developments appears to be limited to a few pockets in the African continent. The policies and development project models adopted by many governments and development partners continue to plague pastoralists. These policies and project models continue to be designed around sedentary systems ignoring the system complexity and rationales of pastoralists (Greenough, 2007). Consequently, these policies and interventions often turn out to be ineffective in guiding the livestock sector, especially in addressing the negative consequences of changes the sector is experiencing (Gerber, et al., 2010). Policy makers' ignorance of the sector's needs are exacerbated further by short comings in policy design, lack of enforcement which is a consequence of ambitious objectives, lack of phasing in the implementation design, lack of resources and unwillingness to

implement measures deemed to have political implications (Gerber, et al., 2010). Greenough (2007), researching development of nomadic pastoralists in the Republic of Niger, noted a serious lack of communication between development agencies and pastoralists. Unequal power dynamics, with resource control being in the hands of development agencies, created gaps. Pastoralists were looked down upon as people to be educated and as recipients of aid, as opposed to being partners in development (Greenough, 2007).

Such inappropriate policies, based on sedentary and production land use paradigms, pose threats to sustainable pastoralism. These policies are the result of policy makers' efforts to deal with problems such as drought (Bayer & Bayer, 2002; Dyer, 2001). However, what policy makers have failed to appreciate is how pastoralists deploy their knowledge, gained through experience, to overcome such shocks. Development approaches that fail to recognize system dynamics run the risk of causing increased deprivation and failure (Ellis & Swift, 1988). As a result, these policies have not yielded positive results for herders and the environment alike. Rather, it has often led to over grazing or too much exploitation of the limited area allotted, exacerbating the situation these very policies tried to overcome (de Haan, 1994; Sandford, 1983). Some government policies have introduced more exotic species of livestock that require intensified exploitation of land and natural resources. Other policies have caused loss of valuable social cultures and traditional knowledge informing how these people relate with the environment they live in and their social ties (Bonte, et al., 1996; Nautiyal, et al., 2003).

2.2.14 Production rationales not appropriate for pastoralists inhabiting disequilibrium rangeland ecosystems

Livestock mobility in arid and semi-arid Africa is one way pastoralists manage uncertainty and risk, and access a range of markets. Studied from a dominant paradigm of equilibrium ecosystems, African pastoralists have been criticised for over stocking and over grazing. However, since the early 1980s a different view emerged that presented pastoral ecosystems in arid and semi-arid regions being in disequilibrium and affected more by abiotic factors than biotic controls (Ellis, Coughenour, & Swift, 1993; Ellis & Swift, 1988). The ecosystem is not balanced, nor

does it operate in an equilibrium and therefore cannot be treated as such. However, the former dominant paradigm has influenced development policy and concentrated mainly on altering internal systems structure aimed at restoring equilibrium and increasing productivity (Behnke & Scoones, 1993; Ellis & Swift, 1988).

The dominant view, stemming from equilibrium theory, advocates removal of grazing pressure to allow the vegetation to revert to a 'climax' vegetation community. This view has long been dismissed and it is now accepted that in arid and semi-arid drylands where dominant plants species are annuals, abiotic factors - such as rainfall or drought - have a more determining effect than biotic factors like grazing (Bayer & Bayer, 2002; Behnke, 2011; Ellis & Swift, 1988).

The equilibrium state of ecosystems exists where herbivore populations and pastures balance in a predator-prey system dynamic, where annual rainfall is relatively high and reliable from year to year, unlike the erratic patterns in arid and semi-arid regions (Behnke, 2011; Ellis & Swift, 1988). The ecosystems in northern latitudes are also found to be in disequilibrium with snow cover, identified as the third variable in addition to rainfall and temperature in the Arctic's grazing systems that influence the herbivore population and pasture growth (Behnke, 2011).

Most rangeland ecosystems that pastoralists inhabit are at disequilibrium, hence concepts of equilibrium and predator-prey dynamics models do not apply to pastoralism. However, development agents seem to apply similar concepts to justify and control pastoralists' cattle numbers and their movements. The 'carrying capacity' model is another such concept borrowed from western style enclosed sedentary intensive beef and dairy systems, and applied to the developing world's extensive low input systems. This concept has been based on intensive farming systems in enclosures with animals physiologically and genetically not exposed to stressful conditions of resource scarcity like pastoralists' cattle (Behnke & Scoones, 1993; Scoones, 1993, 1994). These varied conceptions and applications have given rise to scholars viewing pastoral societies with contradictory perspectives.

Many development professionals and agencies in the past, therefore, viewed pastoral societies as 'backward' needing to be educated (Greenough, 2007). Pastoralists

accumulating and increasing their herds sizes were seen as irrational and often termed as 'cattle complex' (Carr-Hill & Peart, 2005; Herskovits, 1926). It was a trend for professionals with this view to hold the *'belief that those pastoralists had irrational, emotional, and aesthetic attachment to cattle, which they dubbed as the 'cattle complex'* (Chambers, 1984). Cattle complex, as Herskovits's essay explained, was about how pastoralists in Africa (notwithstanding their varying ethnicity) considered cattle very important and accumulated cattle to increase their herd size into perpetuity. A pastoralist would never part with or slaughter his cattle even at the risk of his own life. Only carcasses from cattle that die of natural death were consumed. These pastoralists, culturally claimed to be the ruling class, looked down upon agriculturists and people doing menial jobs who were considered a subject class. The cattle are only parted to pay for wives. Otherwise, every herder would try to accumulate as many cattle as possible. However, hierarchy in wealth level did exist in their society. Kings and chiefs would always take away cattle if an ordinary herder grew his herd comparative to their authorities, thus maintaining wealth levels as per social hierarchical positions they hold (Herskovits, 1926).

With better understanding of the pastoral system and range disequilibrium, the more recent view is that pastoralists accumulating their livestock and growing their herd sizes is a rational choice. It is considered a way of managing the herd in a highly efficient way, owing to the vulnerability of their wealth in the event of calamities. Their long term goals are more important than short term benefits (Mulder, et al., 2010; Ura, 2002). Several studies on pastoralism (Blench, 2001; Ellis & Swift, 1988; Wurzinger, Okeyo, Semambo, & Sölkner, 2009) have suggested that larger herd sizes are a means of increasing security for uncertain times and capitalising on favourable conditions, whereas smaller herd sizes face greater prospects of abandonment and marginalisation (Davies & Bennett, 2007; Intigrinova, 2005). The herds are managed not for short term benefits but for longer term growth, trading off meat today for milk tomorrow, consumption benefits now for children and labour for wives in the future (Mulder, et al., 2010). Large herds are regarded as an asset base to buffer against disasters, for herd growth and milk production, and as capital for payment for wives. Although there is huge potential for rapid growth in herd sizes during good seasons, there is also equally if not a larger risk of catastrophic loss and consequential

fluctuation in household's wealth as a result of a disaster. Large herd sizes, therefore, provide contingency during disasters and enable quick recovery afterwards (Farooquee & Nautiyal, 1999; Namgail, et al., 2007).

2.2.15 Conflicts and wars

This section will not delve into depth on the impact of wars and military clashes, however, it merits a mention here to highlight the vulnerability of pastoralists owing to socio-political disputes. The focus is mainly on conflicts arising out of reduced access to resources due to population growth and multiple land use systems in a given geographical location.

Conflicts are generally due to increasing human population and shrinking resource size and availability. Nowhere is the growth in human population in pastoral societies and equivalent reduction in human-animal ratio more apparent than in Greater Horn of African pastoral societies (Sandford, 2006). Sandford posits that over the years increasing imbalances in humans, livestock and the environment has resulted in inequality and impoverishment of pastoralists with little room for improvement (Sandford, 2006). As productive resources such as land and water become scarcer, conflicts between mobile pastoralists and sedentary farmers are expected to escalate (Dixon, et al., 2001). In Africa, pastoral conflicts take on a whole new level, often involving arms, on the grounds of ethnicity, religion, and culture in addition to the normal herder-farmer and herder-herder conflicts (Moritz, 2006).

Conflicts over access arise as a result of an increasing human population globally but more so in pastoral areas, such as, arid and semi-arid zones of Africa and Mongolia. As Moritz (2006) in a review on conflicts remarks, Africa has transformed '*from an abundance to scarcity of land in one century*'. Similarly, in Mongolia, pastoral populations have increased after the collectivised system ended in 1990. Decollectivisation rendered many former technical and urban cadres redundant who took up pastoral trade. High numbers of new entrants in pastoral systems not only reduced overall grazing resource availability, but also created tension. In 1995 more than 40% of these Mongolian pastoralists owned less than 50 head of livestock per household (Boone, et al., 2008; Mearns, 1993, 2004a). This narrative resembles neo-Malthusian and neo-Hardinian models of population growth and the vicious cycle of irrational and

unsustainable resource management which seems to dominate political and public policy making discourse in the developing world (Milligan & Binns, 2007).

When public policies are not based on proper knowledge of pastoral systems and how conflicts arise, the result is that, the very policies designed to resolve issues in the beginning, become the cause of such conflicts. Today, some pastoralists are faced with conflicts either directly with government policies or with farmers because of the interventions promoted through these policies (Chakrabarti, 2011). Government policies and interventions that fail to recognize traditional institutions that have successfully managed common local resources sustainably, often impose bans or restrict pastoral ways of life. Such policies also favour sedentary systems which in turn conflict with pastoralists over resource (land, fodder, and water) and passage access (Chakrabarti, 2011; Greenough, 2007).

For example, in the Sikkim State of India, government policy aims to completely halt mobile yak pastoralism in contrast to their traditional way of governing the commons. Such moves, without a convincing alternative livelihood in place, not only make pastoralists resentful but also potentially leaves them worse off (Chakrabarti, 2011). Often, as Chakrabarti (2011) indicates, policies restrict traditional ways of life before identifying and implementing interventions that make a meaningful contribution to people's livelihood and overall wellbeing. In Bhutan, environmental policies take pride in following a middle path approach balancing conservation objectives with the livelihood and wellbeing of people (RGoB, 1998). Incentives such as corrugated aluminium sheets, electric cookers and a few exotic crossbred cattle were provided to compensate restrictions imposed on pastoralists' access to forest for roofing materials, firewood, and traditional extensive grazing system for local cattle in forest *tsamdros*. However, such incentives do not meet local people's needs, while restrictions on the locals' access to the natural resources are many and sanctions often punitive (RGoB, 1995). This creates resentment and risks retaliatory actions such as poisoning wild animals or poaching which again risks stricter penalties (RGoB, 1999; Rinzin, Vermeulen, Wassen, & Glasbergen, 2009; Wang, Lassoie, & Curtis, 2006; Wangchuk, 2004). Such policies and conflicts together have caused loss or weakening of traditional resource management institutions.

Conflict also arises at times of crop booms and busts as was the case in Southeast Asia, where crop booms created opportunities as well as risk. Often local small holders including pastoralists are marginalised by corporate capture and state control, taking away land that existed with customary rights or vague tenure arrangements (Hall, 2011). Local smallholder communities sometimes get more busts than boom, as mono crops such as cocoa, coffee, rubber, oil palm, acacia, etc., fail or markets crash. This makes it difficult to service money borrowed from banks and money lenders to buy land inputs and participate in the boom. The communities then resort to selling land and cattle which enables rich people to buy and accumulate wealth further widening the gap between rich and poor, and creating more conflict (Hall, et al., 2011).

However, it is important to note that crisis situations, conflicts, and weakening of indigenous customary institutions do not occur uniformly. There is spatial and temporal heterogeneity within regions and states that needs to be considered (Milligan & Binns, 2007; Moritz et al., 2009). Milligan and Binns (2007) have shown that amidst existence of the herder-farmer conflicts, contrary to the dominant discourse, symbiosis between them does exist in many places and local resource management rules are being adhered to. The authors further note the myopic focus on natural resource degradation and management, donor influence, lack of reliable research and statistics constrained by funds, and lack of space for pastoralists to articulate their needs, often impedes evidence based policies (Milligan & Binns, 2007). Similarly, Moritz et al., (2009) have argued that despite similar if not greater increases in human population in West Africa, in contrast to the Greater Horn of Africa, pastoralism is not necessarily in crisis. They have shown how West African pastoralists have used different strategies such as integration and intensification; movement to the sub humid zone, and extensification to cope with pressures on their pastoral systems. These assertions are made based on pastoralists and state governments in Africa in particular. However, the arguments appear equally valid for pastoral societies in the developing world in general.

2.2.16 Climate change and vulnerability to disasters

The 'wealth on the hoof' nature of pastoralists' livelihood makes them more vulnerable than agriculturists to the effects of natural and manmade disasters

including climate change. The impact of events like disease, drought, raids, and floods are often catastrophic on pastoralist households, but their resilience to such events vary. Disasters have a heavier impact on poorer households than wealthier households (Jones & Thornton, 2009; Mulder, et al., 2010) and women are more vulnerable to consequences of climate change and disasters. When men take cattle to distant pastures or out-migrate to urban areas to find jobs during drought and climate change events, women may lose access to livestock products or face an increased workload owing to men's absence from the household (Watson, 2010).

Climate change is likely to have impacts on growing Asian populations including pastoralists. Asia, with a total population of about 3,902 million in 2002, is the most populous continent in the world and is home to half the world's population (Cruz et al., 2007). Almost 61% of this population lives in rural areas while 38.5% live within 100 km of the coast. With climate change affecting food production and increasing disease incidences, it is becoming difficult to feed the Asian population and improve well-being (Cruz, et al., 2007). Some observed changes in Asia have been the unprecedented retreat of glaciers and permafrost, rising temperatures, variable rainfall, increased frequency of occurrence of climate-induced diseases and heat stress, and pronounced changes in terrestrial and marine ecosystems (Cruz, et al., 2007).

With the rising global population and growing consumption of animal products in the last couple of decades (Rosegrant & Thornton, 2008), declining pasture availability and crop yields due to climate change pose serious challenges (Cruz, et al., 2007). Firstly, the limited herbaceous production, heat stress from higher temperatures, and limited water intake due to a decrease in rainfall causes reduced milk yields and increased disease incidence in animals. Secondly, crop yields have declined in a number of Asian countries due to rising temperatures and extreme weather events. Compared to 1990 levels, about 2.5 to 10% and 5 to 30% decreases in crop yield are projected for parts of Asia for the 2020s and 2050s respectively (Cruz, et al., 2007; Jones & Thornton, 2009). It is also predicted that climate vagaries could render some areas currently used for cropping unsuitable due to lack of precipitation and those affected croppers are likely to convert to livestock keepers (Jones & Thornton, 2009).

This food insecurity, and loss of livelihoods, is likely to be further exacerbated by the loss of cultivated land and nursery areas for fisheries by inundation and coastal erosion in low-lying areas of the tropical Asia (Cruz, et al., 2007). Concerns are also raised about the prevalence of malnutrition among poorer and marginal groups, particularly rural children, and about the large number of people below the poverty line in many countries. Better stock management and more integrated agro-ecosystems that could likely improve land conditions and reduce climate change stresses are needed (Cruz, et al., 2007).

Climate change is likely to have significant consequences to the general rural populace including pastoralists as it could influence resource variability and overall availability. However, this does not represent the most pressing concern for pastoralists. Currently, the most serious challenge to pastoralists appears to be the institutional and policy environment. It is implied that if policies, resource entitlements and institutional arrangements create enabling environments, pastoralists will be able to adapt to climate change without much consequence (Nori & Davies, 2007). Further details on pastoralists adaptation to climate change are provided later under section Adaptation section particularly under section **2.2.3 Mobility as an adaptation strategy (p38)**.

Pastoralism is essentially a system that constantly adapts to the changing environment. Today, it increasingly has to adapt to changing political, ecological, social and economic scenarios. In the following section adaptation theory and some of the strategies pastoralists adopt to overcome, mitigate or cope with the consequences of these shocks are presented.

2.3 Adaptation theories and strategies of pastoral societies

Pastoralists are constantly adapting through seasonal migration, manipulation of herd size, sedentarisation, commercialisation, diversification and adoption of alternative lifestyles wherever feasible including emigration to urban areas (Galvin, 2009; Niamir-Fuller, 2005; Smit & Wandel, 2006).

2.3.1 The concept of adaptation

Adaptation is a fundamental concept discussed in anthropology since the beginning of the 20th century and has gained momentum towards the mid-20th century as a unifying

concept for global changes (Galvin, 2009). However, today the literature on adaptation is overwhelmingly associated with climate change and its effect on ecosystems and society, closely linked with resilience and vulnerability (Jerneck & Olsson, 2008; Kates, 2000; Kelly & Adger, 2000; Mertz, Mbow, Reenberg, & Diouf, 2009; Nelson, Adger, & Brown, 2007; O'Brien & Holland, 1992; Smit & Wandel, 2006). Smith & Wandel (2006, p. 282) define adaptation in the context of human dimensions of global change as:

“... a process, action or outcome in a system (household, community, group, sector, region, country) in order for the system to better cope with, manage or adjust to some changing conditions, stress, hazard, risk or opportunity”.

Adaptation can, therefore, be defined as balancing between livelihood capitals within the space provided by ecosystems, tenure institutions, climatic conditions and alternative economic opportunities to maintain a constant supply of goods and services to the actor units. In other words, it is an effort to survive or advance through smart management of internal factors of production in constant interaction with external factors based on informed decisions. Adaptation is a dynamic process occurring at differential scales, spatially and temporally, necessitating flexibility in the system to respond to changes and reduce negative impacts (Galvin, 2009; Smit & Wandel, 2006). Adaptation enhances system resilience and reduces vulnerability (Jerneck & Olsson, 2008; Nelson, et al., 2007; Smit & Wandel, 2006). However, adaptive capacity and adaptation strategies differ profoundly between the global North and South, and amongst different groups and places within those nations (Kates, 2000). Scholars also emphasize how our understanding of adaptation is shaped by the values the society holds (Reid et al., 2004) along the dynamic continuum.

2.3.2 Pastoralists' adaptation strategies

Pastoralists' adaptation strategies include seasonal transhumance (mobility), commercialisation, sedentarisation, diversification and adoption of alternative livelihood options similar to their cropping farmer counterparts (Ellis, 1998, 2000). The changes or stressors impact adaptability differentially, affecting the poorer sections of the society the most. Pastoralists, with limited livelihood capitals, who depend heavily on natural resources, are often forced to abandon their livelihood, as a consequence of these changes (Intigrinova, 2005; Kates, 2000; Niamir-Fuller, 2005; Nori & Davies, 2007;

Pachauri, 2007) resulting in further marginalization. Some adaptation interventions, brought about by agencies, conflict with the acquisition of adaptive capacity of the poor, and result in increased vulnerability, and hence expel them away from their livelihood source altogether (Kates, 2000; Niamir-Fuller, 1999b).

Coping strategies of successful pastoralists include but are not limited to, building up large herds that can survive shocks, moving herds seasonally, entering into agreements with crop farmers in better endowed areas and/or diversifying into trading and transport (Bayer & Bayer, 2002).

2.3.3 Mobility as an adaptation strategy

In the case of transhumance systems, pastoralists' resilience and adaptation capacity to overcome challenges, posed by externalities and internalities alike, often encompasses concepts of mobility (Niamir-Fuller, 1999a, 1999b, 2005), flexibility (Davies & Bennett, 2007; Galvin, 2009). Mobility and flexibility are closely associated, as mobility gives the opportunity for pastoralists and their animals to be flexible in case of foreseen harsher conditions (Niamir-Fuller, 2005). Flexibility gives pastoralists the ability to keep an open mind and be able to adopt feasible livelihood options when severely affected or presented with an opportunity (Behnke, 1983; Galvin, 2009). Pastoralism as a system or an organization constantly aims to avert disasters such as droughts or climate change effects through mobility which could be seasonal transhumance or nomadic movements, involving exploration and appropriation of resources spatially and temporally (Behnke, 1992, 2011; Niamir-Fuller, 1999b, 2005; Roe, Huntsinger, & Labnow, 1998a, 1998b).

Mobility is central to the practice of transhumant pastoralism in affording opportunities for exploring ecological niches provided by microclimates at different agro-ecological zones, efficiently utilizing available resources, averting risks and producing food from land with no opportunity costs (Kaimba, et al., 2011). It is one of the main strategies used by pastoralists to access natural resources such as pasture and water (Kaimba, et al., 2011; Mulder, et al., 2010). Mobility is crucial for successful transhumant pastoralism to take advantage of resources at diverse agro ecological and climatic condition which otherwise would have added little value to the society. It is through mobility that the transhumant pastoralists opportunistically explore these

natural resources at diverse ecosystems, less known to others, and avert risks of climate change and other environmental hazards while accessing markets successfully (Niamir-Fuller, 1999b, 2005; Nori & Davies, 2007).

Owing to the high adaptability of pastoralism through transhumant mobility exploring niche resources at different agro-ecological zones at different points in time; predicting weather conditions with certain degree of reliability; and averting big disasters with in-depth knowledge of micro-climates, pastoralism has been described as highly reliable as well as a risk-averse system (Roe, et al., 1998a, 1998b). The mobility paradigm, therefore, advances the view that if numerous constraints (eg. government policies advocating sedentarisation, restricting mobility and access to resources) are removed, mobile pastoral systems will thrive against the odds (Niamir-Fuller, 1999b; Nori & Davies, 2007).

Studies (Bayer & Bayer, 2002; Hatfield et al., 2006) have found that pastoral systems that use mobility options, exhibit high levels of efficiency in resource use. For example, pastoralists in the Sahel of West Africa are producing two to three times as much protein as livestock kept under ranching conditions in areas with similar natural conditions in semi-arid parts of Australia and the USA (Bayer & Bayer, 2002). Similarly, pastoralists in Ethiopia's Borana system and in Mali were found to be producing higher returns per hectare per year of both energy and protein compared to both sedentary agro pastoralists and industrialised ranchers in semi-arid Australia and the United States (Hatfield, et al., 2006).

Mobility, however, is not an easy task and involves using resources, mainly family labour. It also requires investment in making, building and maintaining the social capital necessary to access vital resources. Mobility potentially puts pastoralists in the face of disasters and subject to changing social and political scenes (Boone, et al., 2008). Restraints are being increasingly imposed on livestock movement due to reduction in resources, pastoralists own desire to avail welfare services like education and health, as well as changing land tenure policies (Boone, et al., 2008).

2.3.4 Diversification as an adaptation strategy

Diversification of livelihood options occurs with pastoral communities or accompanies sedentarisation in peri-urban areas because they are able to tap available opportunities. Some men after settling near peri-urban areas continue to keep pastoral cattle while women adopt additional trades in the urban market (Watson, 2010).

Adoption of diversification can be both a desperate coping strategy for the rural poor or spreading of income streams by the wealthy households (Ellis, 1996; Start, 2001). Ellis (2000) calls it '*diversification of necessity and diversification by choice*'. The majority of rural households practise diversification and engage in a range of livelihood portfolios because income from their main farming occupation alone is not enough to sustain the household. Often, income from other sources is much higher compared to income from their primary livelihood (Ellis, 1999). The existence of inter and intra community heterogeneity in wellbeing levels and hence a need to adapt through diversification is not always due to lack of livelihood assets or capitals, but due to absence of equitable access or entitlement to vital resources (Davies & Bennett, 2007; De Haan, 2000; Sen, 1982).

Pastoralists sometimes move into non pastoral trade, often with total abandonment of pastoralism (Davies & Bennett, 2007; Galvin, 2009; Smit & Wandel, 2006; Start, 2001). For example, many Himalayan pastoralists have diversified and are now engaged in agriculture, trade and tourism. Some integrate animal husbandry with agriculture. In an integrated system, livestock provide milk, butter, cheese, meat, and valuable inputs needed for crops such as manure to maintain soil fertility, draught power to plough fields, as well as pack animals for transportation during transhumance or for tourism services (McVeigh, 2004; Miller, 1995).

2.3.5 Sedentarisation and commercialisation as an adaptation

Sedentarisation and settling especially in peri-urban areas is generally perceived to potentially enhance human capital through improved access to health care and educational opportunities. Sedentarisation, either through government policies or of their own will, is a growing trend but has mixed impacts particularly on pastoral women (Watson, 2010). In some African pastoral societies, while married couples may

diversify, with men continuing to go with animals leaving women to collect firewood or grow vegetables, female headed households are likely to suffer further marginalisation as a result of biased social norms that look down upon women with no husbands (Watson, 2010). In these societies, commercialisation can have negative impacts on women and increases their vulnerability as the trend follows that as herd sizes grow beyond subsistence level, the economy of the herd becomes more of a business orientation and comes more under the control of men than women (Watson, 2010).

So far in the chapter, pastoral systems distribution, pastoral societies, the challenges they face and their adaptation strategies have been presented. Pastoralism most commonly occurs in areas where grazing resources are held in common. These grazing resources are either communally held or owned by governments. Pastoralists usually only have usufruct rights to graze, collect firewood, fodder, and water. The ownership of land rests with the state. In the following sections, issues relating to rights, access and governance of common pool resources (CPRs) are discussed.

2.4 Common Pool Resources (CPRs): Rights and Governance

2.4.1 CPR and types of CPR rights

Common property or common resource property are more commonly referred to as Common-Pool Resources (CPRs). A property right is the bundle of rights or power vested in the appropriators to impose mechanisms of use, including the rights of access, withdrawal, management, exclusion and alienation. This right could be assigned to an individual or to a group depending on the attributes of common-pool resources (Ostrom, 2000).

There are differences between open access property regimes and common pool regimes. In open access regimes no one has the legal right to exclude anyone from using a resource, whereas common pool regimes have members of a clearly demarked group with a legal right to exclude non-members from appropriating from that resource. Open-access regimes (*res nullius*) include the open seas and the atmosphere, where it is not possible to impose restrictions on who can or cannot use a resource. In addition, open-access regimes lack effective rules defining property rights because

either the resources are not contained within a nation-state or no entity has successfully claimed legitimate ownership over the resource. Open-access regimes can also be the consequence of conscious public policies such as *jus publicum* in order to guarantee the access of all citizens to the use of a resource within their political jurisdiction (Ostrom, 2000).

Two principle attributes of all CPRs that Ostrom (200, p.337) mentions is that (1) *it is costly to exclude individuals from using the good either through physical barriers or legal instruments and (2) the benefits consumed by one individual subtract from the benefits available to others*'. Examples of CPRs include forests, pastures, fisheries, and waters (Agrawal, 2003).

The ownership of CPRs may lie with the state through national, regional, or local governments, or communal groups, or private individuals, or corporations. It can also be used as an open access resource by anyone being able to gain access. Nonetheless, each property regime type has its own advantages and disadvantages, and sometimes they share similar ground rules concerning access and use (Ostrom, 2000).

Increasing concern over environmental degradation and resource depletion, attributed to the failure of state control and privatization regimes of CPRs management, encouraged more decentralized systems of managing CPRs by local people (Agrawal, 2003). The drive for local management of resources has drawn the attention of scholars on institutions for sustainable resource use since the mid-1980s. It has generated a number of case studies on sustainable management of CPRs by local people (Agrawal, 2001). The focus since then for researchers and policy makers has been more towards local management of resources, rather than on central state interventions, market, or privatization of property rights. Scholars now look for conditions under which communal arrangements perform comparably with private or central authority control in terms of efficiency but more importantly on equity and sustainability. More attention is now being paid to power dynamics concerning access and use, management, exclusion and transferability rules of CPRs (Agrawal, 2001).

CPRs form crucial resources providing significant economic benefits and valuable livelihood security for rural people especially the poor occupying an important place

in the socio-cultural domain (Beck & Nesmith, 2001; Fisher, 2008). Several theories have come about suggesting sustainable ways of governing CPRs. In the following section, some theories that have emerged from CPRs access and governance literature have strong relevance to pastoralism.

2.4.2 Communal tenure of CPRs

Many of the CPRs are held in communal tenure in Asia. Communal tenure is defined as a situation where one or more village communities or groups possess secure and exclusive collective rights to own, manage and/or use particular areas. CPRs such as agricultural lands, grazing lands, forests, trees, fisheries, wetlands or irrigation waters, have rules set by community or are crafted and assigned by external government agencies (Andersen, 2011). Two broad types of communal tenure are commonly found in Asia, one where the ownership of certain areas is assigned and some indigenous or ethnic groups given ownership titles and the other where the state maintains ownership through nationalisation and assigns specific usage and management regimes to resource user groups (Andersen, 2011). The latter is akin to community forestry groups, which are more common in Asia. The community user rights regimes are often called 'induced institutions' with devolved management and sustainable usage to the users of the CPR but often with strict management regimes written by the state agencies (Andersen, 2011).

2.4.3 Secure land tenure and access to CPRs as priori for persistent food security

Literature on land tenure advances the view that secure and long term tenure and/or ownership of land is a priority for motivating land users, such as farmers and pastoralists, to make investments and continue producing food (CAPRI, 2010; Cribb, 2010). The view is that without secure land tenure little improvement of land, or interest in continuity of food production, can be expected. If farmers live in constant fear that land could be taken away at any time by the state or corporations (with improved land carrying the most risks), it naturally discourages any farmer from investing in land improvement (Cribb, 2010). Similarly, sustained access to productive CPRs is equally important for alleviating rural poverty where rural people, including pastoralists, inhabit the land. Rural people living in most developing countries depend

heavily on CPRs for grazing their livestock or collections of NTFPs as their landholdings are negligible, with primitive technology, often fragmented and on steep slopes.

Rural poverty and lack of adequate access to land have strong correlations. In agrarian based economies, such as Bhutan where 69% of the population are engaged in agriculture, including livestock keeping (NSB, 2008; PPD, 2008), access to land is the mechanism by which the poor ensure household food supplies and income. Increased land access brings benefits not only to poverty alleviation but also contributes directly to increased household food security (Cotula, Toulmin, & Quan, 2006). Insecure and contested land rights on the other hand have adverse effects on economic growth and overall poverty reduction (Cotula, et al., 2006).

Most pastoralists inhabit areas that constitute some form of CPRs; usually owned by the state but given rights to graze either with private entitlements or shared communally. The following sections will discuss CPR governance regimes and the types of institutions necessary for effective management and sustainable use of CPRs.

2.4.4 Tragedy of the Commons

Amongst other theories relevant to pastoralism, Garret Hardin's theory on the 'Tragedy of The Commons' presented in his 1968 essay (Hardin, 1968), (which later was formalised as the Game Theory or Prisoner's Dilemma Game (Ostrom, 2008)) is the theory that has had the most profound influence on shaping the mind set of many scholars writing about pastoralism, but mainly orientated with environmental conservation. The following argument put forth by Hardin is often invoked.

Hardin's argument is that freedom in a commons brings ruin to all:

Picture a pasture open to all. It is expected that each herdsman will try to keep as many cattle as possible on [this] commons....What is the utility...of adding one more animal?...Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility [to the herdsman] is nearly +1 Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decision-making herdsman is only a fraction of-1. Adding together the...partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to [the] herd. And another; and another....Therein is the tragedy. Each man is locked into a system that [causes] him to increase his herd without limit-in a world that is limited....Freedom in a commons brings ruin to all (Hardin, 1968, p.1244).

Hardin (1968) referred to pasture and herdsman as a metaphor to elaborate a bigger global issue of human population, environmental pollution and sustainability concerns of unmanaged commons (Hardin, 1998). After three decades he acknowledged the criticisms that he failed to separate managed commons with unmanaged open access commons and corrected his theory in 1998:

...the weightiest mistake in my ... paper was the omission of the modifying adjective "unmanaged." In correcting this omission, one can generalize the practical conclusion in this way: "A 'managed commons' describes either socialism or the privatism of free enterprise. Either one may work; either one may fail: 'The devil is in the details.' But with an unmanaged commons, you can forget about the devil: As overuse of resources reduces carrying capacity, ruin is inevitable." Hardin, (1998, p.682)

However, Hardin still maintains the view that the way to avoid 'The Tragedy of The Commons' that is, to manage the unmanaged, is either through privatization or state ownership (Hardin, 1998).

Similarly, the prisoner's dilemma game or game theory also advances the idea that in such a situation, individually rational human strategies produce collectively irrational outcomes, and an individual is always better off to defect than cooperate, but will ultimately bring ruin for all, as every individual pursues a similar course of action (Ostrom, 2008).

The views expressed through the tragedy of the commons, game theory, and the logic of collective action is known as the 'free-rider' problem. If resources are open to all, every rationale individual will appropriate selfishly until the resource is exhausted or not contribute for the common cause in absence of an external coercive force or agency that monitors and imposes sanctions (Ostrom, 2008). However, privatizing commons is problematic and does not ensure sustainable use and management as presented below.

2.4.5 The Logic of Collective Action

In line with the Tragedy of The Commons and The Prisoner's Dilemma Game is The Logic of Collective Action promoted by Mancur Olsen that advocates the view that the promise of group benefit would not be sufficient motivation for individuals to contribute and therefore avoid the temptation to free-ride (Ostrom, 2008).

Mancur Olson, in his 1965 book 'The Logic of Collective Action', challenged the traditional collective action presumption that the possibility of benefit for a group would be sufficient to form and take collective action (Olson, 1965). He instead offered conditionality and the nature of collective action and indicated situations where rational individuals are likely to free ride:

Unless the number of individuals is quite small, unless there is coercion or some other special device to make individuals act in their common interest, rational self-interested individuals will not act to achieve their common or group interests. (Olson 1965, p.2)

However, whilst Hardin himself has corrected his essay to emphasize that he was describing unmanaged commons, other scholars, including Ostrom, have shown that the issues of tragedy of commons does not arise in all open access commons, nor do external Leviathan (coercive power that compels members to commit to the group agenda), such as the privatization or state ownership, perform any better than locally managed common pool resources (Ostrom, 2002, 2008). Rather, there may be several forms of management regimes and a combination of these regimes that work successfully at different places at different points in time (Basurto & Ostrom, 2009; Ostrom, 2000, 2010).

2.4.6 Problems with privatization

Evidence from studies (Ning & Richard, 1999; Thwaites, de Lacy, Hong, & Hua, 1998) suggests strategies like privatization, rights allocation and enclosures have not been uniformly applied. This has led to over grazing in unassigned commons surrounding the enclosed pastures, situations resembling Hardin's Tragedy of The Commons theory (Hardin, 1968, 1998). It is feared that in China the seemingly successful strategy of allotting pastures to individual leaseholds could lead to social stratification, conflict and social disharmony between well to do households that can afford fencing and those that cannot (Ning & Richard, 1999; Thwaites, et al., 1998). Additionally, the consequences of enclosures on increasing risk of environmental degradation and loss of biodiversity have been observed. Drawing on lessons learnt from some neighbouring Soviet states, such schemes would potentially increase pressure on summer pastures. The healthier and increased animal numbers resulting from better

winter nutrition management are likely to exert higher pressure and hence risk degradation in summer pasture (Ning & Richard, 1999).

Perhaps decentralization and privatization strategies in China were adopted based on the lessons learnt from degradation to pasture and agricultural lands observed under the collective regimes. Under the collective regimes, pasture degradation of up to 75 - 79% was observed in Chinese inner Asia, including inner Mongolia and some Russian states, compared to independent Mongolia where degradation was as low as nine percent (Sneath, 1998). Sneath reveals that Russian agricultural collectives introduced European agro industrial models that involved use of heavy machinery and resulted in pasture degradation and loss of topsoil. Further, in contrast to the mobile pastoral style, livestock spent much more time inside the same fenced field, without moving to different regions, causing continuous grazing and trampling of vegetation (Sneath, 1998).

2.4.7 Alternative Common Pool Resource Governance Institutions

Ostrom (2008) has argued that privatization or state ownership are not always the most effective or necessary strategies as privatization can reduce individual's resource size, and state ownership can increase monitoring costs (Ostrom, 2008). She emphasized that a variety of solutions exist, as opposed to the Leviathan solution only, to avoid the tragedy of the commons. In her view, what is crucial is to get the process right with *'reliable information about time and place variables and a broader repertoire of culturally acceptable rules'* (Ostrom, 2008).

In the pastoralism literature, while there is some evidence privatisation has improved resource management and prevented overgrazing and environmental degradation (Fratkin, 1997), there are others that contradict this view. Other scholars posit that communal properties were better managed as commons, and that privatisation and/or state intervention has resulted in excessive grazing and had detrimental effects on the environment (Niamir-Fuller, 2005; Shaoliang, et al., 2007; Tucker, 1986).

It has also been shown that there is no simple solution to managing the commons. Local institutional management of CPRs through collective action is not a panacea for situations where exogenous interventions are needed and can perform better (Casimir

& Rao, 1998; Ostrom, 2008). Casimir and Rao, (1998) demonstrated that in the western Himalayas, both private ownership pastures and government owned pastures were well managed and experienced less grazing pressure compared to the unmanaged commons along the stock routes that were overgrazed. This evidence indicates that co-management of resources between the government and resources users could offer a potential model for sustainable management of the resources (CAPRI, 2010).

Some of the successful combinations of institutional arrangements in governing CPRs with relation to pastoralism in Asia are provided in the following sections. In Mongolia following the World Bank's advice to privatise pastoralism as a move away from its Soviet influenced collectivised systems, livestock production was privatized and animals became private property of individual households (Fratkin, 1997). However, the pasturelands were excluded from privatization and remained a common ownership good. This situation saw renewed strengthening of *khot ails* (Fratkin, 1997). Seeing these opportunities in rural pastoral society, urban wage earners, some laid off by state bureaucracies or enterprises, returned to their village to join their pastoral families. Mongolians have also developed their own grass-roots organizations (*khoshoo*) that are neither customary nor state-inspired institutions, but are marketing cooperatives seeking transport and trade with China and elsewhere (Fratkin, 1997). However, recent literature indicates a decline in these social organizations with privatization of livestock, particularly in the post Soviet era (Sneath, 1993, 2003; Fernandez-Gimenez, 2006). While some sceptics have argued the future possibility of negative wage labour relationships with richer households and environmental risks without adequate external provision of safety nets, Mongolian pastoralists have seen a slight decline in their production and the government is constantly exploring alternative markets and ways to increase their herders' income (Fratkin, 1997).

In China, transfer of rights of land and livestock has taken place in the TAR and some other pastoral regions. While winter forage is a private good and often a determinant of herd size, summer and autumn pastures are held in common, with no limit to herd size. Certain fixed amounts of produce from each household need to be sold to the farm management that fulfil the role of middle men and provide services, while any

extra amount can be sold on the open market at market price. Although the revenue received from submission made to the farm management was less than what can be generated from selling it to the market, the farm management spends the revenue from sale of this collected tax for construction, transportation, meat storage, education, and health and veterinary care for the collective farm (Fratkin, 1997). Increases of 25% in summer herds, most of which are sold before winter, were also reported. As a result, pastoralists have been able to fence their summer hay fields (keeping trespassing herds at bay) and buy hay in the winter (Fratkin, 1997).

Similar observations, in line with decentralization and privatization, coupled with communal grazing rights, have also been made in the TAR of Sichuan province and Inner Mongolia (Fratkin, 1997; Ning & Richard, 1999). The pasturelands remained state owned, and what was perceived as privatization was a long term lease (50 years). Although this arrangement enables the governments to make adjustments as and when needed it, nevertheless, provides long term lease tenure to pastoralists (Ning & Richard, 1999).

The ultimate aim of exploring different theories, models or institutions on governing CPRs is to provide an overview to guide policy development aimed at achieving sustainable resource management and utilisation. Sustainability in pastoral systems implies achieving equilibrium, between producers of the first trophic level (the fodder plants), consumers at the second trophic level (herbivores), and consumers at the third trophic level (human appropriators) (Casimir & Rao, 1998).

Pretty (2008) argued that systems that are high in sustainability are those that aim to make the best use of environmental goods and services while not damaging these assets. The key principles for agricultural sustainability are to:

- (i) integrate biological and ecological processes such as nutrient cycling, nitrogen fixation, soil regeneration, allelopathy, competition, predation and parasitism into food production processes,
- (ii) minimize the use of those non-renewable inputs that cause harm to the environment or to the health of farmers and consumers,
- (iii) make productive use of the knowledge and skills of farmers, thus improving their self-reliance and substituting human capital for costly external inputs, and

- (iv) make productive use of people's collective capacities to work together to solve common agricultural and natural resource problems, such as for pest, watershed, irrigation, forest and credit management (Pretty, 2008).

Further, Pretty (2008) clarifies that agricultural sustainability does not mean ruling out any technologies or practices on ideological grounds, rather it is about choosing technologies and practices deemed to improve productivity for farmers without causing too much harm to the environment, adapting it to fit the local conditions (Pretty, 2008). There is no single 'one size fits all' type of institution to govern the commons. There are instances where local appropriators have successfully managed, and there are other situations where 'top-down' central governance has succeeded and others where neither worked (Casimir & Rao, 1998; Dietz, Ostrom, & Stern, 2003).

The following section presents what attributes and conditions are necessary for successful governance of CPRs by local people.

2.4.8 Attributes and conditions for successful governing of CPRs by local people

The success of common pool resource management and local institutions will depend on, amongst other factors, attributes of resource and users, design principles, hetero and homogeneity, possibility of communication among resource users and benefit-cost analysis (Ostrom, 2002, 2008). However, it is said that where these conditions are not met, appropriators can be expected to be locked in a system extracting excessively from the common pool resources for individual good with devastating effects on the group (Basurto & Ostrom, 2009; Ostrom, 2002, 2008).

Dietz, et al. (2003) and Dietz, Ostrom, and Stern (2008) list the following conditions as conducive for effective governing of common pool resources by local people:

- (i) The resources and use of the resources by humans can be monitored, and the information can be verified and understood at relatively low cost.
- (ii) The rates of change in resources, resource-user populations, technology, and economic and social conditions are moderate.
- (iii) Communities maintain frequent face-to-face communication and dense social networks (social capital) that increase the potential for trust, allow people to express and see emotional reactions to distrust, and lower the cost of monitoring behaviour and inducing rule compliance.
- (iv) Outsiders can be excluded at relatively low cost from using the resource and

- (v) Users support effective monitoring and rule enforcement.

Additionally, successful governance of CPRs needs to be adaptive and robust, and evolve through time to suit the changing socio-ecological and complex biophysical conditions (Dietz, et al., 2003). Governance needs to be adaptive, diverse and robust based on prompt and factual information of resource conditions, resource user actions and their needs amongst others (Figure 2.1).

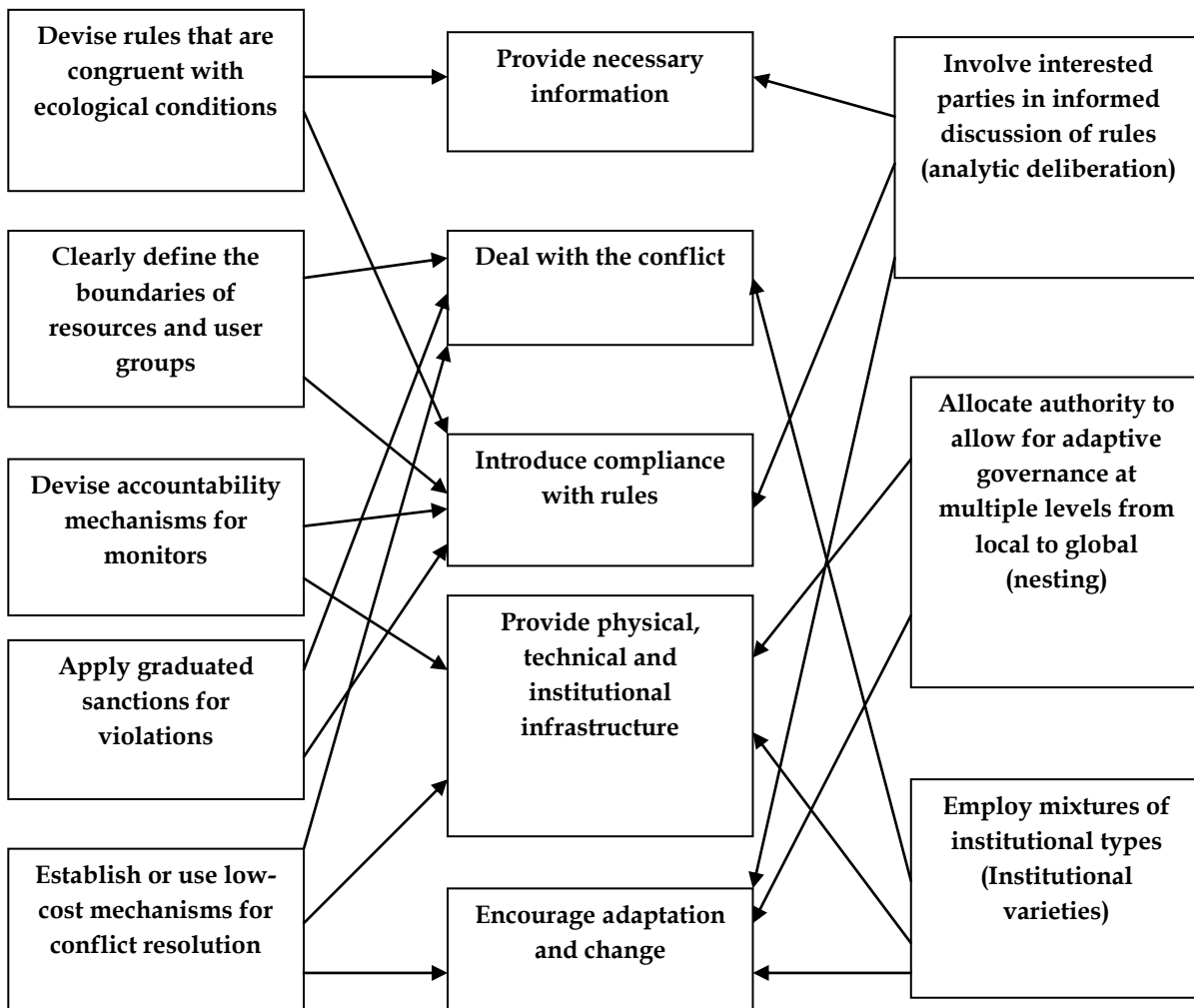


Figure 2.1 General principles for robust governance of environmental resources (left and right columns) and the governance requirements they help meet (centre column). Arrows indicate connections between principles and requirements. Adapted from (Dietz, et al., 2003).

In the light of the significant role public policies play in determining access to resources and its governance that ultimately affects people’s wellbeing, the following section presents approaches in pastoral livelihood development with emphasis on policy and program development that are forward looking, participatory and inclusive in their approach.

2.5 Pastoral livelihoods development through citizen participation

The preceding sections have demonstrated the practices and challenges that pastoral societies face. Changing environments and policies, global socio-economic growth and complexities of resource rights and governance, have led to pastoralists increasingly having to negotiate and adapt. It is clear that the majority of issues surrounding pastoralism have to do with competing paradigms, that is, intensification (with sedentarisation) or extensification (with mobility). In what follows, I present how these competing paradigms may not necessarily be polarised. I also discuss some alternative development approaches that some authors advocate that may help improve pastoralists' wellbeing and the national economy. However, before doing so it is important to highlight the role of livestock development in the context of rural development and poverty alleviation.

2.5.1 The need for development to alleviate poverty and increase food security

The 1996 the World Food Summit defined food security as '*all people, having physical and economic access to sufficient, safe and nutritious food at all times, to meet their dietary needs and food preferences for an active and healthy life*' (Jenny & Egal, 2002). Oxfam emphasised availability (the quality and quantity of the food supply) and access (entitlement to food through purchases, exchange and claims) as part of food security (Young, Jaspars, Brown, Frize, & Khogali, 2001).

There are however, problems with both availability and access to food. Today, in most countries, the gap between rich and the poor has polarised. More than 80% of total income is held by the top 20% of the population and one per cent of global income is owned by people in the bottom quintile (Dag Hammarskjöld Foundation, 2012). With the current trends it is predicted that it will take more than 800 years for the bottom echelon of society to increase their share to just 10% of top levels (Dag Hammarskjöld Foundation, 2012). Gains from economic growth and globalisation have been unevenly shared. With high levels of poverty, unemployment, and social exclusion, inequality and insecurity threaten the care system, social cohesion and political stability (Dag Hammarskjöld Foundation, 2012).

The skewed and deteriorating relative income distribution, with the richest 1% earning 57% of the rest of the population's income, gives rise to widespread poverty and renders many poor people unable to meet food requirements (Pinstrup-Andersen, 2002). The inequities are global, as well as national, with poverty and food insecurity being prevalent in rural areas. For example, in Bhutan although the overall poverty level stands at 23.2%, there is a difference between rural and urban wealth levels. Poverty in Bhutan is a rural phenomenon with 30.9% of the poor living in rural areas as opposed to mere 1.7% in urban areas (NSB, 2007b).

In developing countries, agriculture is the main vocation of people in rural areas with more than 50% of the population depending on agriculture (Upton, 2004). People in rural areas depend on agriculture, either directly or indirectly for their incomes and food security (Pinstrup-Andersen, Pandya-Lorch, & Rosegrant, 2001).

For example, in Africa, livestock keepers are considered to be better off than croppers, and livestock are usually said to be found with the rich and wealthy (Alary, Corniaux, & Gautier, 2011). Perhaps this wealth inequality in the social class system influences the mind set and cultural values, whereby croppers are looked down upon by pastoralists (Moritz, 2006). However, the same may not apply to livestock keepers in Asia, especially in south Asia and the mountain areas. According to Devendra and Thomas (2002), poverty in Asia is closely associated with marginal/small farmers, the landless, transhumant/ nomadic pastoralists, women, tribal groups and displaced people. About 95% of livestock in Asia are found with these resource poor people making livestock raising their main livelihood activity, a means for income generation and livelihood improvement (Devendra, 2002; Devendra & Thomas, 2002).

Most of the global poor live in rural areas, half of which are in south Asia (Upton, 2004). South Asia has about 280 million out of the 800 million globally food insecure people (Pinstrup-Andersen, et al., 2001). Herders in south Asia inhabiting mainly arid/semi-arid zones and alpine grasslands of the Himalayan region are found to be more engaged in nomadism and transhumance system of livestock raising than in southeast Asia (Devendra, 2002). This highlights an opportunity to invest in livestock development for poverty alleviation and ensuring food security in south Asia

(Devendra & Thomas, 2002). The following section describes the role of livestock in rural development and its potential to contribute to poverty alleviation.

2.5.2 The role of livestock in rural development and poverty alleviation

The majority of livestock in developing countries are found with smallholders including pastoral households (Waters-Bayer & Bayer, 1992). In these countries, livestock have multiple functions for poor rural people, providing the major proportion of their cash income, capital reserve, draught power, fuel and fertilizer (Millar & Photakoun, 2008; Steinfeld, 1998), reducing risk and maintaining stability of the farming system. For example, livestock contributes about 10- 45% of the agricultural GDP in a crop-livestock mixed farming system in south Asia (Thomas, Zerbini, Parthasarathy Rao, & Vaidyanathan, 2002). Livestock in developing countries is found to be more equitably distributed than land amongst the poor, with women heavily involved in tending livestock (ILRI, 2007). This makes livestock one of the most effective development means of reaching and assisting the poor and women (Thomas, et al., 2002).

A report from the International Livestock Research Institute (ILRI), Nairobi, Kenya (ILRI, 2007) projects that some 300 million poor people in Asia are to a certain degree dependent on livestock for their livelihood. Two hundred million of these are in South Asia and 100 million in South-East Asia and China (ILRI, 2007). In their report outlining strategies and action plans on livestock research for poverty reduction in Asia, ILRI identifies the following key drivers that are likely to change the landscape of livestock production in Asia in the future:

- Growing gap in income between urban and rural areas
- Rapidly growing demand and rising prices for livestock products
- Changes in the supply chain
- Trade liberalizations and
- Threats from endemic and emerging animals diseases

Globally, population growth, income rise and rapid urbanisation are fuelling the demand for livestock products (Steinfeld, 1998). These trends in developing countries are shifting trends in food consumption from developed countries to developing

countries (Rosegrant & Thornton, 2008). It is indicated that meat consumption in the developing countries has grown due mainly to the improved economy enabling poor people to rise out of poverty (Delgado, 2003).

This rise in demand for food (meat and milk) is projected to increase cattle and sheep populations from 1.5 billion and 1.7 billion to 2.6 billion and 2.7 billion respectively between 2000 and 2050 (Rosegrant & Thornton, 2008). The answer to this surge in demand for livestock products to feed the burgeoning population is known as the livestock revolution. However, it is unclear whether this rising demand and livestock revolution will benefit pastoralists and small holders. This is a question explored in the succeeding sections, followed by a discussion on a possible way forward enabling pastoralists to participate in livestock development.

2.5.3 The livestock revolution and its implications for small holders

The current global livestock production systems are categorised into four different stages of livestock revolution, that is, pre, onset, full swing and post revolution (Gerber, et al., 2010). The livestock revolution is a term used to refer to the trend where livestock production systems gradually change from extensive production systems, where animals have more meaning and use than food, to growing global consumer demands transforming production to intensive systems where livestock become only a component in the global food chain (Gerber, et al., 2010). Most of the countries where pastoralism is the dominant mode of production, including those of Greater Horn of Africa, are classified as being at the pre-revolution era. Countries that have just started experiencing high demands for livestock products, such as India, are at the onset of livestock revolution. Others, like China and Latin America that are already experiencing the above trends have the livestock revolution in full swing, whereas countries in the European Union and the United States are in the post-revolution era. The main concerns the post revolution countries have are now environmental and food safety issues (Gerber, et al., 2010).

The growing human population, and increasing food demand that enthuse livestock revolution proponents, presents considerable opportunities for livestock growth (Gerber, et al., 2010). In the countries where this revolution is expected to occur, concerns have also been raised that increased demand will bring profound changes in

livestock production systems driving them more towards intensive commercial orientation. This could raise food safety and environmental issues. It is also predicted that grazing intensity in grassland based systems will increase up by 50% globally by 2030 (Rosegrant & Thornton, 2008).

However, it is unlikely that small-holder livestock keepers and livestock dependent pastoralist herders are in a position to tap this opportunity as the livestock revolution is unlikely to occur in many of these small holder and extensive pastoral systems (Gerber, et al., 2010), nor are they poised to benefit from the growing food demand (Rosegrant & Thornton, 2008). The revolution may not occur in many of the developing countries because of the cheap imports, remoteness, lack of infrastructure and agro ecological conditions (climate variability, land availability and fertility) (Gerber, et al., 2010). Instead, small holders and pastoralists are expected to be impacted by rising grain prices which they depend on for food, resulting from diversion of these cereals from food markets to animal feeds of commercial intensive farms and for bio fuel purposes (ILRI, 2007). Smallholders such as pastoralists are likely to be outcompeted and pushed even further to marginal lands with loss of most of the productive areas to land grabbing, expansion of commercially intensive farms and commercial croppers (ILRI, 2007; Rosegrant & Thornton, 2008).

Real market and growth opportunities for livestock and livestock products exist but it is unclear how small holders and pastoralists can secure a place to benefit from these opportunities. ILRI (2007) argues without proper policy support and dedicated programs for smallholders and pastoralists, they are unlikely to be able to take advantage of this opportunity. Similarly, Rosegrant and Thornton (2008) also contend that policies should be designed so that livestock systems contribute to alleviate poverty, mitigate negative environmental impacts, reduce income inequality and reduce malnutrition.

Additionally, Waters-Bayer and Bayer (1992) argue that given the interconnectedness and interdependence of livestock and other farming activities in general, livestock policies should integrate with other farm activities. They also claim livestock development and policies should not be viewed from a utilitarian commodity based approach but rather consider livestock as rural people's livelihood system, a source of

survival and wellbeing (Waters-Bayer & Bayer, 1992). Considering the importance of policy and development approaches in the success or otherwise of the wellbeing of pastoral systems and pastoralists, the following sections will present policies and development approaches contextualized within the framework of improving the overall livelihood and wellbeing of pastoralists.

2.6 Pastoral livelihoods development: Competing paradigms in pastoral development

The transference of livestock technologies from the North to South in the 1960s and 1970s have reportedly failed owing to environmental, social and cultural differences (de Haan, 1994; Mathias, 2008). As mentioned elsewhere in this chapter, the direct import of ranching systems and the concept of carrying capacity from the North, also referred to as the Texas system, to Kenya in 1950s and 1960s was a failure (Chambers, 1997). Traditional livestock keepers, including pastoralists for whom livestock production was not only an economic but also a sociocultural activity (Thornton et al., 2007), are seen as being engaged in practices that in a contemporary economic sense are irrational behaviour. The dominant development discourse was then the pursuit of modern technologies to replace and change the production systems of the traditional livestock keepers (Waters-Bayer & Bayer, 1992).

Subsequently, as the rural development field became more informed of the actual values (use value as opposed to market value), the efficiency of local practices, the complexities and goals of traditional systems (Waters-Bayer & Bayer, 1992), more appropriate technologies were adopted in the 1980 and 1990s. However, this approach did not make much headway and like history repeating itself, the current strategies appear to have returned to the 1960s strategies of adopting technologies from the North to the South (Mathias, 2008).

Rural inhabitants like TAP pursue various livelihood portfolios as opposed to specific livestock production purely for milk and meat. Livestock to them is a means with which they achieve variety of the livelihood aims including food production. They achieve these aims by combining the resources whose relative importance again may vary owing to a number of factors, such as, natural and economic conditions, market links and quality and quantity of production factors (land and labour amongst others)

available to the household (Waters-Bayer & Bayer, 1992). It has been repeatedly highlighted that in crop-livestock system, a single system should not be seen in isolation; rather it should be seen from a holistic standpoint. This is important because communities that manage livestock, cropping land and appropriating non-timber forest products (NTFP), manage in an holistic local landscape and within the provisions of customary laws (Bavikatte & Jonas, 2010).

There is need for a different approach to livestock development; one that respects the multiple functions animals serve for small holders and pastoralists and the environment (Waters-Bayer & Bayer, 1992). The overall contribution of livestock, particularly their multiplicity of use and multipurpose contributions to the economy of developing countries are largely underestimated (Alary, et al., 2011; Devendra & Thomas, 2002; Sansoucy, Jabbar, Ehui, & Fitzhugh, 1995). Development support organisations have been slow in the processes of building mutual trust, developing local capacities and strengthening local institutional capacities. Development agencies are also said to have imposed the demands of donors and generated information that local people cannot use or perhaps do not need in the first place (Mathias, 2008; Waters-Bayer & Bayer, 1992). Additionally, governments continue to view livestock, crop production and NTFP appropriation separately and try to address complex system issues in isolation. This approach causes the fragmentation of the interconnected body of values, knowledge, practices and resources (Bavikatte & Jonas, 2010; Waters-Bayer & Bayer, 1992).

There is a need for more inclusive participatory approaches to policy, planning and development with appropriate technology where people have a say; where their perspectives, knowledge, needs, aspirations and customary institutions are respected (de Haan, 1998; Devendra, 2002; Fresco & Steinfeld, 1998; Rosegrant & Thornton, 2008; Thomas, et al., 2002). This includes adapting technologies that are suitable to resource endowment, suitability of bio-physical conditions and people's capability and capacity. In the following section some of the policy and development approaches that may result in more desirable approaches are explored and presented.

2.6.1 Endogenous livestock development

Endogenous development (ED) encapsulates the terms 'bottom-up,' 'participative' and 'local'. It advances the view that development that begins from a base of local resources and involves active public participation in the design and implementation of the programs will be more successful and sustainable (Ray, 1999). It also involves transfer of power downwards from higher levels to lower echelons of society, while building capacity and social capital of the rural community where development is targeted (Ray, 1999; Shucksmith, 2000). The Endogenous Development Magazine (July, 2010) defines endogenous development (ED) as development based on local people's criteria for development, taking into account their material, social and spiritual wellbeing. It posits that popular participatory approaches of integrating local knowledge into development interventions have been shadowed by materialistic bias. It further argues recognizing local peoples' world views and their livelihood strategies reflect sustainable development as a balance between material, social and spiritual well-being. ED seeks to overcome the bias of common development approaches by making peoples' world views and livelihood strategies the starting point for development, thus making development meaningful to the beneficiaries (Ray, 1999). As ED is based on local strategies, values, institutions and resources, priorities, needs, and criteria for development, it may differ from other communities and that of development workers. ED advocates for pursuing development that balances the needs of social, spiritual and material wellbeing as illustrated in the Figure 2.2.

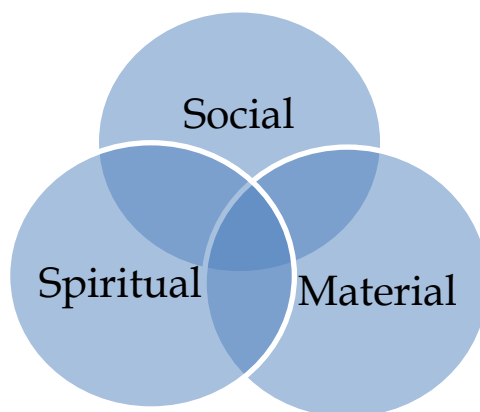


Figure 2.2 Balance between the three interacting worlds

Concept adopted from Endogenous Magazine (July, 2010)

In line with the endogenous development *Endogenous Livestock Development* (ELD) calls for putting livestock keepers at the centre of their own development, facilitating from outside and helping marginalized and poor livestock keepers gain recognition and support for their initiatives through networking, research, advisory services, training and advocacy (Mathias, 2008). Similarly, ELD in pastoral systems means recognizing pastoralists' indigenous knowledge, strategies, priorities of their production and social system. Pastoral development in ELD is using this existing system as a base upon which suitable technologies are combined to enhance pastoralists' wellbeing (Homann, Rischkowsky, Steinbach, Kirk, & Mathias, 2008).

Several initiatives have been taken by livestock keepers around the world including initiatives driven by livestock keepers themselves to address their own problems, using local resources, avoiding pollution while conserving environment and consuming only small units of costly inputs but were able to generate competitive levels of outputs and are profitable (Mathias, 2008). For example, Borana pastoralists in Ethiopia have successfully negotiated with the administration and have regained control of land utilization in a balanced manner thus paving way for conservation as well as cultivation (Homann et al., 2008). However, these initiatives have received little recognition due mainly to politicians, donors and investors preferring large prestigious projects rather than building on local initiatives (Mathias, 2008).

Mathias (2008), remarks that current decisions and policies on livestock development are made in capital cities without the empirical knowledge of herder villages and pastoralist encampments. As a result these policies fail to recognise the initiatives and provide support the pastoralists need. Small-scale livestock keepers and pastoralists should be included in decision-making on issues such as use and management of natural resources; access to land, credit and market; intellectual property rights; research and trade priorities; and protection of rural environment that have direct bearing on their wellbeing (Mathias, 2008). In many countries the awareness of the values of pastoralism still remains poor, and policies and laws disadvantage pastoralists (Rodriguez, 2008). Therefore, there is a need to bridge the divide between technical and social scientists, pastoralists, development planners, policy makers and developments partners to understand each other's view point, obtain evidence, and

translate programs into action. Policies and programs that facilitate pastoralists to make a decent living which satisfies them economically, socially, culturally and one that does not jeopardize the environment and biodiversity sustainability is required (Bayer & Bayer, 2002; Nori & Davies, 2007; Rodriguez, 2008).

2.6.2 Alternative holistic approach needed for pastoral development

Across Asia there appears to be a tradition of livestock research focusing more on the technical aspects of enhancing output with little focus on the socio-cultural aspects (ILRI, 2007). Such an approach tries to import technologies from the North and apply them without considering the socio-cultural and resource endowment differences. This is partly attributed to lack of training of young researchers and development workers who are trained in natural science at college and dispatched into the social world (ILRI, 2007). However, at other places such as central Asia, livestock research has shifted from biological science to consideration of social and conservation issues in response to shifts in political power and interest of funding sources (Kerven et al., 2011).

Rangelands inhabited by agro-pastoralists are an embodiment of one of the most multi-disciplinary fields where joint efforts of policy makers, animal husbandry experts, land management experts, agronomists, development partners and agro pastoralists are needed (Ning & Richard, 1999). There is an urgent need to incorporate social sciences into rangeland and pastoral systems' research. Some authors suggest that focus needs to shift from the more dominant paradigm of production-oriented modalities to holistic approaches that include people and their world views and socio-cultural values in addition to bio-physical environment, biodiversity and production. More inclusive participatory approaches need to be promoted to bridge the gap between disciplines and divergent world views to accurately assess social and rangeland capital and unlock the potential in them (Ning & Richard, 1999). Lessons need to be learnt from others who do it well, for example in Switzerland. The Swiss mountain policy, as reflected in their federal and cantonal laws, provide for both the protection of nature and people's right to an adequate socio-economic development (Biber, 2008; WISP, 2008). It is inclusive and balanced in management and use. Direct and indirect payments are made to farmers in the mountains to encourage practices

such as mountain grazing that improve bio-diversity, as well as for restraining certain actions that might be undesirable environmentally. Additionally, projects are encouraged in cheese production, many in traditional ways, which together with Swiss alps' landscapes became tourist attractions (Biber, 2008; WISP, 2008).

There is also a need for development planners to have a clearer understanding of common property regimes and an holistic analytical framework for pastoral development that includes building capacity, developing and strengthening rules and regulations for common property management, managing key sites, and developing socioeconomic safety nets (Agrawal & Redford, 2009) and drought contingency measures (Niamir-Fuller, 2005). In addition, reforms for increased security of transhumant claims to land, together with serious consideration for livestock mobility, common property management, and roles informal institutions play in successful management of range resources through flexible yet controllable access regimes are advocated (Niamir-Fuller, 2005). Scoones (2008) indicated that clear policies are needed that facilitate and provide opportunities for pastoralists to increase their income-earning options such as education and policies that remove the constraints preventing pastoralists from achieving their full economic potential. Decentralization and local empowerment with integration of conservation with pastoral grazing are recommended by others (de Haan, 1998). de Haan (1998) suggests for sustainable resource management, centralized control and uniform blanket application of single component technology should be avoided.

ILRI (2007) identified livestock as one of the most effective means of reaching the poor because not only are most of those tending livestock women on whose efforts the welfare of family rests, but livestock are also found to be more equitably distributed among poor than land. However, the report (ILRI, 2007) cautions that poverty reduction approaches taken through livestock must take into account the inability of the poor to take risks because of their small asset base. Owing to their limited resource endowment the small-holder livestock keepers and pastoralists are vulnerable to external shocks. The report calls for policies to allow the poor to respond to the opportunities without exposing them to risk and to develop their capacity to respond to shocks and threats. Some literature also highlights the importance and need for

inter-disciplinary research involving collaborating partner stakeholders that must be identified and engaged from the beginning of the research projects. This is a shift in paradigm from the traditional reductionist natural science approach, where researchers in isolation focused more on increasing production and productivity, to multi-disciplinary approaches addressing social and poverty issues (ILRI, 2007; Kerven et al., 2011).

The report (ILRI, 2007) further notes that there has been a wide gap between the researchers and decision makers in the past, each ignorant of the others' need, working in isolation. It is recognised that research now has a greater role to play in policy formulation, evaluation and informing decision makers at all levels, local to national. It suggests for future research programs and projects to have notable impacts on the poor, research has to be based on the needs of the poor and conducted in collaboration with all relevant stakeholders including the poor (ILRI, 2007). The strategy and action plan identified the following five point actions to improve effectiveness of pro-poor livestock research in south and South East Asia and China:

1. Raising awareness and promoting the need for livestock research for poverty reduction.
2. Developing livestock knowledge resource for Asia.
3. Defining regional research issues.
4. Working in partnership.
5. Capacity strengthening (ILRI, 2007).

However, at the local level, policies need to be carefully designed to enable holistic development with a better understanding of local people's needs through persistent engagement in dialogues. Development approaches and policies should put people, especially the poor and potentially marginalised groups such as pastoralists, at the centre of development planning, with recognition of their goals and aspirations (Chambers, 1997; Davies & Bennett, 2007). Past policies have undermined pastoral smallholders' ability to adapt and transform their livestock keeping practices when they find the right technology and market opportunities (Stur, et al., 2013). Instead, livestock husbandry policies are dominated by messages disseminating market and pasture information and not about enhancing pastoral access rights (Brottem et al., 2014). Given its historical exposure and adaptation to changing environments,

pastoralism turns out to be far more economical than irrigated crops such as sugarcane and cotton (Behnke & Kerven, 2013). Therefore, a good understanding of ground realities and pastoralists' need is paramount to designing successful interventions (Kerven et al., 2012).

2.7 Livestock Development in Bhutan

2.7.1 Livestock production systems

In Bhutan, the local breed (commonly known as Siri, Nublang or Thrabam), a *Bos indicus* type cattle and Mithun (*Bos frontalis*) crossbreds make up the majority of livestock population (Dorji, 2011b). Thrabam and Mithun crossbreds (Mithun × Thrabam) make up 82% of total bovine population excluding yaks. Thrabam and Mithun crossbreds are very hardy breeds and easy to raise in an extended system. The milk production of pure Thrabam breed is low but when crossbred with Mithun the crossbreds display high hybrid vigour in milk production, butter fat content, as well as in draught ability. While some crossbreds of European dairy breeds are found in the peri-urban areas both in temperate and sub-tropics, in remote rural areas local cattle constitute the predominant breed.

Table 2.2 shows the livestock population and major species composition in Bhutan.

Table 2.2 Livestock population in 2008

Species	Number	Percentage*
Siri or Thrabam cattle	184014	42.00
Mithun Crossbreds cattle	68885	15.72
Jersey & Brown Swiss Crossbred cattle	55696	12.71
Yaks	40482	9.24
Other livestock	89066	20.33
Total	438,143	100

Source: Ministry of Agriculture, 2009. * Excluding poultry, dogs and cats

Agriculture, including livestock rearing, is largely practised in a subsistence mixed farming style in Bhutan. Rural and peri-urban households grow crops as well as keep animals made possible by the micro climates at different agro-ecological zones. All the domestic ungulates in Bhutan are reared in pastoral systems, grazing in crop fields and communal pastures or forests. Most of these local cattle and all of the yaks are reared through transhumance pastoral system.

Four major livestock systems can be identified: sedentary mixed farming system, local circular migration, vertical cattle based transhumant agro-pastoralism and alpine yak transhumant pastoralism. The sedentary system is more common in the subtropics and warm temperate zones where cattle are either grazed in the forests around the village or in their fields after crops are harvested. This system is more commonly found in rural areas or in peri-urban areas and similar to mixed farming systems found in other countries of the South.

The animals are brought home in the evening and usually tethered in the field or housed to collect their waste. The main source of livelihood for these farmers is from crop farming. Only small numbers of cattle, usually the crossbreds with European dairy breeds, are kept in the peri-urban areas whereas in remote areas local indigenous breeds are kept. Many of these farmers are not necessarily totally dependent on livestock as they have either larger crop fields, fruit trees or some alternative livelihood. However, cattle do form a major source of cash income for the peri-urban farmers.

The local circular migration system involves maintaining larger herds of cattle and practicing circular migration around the village and the fields. The main source of livelihood for these farmers is crop farming, although, major cash generation is often from the sale of livestock produce. The animals are brought to farms after crops are harvested to make use of crop residues and weeds as well as to fertilize the field. The herds move from one place to the other in pastures around their village but do not move to other districts. These villages are usually located in remote areas and do not enjoy the luxury of the market, and access to extension services is also difficult.

The yak transhumant pastoralism is found in alpine regions with hardly any agricultural land for crops. The yak herders are mainly dependent on yaks and yak products. In the high altitude of Bhutan, especially the alpine region, livestock is the mainstay of the rural livelihood. The alpine yak herders live a pastoralist life and depend almost entirely on the rearing of Yaks. They move their yaks to an alpine altitude as high as 5000 m in summer, and drop down to as low as 3000 m in winter, in tandem with both rainfall and the availability of pasture upon which yaks can graze. The summer pastures are grazed from June to September, and winter pastures from

November to March (Gyamtsho, 1996). Yaks are mainly kept for high value yak meat, locally known as *yaksha*, as well as for butter, cheese, fibre and hides. Yaks also contribute draught power and are used as a means of transportation during migration, as well as providing a portage service for tourists (Gyamtsho, 1996).

Rearing yaks is part of Bhutanese culture and has been practiced primarily by the *bjop* communities for centuries. Yak herders play an important role in preserving Bhutanese culture as well as having an informal security function; guarding the borders in the north from encroachment. This system has been studied with the majority of literature relating to the transhumant yak system (Gyaltshen & Bhattarai, 2000; Gyamtsho, 1996, 2000, 2002; Ura, 2002; Wangdi, 2002). These yak herders hardly own any agricultural land for crops and many either herd for elite families living in urban areas or rent pasture rights from these families. The yak herders are mainly dependent on yaks and yak products. They usually keep only yaks with a few sheep and goats.

The TAP cattle system is vertical transhumance and is synchronised with alpine yak system, such that, in winter when yaks descend to temperate pastures cattle move further south to sub-tropical pastures, and then ascend to temperate pastures as yaks retreat back to alpine pastures in summer (Ura, 2002). Most of these local cattle and all of the yaks are reared through transhumance agro pastoral system grazing in rangelands.

In Bhutan TAP herders keep large herds of Thrabam cattle and Mithun crossbreds with horses and sometimes pigs, goats, sheep and dogs. Thrabam and Mithun crossbreds comprise 82 % of the bovine population (Table 2.2, p 60), the majority of which are reared through transhumant pastoral systems. European breeds are not commonly found in such herds owing to the extensive nature of pastoral system where animals are let loose in the forests to graze with little supplementary feed except for occasional salt supplements. TAP herders are mainly dependent on these cattle.

2.7.2 Archaeological and historical evidence of ancient pastoralism in Bhutan

Literature evidence makes it plausible to suggest that cattle herding, with transhumance as the predominant system, formed one of the primary vocations of earlier Bhutanese people. Transhumant alpine yaks system and TAP are likely not only the oldest production sectors that early Bhutanese adopted but it also happened to be the sector that early theocratic and initial monarchic governance system relied on maintenance of the state system. It was not until other agricultural and non-agricultural alternatives became possible that people could establish more sedentarised lifestyles. The following historical information on movement of people into Bhutan provides confirmation to the above theory.

The first signs of people herding cattle in the mountains and gradually moving down to fertile valleys were noted as early as 4000 years ago in Bhutan (Meyer, et al., 2009). Based on a palynological study, about 4000 years ago in Bhutan there was a sudden disappearance of juniper and rhododendron pollen, the immediate onset of pollen input from cereals; and a clear pattern of over-grazing, trampling and peat deterioration (Meyer, et al., 2009).

Pastoralism was widespread in the Himalayan range by the eight century (Miller, 1995). Pastoralism and transhumance in the Himalayan region occurs in areas that are remote and forested and in open highlands where cropping lacks comparative advantage. Recent evidence suggests pastoralism in Tibet started some 8000 years ago during the mid-Holocene climatic optimum (Miehe, et al., 2009).

Indeed the rangelands in Tibet (Miehe, et al., 2009) and Bhutan (Ura, 2002) are said to have been created by people through bush clearance, as opposed to nature given. Pastoralism and the nature of rangeland creation in Nepal have also been described in a similar fashion (Banjade & Paudel, 2009; Goldstein, 1974; Macfarlane, 1989).

While scholars (Chakravarti, 1981; Dorji, 2003) differ in their views on the original inhabitants of Bhutan, both agree that irrespective of their origin, the original inhabitants were good cattle herders. Chakravarti (1981) claims the Khengpa speaking people of Zhemgang in the central east were the first inhabitants of Bhutan and that

other groups who he called *Bhotas* migrated from Tibet, with the majority arriving in the ninth century. However, Dorji (2003) contends that *Lhops*, a tribal group in south western Bhutan, were the initial inhabitants of Bhutan. Chakravarti (1981) argues that *Khengs* and *Lhops* were pushed to the south of the country when powerful *Bhotas*, who outnumbered them, occupied the north. According to archaeological evidence the *Bhotas* started descending to Bhutan with cattle some 4000 years ago (Meyer, et al., 2009). This further affirms that cattle raising and pastoralism formed the primary vocation of early Bhutanese.

2.7.3 The role of livestock in Bhutanese economy

The raising of livestock forms a crucial component of the mixed farming system in south Asia because the animal manure contributes to soil fertility and, therefore, enhances crop production (Thomas, et al., 2002). Similarly, in Bhutan, livestock form an integral part of the agricultural system, contributing not only to soil fertility and draught power, but also to the diet of farmers. Overall, about 90% of the rural Bhutanese population keep livestock of one kind or the other (MoA, 2009b). The husbandry of these animals is either well integrated into the cropping system or engaged in seasonal transhumance synchronised in a way that different species occupy different agro-ecological zones at different times of the year with changing temperatures.

Table 2.3 Import of selected livestock products between 2002 and 2008

Item imported	Year 2002	Year 2008
Beef (MT)	1,547	3,671
Pork (MT)	639	1,352
Chicken (MT)	560	561
Milk (000'litres)	151.9	1,657.2

Source: PPD, (2008)

In Bhutan the livestock products, like butter, cheese and meat, form an important component of the people's diet. The demand for these products has grown over the years. Table 2.3 shows the increase in imports of selected livestock products between 2002 and 2008.

There has been a substantial increase in the importation of livestock products into Bhutan in response to the rise in demand over the years. The increase in imports, especially meat products, is because the majority of Bhutanese are Buddhist and carry strong sentiments against killing (Tshering, 2008), therefore, there is little slaughtering within Bhutan and all of the meat is imported from outside. Moreover, more Bhutanese are changing their eating habits and including more meat, eggs and milk in their diet. This, undoubtedly, is improving their health status with the inclusion of more energy and protein sources in their diet. This is evidenced by Bhutan's achievement of halving the percentage of underweight children under five years old, a component of Millennium Development Goal (MDG) on *Eradicating Extreme Poverty* and the Ministry of Health's concern over increasing lifestyle related diseases (RGoB, 2009b; UNDP & RGoB, 2008). It is projected that the population of Bhutan will grow from 695,822 (projection for 2010) to 809,397 in 2020, an increase of 16.32%, (NSB, 2007a) which will mean more demand for livestock products. These figures indicate that livestock related policies, programs and legislation should be designed more strategically to provide an enabling environment for livestock keepers with technical and financial support to increase production.

In Bhutan, agriculture, livestock and forestry sub-sectors are grouped under the Agriculture Ministry and referred to as Renewable Natural Resources (RNR) sector. Over the years the share of RNR sector to national GDP has been in decline including the contribution from livestock to the national GDP that has also fallen from 8.4% in 2001 to 6.6% in 2006 (Table 2.4. p 64). The RNR sector's share to GDP has significantly declined from being the leading sector with 56% in 1980s to 42.2% in 1993 (Dorjee, 1995) and around 20% in the last decade (NSB, 2007c).

Table 2.4 Share of RNR Sector in national Gross Domestic Product

Sector	2001	2002	2003	2004	2005	2006
Overall RNR	26.4	26.1	24.8	24.3	22.6	21.4
Agriculture	11.7	11.4	10.9	10.8	10.1	9.5
Livestock	8.4	7.6	7.4	7.2	7.0	6.6
Forestry & Logging	6.2	7.1	6.6	6.3	5.5	5.3

The general decline in RNR sector's contribution is, however, not in its gross terms but because of the increased size of the economy and booming construction sector with the establishment of several hydropower dams. Statistics show that the gross share of GDP from RNR sector, as well as the livestock sub-sector, is increasing (Table 2.5).

Table 2.5 Gross contribution of RNR sector to national GDP (million Nu.)

Sector	2001	2002	2003	2004	2005	2006
Overall RNR	6037.0	6884.1	7292.3	7864.0	8255.5	8858.9
Agriculture	2681.9	3000.4	3191.7	3480.7	3684.9	3927.9
Livestock	1930.0	2007.0	2163.0	2331.2	2556.7	2730.4
Forestry & Logging	1425.1	1876.7	1937.6	2052.1	2013.9	2200.6

Source: NSB, (2007b)

The contribution from the livestock sub-sector has increased by about 42% from Nu. 1930.0 million in 2001 to Nu. 2730.4 million in 2006 (NSB, 2007c). Therefore, livestock has a great potential for contributing to pro-poor rural livelihood development (MoA, 2009b) in alleviating poverty and contributing to achieving the country's development philosophy of Gross National Happiness.

2.7.4 Livestock Development in Bhutan

The systematic livestock development programs in Bhutan started in the 1960s with initiation of strategic Five Year Plans (FYP) for development. In the livestock sector, the main theme was to push for increased livestock production through enhanced productivity and production, to be achieved by adopting exotic dairy breeds and cross breeding with local indigenous breeds. A range of cross breeding programs were introduced and promoted exotic breeds of cattle, pigs and poultry in Bhutan (Samdup, Udo, Eilers, Ibrahim, & van der Zijpp, 2010; Samdup, Udo, Ibrahim, & van der Zijpp, 2010; Udo et al., 2011). However, after more than five decades of livestock development, Bhutan has not met its domestic demand for livestock products, and local cattle continue to be the dominant breed with the majority being raised in TAP systems today.

One of the challenges to livestock keepers in Bhutan is the human-wildlife conflict and there appears to be very little solution in sight. The RNR census 2008 conducted by the

Ministry of Agriculture indicated that about 5710 animals inclusive of poultry birds have been predated and killed by wild animals, incurring huge losses to the farmers. Similar yield losses, as a result of wild life depredation, were also incurred in crops (MoA, 2009a) and this has impact on TAP households' food security.

2.7.5 Land use policies and the Land Act of Bhutan 2007

In Bhutan, although pastoral societies carved out rangelands from forest to provide grazing areas and water holes for livestock a long time ago, early forms of recording and awarding entitlements have only occurred since the 1800s (Ura, 2002). A number of reforms and land use policies followed suit including the Land Act of Bhutan 1979, Draft Pasture Policy of 1989 and the Land Act of Bhutan 2007. These reforms had one common objective, to centralise and make *tsamdros* state land and discourage inter-Dzongkhag transhumant movement especially for TAPs. Although earlier policies and legislation attempted to restrict inter-Dzongkhag cattle migration, the subtexts were often subtle and the approach indirect, such as encouraging adoption of exotic cattle breeds such as Jersey and Brown Swiss cattle through crossbreeding programs. Recent reform sought through Land Act 2007 indicated a more radical and targeted approach with a clear intention to cease inter-Dzongkhag cattle transhumance in ten years after the new land law came into effect. Although the new Act commits to leasing back *tsamdros* to people keeping livestock after it has been nationalised (Kreutzmann, 2012b), there is one section of the Act that is antithetical to transhumant agro pastoralists' traditional livelihood practice.

Section 239 of Land Act of Bhutan 2007 states:

After 10 years from the date of enactment of this Act, *Tsamdro* shall be leased only to a lessee who is a resident of the Dzongkhag where the *Tsamdro* is situated.

This section of the Act will particularly affect the cattle TAP system. The Act maintains status quo for alpine herders, as they are considered crucial as informal border guards, keeping an eye on the illegal encroachment across the border. The implication of Section 239 is those people who used to migrate to different districts with their cattle seasonally cannot do so by 2018. This has placed those farmers practicing TAP in a

predicament, threatening their livelihood and the way of farming which has been practised traditionally for centuries.

Over the years Bhutan's kings, especially the third king (reign 1952 -1972) onwards, have always encouraged and promoted policies that enhance citizen empowerment and making their voices heard by policy makers. Concerted efforts by the kings, from initiatives to decentralise decision making, to touring the nation on foot, to visiting, talking and listening to people, about their aspirations in life and problems, have been exemplary in connecting local peoples' aspirations and problems with national policies. The gestures and initiative from the kings need to be translated into action and the main engine to realise this visions rests on the government, the bureaucracy and local leaders.

However, it is yet to be understood if such noble policy framework was translated into action by practitioners. The disconnect, apparent in LA 2007, of putting a definite timeline for cessation of TAP practice, and the reality on the ground, questions if the policy of decentralisation and making public voices heard was upheld. It is not clear whether livestock keepers were consulted or given sufficient opportunity and adequate forums to voice their concerns. Such policies and legislation intentionally or not undermine the age old systems of livestock production such as TAP.

2.8 Summary

The overwhelming issues confronting pastoralism is implied to be inappropriate policies that restrict their movement. Policies either encourage sedentarisation, herd reduction and cropping or prioritise donor supported conservation projects and enclose CPRs as protected areas excluding or substantially restricting access. Some encouraging signs are reportedly occurring in some countries with increasing recognition of significant roles pastoralists play in terms of ecosystems services and increased understanding of pastoralism in terms of human-livestock-land (CPRs) interactions. These positive signs are, however, far from ideal. Policies, based on inappropriate concepts imported from different systems and directly applied in totally different contexts, continue to plague traditional pastoral systems.

The common theme across pastoralism, CPRs and development (rural) are recurrently to do with policies or models on which these policies are based. Another overarching issue was lack of or insufficient citizens' engagement to meaningfully negotiated policy, plans and programs. It is implied the number of issues that affect poor people who inhabit the rural and remote areas, such as the pastoralists, are due to donor inspired policy and programs, drawn from western concept, implemented though a top-down approach in a state hegemonic process.

Little effort has been made to find out the root causes and the processes that cause the domino effect of degradation of rangelands or grazing resources. The issues that confront the herders and cause these effects receive less attention, other than the superficial out right claim that herders and their transhumant pastoralism based livestock are culprits of environmental degradation. Little has been done to view these *pastoralists as victims of cross borders animals diseases, degraded environment and natural calamities*. While it may be wrong to romanticize pastoralism for the challenges it presents to the pastoralist families, effects of overgrazing in poorly regulated (where rainfall is reliable) pastures and difficulty the extension agents face in delivering services owing to remoteness of encampments are real; it is also not right to associate pastoralism practice and pastoralists in general to environmental problems. Such ill-informed conclusions and misconceptions lead to inappropriate policies and programs that have huge bearing not only on rangeland management but also on livelihood of pastoralists. It is, therefore, crucial to understand the process that lead to poorly managed practices resulting in environmental problems (Bonte, et al., 1996; Miller, 1995).

Literature across these disciplines, covering pastoralism, CPRs and rural development, all indicate the need for more meaningful engagement with people and helping people determine their choices based on their aspirations for the future. This needs proper understanding and appreciation of local context, socio-economic and cultural values of local people as opposed to a reductionist neoclassical capitalist way of considering people as a means of achieving material ends. In any case, be it in studying the specific effect of grazing on forest or more general CPRs governance institutions, historical

contexts are increasingly encouraged to inform the present strategy and future direction.

The literature review also revealed a lack of research depth on how modern day pastoralists are adapting to national socio-economic development and environmental changes. Therefore, this thesis will fill the knowledge gap on contemporary changes in transhumant pastoral societies. The research provides a comparative study to other Buddhist theocratic and government systems. In particular, it provides information on how national policies on land tenure can impact on transhumant agro-pastoralists.

CHAPTER 3

Methodology

3.1 Introduction

The purpose of this chapter is to explain the research design and methods used to collect and analyse the data. A review of social science research methodologies and data gathering techniques is provided followed by an explanation of the research design, selection of study areas and the methods used. This research followed an Interpretivist epistemology, constructionist ontology, inductive and qualitative approach based on grounded theory using individual in-depth interviews, semi-structured household surveys, focus group discussions and non-participant observation. The findings were triangulated and validated using these different data gathering tools and secondary statistical data available from the government agencies. Ethical considerations and some reflections of my role as a researcher are also provided.

3.2 Methodological approaches in social science research

3.2.1 Epistemology: Positivism verses Interpretivism

Methodological approaches in conducting social science research can broadly be categorized into epistemological and ontological positions. Epistemology refers to the nature of knowledge and the relation between the researcher and the researched (Mertens, 2005). Epistemological positions mainly deal with concerns such as whether social worlds can and should be studied following the principles, procedures and ethos of natural science (Bryman, 2004).

There are two general schools of thought on epistemological approaches to social science known as Positivism and Interpretivism. Positivism asserts that social worlds can be and therefore should be studied in the manner in which natural science is studied (Grix, 2001; Mackenzie & Knipe, 2006), with value free causal explanations (Mertens, 2005). In contrast, interpretivism contends that alternative research strategies are required, which respect the differences between people and objects of natural sciences, one that enables social scientists to understand the subjective

meaning of human beings and their social action (Grix, 2001; Mackenzie & Knipe, 2006).

3.2.2 Ontology: Objectivism versus Constructivism

Ontology refers to the nature of reality, whether it exists on its own or it is a social construct with multiple meanings locally assigned (Mertens, 2005). Ontology deals with the question whether social entities such as organization and culture should be considered as objective entities that have reality external to the social actors, or as social constructions built through the perception and actions of the social actors (Neuman, 2003). The former position is referred to as Objectivism and the latter as Constructivism, also known as Constructionism.

Objectivism asserts that social phenomena and its meanings are external and independent of social actors, whereas the Constructionism or Constructivism purports that social phenomena and their meanings are not independent but are rather continually accomplished by social actors (Corbin & Strauss, 1990). Constructivists view knowledge as social creation of the research participants, one that needs to be understood from the perspective of their lived experience (Mertens, 2005). Objectivism contends that reality is "out there" one that can be known with certain degree of probability but is limited by human ability to apprehend, while constructivists deny any foundational canons of establishing universal truth (Lincoln & Guba, 2000).

3.2.3 Strategy: Quantitative versus Qualitative

Strategically, social science research can be classified as either quantitative or qualitative or both depending on the type of data used. The distinction between the two is that the data for the former are mostly numbers, subjected to statistical tests and inferences drawn thereupon, whereas, in the latter, data are mostly non-numerical, in the form of words, meanings, experiences and perspectives (Babbie, 2001). Therefore, social scientists or researchers can choose positivistic objective quantitative or interpretivist constructivist qualitative or a combination of the two known as the mixed method approach.

Positivist researchers conduct objective research using precise quantitative data through experiments, surveys and statistical analysis. Positivists test hypotheses and seek rigorous and exact measures, while the researcher remains detached or neutral to the social aspect being studied (Neuman, 2003). Interpretivists on the other hand are sensitive to the context and try through various ways to understand and see the world from the perspective of the ones who live it. In the Interpretivists approach the researcher is subjective and immerses into the social environment and experiences it (Sandelowski, 2000). In contrast to the positivistic approach which is deductive, interpretive approaches are inductive (Grix, 2001). The basic difference between deductive and inductive approach is illustrated in Figure 3.1. The inductive approach is a logical model that moves from specific findings to more generalisations, that is, from concrete empirical observations to discovery of a general principle or abstract ideas (Babbie, 2001; Neuman, 2003).

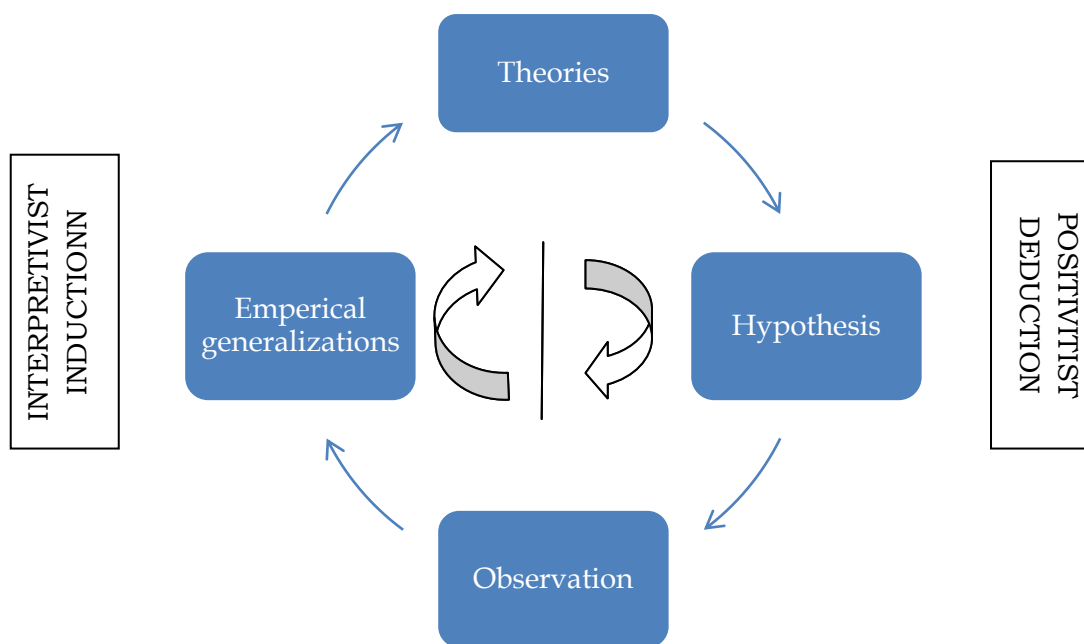


Figure 3.1 Illustration of inductive and deductive approach (Modified from Babbie, 2001, p.32)

In contrast, the deductive approach, also a logical model, begins from abstract ideas and general principles, and works towards concrete empirical observations to be able to test the ideas. In other words, in positivistic deductive traditions, the specific expectations of hypotheses are already developed based on general principles, prior to onset of data collection process (Babbie, 2001; Neuman, 2003).

The basic difference between the quantitative and qualitative methods relate to the approach, type of data gathered and its interpretation. Qualitative approaches usually tend to generate theory from data gathered and analysed, whilst quantitative approaches generally develop a hypothesis to be tested (Bryman, 2004).

Although there has been much debate on which traditions reign supreme in doing research, both approaches have their special place and serve some specific purposes.

The fundamental differences in quantitative and qualitative methods are illustrated in Table 3.1 (p 72):

Table 3.1 Fundamental differences between Quantitative and Qualitative research

Category	Quantitative	Qualitative
Principal orientation	Deductive Theory testing	Inductive Theory generating
Epistemological position	Natural science model Positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism
Level of issues dealt	Usually tackles macro issues	Tends to analyse micro issues
Research aims	Aims to identify general patterns and relationships.	Aims to interpret events of social, historical and cultural significance.

Source: Bryman, (2004, p.20), Grix, (2001, p.34)

Sofaer (2002), contends that the increasing use of more rigorous qualitative research methods parallel to the development in social and policy sciences, testifies *'the need for more in-depth understanding of naturalistic settings, the importance of understanding context, and the complexity of implementing social change'* (Sofaer, 2002, p.329).

While medical or mechanical experiments cannot be done qualitatively, human perceptions and their social surroundings cannot be measured realistically or mechanically in a quantitative way either. As Neuman (2003, p.16) remarks on qualitative or quantitative methods: *'... each has its strengths and limitations, topics or*

issues where it glitters, and classic studies that provide remarkable insights into social life.'

Neuman (2003) and Grix (2001) similarly argue that the best research often combines the features of both qualitative and quantitative approaches to paint a holistic picture.

All research, either quantitative or qualitative, can only capture and reveal facts as based on the researchers understanding, perspective, data and analytical tools used. In other words there is no such thing as absolute truth that any research tradition can capture. It is highly contextualised and is the best possible explanation based on the knowledge and data available at that particular time (Mays & Pope, 1995).

Hence, methodology in social science may revolve around carrying out the research in a positivistic quantitative way, as is the practice in natural science, and/or in the interpretivistic qualitative way. Patton (1990), drawing from the pragmatic tradition, contends methodological choices need to move beyond the orthodoxy prejudices influenced by specific disciplines to paradigm of choices (Patton, 1990). The paradigm of choices advocates methodological choices to be based on the situation in hand, the research questions, the objective of the research and the resources availability, rather than merely trying to fulfil the epistemic canons (Patton, 1990). This means the choice of methodology should be creative, adaptive to the ground situation with various combinations that equip the researcher with the best possible approach to find answers to the research questions.

3.2.4 Mixed methods: Qualitative and Quantitative

Qualitative and quantitative methods can be applied in some sequential order in research projects to better inform the situation or for more comprehensive understanding of the issue under scrutiny (Lingard, Albert, & Levinson, 2008). However, there appears to be no established instructive standards as to which method should precede the other; rather they often are used to supplement as well as complement each other.

Qualitative enquiry can be used to probe into the meanings and reasons behind the observed patterns obtained quantitatively. Alternatively, quantitative techniques can be used on the phenomena or categories generated through qualitative technique, in order to gain an overview (Malterud, 2001).

Combining qualitative and quantitative research techniques in an interactive way offers an avenue to build knowledge on knowledge (Finan & van Willigen, 1991). For example, focus group and rapid appraisal can be combined with survey, where former methods obtain access to local socio-cultural idiom, including relevant categories, perceived problems, and general patterns of variation that help prepare for the quantitative survey. Finan and van Willigan (1991), mention that mixed methods are commonly used in agricultural research where one technique complements the other. In-depth qualitative inquiry can be employed to get the meanings and implications behind the patterns and findings produced through quantitative techniques and can, therefore, provide good means of triangulation (Malterud, 2001).

Triangulation, in the simplest terms, means looking at something from several angles rather than just one way (Sandelowski, 2000). Triangulation can either be triangulation of measure, where researchers take multiple measure of single phenomenon, or triangulation of observers, where several observers observe the same thing, or triangulation of theory, where a single phenomenon is subjected to different theories, or triangulation of methods, where quantitative and qualitative styles are mixed to generate a holistic explanation of a phenomenon under study (Sandelowski, 2000). Triangulation provides a way to increase understanding of complex phenomena and goes beyond mere confirmation of figures from different sources (Malterud, 2001).

3.2.5 Grounded Theory

Grounded theory is a social theory, one that is rooted in observation of specifics and concrete details (Neuman, 2003). It is a qualitative data analysis approach which aims to generate theory out of research data, while achieving a close fit between data and theory (Bryman, 2004). Grounded theory approach is iterative, as data collection and analysis takes place simultaneously (Furze, DeLacy, & Birckhead, 1996). Grounded theory is used to generate rich in-depth understanding of social phenomena under study based on systematic analysis of data (Lingard, et al., 2008).

This study used grounded theory approach to elicit themes, patterns and categories from the data whilst analysis and subsequent data collection alternated sequentially.

3.3 Research Design

The broad methodological approach of this study was an interpretivistic qualitative inductive approach drawing inspiration from the grounded theory tradition using a range of research instruments. Whilst some statistical figures were important to draw some patterns of change occurring with the TAP practice in Bhutan, it was more important to explore the reasons behind the developing trends, in order to provide meaningful results and policy suggestions. My rural childhood experience, during which I have closely been associated with TAP communities, and my current position as a government policy planner, inspired me to explore and gain an in-depth understanding of the practice and likely implications of changes to their livelihood.

This study was partly descriptive, looking into the origin of TAP and how transhumance and pasture systems have evolved, and partly explanatory explaining why such practices existed and looking at the changes and reasons driving these changes. This study used a multi-disciplinary research built on empirical data and literature around natural, ecological, conservation, livestock science, pastoralism, policy science, CPRs, participatory and sustainable livelihood approaches and socio-cultural domains. Over the course of research field work a number of social sciences research techniques were employed. Multi-disciplinary approaches are a key to capturing the holistic picture of issues under study. Whilst single discipline approaches, such as ecology, can relate species level unique features with ecosystems (Basurto & Ostrom, 2009), it is important to pay attention to the process of subject development and more in-depth analysis of common property management from historical contexts (Agrawal, 2003). While quantitative researchers may find correlations of variables, and statistical significance based on number of case studies; without a holistic approach these types of studies run the risk of losing in-depth knowledge, importance of context, history and complexity and diversity of an empirical world. Similarly, qualitative enquiry focused on micro level case details fail to make generalisations and relate to larger social phenomenon (Basurto & Ostrom, 2009).

Six research instruments were used in this study to answer my research questions as shown in Table 3.2. Although there are several other techniques which can be used as

outlined above, it was important for me to choose the research method that fits best in answering the research questions (Furze, et al., 1996)

Table 3.2 Summary of instruments used in this research

Research Question	Data sources
1,2,3,4	Broad literature review on pastoralism, pastoral society, challenges and opportunities, developing trends and its implications for policy and future development.
1,2,3	Structured household survey of communities in study areas to capture the socioeconomic dynamics of a typical transhumant agro pastoralist household.
1,2,3,4	In-depth interviews of herder and agency key informants.
2,3	Focus group discussions with select herder and downstream resident communities.
1,2	Secondary data analysis pertaining livestock or TAP based on documents and statistics available with government agencies.
1,2	Observation of the transhumant agro-pastoralist communities, encampments, and their social activities and social constructs.

In the following section a brief description of the study areas are presented.

3.3.1 Selection of Study Areas

The study areas covered four villages in the west and two villages in the central-east region of Bhutan that practise TAP. In the western region of Bhutan, Papali village under Chukha Dzongkhag, Bempu, Tshebji and Damchena villages under Paro Dzongkhag were covered. In east-central region Urci village in Chumey and Doshi village in Ura under Bumthang Dzongkhag were covered. The locations of the study areas are shown in the Figure 3.2 (p 88). The shaded areas show the Dzongkhags (districts) while the hatched areas indicate the geog (blocks). The locations of villages are indicated with stars.

Although Papali is under Dungna geog in Chukha Dzongkhag and therefore the geog shows it stretching to south, Papali village lies next to Bempu.

These six villages depend heavily on transhumant cattle and the majority of the current population continue to practice seasonal migration between summer and

winter pastures. In-depth interviews and household surveys were carried out in these six villages where the migratory herds originate from.

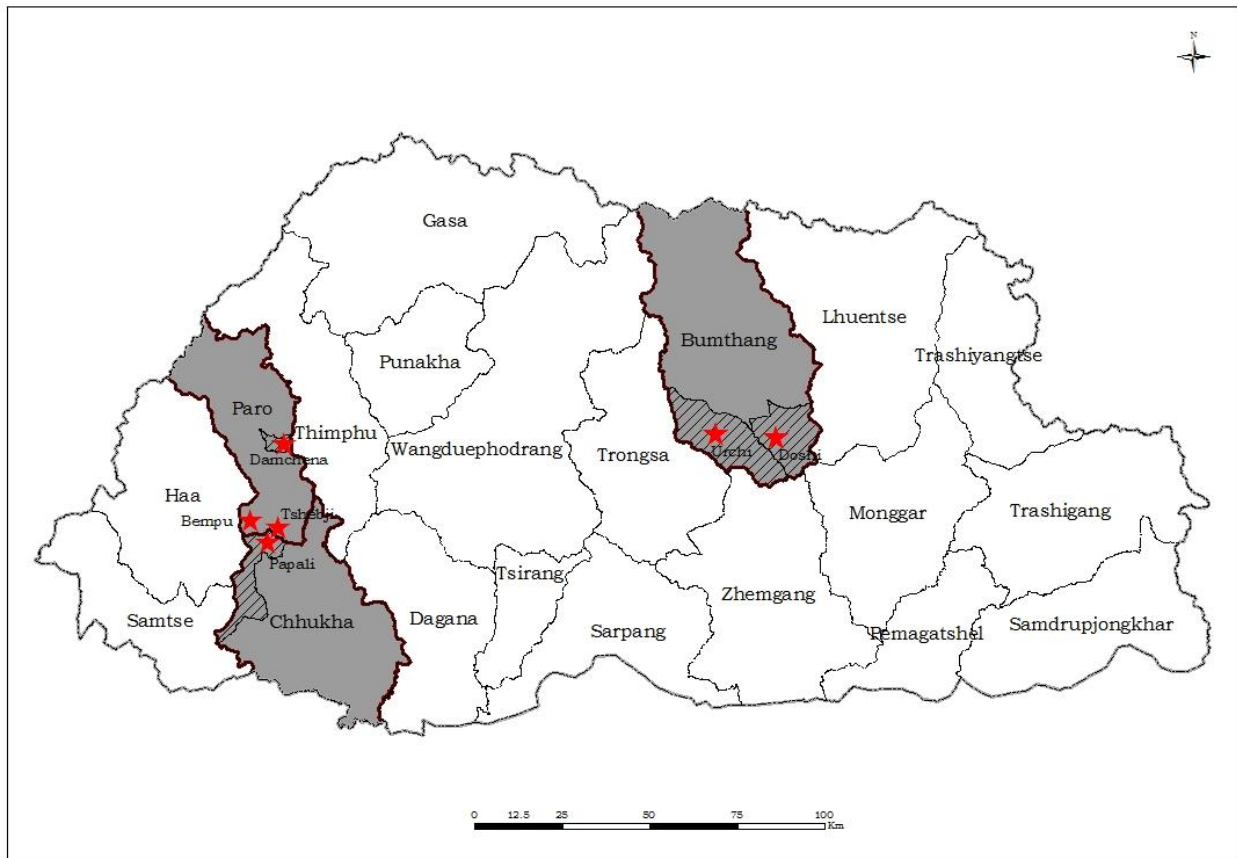


Figure 3.2 Six study areas in Bhutan

These methods were used to generate understanding on the historical perspectives and changes vis-à-vis people's aspirations for future amidst a backdrop of changes. The focus groups were conducted at different regions. While four focus groups took place with the herders, three focus group discussions were carried out in the south and eastern Bhutan where these herds move in winter. The objective of running focus groups with the downstream residents was to explore the issues of *tsamdro*-use-conflicts and gather perspectives and aspirations of the residents residing in the south, adjacent to the winter encampments of these migratory herds (Figure 3.3, p 77). A short summary of description of each village is given below.

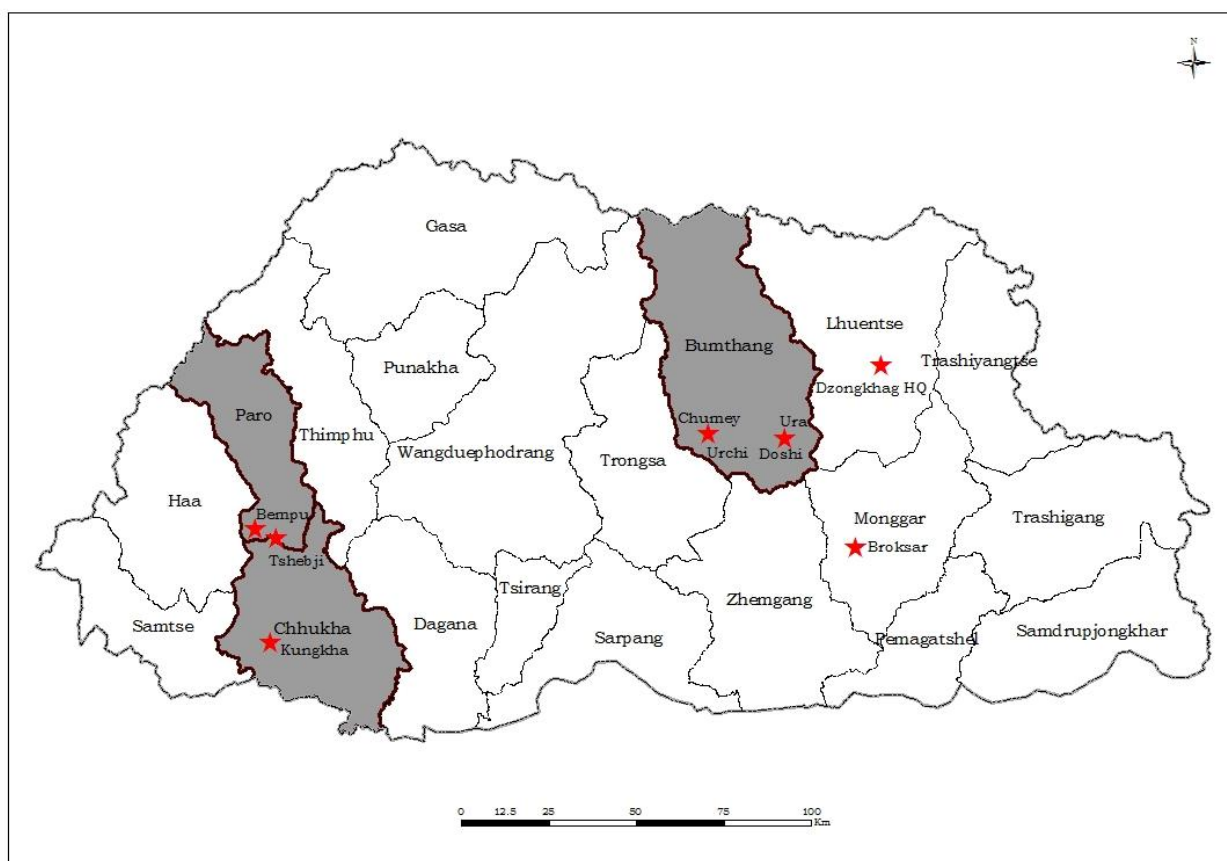


Figure 3.3 Areas where focus group discussions took place

The village of Papali, under Dungna geog in Chukha Dzongkhag with only nine households and a total of 52 people residing in that village, is the smallest community amongst the six villages studied. The nine households in this village raise cattle though only four households actually migrate south with cattle in winter. The other five households also move south during winter, however, they send their cattle with their neighbours and relatives from their village. In 2010, Papali had 260 head cattle comprising mostly of *Thrabam* and *Jatsha-Jatsham* (Mithun crossbreds) with few exotic breed crossbreds. Papali herders on an average owned 0.98 ha dry land and 0.13 ha of improved pasture per household.

Bempu village, under Naja geog in Paro Dzongkhag, is situated at N 27°14.713' E089°22.475'. The village settlement lies at 2812m while some of the summer camps are at 4000m. There were 14 households as per the record with the livestock extension centre, however, only 11 households existed on the ground during the field visit. When the household survey was conducted there were 63 people with an average of 6.3 persons per household. All the 11 households present on the ground had cattle

whereas only nine households actually practised transhumance with cattle. There were 458 head of cattle, 95.6% (438) of which comprised of *Thrabam* and *Jatsha-Jatsham*, and only 20 head exotic crossbreeds existed. On an average each household had 46 head cattle and owned 0.74 ha dry land and 0.21 ha improved pasture.

Tshebji is situated at an altitude of 2585 m and lies at N27°13.408' E089°26.289'. With discrepancies in records kept at Gup office (Local Government) and the Basic Health Unit (BHU), Tshebji had 36 households and 42 households respectively. Accordingly, the population varied with 371 and 219 people as per records with Gup office and BHU respectively. For the purpose of this research the records with the Gup office was used with all 36 households keeping cattle, while the interviews revealed only 11 households actually practised transhumance with cattle in 2010. The surveys of only 11 TAP herder households of Tshebji village in 2010 revealed 339 head cattle with average of about 31 animals per household. The breeds of cattle were predominantly of indigenous breeds with 291 head made up of *Thrabam* and *Jatsha-Jatsham*, and only 48 numbers of exotic crossbred cattle. The average landholding was 2.34 ha dry land and 0.03 ha improved pasture per household.

Damchena, at an altitude of 2880m, is situated about 1-1.5 KM from Paro Dzong (Fortress used as district head quarter) and the national museum. It lies at the heart of Paro adjacent to the fertile valley of Paro which is one of the rice bowls of Bhutan. However, Damchena can be viewed as quite a misfit in Paro. Although situated in close proximity to the fertile valleys of Paro, which produce substantial quantities of local red rice, Damchena has no paddy land. Other villages, particularly Jabana under Naja geog, and alpine yak herders' villages under Tshento geog also do not grow rice. These villages, unlike Damchena, are farther away from the centre Paro and situated at higher altitudes and have no irrigation facilities. Damchena is the land of cattle herders with all 19 households raising cattle though only six households were actively engaged in TAP practice. The household survey revealed Damchena on average had a little over 50 animals per household which is predominantly of *Jatsha-Jatsham* and *Thrabam* breed. They also keep larger numbers of horse and mules with average of 3.2 and 8.2 numbers respectively per household.

In the central-east region, Urchi village, situated at an altitude of 2873m, lies southwest of Bumthang Dzongkhag. It is located at N27°29.735' E090°40.013'. Compared to the study areas in the west, Urchi has a gentle to flat landscape with a wide valley. It had 52 households in total of which 47 households keep cattle, while only 6 households actively participated in transhumant agro pastoralism. The average household size found in the survey was 11. The household survey also revealed an average herd size of 65 head cattle per household amongst the pastoralists that practice transhumance.

Doshi, on the other hand, lies at an altitude of 3227m making it the highest village among the study areas. Situated at N27°28.550E 090°54.549', Doshi lies at northeast of Bumthang. At that altitude, Doshi is at the higher extremities of cool temperate zone nearing alpine zone (3600-4600msl) in Bhutan. There were 62 households in total and all raise cattle, but only 16 households actively practised transhumance pastoralism in 2010. The household survey revealed an average household size of 7.36 persons per household.

At the altitudes where these herders are located crop production is controlled by climate. The cool temperate to alpine climate only allows for a very short growing period, allowing for buckwheat, wheat, barley and potatoes to grow. Perhaps owing to the limitations imposed by the natural phenomenon, these inhabitants of high mountains have adapted their farming skills and raised cattle in transhumant pastoral tradition using natural pastures and forest for grazing. Most of the herders from western Bhutan and some herders from Urchi that go south to orange growing areas engage in the orange business during winter to supplement their income. However, transhumant agro-pastoralism has been their primary source of livelihood since time immemorial.

3.3.2 Fieldwork phases and selection of respondents

Two field visits were made during July-September in 2010 and July-August in 2011 with the first visit spanning about three months and the second over a month. Most of the interviews and household surveys took place in the first field work phase. Two additional agency interviews and some additional household surveys were conducted during the second field visit. The main purpose of the second field work was to run the focus group discussions.

Overall, 75 TAP households (30 female and 45 male) were surveyed using a semi-structured questionnaire. In-depth interviews were held with 24 herders (8 female and 16 male), and 6 government and 3 non-government agency informants (all male) (Table 3.3, p 81). Seven focus groups were conducted; four were with TAP herders and three were with downstream local residents living adjacent to transhumant pastoralists' winter camps and one with government livestock staff at Lhuntse Dzongkhag. In total 64 people comprising of 40 male and 24 female participants were engaged in the focus group discussions.

The aim of the quantitative household survey was to interview as many TAP households as possible focusing mostly on those that kept cattle and are practising or have practised TAP until recently. In some small villages, such as Papali and Bempu, the whole village population was surveyed, whereas in larger villages (Damchena, Tshebji, Doshi and Urci) only TAP households that were available and consented were surveyed. The households were purposively sampled to establish a picture of a typical TAP household largely dependent on cattle and seasonal transhumance.

Individual households for in-depth interviews were selected using purposeful sampling as follows:

1. Herders with extensive knowledge on migration
2. Herders recommended by others to talk to (Snow ball sampling)

The aim of the in-depth interviews was to talk to the transhumant agro-pastoralists and understand their world view, the changes they are experiencing and the challenges they faced. Many key herder informants were chosen based on their extensive knowledge which was gathered from the household survey. Purposive sampling was chosen over random sampling in this study to ensure participants had some experience with cattle migration. Others were recruited through the snowballing technique where one informant or group indicated that a particular herder would be helpful, who recommends the next potential key informant and so on (Noy, 2008). The main criterion for key informant selection was that the herder possessed substantial lived experience of TAP and had seen changes over the years. Generally the participants for the in-depth interviews were selected purposively to generate

knowledge and learning on the issue in question in the grounded theory tradition (Lingard, et al., 2008).

The nine government and non-government agency informants were chosen based on their knowledge of livestock development in Bhutan. Their experience and knowledge in forestry policies and rules, and direct or indirect involvement in the processes that led up to formulation of Land Act of Bhutan 2007 was also crucial to get insights on the issue.

Similarly, the criteria for recruiting focus group participants was that they were either active TAP herders, that is, amongst pastoralists, or resided adjacent to migratory herders' winter encampments for the downstream local residents' group. The village leaders were asked to make sure the focus group participants represented diversity in terms of gender and age to ensure a range of perspectives.

Table 3.3 Number of participants involved from each study area

Location			In-depth Interviews	Focus Groups	Household survey
Village	Geog	Dzongkhag			
TAP herders					
<i>Papali</i>	Dungna	Chukha	3 (3M,0F)	0	9
<i>Bempu</i>	Naja*	Paro	4 (3M,1F)	8 (5M, 3F)	10
<i>Tshebji</i>	Naja	Paro	4 (2M,2F)	14 (10M, 4F)	11
<i>Damchena</i>	Shari	Paro	3 (2M,1F)	0	6
<i>Doshi</i>	Ura	Bumthang	5 (3M,2F)	12 (5M,7F)	14
<i>Urchi</i>	Chumey	Bumthang	5 (3M, 2F)	9 (6M,3F)	25
Downstream residents					
<i>Kungkha</i>	Phuntsholing	Chukha	0	8 (5M, 3F)	0
<i>Brokser</i>	Saling	Mongar	0	8 (4M,4F)	0
Agencies					
Government			6 (6M,0F)	5 (5M, 0F)	0
Non-government			3(3M,0F)	0	
Total			33 (25M,8F)	64 (40M, 24F)	75

* Naja geog is often referred to as Jabana and people as Jababs.

3.3.3 Data collection methods and process

All in-depth interviews, focus group discussions, and household surveys were conducted face-to-face in the native language *Dzongkha*. Although some local extension personnel were involved in coordinating, informing and assisting with some

household surveys, all the in-depth interviews, focus groups and majority of the household surveys were carried out by the principal researcher.

A pre-test was conducted for the household survey, the in-depth interviews and the focus groups. Three household surveys and two in-depth interviews with herders and one in-depth interview with agency personnel were conducted. These were analysed and the findings and reflections from the pre-test were discussed with the student's supervisors. This enabled some adjustments to be made to the questions.

The first focus group was run in the presence of a supervisor where 14 participants turned up; some apparently not invited but who wanted to join the discussions which I later learnt was due to the presence of a 'foreigner'. The focus group's outcome and ability to elicit answers to questions, and facilitation techniques were later discussed with the supervisor. Both the supervisors visited the research sites to gain firsthand experience and to understand the place, people, their livelihoods and their culture. This field experience enriched the supervisors' understanding of the context of the research and helped in guiding the researcher in a more meaningful way.

3.3.4 In-depth interviews

In-depth interviews formed the core tool for this research. Interviews are perhaps the most widely used data gathering technique in social science research. Interviews can be conducted face-to-face in person or via telephone. Field researchers can use semi-structured or open ended questions for in-depth interviews or structured survey questions during interviews (Sandelowski, 2000).

Although there are issues of obtaining different responses from different interviewers depending on their skills, the interview technique presents many benefits. It allows the researcher, especially in face-to-face interviews, to gradually establish some degree of trust and gain insights from normal everyday like conversations (Sandelowski, 2000). An aide memoire was used to guide the conversation and small probing questions are used to obtain more detailed information. In face-to-face interviews, the researcher also uses visual aids and facial expressions to clarify questions and answers to the respondents. Interviews have a high response rate compared to mail surveys due to the personal approach (Sofaer, 2002).

In-depth interviews are often referred to, in qualitative research as unstructured interviews, although, it also sometimes implies semi-structured interviews (Bryman, 2004). In this study in-depth interviews with open-ended semi-structured questions were used to explore herders' experiences and elicit issues (Tong, Sainsbury, & Craig, 2007) (see Appendix A- Herder in-depth Interview guide).

After having informed the herders in a particular village through the extension personnel or local people, the researcher went with a helper from the local village to conduct the interviews. Before the interviews started, the researcher introduced himself. Although many people in Papali, Bempu and Tshebji knew the researcher personally, not many in Damchena, Chumey and Ura did. Introduction started initially befriending in the traditional way by offering "*Doma Khamto*" (a preparation of areca nut with betel leaf and a paste of slaked lime) and some sweets to the children and asking general questions. Once some rapport was established then the researcher's background, village, education, work and what the researcher was doing was explained. It was made clear to the participants that the researcher was there as a student researcher and not as a government official.

The herders were asked semi-structured open ended questions during the individual face-to-face interviews with occasional prompts from the researcher to guide the conversation through to issues under study. Interviews are carried out in the informants' own residences on a pre-agreed date and time allowing them to tell their stories and express their views openly.

Similarly, the in-depth interviews with agency informants took place in their offices at their convenience. The agency informants were given the choice of a place to conduct the interviews, either at their office or some informal cafe. However, perhaps because the agency key informants were familiar to the researcher and because the research topic did not carry sensitive issues, all agency informants preferred to be interviewed at their offices. Only one agency informant was interviewed at his residence because he was a retiree and did not have an office. The agency interview guide is shown in Appendix B. Subtle prompts were used during the interview to ensure the conversation stayed on track when interviewees tended to share unrelated information. Additional probes were used to get more in-depth information whenever

the interviewees shared experiences or expressed opinions related to the issues under study but were unclear to the researcher. The questions, however, were open ended with no pre-determined answers provided to respondents to choose from, allowing for a free expression of their world views. This approach allowed the researcher to move back and forth, clarifying issues when certain things were not clear or missed out, and then probing further to get more in-depth knowledge of issues the participants faced with which the researcher is unaware of (Westbrook, 1994).

3.3.5 Observation (participatory and outsider)

This is a technique used often in field studies either solely or in combination with other techniques. Observation can either be participatory, when the researcher actively engages in the activities (Chambers, 1992), or non-participatory and/or outsider observation, wherein the researcher is present, keenly observing the process but not necessarily taking active part in the activities (Vermeulen, 2004). Observation entails the researcher being in the field paying attention, watching, listening carefully, asking questions, and collecting things using all the senses to absorb all the sources of information (Neuman, 2003) while remaining open for the unexpected (Westbrook, 1994). Creswell (1998) suggests following the steps in doing observation:

- Select a site to be observed
- Identify who, what, when and for how long to observe
- Determine the role of an observer (as insider or outsider)
- Design protocol to record note in the field
- Record aspects (portraits of informants, physical setting, events, activities and self-reactions)
- Be passive and friendly initially and start with limited objectives
- Always thank the participants for information after observation

The observation technique was used as part of this research field work. This technique was deployed by the researcher as an outsider during in-depth interviews, focus group discussions, household surveys and casual conversations (Vermeulen, 2004). It was also partly participant observation in the sense that the researcher visited and lived in herders' villages, walked with the herders to their encampments, joined them in transporting their products and observed herder activities without necessarily

indulging/participating in all the things herders performed as their normal everyday chores. The aim was to try to fit in and observe and absorb as much as possible in an unobtrusive natural setting without disturbing the normal flow of events of the herders' everyday life (Westbrook, 1994).

Observations were made throughout the field work such as the physical objects, the social activities and meanings implied in the villagers' conversations. The researcher kept notes and memos of all the activities and conversations that occurred related to transhumance practice and incorporated them into the findings to complement the information obtained through more formal methods.

3.3.6 Household surveys

Surveys involve asking questions to people from a structured written questionnaire in person or over the phone (using closed or semi closed questions). Surveys can also be mailed or handed to people to fill in their answers (Neuman, 2003) when the respondents are literate. However, when the respondents are not able to read or write the questionnaires should be filled out by the researcher or team of enumerators trained to do so.

The structured surveys cover various parameters to be measured at a single point in time. The survey technique usually uses samples to obtain results which can be generalized to a bigger population. The technique ultimately quantifies the responses in the form of tables and is subject to statistical analysis to detect patterns of association (Bryman, 2004).

In this research, household surveys were carried out to gather socioeconomic and demographic information of the transhumant agro pastoral communities studied. Semi-structured household survey questionnaires were administered through face-to-face interviews to obtain information on the socio-economic dynamics of the communities such as demography, household size, literacy level, landholding, cattle numbers, health and sanitation facilities, and economic contributions of different components (cattle rearing, crops farming, cash crop business and income from off farm income including wage labour) to the family's income. (See appendix C: Household Survey Questionnaire). Household surveys took place with the family, the

husbands and the wives answering most of the questions, sometimes supplemented by their adult children. This approach allowed for some verification of information within the family to ascertain what was being answered was not out dated or irrelevant.

The household survey questionnaires had mainly closed questions but also some open questions to elicit their awareness and opinion on government policies and legislation, particularly concerning pastures, forest grazing, transhumant pastoralism and human-wildlife conflict. This survey method has the advantage in that it permits collection of maximum data from large numbers of respondents in a short period of time (Chadwick, Bahr, & Albrecht, 1984) at a reasonable cost. Although the Chadwick et al., (1984) are of the opinion that the survey method is one of the most cost effective methods, I put it as reasonable cost considering the nature in which the household survey had to be administered. Since respondents were mostly illiterate, the survey was needed to be done in face-to-face interview design; verbally reading, translating into native language and explaining questions and answers to the respondents. Therefore, the cost incurred in this survey was not as cheap as may be expected from a mail survey where questionnaires are posted to respondents with post-paid return envelopes or through emails where respondents are literate. Face to face interviews and translation processes also take a lot of time. Walking from one household to the other, in villages where houses are scattered and with no vehicular road to the village, time is a valuable resource. In fact Neuman (2003), argues that the greatest disadvantage of this technique is the high cost involved in travel, training, supervision and personnel cost for the interview.

Other issues, such as interviewer bias, and the possible intimidation that could stem from the way the interviewer presents her/himself to the respondents, are also possible. This could possibly render respondents to provide an answer that he/she thinks is the way in which the interviewer is interested (Neuman, 2003). In this research this was overcome by explaining clearly the purpose of the research to the pastoralists and the majority of the surveys being carried out by the principle researcher. Only some surveys in Urchi used research assistants after training and explaining to them clearly the purpose and how to complete the survey.

Finan and van Willigen (1991) hold the opinion that structured questionnaire surveys offer one of the most reliable research techniques to capture the internal variations in a complex social set up. They recommend structured questionnaire surveys to pick up the patterns or the native points of view missed in a quick participant observation.

Face-to-face survey interviews for the household surveys were also selected on the following grounds:

- The respondents were in Bhutan and most of them were illiterate. The interview had to be conducted in the national language, *Dzongkha*.
- Although many respondents have mobile phones the cost incurred from interviewing so many respondents by phone would be more expensive than the flight cost to reach Bhutan.
- My familiarity with many of the respondents and because I availed the services of local government personnel, meant it was easy to gain respondents' trust to provide honest views.
- Their ability to provide me with an opportunity to observe the tangible and intangible meanings and social constructs they attach relating to transhumant pastoralism.

3.3.7 Focus groups

Originally a market research tool, this technique involves an informal discussion with a group, with a moderator, about issues affecting them, in a natural setting. The group may consist of seven to twelve individuals, who share some key characteristics such as age, race, occupation or interest (Jacobson, 1999; Neuman, 2003). This allows people from weaker sections of the society, such as members of marginalized social groups, to express their opinions freely. Focus group discussions have the advantage of making people feel empowered and thus express freely while asking questions and explaining questions to among each other (Neuman, 2003).

Focus groups are more commonly used as an adjunct to other academic research methods such as interviews, as opposed to being a stand-alone method as in market research (Bloor, Frankland, Thomas, & Robson, 2001). Using focus groups with other methods in a multi method design gives researchers the ability or opportunity to

understand how people view survey topics, for example (Neuman, 2003). Focus groups can also be useful in understanding group dynamics and group norms (Bloor, et al., 2001).

However, there are some disadvantages with focus groups, such as some participants dominating others, poor facilitation, peer group influence and group members thinking alike (Neuman, 2003). There can be a danger of under reporting intra-group variations (Bloor, et al., 2001). In a time span of about 90 minutes, only a few topics can be discussed compared to individual interviews (Neuman, 2003). Given the above disadvantages and possible issues associated with focus groups Bloor, et al. (2001) does not recommend using this technique as the primary method of choice.

Group composition should be carefully chosen to represent diversity of participants for effective interaction to take place. However, researchers should be wary of the dangers of overly heterogeneous groups with disparate views, hindering meaningful exploration of any particular issue, let alone digging deep into conflicting and repressive views (Bloor, et al., 2001). Bloor, et al. (2001) advises group sizes to depend on practical issues on the ground, although literature generally recommends (6-8). However, diverse group sizes, ranging from 3-14 members, were also commonly used by others.

In this study, focus groups were used to triangulate the information obtained from in-depth interviews and household surveys. They enabled the researcher to explore further and verify information gathered on critical issues through the household surveys and in-depth interviews. The focus groups covered topics such as *tsamdro* use conflicts, how such issues were dealt with in the past, who were involved, who does what and what is agreed as a solution etc. The triangulation has allowed the possibility to explore further the issues of resource use conflicts between transhumant herders and downstream residents that emerged during the in-depth interviews (See Appendix D: Focus Group guiding question).

3.3.8 Secondary data analysis

Secondary data analysis analyses existing statistics or information collected by other researchers or government officers, as opposed to the researcher's primary data from

the field work (Bryman, 2004; Neuman, 2003). This is a cost effective method that facilitates replication and allows for the possibility of comparisons across group and time. This method can provide a good source of data triangulation to compare and arrive at a reliable trend or pattern based on data collected from field and secondary data. However, there are issues of gaining accessibility, reliability and appropriateness of the data available which the researcher should bear in mind (Sandelowski, 2000).

Secondary data used in this research came from the livestock extensions centres, the Department of Livestock (DoL), Policy and Planning Division (PPD) of the Ministry of Agriculture and Forests (MoAF). Some information from National Statistical Bureau (NSB) reports, Gross National Happiness Commission (GNHC), and United Nations Development Programme (UNDP). Bhutan publications were also used wherever relevant. However, lack of reliable statistical information from government departments limited meaningful trend and predictive analysis. The primary data collected using in-depth interviews, household survey and focus group discussions was key to understanding respondents' knowledge, opinion and perspectives based on the lived experience of key informants.

3.3.9 Data Analysis

The interview and focus group data were uploaded into a laptop computer in the evenings after fieldwork with password protection. The actual field data collected in digital form and the hard copies of survey data were brought back to Australia to be analysed at the university. In Australia, the survey data was kept in the locked cabinet while the audio and digital data remained on a personal computer and school computer under password protection.

The combination of research instruments not only allowed for triangulation of data sources and techniques but also gave the participants, especially the ones that are potentially marginalised, voices. It also gave them an opportunity to give their views in a gender and age balanced manner. While complete desktop analysis took place at the university, certain levels of analysis were constantly performed in tandem with the field work, trying to connect the dots and covering missing links during the field work, and follow up data gathering sessions (Westbrook, 1994). The data analysis was

an iterative process with constant feedback from analysis guiding data need for the next session or next day of data collection (Lingard, et al., 2008; Westbrook, 1994).

Complete data analysis at the university was undertaken manually, with limited use of NVivo 8 for the focus group data. The researcher generally followed the advice of using all the five senses and often relying on the sixth sense; the intuitive mind or intuition from data gathering through to making sense of the information (Janesick, 2004).

The audio recorded data (interviews and focus groups) was later translated and transcribed into a Word document in English using word processor of Microsoft Office 2007. Interviews with the agency experts were carried out in English which enabled direct transcription. Nonetheless, all the interviews were translated and written into English verbatim. Owing to the process of listening to the recordings in Dzongkha, translating it into English and then writing it up in English, the process of transcribing was very laborious, time consuming and stressful. However, the experience was rewarding as well as vital as it allowed the researcher to familiarise and achieve a certain level of analysis while frequently immersing himself into the conversations as he listened to the interviews. Because the researcher undertook the interviews, the researcher's knowledge on how and what was said in what context, and the subtle emphasis of informants, allowed the researcher to cross check the recorded data with field notes while transcribing (Dunn, 2005).

The focus groups' audio recordings posed some difficulties in transcribing verbatim due to noises from the discussion with and among the participants. The focus group data was therefore summarised for each main question with particular quotations used wherever relevant and possible. The focus groups were facilitated by the researcher allowing the participants to discuss each question for a while, before one or two participants answered. The opportunity to answer questions was rotated to give a-fair-go amongst the focus group participants. This was not easy since some would not talk, while others can't stop and the researcher has to subtly reduce the talkative ones and encourage the silent ones to respond.

The household survey data were analysed for descriptive statistics using Microsoft Excel 2010. Survey questions were in English, while in the field the questions were translated and asked in Dzongkha. However, because the answers were directly translated and written down in English during the survey, it was directly transferrable onto MS Excel tables for analysis. The results obtained were either incorporated with the qualitative data to support the issues arising from qualitative data or used to describe the demographic and socio-economic background of the study areas.

Once all the in-depth interview transcripts were uploaded into the computer, inductive analysis was performed allowing for patterns, themes and categories to emerge out of the data (Patton, 1990). For every research question, cross-interview analysis was performed, pulling together answers from different key informants for the same question to draw broader patterns with categories and sub-categories under each theme (Patton, 1990). Each transcript was skimmed through for each question and all the answers to each question from different informants were pulled and grouped together. Broad themes, categories and patterns arising from the transcripts were then grouped and written up accordingly using relevant quotations to allow data to tell the story (Patton, 1990).

All the key informants and household survey respondents were coded and their names were not used in quotations to protect the identity of the source of the quotes (Dunn, 2005). These understandings, generated from the interviews, were supported by the observations, notes and memos from field observations.

The focus group transcripts were uploaded into NVivo 8 (QSR International Pty Ltd 2008) and analysed for themes and patterns of participants' views on the question. NVivo 8 was used to assist in coding, pulling answers together or grouping similar responses under broad themes and categories using nodes such as free nodes and tree nodes for each research question. Each thematic answer, with similar patterns emerging from the data, was identified and pulled from each transcript and categorised under similar topic or broader themes.

While focus groups mainly explored the issue on upstream – downstream resource use conflict, some of the major thematic issues such as trends in TAP practice, outlook

towards government's conservation policies and perspectives on the future of TAP were also discussed. Once all the themes, categories and sub-categories were identified and grouped under a tree node, all the data was copied and pasted onto a word processing page where it was manually synthesized, articulated and written up in the same way as the in-depth interviews. Broadly, analysis for both the in-depth interviews and focus group data followed open, axial and selective coding for grounded theory generation (Creswell, 1998; Westbrook, 1994).

The researcher's childhood experience as a rural farmer's son, and knowledge gained from working for many years in the government in the agriculture sector, combined with the field work experience, allowed the researcher to take a balanced view of the situation. In other words, the researcher tried to balance and provide the informants' views as holistically as possible, immersing himself into the issue from both the herders, as well as policy makers' perspective, yet stepping out and trying to understand what it means from the outside (Janesick, 2004).

3.4 Ethical considerations

This project involved no experiments on humans or animals. However, people were involved in interviews, surveys, observation, and focus group discussions for which ethics clearance was obtained from Human Research Ethics Committee of Charles Sturt University as per approval number 2010/065 dated 10 June 2010 prior to commencement of actual field work in Bhutan.

The purpose and the objective of the research were explained to all key informants and focus group participants. Research information sheets (see appendix E) explaining the purpose of the research and informants' rights to either consent or opt out were provided to agency key informants. In the case of herders, owing to their inability to read and write, everything had to be explained verbally by the researcher in the native tongue. The information sheet contained addresses to contact in case of complaints. The voluntary nature of their participation and confidentiality of information was stressed to ensure none of the participants felt pressured to be involved, and understood the research objectives and their rights.

All data collection and interviews only commenced after the participants understood the purpose of the research and consented to participate. The participants were financially compensated for their valuable time spent on the research during in-depth interviews and focus group discussion at the rate permissible based on Bhutan government rules. The privacy protection and confidentiality of issues concerning information they provided were ensured by not requiring names and addresses on survey forms as well as by identifying them only by codes in the thesis. The participants were also informed about the possibility of leaving should they at any time during the discussions feel uncomfortable about answering particular question.

The participants were informed that the interviews were being audio recorded and they had the option to agree or go off the record. Additionally, they were briefed that should an individual not consent to recording during the focus group, or the in-depth interview, the audio recorder will be put on pause during his or her response. However, everybody was eager to share their views and frustrations and wanted to be recorded.

Most field interviews and focus group discussions were done in the national language (Dzongkha). Only in Brokser, a small village in Mongar Dzongkhag, living adjacent to some of Doshi herders' winter camp sites, the researcher had to adapt to their local dialect because of the locals' inadequate proficiency in the national language. English, often mixed with Dzongkha, was used with the agency informants.

I declared my position upfront as a civil servant on study leave and currently undertaking research. I was aware of my potential influence as a civil servant and tried to minimize any negative influence by 1. Not raising expectations, 2. Building rapport with interviewees and 3. Not taking advantage of their hospitality. Although many herders knew the researcher as a civil servant, after explaining his current position as a research student, the participants did not show any signs of feeling intimidated. Additionally, many of those herders in Papali, Bempu, Tshebji and Damchena knew the researcher personally or were family friends of his parents. This made them feel very comfortable, at the same time making it easy for the researcher to gain their confidence to share information. Many participants invited the researcher to come and stay with them at their homes. However, for ethical reasons many of these

invitations were declined politely so as to not take advantage of their friendliness, not to raise their expectations or create false hopes. At the places where night halts were made and food consumed, it was politely compensated for, cash in Bhutanese traditional and culturally appropriate ways, by leaving behind cash gifts to the landlady.

3.5 Personal challenges and dilemmas experienced

Conducting field work exposes the researcher to various sources of dangers that exist in the real world in the natural setting, both external as well as internal. The researcher needs to be prepared to face and overcome several constraints that can deter him/her from conducting successful field work such as harsh environmental conditions, animals, parasites, vector borne diseases, degenerative diseases, robbery, physical assault and crimes (Biddle, 1993).

In the following sections the challenges and dilemmas the researcher faced, and steps taken to either prevent or manage the issues, are presented. Although the research field work presented some challenges, such as views of some bureaucrats to logistical and coordination problems, the experience was enriching and exposed the researcher to contemporary empirical realities.

Conflicting views: Some officials in the government bureaucracy indicated that transhumance pastoralism was a dying culture and did not warrant an in-depth study. This perhaps indicates the lack of understanding of the reality at grassroots level and the governmentality (Morton, 2010) and feeling of superiority of their knowledge over locals' lived experience. However, others felt this research was important and in fact very timely given the dilemmas created by the Land Act 2007.

Logistics: In the field the researcher faced issues of people not turning up either for discussion or portage of researcher's gear as agreed. At least on two occasions, once in Papali and another one at Damchena, people did not turn up as agreed or expected.

On another occasion, the livestock extension personnel at one research site failed to gather herders for a focus group. It was later learnt from the extension personnel that the problem of mobilising public participation in that geog was a difficult issue. Either

to discredit the leadership of their local government authorities with the taste of democracy, or due to lack of rapport in delivery of extension services, herders refused to show up for the planned focus group and the focus group planned for that site had to be cancelled. In contrast, the previous year, the researcher was welcomed to their houses and people talked very candidly about their experiences and expressed their views freely when approached through a friend who is a son of one of the local residents. Although this could be an isolated case, and cannot be generalised, it presents a picture of the reality of the relationship between locals and extension personnel.

Physical: Conducting field work in remote Bhutan with limited road access is not only physically exhausting but psychologically draining. Road blocks on the highway and delays are a common feature in remote Bhutan. For example, the episode of driving and walking to Brokser on the road that has just had its first formation cut under the torrential downpour was a big challenge. The responsibility that the researcher had to take, not only for his own life but also for the 4WD Utility vehicle, the driver on hire, and accompanying staff and their welfare, was challenging.

On another occasion, a focus group planned with downstream residents in Lhuntse Dzongkhag had to be cancelled and a discussion with livestock personnel at the Dzongkhag was done instead. There was no vehicular road in those villages and walking there would take over a week to reach a single village one way. Besides, the extension staff informed the researcher that all the residents there were busy transplanting paddy as it was peak season for that activity.

On another occasion, while returning from Lhuntse and Mongar, more than half a day was lost at a point on the highway because of a heavy landslide that had blocked the road. There were no shops and the nearest food retailer shop was 20-30KM away. While waiting hungrily for the road to clear, the researcher came across, amongst others, two stranded travellers. One happened to have worked with the livestock department in the past and the other one was a senior civil servant working in National Land Commission Secretariat. The researcher benefitted from the long chat with these two fellow travellers while waiting for the traffic to resume.

On yet another occasion, while at one of the study sites to conduct an in-depth interview, the researcher encountered herders losing high number of calves to black quarter (BQ) disease. In one herd nine calves died due to BQ disease in a month, which could have been prevented with vaccination. This vaccine is a regular requirement in Bhutan and the extension personnel were supposed to have included it in their schedule and vaccinated all the young calves. However, for some reason the vaccination did not take place. Despite the severity of the issue, and repeated requests from the herders (as reported by herders), the extension personnel, who lives about two hours walking distance, did not turn up. Upon seeing the herders' plight the researcher made a friendly call to the extension agent, sent one person from the village to assist him in carrying the vaccines and managed to get all the herds vaccinated. The extension personnel's contention was that the villagers did not come to help him carry the vaccines. A small coordination issue, due to lack of communication and understanding of each other's expectations, resulted in the loss of many calves which is a huge loss to the herders.

This incident indicates serious lapse of responsibility and ignorance on the part of the extension personnel which if reported to Department of Livestock could result in serious repercussions. However, owing to my position as a researcher, I befriended the staff member and politely asked him to come to help the herders while persuading the local government representative from the village to depute one person to go and fetch the vaccines. Through my initiative and negotiation, we managed to get the extension personnel to come for vaccination and, hopefully, saved many calves which otherwise would have caused huge losses to these herders.

By any standard, there is no denying, the life of the herders and their families is tough. Many of these herders also had few wealth assets visible, except their animals and houses which varied widely from herd size, quality of animals and quality and age of their houses. Such a difficult life, yet so much kindness and welcoming gestures were shown towards me that I began to reflect on my life and appreciate my Bhutanese culture and values. The herders and their children's ability to put big smiles on their faces, despite the adversities they face, and the hard life they live, gave the researcher inspiration and energy to challenge and push the limits. These experiences have

taught the researcher new ways of looking at life and a different outlook towards the world. Overall, despite the logistical hiccups and physical challenges, the researcher thoroughly enjoyed not only the field work but the whole PhD journey and has gained exceptional knowledge and perspective on life. Through the process of this research field work the researcher was able to make friends and get to know many of the participants who used to be family friends but somehow lost connection. The researcher managed to establish good relations not only with many of the participants but also local authorities and extension staff working in the field.

CHAPTER 4

Origin and Contemporary Nature of TAP in Bhutan

4.1 Introduction

This chapter answers research question 1:

What is the origin and contemporary nature of transhumant agro-pastoralism (TAP) in Bhutan?

This chapter is divided into two parts; the first part presents the historical perspectives of transhumant agro pastoral systems - its origins and development in Bhutan including reasons why pastoralists migrate. The second part of the chapter provides information on the contemporary nature of TAP including migration practices, socio-cultural practices and herders' management practices of both the stock and pasture.

4.2 Historical perspectives of transhumant agro-pastoralism

4.2.1 Views on when TAP practice began

The herders and agency staff interviewed for this research were unable to define exactly when transhumant agro pastoralism in Bhutan began. However, all the respondents agreed that it is a very old system extending back several hundreds, if not thousands of years. A timeline on chronology of events leading to establishment of inter-Dzongkhag TAP in Bhutan has been constructed based on information provided by both herders and agency key informants (Figure 4.1).

Many herders said they have memories or heard from their parents and grandparents about TAP. A male herder based in Bempu (in his forties) said he saw his parents practicing transhumant agro pastoralism as a very small child.

" ... by the time my legs could carry my stomach we have been moving like that. So I cannot tell you when such practice must have started."
(Herder_18)

An elderly male herder in Doshi indicated the transhumance system, particularly the Doshi - Mongar and Doshi - Lhuntse system existed since Jigme Namgyel (1825 - 1881), the father of the first King, Sir Ugyen Wangchuck's time. Sir Ugyen Wangchuk

became the first king of Bhutan in 1907. This suggests transhumant agro pastoralism in central Bhutan has existed since the 1800s.

The herder said:

“ ... first king’s time ... even before that the system was similar. However, owing to constant conflict and power struggles between the local authorities the system changed quite often. It is only since father Jigme Namgyel’s time the system became more systematized for people of Bumthang and Zhongar. He allotted tsamdros from Mongar, Zhemgang and Lhuntse to people of Bumthang to graze their cattle.” (Herder_5)

A senior male herder (in his mid-eighties) from Urcchi thought that TAP must be about 200 to 300 years old. He mentioned having seen his three grandparents practice TAP when they were all around 85 years of age. The herder is 86 years old and he continues TAP today, taking cattle to the south in winter.

Furthermore, a male herder in his fifties from Doshi believed that the TAP practice must be about 700 to 1000 years old. Explaining how Bumthang herders gained access to *tsamdro* resources in the south, he suggested Bumthang TAP to have existed even before the monarchy system was instituted in Bhutan, around Pema Lingpa’s (1450-1521) time. He believes TAP must be a thousand years old because people at high altitude areas needed to move south in winter to raise animals and supplement their living.

None of the agency personnel were able to put a definite time line to the beginning of the TAP system in Bhutan. However, they all agreed TAP is a very old system. One of the agency informants (Agency_2), a son of a transhumant agro pastoralist, had a note he had written based on his late father’s oral narration, and he shared it with me. According to his note, probably the only written document of such accounts, it puts the origins of herders at Damchena around 1906. He notes, the twenty third *Penlop* (regional governor) of Paro - Penlop Dawa Penjor, cousin of the first king, decided to build a herd of cattle and bought 120 *Jatshams* from Bumthang and initiated the institution of *norpons*³, appointing one of his courtiers as the first *norpon*. He later records, during the reign of the twenty fourth Paro *Penlop*, the original herd became

³ Official herders or herding job position in the past for which some sort of payment has been paid. *Norpons* looked after royal herds, monastic body herds and later elite families’ herds for payment until they ended up taking up pastoralism as their livelihood.

too big and necessitated splitting into two separate herds – a *Jatsham* herd and a *Thrabam* herd, thus employing additional *norpons*.

However, one expatriate agency informant, with substantial experience in Bhutan's research and livestock systems, held the opinion that Bhutan TAP would be between 200-300 to 2000-3000 years old, based on the literature he has read.

When asked if he could put a date on the beginning of TAP, he said:

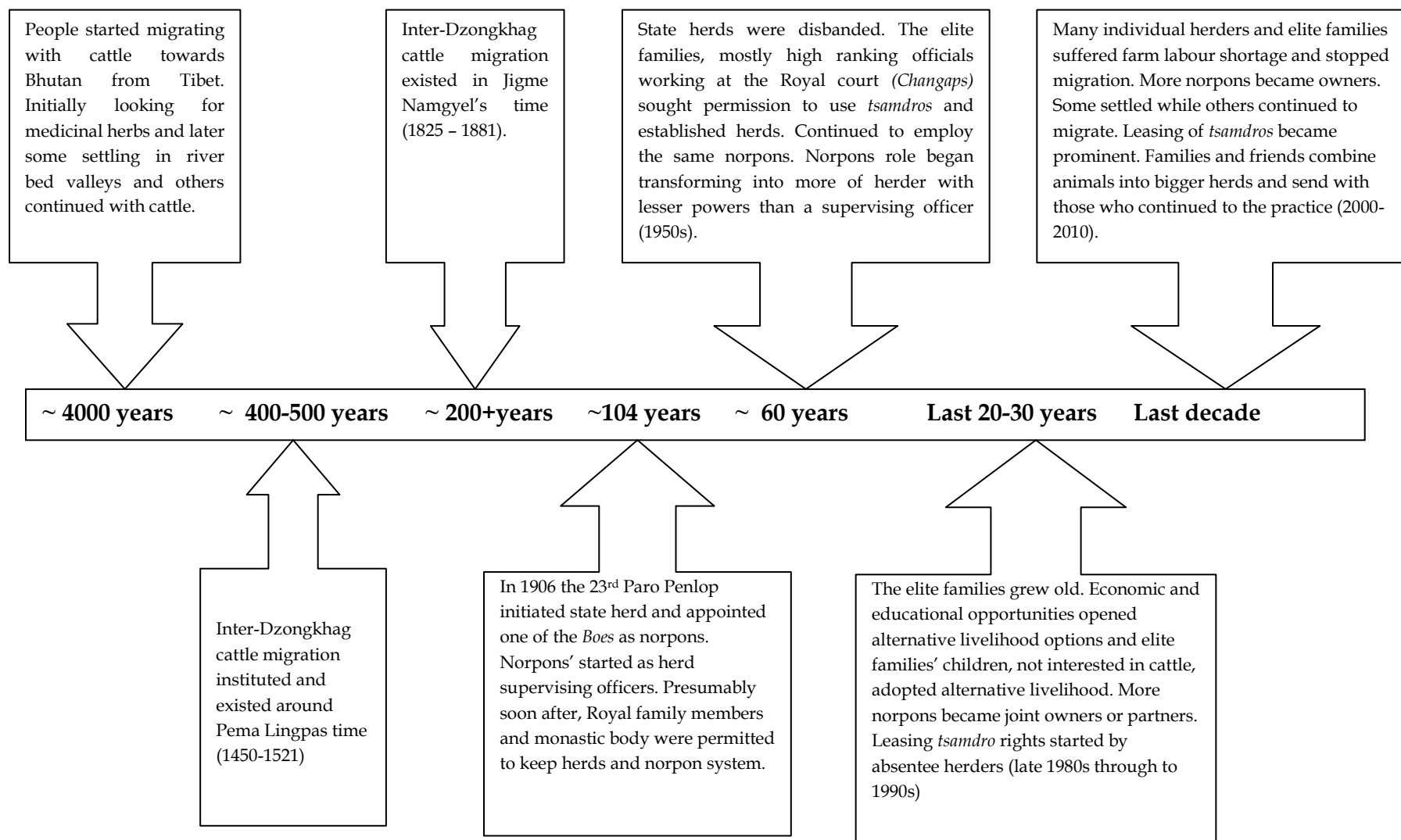
"Migration system, I don't think so. But you have these records ... some 200-300 years or more I think. And there are these papers, about a year ago they were finding traces of some human activities in Laya ... so I think it may be about 2000-3000 years or may be even more." (Agency_5)

The same agency informant believes Bhutan has always been the land of the herders as the majority of Bhutanese are farmers who kept cattle as an important component of farming system. As he expressed:

" ... I have always considered Bhutan, traditionally, as the land of the herders, because most people are farmers who kept livestock as one of the main subsystems." (Agency_5)

Similarly, most of the elderly herders indicated TAP as a very old system but the only way they knew about the beginning of TAP is that they have seen their parents, grandparents and great grandparents practice it and they have inherited this form of livelihood.

Figure 4.1 Timeline on chronology of the development of inter-Dzongkhag cattle migration



Source: Key informants and secondary literature – Meyer, 2009.

The following section explains the culture of the *norpons* and how the norpon system was instituted.

4.2.2 The establishment of the norpon system

According to herders interviewed for this study, *norpons* were herd managers for royal herds and *goendeps* (monastic bodies) in the earlier days (approximately at the beginning of the 20th century). As there was no revenue generation or cash tax collection and much of the economy was based on barter exchanges, the state and the monastic body maintained cattle herds, supervised by *norpons*. The *goendeps* were also permitted to keep cattle to produce dairy products and meat for the monastic body and for themselves as still happens today. Some royal family members and the monastic body are said to have continued to maintain large cattle herds until recently, though the state herd was abolished in the mid-1900s. Large numbers of cattle were raised for which *norpons* were employed to manage them. The king and/or regional governors reportedly allotted large areas of *tsamdros* in the cool and warm temperate and sub-tropical areas as grazing grounds for the royal and *goendep's* herds. The *norpons* migrated to the south in winter with the herds and utilised the fodder available in that area.

A retired female TAP herder in her seventies from Damchena provided this information to indicate that the norpon system was an extremely old system:

“Our great grandfather, Tozey Penjor, grandfather to my mother, was nominated from amongst his Boes and awarded scarf-appointing him as norpon. I have been involved in this since the 2nd king’s reign.” (Herder_35)

According to this elderly woman herder, Tozey Penjor was the first *norpon*. She also attributed the marginal landholdings of Damchena herders to their age old profession of *Norponship*. Having spent the best part of their life mobile, looking after others’ cattle, they were left disenfranchised and it prevented them from owning fertile paddy land and settling down.

Over the years, however, *Norponship* experienced a transformation in *norpons’* role and the nature of jobs they carried out. The role of *norpons* changed from being herd

supervisors /officials with certain powers, where the actual work was carried out by helpers and villagers, to one where they had to carry out all these tasks themselves.

The herders and agency informants believed the life of *norpons* in those days was not difficult. *Norpons* of *poen* (a term used to refer to king but sometimes it also refers to the governor of Paro), *Ashi* (queen), and *goendeps*, reportedly supervised the work and managed the herd and its produce. The labour and fodder for the herds during migration were contributed by secular communities residing along the way. Tasks like pitching tents, arranging forage for the cows and calves and herding the cattle are indicated as responsibilities of the communities residing along the route. As explained below;

“ ... the people in that geog had to go and build the camp, collect fodder, firewood, water and do all sorts of chores for the norpons. The norpons only supervised the works.” (Agency_2)

As the herds approached their area of jurisdiction, the local authorities were charged with the responsibility of arranging logistics for a successful passage of the herd through their respective communities. The local people from a particular village had to contribute labour to carry the luggage and look after the cattle until the herd reached the next community, for which they received no payment. Additionally, local people also had to bring their own supplies to eat while they looked after the herds. As one herder informant from Damchena puts as:

“The villagers contributing labour from different communities had to bring their own ration to eat while taking the herds down or up.” (Herder_36)

Another retired herder informant from Jabana said that a messenger from one community was sent to the other community in advance to inform them about the herd's arrival at their locality and the arrangements that needed to be made. As the herds reached their base camps in the south or in the north, the responsibility of looking after the animals, feeding, milking, overall management and shifting of camps, fell on the employed helpers who worked under the *norpons'* supervision.

As he notes in the following quote, Agency _ 2, who in fact is a TAP descendent born on the way during the process of transhumance, explained the life of *norpons* and the privileges that came with their position.

“ ... in general, ‘norpons’ in those days led a life that was considered decent if not even powerful at times. They were kind of employees of the ‘zhung’ [central government]. During migration time, the job was made very easy as villagers at various points of the route would have to come and give their services including making the camp, collecting fodder, water and firewood. Their diet, consisting of rice, butter, meat and milk, was much nutritious than the general rural populace. In a way the herders [norpons] enjoyed their life.” (Agency_2)

A herder from Damchena also explained how prominent the *norpons’* positions were and the privileges they enjoyed.

“Norpons are usually husband and a wife and sometimes with children. They were very powerful and would have a separate tent. There were always a group of servants or helpers with each herd. ... [Work] churning the milk in the morning, feeding the calves, and looking for fodder for the calves, everything is done by the helpers. The meals are separately prepared. The Norpons’ family needs to be served separately and helpers make their own food separately.” (Herder_36)

According to the same agency informant (Agency _2), the royals and *goendeps* used to own separate herds of *Jatshams* and *Thrabams* for which separate helpers and *norpons* were employed. He notes how the official herd size of Paro Penlop grew and was divided into *Thrabam* and *Jatsham* herds:

“By then the original herd size had increased greatly and it had been divided into two herds – a ‘Jatsham’ herd and a ‘Thrabam’ herd. ... was the ‘norpon’ of the ‘Jatsham’ herd and ... was the ‘norpon’ of the ‘Thrabam’ herd.” (Agency _2)

Jatsham norpons were also entitled to higher status and better benefits than *Thrabam norpons*. Contributions from the villages along the routes, in terms of labour as well as fodder, also differed between the two herd types.

A herder key informant explained how hierarchical systems translated into different herd categories and their differential entitlements to contributions that each locality had to provide when these herds with *norpons* migrated:

“ ... each household had to provide two bundles of wheat/barley straw and then people to look after the animals in the morning and in the evening known then as tshorep. There were seven people contributing labour from the locality. Norpon ...’s herd because he was the king’s norpon he used to get 10 people. My mother’s herd because it belonged to the queen, she used to get only 8 people.” (Herder_33)

The farmers along the way had to guard their own crops in the field from the migrating herds and *norpons* were not responsible in the event cattle strayed into those fields. As agency informant (Agency_2) noted if villagers made complaints on crops being destroyed, the *norpons* retorted and told villagers to go and make complaints to the man in the *Dzong* (Fortresses, used as the power centre in each *Dzongkhag*). The *norpons* knew that the villagers were unlikely to do that because the man in the *Dzong* is no other than the *Penlop*, as he notes:

“If cattle strayed into the crops, which often happened, and if villagers complained, the herders would fire back, ‘Go and tell that man in the dzong, it's his cattle.” (Agency_2)

There were reports of some abusive *norpons* who would carry pistols and threaten workers or the villagers along the route for minor mistakes while making their contributions.

The agency informant noted:

“Although ... was a hard worker, there were tales of norpon ... brandishing a gun and chasing poor ... across the jungle when ... failed to perform his duty to the expectations of norpon ... ” (Agency_2)

The agency informant (Agency_2) recorded that, *Norponship* was a kind of government employment, but they received no salary. Instead they received rations, an annual cloth quota and retained half of the produce from the herds they looked after as an incentive.

One herder informant mentioned the *norpon’s* entitlements as:

“ ... in a year they get an apron, Thara [traditional fabric material] as annual dress quota, then they get ration, no salary because there was no system of salary or wage at that time. Then you get half of the dairy products produced. That was the benefit ... ” (Herder_33)

Gradually the royals (*poen and ashi*) gave up cattle and ended the cattle system (in approximately the 1950s), which led to the opening up of many *tsamdros* for other herders to use. Some royal family members continued to keep TAP herds and appropriated until recently.

The *changaps* (courtiers), or people at ministerial level, were aware of the availability of free resources, and took advantage of this situation and approached the *poen* and sought user rights. They seized the opportunity to utilize the *tsamdros* formerly used for grazing royal herds, thus creating a cohort of elite families owning TAP cattle with access to *tsamdros*. When the *poen* disbanded the royal cattle, (presumably under the advice of the financial management official justifying that the state cattle system was not beneficial), the *norpons* almost became jobless. The elite families, composed of *changaps* and those at ministerial levels who now had *tsamdros* to graze, employed the same *norpons*. This was a turning point in the life of *norpons* and an end to *norpons'* prestige.

It appears, from this time on, when the ownership changed from the royal and *goendeps* to the second level elite families, *norpons* started working or managing the herding job on their own without helpers. Eventually, developmental changes such as roads, education, trade and other non-cattle based professions opened up better livelihood alternatives for these second level elites and they too started giving up migratory herds around the 1990s and this trend continues to this day. These elite families found TAP a burden rather than a wealth asset. As explained later under the section '**Norpons, *tsamdros* and how they finally gained access to these *tsamdros* for themselves**' that explains how these *norpons* came to own their own herds, this layer of elite families opted for better alternatives to TAP cattle. This abandonment of TAP by the elite families opened up an opportunity, or a necessity for *norpons* to own their herd and carry on, finally enabling *norpons* to be their own masters and own their own cattle. While the TAP system gave employment to *norpons*, the *norpon system* as an institution played a crucial role in survival of the TAP system whilst assisting the state, the royals, the monastic body and later the elite families.

Today, one of the main factors enabling northern Bhutanese pastoralists to conduct their transhumance is because they have usufruct rights to *tsamdros* in the south. It is implied that the government's intentions to impose restrictions through the Land Act on inter-district migration stems from perceptions that associate various environmental problems and resource use conflicts with TAP system. It is intriguing to understand the enabling factors that underpin TAP herders' access to *tsamdros* in the south in the first place. What follows is evidence gathered from in-depth interviews with the TAP herder informants and agency staff on how TAP herders gained access to *tsamdro* resources in different Dzongkhags.

4.2.3 Types of agro-pastoralists and how they gained access to *tsamdros* in the south

The previous section described the beginning of TAP in Bhutan and how it existed. The following section presents the existence of two broad types of transhumant agro pastoralist herders and how each group obtained user rights to *tsamdros* in the south.

The in-depth interviews revealed two distinct groups of transhumant agro pastoralists based on their origins. The first group are the former *norpons* and the second group are farmers that took up cattle rearing as a livelihood option once their ancestors started settling in villages.

Recently, the former *norpons* now own their own animals, and have bought some user rights to *tsamdros* and settled in villages. They still rely heavily on the animals and migrate between sub-tropic and temperate pastures seasonally. Amongst the herder key informants interviewed, it appeared that all of the herders in Damchena have originated through generations of *norpons*.

The second group of herders believe the practice of TAP was adopted by their ancestors as a livelihood option when they settled into temperate villages and inherited it from their parents and great grandparents. All the herders interviewed in Urci, Doshi, Papali,

Bempu and Tshebji villages indicated they have lived a private transhumant life since their great grandparents' time.

Therefore, today's TAP herders are either descendants of former *norpons* or those hereditary herders that inherited cattle and *tsamdros* rights from their parents. While the *norpon* groups either bought *tsamdros* (which in reality was only a usufruct right) from the royal herds and the *goendeps'* herds, other herders obtained *tsamdros* as their land allotment by which they pay tax, while others have bought *tsamdros* from regional governors or their representatives and from aristocratic/elite families.

For the purpose of clarity I have categorised the two types of *tsamdros* as '**Norpons'** *tsamdros*' and '**Other** *tsamdros*'. The following section presents the details of the each type of *tsamdros*.

4.2.4 Norpons *Tsamdros* and how they finally gained access to these *tsamdros* for themselves

Evidence gathered through interviews with herder informants indicated that the *tsamdros* currently used by former *norpons* were erstwhile state/royal and *goendeps* *tsamdros*. When royal herds (ones that belonged to the king and queen, not the relatives) were either abolished or disbanded some *tsamdros* became available. The king and later his regional governors allotted the *tsamdros* to applicants seeking permission to graze their cattle. The agency informant (Agency_2) in his unpublished note mentions: the opportunistic high level officials working close to the royal court not only influenced the decision to close the royal cattle system but the same officials also manipulated and created space to appropriate *tsamdros* resources for their personal gain.

The agency expert wrote:

"... [an influential official] ... had recommended to the government [same as the king in absolute monarchy] that 'government cattle' system was not profitable and it was best the cattle be sold off through public auction. His suggestion was duly followed up. The herd was disbanded and most of the cattle were sold off." (Agency_2)

The agency personnel then elaborated how the official then unleashed his self-interested plan and obtained the *tsamdros* that once belonged to royal/state herd. The official in question then bought a few animals and approached the king and sought user rights, thereby, gaining access to the royal *tsamdros*. These officials gradually established bigger herds and employed the *norpons*.

" ... then [the official] enlarged his herd and proceeded onto his next move – that of approaching the 3rd King for granting him tsamdros. The King gave him a 'kasho' [Royal Decree] which gave him the rights to graze Thogongmu, Laaptongsa and Chaasa in summer and the Gumphuna complex in winter which consisted of Gaylangkha, Zomdo, Dado, Longrina, Gumphuna, Tesna and Nhaleykha." (Agency_2)

While local pastoralists had access to some *tsamdros*, there is evidence to suggest that majority of *tsamdros* usufruct rights were held by rich and influential families. A middle aged male herder from Damchena mentioned that in those days, *tsamdros*, both temperate and sub-tropical, were owned by rich and powerful people.

" ... The migratory herds belonged to rich and powerful people and they still own them. If we consider ... he owns tsamdros here and in the south near Dungna village; the forests above Dungna village are all his tsamdros. They have been a very powerful and rich family for generations. They still have thram in their name. And if we consider ... they own lots of tsamdros in Samtse Dzongkhag. They had the ownership since long time. " (Herder_36)

One agency staff member suggested in the past perhaps a society of 'haves' (referring to royal families and other elite families) and 'have-nots' (referring to ordinary citizens including peasants) existed whereby the former had access to resources in the north as well as the south. The latter had only small resource endowments in one of the regions or worked for the 'haves'. Talking about herders from northern Bhutan having *tsamdros* user rights in the south the agency staff said:

"I will quote an example of ... there are these noble families called ... people considered to be belonging to higher class. So maybe these people had better rights I think ... and then they own land in that particular area. They also have some places they call winter residence and summer residence. In winter they normally go to the south and that is how they have started this ... user rights ... property in the south ... maybe that is how this must have started." (Agency_4)

These systems have created a generation of *norpons*, some of whom later settled in temperate villages with smaller areas of agricultural land, but still rely heavily on the transhumant cattle, which now they own.

However, with development, the economic landscape has changed in the country, particularly in the late 1980s and early 1990s. Pastoral livestock began to lose its value as a household wealth asset to these elite families. They had better livelihood alternatives with good holdings in productive cultivable land and better education for their children and as a result they started selling the *tsamdros* and disbanding their herds.

Meanwhile, according to a herder key informant (Herder_36) and an agency informant (Agency_2) the *norpons*, foreseeing the possibility of becoming unemployed, saw the need to build their own livelihood assets. This desire made *norpons* indulge in dishonest practices. *Norpons* started hoarding the herd produce and began buying cattle to establish their own herds, whilst still working as *norpons* (in about 1990s) and the elite families, the initial herd owners, could no longer trust their *norpons*. It became a daunting task for the elite families to monitor their *norpons* and the quantity of herd's produce they submitted. In addition, the families also had to lease *tsamdros* they no longer used to local herders /villagers and collect rent.

Gradually, the *norpons* bought cattle and some user rights of *tsamdros* from their employers (as the elite families gave up TAP cattle) and carried on the legacy of rearing cattle and the practice of transhumant pastoralism. This is how some of the herders, who now depend heavily on transhumant herds, especially the Damchena herders, evolved, as they spent a good part of their life herding animals but did not own any land. They only purchased usufruct rights of some *tsamdros*. This is also how herders from Damchena, the descendants of *norpons*, gained access to *tsamdros* in the south in Chukha Dzongkhag. It is only in the last decade that these herders, challenged by different government policies on the one hand and favoured by the cash generation opportunities in the south on the other hand, started buying small parcels of land in their summer place and building houses and

settling down. However, they still are largely dependent on cattle and practice seasonal migration as transhumant agro pastoralists.

While many of these *tsamdros* were bought by the former *norpons*, some were sold to village based pastoralists. It is these *tsamdros* which are being utilised by *norpons* now while they continue to pursue a transhumant agro-pastoralist lifestyle. A female herder in Damchena reported having bought the rights to *tsamdros* of their masters:

“The tsamdros are the same that our parents have used before. It was also the same tsamdros where they lived [grazed], with the royal herd until the 3rd king’s reign. Later the 3rd king sold out all the animals and tsamdros were given to ... We somehow have some animals by then but no place to graze them, so we bought that tsamdros from ... I don’t remember now how much we paid. ”
(Herder_35)

For many herders all they knew about these *tsamdros* rights was that this has been the system since the time the king and /or the government used to maintain royal herds (approximately 1900 -1950s) and they have inherited it from their parents.

4.2.5 The Other *tsamdros*

Interviews with the herders and agency staff indicated the existence of a second group of transhumant agro pastoralists who seem to have gained *tsamdros* as their resource base on which they raised cattle and adopted transhumance as their chosen lifestyle.

The herders of Papali, Bempu and Tshebji village in the west and Urci and Doshi villages in east central Bhutan are reported to be herders who lived with livestock as their main source of livelihood. While many herders did not know how their parents gained access to those *tsamdros*, others reported to have bought *tsamdros* from other herders. Still others bought ex-royal or *goendeps tsamdros* from elite families or representatives of regional governors. These herders believed that their ancestors must have adopted livestock and transhumance agro pastoralism since they settled in those villages.

Referring to a very old history of their transhumance an elderly male herder from Bempu in his seventies explained that transhumance was their way of life. *Tsamdros*, according to him, were allotted to them by government like other categories of land owned by people

doing different agricultural practices. He referred to the people of Paro having paddy land and indicated that *tsamdros* meant the same thing to the herders:

“Well, the tsamdros are from very long time, since our parents’ time. It’s since the beginning, like how the Parops came to own their lands, it’s from your parents. It’s been passed down from generation to generation. Even to this day, it is like that. Earlier, it wasn’t different from other land categories.” (Herder_16).

The difference between the (ex) *norpons* and this group is that here people reared their own cattle, whereas *norpons* were initially looking after cattle for their employers. When asked if their cattle initially belonged to some rich and powerful people, the same elderly herder emphasised that the cattle they reared were their own while practising transhumance:

“No, no, they don’t own anything in our cattle. Not even Shiki Chi [meaning 25 chetrum or equivalent to a quarter of Ngultrum]. Even if you have 100 animals, it is all yours, but some had only 10-11, 15-16 heads - the poorer households.” (Herder_16)

During the interviews some herders told stories about how transhumant herders from north gained access to *tsamdros* in southern Dzongkhags. Some of the stories, particularly concerning how Doshi herders gained access to *tsamdros* in Mongar, Lhuntse, and Zhemgang Dzongkhags, take a mythical proportion. A herder key informant (Herder_4) from Doshi narrated a story of a man called *Dung Nagpo*, a man with enormous strength supposedly used his power to subdue opponents and made *tsamdros* in south available for Ura herders. *Dung Nagpo*, according to him, became a sort of protector for Ura geog. *Dung Nagpo*, with the strength of epic proportion through his two re-incarnations, is said to have allotted *tsamdro* to Ura herders with land demarcations. This story as narrated to the researcher by the herder key informant (Herder_4) is provided here as a case in Box 4.1.

Box 4.1. The story of Dung Nagpo and how Uraps gained access to *tsamdros* in other Dzongkhags

A herder in Bumthang narrated an account how Uraps gained access to *tsamdros* in the south, which almost sounds like a myth to an outsider. According to him it is believed that once upon a time there lived a very strong person there called Dung nagpo. Some called him Dung nyep (meaning the 2nd Dung). There were 2 Dungs in fact and the other Dung was of Royal descent. The Dung that lived in Ura was said to be a very strong man someone who earned his power out of his physical dominance. It is said that this Dung nagpo was the one who made the *tsamdros* in Mongar, Lhuentse and Zhemgang available to Uraps. Uraps since then utilised and grazed the land that was identified and demarcated by him.

And that according to the same herder was even before the Kings, about Zhabdrung and Pema Lingpa's time which could be dated back prior to 17th Century because Shabdrung came to Bhutan in 1616. It is said that the Dungenagpo's one generation was even before that. His earlier generation was born in Thrithangbi, and he built Zhongar Dzong but later lost it to Zhongar Poen, who built the Dzong with proper structure. However, people in Mongar got together and assassinated him because he was a Nyagoe (strong man).

Later he was believed to have reborn in Tibet and travelled again to Bumthang and settled in Ura. That incarnate refused to go to Zhongar believing, because he was born in Tibet, he would be susceptible to Malaria in the south so he settled in Ura. He then made the *tsamdros* in south available to Uraps, so Uraps started keeping more cattle then. The herder said "*I believe that they used to keep some cattle even before that but the herd sizes really grew after gaining access to the tsamdros in south*" (Herder_4). That according to the informant was how Uraps became transhumant agro pastoralists. Every household kept some number of animals with various herd sizes. They depended almost entirely on cattle kept primarily for butter and cheese. And this he said is the reason why Uraps get a bit more agitated or anxious when anything on cessation of inter-Dzongkhag transhumance is mentioned.

4.2.6 Purchased *tsamdros* user rights

While the majority of the current generation of herders irrespective of their origins have inherited the usufruct rights from their parents, some indicated they had to buy the rights either to start up or because the ones they inherited were insufficient. Table 4.1 shows that out of the 24 herder key informants interviewed for this study, five indicated they actually bought the *tsamdros* rights.

While the majority of herders (n=15) inherited the rights, four did not indicate if they have bought or inherited the rights. My assumption is that these four also inherited the rights because of the long history of transhumance and rights inheritance. The question specifically on how a particular household got their *tsamdros* rights was not asked in the interviews where it became obvious from their earlier statements that the usufruct rights

were inherited. The reason for highlighting purchased rights is because of its nature of (il) legality explained later in Chapter Seven.

Table 4.1 Origins of *tsamdrol* usufructory rights among TAP herders from 6 study areas

Rights holders	Bought	Inherited	Not indicated	Total
Tshebji	2	2	1	5
Papali	0	2	1	3
Bempu	0	5	0	5
Doshi	0	3	0	3
Urchu	0	2	0	2
Damchena	3	1	2	6
Total	5	15	4	24

4.2.7 Transhumant agro-pastoralists were some of the first taxpaying citizens of Bhutan

Except for *norpons*, who only recently started owning cattle and settled as transhumant agro-pastoralists, the *other herders*, especially the elderly herders mentioned, paid tax in kind and narrated how difficult it was prior to 1950's when the third king abolished in-kind tax system.

A herder in Doshi said besides paying taxes for meat, butter and cheese they also had to make butter and cheese contributions for national rituals. He explained how the tax rates and contributions are calculated:

'Once back here [Doshi] we need to make contributions @1Jatsham = 6kgs of butter to Jakar Dzong. We have to make contributions for the national rituals twice a year- in summer for Lhamoi Domchoe and in winter for Punda Domchoe-, these are called Penda. Butter tax is paid separately on the 1st day of the 8th month at Jakar Dzong again.' (Herder_5)

A similar story was also narrated by another elderly herder from Bempu who told how an official from the central government would come and collect tax based on the number of animals they owned. He also indicated the additional contributions they had to make

for religious activities, like blessing ceremonies (locally known as *Wang*), aside from the main tax:

"... during that time we have to pay Sha threy- Maa threy [meat and butter tax]. That was called Batsibi maa, i.e., each milking cow is equal to one sang of butter [about 1/3 kg], the officials would come and collect. Then there is Wang maa [blessing butter] that was from Zhabdrung Rinpoche's time. We have to offer about 3-4 Dhos [one Dho = 40kgs]." (Herder_16)

The same herder reported that the amount of tax or contributions levied on each household was progressive and proportionate to the household's resources such as landholdings and number of cattle in the herd. Richer families paid higher taxes and made larger contributions compared to the poorer households:

"... it [tax] depends, I mean since then it was depending on size of your land and number of animals you have. If you are rich and have more land, you have higher tax. Even meat is like that, in sangs. We don't have kg system then. And then there is something called Buema. There will be Boe coming from Dzong to collect separate taxes." (Herder_16)

Another herder in Papali reiterated their tax payment and suggested that the taxes necessitated transhumance agro-pastoralism, because they were cattle dependent and had to pay meat and butter tax. This was not possible if they stayed in the temperate village in winter because it was too cold and all the forage resources would have dried up in winter leaving nothing for animals to feed on.

"... because earlier we had to pay Sha threy- Maa threy ... in order to pay that tax we have to move down, settle in a tsamdro, and pay the tax from the cattle produce. Otherwise, there is nothing here in winter, how can we rear animals here, and how are we going to pay tax." (Herder_8)

His view was supported by another elderly herder in Papali who indicated that it was only in recent generations they were able to keep their livestock products and sell it to the market and earn cash. This herder recollected how difficult life was then with heavy in-kind taxes on their livestock products and a meagre amount of production from the crops in the temperate settlements:

"It is only during our generation that we got the opportunity to sell our produce. Earlier we ... have to deposit Sha threy and Maa threy ... Officials,

known as Baatshipscome and record animals. Cows with a mere drop of milk will be recorded and subjected to tax. Later on... that tax system was abolished ... People had to live in the forests, in tsamdros, looking for wild yam, and eat those. We didn't have anything to sell those days because we had to deposit our produce as tax." (Herder_9)

Several herders indicated that having paid large sums of taxes, they had contributed to nation building with the help of their migratory cattle during their parents' lifetime. Often, these contributions they made were put forth as an argument to claim their legitimate rights for continuity of the TAP system and use of *tsamdros* in the south.

4.3 The contemporary nature of transhumant agro-pastoralism in Bhutan

4.3.1 Transhumance and its impact on education of herder children

Given the nature of their remote location and need to move seasonally transhumance poses a threat to herders' children's education. The literacy level of these herder communities and the effect of transhumance on children's education were therefore explored in the survey with a semi structured questionnaire. Table 4.2 presents the literacy level of the household members of the transhumant agro pastoralists interviewed for this research. The figures pertain to only 50 households (346 persons). The information on 25 households in Urchi is not included due to administrative error.

Table 4.2 Literacy level of TAP household members interviewed (n = 50)

Literacy level	No. of people	Percentage
<i>Illiterate (Do not know how to read or write)</i>	196	56.65%
<i>Literate (Knows how to read and write)</i>	121	34.97%
<i>Had secondary or university level education</i>	29	8.38%
Total	346	100.00%

Table 4.2 shows that about 57% of TAP household members were illiterate defined by lack of knowledge to either read or write. Around 35% of the household members were

literate being able to read and write in either English or Dzongkha. These literate members are either children currently in primary school, or adults that have been to a formal or monastic schools and learnt how to read and write. The remaining eight percent had either had secondary or university education.

The majority (97.33%) of herders interviewed (N=75), reported that transhumance does not affect their children's education. Only about two and half percent out of the 75 households (621 individuals) reported some effect of transhumance on their children's education.

All the herders reported that the south bound migration commences before school breaks begin. Annual exams and winter breaks for children, begin in November/December, a month or two after the migration had taken place in September/October. Schools reopen sometime in February/March while north bound migration only takes place in April/May. Owing to these different timings if school age children joined migration, there is no way they can either join school on time or finish exams to go to the next level. However, the household survey results revealed that herders were making appropriate arrangements to allow their children to join school on time and allow them to finish exams in winter.

Most of the herder households (98%) reported making arrangements to allow children to finish exams in winter and re-join school on time in spring. They either arranged a family member to look after the children (84%), or kept them in a government boarding facilities (12%) especially teenage children, or made other arrangements, such as; as paying guest (paying small amount of money for accommodation and preparing own food) at an acquaintances houses (2.67%), to enable children to get back to school on time in spring and finish exams in winter before joining other family members in the south.

Less than one and half percent of households reported children of school age joining the migrations. Some of the ways transhumance affects children's education were when children run away with their parents before the final exams or children needed to help

their parents in migration or some children, after their parents migrated, were not happy and did not do well in their exams.

One herder said children joining the family in migration used to be the norm when he was young. He indicated, in retrospect, how many like him ended up dropping out of school because their parents did not know the value of education and they were too young to comprehend its consequences later in life. He said, for them, as children, the charm of going down to the warm places appealed more than anything, compared to having to sit exams in the torturing cold winters. However, now he says both parents and children are aware of the value of education, so arrangements are made to allow children to join school on time, as well as complete their final exams.

4.3.2 Gender roles in transhumance agro-pastoralism

In most of the herder households, there is limited farm labour, so there is no gender differentiation between men and women. However, in some households, different gender roles do exist and this is explained in the following section.

As reported by all the herders the normal practice during migration is that men normally move ahead of the general herd with the logistics and amenities loaded on horseback or oxen. Women and children herd the general group of animals and follow the earlier load carrying group. The herders said it is important for men and the amenities to move ahead, so they can reach a camp site early and set up a camp, make a shelter and makeshift corral to contain the calves, and prepare tea for the women and children who arrive tired and hungry. When the women and children finally arrive, they can immediately have a cup of warm tea and some snacks. Then the women start preparing dinner, men collect firewood and water, tie the calves (so that the milking cows do not run away ahead with the calves), collect fodder for the calves and take stock of the animals. The herders reported that along the way, until they are settled in their winter camps, men do most of the work, often including preparing meals.

A herder in his fifties in Damchena explained:

"During migration, men manage the pack horses and go after them because it is risky along the steep, narrow and slippery paths ... Women and children will just follow from behind with packed lunch and hot tea in the flask ... They could reach as late as 3PM at the camp because everything will be ready for them by the time they reach there ... " (Herder_36)

The herders also reported once they are settled in the winter camps, often only women, children and elderly are left to take care of the animals and process the products (butter and cheese). They are assisted by a hired helper if required. The men go with the horses to transport oranges to generate additional cash income. However, this practice of engaging in cash generation activities in winter depended on the availability of capable human resource in the household and accessibility to these opportunities.

A female herder in Urchi said:

"... although along the way men do most of the hard work, cattle are left with women and children once we reach our camp sites and settled. Men go with horses to transport oranges to generate some cash." (Herder_2)

However, in some of the southern places where they have no access to orange transportation either due to remoteness or non-availability of oranges in the locality, they engage in other activities. Besides, collecting fodder and firewood, men engage in cane works: weaving baskets, making bamboo containers and ropes. Women, aside from fetching water and preparing meals, weave clothes.

An elderly male herder in Urchi said:

"... while in the south, men will engage in cane works: weave baskets, and make ropes ... we keep whatever we need and if there are extras and if someone makes a demand we sell them ... Women; what will they do? These days some of them take some cloth weaving work but otherwise it is just preparing meals at the camp ... collect fodder for calves, some firewood, and fetch water." (Herder_1)

Transhumant herders have separate gender roles with men often taking the tasks that require heavier lifting or are more physically demanding such as loading the pack animals, and going to the forest to collect materials for cane works. Women mostly take care of the family, fetch water, prepare meals for the family and feed the calves. They also now weave clothes to keep them occupied in the camps during winter. However, the

division of work can become blurred when the household is faced with family labour shortage.

Although it was reported that in the past pregnant women joined the migration and sometimes gave birth along the way, that seems to have changed now. All households reported that alternative arrangements are now made for pregnant women to come in a bus or other vehicle to the nearest town prior to heading to camp site. If there is a family labour shortage they would hire a helping hand rather than let her join the migration.

4.3.3 Importance of cattle for transhumant agro-pastoralists compared to crop farming

Interviews with the herders revealed they considered livestock of primary importance compared to crop production, because of non-food self sufficiency attributed to inadequate landholding and the location of their village; situated between the mountains at higher altitude. Owing to these conditions, their only annual crops like wheat, barley and buckwheat, have low yields. In some places potatoes have been tried but this also is limited by land, climate change and market fluctuations.

An elderly herder in Doshi said:

“ ... livestock is a must for Bumthaps. Butter and Cheese are our main livelihood support products. There is potato but it is unpredictable, when the price is good it is better but when the price is down it cannot even pay its transportation charge ... In Doshi even these crops do not grow well. So, livestock is the only reliable source for us. Our parents have done that and we also need it.”
(Herder_6)

Another Doshi herder gave similar reasons and indicated livestock products as being more reliable than any other crops. It was the livestock products that they exchanged for cereal grains with crop farmers from lower valleys. Livestock products are now being sold to purchase other food items. This herder too is sceptical of relying on potatoes owing to market uncertainty and said:

“Cattle are very important ... earlier we produce abundant butter and cheese enough for our consumption as well as to present it to others. We go to ... with butter and cheese and exchange with wheat and buckwheat ... Potato helps when

the price is good in Phuntsholing, but should anything go wrong with that potato then we have a big problem.” (Herder_4)

Pastoralists perceive that they do not have enough land to be relying solely on food crops. This view of land insufficiency was then explored through the household survey that revealed slightly more than half of herders believed they have enough land to support their households’ food needs. However, only 40% of the respondents reported producing enough food from their land (Table 4.3). Reasons cited were the inability to cultivate all the land they owned, land fragmentation, land located faraway from house, wild animal depredation and dependence on traditional farm equipment.

Table 4.3 Herder perceptions on land and food self sufficiency

Have enough land?	Yes	42 (56%)
	No	33 (44%)
Produce enough from the field?	Yes	30 (40%)
	No	45(60%)

These marginal landholdings and fragmentation were further exacerbated when government allotted part of their *tsamdros* land to new immigrant settlers in the south in the 1970s. It was indicated in the past some herders initially leased part of their *tsamdros* to early *Lhotshampa* (term used in Bhutan to refer to southern Bhutanese of Nepalese ethnicity) settlers. Herders said, as new settlers started settling in the south, they cultivated part of herders’ *tsamdros*, and paid annual rents in kind. The latter became one of the incentives for the herders to migrate seasonally.

An elderly herder in Bempu said:

“They [Lhotshampa settlers] grew crops and we could collect lease fees in kind. We could get maize 20, 40, 50 kgs depending on the size of our land. My wife’s household used to get the highest quantity.” (Herder_16)

Another middle aged herder, also from Bempu, indicated a similar reason for collecting lease fees initially:

“Earlier it is because some have land down there, so they get lease fees paid in kind from Lhotshampas which is called Taanam which these days would be referred as Zhing gi Tsho.” (Herder_17)

However, this practice of collecting fees was said to have ended after the government allotted land to the settlers in their own name. This was later confirmed during the focus group discussions both with herders in north and local residents in the south. The leasing of *tsamdros* for cultivation and collecting rents by *tsamdros* rights’ holders was ended in 1971 when the government asked the *tsamdros* owners to collect the price of the land cultivated by settlers @ Ngultrum 75/acre (A\$ 1.63) and registered those cultivated areas in the *Lhotshampas*’ names.

This reduction in *tsamdros* areas to graze led herders to look for additional income generating activities. Accordingly, herders diversified their livelihood and explored other opportunities while in the south during winter, as well as, at their temperate villages in summer, to supplement the income from transhumant pastoralism. Migration with their cattle enabled herders to engage in a range of off-farm-activities (OFA) that helped them supplement their income and food produced from their cattle and smaller land holdings.

Some 91% of herders indicated they are engaged in seasonal OFAs, such as transporting oranges in winter, carrying tourist logistics and construction materials, making cane products, working as casual labour at construction sites, and other cottage industries such as *Yathra* (woollen cloth material) weaving.

Table 4.4 (p 135) shows the various amounts herders earned from OFAs each season that contributes significantly to herders’ household food security. Herders reported the amount of money each household earns each season depends on their individual households’ capacity and capability and availability of household members capable of doing business or going after the horses, as well as availability of horses.

Table 4.4 Proportion of herders and levels of income earned from seasonal OFAs

Off farm income level (in Nu.)	No. of households	%
Not engaged in OFA	9	12.00
<20000	24	32.00
21000-30000	19	25.33
31000-40000	9	12.00
41000-50000	6	8.00
>50000	8	10.67
Total	75	100.00

This tradition of herders engaging in seasonal OFAs was well captured in his note where one of the agency experts wrote:

“Winter was a time when the two families like many Haaps and Jababs do, engage themselves in orange business in Phuntsholing. They took their dozens of horses and mules to mainly engage as porters, carrying oranges from the orchards to Phuntsholing.” (Agency_2)

However, irrespective of the amount of income they earned from OFA seasonally, or crops they harvest from their field, the majority of herders (88%) rate cattle as important to highly important for their household’s livelihood (Table 4.5). Although cattle herding is considered the main income source, herders were not able to provide figures and it was much easier for them to give figures for the OFAs.

Only eight percent considered non-timber forest products (NTFP) as important to highly important for their household. Crops and OFA constitute medium importance to the herder households, relative to cattle and NTFP.

Table 4.5 Relative importance of different income sources to herder households

Sources of income	Relative importance		
	High	Medium	Low
Cattle	38 (51%)	28 (37%)	9 (12%)
Crops	26 (35%)	30 (40%)	19 (25%)
Casual labour & OFA	9 (12%)	26 (35%)	40 (53%)
NTFP	4 (5%)	2 (3%)	69 (92%)

Some herder informants also reported engaging in weaving baskets, making ropes, containers and household items using bamboo and canes while in the south during winter. These herders sold some of these products after their own requirements are met.

A herder key informant from Urchi said:

“While in the south, men will engage in cane works; weave baskets, and make ropes ... we keep whatever we need and if there are extra ones and if someone demands we sell them.” (Herder_1)

During the orange season in winter, men either transport orange on horseback, their own back, work as guard for orchards, or supervisors (locally known as *byders*) or do some petty contract trade (locally known as *thikadars*). Women also transport oranges on their back, do some vendor (*khudura*), run a small shop or engage in packing mandarins in boxes. They also engage in transportation of tourist logistics and construction materials with their horses when available.

The economic reasons and bio-physical factors that necessitated TAP herders to engage in seasonal inter-Dzongkhag migration are presented in the next section.

4.3.4 TAP herds are bigger in size than downstream residents’ herds

One of the features that emerged during the focus group discussions was that migratory herders owned larger herds than the downstream local residents. The newly established herds, as well as the existing migratory herds, are said to be even bigger than they used to be in the past. The existing herds that still practice transhumance take the non-migrating households’ cattle with them in winter and utilise the *tsamdros*, while the downstream local residents are refused grazing rights in their pastures. Livestock extension agents said that as many as seven to eight households in Urchi and Doshi combine their animals into a single herd and one or two households migrate to take care of the animals. The focus group participants reported, while a migratory herd would have herd sizes ranging from 30-40 to 150-200 animals per herd, the majority of local residents would have five to six up to 20 animals at the maximum. When asked if local residents’ small herd sizes could be attributed to their lack of access to *tsamdros* resources, many herders indicated

this could be the case.

The focus group participants concurred with the above statements that local resident farmers in Brokser in the east and Kungkha in south western Bhutan indicated that if they could gain access to *tsamdros* in a locality they are willing to keep more cattle. Although, the authenticity of their statement remains to be established, whether they would truly keep more cattle or not, the downstream residents in study areas had fewer numbers of animals than the TAP herders. It is also reported that very few households in communities like Chimuna, and Geling in Chukha Dzongkhag where some of western herds go, possess bigger herds comparable to TAP herds. One of the herds in Lhuntse in eastern Bhutan as per livestock personnel during focus group discussion is also said to have herd size comparable to Doshi herds.

4.3.5 The TAP herders' preference for Jatshams and Thrabams over exotic breed cows

Discussions with the herders found the cattle breeds kept by TAP herders in the past and adapted to the transhumance system were predominantly *Thrabams* and *Jatsha-Jatshams*. *Thrabams* are an indigenous breed of cattle of *Bos indicus* type also referred as *Siri* or *Nublang*. Mithun (*Bos frontalis*) originates from Arunachal Pradesh State in India (Fig 4.2).

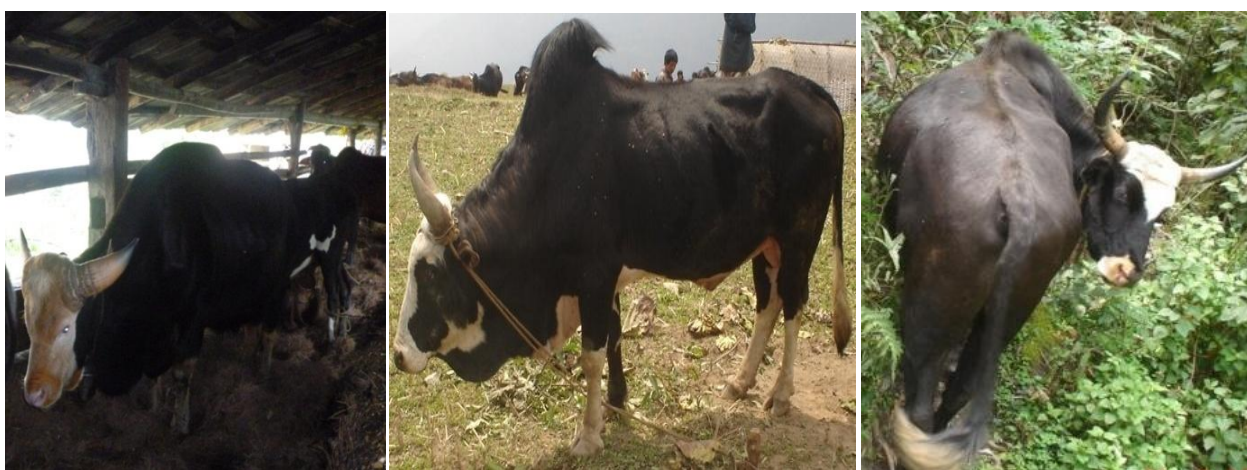


Figure 4.2 A pure Mithun bull, a Nublang bull (indigenous) and a Jatsha ox

Herders indicated crossbreeding Mithun with *Thrabams* to produce *Jatsha-Jatshams* for the higher milk production, high butter fat content, superior strength of these animals well

suited for ploughing and pack animal purposes, ability to walk long distances, negotiate steep and narrow landscape and graze in the forest.

A herder in Bumthang, when asked if he would be able to stop migrating, said his *Jatshams* would die of the cold if he stopped migrating:

“The Jatshams would die because Jatshams can’t survive here and I ... have 30-40 heads - Jatshams and Thrabams. I don’t have exotic breeds like Jersey ... there is shortage of fodder in winter, so definitely animals will die.” (Herder_4)

Herders also reported the existence of *Yangkums* (*Jatshams* backcrossed to *Nublang* bull) with *Thrabam* and *Jatsham* herds. This trend is not preferred by the herders and implied as an outcome of labour shortage that constrained selective breeding practice. One elderly male herder from Doshi mentioned maintaining pure *Jatsham* herds in the past. He took *Yangkums* to other Dzongkhags like Wangdiphodrang, sold them, and brought back pure *Jatshams* and maintained a pure *Jatsham* herd. Now, he said, due to labour shortages he could not go and sell his *Yangkums*, nor purchase *Jatshams*:

“I used to take Yangkums and sell them and buy Jatshams in return to maintain pure Jatsham herd for higher productivity. But I cannot do it now so the herd comprises of mixed breed and productivity has declined.” (Herder_6)

Herders and agency experts reported in the past elite families and monastic bodies also maintained separate herds of *Jatsham* and *Thrabam*.

However, the TAPs herds today continue to be dominated by these breeds. While some report of improvements in their herd by replacing largely *Thrabam* herds by *Jatshams*, others lament the deteriorating herd quality to *Thrabams* from once having pure *Jatsham* herds. The ability to convert the herd into more *Jatshams* is considered as progress in herders’ world view.

Migratory herders are not confident enough to shift to exotic breeds of cattle because of the high cost involved, fragile health and high level of management required for the exotic European breeds. Even today, most herders reported having only a few or no exotic breeds of cattle, particularly Jersey and Brown Swiss, which are adopted and

continue to be promoted by the Bhutanese government for cross breeding with the local *Thrabams*.

Herders expressed the high cost of exotic cows and the fear of huge losses that can incur to the household given the fragility of such breeds. A female herder in Tshebji said, “... for poor farmers like us, we cannot afford to buy exotic crossbreeds, besides sometimes these animals die suddenly and cause huge loss.”

Many young herders with little education appeared sceptical about ceasing transhumance vis-à-vis indigenous cattle, sedentarising the farm and adopting exotic cattle breeds. These young herders expressed a desire to continue like their parents and retain *Jatshams* and *Thrabams*.

A young herder participant from Bempu said:

“I feel we would be doing it the same way as our parents did. Exotic breeds like Jerseys are difficult to manage and very fragile and die very easily. Our Jatsham breeds are very thrifty, easy to rear and live long life.”

The same perception resonated in focus group discussions in Urchi. Herders in general believe the majority of them are not able to provide the level of management these exotic dairy cattle crossbreeds need.

A young female herder from Urchi said:

“No, Jerseys are dependent on the quality and quantity of grass you feed and we can't give that level of management. You need to feed with good quality grass and concentrates. Our local cattle we just need to give salt occasionally and they will graze in the forest.”

Another young male herder participant in Doshi explained this on behalf of the group:

“... although some households have a few head of crossbreeds, because the growing season here is so short and dry period is longer, we cannot grow enough fodder for animals. And because these crossbreeds require higher level of management, we are not able to get the maximum milk production. Often, we barely manage to keep the animal alive and yet still some people just live by that because they have no people to migrate with the herd.”

Clearly the herders' preference is for *Jatsham* and *Thrabam* breeds as long as they have

adequate farm labour available to go after the animals. The reason is the superior survival and thrifty characteristic of local breeds over exotic cattle. The migrating herds, though the task of migration during bad weather is daunting, provide butter and cheese production with free grazing in the forests. The higher butter fat content and possibility of keeping higher number of cows in milk with migrating local breeds also raises the prospect of better income.

However, as mentioned in the previous quote, some households are adopting crossbreeds kept at the homesteads, although the animal's ability to express the genetic potential may be highly compromised due to substandard nutrition and poor management. Details on this trend of adopting exotic breeds are presented in Chapter 6.

4.3.6 The migration routes and length of migration

Herder key informants and agency experts both reported the existence of established routes that the herders follow regularly, camp sites they use during migration and final camps where they erect semi-permanent sheds in winter.

The interviewees also indicated that the transhumance journey in a single direction could take between four to five days for the shortest one to as long as over a month for the longest one. The shortest migration route was reportedly the Jabana-Dungna route which could be reached in four to five days (Figure 4.3). This was reported by an agency informant who has had substantial experience working with these herders and has conducted several case studies.

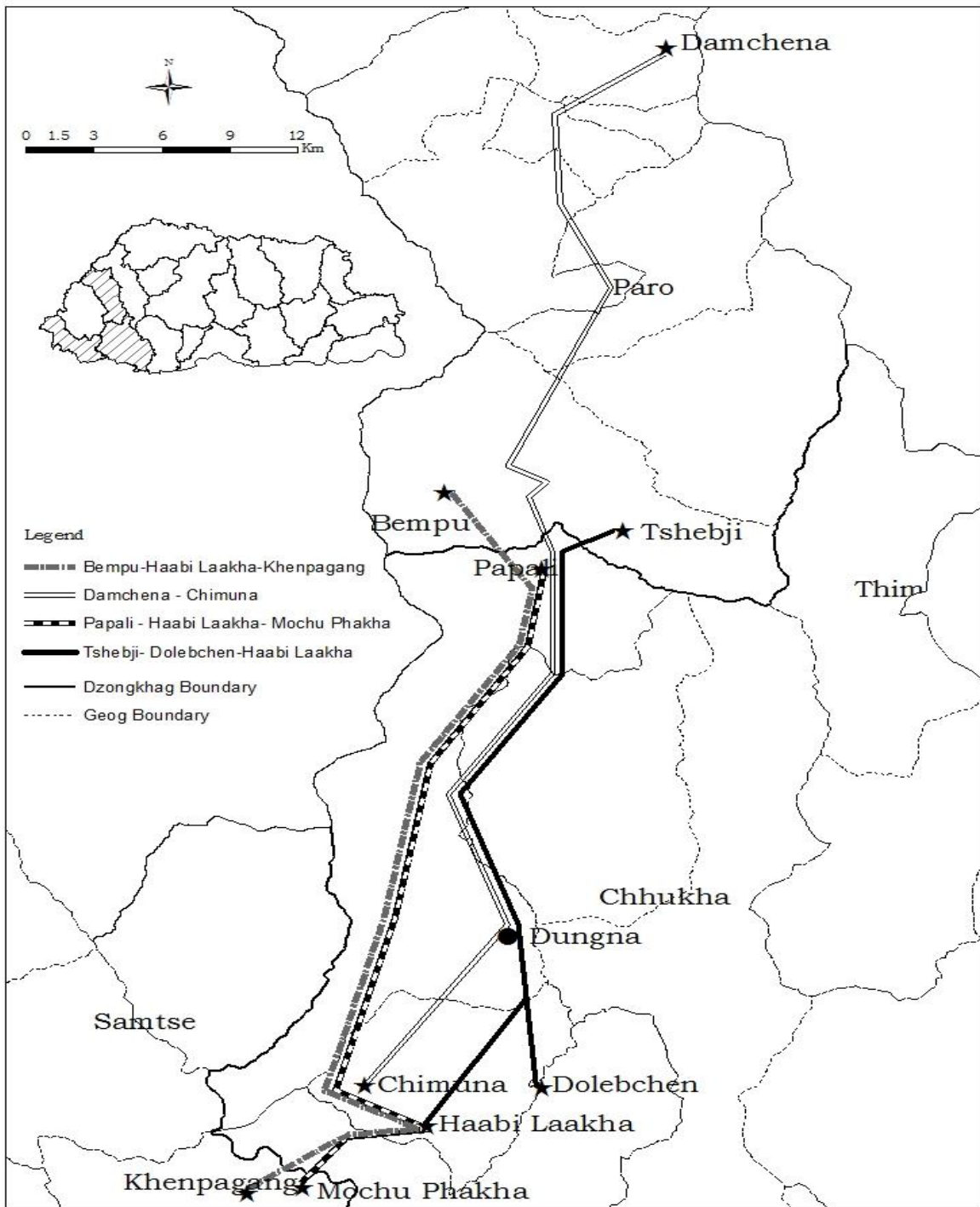


Figure 4.3 Migration routes of Western Bhutan herds

The longest route (Figure 4.4) as reported by a female herder in Urchi, some Urchi (Bumthang) - Surey (Sarpang) routes take over a month to reach the final destination in one direction:

“The nearer ones they reach in about 1-2 weeks’ time. My herd because we are a bit far away, it takes a bit over one month ... [I]t takes over a month to go down and over a month to reach back here. And sometimes if we face some problems on the way then it may take even longer than that ... ” (Herder_2)

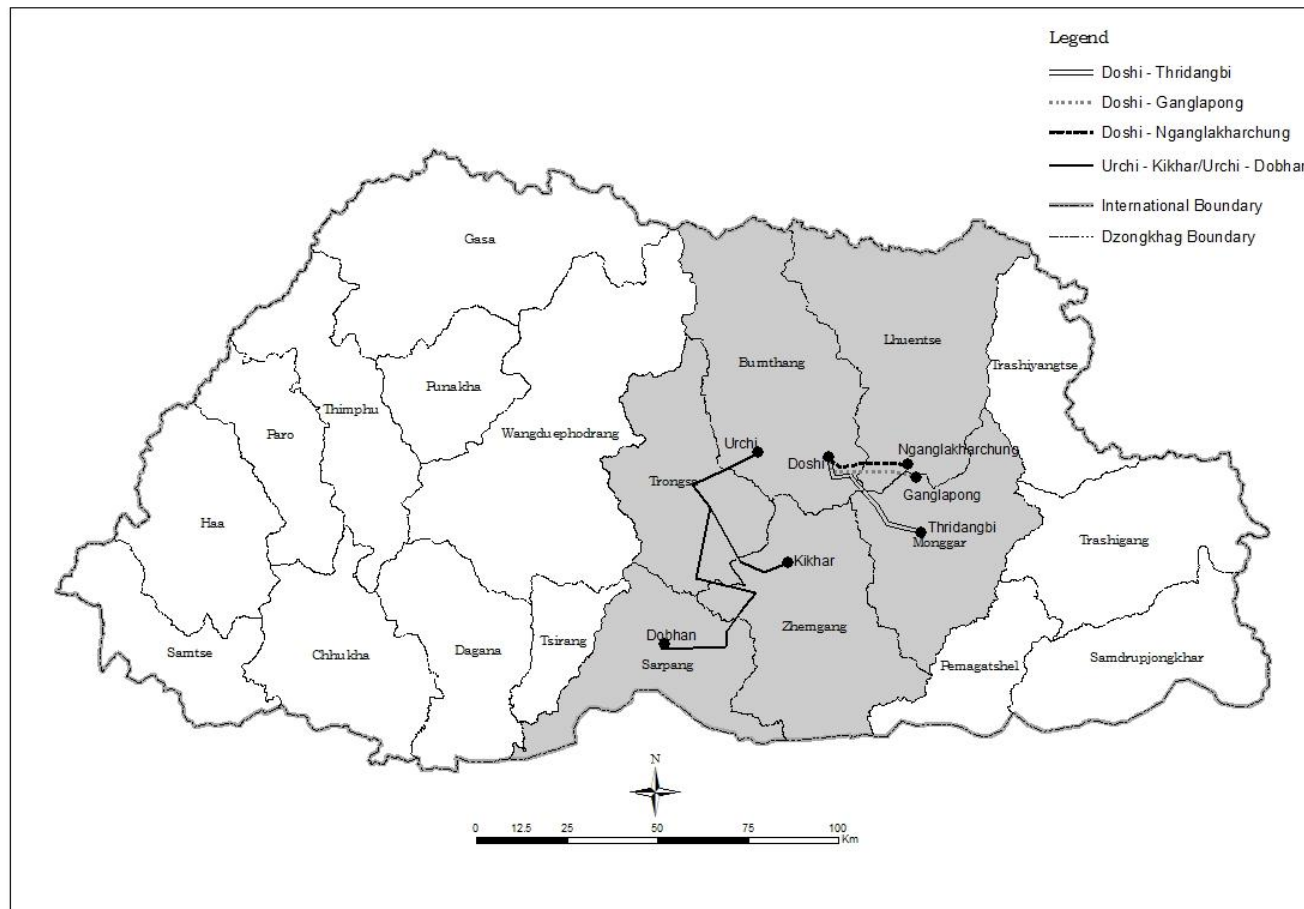


Figure 4.4 Migration routes of Central Bhutan herds

The routes they follow generally were established during their parents’ time and the current generations follow similar tracks. These routes and halt points are reportedly so regular and established that even their animals know these places quite well.

A female herder in Tshebji said:

“It has been designed that way for a long time. The animals know already where to halt. If we have halted at certain places last year, this year when the herd moves the animals will stop as soon as they have reached those camp sites.” (Herder_32)

However, on a daily basis the herds usually move shorter distances and also halt several days along the way for various reasons. Some halts are the result of the herders' own decision, to let animals graze the pasture on the way, and others are forced upon them because of weather and other natural calamities, wild animal attacks and general poor health condition of the animals.

4.3.7 *Tsamdro* management practices of TAP herders

While the foresters and environmentalists in Bhutan in general tend to view cattle grazing in forests and herders actions as largely having negative impact, the views of agencies as well as pastoralists interviewed for this research were divided. While some foresters tend to put outright blame on cattle grazing, others contradicted these views and explained that perhaps there are other factors affecting the forest regeneration issues that were often blamed on cattle grazing. One agency personnel gave an example of forest regeneration at Chelela pass between Paro and Haa Dzongkhag. He indicated that the stretch of forest near that pass had had a very low regeneration rate for a long time and cattle's grazing was thought to be the cause. However, he said, it was wrong, for without any intervention, the regeneration in last couple years has been robust, indicating there must be other factors in play. He clarified that the problem with cattle grazing occurs but is often associated with the logging and clearance. Cattle tend to graze in open areas, and wherever patches of forests have been logged and re-planted, cattle grazed there and caused conflict. Other agency personnel indicated that the effect of grazing is not an issue with coniferous forests but uncontrolled intensive grazing can affect broadleaf forests and sub-tropical forests.

Around three quarters (74.67%) of the TAP households surveyed (N=75) felt that cattle grazing had no negative effect on forest, while some 25.33% (n=19) felt there is some effect such as trampling and eating seedlings, but mostly restricted to understoreys and shrubs. One of the reasons for this perception stems from the view that the animals only consumed annuals; those that would die in a year, even if it is not grazed. Besides, the

branches of fodder trees lopped will grow back with better biomass production the following year.

The majority of the herders (88%) disagreed with the proposition that herders destroyed or caused degradation to environment by chopping down trees at camp sites. Only 12% of them held the opinion that some herders, especially when they graze in common pastures, might cut down some trees. The former group indicated TAP herders almost never felled the big trees. They only mentioned lopping branches, keeping the terminal branch intact, and knew if trees in *tsamdros* were destroyed the consequences will fall on them.

The herders reported that even when fodder exhaustion approaches towards spring, they restrain themselves from cutting down the trees, and just lop the branches and twigs of the fodder trees. Some said, often times there are no able bodied people at the camps, capable of bringing down big trees on a large scale. It was also explained earlier under gender roles, once the herds arrived in the south only women, children and elderly members, who are not in position to fell big trees, are left with the animals.

Instead, herders indicated employing several management practices in line with responsible stewardship of managing the natural resources. They mentioned collecting fodder tree saplings from faraway places, and planting them near their camp sites in April-May, before the herds moved back to their summer pastures. The newly planted saplings are said to be kept covered and protected from wild herbivores, after the herd moves, to let them grow. The same saplings are expected to be ready for harvest in 2-3 years' time, to supplement the ground cover forage.

A male herder informant in his mid-forties from Doshi said:

"We collect fodder saplings from landslide and flooded areas, places away from our tsamdro and plant them in spring prior to migration to the north. It has to be kept covered with bushes or provide some sort of fencing so that the foders saplings will grow to a tree which we can harvest in 2-3 years' time."
(Herder_4)

When asked about their management practices, and if they cut down trees indiscriminately to feed their animals, one elderly herder in Bempu said:

“No, No, there is no way. The cut-away branches of the fodder trees we lopped the year before would have dried, after the leaves and bark of the cut piece are consumed by the animals. We collect that as firewood. In addition there are dead trees, trees that dried or fallen down because of wind and storm in spring. The fodder trees would have grown again strong with good foliage and biomass from the edge where we have lopped the year before. (Herder_16)

TAP herders' *tsamdros* management strategies can be summarised as follows:

- Collecting fodder tree saplings from far places; usually from creeks, cliffs, flooded and landslide areas.
- Planting the seedlings and/or saplings near winter camp sites.
- Keeping seedling and/or sapling covered to protect from wild animals while migrating to north.
- Covering and protecting water sources
- Clearing bushes and minor understorey to enable animals to graze as well as leading them to water.
- Not felling the trees or not cutting the terminal branch when lopping.

These practices, according to herders, help maintain their *tsamdro* and natural environment, in contrast to the popularly held view by some Bhutanese environmentalists and foresters.

Additionally, herds are moved and rotated between different *tsamdros* in a particular season, in both the south and north encampments, to avoid over grazing. Herders relied on physical observation of the condition of *tsamdros* and drop in milk production of cows, as an indicator to move their camps and transfer the herd to a different *tsamdro*. Transhumant agro-pastoralists indicated they manage their *tsamdros* in a sustainable way because they understood the benefits, and they will have to use them in future. They also indicated protecting water sources, and clearing and maintaining paths, both for their animals and for herders to access the forest resources.

4.4 Drivers of migration

4.4.1 Why is transhumance necessary?

Some of the main reasons for migration mentioned by herders were: cold temperatures, shortage of feed resources, engaging in cash generation opportunities in the south, avoiding parasites in the south, to have draught power and manure for the fields, and because it is their tradition and their way of life (Table 4.6,p 146).

Table 4.6 Frequency of factors necessitating transhumance mentioned by the herders

Factors necessitating transhumance	f (n=24)	Percentage
To avoid the harsh winter cold and mortality of animals owing to high altitude	15	62.50
No space (enough land) and shortage of feed at temperate village in winter	14	58.33
To engage in the off-farm activities (OFA) (transportation, petty contract and packaging)	6	25.00
To be able to take care of their animals, avoid animal parasites in the south, grow crops in the village, and supply draught power and manure for the crops	5	20.83
Because the summer <i>tsamdro</i> in winter will be grazed by <i>Bjops</i>	4	16.67

The numbers shown in Table 4.6 represent how many herder key informants (n=24) mentioned each of the reasons or benefits of the transhumance system. Frequencies presented here are neither in terms of its relative importance nor weighted.

Very low temperatures (62.5%) and lack of space and shortage of feed (58.33%) for animals in temperate villages in winter resulting in high mortality of animals featured as main factors necessitating south bound migration. Herders reported in winter the pastoralists' villages become extremely cold with snow and frost, with evening temperatures often dropping below zero degrees Celsius. Everything around the village premises dries up leaving no forage for their animals to graze on. The herders reported that the frigid temperatures not only diminish the milk production, but also result in high mortality of animals. They also indicated their animals are a local breed that are used to

the transhumance system and would die of cold and feed shortage if not taken to the south in winter.

An elderly herder from Papali explained the need to migrate as there was nothing in the village in winter for animals to feed on.

“... how can we survive here? So many animals, there is nothing to feed them in winter. Cattle are already running away.” (Herder_8)

The possibility to earn supplemental income from OFA, and avoiding parasite load on animals in summer at southern sub-tropical pasture and the need for manure fertilizer and draught power to cultivate cropping fields at temperate villages, are also important factors that were mentioned. However, OFA opportunities were not uniform between central east and western Bhutan herders. While the majority of herders in west and some herders in Urtchi reported engaging in the orange trade in winter in the south, Doshi herders and most Urtchi herders do not have this opportunity. Some Urtchi herds like western Bhutan herds go to southern Dzongkhags where oranges grow, and are engaged in either transporting or other activities. Doshi herds and some of the Urtchi herds do not go that far south to be able to engage in the orange trade and they reported engaging in some bamboo crafts, however, it does not generate as much cash as engaging in the orange business.

Shortage of land around the village also necessitates moving cattle to the south because their summer pastures were being occupied by *Bjobs* (Alpine yak herders) in winter (around 17%). TAP herders also mentioned not having enough private land to grow pasture, crops and graze their cattle altogether. Summer pastures for cattle become winter pastures for the yaks.

A male herder in his forties from Damchena said:

“ ... in winter these tsamdros here belong to Bjobs rearing Yaks. Those bjobs from Bjeyla, although they belong to Thimphu Dzongkhag under Lingzhi Geog ... in winter they say it belongs to them ... although the tsamdro is in Paro. Our rights to these tsamdros are restricted only to summer, in winter it belongs to Bjobs ... that [non migration] will lead to death of all our cattle.” (Herder_36)

The issue of lack of space resonated very strongly with the herders in the west as well as in central Bhutan. Furthermore, the herders said that because their villages are situated at high altitude, between the mountains, crop production is constrained by the compounding effects of low temperatures, short growing periods, and changing precipitation patterns on the small and fragmented landholdings.

The issue of landholdings, availability of improved pastures (an activity that is usually promoted by the government and grown on private land (Table 4.7)), and production from their land was explored further through semi-structured questionnaires in the household survey.

The household survey revealed that on an average each household owned about 2.57 ha of dryland that are rain fed, and a few herders also owned paddy land in the south with an average holding of 0.20 ha per household. However, despite the government’s effort in promoting improved pasture with free pasture seed subsidy with the cattle crossbreeding program with exotic dairy cattle, improved pasture holdings averaged only 0.36 ha for every household surveyed.

Table 4.7 Comparison of landholdings in six herder villages studied

Study villages	Dry land (acres)					Paddy land (acres)					Improved pasture (acres)				
	max	min	mean	range	sd	max	min	mean	range	sd	max	min	mean	range	sd
Bempu	5.00	0.33	1.83	4.67	1.48	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.51	1.00	0.36
Damchena	20.00	0.45	5.51	19.55	7.80	6.00	0.00	1.17	6.00	2.40	2.00	0.00	0.55	2.00	0.81
Papali	4.00	1.33	2.42	2.67	0.89	1.00	0.00	0.11	1.00	0.33	1.33	0.00	0.31	1.33	0.50
Tshebji	12.00	3.00	5.79	9.00	3.01	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.07	0.60	0.18
Urchi	20.00	1.00	7.41	19.00	5.54	5.00	0.00	0.56	5.00	1.05	7.00	0.00	1.52	7.00	1.95
Doshi	17.00	6.00	9.26	11.00	3.23	7.00	0.00	1.13	7.00	0.51	3.00	0.00	1.25	3.00	0.75
Consolidated	20.00	0.33	6.34	19.67	5.40	7.00	0.00	0.50	7.00	1.26	7.00	0.00	0.90	7.00	1.32

Table 4.7 shows there are large inter and intra village variations in landholdings. For example, except Damchena, dryland holdings were significantly lower, but more uniformly distributed in herder villages in the west than in central Bhutan. Only one household in Damchena reported having 8.1 ha of dryland. Other households in

Damchena had holdings comparable to other western herders. In contrast, Urchi and Doshi herders had significantly higher dryland holdings, but distributions were skewed with maximum holdings up to 8.1 ha and minimum holdings around 2.03 ha.

Similarly, improved pasture holdings were also significantly higher in central Bhutan with inter household differences. With an overall average of less than one acre, only a few households in the west had improved pasture, whereas in central Bhutan herders on average had more than one acre of improved pasture per household.

Some elderly herders also claimed that TAP needs to continue as it is a Bhutanese tradition and the government should support its continuity.

An elderly herder in Doshi said:

“The government often mentions preserving our own tradition and culture, and we feel transhumant agro pastoralism is very much part of our culture and tradition that deserves due attention and be allowed to be continued.”
(Herder_6)

The TAP system had served the herders well, from paying in kind taxes to providing a constant flow of income, to supplementing their single cropping in the cool temperate villages. TAP has also helped herders avoid adverse effects of seasonal changes, whilst facilitating access to a range of other livelihood opportunities to supplement their household income from the herd.

4.4.2 The timing of migration

The timing for migration is reportedly similar in seasons across west and central regions of Bhutan. It appears that irrespective of the region, the herds move south in early autumn and return to temperate pastures in late spring or early summer. Migration to the south takes place between the months of September–October whereas the north bound move starts in May–June.

Besides the established calendar, around which herds initiate their seasonal migration, there are several other signs and indicators that signal herders to move. These factors,

amongst others, are climatic indicators, and therefore changes observed in village premises and animal indicators.

4.4.3 Climatic indicators

The herders mentioned that one of the most reliable indicators for commencing migration is the drop or rise in temperatures. It is said as autumn sets in the ambient temperature will drop at their temperate village. Gradually, besides feeling chillier day by day, they start to see frosts on the ground in the mornings. This is then taken as an indication to move down to the southern *tsamdros*.

Similarly, the herders said as spring sets in and the temperature in the southern *tsamdros* begins to rise, more flies and other parasites emerge. Herders reported seeing animals sweat on their back as the temperatures rise. These indicators are taken seriously by the herders to initiate their north bound move. They also indicated that not observing these signs risks disastrous outcomes such as heavy snow at the high passes in autumn or heavy rain and storms in spring.

4.4.4 Village premises indicators

The other indicator the herders mentioned was, as migration time in autumn arrived, all the deciduous trees shed leaves and the grasses dry up. Except for the pine trees and other evergreens, the premises surrounding their houses in temperate villages become dry. The growth of the grasses, controlled by grazing, is now compounded by the near freezing temperatures, thereby rendering feed shortage for the animals. This leads to animals showing signs or initiating migration on their own.

4.4.5 Animal indicators

In autumn, as the temperatures drop and feed resources become limited for animals, cattle return to the homestead or their camps early, their stomachs half filled. The herders also indicated cattle not only return early from grazing, they often bellow especially in the morning which is an indication or a way of telling the herders that it's getting cold and there is nothing for them to graze on, 'let's move down'.

The TAP herders mentioned if the herds do not move at the correct time, some of the animals run away, especially, those animals which do not have young suckling calves and they initiate migration on their own, or follow other herds moving down south. Similarly, in spring, as the temperature rises and more parasites begin to infest the cattle, the cattle start bellowing, returning to camp early from grazing and start running away if migration does not commence.

An elderly herder describes this:

“The cattle would bellow and look for their calves and some others would just run away. As they feel the cold on their body here and no grasses to graze, they know through experience that it is about time to move down where there is grass and is much warmer. They will follow the route and those ones that can get hold of their calves would take their calves and if the owners didn’t see they would run away.” (Herder_16)

Herders mentioned they take these signs seriously and move on time. Not moving on time not only risks natural disasters, but also creates disharmony with residents along the way because some animals that ran away and initiated migration sometimes stray into crops along the route. This problem, the herders said, can be avoided when all the animals are together, ushered in droves under the herders’ close supervision.

Additionally, milk production and therefore, butter and cheese production also decline in quantity by autumn. Similarly, by spring the milk gets spoiled faster and many flies not only bother the animals and herders alike, but also get into the food.

In short, the herders follow various signs and indicators, keenly observing their animals and the environment, before making strategic moves for maintaining animals in good condition and achieving higher levels of production.

4.4.6 Other factors herders’ consider in planning and initiating their migration

Although the transit camp sites along the routes are well established, there are several such camp sites and it is crucial for the moving herd to plan ahead as to which camp to reach for the day. The herders indicated it is important to avoid being caught up in the

mountains especially in autumn should a heavy snow fall occur while crossing the mountains. The journey should be planned in such a way that the mountains are crossed or halted before they are reached, lest the herd is caught on the mountains and risk grave consequences from snow fall and extreme temperatures. Other factors they consider are the availability of fodder resources along the way and prevalence of wild predator carnivores. The herders from Papali and Bempu indicated that if they happen to be the first to move, they spend some time grazing the fodder available along the way. This is not possible, if they migrate later or in the middle of others, because they need to move faster to make space for the herds following behind them.

4.5 Land rights and issues

4.5.1 Differences in landholdings between migratory herders and downstream residents

Comparing land ownership, *ceteris paribus*, the general landholdings for cropping purposes are small both for migratory herders and downstream locals alike. The migratory herders, however, access grazing land with usufructory rights in much larger proportion compared to the local population downstream. A huge inter-household differential in landholdings was also observed in both communities. In both the migratory and the downstream communities, landholdings are said to be between zero to the maximum of 8.1 ha per household.

Some herders in Damchena indicated that after dividing the land amongst siblings, some male herders own as little as 25 decimals in their name (because a larger portion is given to the daughters), whereas in Bumthang some herders reported owning 8.1 ha which is almost equivalent to the maximum national limit of 10.13 ha per household. Some Urchi herders also reported having over 121.5 ha of land prior to the 1979 Land law which restricted the maximum holding to 10.13 ha per household. However, many herders maintain that the location of their village handicaps them from growing many crops, owing to the high altitude, wildlife depredation and short growing seasons, unlike the downstream locals in the sub-tropical areas.

The household survey data revealed the majority of TAP households (85%, n=64) did not have any sort of farm machinery. Only 15% (n=11) of households in Urci and Doshi, had some kind of farm machinery. Two households had a farm tractor set, one household had a power chain, and remainder had power tillers. None of the herder households surveyed in western Bhutan had any farm machinery and they relied on the traditional farm implements made out of wood.

However, owing to the interaction of a range of factors, differential land holdings does not necessarily mean differences in food sufficiency. Factors like shortage of labour, land capability, and possibility of earning cash from OFAs can have equally compelling effects as that of land availability. Consequently, alternative sources of income are of importance in understanding how herders adapt, against the back drop of land use policy changes, climate change and developmental changes. These herder perceptions on land asset adequacy, food self sufficiency and alternate sources of income are presented in Chapter 6.

4.5.2 Types of *tsamdro* user rights: Private versus common rights

During the interviews, it emerged that *tsamdro* user rights (which many herders until recently thought as private ownership) are of three types, private ownership, joint ownership and common owned by the community.

Private *tsamdro* owners have exclusive rights to graze their cattle in *tsamdro* registered in their household's name. These rights are inherited by children and get converted to joint ownership when more children need to share their parental *tsamdro*. These two types of *tsamdros* were more prominent in western Bhutan.

An elderly retired herder informant who once lived a *norpon*'s life with his parents said:

"...all tsamdros are registered. Some tsamdros are registered in joint ownership. Yuebjikha has no thram [registration], because this is just a transit camp site. ... the rest are all registered individually, jointly or in common ... In shared/joint tsamdros, if one camp is here, another one will be there and the other one just below that and all animals graze together. Similar to Ayebji, in about 3KM distance, is Haabi Lakha; that tsamdro too is jointly owned ... [several households] all share

and graze together ... the Kadori side has thram [registration] in Paro Dzongkhag's Rabchub's name [monk body]" (Herder_33)

Each household would have more than one *tsamdro* and priority or scheduling of utilization of each is based on individual household's choice amongst the western Bhutanese TAP as they possess individual rights, whereas, with the central-east herders it is based on draw-lot combination as the predominant ownership is in common.

The herder participants in Urci and Doshi indicated only a few households in central Bhutan had private *tsamdro* rights. It is this type of *tsamdros* where incidences of illegal transactions have been reported. These *tsamdros* remain state property *de jure* as per the Land Act of Bhutan 1979, however, some incidences of buying and selling, thus changing ownerships, were reported as *tsamdros* are held as private property *de facto*.

As one elderly herder in Doshi said, "*There were two types of tsamdros known as Gerpa [private] and Mangi tsamdro [public or common]."* (Herder_6).

Common ownership *tsamdro* is known as *Nyekhor tsamdro* - when it is in the village premises and *mangi tsamdro* - when it is either in the southern pasture or at a distant place from the villages. While these types of *tsamdro* ownership are present in the west, it appears to be more common in central Bhutan. Herders also reported having successful indigenous institutional arrangements in place to manage these common pool resources including systems on allotting herders certain pastures to graze based on their local set of rules.

4.6 The challenges of the transhumant agro-pastoral system in Bhutan

4.6.1 Blamed by government agencies for spreading animal diseases

Transhumant agro pastoralism as a livelihood option also has its draw backs because of its nature and the location of the practice. It presents the herders with serious difficulties often compounded by other factors like policy changes and climatic conditions. Some government staff believes that TAP is an archaic practice, while others consider it is an uneconomic system that must change.

The transhumant herders and their animals are often blamed by veterinarians and livestock extension agents for animal disease outbreaks such as Foot and Mouth Disease (FMD), and Rabies and the difficulty in reaching veterinary services as one agency informant describes:

“I think, frankly speaking, we have more drawbacks ... than the advantages [in TAP]. Drawbacks; first and foremost is the disease, the spread of disease, because these migratory cattle ... spread diseases. ... the migratory cattle brought and spread FMD in Zhemgang. Likewise, there is FMD in Thimphu, cattle migration from Punakha brought it. So when we try to correlate that temporally and spatially, FMD just followed the migratory routes.” (Agency_4)

The same agency informant also said that the transhumant cattle also pose difficulties in delivering government extension services. Owing to the remoteness of their location and lack of suitable technology in storing vaccines, extension agents have difficulty in vaccinating animals prior to migration as required in the livestock policy of Bhutan. Due to lack of appropriate technology, vaccines often get exposed to heat before reaching the migratory herds thereby losing its efficacy.

However, opinion on transhumance as a cause and means of spreading animal diseases is equally divided among pastoralists. The type of diseases from their perspective included FMD, black quarter (BQ), general weakness, old age and diarrhoea. More than half of herders (58.67%) interviewed believe migration has little to do with exposure of cattle to these diseases. The other 41.33% believed migration exposed cattle to some level of risks of contracting or suffering from some of the aforementioned diseases and conditions.

However, on the issue of transhumance being responsible for spreading these diseases, a significant proportion of herders (69.33%, n=52) denied these allegations often implicated to transhumance by agency personnel. Only 30.67 % (n=23) believed transhumance in some ways contributed to spread of animal diseases.

Additionally, the majority of the herders practicing transhumance (81.33%) responded favourably to vaccinating their animals prior to migration south and after arrival from the south, while 18.67% did not vaccinate their animals. However, a serious problem in

delivery of extension services was reported by herders, owing to reasons inter-alia of being very far away in winter and absence of a regular vaccination schedules even at summer pastures. Many of those who did not vaccinate their cattle also believed vaccination affected milk production. Some herders also reasoned that their animals do not come in contact with any village or other animals, therefore presented little risk and not in need of vaccination.

4.6.2 Pastoralists face increased risk of climate change

The TAP system also subjects both the migratory herders and animals to bad weather conditions such as untimely rainfall, road blocks and swollen streams that can wash away cattle and herders.

Amongst herders there were varying perceptions on climate change and its effect on transhumant herders' livelihood but mostly the impact is negative, rendering transhumance difficult and risky. All except one herder reported witnessing or experiencing one or two of the following: the rise in temperature, intense sun, erratic weather pattern, tropical form of rain in temperate region, characterised by sudden down pours, very unpredictable nature of weather unlike before, and undesirable pattern, whereby there is too much rain when they need sun and vice-versa.

Aside from affecting transhumance, herders reported climate change also impacted crop production. Inability to sow seeds in time, low yields and inability to harvest the yield, high post-harvest damage, increased disease incidence and upsurge in use of chemicals were some of the reported outcomes of climate change. The negative impacts affect transhumant agro pastoralists both at their summer residences as well as in their winter camps. The threat of swollen rivers and heavy rains resonated several times as having the most impact and making migration difficult and dangerous. Several herders recounted incidences where some of them have not only experienced a huge part of their herd being washed away by unexpected swollen rivers but also lost a member of their family:

“The effect is that when we migrate down, and when it rains like this about 5-6 animals would die of cold at the passes. And when the rivers swell, like last year,

that river which almost never swells took away not only animals but also claimed human life. Now the times have come of such. Some times on the way down, about 10-11, 15-16, especially weak animals would die on the way as a result of these changes” (Herder_16)

One female herder recounted the experience of losing more than half of her herd with their belongings and one of her daughters being washed away by a swollen river. It appeared they have not recovered from that loss and have given up pastoralism all together. The family still migrates to south in winter but only to engage in the orange business, packing oranges in boxes or running a small shop in a temporary shed. The few head of cattle they own are sent with the neighbours and they get them only next season when the herds reach their village.

In the past, when the weather patterns were regular, transhumant herders and their animals could predict the weather with a certain degree of reliability. They were so predictable, people had names for seasonal rains and their timing of herding or farming events were scheduled around that. Herders indicated that now the rains continue for longer and temperatures have increased.

One herder key informant in Bempu said:

“Well, earlier we have names for all seasonal rains, such as Khamtsho Luetscho Chap [rain for ripening peach and pear in garden], and then in 7th month we get Thrué cha [blessed rain]so this rains have their time and stop on time. Now it is not like that, if it rains it does not know how to stop” (Herder_16)

According to one herder one of the benefits of climate change was the possibility to grow some crops because of the increased temperatures. For example, Bempubs can now grow chillies which were not possible in the past and these form a very important component of Bhutanese cuisine.

The elderly herder informant said:

“The benefits from the increased temperature ... [is] now it ... [is] possible for Bempubs to grow chillies. Earlier, it can only be grown in places like Tshebji,

Babana and others but not in Bempu. We have to buy from them. Now at least if one can work on a large scale, chillies are doing well.” (Herder_3)

Another herder (Herder_4) from Doshi indicated the water offerings in the altar in the past used to be frozen in the container during winter, which means he could not make offerings every morning. However, now in his opinion the temperature has increased because the water offerings made now do not freeze and he can change water every day like in summer.

4.6.3 Social isolation and high level of risk involved

Some herders consider TAP both an asset and a liability. While the benefits and purposes of transhumance served are many and varied, it is not without its complications and difficulties.

From a social perspective some herders mentioned that it is difficult at times because the family members are physically separated and have to stay far away from each other. While some stay in the village home and tend the crops, others have to live far away in deep forest *tsamdros* with the animals. This they say causes them some loneliness or they worry about each other’s health and welfare.

Additionally, as winter advances and the grasses and shrubby fodder resources decline, herders climb fodder trees to lop them to feed their animals. This puts the herders’ life in danger as occasionally herders fall from the trees and dies. Herders in desperation will put their lives at risk while trying to feed their animals. An elderly herder in Papali describes it as “the good and the evil”; the good is the products they can get from their animals, but the evil is putting their life in danger at times trying to feed and care for these animals. He gave examples of his two neighbours who fell from trees and died during winter in the *tsamdro* while trying to lop fodder trees to feed their animals:

“... while climbing a tree if you miss a step, you could fall and end your life ... at least a man and a woman; our neighbours ... died, falling from trees ...”(Herder_9)

While transhumance has a number of challenges herders also reported they do have fun and enjoy migrating especially when the weather is fine and there are no predators along their route. Herders also reported existence of strong cultural practices engaging themselves in many activities that contribute to building and maintaining their social cohesion and sustainable management of their *tsamdro* resources. Some of these practices are described in the following section.

4.7 The cultural practices and social interactions associated with migration

4.7.1 Propitiating deities and appeasing local spirits

The study found a number of cultural practices and social interactions associated with the transhumance system. Herders reported propitiating demi gods, appeasing local deities and spirits, and performing annual rituals for their own and their animals' wellbeing. Some herders indicated that they have to perform *Lha soe* (a kind of shamanistic ritual appeasing demi gods), while others reported performing *Tshen* (propitiating local protecting deity). At the temperate residences and southern camps herders also appeased spirits - *luu* (naga), and *douie* (some sort of local spirit usually associated with rivers, streams or gorges). They offer food and milk, burn incenses and chant some mantras to please and make peace with the spirits in occupying that area in peace and harmony. However, the main annual event for every household is the *lo-choe or choku* (the annual wellbeing ritual performed by Buddhist monks, lamas and lay monks at the herders' home). These events take place prior to the south bound migration because in the south, owing to the remote location of the camps and *tsamdro*, it is not possible to organize such an event.

Two herders in Damchena, amongst others, described the way the *lo-choe or choku* session sparks off in one household before they migrate to south and how it spreads until every household in the village had conducted their session for the year:

"All chokus [annual rituals] are conducted here in the 8th month prior to migration to the south. When chokus are being conducted everyone follows each

other so it sort of goes continuous once it is started at one place. There is nothing much being done and there is also no space or place to such in the southern camps.” (Herder_36)

When these *chokus* are held, neighbours gather in that household and feast for a day with good food and alcoholic drinks provided by the host.

A retired herder, while describing how the *Ashi's* (queen's) herd moved during the south migration, indicates they had to halt a night at a place called Chazhi to propitiate the *Tshen* at Sachoka (name of local community temple).

“Then the Jababs take it [the queen's herd] from here to Chazhi ... we have to spend a day there because we have to go to Sachoka to propitiate the local deity (Tshen tongo) ... ” (Herder_33)

Another event the herders described that brought the community together in celebration was the archery matches. During summer when the work is not heavy, herders reported organizing inter and intra-community archery matches where lots of food and alcohol are brought together and shared. These matches are celebrated with traditional dances, lots of singing and good food usually accompanied with lots of laughter. Archery is the national sport of Bhutan.

Whilst conducting Buddhist rituals, propitiating local deities and appeasing demi gods, for peace and wellbeing of herders and the herded, herders also built and sustained strong socio-cultural interactions and relations with their counterparts living downstream. Villagers along the migratory route and near the winter camps and the herders have socio-cultural exchanges and relations built on mutual reciprocity and trust. Some of these symbolic exchanges and relations have been built over time and are presented in the following section.

4.7.2 The social interactions and relations with other communities along the migration route

The transhumant herders by virtue of moving through different villages have made friends and developed relations with many people along their route, as well as near their winter camps. Except the Chabijams (Papali and Bempu), who typically follow a route

along a ridge and do not pass through any villages, all the other herders interviewed indicated passing through others' villages and developing relationships and making friends. The only nearest community that has some sort of relation with the Chabijams are said to be Chimups, in the south. This interaction, too, was restricted to a few stays on their way to Phuntsholing for shopping or when they had to find a place to keep some of their luggage while migrating north. Chimuna village is located below the Chabijams' winter camp site (Figure 4.5).



Figure 4.5 Chimuna Village (Photo: facebook.com)

A young male herder in Papali in his thirties had the following to say regarding the level of interactions they have with Chimups:

"... only after we are settled in the southern camps and go to town, we go through Chimups village. When we move up here we leave our milk containers, churners etc., with them. They would come to collect it from our camp. We get it back once we reach down south next season." (Herder_10)

In contrast, Doshi, Urchi, Tshebji and Damchena herders all pass through a couple of villages and have intimate relations that have built their social capital or safety networks, while sharing their culture. These friendships and social networks have developed as a social safety net for them should they face any problems along the way during migration.

Herders in Urchi and Doshi reported having particular households in the villages along their route which they consider as their host. They said that as soon as their herd has

arrived, the host household will come to greet them with local agricultural products and a local alcoholic brew. They have meals together and exchange gifts and also help them if they need assistance in herding their cattle, or needed an extra hand to manage the meat of an animal that has died or been attacked by wild animals. Some gift items, given by these herders from Bumthang, included fermented cheese, garlic, pepper (*Zanthoxylum sp.*). A female herder in Urchi explained how villagers come and help them get her animals across a river on the day she starts the north bound migration:

"There is a big river (Surey river) ... to cross. The day before we cross ... [we] inform them our herd has reached at the confluence of the 2 rivers and request them for help ... The following day, some of them will be waiting by the river, while others will come early morning to the camp ... Some of them will help get animals out of the cave and others will help get out of the river... to get our animals to the vehicle road.... sometimes if we can't manage the entire luggage, we pay and leave it with them and they will bring it till our camp." (Herder_2)

Similar relations and inter-dependency on each other was also mentioned by herders from Damchena and Tshebji, with communities in Mondokha and Dungna respectively along their route.

A female herder in Damchena said:

"The communities along the way, we know each other very well so we have a good relationship. Dungna and Mondokha, even if we have a sick animal that is not able to walk we leave that behind and request them to look after it for us. Also if we lose some animals along the way, we have to seek their help ... If in case an animal dies we say, please manage this meat." (Herder_35)

The herders from Tshebji indicated that besides the normal casual dependency relations they also have mutual reciprocal gift exchanges and some bartering between them and the communities of Mondokha and Dungna.

One elderly herder from Tshebji said:

" ... we take Ema kam (dried chillies), Kap pchee (wheat flour) and Ara (locally brewed drink) to them. We stay several days in Dungna then. Ema kam and Kap pchee are presented as gift for which they will give us some rice in return at their own will. The Ara; we sell it to them. One bottle of Ara can fetch three dreys of rey (rice paddy). And this practice is still active ... " (Herder_27)

All these interactions and relationships are likely to be lost if migration ceases. One female herder in Tshebji said if migration ceases, people will not even know their closest family friends from these communities:

“Yes, if we don't migrate like we used to do, there won't be interactions, we won't be going to their [southern residents] place and they won't be coming here too, so probably by our children's time we won't even know each other.”
(Herder_28)

In summary, transhumant herders have developed a high level social safety net by way of building relations along their routes, as well as in the south that they can depend on in times of need and live in harmony with each other.

4.7.3 The *Northue* system: Creation of social capital for mutual benefit

Northue is a system whereby two households, usually from different agro-ecological zones, commit a certain degree of allegiance to each other and agree to share ownership over animals. The alliance could be forged by putting together equal numbers of the same category of animals to be kept in joint ownership or can be formed by a *Norpon* paying half the cost of a herd that they looked after that belonged to their employer elite family.

The main benefits of this co-ownership, (except the one with *Norpons*), is that both owners take the responsibility of looking after the animals but at different seasons, thereby relieving the other partner and giving the possibility to explore other income-generating activities. In the case of the *Norpons* the animals are always looked after by them, but the produce is shared, while their partners provide them with rations and clothes. The overall ownership of the animal remains shared; for instance, in case of death or attack by wild animals in the forest, the meat is shared between the two partners if it can be salvaged, otherwise the horn or skin or some bones of the animal has to be shown to the other partner as proof of death. In some cases the meat is sold and the money collected from the sale of the meat is divided amongst the partners.

Five different *Northue* systems were identified during the course of the interviews with the herders. These systems are mostly in and between Paro and Chukha Dzongkhag as listed below:

1. Paro and Mondokha
2. Paro and Chabijams (Bempu & Papali)
3. Jabana and Dungna or Mondokha
4. Jabana and Chabijams (Bempu and Papali)
5. Elite families and *Norpons*

During the interviews, it was learnt that partnerships between Paro farmers and herders of Bempu, Papali and Mondokha existed in a way that the animals are brought to Paro in summer because they need oxen to plough their field and transplant rice. Once that job is completed the animals are taken back to Bempu from where they then migrate to southern pastures for the winter or are taken by partners in Mondokha and kept there for the whole winter until spring. Mondokha has a moderate climate and is rich in *tsamdros* with broadleaf forest for grazing cattle; owing to this Mondokha communities are largely dependent on cattle. The communities in Mondokha have marginal landholdings and with low productivity in rice because it is closer to north.

The other partnership system is between the people of Jabana with partners in Papali, Bempu, Mondokha and Dungna. Jabana is the name given to a number of communities essentially under Naja geog, with Paro Dzongkhag, which includes Bempu and Tshebji. Until recently, Bempu was under Metakha geog with Chukha Dzongkhag. Bempu and Tshebji, amongst the research sites for this study, are often generally referred to as Jabana alongside with other Jabab communities. The Jabana partners get the general herd in late spring and oxen only in late summer. In this case, because Dungna and Mondokha grow rice, so the oxen are brought up late in summer after rice transplantation in Dungna and Mondokha to sow wheat and/or barley in Jabana. Here the Jabana partners may or may not migrate. In either case the animals in winter will remain with the partners from the south. The Jababs may still move to Phuntsholing in the south in winter to engage in orange transportation or other similar jobs. The partnership between Jababs and Papali is usually with Jabab families with fewer cattle.

As autumn approaches and the herd in Papali prepares to head south, the partners in Jabana bring the animals to send with their partners. They either bring the animals to Papali themselves or partners from Papali go and get the animals depending on their availability of human resources and convenience. The researcher has encountered young herders from Papali going to Jabana (Nagu & Lingzhi), as well as an elderly woman who brought her cow, a young stock and calf from Lingzhi to Papali, as her partner in Papali prepares to head south.

The third type of *Northue* system was developed between the elite families and the *Norpons*. As the early generation of rich and elite families became older and children adopted alternative life styles, it became increasingly difficult for them to monitor their *Norpons* and the produce from their herd. Alternatively they have offered *Norpons* the opportunity to buy half the herd and keep looking after the animals on a shared ownership basis as *Northue*. This is how the alliance between former masters and their *Norpons'* *Northue* system began. However, this too seems to be becoming difficult as the former masters are not able to control the developing trend as well as becoming more religious. The trend that has developed over years in the Master -*Norpon* complex is that *Norpons* do not give all the produce to their masters because they know their masters are not in position to monitor and control their activities. One herder from Damchena reported incidences where the whole herd and *tsamdro* are now in the custody of the former *Norpons* - supposedly in *Northue* system, but former masters have almost lost control over the herd.

As animals had their uses at different places at different times of the year, it necessitated transhumance through the *Northue* partnership that continues to this day. Transhumance facilitated both the partners having ownership of the cattle and products for certain times of the year when they need them.

However, it was reported by herders, that during the last decade the *Northue* system has become rather the preferred system for many herder families in western Bhutan. As more families are running short of farm labour, and finding it difficult to go with the animals in

winter, they look for partners from Mondokha or Dungna or the ones from their village that continue to migrate.

Many other similar systems may exist in other parts of Bhutan and are yet to be identified but such relations were not reported by herders from central Bhutan (Urchi and Doshi in Bumthang Dzongkhag). However, herders transiting to sedentary farming and limiting their migration on a trial basis in these two communities are reportedly sending their animals with the relatives and friends that still migrate to warmer pastures in winter. For details on this type of arrangement refer to Chapter 6 where an explanation is provided on how such arrangements are used as a strategy by herders to deliberately exclude downstream locals from accessing their *tsamdros* even when they don't migrate.

4.8 Summary

TAP is an important part of the living tradition and cultural heritage in Bhutan. Migration may extend from a few days to over month in a single journey. TAP is an adaptive practice to avoid production loss and mortality of animals from cold, shortage of forage, off-farm income and avoiding parasites in the south in summer and free up pasture space for yaks in winter. Herders have not only adapted their livelihood to ecological niches at different altitudinal levels but also used resources sustainably while synchronizing their socio-cultural activities with the seasonality of practice. Crop production is limited by marginal landholdings, fragmented and steep contour, climate change, short growing season, limited crop varieties, high altitude, wildlife depredation and market fluctuations.

More than 50% herders are illiterate, around 35% know how to read and write and only 8% received secondary or higher education. There is also large spatial heterogeneity in landholdings as well as in animal ownership. Less than 50% of households surveyed produce enough food from their own land, owing to above reasons, and many are therefore engaged in OFAs for additional income made possible through the TAP system.

Tsamdros are held with usufructory rights which could be in joint ownership within different families but related, or privately, or in communally in common. Herders reported having successful indigenous institutional arrangements in place to manage these common pool resources including systems on allotting herders certain pastures to graze based on their local set of rules.

There are specific gender roles for men and women in TAP practice with men usually taking tasks that involved heavy lifting and more arduous work. However, this line of division becomes blurred when households are faced with family labour shortage.

The dominant cattle breeds in TAP herds are indigenous breed Thrabam and Jatsha-Jatsham (Mithun crossbreds) with higher preference for Jatsha-Jatshams for their superior milk production, hardiness, higher butter fat, and excellent draught ability. Herders consider themselves to have practised responsible stewardship of natural resources management by managing their *tsamdros* sustainably.

However, TAP practice is now faced with increasing challenges such as reduction in grazing resources, climate change impacts and government policies. Losses of part of their grazing land to Nepali immigrants in 1970s were first signs of reduction in grazing resources and *tsamdros* still remain a contested resource between transhumant herders and downstream residents.

TAP practice drawbacks include having to endure blame from some government agencies for causing environmental degradation and blame from veterinarians and livestock extension agents for spreading animal diseases, which the herders deny.

These herders have strong cultural practices grounded in Buddhist and shamanistic traditions which is conducted around the onset of south bound migration and they made and sustained very strong relations and kinship among the residents living along their migratory routes, exchanging gifts and feasting together.

With the changing socio-economic situation and increasing farm labour shortage, herders and other cattle keepers have developed strong social capital they can depend on. More

cattle are now reared in *Northue* system, with different partners taking care of animals at different times of the year depending on the households' convenience.

CHAPTER 5

Changes and factors affecting TAP practice

'Nor rang da Cha, Bu ro da cha' (Bhutanese proverb)

Literally meaning your cattle should always be with you and your children would be better off to mature with others. Herders believed that their animals suffered from poor health leading to loss of productivity and sometimes even death due to lack of personal care when entrusted with others due to family labour shortage.

5.1 Introduction

This chapter answers research question 2:

What are the recent changes in TAP practice and what are the factors driving these changes?

The results from this research show that the practice of TAP in Bhutan is still active despite a declining trend in the number of households migrating with their cattle. The data provided in Table 5.1 shows that in the six study sites an overall decline of 31% in the number of households practising transhumance occurred over 20 years between 1990 and 2010. Exceptions were the villages of Bempu and Damchena that have both shown an increase of one migrating household each.

Table 5.1 Changes in the number of households (hh) practising TAP between 1990 -2010

Village	Geog	Dzongkhag	A	B	% Change	C	D
Bempu	Naja	Paro	8	9	(+)13	11 (100)	82/82
Damchena	Shari	Paro	5	6	(+)20	19 (100)	32/32
Tshebji	Naja	Paro	20	11	(-)45	36 (100)	31/31
Papali	Dungna	Chukha	9	4	(-)56	9 (100)	44/44
Urchi	Chumey	Bumthang	13	6	(-)54	47(90)	13/12
Doshi	Ura	Bumthang	20	16	(-)20	62 (100)	29/29
Overall			75	52	(-)31	184 (97)	28/27.5

A: hh migrating with their cattle in 1990; B: hh migrating with their cattle in 2010; C: hh keeping cattle in 2010 (% of total hh); D: hh that migrate in 2010 as % of hh with cattle and total hh.

However, the herders reported most households have cattle as evidenced by 97% of households keeping cattle while only 28% practised TAP. The herders indicated those

households with a few animals and faced with shortage of labour prefer not to migrate, but they still raise cattle. About seven to eight households are said to be combining their animals into one herd with only one household migrating and looking after the animals in winter. Although data was not available from the government agencies, the herders reported that households keeping cattle have grown in parallel with the increase in number of households in the village.

Therefore, the declining trend in TAP should be interpreted with caution as it does not reflect the equivalent reduction in cattle numbers. As can be seen from Figure 5.1 the total cattle population in Bhutan has only decreased slightly in the period 1999 - 2008.

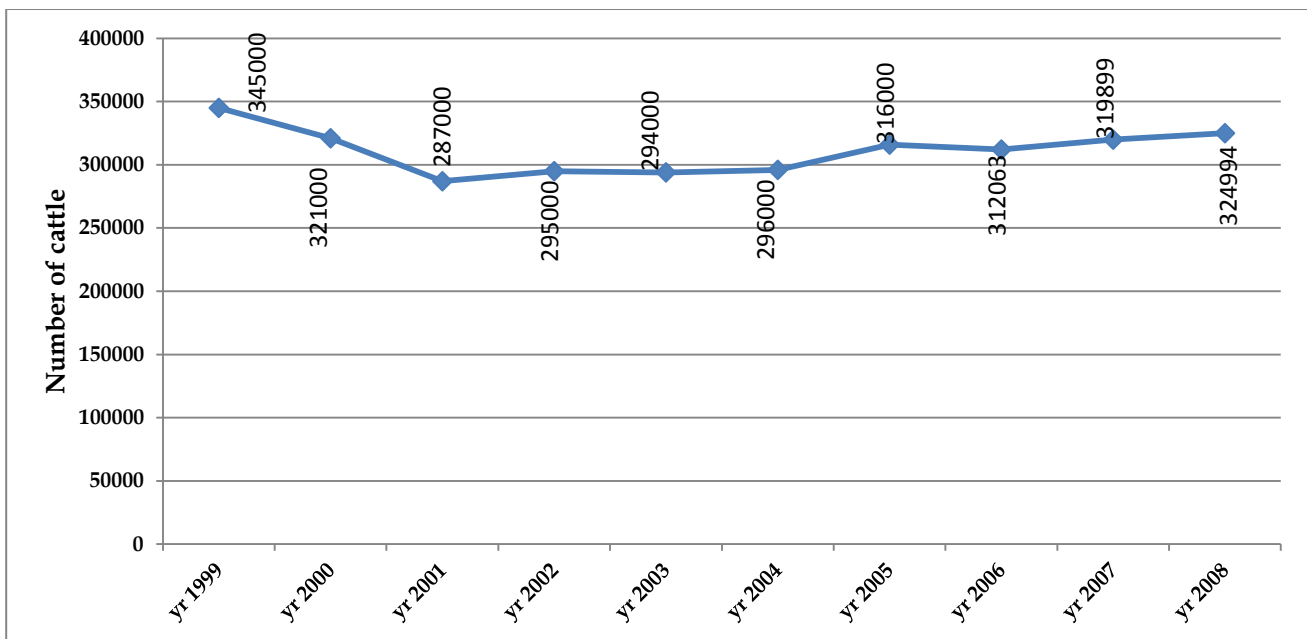


Figure 5.1 Trends in cattle population change in Bhutan (1999-2008)

The data available with the Livestock Department show only around six percent decline in overall cattle population in the country from 1999 to 2008.

Generally, the human population has grown in all six study sites but household labour availability has declined. This could be attributed to the broader socio-economic development and policy changes, such as free education and health policies in Bhutan. Nonetheless, differences between, as well as within regions exist in the study areas. These differences, and the factors driving the changes in migration across regions, are presented

in the following sections. Each of the factors is described in order of importance based on the respondents.

5.2 Factors driving the decline in number of households practicing TAP

According to herders from Urci, Doshi, Papali and Tshebji, there has been a significant decline in the number of households practicing transhumance agro pastoralism from these villages. While some have chosen to end transhumance and switch to alternative lifestyles, others were forced to give up TAP because they lacked some of the enabling factors to participate transhumance. The factors described below either enabled better off herder households to cease migration or forced poorer families to give up the transhumance practice. Striking differences in economic conditions within the households that ceased transhumance practice are apparent. The factors for decline in TAP include: farm labour shortage, restriction on grazing resources, economic opportunities and adoption of semi-mechanized farming systems, changes in family structure and climate change. These factors will be discussed in the following sections.

5.2.1 Farm labour shortage and difficulty in hiring local labour

Interviews with the herders revealed transhumant agro-pastoralists in Bhutan are experiencing severe farm labour shortage. Many herders said it was having a profound effect on transhumance practice. A significant number of herders said only elderly members were left at home in villages to look after the cattle, as their children are either in schools or engaged in alternative livelihoods. There are few young herders left in those villages to manage the herds. Consequently, those households with little possibility of profiting from the transhumant system ultimately forego migration. The household survey revealed while the literacy rate was low at 34.97%, majority of members of herder households surveyed (63.77%) were within the economically active age group (Table 5.2). However, most of these are either children pursuing education or adults working outside the pastoral profession.

Table 5.2 Human demography and cattle numbers

Population		Education		Age distribution	
Total people	621	Illiterate	56.65%	19.81%	≤14yrs
Average	8.3 / hh	Literate	34.97%	63.77%	15 -64yrs
Total cattle	3393	Tertiary education	8.38%	14.49%	≥65yrs
Average	45.24/hh				

The issue of farm labour shortage has strong interactions with other factors such as: school enrolments, economic development, climate change, and increased desire for improved life for children leading to adoption of smaller families.

The in-depth interviews with herders revealed that most of the herders' children are studying in schools or monasteries, while some younger adults also worked either in the government or private sector, or served in the military. This trend of taking up occupations away from the farms has resulted in farms and animals being left with the senior members to provide care.

One elderly herder said:

“Nowadays most children are in school and after that the youth do not return home. The ones that find a job stay to do the job, others just loiter around the town ... So the herd sizes have reduced drastically. Only elderly people are at home.”
(Herder_6)

An elderly key informant from Doshi mentioned keeping two separate herds of *Jatsham* and *Thrabams* in the past. However, owing to farm labour shortage, he said his herd has now been reduced to a single herd. Another senior herder key informant from Doshi, who staunchly defended the TAP system, had reportedly pulled one of his sons out of school to help at home because there was no one to look after the animals.

A female herder in Tshebji explained that, as a result of educational opportunities, some households are faced with extreme farm labour shortages and rely on their friends and relatives. This increased dependency on others, she said, has resulted in a substantial loss of animals, ultimately putting an end to their transhumance lifestyle:

“ ... others’ children that are educated and have a job now do not do migration anymore. It has reduced both in terms of households as well as in animal numbers. This is because when the owners cannot go with animals, the animals just fade away. For example, if I send 10 animals with others this year, by the time the herd returns, it would have reduced to 5 or so because animals die or get killed by wild animals due to lack of management and care.” (Herder_28)

Additionally, over the years, herders have seen it become increasingly difficult and expensive to hire local labour to work with the animals. A retired herder during an in-depth interview warned against depending entirely on hired labour especially when fewer cows are in milk:

“... earlier if you hire a labourer from the south, the rate is Nu. 400 per month. Later it increased to Nu. 600, and since last year [2009] it has increased to Nu. 1000. Besides, you have to provide them with food and clothes. Now from this year even for that rate people refuse to come. So if the situation is like that it is like ‘Gu Bjek Tsa Wa’ [suicide] ...” (Herder_33)

He believes, as it becomes more expensive to hire local labour, the dwindling income from transhumant cattle would hardly be enough to pay the labourer’s wage.

5.2.2 Ability to adopt alternative economic opportunities

Some herders and agency experts alike believed that the overall economy of the country is growing and has opened up new avenues for exploring alternative livelihood choices. They feel this has reduced the relative importance and reliance on transhumant cattle which has resulted in a reduction in migratory herds over the last two decades.

One agency staff member mentioned that transhumant agro pastoralism in the past was practised mainly by herders from high altitudes because there were not many other livelihood options in these areas. Transhumance then, in his view, was the most logical and feasible activity. However, now with other development and employment options, the construction of new vehicular roads and increased varieties of crops being promoted in these areas, the relative importance of transhumant cattle in his opinion has reduced:

“ ... Cattle migration was practised by those from high altitude because they had very limited development activities those days at higher elevation ... now with all these development activities, motorable roads, agriculture, horticulture, cash crops

being promoted in high elevations, things are changing. I think in the past they depended more on butter & cheese production ...”(Agency_1)

During the course of the interviews it became clear that in the past farmers who inhabited the fertile lowlands of Paro also kept large numbers of local cattle and practised migration either through *norpons* or by means of the *northue* system (as explained in Chapter 4). Their paddy fields were tilled using oxen. A herder key informant explained how, besides their own oxen, Paro farmers hired oxen from Bempu and other villages in Jabana during rice transplantation. Oxen were used for ploughing the rice fields in Paro, as well as wheat fields in Jabana.

However, usage of oxen and keeping large herds of cattle by lowland Paro people seems to be changing as one agency personnel reported. According to this agency informant, who comes from a family that once had migratory cattle as well as a herd of yaks, the adoption of power tillers and tractors, favoured for use on the plain to gentle slopes of the paddy fields of Paro's lowlands, the use of oxen has diminished. This, he said, has ultimately led to these Paro farmers giving up transhumant cattle:

“One reason is because earlier we needed cattle to produce the oxen to plough for transplanting rice. Now with the introduction of power tillers, we don't need oxen any more ... in Paro I think almost with everybody it is like that ... had cattle that migrate [in the past]. Now that system is lost. Especially from my village-Bondey, we all had Northue with Mondokha ... now there is none.” (Agency_8)

Today, Paro farmers cultivating rice fields have almost all given up migratory cattle and adopted sedentary farming with a few head of exotic breeds like Jersey cows. They can do that because, although transhumant cattle contributed to their income and elevated their economic and social status in the past, these households were not dependent on transhumant cattle. The migratory cattle are now left for the Mondokha⁴ people and left in *tsamdro* in and around Mondokha all year. Only two groups of people in Paro now depend heavily on livestock; the cattle herders in Damchena who depend on their cattle,

⁴ Mondokha lies to the south about two days walking distance from Paro. This place has moderate temperature suitable for grazing all year round. However, landscape is steep and rocky and does not present good opportunity for cropping.

and the *Bjops* (yak herders) who depend on their yaks. None of the Damchena herders during the survey reported owning paddy land to grow rice.

These paddy land owning households are usually the families that have adequate agricultural land and other wealth assets that earn them more than the TAP cattle can provide. Moreover, they can also afford better opportunities for their children. Currently, because their children will not do TAP work, and it is difficult to find cheap labour to perform the same task, these households have sold their transhumant cattle. During the researcher's field visit in 2010, I found many such families had sold out. There were two families caught in a dilemma of balancing their religious convictions with human resources to maintain their assets. While they wanted to sell off their transhumant stock, due to lack of labour to look after animals, they did not want to send their animals to the slaughter houses due to their belief in Buddhism shunning taking life.

In addition, some of the herders interviewed said that the development and glamour of urban life had drawn the youth out of their village. Education has also enabled some to explore and adopt different livelihood options outside TAP, and others simply do not want to take up TAP.

Here is what an elderly herder in Doshi had to say on this matter:

"I think children won't continue because everybody wants to stay in a clean house. Nobody seems to be interested in soiling their hand and working in the rain to make a living. Even without any job or source of income, people still prefer to stay in a clean house like an officer." (Herder_6)

As mentioned earlier in the section on farm labour shortage, today many children from TAP households either work in the public service or in the private sector. This has strongly influenced the village demography and dynamics of the farm labour situation forcing not only herders to stop migration in some places, but also some farmers to leave their land fallow.

5.2.3 Government restrictions have caused reduction in grazing resources availability

Losing grazing areas to pine forest and a consequent reduction in grazing areas resonated among herder participants in Tshebji, Doshi and Urchi during the focus group discussions. The participants believed that restrictions by the Forest Department on clearing bushes and burning - a traditional pasture management system, has resulted in pine trees invading their prime grazing areas. The participants said that no grasses grow under the pine trees.

A male participant in his sixties in Doshi said:

“Earlier we used to clear the camp sites and grazing areas by cutting and burning the bushes. Now because of the forest restrictions saying its environment, trees are important and, not allowed to do this or clear that; these trees are taking over even our agricultural fields.”

This trend was evident from the researcher’s observations in all six case study areas. Many areas in and around their villages, which the village elders indicated had been used for growing buckwheat in the past, are now all covered in thick pine forests. Most pine trees in the village premises are still young and not mature enough to be harvested for timber purposes.

5.2.4 Smaller families and smaller shares in cattle

In what appears to be a contradiction to the traditional Bhutanese system of extended family systems, the herders reported that more families now tend to be nuclear and smaller in size. Although some forms of extended families do exist, it is the parents living with one of their children that create a steady source of income or grandparents offering help to look after the grandchildren.

The household survey revealed that TAP herder households on average have eight members per household with a maximum of 15 and the minimum of two. Herders reported it is now uncommon to find all the siblings, uncles and aunts, living under one

roof as in the past. This has reduced the farm labour at the household level, thereby forcing some herder families to cease transhumance system.

One elderly herder in his seventies, during an in-depth interview, described the difference in family structure of the past with the present and suggested this was a cause for the decline in the transhumant system:

“ ... earlier for instance in my household, we had 35 members. That 35 people eat together and work together. These days as per government policy; each daughter marries one husband and each son gets one wife and they move out. Some households end up with just the husband and wife. ... it has become difficult to manage ... cattle have reduced ... when you cannot migrate and manage your animals properly, it just fades away.” (Herder_1)

Discussions with the herders also revealed that some younger families, after moving out of their parents' home, received a small number of animals as a gift or inheritance share. This trend of a small number of cattle share, combined with the nuclear family structure, compounds the farm labour shortage. With only negligible income from a small herd size, TAP presents little prospect of sustaining both the system and family's income under such circumstances.

Initially these animals were sent with the neighbours, relatives or family friends from southern Dzongkhags in winter. However, as explained earlier, lack of personal attention to cattle leads to the disappearance of animals and finally circumstances drive these households to cease TAP.

A young female herder informant from Tsheljji said:

“The other thing is family separations, when one family gets segregated to say 3 families and all the animals are divided, the individual herd becomes too small and they just combine and send their animals with some friends who still do it ... ”
(Herder_33)

However, smaller individual herds, transiting to sedentary farming and sending animals with others, is setting a different trend whereby the overall number of herds migrating has declined; but the size of individual herds migrating has increased. In one of the focus groups in Urchi, the participants agreed that with the number of migrating herds

decreasing, the size of the migrating herds has grown.

One male participant in the focus group at Urchi said:

“...the size of the herds is bigger now as it is not feasible to go after animals if you don't have bigger herd size. However, in terms of number of herds, it has reduced because the big players like the royal herds, and some monastic body herds, have stopped now.”

This trend was confirmed by another elderly herder in Doshi during a focus group discussion. When asked a general question about what they perceived is the trend of the TAP system in Doshi, the participant indicated that, in his opinion, the same numbers of animals are migrating. Even if some households stopped migrating, their animals continue to be sent with relatives or friends. More detailed accounts of combining animals with migratory herds are provided in Chapter 6 describing how households that ceased migration still held control over *tsamdros* in the south.

5.2.5 Climate change increases risk and has a negative impact on TAP

As explained earlier in Chapter 4, climate change has negative effects on TAP practice and increases risk to pastoralists. The majority of herders interviewed indicated climate change as having negative impacts on transhumance pastoralism making it difficult and risky, to the extent that one family had given up migration due to heavy losses.

5.3 Factors driving the persistence of TAP practice

5.3.1 Family legacy and remoteness of transhumant agro-pastoralists' village

This section explains the reasons behind the unusual trend of an increase in the number of households practicing TAP, observed in Bempu and Damchena. Although increasing population is a universal phenomenon, an increase in the number of households in the villages does not necessarily mean similar increases in the number of TAP herds. Unlike the rest of the herder communities, Bempu and Damchena experienced a positive correlation between population growth and TAP herds. During the in-depth interviews, herders attributed this change to children getting married and moving out from the

extended families' household. Customarily, the parent's assets are divided among the children who establish a new household.

The interviews also revealed that in Bempu and Damchena, the young families that separated from the main households also adopted transhumant agro pastoralism. An elderly herder from Bempu explained how the overall number of households practising TAP has increased albeit with a decline in individual stock holdings:

"It [households practicing TAP] has increased though number of animals per household is lesser than it used to be in the past. This is because population grew and animals got divided among smaller units ..." (Herder_16)

The same herder indicated that, although the number of households practicing TAP and individual holdings, had declined owing to the overall growth in population of both people and animals over years, the total number of animals has increased. He believes the increased number of animals in their village is exhausting forage earlier in the season and that necessitates early onset of south bound migration. He explains that the Bempu herds now start their south bound migration earlier than their usual timing:

"It is also because, now there are more cattle than in the past. When there are more households, the grasses get finished early and that is the main reason. Earlier there was lesser number of households, so the grasses were more abundant ..." (Herder_16)

However, the question then arises as to why there is such a difference among herder communities, such that while the majority have adopted alternate livelihood options, children in Bempu and Damchena have chosen to follow their parents' footsteps? What factors influenced their decision to keep practicing transhumance despite increasing population and reducing *tsamdro* resources?

The answer may lie in the remoteness of their temperate villages and the mobile nature of the pastoralists' lifestyle. While Urci, Doshi and Tshebji are well connected with the highways, Papali and Bempu were not connected to the road until 2010. In 2011, the researcher observed a new dirt road being built to connect Bempu to one of the national highways. Damchena is fairly well connected to road and near to the main Paro town.

The reason for this lies in their ancestry. All Damchena inhabitants were descendants of past *Norpons*. *Norpons*, by nature of their job, kept migrating with cattle for most of their lives without owning land and settling down, until recently. The earliest settlers in Damchena were around 1980s according to one agency informant. This prolonged mobile nature of their job, with lack of understanding of the value of education, contributed to many children being left out of schools and ultimately ending up with their ancestral TAP profession.

The herders in Papali are hoping for the road to reach their village while they conduct their business as usual.

Another elderly herder who was preparing to stop migration and wanted their village to be connected with road said:

"Some of them somehow managed to buy land at the other side of the valley where there is road access. So they concentrate on growing potato. If there is road access coming to our side of the valley, actually the production and quality of potato is much better here, compared to the other side of the valley." (Herder_9)

Herders in Bempu said they have been tossed around many times with the government's action of changing administrative boundaries. The herders in Bempu and Papali believe that frequent changes in administrative boundaries between Paro and Chukha Dzongkhags have resulted in delays in getting basic infrastructure such as vehicle roads to their villages.

A male herder informant in his fifties from Bempu said:

"While Naja geog villages were getting roads we were under Chukha Dzongkhag. Now when the plan is almost finished we are put under Naja geog, Paro Dzongkhag. We are always on the missed list." (Herder_17)

All the above evidence suggest that the unusual increase in households practicing TAP in Bempu and Damchena was a result of remoteness of the village and mobile nature of *Norpons'* lifestyle until the Damchena *Norpons* started settling down.

5.3.2 Heavy dependence and a strong attachment to TAP cattle and *tsamdro* resources

The existing migratory herders depend heavily on their cattle which in turn depend on the *tsamdro* or rangeland resources. The herder key informants, as well as focus group participants, indicated their strong dependence on cattle, irrespective of seasons, as their main means of living. The herders, especially those practicing TAP, indicated their attachment to their migratory cattle.

One elderly male herder in Bempu, during an in-depth interview, said:

“The main source of income and the reason why we need to migrate is because we depend on our cattle. That is supplemented by buying horses.” (Herder_16)

This sentiment was also mentioned during focus group discussions in Bempu when a herder said: *“There is nothing else; we depend heavily on cattle irrespective of seasons.”*

The focus group participants in Tshebji ascribed to a similar reason and said they kept cattle and depend quite heavily on cattle, because without cattle, even agricultural fields in their opinion are valueless as they need manure to fertilize and draught power to plough them.

An elderly female herder in Tshebji said:

“We have to plough our fields and milk the cows and feed the household. If we stop migration and give up cattle how are we going to feed ourselves? We cannot do business like others.”

Similarly, herders in Urchi also explained migratory cattle have significantly contributed to their families' wellbeing and, therefore, they are attached to the migratory cattle. A male participant in his fifties, during a focus group in Urchi, said: *“... my five children are brought up with the income from these animals. And I have 15 people in my house - fed and raised with these cattle.”*

Also many herders, irrespective of gender, cited heavy dependence on cattle resulting in their strong attachment to cattle; and women are more emotional and tend to feel more comfortable with their cattle because they have lived with their cattle for many years.

Female herders indicated a strong sense of attachment to their animals and their way of life in Tshebji and Bempu:

“...May be because I have always lived with the animals, I feel lonely and feel like something is missing when my animals are not around.” (Herder_25)

There is also a strong indication that female herders not only feel secure and comfortable with their migratory cattle, they are also less confident of adopting exotic cattle breeds.

Another female key informant in her thirties in Tshebji said:

“...I somehow cannot think of staying without my animals or adopting sedentary farm with exotic breeds. Besides losing the butter and cheese, I will not be happy at all without cattle.” (Herder_32)

This heavy dependence and strong attachment to cattle, which in turn depends on accessible *tsamdro* resources through transhumance, keeps the spirit of transhumance alive for these herders.

However, while equally dependent on TAP cattle, inter-herder variations exist based on their possession, or lack of, the resources associated with TAP; hence differences in herd sizes, and the amount they benefit from the system, consequently arises.

5.3.3 Market connectivity of dairy products contributes significantly to family income

The herder participants indicated there has been an improvement in access to market for their dairy products and believe the market is growing for their products. These two factors enhance the opportunity of converting their products to cash, compared to the past where they had to barter their products for cereals and other food items with crop farmers. This sentiment was held by all the key informants and focus group participants. Butter and cheese are being transported on horseback to road heads where middle men come and collect it in bulk, which is then transported to urban consumers (Figure 5.2).



Figure 5.2 Transporting butter and cheese from a herd (4000msl) to the market

Herders also said the market access and income gains from dairy products are encouraging them to keep the tradition of TAP. An improved income opportunity was one of the reasons for continuing to migrate seasonally with their cattle, a male herder key informant from Bempu said:

“ ... especially now because there is market and income from the dairy products. We migrate down and up. Now as we bring our butter and cheese here [at the road head], people rush to get it.” (Herder_16)

In some focus groups, herders indicated that asking them to reduce their herd size and impose restrictions on their movement comes at a critical juncture when the market has just opened up and many of them are benefiting from the sale of butter and cheese.

For others that do not plan to reduce their herd size, they are hoping the highway projects will be completed soon that will bring them and their products closer to the market. In one focus group discussion with livestock development practitioners, one person said:

“I met the herder’s son on the way here today and when I asked him how he wished to do with his herd, he said there is going to be a highway [Shingkhar – Gorgan Highway] and it will be easier for him to market his products and he is going to keep a big herd ...”

Consequently, from the herders’ perspective, the amount of cash they earned from their TAP cattle is significant, contributing substantially to the welfare of their families. Additionally, the herders also indicated that owning cattle herds gives them leverage to

borrow money from others in case of emergencies, because the lenders feel confident they have cattle and repay the loans with the income from the sale of butter and cheese.

A herder, during a focus group discussion in Bempu, said:

“When we migrate down, each herd earns from Ngultrum 5000 – 15000 per week from sale of butter and cheese, depending on the number of milking cows we have. That is good money. And because of our cattle even if we need to borrow from others, it is very easy because they [lenders] trust us because they know we have butter and cheese to sell, so we can and will pay them back in time.”

Therefore, besides the direct income, which in their view is significant, migratory cattle also act as security or mortgage against which herders can borrow money in case of uncertain events.

In addition, herders also often emphasized the remuneration from livestock products is not a lump sum amount, but provides the family with a continuous supply of dairy products and cash to buy other food items. The same opinion was also shared by one agency personnel who said: *“the income from livestock is not substantial but it nevertheless provides them with continuous flow of income.”* (Agency_3).

In contrast, one key informant from Doshi said that migratory herds were not economical and not worth paying the labour hired to look after the animals. When asked to comment on this statement, the participants at the focus group in Doshi had a different opinion, and contended that the view on economics of TAP is contextual and depended on the household's farm labour situation.

One male herder participant in his thirties explained:

“Well it should be understood at two levels - if that person is hiring or sending his/her animals with others or herding on his own. If the animals are with others you get only 1/3 of the production, 2/3 will be gone, but if you look after the animals yourself, you get 100% to keep.”

The focus group participants in Doshi clarified that only when the herder is not in a position to look after his/her animals and hire other people to do so, then the benefits decline. They indicated this can be compounded by small herd sizes. However, for those

that look after their own animals, transhumant cattle are considered to be contributing significantly to the herders' income.

5.3.4 Lack of adequate livelihood capitals to adopt changes in the farming systems

Leaving the transhumant practice requires capable household members to diversify into some sort of business, to provide alternative sources of income to feed the family. Key informants and focus group participants expressed the need for someone from the household to venture into some business, such as: exporting apples and oranges, or running a shop or having a means to grow substantial quantities of vegetables. These options require the household to have the capacity to either buy expensive exotic breeds of cattle, have enough land to grow fodder and vegetables on a bigger scale than normal, or have the means and skills to engage in some sort of business to replace income lost from giving up TAP system. Means include cash, opportunity and skills, either enhanced through education or inborn personal capabilities.

A focus group participant in Tshebji, whose household stopped migration in 1995, confirmed this assertion. He now keeps a few head of exotic breeds of cattle and engages in a seasonal business of oranges and apple, exporting them to Bangladesh. He also takes his exotic cows south in trucks during winter when he migrates south to engage in the orange business.

He said:

“ ... if they are to give up cattle they will need to take up some sort of business to feed their family. There is no other way. Therefore, those with a small number of animals keep migrating because they need their animals to fertilize and plough the field, to feed themselves, and this is supplemented by cash earned by horses during winter in the south.”

He also clarified that it is the big cattle herds that make TAP an economically viable venture amongst the herders. The modest sized migrating herds, according to him, do not make much cash from cattle directly, but allows them to engage in cash generating opportunities in the south during winter.

Herders indicated that to forgo the TAP system and sedentarise they would need enough private land or access to land under some usufructory arrangements for growing fodder, aside from other management issues. One herder from Urchi explained at a focus group about his trial with sedentarisation indicating the need for physical capital like land. In contrast to the commonly held view of policy makers that the TAP system is labour inefficient, the herders indicated that labour could be efficiently used even with migratory herds.

The herder from Urchi said:

"I have tried [sedentarisation] but because winter is too cold it is very difficult to rear them [exotic cattle breeds] in winter. We could keep around three animals only and the income from that is not enough. Besides, one person needs to work with them full time whole year around. Whereas, with our local cattle, say three persons can manage about 100 animals. It's only during migration that we need about three but once it reaches the camps only two persons can manage. Again to keep exotic breeds we need so much land as well."

The other main enabling factor for giving up migration is the herders' social capital upon which they rely while transiting to sedentary farming. The herders indicated those households that are 'testing the waters' with sedentary farming need people willing to take their animals in winter until they decide to completely abandon TAP or revert back to the TAP system. They send their animals with a relative, a neighbour, a partner from their locality or a local resident from the south willing, to take their animals during winter. This is the same trend followed by all herder communities in Bempu, Papali, Tshebji, Damchena, Doshi and Urchi.

When asked how the households stopping migration are managing their cattle, a focus group participant in Urchi said:

"Some send it on shared ownership basis with their partners while others request their neighbours or relatives to take their animals for winter and to keep all the products if the cows are in milk with the permission to use their tsamdros as well."

However, there are differences among the herders in the level of these resources and the capability they are endowed with that either facilitate or constrain them from giving up TAP.

These differences have created two distinct groups of herders that continue to migrate that sit at two extreme ends of a spectrum. One group of current TAP households are those that have increased their herd size and were able to capitalise on the opportunity and do not plan to give up TAP. The other group, sitting at the other end of the spectrum lack many of the above resources, yet continue to migrate with their cattle. For the latter group even if they only have a few head of cattle, TAP is their only viable livelihood option.

An elderly herder in Doshi feels, for families practicing TAP owing to the lack of livelihood choice, restricting their movement and making them adopt intensive systems would put them in a difficult position.

He said:

“ ... transhumance system in this village is on the decline, the ones that still practice it are mostly those who have no better alternatives. They don't even have educated family members in public service to supplement their income.”
Herder_5

The above section indicates, whether it is changing from TAP to sedentarised western style intensive farming system with exotic cattle breeds or capitalising on transhumance system, capitals (physical capital, financial capital, and social capitals) and capabilities (acquired, embodied and inherent as well acquired) are essential.

5.3.5 Herders believe crops and sedentary farming are risky

While some of the herders are enjoying the cash from selling their vegetables and fruit in the market, and are beginning to buy land near roads or looking forward to connecting their villages with the road network, many of them are still not confident with these alternative options.

One of the reasons for the persistence of TAP practice is the herders' lack of confidence to

rely heavily on the cropping business. Active herders of all ages appeared reticent about ceasing migration soon and relying heavily on field crops and vegetables. Focus group participants in Urchi, Bempu, Tshebji and Doshi indicated the price of potato fluctuates a lot in the market. This is the only cash crop grown on a fairly large scale recently at their temperate villages. Besides, potato production is also prone to the effects of changing weather patterns and wild animal depredation.

A young female herder in Urchi said:

"... potato is problematic with wild pig. My field is comprised of many small fragments of land spread across in the forest, and prone to wild animal depredation, so we stopped crop cultivation and concentrated on cattle."

Another young female herder in Doshi, during a focus group discussion, when asked if she would continue the TAP system or choose to sedentarise said: *"I think we need to continue [TAP] because the price of potato is not reliable. Whereas butter and cheese; even for a small quantity we get a good price."*

During the researcher's field work in 2010, many herders reported being unable to harvest substantial amounts of potato from their fields due to unusually prolonged periods of incessant rains. The researcher also observed herders leaving the potato crops in the fields without harvesting them because all the tubers were rotting in the field due to rain. Large quantities of harvested potatoes also rotted in the storage before they were transported to market. Additionally, because they were harvested in the wet season and not properly drained, some rotted during transportation and this all affected the price.

Additionally, pastoralists' lack of contiguous pieces of land makes it expensive to fence which is a requirement to make paddocks when exotic cattle breeds and intensive farming systems are adopted. Herders are of the opinion that a substantial amount of land from the state forest will need to be released in order to make room for pasture development. However, some herders are sceptical of successful sedentarised farming with European cattle breeds and want the government to prove the possibilities especially when such attempts have failed in the past. An elderly herder in Doshi

mentioned that Swiss Development Agency (Helvetas) had once spent a substantial budget to try to consolidate their pieces of land and help them fence it and develop paddocks. However, the project reportedly did not progress from the initial surveys for reasons unknown.

Pastoralist herders perceive their land resource endowments are inadequate, fragmented and do not produce enough food for the families. Nor does TAP allow for establishing paddocks and improved pasture for exotic cattle breeds as desired by the government. TAP, and the associated cash generating opportunities are, therefore, the most practical livelihood in their opinion.

5.3.6 TAP provides livelihood for those with no education or job prospects

One of the reasons why the migration practice still remains is because in some villages young educated and semi-educated children return home to carry on the legacy of transhumance. Contrary to the overall trend of farm labour shortage, some herders indicated the availability of household labour or ability to hire extra labour, as one factor enabling them to carry on migration.

Just as complex and diverse as the resource endowments are, between and within herder households, so are the household's farm labour supply situation. Despite changes occurring in the family structure - preferring smaller families to extended family system, rural - urban migration, and developmental changes, some families have managed to retain family members to work together at home. Normally, these changes are considered an impediment to herder families in practicing TAP. These types of families have adolescents available in the village who have for some reason missed the opportunity to go to school or have returned home to work on the farm.

When asked who looks after his herd, a male herder in Urchi during a focus group, said:

"My wife, daughter and son-in-law. I have two daughters that did not go to school. One stays at home and cooks for school going children. The other one and her husband are with my wife at the camp with cattle."

Another female herder key informant in Bempu believes that children with no education will need to continue with TAP, while educated ones may be able to find different jobs. Indicating she feels safer for her daughter to continue TAP system, she said:

“I think my daughter will continue because she did not go to school. May be if someone is educated then she/he would find a job somewhere and do away with it, but my daughter is not educated so she must continue to migrate like that to survive ...” (Herder_25)

These views were reinforced by one extension personnel during a focus group discussion who indicated that the biggest herd in his area has around 150 head of cattle and is looked after by three persons; the herder’s wife, a daughter, and a helper. The son is engaged in marketing butter and cheese to bigger markets in Bumthang, Mongar and Thimphu.

For these children, having had no benefit of education, the parents and children alike feel that carrying on with what their parents have established is the safest approach to get on with life. Many of those young herders with no education or only primary level education expressed their desire to continue with the TAP system because they feel, without education, they have no other opportunities.

There are also households that had children returning from school, while others had taken their children out of school to join the family labour force. Many herder communities mentioned that more adolescents at various stages of their education are returning home to work with their parents. The herders indicated these teenagers find the job market very competitive and saturated with the growing population.

When asked if more children from high school and higher secondary schools are returning home to join the family, a participant in focus group discussion at Tshebji said:

“Yes, they are returning. Some say that even if they complete their studies it is very difficult to find jobs, while others are saying the prospect of finding jobs is very grim and instead of letting old parents suffer with farm work in the village, they would rather help the parents and start doing what they will ultimately end up doing sooner or later”.

One elderly herder informant from Doshi reported pulling one of his children out of school to help at home and hoped that gradually he will take over the profession of TAP. In his opinion, children are sent to school to gain education, but as children get used to the school and the urban environment they do not want to return to the farm. He said he felt it was necessary to take action before the TAP collapses, so he has taken his son out of school to help at home:

“First we put children in school with the hope of making them at least be able to read and write. The kids will somehow study up to class 10, after that they won’t quit and want to study at least up to class 12 with private funding... they do not want to return to the village. With only old people in the village; we cannot manage everything. I have 4 sons, so I have decided to drop one child out of school to help us at home in the village and carry on the family tradition.” (Herder_6)

Some herders are of the opinion that only those children of well to do families are able to get higher education and white collar jobs. Those coming from poorer families, including some of these transhumant herders, do not have that kind of prospect unless they were exceptionally good and able to qualify for government scholarships. These families simply do not have the means to send their children to private schools and universities.

These views are reinforced by the researcher’s own experience where he has personally lived with a family in Bempu during research field work in 2010 that had one of their sons return from school after class 12 (equivalent to Australian year XII) to work with the family. Returning back to run a focus group discussion in 2011, the researcher noticed the landlord’s daughter had also got married to a man who left high school. The new son-in-law was also seen helping with the household’s TAP tasks. Additionally, the researcher also met a teacher with a bachelor’s degree in education in the same village, who left his teaching profession to help his wife, and another high school graduate, who could not find a job in the urban town, practising TAP as their primary livelihood.

Similarly, the ability to hire extra labour also influences the availability of farm labour. Some of these herders were able to hire people to look after their cattle while they are engaged with household tasks, crop field activities, kitchen gardens, village meetings and attending the horses.

An elderly herder in Doshi explained that he is managing his herd with the help of a hired labour because his children were away:

“Most of the children are now either in school or serving as civil servants or in the armed forces. I have one hired labourer working for me and I have to pay him monthly salary.” (Herder_5)

Traditionally, herders in Jabana, including Bempu, Papali, and Tshebji, have always been able to convince some southern residents in the past to come and work for them. Having lived and worked side by side in the south during winter, people seem to have developed trust between each other. Additionally, people from the south may have preferred the working conditions in temperate villages, which would be far more comfortable than their sub-tropical village in summer. The temperate villages have moderate temperatures with no parasites and less rain, while the sub-tropical south is characterised by heavy rains, heat and numerous parasites. Therefore, although the actual job may be physical and the wage not very attractive, some southerners tend to opt to work in northern villages in summer. The researcher observed several of these southern wage earners in Bempu, Papali and Tshebji during research field visit.

5.3.7 Herders hope of gaining ownership of *tsamdros* land

One of the reasons that keep TAP going is the herder's hope of gaining ownership of the *tsamdros* land. It was not explicitly mentioned in the interviews and often subtly implied in informal conversations. However, it can also be inferred from the assertiveness of their claims and outright rejection or defiance at suggestions about sharing some of the *tsamdros* resources in the south with the southern local people. When the researcher suggested the possibility of sharing some *tsamdros* in the south with local residents, most herders were adamant that it is not possible because they have inherited the *tsamdros* from their parents who have paid large taxes in the past to retain access to these resources. One herder key informant said that a physical feud would result if their *tsamdros* was proposed to be shared with local residents.

One of the agency key informants also concurred with this view and said that perhaps some herders keep migrating in the hope they might get ownership of the *tsamdros*.

The agency key informant said:

“One of the main arguments to keep the animals is to keep the tsamdro ... because there is still a hope that one day you can convert it to some other use and you don’t want to pay for it.” (Agency_5)

Though implicit as it may be, the intention is clear because if this happens they could gain private ownership rights to vast expanses of land which they will not have to buy.

5.3.8 Logistical issues and religious sentiments interfere with disposal of local animals

Although some households are faced with severe labour shortages and wanted to dispose of their animals and cease migration, they are faced with practical issues such as not knowing where to sell cattle or no one to buy the cattle, and religious sentiments constraining them from disposing of their animals.

Some herders indicated that even if they decide to stop migration, as the government expects, and start sedentary farming, they will need government support for the humane disposal of their existing local stock. These herders want buyers who would continue to rear those cattle and not send them to the slaughter houses.

One herder’s family was a third generation owner of the herd that had its lineage from the royal and *goendep’s* (monastic body) herds. By virtue of having bought such a herd, the family also had usufruct rights to several *tsamdros*. They employed *norpons* who seasonally migrated between the *tsamdros* at different agro ecological zones. Through the course of the interview it was revealed that lately the owners are being challenged by their age and want to dispose of their animals, but the household was unable to dispose of their local cattle. They wanted some assurance that the buyers are genuine herders or farmers, lest their animals are sent to the slaughter house.

An elderly female key informant said:

“ ... I don't need these animals now ... I have sold out all my yak herds. We also have 2 herds of cattle ... government will need to buy these animals. No, I don't need cattle now but who will buy them? The buyer should have the means to pay for my cattle and a place to graze ... [and] people to look after them. I have offered them to the monastic body for free, but now they are not allowed to keep cattle either. Buyers must assure rearing them and not put them in the hands of diki phochu [butchers] lest sin and bad karma befall on all of us.” (Herder_42)

Interviews with herders and an agency key informant indicated that in the past cattle and *tsamdro* were wealth assets and a sign of prosperity. However, recently they have become a liability for these elite families who are faced with the difficulty of managing and/or disposing them. This problem is further compounded by the desire to live within the confines of the spiritual convictions based on their religion. The inability to find a suitable buyer with assurance of continuing to rear those animals because of religious sentiments forces some households to continue TAP. They continue to keep a large number of cattle and practice TAP even in the absence of economic incentives to keep large herds.

5.4 Broader changes influencing the practice of TAP system in Bhutan

5.4.1 Change in the tax system and monetization of the economy has improved TAP herders' wellbeing

Many elderly herders indicated the transformational change in the Bhutanese tax system was a huge relief to them. Herders, especially the elders, recounted days when they had to pay heavy in-kind taxes in the form of butter and cheese. The in-kind tax system left little room for extra production and, sometimes, when they managed to produce a bit more than what they needed to submit, there was no market. They had to either barter with lowland villagers for cereals or gift it to their acquaintances in exchange for some other food items.

According to the herders, the difference in practising TAP then and now is that in the past, migration was necessary to be able to pay taxes, whereas now it is an opportunity for pastoralist herders to earn a living. A herder in Damchena explained how butter and cheese hoarded by some *norpon* herders in their camps were either presented as gifts or exchanged for cereal:

“ ... there was no market as such. Norpons could not sell the produce in the market. Even later when I started staying with cattle, there was no market in Paro ... to sell dairy products. People from villages would come to camps with some fruits, vegetables, cereal flour, zaw [roasted rice usually consumed as nibble with tea] and cereals, looking for butter and cheese in return. Those days, you can't even fetch a good price for dairy products. Norpons would usually give the villagers more butter and cheese than what they brought is worth, in a barter system or as give away.” (Herder_36)

Another herder in Bempu supported the above view and explained how after paying taxes they bartered their excess produce for rice:

“Earlier there is no opportunity to sell like that. We exchange it with rice because we cannot grow rice at our village. The remaining produce [after paying taxes] is taken to Paro to barter with rice.” (Herder_16)

The same herder posits that this situation has now changed. He explained there has been an increase in the number of animals migrating from their village because now there is a real income from migratory cattle.

5.4.2 Institutional reforms have transformed all forms of *tsamdro* lands to state lands

According to two agency personnel (Agency_6, Agency_9), *tsamdro* titling, accorded during the pre-monarch era and later under monarchic rules, were subsequently reflected in the national land records. This is said to have happened when the national assembly in 1953 accorded full private ownership rights of *tsamdros* to individual and joint ownership, similar to other land categories. However, according to one agency interviewee, the first land law of the country (Land Act of Bhutan 1979), “diluted the ownership of *tsamdros*” (Agency_9), and put an end to tax collection. Thus, instead of tax collection, only permit/lease fees were collected; converting herders’ *tsamdro* ownership rights to mere usufructory rights.

One herder key informant who saw these changes explained:

*... earlier it was tax, then it was permit with a fee of about Ngultrum 100 ... It was Ngultrum 100 per annum per household irrespective of the size of *tsamdro*,*

either big or small, as long as it is registered as tsamdro in your name.”
(Herder_33)

Another male herder in Tshebji went further to explain that since 2008 the government has also stopped collecting the Nu. 100 permit fee:

“ ... we have been paying taxes and fees, but it has been now three years, geog [local government] office did not collect that either. Until that time we have been paying and getting the receipt.” (Herder_27)

This was an indication that the *tsamdros* have once again been nationalised under the new land law (LA 2007). However, it was not clear to many herders what was happening and lots of rumours abound resulting in herders being apprehensive about the Land Act of Bhutan 2007.

5.4.3 Change in the timing of migration

Discussions with herders indicated there has been a change in the timing of migration especially in the south bound migration. Herders in Bempu and Papali are moving down to the southern pastures a month earlier than they used to do. The current active generation of herders of Bempu and Papali comprises mostly young herders. They have started to move down by the mid of the eighth month of the Bhutanese calendar corresponding to September. Previously they used to migrate by the ninth month (October). An elderly retired herder from Bempu believes this change is because of the lack of coordination among the herders due to increased population; unlike in the past when grazing resources were plentiful and coordination was better between smaller herd numbers migrating.

He said:

“ ... it [onset of migration] is earlier now. That is because of seasonal changes ... also because, now there are more cattle than before. When there are more households the grasses get finished early. Earlier there were only four households, so the grasses were abundant and there was a common understanding and coherence so they all migrate together on one day. Now it is not like that, everybody is on their own.” (Herder_16)

Additionally, he suggests the other reason for this trend is the changing seasons and increased cattle population. He draws a parallel with the change in the rice plantation season in Paro and contends these similar change trends are set by seasonal changes. Rice planting in Paro is normally done in the fourth month (May), and now occurs by the third month (April) as a result of seasonal climatic changes.

However, an alternative view was offered by another, much younger herder from Bempu. He suggested in the past herders migrated at the same time, irrespective of their ability to manage their animals, which resulted in crowding along the way and presented difficulties in herding. He feels this has changed now, as only 2-3 herds move together and the rest follow a couple of days later, which he believes helps avoid crowding and makes herding a more comfortable and easy trade.

He said:

“Compared to earlier days, now it is easier ... earlier, even quite recently, for greed of the pasture almost everybody moves together whether you can manage or not ... now we go in succession. Probably two households combine and go together for convenience and to help each other. Earlier, everybody irrespective of their ability to manage, rush and move on the same day.” (Herder_17)

However, during casual conversations with the researcher, the young herders from Bempu and Papali indicated that the herders were trying to move ahead of each other to reach the lush pasture along the way and the common pasture at the base camp in the south. According to their unwritten local institutional rules the herders can halt only one or two nights at the camp sites along the way until they reach a place called Bakcheka. Bakcheka is a common base camp or departing point. Herders said that reaching Bakcheka is also an indication they have reached the south. It is from here the herds move to their respective camp sites for the winter.

Additionally, there is an unwritten rule that because Bakcheka is an established *tsamdro*, herders can halt there much longer, as long as there is no other herd following. Bakcheka may represent an open access or unmanaged common whereby anybody can graze as

long as there are no other herds arriving. It is also to take advantage of this open pasture that herders try to migrate ahead of each other, though still in a group of 2-3 herds.

5.4.4 Change in cattle breeds and herd quality

The interviews revealed changes to the cattle breeds and quality of the herd over the years. Most of the herders stated the overall herd composition of migratory herds has changed from herds being largely of local *Thrabam* (*Bos indicus*) to that of *Jatshams* (crossbred between pure Mithun (*Bos frontalis*) and local *Thrabam*). One herder proudly said he had cows which are crosses between Mithun and Jersey. Herders considered the following traits desirable in TAP cattle for selection: ability to walk long distances, browse in the forest, easy to maintain, produce good quantity of milk and have high butter fat content in the milk.

A male herder in his forties from Bempu said:

“Earlier, as far I could remember, when we were about 15 – 16 years old, cattle were mostly local Thrabams alone. Now the breeds have improved and there are many Jatshams and Yangkums.” (Herder_18)

However, one elderly herder in Doshi indicated there has been a decline in stock quality in his herd and attributed this to the farm labour shortage. He reported that in earlier days, the herder used to maintain a pure herd of *Jatshams*. In summer, the herder would take *Yankum* (*Jatsham* back crossed with *siri* bull) and other crossbreds beyond *Yankum* and sell them in and around Wangdi Dzongkhag. He would then buy *Jatshams* and restock his herd with pure *Jatshams*. This way his herd consisted of pure *Jatshams* with superior milk production and butter fat content compared to the other breeds. However, recently, challenged by age and faced with farm labour shortages, the herder could not maintain the herd quality. Now he said, his herd quality has deteriorated and is comprised of crossbreds and *Thrabams*:

“One of the problems of bigger herds with limited production is also because of labour shortage. I used to take Yangkums and sell them and buy Jatshams in return to maintain pure Jatsham herd for higher productivity. But I cannot do it

now, so the herd comprises of mixed breed and productivity is very low.”
(Herder_6)

This change in cattle breeds and herd quality reflects the diversity and complexity of the changes within the TAP communities which is a function of their ability and resource endowment. While some herders have made progress in integrating *Jatshams* into their herd, others that have previously taken pride in their ownership of separate herds have ended up with mixed cattle breeds as a consequence of the farm labour shortage.

5.4.5 Change in species mix being reared

The herders reported the past practice of keeping smaller animals with the cattle has now changed. Now, not many domestic animal species are being kept now with the cattle herd except for a dog and/or a cat. In the past a herder household possessed goats, pigs and birds in addition to the aforementioned species.

The major species of livestock reared are cattle with about 45 per household on average (Table 5.2). This was followed by horses, poultry birds and mules. There were no sheep. However, there is huge range (123) and standard deviation of 26.75 in numbers of cattle per household with the highest at 127 and lowest at four cattle per household. Similar differences among households were also observed in horse, mule and poultry numbers.

Table 5.3 Total and average domestic animal species composition per herder household.

Species	Cattle	Horse	Mules	Donkey	Pigs	Poultry	Dogs	Cats	Goat
Total No. of animals	3393	319	181	9	18	212	113	70	7
Average per household	45.24	4.25	2.41	0.12	0.24	2.83	1.51	0.93	0.09
Average per person	5.46	0.51	0.29	0.01	0.03	0.34	0.18	0.11	0.01

The ratio of species composition with human population covered in these 75 households shows that except for cattle, there are more human beings than any other species of domestic animals. There are on average about five and half bovine species for every person in the TAP community.

Some herders recounted the hardship that especially women and children had to endure in the past herding the small domestic animals along with the cattle. It was particularly difficult for women when they used to rear pigs and goats with the cattle. A female herder in Bempu said how tired she became and how she cried along the way:

“I remember crying because the pig won’t step in the mud and run into the forest, while I could not penetrate the forest with a basket on my back ... During the parents’ time, they do it with so much difficulty; kids at their back and small calves carried in their front.” (Herder_25)

Pigs used to be kept with cattle to be slaughtered during the annual *choku*. Pigs are hardly ever reared now. There were only 18 pigs from the western region and none in Uchi and Doshi.

An elderly herder from Bempu said that in the past pigs were an important part of their system that helped them prepare for their annual rituals:

“And then when it is about time to migrate down we have a Lochoe [also called Choku, is an annual religious ritual] where in the past we slaughter about 2 pigs but not now because the meat is available. The pig has to be slaughtered a day or 2 before the ritual, lest, the meat becomes a Nyinsha [fresh meat- not preferred] the remaining meat is dried and taken to be consumed along the way during migration.” (Herder_16)

Goats were also kept in the past with cattle herds, as one herder informed, for the belief that the smell from the buck protects the *Jatshams* from black quarter disease. However, only seven goats were reported among the 75 households surveyed.

Both male and female herders reported it is much easier now for women during transhumance than before, with the change in species composition being reared.

5.4.6 Government’s livestock breeding policy favours exotic dairy breeds over local cattle

Despite the TAP herders’ preference for local breeds –*Thrabam* and Mithun crossbreds (*Jatsha*, *Jatsham*), the government livestock breeding policy is grossly discriminatory against *Jatsha*, *Jatsham* and *Thrabam* breeds. Government’s breeding policy promotes exotic breeds of cows which are not fit for long distance transhumance. This policy is

strategically designed to reduce migration and adopt sedentary livestock keeping practices. Government requires herders to pay for breeding stock of the breed suitable for transhumance movement such as Mithun while exotic dairy breeds are provided free of cost.

One extension personnel indicated the ingenuity of the herders to combine good milk production quality with high butter fat content of Jerseys and hardiness quality of Mithun. However, to the disappointment of the herders, this breeding scheme is labelled by livestock policy makers as haphazard breeding and not allowed according to the livestock breeding policy.

The government requires people to pay for Mithun breeding bulls which the herders find expensive, while Jersey and Brown Swiss bulls are supplied to farmers free of cost. During one focus group, an extension personnel indicated that the increased cost of A\$ 348 (1AUD=46BTN in 2010) per Mithun bull is expensive for herders and perhaps only about 50% of herders from his area would be able to afford to buy in groups.

The extension personnel also indicated the demand for breeding stock from the village is mostly for Mithun bulls, preferring their progenies for better butter and cheese production and ploughing purpose. However, the herders have not been placing demands on Mithun bulls in the last two years or so owing to the increased price they have to pay for the Mithun bulls.

When asked why there was a reduction in demand for Mithun bulls the extension personnel said: *"There is demand, but when it comes to contributing money, they cannot produce Nu. 16000 (A\$348)."*

However, the main problem of migration cessation or sedentarising is the need for capital - physical, financial and social - which one livestock personnel opines is scarce with poor herders or farmers in general. The agency personnel said: *"the thing is; livestock development needs all capitals-money, land and labour and usually poor are without any of these."*

5.4.7 Herders face increased incidence and scale of human-wildlife conflict as a consequence of conservation policies

The following section describes how human-wildlife conflicts are affecting transhumant agro-pastoralists' livelihood causing loss of animals and crops (Table 5.4).

Table 5.4 Households with average number of animals lost to wild predators annually

No. of animals lost/yr	No. of households	% of households
None	13	17.33%
1 animal	9	12.00%
2 animals	22	29.33%
3 or more animals	31	41.33%
Total	75	100%

Data shows about 83% of households have lost at least one animal annually to wild predators. About 17% of households reported having not lost a single animal.

Human-wildlife conflict is having a significant effect on the livelihood of the herders. Asked how they viewed the severity of conflict on their ability to live a pastoralist life, over 77% of herder households surveyed viewed it as serious to very serious and affecting their livelihood (Table 5.5).

Table 5.5 TAP households' concern with human-wildlife conflict

Severity of effect	No. of households	Percentages
Not serious	17	22.67%
Serious	39	52.00%
Very serious	19	25.33%

Table 5.6 below shows that in 2010, herder communities on average lost two cows, one bull/oxen, and one calf per household. These losses have huge ramifications for their ability to build their herd and replace the animals lost in previous years or that died of old age, diseases or disaster. The data shows cows constitute 50% of the total number of animals lost in 2010 (Table 5.6, p 202). A comparable proportion of male cattle and calves,

about 20% and 22% respectively, were also lost. A smaller number of mule and birds were lost compared to horses (about 5%).

Table 5.6 Species of animals lost to wildlife in 2010

Species lost	No. of animals lost	% of total lost
Cows	137	50.37%
Bulls/Oxen	54	19.85%
Calves	61	22.43%
Horse	14	5.15%
Mule	4	1.47%
Birds	2	0.74%
Total	272	100.00%

When asked, based on their lived experience, if the situation of human-wild life conflict was showing any signs of improvement; 41% said it is improving, 35% were not sure or thought the situation was same, but 24% have observed the problem becoming more serious every year. Those that said it is improving also said, while the predation on their animals has reduced, the pressure on their crops has increased. Almost all the households reported losing significant amounts of their crops every year to wild animals' depredation.

Common wild species that attack domestic animals were bear and wild dogs while for the crops it was the barking deer, sambar, monkeys and wild pigs. Occasionally, tigers also attacked cattle.

The reasons why some are not affected by wildlife are because, either their camps as well their village fields are in the middle of the settlements and others act as buffer for them, or they are just lucky. Some herders said it is sometimes based on one's luck. They said if you are not lucky, even if you have only a few animals, they get attacked. If you are lucky, even if you have hundreds of animals, they remain safe.

An elderly herder from Bempu said:

"I think it also depends on your luck. Sometimes the ones with only 5-6 cattle get attacked and others even with hundreds of animals are safe. It really depends."
(Herder_16)

However, most of these herders have not received any sort of compensation for their animals and crops lost to wild animals. Owing to the lack of compensation from any agency or government body, herders have not bothered to estimate the quantity lost. Some herders reported compensation schemes exist only for animals killed by tigers. Only one herder in Bumthang reported receiving some sort of compensation once through WWF Bhutan for his animals killed by a tiger. However, it was later confirmed by one agency personnel that the compensation for tiger attacks has also discontinued fearing sustainability issues in the long run.

Given the incidence of human-wildlife conflict with no compensation, it may affect the herders' perceptions and support for conservation policies. This issue was explored during the household survey and presented below.

Around 76% of herder households surveyed indicated they feel the conservation policies are important and 79% supported the policies. The reasons for supporting these conservation and biodiversity protection policies include:

- It is important for their animals
- For firewood supply
- For construction timber
- Because it is a water source
- Consider wild animals same to their domestic animals
- A desire to hand over nature intact to the future generation.

The herders said their way of pledging support for such policies are in the form of not cutting down trees, following forest rules, obtaining forest permits, controlling fire and not practicing slash and burn, no hunting at all, and refraining from and informing neighbours not to exploit the forest.

However, only 24% of households expressed their lack of comprehension and benefits of such policies, while the other 21% are unsure of their support and hence do not know how to support such policies.

Similarly, their responses in dealing with the human-wildlife conflict also varied. While some indicated helplessness and having no idea how to deal with this problem, others suggested the following:

- Subsidies for barbed wire fencing
- Religious activities
- Understanding each other (people - animals and government - citizens)
- Government and people sit together and discuss
- Education and awareness
- Better management of animals
- Compensation because it is also considered a sin to shoot these wild animals.

Only one frustrated young herder in his thirties said it will be better if government supplied guns, one per *Chiwog* (sub-division of geog), and left it to them to handle the situation.

In some places respondents also reported their management weakness as reasons for not reporting crop losses. These reasons included sowing seeds for wheat and barley before south bound migration leaving crops unguarded, and locking houses during winter till the early members return around February to sow potato tubers. Although deer and wild pigs' infestation occurs even after people have arrived at the village, for the whole winter the field is left unattended making it a safe haven for the wild animals to feed on.

5.4.8 Change in aspirations over time - Southerners express desire to get access to *tsamdros*

The interviews and focus groups revealed subtle desires of people occupying villages adjacent to *tsamdros* to access those resources, which might have been unable to be expressed or suppressed by existing legal and institutional arrangements. How some of these expressions of desire fuelled by new legislation are causing new conflicts or reigniting old benign cases between TAP herders and downstream locals are explained in Chapter 6.

The access is traditionally determined by the leasehold right provided by Land Act 1979. Southerners encroaching in pastures would have legal implications. When the herders are

not around, *Tsamdros* are informally monitored by households/members of southern residents who are in good terms with herders (whistle blowers).

Given the opportunity there is desire among the southern Bhutanese residing next to *tsamdros* to gain access to these areas. Local residents in Brokser village (Figure 5.3) in eastern Bhutan (Mongar Dzongkhag) indicated they would be happy to get access to *tsamdros* and expressed, in their perception, it is only fair if people stayed within the bounds of their Dzongkhag to allow for equitable access to natural resources. Herders from Bempu, Tshebji, Doshi and Urci were also aware of such intentions by southerners residing next to their *tsamdros*. The Brokser communities indicated they intended to keep more cattle and were also willing to adopt Jersey crossbreds if they could get access to *tsamdros*. Probing further to understand why the Brokser kept smaller herds revealed these residents' herd sizes were limited by lack of grazing area and had intentions to keep more cattle if access could be gained to *tsamdros* around their locality.



Figure 5.3 Brokser Village (Photo: Kuenselonline.com)

One male participant in his late forties during focus group in Brokser said:

*“Yes, if we get this kind of opportunity we will keep more cattle ... if such an opportunity is granted to us to utilise some of the *tsamdros* around our village, we of course have aspirations to rear more cattle.”*

Another female participant in her forties supported the above participant's statement and

said:

“Given the opportunity - if we can gain access to these tsamdros, we would like to rear Jersey crosses, because the tsamdros areas are very good land - flat and fertile. We grew maize crop once in some of those tsamdros but later they didn’t allow us. So our aspiration is to gain access to those tsamdros and government supply us with a Jersey breeding bull.”

This situation was confirmed by the researcher’s own observation of a good area of flat land, opened and cleared at the camp sites with favourable climatic conditions of sub-temperate to sub-tropics.

The herder communities in Bempu, Urchi, Tshebji, and Doshi also informed the discussions that the local residents at Chimuna, Langthel, Dolepchen and Lhuntse were eager to get access to their *tsamdros* and have indicated this to them. One male participant in his thirties from Urchi said: *“In Trongsa particularly in Langthel, there is a strong desire to rear more cattle if access could be gained into tsamdros currently used by our herds. They express that to us verbally sometimes.”*

While Kungkha residents in south-western Bhutan under Chukha Dzongkhag (where some of Tshebji herds go to in winter) also expressed their interest in getting access to the *tsamdros*, but they did not indicate if they would keep more cattle. Their main source of livelihood is from cash crops such as mandarin oranges, cardamom and ginger, and keeping small number of animals in those orange orchards.

Similar incidences of downstream residents indicating their desire to gain access to the *tsamdros* have also occurred in the past in Dovan in central south under Sarpang Dzongkhag, where some of Urchi herds go in winter. The focus group participants in Urchi reported of an incident where Dovan villagers, led by their local authorities, claimed that the villagers had rights to those *tsamdros* and asked the herders to stay within their Dzongkhag boundary. The Dovan villagers have reportedly planted fruit trees and grown crops in those *tsamdros* prior to the 1990s political uprising, in pursuit of keeping the herders at bay. However, that did not succeed and the issue reportedly has died down since then.

A male herder in Urchi during a focus group said:

“In some places [south] they have threatened to disallow us grazing rights, earlier; before the 1990’s political problem. The karibari [village messenger] told them informally that our [herders] districts boundary was along the mountain ridge and all other areas below that ridge belonged to them [Dovan residents] and they should have the right use it. Some cultivated maize, while others planted cardamom. But now they don’t do that anymore.”

Irrespective of what use they will make of the land, discussions with the herders and downstream residents indicates a strong desire from southern residents’ access to *tsamdro* resources. In contrast to this view the extension personnel in Lhuntse said most of the residents in Lhuntse Dzongkhag; especially the ones at Zhongmey village lacked the desire for more grazing areas because they are faced with acute farm labour shortage.

5.5 Summary

Transhumant agro-pastoralists in Bhutan are experiencing many changes from external factors as well as a desire for a better quality of life. Among the six study sites, there has been a 31% decline in the number of households practicing TAP between 1990 and 2010, due to farm labour shortage, alternative livelihood choices, government policies and climate change.

Although the general trend was a decline in TAP, the practice continues and serves a very important role for many pastoral households. The historical legacy, economic and social importance of cattle and a desire to gain formal rights to common land, keeps TAP alive today. The inter community and household heterogeneity in resource endowment, as well as personal capability, also influences continuity of TAP practice. While some households in all the communities have been able to adopt alternative livelihoods, educate their children and adopt machinery to overcome challenges of labour shortage and adjusted to reduced grazing land and climate change vagaries; others have not been that successful. Despite the challenges, many still continue TAP either owing to their parental legacy, remoteness of village, emotional attachment to animals, difficulty in

selling off cattle, lack of potential to adopt alternative livelihood options and due to improved access to markets.

There are also other general changes in TAP practice such as: alteration in species composition in the herds, breed quality of cattle, timing of migration, removal of taxes, and monetisation of economy. All these changes are a function of livelihood capitals and capabilities. While tenurial policies have similar impacts, the decision to adopt alternative livelihood, or capitalise on TAP with bigger herd size, or continue TAP with meagre income is determined by availability of human capital (household labour), financial capital (to hire labours), and capability (education and personal capability) to make informed decision.

A more recent issue that could partly be understood as being fuelled by the new legislation (LA 2007) is that the southern residents inhabiting areas adjacent to TAP herders' winter pastures are increasingly expressing their desire to access those *tsamdro* resources.

CHAPTER 6

Perceptions on land use rights, policies and the future of TAP in Bhutan

6.1 Introduction

This chapter answers the third research question:

What are the current perceptions regarding land use and the future of transhumant agro-pastoralism in Bhutan?

It covers the perceptions of herders on the land use policies, particularly the contentious land law, Land Act of Bhutan 2007, their views on availability of platforms and capability of their representatives to make their voices heard; and how the above legislation and government interventions are causing resource use conflicts. The agency personnel's perspectives on the legislation and policies, and citizen participation during these policy formations, are explained. Finally, the perspectives of herders and agency personnel on the future of TAP and their children are presented.

6.2 Understanding the basis and process of the Land Act 2007: Conception, development and citizen participation

A number of issues concerning conflicts between TAP herders and downstream residents, either active or subtle, relate to the new legislation. The herders, on a number of occasions, implied that the new legislation had either reignited old conflicts or instigated downstream residents to challenge pastoralists' historical rights of access to *tsamdros* in the south. The LA 2007, especially sections and provisions on access to *tsamdros* resources, were investigated further with agency key informants involved directly or indirectly in drafting the new law, extension personnel working with the TAP herders, and TAP herders, as well as with downstream locals.

6.2.1 The rationale behind nationalisation of *tsamdros*

The LA 2007, and the provisions particularly those relating to *tsamdros* according to agency personnel (Agency_6), were conceptually reviewed to keep abreast of the need of changing times. The same agency key informant said *tsamdros* resource distribution, based on records with National Land Commission Secretariat (NLCS) and Ministry of Agriculture (MoA), were much skewed. The records showed that out of 126,000 households in Bhutan, *tsamdros* rights were held only by about 5200 right holders including the royal herds, the monastic body and the Department of Livestock (DoL). This data presented a distorted distribution in the *tsamdros* usufructory rights holding, considering 69% of the country's population are rural based with around 90% raising livestock. The agency personnel (Agency_6) believes one of the reasons why the government felt it necessary to nationalise the *tsamdros* was to correct the imbalance in distribution of resource access and provide equity among the livestock keepers. In addition, the same agency personnel held the view that some of the absentee herders were leasing *tsamdros* to livestock dependent citizens and were appropriating rents, a practice that was not in keeping with the provisions of the then existing legislation (Land Act of Bhutan 1979).

Agistment was illegal as per the land law because the grazing rights holders only had usufructory rights and do not own the *tsamdros* land but:

“ ... it was found that many rights holders were not keeping cattle or yaks. Rather, they were leasing the tsamdros rights to people that depend on livestock. These usufructory right holders were collecting rents from livestock keepers breaching the provisions of the Land Act of Bhutan 1979.” (Agency_6)

Another key informant (Agency_9) also indicated there was a certain degree of ambiguity in the legislation. For example, the Land Act 1979 provided rights and registered *tsamdros* to the individual households' or joint ownerships' names which was as good as private ownership rights. However, in contrast the Forest and Nature Conservation Act 1995 includes all *tsamdros* under the forest definition and identifies them as government property.

The same key informant said *tsamdros* needed to be nationalised because the old system, where entitlements for *tsamdros* rights were given to the monastic bodies, is irrelevant nowadays. In the past, monastic bodies were allowed to keep cattle herds to generate butter and cheese for their monks, as well as for national rituals and for lighting butter lamp purposes because those products were not available in the market nor were there cash subsidies from the government. Now the monastic bodies are subsidised by the government. Butter and cheese required for performing rituals or for consumption are readily available in the market. The informant said for these reasons the old system has become obsolete. Moreover, there was an urgent need to provide for equitable distribution and access to *tsamdros* resources particularly considering the people dependent on livestock that have been paying large sums as rent to the absentee herders.

Section 239 of the Land Act 2007, which provisioned for nationalisation of *tsamdros* and thereafter restricted lease to residents of that particular Dzongkhag, was essentially aimed at putting an end to inter-Dzongkhag cattle migration. The following section presents the empirical realities and impacts of the Land Act 2007 as perceived by the herders and the processes used during the development of the Act.

6.2.2 Lack of consultation resulted in non-acceptance of the law by TAP herders

Across the six study sites the overwhelming response from herders on the provision on *tsamdros* was of non-acceptance and outright rejection. The herders argued they have never been consulted on such a serious issue with potential for grave consequences to their livelihood. They have labelled the law as that of *Chimis* (National Assembly (NA) representatives) law and refuse to honour it. They claim *Chimis* went to the NA and decided on their own and did not consult the herders who would potentially be affected by such a law.

During one focus group an elderly herder when asked if they were consulted by their representatives before going to the NA said:

“No, no, not at all. They never do that. Our Chimis; we do not know about other villages, went silently to National Assembly and it was decided there! The law was passed by the NA without our knowledge.”

In an interview with an agency key informant, he indicated there were outright rejections from the cattle herders. He said: “... herders, especially the ones with big *tsamdro* and bigger herd sizes are dead against it.”(Agency_6)

Another key informant who had a major role in drafting the Land Act of Bhutan 2007 also affirmed the new law has not been well received by the herders. He said: “I think people are not supporting that *tsamdro* provision in the Act and it is up for a review.” (Agency_9). The LA 2007 has only partly been implemented because a nationwide cadastral survey has already begun in keeping with the same Act. A review was commissioned by the first democratic government in 2012, however, the decision was deferred and passed onto the next government commencing in July 2013. Meanwhile the provisions on *tsamdro* have been kept on hold, maintaining a *status quo* as per provisions in LA 1979. The compensation of erstwhile *tsamdro* right holders as foreseen in the same Act has also not been effected. The LA 2007 has provided for compensation with the nationalisation of *tsamdros* to compensate erstwhile rights holders at A\$ 4.35 (Nu. 200) per acre.

6.2.3 Land Act of Bhutan 2007 was based on assumptions and little research

The drafting committee of the LA 2007 comprised of civil servants from different government ministries, each with sectoral interests in land resources. They decided to include the restriction in inter-Dzongkhag cattle transhumance system based on a number of assumptions. The key informant (Agency_9), who was an active member of LA 2007 drafting committee, indicated they took the following assumptions based on the information from case studies of migratory cattle straying into crops at downstream villages and an over grazing issue at Radi-Phongmey in Trashigang Dzongkhag.

The committee’s assumptions were that:

1. The migratory cattle were bad for downstream residents’ crops and detrimental to the environment. One assumption was that pastures were getting grazed

continuously by cattle in summer and yaks in winter and stopping inter-district migration will avoid this situation,

2. With available technology herders would be able to grow improved pasture and conserve fodder for winter,
3. There was enough registered *tsamdro* land area within each district to contain the available animals' units within those districts,
4. Herders will be able to adopt exotic breeds of cattle and reduce herd size, substantially reducing pressure on the environment,
5. With the crossbreds of exotic dairy cattle herders they would be able to enhance production and cash income with less labour.

The agency key informant said:

"The views of the Land Act review committee was that with the emerging technologies or the potential of it, it should be possible to conserve fodder that would supplement feed in winter. The other assumption was that there would be enough tsamdros for cattle to move within their own Dzongkhags. The other thing was the breed improvement of cattle." (Agency_9)

These assumptions were said to be based on two cases (in Trashigang Dzongkhag) being studied by SNV (Netherlands Development Organisation) in collaboration with the research centre in eastern Bhutan. The key informant also asserted that in Mongar and Zhemgang, the crops were being damaged by migratory herds from the north that made farmers from the south either stop growing crops or harvest early thus compromising on the yield.

6.2.4 Section 239 of the LA 2007 is founded on consistent government policy to stop migration

It is highly likely that the impetus to proceed with inclusion of provisions to impose restriction on inter-Dzongkhag transhumance system stems from the concept that it is a consistent government policy. One agency key informant, cautioning against potential bias in his view owing to his long career affiliated with livestock development, indicated that discouraging migration was a consistent government policy; one that he believed was in the right direction. He mentioned the pursuit of crossbreeding of local cattle with

exotic European dairy breeds, the livestock breeding policy of 1980s and the draft pasture policy of 1985 as some of the initiatives taken by the government towards reducing local cattle population, adopting exotic cattle breeds and stopping migration. He also cited reasons such as migratory herds being uneconomical, causing environmental degradation, and spreading animal diseases as a result of transhumance.

The same key informant mentioned that several breeds of cattle had been tried and tested in Bhutan to find a breed suitable to Bhutanese livestock keepers; one breed that could be grazed in open fields without having to migrate. Jersey and Brown Swiss were finally found suitable and breed barriers were established with Jersey meant for low altitude and Brown Swiss for the higher altitude. However, people, including those at high altitude that initially were made to adopt Brown Swiss cattle, later switched to Jersey.

The key informant said:

“Farmers are wiser than technical people to choose breeds of cattle suitable for their need ... to the disappointment of our ... friends, farmers preferred Jersey to Brown Swiss cattle. Brown Swiss was not popular with its bigger frame.”(Agency_6)

Although livestock keepers largely prefer Jersey crossbreds, a number of state farms exist, one Brown Swiss cattle farm in Bumthang and a Jersey cattle breeding farm in Samtse Dzongkhags. Both farms are for breeding and supplying exotic breed bulls to farmers for cross breeding with their local cows.

6.2.5 The approach used in the development of the LA 2007 may have been top-down

The process followed by the drafting committee in the words of one agency key informant was a ‘top-down approach’. The only window of opportunity available for local people to argue or give their opinion was when the draft copy of the law was sent to Dzongkhags and Geogs for review and comments. The key informant said: *“The documents [draft copy of the Land Law] were sent to Dzongkhags and Geogs and further than that there was no other consultations with the public.” (Agency_9)*

The Dzongkhag and Geog authorities were supposed to have discussed the proposed Act with local people, scrutinised it and sent back their views to the drafting committee through the Dzongkhag administration.

The agency key informant said:

“... those days it was really a top down exercise. It was moved by ... The authority at the gups’ level, it will be again interesting to see if decision making, participation has really gone down to peoples’ level. In this case regarding tsamdros, sokshing and migration, I think there is minimal input. I doubt if the draft we distributed had really gone down for discussion.”

Q. So there were not much counter arguments from the Dzongkhags?

A. No, not much. I don’t remember that well. But I mean those are the things where we take it for granted, you know.” (Agency_9)

Accordingly, there was a realisation by the drafting committee that the only opportunity for local people to give their opinion on the new legislation might not have occurred and this process had not succeeded in reaching the affected people. The same agency key informant involved in drafting the legislation said *“Well, I think we have failed to reach these people then and they have not got opportunity to express themselves.”* (Agency_9). As local people began hearing about changes proposed in *tsamdros* usage in the LA 2007, herders rejected it and some herders are said to have requested their members of the parliament (MP) or Ministers to review the Act and allow them to continue TAP as in the past. Another agency key informant (Agency_6), recently tasked by the government to undertake a comprehensive review of the Land Act of Bhutan 2007 with particular emphasis on *tsamdros*, said the government was immediately informed by herders about the unacceptability of the provision on inter-Dzongkhag cattle migration. As the first democratic government was elected in 2008, just as the LA 2007 was beginning to get implemented, the government took stock of the issues coming and felt it was premature to act on the Act. However, the government is said to have assured the herders that the Act will be reviewed in the near future if it is affecting their livelihood.

6.2.6 The LA 2007 was poorly explained to citizens

After the LA 2007 was passed by the National Assembly (NA) in 2007, the legislation was poorly explained to people. One agency key informant (Agency_6) said while conducting a review on the same legislation, he found that in order to create room for the transition and formation of political parties for the first parliamentary election in 2008, the village representatives to NA were made to resign immediately after the last NA session in 2007, where they passed the LA 2007. This created an institutional vacuum, contrary to the practice in the past, resulting in a lack of an agency to explain NA resolutions and new legislation to the general public. In the past the NA members would, after the NA session, go back and brief locals on the new legislation passed in the NA and the resolutions of NA. This did not happen in the case of the LA 2007 and as a result there was confusion, conflict and a lot of apprehension about the Act among herders as expressed by the following the agency informant:

“There is a need to remove the unnecessary apprehension ... the content of LA 2007 was not disseminated well. Earlier Chimis [village reps to NA] used to do the job. In the case of LA 2007, this did not happen as it was the last session, the Chimis needed to resign for transition government to take over and make room for the parliamentary election. As a result a lot of conjectures, confusion, and misinformation took place among the general public.”(Agency_6)

The misinformation and confusion about the Land Act of Bhutan 2007 resulting in ignorance was also pervasive among government officers as well as local people. The key informant (Agency_6) reported that taking advantage of the misinformation, some locals have allied with forestry officials who are ignorant about the provisions of the Act and are eager to show target oriented achievement figures converting some *tsamdros* into community forestry. The locals were taking advantage of a vague understanding of the Act, much of which was based on local conversations and hearsay, to keep away the migratory herds and herders.

The agency informant said:

“In Sakten, the content of the Act was not understood not only by herders but even by government officers. Tsamdro is a Phazhing [family inheritance land] for Bjobs [yak herders]. This insufficient understanding has created almost a

state of lawlessness. The Court officials had to intervene and said it could result into physical feud and assault ... the locals has therefore converted it to community forest and are disallowing Sakten herds to graze in it"
(Agency_6)

In the process of creating room for a new institutional arrangement the old institutions became defunct which resulted in the general public missing the opportunity to not only participate or make their voices heard early in the process, but also did not have anyone to accurately explain the provisions of the legislation.

6.3 Herders' perceptions of land policy and the availability of fora for making the herders' voices heard

6.3.1 Herders' perceive ambiguous policy and/or legislation caused resource user conflicts

Interviews with the herders in Doshi found they viewed the ambiguous nature of the land use policy, particularly concerning *tsamdros* and TAP practice, as enshrined in the LA 2007, reinvigorated old benign conflicts between TAP herders and downstream residents. Many herders from Bempu, Urchi, Tshebji and Damchena also reported similar incidents where southern residents expressed their desires to access *tsamdros* citing the LA 2007 as basis for their claim. These conflicts were reported to have escalated as a result of the new law and some had sought legal and administrative intervention from central government authorities.

Accordingly, the perceptions of both herders and downstream residents around the issue of resource access conflict were explored further through focus groups to provide an understanding of the extent and likelihood of disharmony the legislation may cause if implemented. The findings from the focus groups also provide an insight into the nature and type of conflicts as perceived by the herders as well as downstream residents.

During the course of the interviews, the herders in Doshi indicated the conflicts on *tsamdros* usage between their herds and residents of Dzongkhags where *tsamdros* are located, including Lhuntse, Mongar and Zhemgang Dzongkhag, existed prior to the arrival of the new land law. It was revealed that along with the history of Bumthaps

having user rights over *tsamdros* in southern Dzongkhags, the misunderstanding and conflicts with the residents of those Dzongkhags, associated with the agro-pastoral transhumance system existed for a long time.

According to the history as narrated by a herder from Doshi, aside from the version that referred to *Dung Nagpo*, it is said the *tsamdros* user rights were allotted to Uraps by Jigme Namgyel, the father of the first king Sir Ugyen Wangchuk. It was also reported that occasional signs of dissatisfaction from the residents of the southern Dzongkhags, where *tsamdros* are situated, have constantly occurred. However, despite some conflicts the system is said to have continued fairly smoothly. It was also indicated that whenever occasional complaints and proposal for using the *tsamdros* by the residents appeared, the successive kings have respected the long standing policy decision of their fore fathers and maintained the system for Uraps.

The elderly herder from Doshi said:

“During the 1st King’s time ... the people of Mongar, Lhuntse and Zhemgang put up a petition to allow the tsamdros within their area to be utilised by local people. There was a big conflict then. However, the 1st King Ugyen Wangchuk reiterated the allotment rule done by his father on the basis that Bumthaps are the main contributors of butter tax. Bumthaps do not have productive land in Bumthang. People of Mongar, Lhuntse and Zhemgang have productive land which is enough to feed them and they are not required to pay any taxes.”
(Herder_5)

According to him, the same conflicts occurred again during second king’s reign. The king, however, is said to have honoured the existing rule and asked the encroachers to compensate the Bumthang herders. Non abiders were punished. The residents reportedly blamed the king as being biased and favouring the Bumthaps.

During the third king’s reign however, the prime minister proposed the residents of each Dzongkhag appropriate resources within their Dzongkhags. That was said to have resulted in serious conflict between the herders and downstream locals. The case according to the same herder reached the Supreme Court where the third king nullified the new proposition and reiterated the earlier rule once again giving rights to Bumthaps.

During the fourth king's reign the grazing arrangements was reported to have existed peacefully without any issues.

One herder reported the issue again cropped up recently when local administrative bureaucrats, trying to implement the new land law, proposed for allotting the southern *tsamdros* to locals or to re-settlers:

Recently, in the last 1- 2 years again, Dzongdas [Dzongkhag administrators] said it has become very inconvenient in implementing development activities in Bumthang because people do not stay in one place. They said it would be better to give tsamdros in south to residents of those Dzongkhags for resettlement purposes or as tsamdros since there are still people in those Dzongkhags who need it."
(Herder_5)

The herder reported the bureaucrats, including the livestock sector heads, held a large meeting with the herders where Ura herders have explained, Uraps are living in between the mountains and do not enjoy huge *tsamdros* like yak herders, nor do they have fertile/productive land like the southerners. He said they clarified Uraps are cattle dependent, therefore the proposal would severely affect their wellbeing. They are said to have pleaded with the fifth king to respect the precedent set by the previous kings and allow Bumthaps to migrate as usual.

From the interviews with the herders it became clear that the conflicts between user interest groups were not new and existed between Uraps and other southern and /or eastern Dzongkhag residents for a long time. In Urchi, Papali, Bempu, and Tshebji, these issues were not reported. However, one male herder in Damchena mentioned there were complaints from residents of the south to the government authorities on the pastoralist herds coming from the north. He said their southern Dzongkhag counterparts were dissatisfied calling it unjust owing to the damage that animals caused to the crops:

".... The southerners used to tell us that when Haaps and Jababs come down with their cattle, they act very powerful. It is true though, because suppose if our camp is near to their settlement as soon as we reach there, cattle would stray into their fields and if they have crops like maize and millet it would be destroyed by our cattle."
(Herder_36)

While the few TAP herders are challenging the LA 2007 and making a stand to keep their traditional livelihood, the residents of Dzongkhags where winter *tsamdros* are situated are reportedly seeking their rights to these resources. The expression of interest seeking their rights to these resources from residents from south and eastern Bhutan are diverse, particularly those from Lhuntse who are said to have stepped up trying to keep migrating herds and herders at bay. Lhuntse residents have let their animals graze in those contentious *tsamdros* before Bumthang herds arrived there in winter, necessitating government intervention.

6.3.2 Perceptions on the practicality of putting a timeframe for TAP to cease

There appears to be a high degree of uncertainty among herders as well as agency informants as to whether TAP will cease all together as a livelihood option and if and how long it might take before TAP becomes a thing of the past. The uncertain nature of TAP also questions if it was necessary and /or legitimate to put a time frame and include it in the new land law predicting when inter-district TAP should cease.

Despite the assertion by some agency key informants and agreement by some herder key informants about the bleak future of TAP, there are sceptics both within herders as well as agency personnel over the deadline of 10 years stated in the LA 2007. It is generally believed that complete cessation of inter-Dzongkhag cattle migration will not happen within such a short time frame as stipulated in this Act. In some agency personnel's view the government should make adequate arrangements and support a gradual transition to sedentarised farming if the broad objective is to be achieved.

One agency key informant said:

"I think it will be very difficult for government to implement this section of the Act in the short term. I think government will have to make adequate provisions for the herders for gradual reduction of local cattle population prior to stopping migration." (Agency_1)

The herders, especially the ones that depend heavily on livestock, believe that TAP practice should be allowed to continue as long as it is necessary for them and it is not realistic to put any time line on cessation.

Another agency key informant believed that the frame 'one size fits all' policy does not work and it should be based on the local landscape and resources. He does not support the view that TAP should be restricted by law:

"No, one thing is that especially we need to have ... different scenarios ... [for different] places ... where there isn't many migratory herders ... [and] another ... like in Chukha where there are lots of migratory cattle. Again if you look at it even the breed ...in Chukha you will find lots of Mithun crosses because the landscape is as such that they have to still follow that [TAP] ... replacing the whole herd with crossbreds is not feasible. So, that is why we need to come up with a strategy, suited for that particular district or that particular place, only then it is going to work."(Agency_4)

When asked about their opinion on how to deal with the dilemma of existing migratory herders if the LA 2007, which restricts migration, is to be implemented as it is, one educated herder from Doshi said that it would result in more forest clearing, while herders would be forced to supplement their animals with concentrate feed:

"If we stop migration and sedentarise them, it will be difficult for them to raise those animals ... then the pressure on the surrounding, the environment, will increase because they will then resort to cutting down trees and open more areas for grazing here. They will then have to resort to feeding concentrate feeds like Karma feeds [only commercial concentrate feed producer in Bhutan]."

However, one male herder in his thirties from Doshi indicated, if sedentarisation is to take effect with exotic breeds, perhaps a substantial subsidy to buy exotic cattle and on the price of concentrate feed would be necessary to enable migratory herders to give up migration, sedentarise and yet be able to maintain the same level of income to buy food for their family:

"... if this [transhumance system] is seen to be problematic by government, what we need is butter and cheese to sell to buy food. So if government can find a way to make it happen here with about 80% subsidy then probably people can adopt sedentarisation. Otherwise, there will be problem. However, this is my own opinion and it has to depend on what all the migrating herders in Bhutan

feel about it."

Some young and educated participants stressed the importance of providing education free of cost by the state as a pre-requisite to any change. They posit that with education, people will understand things better and adopt new ways of doing things gradually. They also opine that pasture development and supply of exotic breeds should precede restrictions on movement. Only then will herders see the result and feel confident to adopt new systems.

One young educated herder's son said:

"... the government should start and carry on pasture development and supply and support rearing crossbreds here. That way migration will cease after sometime and people will adopt sedentary farming. But if the government wants to stop that [TAP] first and then only begin development here; our older generations would not accept that at the moment."

Similarly, one senior agency key informant, who although believed migratory herds are uneconomical and environmentally destructive, did not see it as necessary to include the cessation of TAP in the Act. The informant feels that left alone the migration culture will cease on its own as people find it difficult and economically unattractive.

Another young herder participant in his thirties, during a focus group discussion in Doshi, said there is no need for restrictions to be imposed on migratory herders. He opines that as the precedent of keeping exotic crossbred cattle at the homestead has already been set, the practice will increase and migration will stop on its own if people find it a better alternative to migratory practice. He believes that although migratory practice has a long history and has been the livelihood of their forefathers, change is inevitable and people will make their own choices. If interventions, contrary to historical traditions and norms, are imposed; this, in his opinion, will cause conflicts among stakeholders and create disharmony in society:

"Well, these things [migratory practice] started even before the first king by local chiefs; our parents /ancestors got the [grazing] rights since then ... if the current legislations say otherwise, this is bound to cause lots of conflict and inconveniences ... However, if kept as it is I think it [TAP] will cease on its own,

because now every household has some cattle here at home even in winter which we never used to have before ...gradually if this is profitable people will stop [migration] on their own."

According to the young herder, change is inevitable and so are the aspirations of other young herders and educated children of herders, however, they would like to effect this change on their own terms without state impositions.

In the following sections I explore and present the aspirations and world view of the young uneducated as well as semi/educated herders and potential herders in relation to their participation policy making and future of TAP.

6.3.3 Avenues for herders to express views and hear about policies

The household survey (N=75) showed the majority (64%) of herders felt their views on policies and issues concerning their livelihood were not being heard, while some 36% felt otherwise. Only 30.67% indicated being aware of certain avenues available to them for expressing their views including *Geog Tshogpa* (village representative to the local governance office), and the *Geog Tshogchung* (block development committee - the lowest administrative body). The remaining 69.33% felt there are either no fora for them to express their views or inform them on new policies and legislation. Those that considered having fora and those who considered otherwise, said existing avenues were inadequate because their *Tshogpas* are not able to make their issues heard. For example, some herders indicated their village needed infrastructure such as roads, bridges and farm machinery, but because of the weak institutions at their village they could not get the facilities. Some also indicated their local government office was far away from their villages thereby not benefitting them from such institutions.

Consequently, the survey revealed (Table 6.1) slightly more than half (60%) of the households interviewed indicated being aware of some legislation or policies concerning the TAP practice and accessing *tsamdros*. The remaining 40% reported not hearing or not being aware of any policies about *tsamdros*, migration or forest rules.

Table 6.1 Level of awareness among herders of policies relating to TAP practice

Aware or not	No.	%
Yes	45	60.00
No	30	40.00
Total	75	100.00

However, except for faint memories of hearing something on such topics in conversations, none of the informants were clear or well versed on the provisions of the LA 2007. When asked which particular policy or legislation they knew or had heard about, the majority mentioned something about *tsamdro* or cattle migration (Table 6.2). Their idiosyncratic perceptions of policies were many and varied. None of the herders knew exactly what the Act provisions were and which piece of legislation it originated from. More than 22% that had heard something about *tsamdro* regulation either forgot what it really was about or were not clear of the message.

Table 6.2 Herders awareness of policies

Which policies or legislation?	No.	%
Relating to <i>Tsamdro</i>	15	33.33%
Concerning cattle migration	16	35.56%
About forest and forest protection	4	8.89%
Can't remember or not sure	10	22.22%
Total	45	100.00%

Amongst the herders that reported hearing something concerning forest, migration and *tsamdro*, 42.33% said that those policies and legislation will affect their livelihood. The remaining 58.67% expressed inability to comprehend the impact or simply said 'don't know'. The effect of the LA 2007 if implemented, according to the herders, will hinder the transhumance practice, meaning animals will die or have no production resulting in serious consequences for their livelihood.

In contrast a small number of herders (2.67%) indicated the effect of changes they heard would be beneficial to them. When probed further on this view, it became clear what they

have heard was not clear and opposite to the provisions in the Act. These herders claimed they heard from a minister or a member of parliament that the herders will be allowed to migrate as usual without restrictions. This rumour if it became true would be beneficial in their world view.

However, the household survey results revealed that the herders use various sources to gather information concerning their livelihood and make decisions accordingly. Asked where they obtained the information, the majority of the herders indicated hearing about recent changes in policy and legislation concerning cattle migration and *tsamdro* access from television or radio (Table 6.3).

Table 6.3 Sources of information for local people

Type of information source	Numbers	Percentages
TV & Radio	35	77.78
Government people	11	24.44
Friends and neighbours	10	22.22
Local government authorities	6	13.33

It was the extension personnel that they referred often to as ‘government people’. Local government authorities, which are at the grassroots with huge potential and responsibility of keeping locals informed, were only mentioned by 13% of herders as a source of their information.

Many herder participants also expressed their desire to participate in consultations about policies and programs that have implications on their livelihood. Herders also indicated they have felt the need for policy makers to have the courtesy to consult them and include their perspectives when such policies are designed. They indicated their desire to make their voices heard. The herders also mentioned that in their view if such controversial issues like restricting migration were discussed with them from the beginning, the policy makers would have understood their point of view better. They felt things would be better understood and easier to implement if such issues were dealt with

beforehand prior to finalising into legislation.

In one focus group, when asked if the herders felt it was important to have consulted them on the *tsamdro* and cattle migration issues when the new legislation was developed, a middle aged herder participant said: *“Yes, we think it is very important. However, in the previous case we have just been told about it after the law was passed.”*

This was further elaborated by a male participant during a focus group at Bempu:

“We strongly feel it is important to discuss with the communities concerned, and horn out the issues prior to bringing it out as the final policy or legislation. Issues of concern would be much easier dealt with, if consulted earlier and clarified. By the time it is passed as a legislation it will be very difficult to change.”

The following sections discuss issues of citizen participation as perceived by agency informants.

6.4 Agency perceptions on issues of citizen participation

6.4.1 Poor capacity and capability of local people to participate

According to one agency personnel practical problems such as who is available to participate in consultation meetings limits the usefulness and occurrence of true participation. The agency key informant highlighted the practical problems in garnering true participation while eliciting citizen participation as:

“Another thing we should also note is how we garner genuine participation from the public. Unless there is public awareness and people are capable of participating, how do we expect them to participate? In the meetings we call, it is usually those who are available, those that the households could spare for us. And these are often people who are not capable of expressing their views ...”
(Agency_9)

In his view obtaining true participation and valuable consultation still remains a challenge in development planning and policy development.

6.4.2 Multi-sectoral stakeholders in drafting committee - time consuming and varied views often with sectoral interest

Another issue the agency key informant (Agency_9) mentioned was the difficulty of working in a committee comprised of multi-sectoral stakeholders with varying interests and opinions. The committee tasked to draft the revised land legislation reportedly disbanded and it took a long time to revive the committee and finally release a draft:

“... there were reservations from members from many corners of the government sector saying why should we disturb the law. It took a long time. It started in 2005 but because of lack of agreement it took a long time. In between the committee died and I had to revive the committee and get on and it really took very long.” (Agency_9)

However, the much awaited draft was said to be passed by the National Assembly with little debate and now faces implementation problems.

The same key informant indicated it was often too difficult to coordinate the committee or come to a consensus on certain provisions and they had to debate for long time. Sometimes they have also used a SWOT analysis to build consensus on issues such as a ceiling for a maximum land holding. This was reportedly argued by some members to maintain it as 10.13 ha while others said it could be reduced to 4.05 ha based on land capability. The other issue that was said to be reportedly argued was the ownership of land in general, such as should it be restricted to only private ownership or should joint ownership be allowed as well. The ownership was said to be agreed to allow both after weighing the pros and cons on each option.

6.5 Perceptions on the future continuity of TAP in the 21st century and beyond

In the following section the perspectives of the herders on the future of TAP and their aspirations for the continuation of TAP by their children and perspectives on policy formation, as well as the agency personnel's view on the future of TAP, are presented. Additionally, perspectives of some downstream locals residing near the pastures of

migratory herders on policy and on accessing pasture resources are also explored and presented here.

6.5.1 Migratory herders hope to continue but want the future left open for their children

All the herders involved in this study have aspirations to continue to migrate with their cattle as long as possible and hope the new government will allow them to carry on with their parents' legacy.

Some herders also indicated the new legislation restricting their mobility was passed without their consent and expressed the hope that the new government will investigate the matter. They said they have been in contact with some members of the elected government and the latter have promised to look into the legislation if the law affects their wellbeing:

"The law was passed by the National Assembly without our knowledge. However, the new government told us that if migration is our tradition, our livelihood and our passion, the government is committed to supporting its citizens, therefore, even if the legislation has been passed we don't have to panic regarding tsamdro ... the government will review the Act."

Although the existing herders, the elderly and young herders with little education, wish to continue TAP, they are keeping an open mind to changes and the aspirations of their children as and when they are feasible. Many herders expressed the view that although TAP is currently the best option, they are not sure about their children's future. They do not want to force their children to continue TAP if they choose not to do so. Herders indicated their children are in schools and it will depend on the children if they want to do a different job or continue with cattle migration or farm in a different way.

In one such discussion a middle aged female participant said:

"At the moment ... they [children] are all in schools. We do not know how they will do. However, later if some of them could not find a job, may be they will need to do the same like us because cattle herding is what has survived us for generations and it will feed them too. But it will depend on them."

However, there is some consensus among some of the herders and government agency staff on the future of transhumant agro pastoralism. Some key agency informants appear certain that TAP is difficult, uneconomical and has many other problems and should cease. In addition some herders contend that the future is uncertain and it is likely that TAP will decline further but would also depend on their children's choices.

One agency key informant opines that TAP should end for various reasons and herders should start zero grazing with exotic cattle crossbreds:

"I think the reality is this; migration practice with local breeds is uneconomical, not to mention the hardships they undergo. We are of the opinion to make them go for zero grazing with improved breeds." (Agency_3)

Certainly there is agreement on the uncertainty of the future of TAP practice. However, the differences in opinion in the way the herders and some agency personnel view this situation exist. While some agency personnel held the view that TAP should cease soon, herders on the other hand believe that it should be left to their children to decide for themselves.

The current generation of herders want to continue migrating often citing reasons of lack of options and accessibility issues. While they are not sure what directions the children in schools will take, they are concerned about the uneducated children and hoped migration continued for those children, as the market is improving for butter and cheese. The participants also expressed aspirations that life would become easier for their children in the future, with more avenues for better economic returns, diversifying into crops that could be converted to cash in addition to livestock products.

A female participant in Bempu said:

"I hope my children would continue the same and because there is road coming here now, I hope they will also grow some vegetables and have better cash income than now. Those educated ones may or may not come back but we still have children that did not go to school. For them the best thing is to adopt the same livelihood as we have been doing."

Some herders' children, who are educated, are willing to work on the farm and are positive about future change, but feel the need for government support in providing

better feed and management for the exotic breeds. These educated participants, who have studied up to high school or higher secondary school, expressed a willingness to work and carried a positive outlook on changing farming systems gradually in the future.

One participant, studying in year 12 in higher secondary school, representing his family in the discussion, said he is willing to come back and work in the farms as he believes it is much easier than finding jobs in town. Asked if he would carry on with the TAP tradition, he said: *"Yes I will carry on, because we have to work anywhere and it is much cheaper here. We can grow vegetables; cultivate our own crops or rear domestic animals."*

These educated young generations indicated it will at least take the existing generation to retire before any significant change in farming systems can take place. One such educated participant said, because the current herder generation are mostly uneducated, it will be difficult to convince them to change their herding system. The younger generation are, however, confident that from the next generation, once the more educated group takes over, more changes will be visible as they try to apply their knowledge and adapt farming to more convenient and higher profitable systems.

One young educated herder's son said the following:

"I am hoping that farming would be much better and easier in the next generation because by next generation most of us will be educated farmers. And it might as well develop a bit further."

When asked to elaborate on his understanding of development he said,

"I feel they will apply the knowledge that they have learnt in schools. Farming based on the knowledge they gained in school; knowing what is best for what crops and animals and what style do we need to farm."

Probing further he indicates that not many herders have stopped migration or changed the way they farm for many years because they were uneducated. He posits that this will change once the young educated herder/farmers take over:

"At the moment because most of them are not educated they have to do most of the farming with physical force. When the educated ones come back and farm, they will be using farm machineries like power tillers and using the farm roads."

Another young educated herder's son expressed his desire to develop pasture and settle down with sedentary farming if the government provides subsidies on exotic cattle breeds, access to open government land and on pasture development activities:

"... if there is possibility of getting local areas improved with government subsidy and exotic breeds supplied by government, personally I would take that because that would mean less work and better production."

These educated children also indicated that they learn to appreciate farming in school while participating in school agriculture programs.

A young female herder also expressed her willingness to stop migration but wants confirmation from the government to allow them to lease GRF land for pasture development. Certainly, the households seem to be feeling insecure about ceasing migration without first having established improved pasture at their homestead to feed cattle in the winter.

A female herder participant in Urchi said:

"Given the opportunity ... [and] we can access open government land and receive help with pasture development we will give up migration ... until that happens we will need to continue with cattle because, even if children could study till class 10 with government support, many cannot continue beyond that we do not have that kind of money to send them to private schools. They will have to come back and continue but hopefully then it will be bit easier if they have access to improved pastures here."

There were more indications from other herders, if leasing GRF land and pasture development is implemented and they get access and support, they will eventually give up migration.

Given the understanding generated in the preceding sections that many of the resource use conflicts are either created or have been reignited by LA 2007, the following sections will explore in detail the types and factors responsible for conflicts associated with TAP.

6.6 Types of conflicts and factors causing upstream-downstream resource access conflicts

During the course of the interviews and focus groups a number of upstream - downstream resource use conflicts emerged, viz. conflict over access to *tsamdro* resources, conflict over traditional route right of way, and conflict of TAP cattle straying into local residents' crops.

Although LA 2007 was often mentioned by many herders as the main contributor to inter-Dzongkhag conflicts, either directly or implied, there are other reasons that are important in understanding the conflicts. The following sections explain the different types of conflicts and factors that contribute to the contentious resource access issues.

6.6.1 Conflicts associated with access to *tsamdros*

This type of conflict occurs between transhumant herders and local residents over access to *tsamdros* in the south irrespective of the type of ownership. This issue appears to be recurrent and has in some places been instigated or heightened by LA 2007. This type of conflict was present in south-western *tsamdros*, central-south *tsamdros* and central-east *tsamdros*.

This type of conflict was first reported in Ura geog, when the researcher in his capacity as civil servant accompanied the Agriculture Minister during a visit to Bumthang in April 2009. The herders reported that owing to the provisions reflected in the Land Act of Bhutan 2007; providing for leasing *tsamdros* only to the residents of that particular Dzongkhag, the locals have repeatedly grazed in the herders' *tsamdros* before the herders arrived. When confronted by Shingkar TAP herders, the locals have reportedly retaliated citing reasons that as per the new land law Bumthaps are not supposed to migrate and *tsamdros* now belonged to the local residents. The same issue also emerged during the in-depth interviews with the herder key informants in 2010 in Doshi.

Although this type of conflict does not appear to be a uniform phenomenon, the herder key informants during interviews said that the conflicts of such nature were not a new

phenomenon but appeared to follow some spatial specificity. One elderly herder reported that such issues have always been there since Zhabdrung's time, meaning since the seventeenth century. Historically, herders from Bumthang Dzongkhag, particularly from Ura geog, reportedly have had conflicts with the residents of Lhuntse and Mongar Dzongkhags.

The focus group discussions also revealed such conflicts occurred in Brokser where the local residents complained of unequal access to resources and how Bumthang herders denied them access to *tsamdros* near Brokser village. Brokser residents indicated that Bumthang herders do not allow local residents' cattle to graze in the *tsamdros* around their own village and would even injure and cause harm to their animals if cattle strayed into those *tsamdros*.

Although the conflicts as such did not occur, the herders from Bempu, Tshebji, and Urchi were also informed by their neighbour local residents in the south, of their interest to access the *tsamdros* resources, as per the provisions of the new Land Act.

6.6.2 Conflict due to the location of *tsamdros*

All the focus group discussions highlighted that the conflicts arising due to migratory cattle straying into local crops or locals grazing herders' *tsamdros* are inevitable and had much to do with the evolution of some villages in the south. Doban village where Urchi herds migrate, Dolepchen village where Tshebji herds go, Kungkha villages where some Jabana herds go, and Brokser village where some Bumthang herds go, were all carved out of former *tsamdros*. These villages were *tsamdros* of the migratory herds prior to settlement of today's residents. The residents cleared the forest and started settling existing *tsamdros* to what locals today consider their village. Kungkha, Dolepchen, and Dovan *tsamdros* were cleared and villages formed in later part of the 1960s and early 1970s. The focus group participants in Bempu and Kungkha indicated that until 1971 the *tsamdros* right holders of the then *tsamdros* collected lease fees from the new settlers. These settlers were mostly ethnic Nepalese settling in those *tsamdros* and cultivating maize.

Participants in Kungkha revealed the following which supported the herders' view during focus groups in Bempu, Tshebji and Urchi:

“The reason why such conflicts occur is because our village [Kungkha] was a tsamdros before our parents and grandparents started settling down. They leased part of these tsamdros ... cleared and grew crops for which they paid lease fees in kind called Tanam Pathi ... in 1971 the government surveyed the area, asked the tsamdros owners to collect the price of the land and whatever land we farmed thus far was paid for and registered in our name. Our parents paid @Nu. 75/acre. The rest of areas surrounding the new villages continued to be tsamdros of migratory herders to this day”

In 1971 the government allowed the new settlers to register those areas they have cleared and farmed in their name with payment to erstwhile rights holders at existing market rate of A\$1.63 (Nu. 75) per acre.

A similar story was revealed for Brokser village but for different reasons and by a different ethnic group. Brokser village had also been a *tsamdros* of migratory herds coming from Bumthang. About forty years ago a women by the name of Abi Choden (grandma Choden in eastern Bhutanese language) bought some *tsamdros* land in Brokser. Abi hails from a village called Jaigon, which in those days was far away and difficult to send children to school in Mongar. Abi settled in Brokser and sent her children to school in Mongar. Abi Choden was 102 years old and still alive when the researcher undertook focus group discussions in August 2011. Brokser now has 21 households, all related to Abi Choden.

Owing to the ecology of the village being either adjacent or at the heart of a *tsamdros*, conflicts of cattle straying into crops and local animals grazing in these *tsamdros* is inevitable.

6.6.3 Conflicts caused by migratory cattle straying into local residents' crops

This type of conflict is caused by migratory cattle straying into the local residents' fields. The participants from Tshebji reported their cattle straying into others' crops. In cases where the conflict could not be resolved in the village it was referred to Phuntsholing

Drungkhag (sub-district) court. One elderly herder from Tshebji, however, said this type of conflict is now a thing of the past and is not occurring now.

However, participants in Kungkha indicated that the problem of Jabana and Geling herds straying into their crops still exists. Cattle from these herds stray into their maize fields, cardamom orchards, vegetable gardens and ate other plants such as Napier, Ficus saplings, and other planting materials used for land management through the support of Sustainable Land Management Project (SLMP).

Participants in Kungkha also reported some of the Jabana herders have begun leaving behind the general herd (dry cows, young stock and old animals) and took back only milking cows and oxen (used for ploughing the fields) when they migrate back to their village in spring. They feel that the Jababs' lacked farm labour and their herd sizes increased resulting in less control over animals. The local residents reported this is becoming a real menace in summer as these stray cattle rampaged their crops.

6.6.4 Conflicts over the traditional migration routes

This type of conflict arises when TAP herders' traditional routes get blocked by local residents through fencing off and making paddocks to sedentarise their own herd. This type of conflict was mentioned during focus group discussions in Doshi and the researcher's visit to Sengor enroute to Mongar and Lhuntse. While Doshi herders are complaining that Sengor residents have fenced off their traditional routes of migration, the Sengor herders alleged Ura herders had destroyed their fences and paddocks. Details on how such episodes occurred are detailed in the succeeding sections.

6.6.5 Government agencies' development interventions overlooked local rules

Evidence from Doshi and Sengor suggests that government agencies promoting intervention programs such as subsidising improved pasture seeds, exotic crossbred cattle, and supplying fencing materials to fence and develop modern style paddocks, may have been ignorant or have deliberately overlooked local resource access rules. This had resulted in unintended inter-community conflict amongst the Sengor locals and Ura

migratory herders. The focus group participants in Doshi indicated how one such intervention by a development agency supplying barbed wire fencing materials to fence the paddocks is blocking their traditional migratory route at Sengor (for details on this case refer Box 6.1, p 205). This has not only caused them inconvenience, but has created dispute with Sengor herders with whom they have traditionally had mutual respect based on their traditional rights and customs.

During a focus group a male participant in his thirties from Doshi said:

“... it appears very likely that we will again have some conflict soon. The Sengorpas have fenced with barbed wire on our traditional migratory route and left only the highway. Sengor is traditionally our camping area. They said the fence was supplied by the Park ... for generations it has been our tradition to spend a night there and it's our traditional route. Nobody says anything ...”

6.6.6 No available *tsamdros* despite a declining migration trend

In spite of a significant overall decline (37.5%) in households practising TAP between 1990 and 2010 in the six study areas, there are reportedly no *tsamdros* in the south left unused. Herders across the study sites reported having no empty *tsamdros*, except for a few in Trongsa which the focus group participants from Urcchi reported are being grazed by locals already. Logically one would assume many *tsamdros* in the south would be lying idle since migratory herds have declined in number. This situation that was tantamount to disconnect between logic (expecting idle *tsamdros*) and empirical situation (virtually non-existence of unused *tsamdros*) needs explanation and is presented in following section.

Focus group participants suggested in the event of TAP household ceasing transhumance practice, these *tsamdros* continue to be used by their family members, friends and networks from within the herder communities that still migrate. Those recently established herds from their own community that begun TAP practice were also permitted to graze these *tsamdros* through some informal arrangements, but not residents in the south.

Some *tsamdros* of former herders from Tshebji and Bempu continue to be grazed by their relatives, because there was no expansion in *tsamdros* areas and all siblings that separated and established their own families in the villages continued to camp in the same *tsamdros* that belonged to their parents in winter. The herders that have stopped migrating send their animals with their friends and relatives that still practice migration and allow them to use the *tsamdros*.

During a focus group in Tshebji, when asked if some of the *tsamdros* remained empty after some herders stopped migration, a female herder in her late thirties said:

“No, there is no vacant tsamdros or allowed to be used by anybody not related. All tsamdros continue to be used. It works like this, even if I stopped migration, if a far relative of mine still does it, I would send my oxen and dry cows with him/her and allow them to use that Tsamdros.”

Among the Urchi and Doshi TAP households, many *tsamdros* in the south are held in common with local institutions for assigning *tsamdros* for each herd in winter. Local institutions have successfully assigned herds to graze in a particular *tsamdros* for a certain season. Additionally, similar to herders in Tshebji and Bempu, Doshi herders are also organised in such a way that the incumbent migratory herders and the newly established migratory herds, take with them the cattle of herders that have ceased migration. This way *tsamdros* that belonged to the retired herders continue to be used by herds that still migrate thereby excluding the locals. This is a deliberate exclusion strategy by migratory herders to deny local residents access to those *tsamdros*.

During a focus group in Doshi, a male herder in his early forties said:

“Well even if some stopped migration some others have started a new herd. There is a new herd with over 60 animals and another 2 herds from the other village ... Because we own [only usufruct right] the tsamdros, held in common amongst Uraps [people of Ura], the new comers request the community and ...being from our own village our people would allow them but not the residents down there ...”

Arrangements among herders are made to ensure the continuity of *tsamdros* in the south and keep away the locals. They use many justifications such as local residents from warmer areas can grow different crops continually throughout the year, as opposed to

herders being in high altitudes and limited in their choice of crops they can grow with a short growing season. Some herders also tend to use their usufructory rights almost as a private property rights to keep away the locals and deny giving rights to locals to graze in those *tsamdros*.

This strongly suggests that as far as possible the herders would deploy several strategies to exclude the locals from accessing *tsamdros* for the fear that once it is opened it will be difficult to exclude them in future.

Box # 6.1 Government initiative in Sengor may be breaching some traditional rights

On my way to Mongar and Lhuntse Dzongkhags I paid a visit to the group milk collection centre at Sengor, where I am aware that Department of Livestock has been working with Sengor herders for the last 3-4 years and made some investment in distributing pastureland, making paddocks, providing inputs like fodder seeds, fencing materials, brown Swiss crossbred cows and even tractors to plough the paddocks for establishing improved pastures. A mini dairy processing and marketing group has been formed too with cold storage facilities for safe keep of products.

The extension agent on duty indicated that besides subsidies on fodder seeds, supply of brown Swiss cows, establishment of dairy group, free tractor to plough, up to 60% subsidy was also provided to purchase barbed wires to fence the paddocks. The 20 households out of the total 21 households in Sengor have registered as members. One household was said to be an absentee household with only his registration but not living there physically. The registered member households were allotted 4.05 ha each of pastureland including their private land and Government Reserved Forest (GRF) land, which is then divided into paddocks. The extension agent said, *“The paddocks need to be fenced with barbed wire because migratory herds and herders from Ura break the fence and graze during migration season.”* The member households need to establish at least 0.405 ha (1 acre) of pasture in a year. All these were done to discourage migration of Sengor herds and to make sedentarisation mandatory.

However, all twenty households in Sengor still migrate to Mongar Dzongkhag in winter and the milk processing centre remains closed for the four winter months. The herds migrate to south from 9th month (around October) till the 4th month (around May). Almost all households also have some holdings of paddy land towards Zhongar in Mongar Dzongkhag.

The extension agent reported that although the fencing with barbed wire is to have started earlier, there is problem with cumbersome permit processing procedure and time required in obtaining permit for fence poles from department of forest. The extension centre has reportedly applied for permit several months ago but hasn't heard anything on it yet.

On the technical front the extension personnel indicates that Sengorpas migrated in the past not only because it is cold but because there is no forage for animals in winter. He however feels that farmers are wrong in saying there is no enough forage production even in summer both for grazing purpose and enough to be stored for winter. He proudly said that the technical people have tried growing improved pasture with application of Urea and SSP and with a 2nd SSP top dressing there is possibility for at least two cuts. The first cut was said to be good and was waiting for second cut when I visited.

What this indicates is a strong emphasis of government particularly the agencies dealing with livestock production to invest so much resources discouraging migration and instituting a sedentary farming culture.

However, this might indicate that in the quest for simplistic solution and fast results, traditional systems are being overlooked thereby causing new inter-community disharmony and conflict besides introducing high external inorganic input dependent industrialised style of farming to the those low input, organic, less intensive system.

The extension agent appeared ignorant of the traditional rights of migratory herds of Ura- their traditional routes, camping areas and rights to graze while halting overnight at Sengor.

6.6.7 Contradictory claims over *tsamdros* and possible ignorance by government staff

The focus group discussions with development agency personnel in Lhuntse, and informal conversations with some agency personnel in Mongar, indicated a lack of awareness of herder conflicts and disputes by government staff. One livestock extension personnel in Lhuntse reported that a Lhuntse herder claimed that Bumthaps and Lhuntse herders had equal rights over the *tsamdros*; both grazing at the same time occupying different sites. However, this claim was dismissed by the Doshi herders.

The government personnel in both Mongar and Lhuntse Dzongkhags said they were unaware of the conflicts and they had not been brought to their attention. Meanwhile, the herders reported the Ura-Kurtoe conflict as chronic and had sought central authority's intervention in the past because local authorities were ineffective. The government personnel, however, were ignorant or unaware of the issue of migratory herders from Ura confronting herders in Sengor. When asked if the Dzongkhag livestock personnel have come across such conflicts one Dzongkhag livestock personnel said: *"No, so far we haven't heard of any issues brought here for settlement."*

6.6.8 Unclear legislation is responsible for some conflicts

The focus groups identified conflicts over access to *tsamdros* resources between migratory herders and local residents resulting from the unclear and uncertain nature of the Land Act 2007. A number of inter-district disputes, either on-going or newly developing or escalating in seriousness, have been the result of uncertainty in the law and a lack of enforcement by authorities.

The focus group participants in Doshi said that conflicts had escalated between the Ura herders and some of the Lhuntse local residents. The participants indicated that, although some occasional disputes exist in the past, it remained largely benign. Locals have always respected the existing policy from the line of monarchs that has given rights to Bumthaps to graze. The locals have now become bolder and started grazing Urap's *tsamdros* citing the new land law requiring people to stay in their own districts and eligibility to use

tsamdros has shifted to local resident livestock keepers. The Doshi participants highlighted a recent incident where altercations had occurred between an old herder couple from Ura and a group of young locals in *tsamdros* in Lhuntse over grazing accessibility. This dispute was said to have become serious and almost led to physical assault. The focus group participants also indicated that the case has been referred to local authorities but the locals do not heed the restrictions and continue to graze their *tsamdros*:

“... It's been 4 years [indicating it is as a result of Land Act 2007] they have been grazing our tsamdros in our absence. Earlier by 5th month [June] it is Ridam [forest closure] and their animals cannot even step into our tsamdros. We have asked them repeatedly not to graze but they don't listen They say they have heard over radio that they can use it or some survey people told them ...as per law we have the right”

In another instance Bempu, Tshebji and Urchi participants said that although locals have not grazed or confronted them formally, locals downstream have indicated to them informally that they have heard that according to the new land law people should stay within the bounds of their districts and locals can graze the *tsamdros*. However, being unsure of the standing of the legislation, the downstream locals have not dared to take action yet. To maintain their firm hold the migratory herders tend to brush off these claims and tell locals that herders have never heard of such legislation and the new elected government has assured them continuity of their traditions.

A male herder in his fifties during a focus group in Bempu said:

“It is only now that they informally indicate that there is a government order that people from different Dzongkhag are not allowed to graze in other districts. We tell them that such orders have never been relayed to us but rather we were told by the newly elected government in 2008 that traditional system can continue as it used to be in the past.”

In Urchi the focus group participants said the *tsamdros* in their locality, which had exclusive rights with certain families, have now become a common property as a result of the LA 2007, and no one could now exclude the other.

In the study areas, and in eastern Bhutan as informed by agency key informant

(Agency_6), the new land legislation was either not explained to the herders or grossly distorted in interpretation by individuals resulting in more confusion and uneasiness among the migratory herders as well as local residents. The data indicated that while herders are unsure what the final decision will be regarding cattle migration, the locals in Brokser are even more concerned. The Brokser focus group participants said their local authorities have told them the government was going to take over even the smaller grazing areas they had access to and they will have to pay A\$ 21.7 (BTN1000) per acre per year if they wished to lease it back.

When asked what they understood about the provisions on accessing *tsamdros* in relation to the new land law, a male resident in his early fifties from Brokser said:

"We are also ... confused hearing issues like the government is going to close the tsamdros. We do not know what to do. But if such an opportunity is granted to us to utilise some of the tsamdros around our village, we of course have aspirations to rear more cattle ... we feel that an amount of Nu. 1000 per acre is very expensive for a simple farmer given the income from animals is not substantial. I wish people here are given access to tsamdros around our village without having to pay lease fees."

However, when the researcher crosschecked with the land lease rules it was revealed that was not what was mentioned in the Land Lease Rules. The amount (A\$21.7) mentioned here relates to the lease of government reserved forest (GRF) land for commercial agriculture and not for *tsamdros*. The amount has also been reduced to A\$14. The lease fees for *tsamdros* is lower and less than A\$1.5 per acre per year for sub-tropical *tsamdros*, with a smaller amount levied on high altitude pastures.

In all the study areas the provisions of the new land law were not explained well to local people and in places like Chumey geog where some information was relayed, it was with no clear mechanisms on how to lease *tsamdros* and GRF land for pasture development and what the process entailed.

When asked if the herders have heard about possibilities of leasing GRF land for pasture development, participants in Urchi said: "... The Tshogpa told us about the possibility with government approval but nobody applied so far, we do not know the procedures yet."

As a result, migratory herders and downstream residents alike are confused and are unable to take opportunities to lease GRF land. Even the local authorities are confused and are unaware of the details on possibilities of leasing *tsamdros* back or leasing GRF land for pasture development and the mechanisms to work through this new scheme. Ultimately, this situation has resulted in all the individuals interpreting the new land act based on what they surmised it meant, whilst confusion, consternation and apprehension loom large in their minds.

6.7 The scale and resolutions of conflicts

6.7.1 Conflicts at local level are handled by local institutions

What also emerged from the focus group discussions was that local institutional arrangements exist either to allocate resources within a village or settle minor disputes within the village. However, the jurisdiction and effectiveness of such institutions appears to be limited to their village and subject to the parties' agreement with the decision passed by the local institution.

Focus group participants in Doshi, Kungkha, and Tshebji indicated how and when such conflicts were either settled within the Geog or brought to the court to settle their case. Tshebji herders and Kungkha residents said that some of the cases of migratory cattle straying into local crop fields have been settled amicably within the village through the *Thoksup* (village crop administrator). Similarly, a local mechanism exists to allocate *tsamdros* among herders in Ura to graze in their common pastures, and a system amongst Tshebji herders to use *tsamdros* together for joint right holding. However, Tshebji herders indicated that sometimes when the parties do not agree with the decision of local *Thoksup* then it has to be referred to judicial court.

6.7.2 Conflicts at a larger scale require higher level intervention

When confronted with disputes or conflicts involving parties from different district jurisdictions or when parties fail to respect the decision of the local institutions, these cases need intervention either from Dzongkhag administration office or Dzongkhag

court.

Herders in Bempu, Doshi, Urchi and local residents in Brokser indicated that conflicts over *tsamdros* resource use in the past have sought Dzongkhag administration and judicial court intervention, sometimes reaching the high court in Thimphu.

An elderly focus group participant in Bempu said:

“When we put up the case in Drungkhag court [sub-district court] in Phuntsholing, they [Chimups] argued that in the past they too have contributed butter and meat tax to the government. However, the court passed the verdict in our favour because we had the registration in our names. Since then they never grazed and we did not have formal issues with them.”

Once the court or Dzongkhag administration intervenes, the parties must respect the verdict and restrict resource appropriation within the boundaries set by the verdict. However, herders indicated that the Land Act of Bhutan 2007 has and is fuelling more conflicts and causing social disharmony among TAP herders and residents downstream living adjacent to *tsamdros*.

6.8 Summary

This chapter presented evidence of elite capture and distorted *tsamdros* distribution with less than five percent of the population owning all the usufructory rights to *tsamdros* in a country where 69% are rural based and at least 90% keep livestock. This has resulted in illicit practices by the absentee herders, mostly elite and well to do urban based families, leasing rights to herders who depended largely on livestock, thus breaching conditions of the Land Act of Bhutan 1979. The findings also suggests with changing times and commercialisation, the old system of monastic bodies needing *tsamdros* and keeping cattle may be now considered redundant as monastic bodies are subsidized by the government. The findings also suggest that the provision in LA 2007 to cease inter-Dzongkhag transhumance system is based on false assumptions.

Lack of adequate consultation during the development of the legislation, as well as lack of information sharing on the law with the public, denied local people the opportunity to

voice their concerns. As a result there has been outright rejection of the law by herders, together with confusion, anxiety and apprehension. The new land law has also apparently created new conflicts and reignited old benign issues between upstream-downstream communities.

Poor understanding of the Act by government staff has also resulted in development interventions that added fuel to such conflicts. The whole saga of poor design and consequent issues also has resulted from the transitioning of governance to a democratic system. The need for old guards to resign to make room for ushering in a new system resulted in resignation of NAs which created an institutional vacuum. This has resulted in the general public missing out on crucial information about LA 2007. While the issue of rights over *tsamdros* still linger on as politicians take time to resolve the issue, TAP parents want to continue for now, and feel it is crucial for their children with little education; they want their children to make informed choices about their own future.

Educated children are of the view that change is inevitable, however, it will not occur soon as the majority of current generation of herders are uneducated. They contend once the next generation of educated and semi-educated herders take over, they will look for ways of doing things differently that will save time and labour, and bring in the most income. Some early signs of changes are visible, like keeping exotic cattle breeds by some households that are transiting to sedentarisation, albeit with presumptions that the productivity may be highly compromised.

CHAPTER 7

DISCUSSION

7.1 Introduction

This chapter discusses the main conclusions based on the findings from previous chapters [Chapter 4, 5 & 6] in the context of broader theoretical literature on global pastoralism [Chapter 2]. The findings and their implications are also interpreted in relation to local Bhutanese history, and the evolving political and development context [Chapter 2]. The chapter firstly discusses how transhumant agro-pastoralism evolved as a vocation in Bhutan with a crucial role in nation building and maintenance of monastic bodies, but left unequal access to land resources. It then discusses how Bhutanese TAP has declined but also adapted to environmental and socio-political changes in a similar manner to other countries. The chapter then delves into the need for more meaningful engagement and empowerment of TAP households through their participation in the whole spectrum of development, from policy to research and implementation. The chapter concludes by addressing research question four, **‘What are the implications for the future of transhumant agro-pastoralism as a livelihood?’** There is a need to rise above the theoretical dichotomies of mobility versus sedentarism, human versus nature (conservation), and intensive versus extensive farming systems, to more inclusive, contextualized, locally relevant, integrated approaches to pastoral development.

7.2 Historical legacy legitimises TAP as a contemporary practice in Bhutan

From this research we learned that rearing cattle through the transhumance system is one of the oldest livelihood vocations of Bhutanese people [Chapter 2]. Although the exact origin of TAP is beyond the memory span of current generations of herders, its history remains steeped in oral traditions, passed down through generations [Chapter 4]. This oral history is vitally important as there are very few written historical records on pastoralism in Bhutan as is often the case elsewhere (Montero, et al., 2009).

7.2.1 TAP households helped build the nation's economic and religious wealth but created inequity

The literature also supports the claim of TAP herders interviewed as part of this study that they have made enormous contributions in supplying food and paying hefty taxes through their TAP practice. Zhabdrung, a Buddhist lama who fled Tibet, arrived in Bhutan in 1616 (Ardussi, 2004) and united the regions for the first time as one nation. He adopted a similar theocratic governance system prevalent in Tibet and Mongolia at the time (Goldstein & Tsarong, 1983; Goldstein, 1986; Sneath, 2003; Fernandez-Gimenez, 2006; Goldstein, 2012). The theocratic state established by Zhabdrung portrays the concept of dual administration according to which, the society is divided into religious and secular groups with himself sitting at the helm as the supreme ruler. Powers of state were consolidated in the monastery and he appointed civil and religious regents. Civil governance was supposed to be carried out by the appointed civilian ruler but was often a monk (Ura & Kinga, 2004). Bhutanese society was largely divided into two groups; the monastic community who with their rulers was the centre of executive, legislative, judicial and other powers associated with the state, and the ordinary citizens. Since it was inappropriate for monks to be working in the field and there was no market and monetised economy, in-kind tax needed to be collected (Rhodes, 2000). This meant that ordinary citizens needed to work in the field (Ura & Kinga, 2004). It was during those times that TAP ancestors made significant tax contributions from their cattle in the form of butter, cheese, meat and live animals. Exploitive taxes existed in Bhutan while regional governors constantly fought and plotted assassination of each other in a power struggle to rule before Zhabdrung's arrival in 1616, and in the period between his death and installation of the monarchic system in 1907 (Ardussi, 2000).

Similar systems of commoners contributing their services for state and monastic herds for which they received no payment, was observed in Mongolia prior to the 1921 Mongolian revolution (Fernandez-Gimenez, 1999). From 16-20 century Mongolia was divided into administrative districts ruled by, inter alia, Buddhist monasteries and rich lords who owned livestock that was looked after by subjects and servants who are paid in-kind

(Sneath, 2003; Fernandez-Gimenez, 2006). During the pre-revolutionary era lay subjects were charged with herding livestock under close supervision of appointed officials, similar to *norpons* in Bhutan. A similar system of employing state officials to look after livestock, allotting only usufruct rights to graziers, and collecting taxes in kind also existed in Tibetan Autonomous Region of China (Goldstein, 2012). Tibetan Buddhist institutions also ruled and had land and livestock that are worked by villagers or herders, some as serfs in TAR, as well as, in Ladakh, India (Goldstein, 1986; Goldstein & Tsarong, 1983).

It can thus be argued pastoralism and theocratic governance have always existed side-by-side in Bhutan, making the theocratic systems possible like the Buddhist governance traditions in Tibet (Goldstein, 2012), Mongolia (Fernandez-Gimenez, 1999) and India, prior to colonialism. In India the ruling monarchs/leaders exercised control over the political and economic life of villages where villagers supplied the necessities as well as served as local outposts of control and authority over scattered peoples in the hinterland (Bromley, 1992). A system similar to later day *norpons* and *northue* exists with FulBe pastoralists of Far North Region of Cameroon, where peri-urban agro pastoralists either entrusted transhumant cattle with other herders or kept them under the supervision of *kaliifa*; an appointed guardian (Moritz, 2012).

Although Wangchuk (2000) contends that land use systems in Bhutan are different from Tibetan systems, it can be argued that certain elements came from Tibet with people and rulers like Zhabdrung. The well to do families in northern Bhutan that had traditional rights to *tsamdros* in the south, had affiliation to the monarchy and elite families with their origins in Tibet (Ardussi, 2000).

The research findings of this study on inequity of access and use of *tsamdros* are also supported by historical data. People often ran away into the forests to avoid state governance and preferred being not seen and subjected to taxes and servitude. Many are said to have even moved to the Indian state of Arunachal Pradesh (Grothmann, 2012). This has led to the scattered nature of Bhutanese villages (including some of the TAP

villages) being located in remote places, often separated not only from the central authorities, but also from other villages. They can be days and weeks' walking distance from each other or towns. Such practices are also documented in Scott's 'People of Zomia', the people inhabiting the highlands of Southeast Asia (Scott, 2009). Similarly, Goran Hyden (1980) in Chambers (1984) mentions small peasants in Tanzania, seeking isolation as a strategy to avoid state bureaucracy and retain their independence. They feared being rendered powerless by coming in contact with the authorities. Isolation and running away from state rule has been one of the strategies people have adopted to avoid losing their independence and liberty (Scott, 2009).

Unfortunately for TAP herders in Bhutan, it is also likely that such attempts of running away from central authorities presumably deprived them of the knowledge and potential to influence authorities to access resources. Today, very few agro-pastoralists that practice transhumance and even fewer southern residents have usufruct rights to *tsamdros* in the south and many interviewees cited stories of having bought those rights from elite families after the latter started giving up cattle [Chapter 4].

In addition, such avoidance attempts by Bhutanese people did not always succeed, as was also the case with pastoralists in other countries (Kreutzmann, 2012b, 2013). The division of the country into regions, running parallel from north to south, made it easy to track people under rule by *Penlops* and *Dzongpons* (state appointed regional governors) (Gyeltshen, 2006). While butter and cheese contributions were paid from their herd production, meat tax was paid in terms of live animals to replace the dead animals from villages submitted for the monastic bodies' meat consumption (Ura, 2002). Herders have, therefore, contributed immensely to state building through tax contributions and through their role as *norpons* for state herds and monastic herds. The in-kind tax system and serfdom existed till mid-1900 when the third king abolished this old system (Mathou, 1999) and opened the doors to the outside world, with reforms in governance and planned development (Ura & Kinga, 2004). These landmark transformations in the state tax system were hailed by TAP households in this study as it allowed them to own and trade the products of their hard labour.

Transhumant agro-pastoralism as a practice has earned its legitimacy as valuable social and cultural practice and thus deserves recognition in Bhutanese identity and needs to be allowed to continue based on household choice.

7.2.2 TAP in Bhutan is unique

From this research, it is apparent that TAP in Bhutan [Chapter 5 and 6] is unique compared to most types of transhumance system or pastoralism described in the literature (Fratkin & Mearns, 2003; Homewood, Trench, & Brockington, 2012; McGahey, 2011; Oba, 2012). The transhumance pastoral systems described in the Middle East and Central Asia (Kerven, Channon, Behnke, & Channon, 1996; Misra, 2009) and Himalayan region are predominantly focused either on yaks (Bishop, 1989; Degen et al., 2007; Dong et al., 2009; Dorji, 2002; Farooquee & Rao, 1999; Wahlquist, 1996) or small ruminants (Namgail, et al., 2007; Tucker, 1986). TAP in Bhutan is predominantly cattle based with seasonal (vertical) migration between specific *tsamdros* either in sub-tropical forests or temperate forests and meadows around villages [Chapter 4]. Their permanent settlements are in temperate villages and they only have temporary sheds at their designated encampments in the south (Namgay, Millar, Black, & Samdup, 2013). This is different from most highland transhumant systems described in the literature where seasonal movement is between homestead pastures in winter at lower valleys and higher pastures in summer (Axelby, 2007; Banjade & Paudel, 2009; Farooquee, 1998).

Yak systems exist in Bhutan and their transhumance runs in synchrony with the cattle TAP system as these two groups often share the same grazing resources at temperate and sub-alpine pastures (Gyamtsho, 2002). Kreutzmann's edited volume (2012a) on the vertical dimension of pastoralism in central Asian high mountains and the Tibetan plateau includes yak and yak-cattle hybrids, but does not encompass the TAP cattle system existing in synchrony with yaks in Bhutan. TAP cattle may be seen to be competing with transhumant alpine yak pastoralism but they are not. Timing offsets the competition (Niamir-Fuller, Kerven, Reid, & Milner-Gulland, 2012). Different species grazing behaviour further minimises competition, as local cattle are good browsers, while

yaks are known to be able to feed on very short swards (Gyaltsen & Dorji, 2002). Additionally, seasonal migration and rotational movement between pastures per season allows for enough time for pasture re-growth, suitable for the next grazing by cattle (in sub-tropical pastures) and yaks (in temperate pastures). Moktan et al. (2008) indicated that the practice is akin to rotational grazing management regimes as practised in intensive farming systems. In places where large grazers and rangelands have co-evolved like in Mongolia, plant communities are resilient to grazing pressure and recover their productivity and species diversity when temporarily rested (Scharf, Fernandez-Gimenez, Batbuyan, & Enkhbold, 2010).

The only area where some degree of competition exists in Bhutan is in the eastern region where yak X cattle crossbreeds of Merak and Sakten communities compete with cattle from downstream locals of Radhi and Phongmey villages in Trashigang Dzongkhag (Chophyel, 2009). This could be attributed to these alpine herders' practice of cross breeding yaks with cattle thus allowing crossbreeds to come to lower altitudes. However, this cattle breeding practice is isolated and confined to that community alone and not practised elsewhere in Bhutan (Chophyel, 2009; Dorji, 2011b).

Transhumant mobility is necessary for number of reasons dictated mainly by bio-physical and climatic variations. It is not always insufficient land registered as *tsamdros* in a particular Dzongkhag that necessitates transhumance in Bhutan [Chapter 4]. Mobility is necessitated by the hostile environment in winter at temperate villages with sub-zero temperatures and dry grounds rendering it near impossible for local cattle breeds to survive. TAP movements, therefore, cover different agro-ecological zones transcending beyond arbitrary administrative boundaries. In the past, the herders from Bhutan have migrated seasonally even to southern plains and the eastern state of Arunachal Pradesh in India (Chakravarti, 1981). It is important for policy makers to understand that migration is dictated by environmental and seasonal changes and not out of irrational decisions of TAP herders. Therefore, arguments and policies focusing on restricting *tsamdro* leases within resident Dzongkhag administrative boundaries are misplaced, ill-founded and will have practical implications for TAP families and their livelihood.

Additionally, the bequest system in Bhutan is matrilineal unlike the majority of pastoral societies where patrilineal inheritance is practised (Pain & Pema, 2004). Parents often give smaller shares to children that move out if necessary, but as a norm, the daughter that stays home with the parents inherits the house, land and animals. Only within the yak rearing alpine herder societies locally known as *Bjobs*, is patrilineal inheritance practised. Pain and Pema (2004) attribute the matrilineal inheritance to men having more advantages in education and employment than women and therefore women needed protection and support which was culturally instituted through inheritance of household's property (Choden & Sarkar, 2012).

7.2.3 TAP system is highly adaptive and symbiotic

Compared to pastoralists elsewhere, pastoral movement in the Himalayas is dictated by altitude and temperature rather than water availability, a term known as vertical transhumance (Miller, 1995). Pastoralism, particularly vertical transhumance exploits the mosaic of resource niches provided by biophysical and ecological stratification at different altitudinal regions (Montero, et al., 2009). Pastoralists' socioeconomic livelihood patterns are shaped by the agro-ecological conditions and physical characteristics of the range resources (Rota & Sperandini, 2009). Most rangelands are created by sustained grazing, competing yet complementing with wild ungulates, and have become grazing dependent ecosystems (Niamir-Fuller, et al., 2012).

This research found that TAP families in Bhutan cover long distances [Chapter 5]. Pastoralists throughout the world travel ten to hundreds of kilometres allowing livestock to cope with seasonality of forage availability and enabling conversion of low-value ephemeral forage to high value livestock and its products (Boone, et al., 2008). TAP in Bhutan as a livelihood has adapted to the niche ecosystem provided by altitude differences in the marginal environment since the time when limited technological inventions existed. Perhaps owing to the limitations imposed by natural phenomenon, these inhabitants of high mountains have adapted their farming skills and raised cattle in transhumant pastoral tradition using natural pastures and forest for grazing. At the

altitudes where these herders are located, crop production is controlled by climate. The cool temperate to alpine climate only allows for a very short growing period, suitable for buckwheat, wheat, barley and potatoes. Bhutanese agro-pastoralists' preference for cattle and not crops like potatoes is an indication of their adaptive decision making and risk management.

Pastoralists are highly adaptable and adopt change as and when they see fit, if certain flexibility in policies occurs (Fratkin, et al., 2004). For example, Rendille pastoralists in Kenya have successfully combined a settled lifestyle with their pastoral transhumance when government policies encouraged sedentarisation (Sun, 2009).

Similarly, TAP is an important adaptation of livelihood and socio-cultural life to environmental changes and niche eco-systems. The study findings highlight the crucial role that livestock, particularly cattle, continues to play in Bhutanese TAP society [Chapter 4] as reported elsewhere (Farooquee, 1998). Livestock provide food, income, social security, companionship and draught power. Similar to TAP herders in Bhutan, Marshall (2011) also noted that Australian cattle-graziers in Queensland, owing to their heavy dependence on cattle and range resources, *inter alia*, tend to be socially and economically attached to their cattle and allied resources. Additionally, the agricultural practice of using oxen to plough instead of farm machinery, (which only a few could afford), is a sustainable use of renewable energy. It benefits households economically and society in general as a result of less green house gas emission than burning of fossil fuel (Dikshit & Birthal, 2010).

Given the slow growth of the private sector in Bhutan and limited capacity of government to provide infrastructure such as roads and other facilities to the remote villages, the TAP cattle system in Bhutan continues as a major livelihood for a considerable portion of the population. As expressed by some herders in this research, TAP communities have realised the environmental, technological and market limitations in engaging in a sedentarised economy or having sole dependence on their TAP cattle [Chapter 5]. These herders have diversified their income sources by engaging in seasonal

orange transport, making cane products, the tourism industry and various trades as a means of spreading risk. This trend of Bhutanese transhumant agro-pastoralists engaging in off farm activities is also found in Africa and other pastoral areas (Homewood, et al., 2012). Diversification is usually adopted either out of necessity for destitute pastoralists or to spread out income sources for more affluent families (Homewood, et al., 2012). The Bhutanese TAP households have also diversified for a range of reasons but largely out of necessity as income from their cattle alone were not sufficient for many households.

Another finding of this research was that TAP pastoralists in Bhutan have adjusted their socio-cultural activities around transhumance [Chapter 4]. Most social activities occur in summer in their temperate villages since they have few activities in summer and there are people around. Archery matches and social gatherings take place in summer. It is a time to get together, share and build and/or reinforce their relations and friendship. Religious activities such as propitiating deities or appeasing demigods for wellbeing of both people and their animals are done prior to the south bound migration. After people arrive in the south they are scattered in camps in the middle of forest and in places where they can engage in the orange business, so social interactions are more difficult. It is not only difficult in winter to find monks and other shamans to perform rituals but people do not have time to sit back and relax. Such activities are not only important for their spiritual well-being but also to make new friends, relations and reinforce existing allegiance with their close relatives and friends. This form of social capital is of key importance in times of family labour shortage and to cope with environmental uncertainty. Additionally, there is a mutual, symbiotic relationship between TAP households and villagers along the migration routes (Fratkin, 1997; Fratkin, et al., 2004).

The relationships that have been built and sustained for many generations and have proved to be useful during times of need are at the risk of being lost if migration declines. As one female herder remarked, close family friends may not even know each other in the next generation if migration is discontinued [Chapter 5].

7.2.4 Role of local knowledge and beliefs

The study results showed that TAP communities in Bhutan not only learnt to adapt to the changing environments, they and their animals have learnt how to display signals and interpret signs and symptoms exhibited in each other's behaviours as strong modes of communication [Chapter 4]. Years of keen observation and living together with their animals in those uncertain environments has given them rich knowledge and understanding of each other. This wealth of knowledge and skills can serve as an important source of knowledge for understanding and providing better management for local cattle breeds in future.

Transhumant pastoralists in the Himalayas are known to possess complex pools of knowledge concerning health, behaviour and productivity of their livestock as well as their range ecosystem and climatic conditions (Farooquee & Rao, 1999; Nautiyal, et al., 2003; Ura, 2002). Such knowledge and skills are rich and profound and are not found in text books (Miller, 1995, 2008). There are several local institutional arrangements imbedded in shamanistic and bon practice rituals that worshipped nature and imposed restrictions that existed prior to arrival of Buddhism in Bhutan in the eighth century. Some of those belief systems still continue in some remote villages along side Buddhist influences to restrain over exploitation of nature (Rinzin, et al., 2009; Ura, 1993, 2002; Wangchuk, 2005). Similar shamanistic and Buddhist reverence to nature and conservation were also seen in Mongolian pastoralists culture (Upton, 2010b). These practices translate into sound pasture management regimes including rotational grazing and seasonal movements allowing *tsamdros* rest periods while also planting fodder trees [Chapter 6].

However, the spread of monastic schools and Buddhist studies in Bhutan which view shaman practices as inferior has led to a decline in shaman practices in Bhutan. This resonates well with Sherry Ortner's extensive work (1989, 1995) with Sherpas in Solu and Khumbu in Nepal. Ortner (1989, 1995) shows how monks through cultural politics and monastic hegemonic process, built Buddhist monasteries, invented rituals and changed existing shamanistic rituals to Buddhist ones. Married monks and shamans were

disparaged, thus changing the broad discourse and belief system, elevating monks and Buddhism above others. This led to a gradual decline in number of Shamans as well as married/lay monks performing various rituals in Solu and Khumbu in Nepal.

The cultural practices and rangeland management systems of pastoralists needs proper understanding lest policies are designed based on pre-dominant misconceptions of rangeland degradation and over grazing, that would affect pastoralists negatively (McGahey, 2011; Niamir-Fuller, et al., 2012). The current trend of formal legislation separating nature from people runs the risk of possible loss of reverence to nature by people and could have implications for future environment and bio-diversity conservation (RGoB, 1999; Wangchuk, 2005).

Given their rich knowledge of local resource distribution and ecology, pastoralists could be key partners in the maintenance of ecological services and biodiversity conservation (Foggin, 2012). The possibility of partnering with pastoralists to use herders' traditional ecological knowledge (TEK), generated through their lived experience to assess rangeland quality and development of management regimes, have also been suggested (Kakinuma & Takatsuki, 2012; Oba, 2012). Pastoralists TEK was found to accurately assess the range productivity thus stocking density of cattle in a given area (Kakinuma & Takatsuki, 2012).

7.2.5 Elite capture of resources or egalitarianism?

The *Northue* system in Bhutan is in many aspects similar to pastoralists elsewhere relying on their social network systems to minimise or combat household labour shortage [Chapter 2 and 4]. Although the earlier *Northue* system in Bhutan was based on seasonal usage of animals, especially draught animals based on cropping season and intensive use, now the system helps overcome labour shortage [Chapter 4]. This is an important adaptation. As pastoralists increasingly diversify their livelihood choices and become exposed to education and modernity, past experiences, networks, and customary rules may not be sufficient and new alliances may need to be forged (Galvin, 2008; Lesorogol, 2003).

However, not all social capital is the same, nor do all social networks have the same value. Galvin (2008) points out that traditional pastoralism networks tended to favour the wealthy elders in controlling and determining access to pastoral resources. This is perhaps what has happened to TAP in Bhutan and continues to occur. Earlier, because most true pastoralists lived in remote areas they did not have networks close to central authorities, and lacked both information and influence to gain access to more *tsamdros* in the south [Chapter 4]. The people situated near the power centres knew of the opportunity and used their influence to seize such opportunities. This has resulted in a situation wherein today only around 5000 households, comprising mostly the elite families with no interest in pastoralism, own user rights of all *tsamdros*, whereas the majority of livestock keepers have little access to those resources.

This situation clearly demonstrates where unequal social capital has created unequal access to natural resources. Similar situations of unequal access to resources as a consequence of unequal social ties and embezzlement of high level officials were also observed in Siberia after the collapse of Soviet Union collective system and re-distribution of grazing land for private purposes since 1991 (Intigrinova, 2010).

In Bhutan the absentee rights' holders leased their grazing rights to actual pastoralists and collected rent in kind (initially as terms of butter and cheese, and later in cash). This system resembles that of the agistment system prevalent amongst graziers in Australia developed to relieve drought stress by moving cattle temporarily to neighbours available pastures for a payment (McAllister, 2010; McAllister, Gordon, & Janssen, 2005). However, the relation between TAP herders and absentee *tsamdros* rights' holders is slightly different in a sense that it is not as explicit legally and in detail as in the agistment system in Australia. In the Bhutanese system, this practice was illegal *de jure* as per the land law (Land Act of Bhutan 1979) but existed in a *de facto* sense with rents paid in kind.

This situation asserts that egalitarianism in pastoral societies is a highly contextual concept. It is true that within their own society there exists a set of rules to distribute commonly held pastures in an egalitarian manner. Ura (1993, 2002) indicated how

pasture allocation within pastoralists of Haa and Bumthang Dzongkhags were egalitarian in nature. This research has confirmed that in those areas the pasture distribution appears fair and just within the herding community.

However, this research also found inter-community inequality in access to grazing resources [Chapter 7]. The majority of winter pastures belonging to Doshi herders are in Mongar and Lhuntse Dzongkhag. To the discontent of the local residents in these Dzongkhags, residents residing next to those pastures do not have rights to graze in those pastures. The existing system undermines the local residents' interest. A closer look at historical data however indicates this problem is of a historical nature. Historically, as more northern districts were occupied by powerful elites that migrated from Tibet, the authorities exercised control and increasingly made use of resources in the centre and south (Phuntsho, 2013). Pastoralism was one of main activities as butter and cheese formed the main component of their diet. Many ordinary citizens were made to look after cattle to produce their supplies. Because of this origin, TAP herders have access to *tsamdros* in the south today because they are either related to these past authorities or ones whose ancestors were *norpons*.

Additionally, most of these local residents have smaller landholdings compared to the pastoralists. Local farmers in Brokser in Mongar where Doshi herds go, and Lokchina and Chimuna farmers under Chukha Dzongkhag where Tshebji and Bempu herds migrate to in winter, feel extremely dissatisfied with this arrangement and live with resentment while seeking change. Some of these issues have recently appeared in various national media calling for the authorities' attention (BBS, 2012; Namgyal, 2011; Tashi, 2012). Such situations call for a comprehensive review of equity and social justice in resource allocation and the possibility of making a decent livelihood. These reviews should, however, look into issues of resource endowment and capability such as landholdings, land capability (suitability), climatic conditions and households' capacity.

As pastoralists essentially are highly adaptive, transhumant agro-pastoralists in Bhutan have now realised the benefit of health, education and modern transport systems and are

increasingly seeking these facilities. This adoption of modern life amenities is indicative of their adaptability to change when they see tangible benefits, and change is underway within the TAP communities in Bhutan.

7.3 Implications of challenges and opportunities facing TAP herders

A major finding of this research was the 31% decline in the number of households practicing TAP between 1990 and 2010 [Chapter 6]. The reduction is due to farm labour shortage, alternative livelihood choices, government policies and climate change. According to Boone, et al. (2008) certain restraints on pastoral movements are inevitable due to reductions in resource availability and pastoralists' own desire to access welfare services like education and health. The findings from this research indicate that TAP in Bhutan is subject to the same forces particularly socio-economic development, with potential resource restrictions from nature conservation policies and the LA 2007.

7.3.1 Challenges and opportunities

As more children participate in education and non-pastoral professions, further decline in TAP in future is inevitable. The Bhutanese economy is projected to have a positive growth for the coming decade which also presents a conducive environment for adoption of alternative livelihoods (MoEA, 2012). Additionally, farm roads are increasingly penetrating into more remote areas of the country increasing cash generation opportunities of TAP households. At the same time it will also diminish their income from orange transportation using horses as more orchards in the south become connected by road (Phuntsho, 2013).

The government's current drive of declaring conservation and protected areas in congruence with the ban on swidden practice, which TAP herders traditionally practised, appears to be taking land from people and reverting it to forests. Recent trends in leasing state land for private-public partnership projects (PPP) for private and corporate bodies to invest in export oriented crops such as coffee and hazelnut, is also concerning. Concessional land lease regimes may compete with grazing resources, similar to the land

grabs occurring in other south Asian and African countries (Duangklad, 2010; Hall, 2011; Mishra, 2011; Moloney, 2012; Zoomers, 2010). Common property resources are increasingly targeted for public infrastructure developments (Ura, 2002) and external concessional land grabbing (Kreutzmann, 2013) causing further reduction in land available for grazing.

Future impacts of climate change are far less clear. It is, however, likely to occur in highly erratic and unpredictable forms, varying spatially and temporally in pastoral areas. The exact nature as to how other factors will influence pastoralists' climate change adaptation capacity is uncertain, which underscores the importance of local level adaptation (Birch & Grahn, 2007). Essentially, pastoralism is a system well adapted to changing climate, with mobility and flexibility together with diversifications as strategic mechanisms to overcome risks (Kreutzmann, 2012b). Pastoralists are also considered to be highly adaptable, adopting change as and when they see fit if certain flexibility in policies occurs (Fratkin, et al., 2004). Therefore, TAP, like any pastoral practices, may offer a valuable livestock management strategy in adapting to climate change in Bhutan. However, owing to the complexity and uncertain nature of change and limited options for diversification, mountain people are highly vulnerable and low in resilience (Molden, 2013). Hence, better stock management and more integrated agro-ecosystems that improve land conditions and reduce climate change stresses may be needed (Cruz, et al., 2007).

In addition to these challenges, TAP households in Bhutan also face religious sentiments, and forestry and livestock policies as a deterrent to development of a livestock based economy [Chapter 6]. Currently, forest legislation and religious sentiments seem to be working hand-in-hand to the disadvantage of livestock production (or a livestock based economy). Being steeped in the Mahayana tradition of Buddhism, Bhutanese in general resent taking life including slaughtering animals for meat. Therefore, cattle are raised for dairy and draught purposes only, similar to Tamang people in Rolpa district in Nepal (Kreutzmann, 2012a). Bhutanese care about their own spiritual beliefs and what their neighbours say; as societal pressure is immensely strong (Tshering, 2008). This compels them to refrain from slaughtering lest they attract criticism and possibly risk community

non-cooperation in future. In addition, forest and nature conservation policies have reinforced restrictions on killing by restricting shooting problematic wild animals that damage crops or predate their animals (Blench, 2005). Adding to this are forest and livestock policies, both of which favour fewer numbers of animals operating in a sedentarised system.

Paradoxically, Bhutanese people, including the general population and even religious figures, such as lamas and monks, have not lost the taste for meat (Blench, 2005). Most meat is imported from India and Nepal causing drains to the country's rupee reserve. Concerns are often raised of retaliation by locals to the detriment of conservation policies or objectives if social objectives are not met (RGoB, 1999; Rinzin, et al., 2009; Wang, et al., 2006; Wang & Macdonald, 2006). For example, there have been some incidences of poisoning of wild dogs by locals (Wangchuk, 2004). Nevertheless, an all-out defensive or offensive attitude towards wildlife is not expected owing to the strong religious sentiments. Therefore, livestock owners appear handicapped from all sides with religious sentiments, legislation and societal pressures working against them. Because of the scattered nature of Bhutanese remote villages, fragmented land holdings, invasive forest regeneration and strong legislative restrictions against killing wild animals, the wildlife depredation on both crops and domestic animals can be expected to remain the same if not grow worse in future.

Intensive farming with a high level of culling and selection may not present much scope for expansion in the future. This means unless a multitude of livelihood options are presented with adequate support, pastoralists may be forced to abandon their practice with no viable alternatives. Such a combination of socio-cultural and political ecology presents a dire situation for TAP households unless concerted efforts are put in to improve their livelihood with suitable sustainable options.

Taken individually, the various factors identified here may not present a sufficient reason to cause total abandonment of TAP practice. However, all of these factors may act in congruence and the compounding impact of multiple negative drivers on vulnerable TAP

households can result in the gradual disappearance of TAP practice over time. For example, human-wildlife conflict may seem a general issue, rather than a determining factor for decisions to cease TAP as predator attacks are random and can occur to both rich and poor households alike (Rosen et al., 2012). However, when predators attack adult animals of smaller herds this cripples the household's ability to generate enough income. It is not only expensive to replace the lost stock but prolonged gestation period of cattle makes poorer TAP households worse off. This may force TAP households to abandon cattle and/or the practice of transhumance with no reliable alternatives.

However, owing to the heterogeneity in resource endowment and personal capability across all the study sites, it is difficult to predict a timeline or pace at which TAP may decline. It is also difficult to say if all current TAP communities will be positively affected by the nation's projected economic growth. Past trends may not be a good predictor for the future of TAP either. Today, TAP exists as a livelihood in contrast to the past when it largely existed as an additional wealth symbol for affluent absentee herders. If policy assumptions are based on erstwhile well-to-do families in Bhutan, the current TAP communities run the risk of losing their livelihood.

Furthermore, development will take time so certain levels of TAP may persist in the future due to lack of infrastructure, low levels of education and lack of viable alternatives together with intercommunity and individual choices. The public sector's compact structure with a policy to maintain "small, compact, efficient and effective" civil service (RCSC, 2012) does not allow much growth in job opportunities, whilst the private sector is yet to develop significant markets. This limits the job market, which might compel some educated youngsters to return to their villages and continue with their parental livelihood [Chapter 6]. If pastoralists and their children choose to adopt different lifestyles, it should be under their own terms and not out of compulsion or some external pressure (Bayer, 2010).

Though the current policy of providing free education seems to have drawn children to schools with unintended negative impacts on household labour supply, the author

believes this policy should continue. Education presents a good potential to draw younger generations out of pastoralism and can help reduce the anthropogenic effect on pastoral rangelands (Beimatsho, 2008). Additionally, vocational training institutes need to adapt curricula to suit emerging local needs and enhance capacity and skills to adapt to the various changes. Policies and strategies are needed to enable TAP communities to share the benefit of the nation's growth, enable them to make these decisions on their own, build their capacity as well as capability to enhance their livelihood, and encourage their participation and involvement in decision making and planning for their wellbeing (Kreutzmann, 2012b).

7.3.2 Need to recognize community heterogeneity and small changes

The spatial heterogeneity and small changes pastoralists make to continuously adapt needs to be recognized. Policy makers and development agencies need to avoid viewing TAP households as 'backward' and irrational (Kreutzmann, 2012b).

Pastoralists exist as a society in their own right with ideological, ethnographical, social and economic identity separate from sedentarised cropping groups (Meir, 1986). It is important to note, although a community as a whole may exhibit a uniform identity, externally there is much diversity and complexity within that seemingly identical society. Pastoral households, notwithstanding their external depiction of being a homogenous community, are highly heterogeneous (Kerven, Steimann, Dear, & Ashley, 2012). There are differences in resource endowments including social capital and tacit knowledge that creates power dynamics and differential influence (Kerven, et al., 2012; Upton, 2008). These dynamics of resources and power influence one's ability to adapt to the multitude of changes. Owing to these differences their ability to adapt differs significantly amongst transhumant agro-pastoral households and communities in Bhutan, leaving some more vulnerable than others.

It is important that policy makers and development agencies understand and appreciate this diversity so that broad based policies and programs are designed that are adaptable to different households based on the environmental resource endowment and personal

capability and capacity (Yi et al., 2008). Uniform policies with blanket application should be avoided (Eneyew, 2012).

The study findings demonstrated that Bhutanese TAP communities are adapting themselves to broader changes but at different scales and priorities based on different capabilities and capacity to change. This can be inferred from some TAP herders already conducting trials with exotic breeds, making arrangements for children's education and sending animals with *northue* whilst trialling a variety of options. In terms of the size and numbers (which the government progress reports look at), these changes may be negligible or statistically insignificant, but for the household it is a considerable change. Rural societies like these may seem static from the outside but in reality they are constantly changing, often subtle and elusive (Chambers, 1984). Chambers (1984) mentioned how these seemingly insignificant individual changes make great movements when taken together and emphasized:

The best way forward in most cases is through small steps and little pushes, putting the last first, not once but again and again. Small reversals then support each other and together build up into a greater movement (Chambers, 1984, p.190).

These changes need to be recognized, and support programs and policies need to be aligned to facilitate these changes with training, input, micro-credit with minimal interest, equipment, value chain development, extension services and marketing, so as to reduce their vulnerability to multi-dimensional change and not fall through the system into poverty traps. If interventions are not based on local resource and people's capability with concerted follow up and technical backstopping, local people like TAP, may fall through the system. Kemp (2012) clearly presented a similar situation in Laos wherein interventions and false promises have driven the majority of farmers into debt whilst well-to-do ones benefitted.

Local effects such as environmental degradation and perceived over grazing issues need to be assessed locally on a case by case basis with identification of causal factors and processes, instead of applying popular narratives and restricting pastoral livelihoods

(Homewood & Rodgers, 1984; Kerven, et al., 2012). Instead of jumping into action immediately, projects and programs, need to be patient and begin with capacity building through skills training and institutional support (Shah, 1994). Short term interventions and induced institutional arrangements without long term committed programs often fail to make lasting impacts once the funds cease (Upton, 2011).

A well-developed human resource both in terms of staff and farmers capability will yield high returns and save cost in the long run with less institutional support needed (Shah, 1994). Using small steps and putting the last first is worth an effort. Small steps, although seemingly insignificant to an individual when summed together, yield greater results in empowering the rural poor (Chambers, 1984).

Herders need a voice and that may require transformational change in policy and development approaches to participatory, inclusive, adaptive, local and evidence-based.

7.4 Implications for policy & practice: A middle path approach to balanced and locally relevant pastoral development

Bhutan has attracted international interest with the concept of Gross National Happiness (GNH), a development philosophy propounded by the fourth king in 1974. A series of international workshops were conducted and concerted efforts are being made to develop happiness indicators (Samdup, Udo, Ibrahim, et al., 2010). A happiness index has been developed following a high level workshop in Bhutan amongst international experts that recently concluded with an alternative development paradigm (Ura, Alkire, & Zangmo, 2012).

However, if Bhutan is to live up to this philosophy, it needs to review its domestic policies to enable every citizen to realise the dream of happiness. If TAP herders and the general rural population have to spend sleepless nights guarding their fields from wildlife, while conservation legislation restricts hunting feral animals and compensation for losses, the realisation of genuine GNH may be farfetched. The way forward for pastoralists is through inclusive democratic meaningful participation. Education is just

one crucial aspect of this process that needs to be enhanced and made more accessible. Future policies also need to be more evidence-based through research and inclusive consultations with people to reflect the reality on the ground and true aspirations of local people.

The literature suggests that the problems prevalent in the global development arena are multidimensional, context-specific, dynamic and uncertain. This will likely need decision-makers to be equipped with practical tools and capacities to help generate interventions that respond well to local contexts and to contemporary evidence on their effects, instead of applying 'narratives' and blueprints from the top-down (Jones, 2009).

7.4.1 Transformational change through an adaptive process is needed

In Bhutan, the change in the political system from an absolute monarchy system to constitutional democracy was transformational and unprecedented in the sense that no country in the world has seen such a change, where democracy was imposed upon people by a royal decree (Turner, Chuki, & Tshering, 2011). Similarly, what livestock professionals are trying to achieve, either as sectoral goals or as a sign of yielding to pressure from environmentalists, (that is to adopt exotic dairy cattle breeds, sedentarise production and stop transhumance practice), is a transformational change in the farming systems' context. The study findings suggest that the assumptions such as 'going for zero grazing' and the intended blanket application of the LA 2007 and draft Pasture policy of 1985 are flawed and based on inappropriate and ill-informed assumptions [Chapter 6].

Transformational change may be needed wherever agro-ecological and biophysical conditions are favourable. However, it will be futile to assume application of the same technology and policy as a 'one size fits all' operation. Interventions need to be based on the assessment of the potential of such range resources and socio-economic considerations (Gyamtsho, 1996). Transformational changes with renewed focus and investment in the way Bhutan produces its food are needed and should lead to sustainable agriculture practices (International Fund for Agriculture (IFAD) & United Nations Environment Programme (UNEP), 2013). However, the process should be based

on adaptive management (Allan, Curtis, Stankey, & Shindler, 2008) wherein smaller projects are tried and tested in suitable locations, to provide feedback to the system for further improvement. People need to be involved throughout the adaptive process through education, negotiation training and provision of incentives and resources. People need to see if new options have tangible benefits with potential to enhance their quality of life. Transitions need incentives with technical and budgetary assistance.

However, the herders should have the right to make informed decisions based on their aspirations in life and risks they are willing to take. They should be allowed to practise their way of life and adopt change as and when they are able to. They should never be forced to change without understanding their ability, resource endowment, and desire to change. Change should suit the local culture and build upon their indigenous knowledge with tangible outcomes and change agents demonstrating local, tangible benefits from change. When people see the benefits themselves they adopt change naturally as shown by this research where some precedence of rearing exotic breeds in Bumthang has been set [Chapter 5].

7.4.2 Livelihood resource policies and development approaches need to be evidence based

Evidence based policy (EBP) is an approach in policy development and implementation that claims to help people make well informed decisions about policies, programmes and projects. It is based on a wide breadth of evidence, including hard research that informs the quality, credibility, relevance and the cost of the policy (Sutcliffe & Court, 2005). EBP is a contemporary approach to reform and re-structure policy processes through coupling of past experience, judgement and expertise. It prioritizes decision making based on the best available evidence obtained through systematic research. It is aimed at avoiding policy failures and cost arising out of mismatch between government expectations and on the ground empirical situations (Howlett, 2009). EBP is claimed to be a shift away from ideological opinion-based decision making towards a more rigorous, rational method. It

is about basing policymaking and professional practice on evidence that is gathered, critically appraised and obtained from high quality research (Sutcliffe & Court, 2005).

However, policy making is a complex process that is played out with multiple stakeholders with their own motives to push their sectoral agenda. Kingdon (1984) asserts that appointed political executives more than civil servants have a say in deciding what issue becomes a policy agenda. When it comes to alternatives and implementation of such policies, civil servants are in the forefront. Kingdon (1984) also highlights the frustrations and lack of consensus that shrouds the policy alternatives when multiple stakeholders or impromptu committees push their own sectoral agendas. With high policy personnel turnover and participation depending on who shows up, who is invited, or who fails to participate, different interest groups can push their own agendas, so that policy decisions and positions keep shifting. This fluidity of participation in such committees and decisions moving from one meeting to another, add costs and time (Jones, 2009; Kingdon, 1984). Participants often have their main responsibilities which may be totally different and may not have much to contribute or dominate the discourse disproportionately thereby influencing the solution to the problem or policy alternative with profound implications (Kingdon, 1984).

An EBP approach must also consider the complexity and uncertainty of ever changing circumstances so it is not trapped in discipline driven scientific evidence in so called 'silos' or compartmentalised (Jones, 2009). The professionals are often through their training and association conditioned to think alike within their specific disciplines focusing on limited aspects (Chambers, 1984). It is true in Bhutan that many public servants at some stage engage in broad policy, but lack appropriate and adequate training. Policies are developed by personnel fresh out of universities, often with technical backgrounds but a lack of knowledge and skills to deal with broad and complex societal needs (ILRI, 2007) such as TAP.

The findings of this study indicate that the way forward in policy processes requires a more holistic multidisciplinary approach with knowledge generation and citizen

empowerment. This requires building capacity and capabilities of the poor, avoiding tokenism, and provision of secure tenure and/or access to resources, as well as range of livelihood options. Citizen participation is claimed as a means for inducing significant social reforms that allows the weaker sections a fair share of the affluent society (Arnstein, 1969). Arnstein's typology of citizen participation refers to redistribution of power in the society, particularly enabling the marginalised sections of the society, who are excluded from political and economic processes, to be deliberately included. People need to be able to determine how information is shared, goals and policies are set, tax and resources are allocated, programs are operated and benefits like contracts and patronage are distributed (Arnstein, 1969).

However, critics argue this model's ladder is too simplistic and does little to alter the power dynamics for effective policy and decision-making (Collins & Ison, 2006; Collins & Ison, 2009). They argue that instead of mere participation, in an environment inherent with high degrees of interdependency, complexity, uncertainty and multiple stakeholders, social learning offers a paradigm shift in the thinking and practices of policy-making (Collins & Ison, 2006; Collins & Ison, 2009). Social learning is arguably an emerging governance mechanism that promotes concerted action that enables transformation of complex natural resource management situations and adaptation to climate change (Collins & Ison, 2006; Collins & Ison, 2009).

7.4.3 Improving participatory approaches in policy development and extension service delivery

Sustainable agriculture including pastoral development requires professionals to engage in sensitive learning about given conditions of rapid change especially when working under complex, diverse and uncertain local environments (Pretty & Chambers, 1994). Sustainable agriculture requires highly decentralized 'bottom-up' approaches complemented by 'top-down' commitment with a clear shared mission. There is need for facilitators in the field with technical knowledge but most importantly people skills (Roling, 1994). Even in relatively highly educated and motivated groups of farmers like

Land Care groups in Australia, there is need for highly skilled facilitators to work at the community level (Campbell, 1994). These participatory approaches also require building on various expertises drawn from range of people with different backgrounds whilst at the same time having experts guiding and giving technical support to facilitators (Campbell, 1994; Roling, 1994). That is where the input from multidisciplinary expert partners comes in, to design projects and programs with the potential to make a difference in the lives of the poor small-holder livestock keepers and pastoralists (ILRI, 2007).

However, there are challenges to participatory approaches in pastoral development. Despite 'participatory' being a common term in policy or program documents, whether participation has resulted in tangible, meaningfully engaged and negotiated outcomes remains to be seen. The mere use of the term 'participation' does not guarantee genuine citizen participation given the inherent unequal power dynamics between professionals and sponsors of programs and local people including pastoralist herders (Leach & Mearns, 1996). Leach and Mearns (1996) warned of local people only providing information that they think the professionals are interested in or sometimes identifying themselves with dominant policy narratives such as environmental degradation to exclude other users (Leach & Mearns, 1996). The literature indicates that participatory approaches in developing nations in general and in pastoralists' societies in particular, have not been optimum (Bayer & Bayer, 2002; Mathias, 2008).

Participatory approaches face real challenges in pastoral settings mainly because of a lack of understanding about each stakeholder's needs and resources. While local people understand local conditions and processes within their normal experiences, they may not understand the motives and reasoning of the government agencies that must cater to broader interests of the nation as a whole (Bayer & Bayer, 2002; ILRI, 2007). The poor may not be in position to articulate their need or fail to see beyond their immediate needs. This situation was highlighted by one agency personnel when asked about consulting local people while framing the LA 2007 [Chapter 6]. The agency personnel's contention was that consultations do not bear much fruit because villagers send only whoever is

available to attend meetings which in his opinion adds little value. There is a clear need to educate pastoralists to be able to comprehend the bigger roles they play in the society and identify their long term roles (Bayer & Bayer, 2002; ILRI, 2007). Likewise, government agencies need a better understanding of micro systems, to appreciate pastoral systems, and value herder's arguments in order to arrive at consensually agreed policies or development programmes and projects (Bayer & Bayer, 2002). Timely information and proper relaying of the importance and implications of subjects under discussion would better inform local people and enhance their participation.

The study findings indicate that in Bhutan delivery of extension services and technology adoption systems in pastoral areas also need to be reconsidered. Technology adoption in Bhutan as is the case in the developing world, particularly in rural development, has been delivered in the traditional top-down approach. Technology is generated in research centres, and advocated to rural farmers to adopt as the technology of choice, one that has been identified for them by the researchers (Chambers, 1984, 1997).

However, studies have found there is no single simple approach in technology adoption and rural people's way of learning (Black, 2000; Millar & Connell, 2010; Millar, Photakoun, & Connell, 2005). It has long been felt that the conventional transfer of technology (ToT), top-down, centre-outwards approach in agricultural research and extension, is inappropriate (Pretty & Chambers, 1994; Roling, 1994; Scoones & Thompson, 1994b). This gave rise to alternative populist Rapid Rural Appraisals (RRA) approaches that are arguably inclusive; involving local people as partners in all aspects of the research and development process, and bridging the gap between the development professionals and the resource-poor farmers. in various forms often termed as "farmer first" (Chambers, 1997). This approach emphasised listening to the farmers' voices during the process of agricultural development and the need for methodological tools used by researchers and extensionists (outsiders) to gain insights from them (insiders) (Scoones & Thompson, 1994a). It required new ways of understanding local knowledge, building local capacities and satisfying local needs (Scoones & Thompson, 1994a). Foggin

and Torrance-Foggin (2011) emphasized mutual learning as a necessity to integrate local and contemporary approaches to animal husbandry and rangeland management.

Such hybrid models of 'development' in pastoral areas should be built upon pastoralists' wealth of experience, traditional ecological and other knowledge, and cultural preferences and aspirations, as well as on scientific findings and global experiences of development. The imperative lies in the fact that there is much knowledge that can be learned from local people, and they should have a say in determining and making informed decisions regarding issues that affect their lives (Foggin & Torrance-Foggin, 2011; Mortimore, 2005).

Several methods may need to be tried either as stand alone or in combination to suit the learning process of farmers and livestock keepers. Obviously, each method has its pros and cons depending on the level of expertise of the staff delivering extension services, and the target recipient or partners in systems change (Millar, et al., 2005). Case studies, cross visits, champion farmer visits, demonstrations, one to one communication, home visits and step-by-step learning are some of the participatory extension methods used to stimulate farmer learning and adoption of new technologies (Black, 2000; Millar, et al., 2005). To scale out preferred technologies or management regimes successfully, the partners in change (farmers and herders) need to see field testing of the proven technologies, evidence of significant livelihood improvement, fostering of local innovation, competent field staff, effective peer learning and on-going institutional support (Millar & Connell, 2010).

Recognizing indigenous knowledge, developing and supporting sustenance of institutions, and capacity building of livestock keepers are imperative for better planning and successful implementation of improved livestock development programs (Dong, et al., 2009). A network of researchers, policy-makers and extension officers could encourage agro-pastoralists to work with professionals to better integrate indigenous skills with advanced technologies in Bhutan.

This research suggests that there is limited understanding of democratic rights and ordinary citizens, including TAP herders, appear highly vulnerable to authoritarian modes of governance [Chapter 6]. Without a deliberate approach to meaningfully engage and encourage citizen participation at various levels of decision making, common people will continue to benefit less from the democratic system.

7.4.4 Lack of public awareness of democratic rights and vulnerability of common citizens

There is a vulnerability of common citizens in Bhutan owing to having too much faith and trust in leaders and poorly framed policies. This developed during the absolute monarchic system. Today, although there is a parliamentary democratic system, the general population is largely ignorant of their rights and policies and how they can defend their rights, such as their right to a decent livelihood. Although transhumant agro-pastoralists are aware that restrictions as per LA 2007 would impact their livelihood negatively, they felt powerless against the government, but still have faith that the government will do something to help them [Chapter 6].

When asked what they would do or what might happen if the policy to restrict inter-Dzongkhag transhumance movement is implemented by the government, TAP herders often said: *“what to do, we probably have to live with it...the government is powerful. If there is problem, hopefully they will help us with that.”* None of herders mentioned claiming their rights and asking the government to change the policy. This indicates the inequality in power dynamics where a herder would use his rights to exclude a fellow citizen but not think of challenging the government. They would disagree to share even a portion of their *tsamdros* with fellow downstream locals, but would not make a claim to the government over access to these resources.

This precarious situation of citizens feeling powerless in a democracy demands a more concerted and balanced approach from the government and development partners to secure access to livelihood resources and options without compromising environmental sanctity.

7.4.5 Providing a diversity of livelihood options and secure resource access tenure

This research has shown TAP communities in Bhutan, similar to pastoralists elsewhere, had adopted and are increasingly seeking diversification options as income from their primary livelihood is insufficient [Chapter 5, 6, & 7 and earlier sections of this chapter]. The relative importance of each sector to pastoralist households differs significantly and is determined by the size of landholding, available family labour and access to seasonal pastures at different agro ecological zones. Individual preferences, abilities, opportunities, and constraints also differ thus creating heterogeneity in households' coping strategies (McVeigh, 2004).

As more TAP households diversify their livelihood, support and development programs need to cater for this diversity instead of focusing purely on pastoral systems (Bayer, 2010). Flexibility in livelihood options through a variety of choices enhances household's ability to cope against increased external stressors with poorer households benefiting the most (Thornton, et al., 2007).

Therefore, policies and programs need to be broad offering a basket of livelihood choices (Chambers, 1984) to enable pastoralists to adapt livelihoods based on their resource endowment, capability and capacity. However, during the change process special attention must be paid to those with smaller herd sizes who still retain TAP owing to lack of choices or incapacity. Programs that suit them and enable them to gradually enhance their living standard and quality of life need to be developed while policies facilitate those that desire and have potential to grow and capitalize on TAP.

Clearly, to enhance pastoral communities' local needs, areas of responsibility need to be identified and capacities built to manage their own development (Bayer & Bayer, 2002). Endogenous livestock development (ELD) that builds on indigenous knowledge, blending it with outside resources including technical knowledge, whilst recognizing each other's weaknesses and working together towards an holistic approach to sustainable livelihoods, presents one promising approach (Homann, et al., 2008; Mathias,

2008). ELD focuses on livestock and people promoting animal production based on the initiatives of farmers, pastoralists and other livestock keepers. ELD uses local people's worldviews, values, knowledge, institutions and resources, and combines it with suitable external resources. It is an approach that integrates indigenous knowledge and local culture with contemporary technologies to help pastoralists make informed decisions as they face the future with increased uncertainty (Homann, et al., 2008).

The need to adapt through diversification is not always due to lack of livelihood assets or capitals, but due to absence of equitable access or entitlement to vital resources (Davies & Bennett, 2007; De Haan, 2000; Sen, 1982). However, decisions on who should have access rights to resources need to be made with those affected and existing traditional resource use regimes. For example, the conflict between Sengor herders with Doshi herders is a case created by interventions proposed to fence paddocks at Sengor. It appears that the proponents have failed to take stock of the existing traditional resource use regimes. Additionally, the case in the east of Bhutan as reported by one agency personnel where downstream locals have converted traditional transhumant pastoralists' grazing areas into community forests has also created conflict [Chapter 6]. These study findings indicate that attention must be paid while creating outsider induced institutions and crafting the rules to govern these CPRs lest the multiple usage of a given area by several groups for different purposes, each with ownership over separate products or at different times through nested institutions, are not missed (Andersen, 2011; Ostrom, 2002).

These incidences exemplify situations where public policies, designed with inadequate knowledge of pastoral systems and their traditional institutions, result in the very problems that the policies were designed to resolve in the first place (Kamara, Swallow, & Kirk, 2004; Rohde et al., 2006). Today, pastoralists in general are faced with conflicts either directly with government policies or with farmers because of the interventions promoted through these policies (Chakrabarti, 2011). Government policies and interventions that fail to recognize traditional institutions that have successfully managed common local resources sustainably, often impose bans or restrict pastoral ways of life. Such policies also favour sedentary systems which in turn conflicts with pastoralists over

resources (land, fodder, and water) and passage access (Chakrabarti, 2011; Greenough, 2007).

Further, errors arising out of assumptions such as carrying capacity of pastures (Scoones, 1994) based on static resource conditions should be avoided, as CPRs are under dynamic change (Andersen, 2011; Ostrom, 2000), much more so today than ever before due to climate change. Poor understanding of the complexity on the ground and uniform application results in irony where the very interventions become the obstacle for improvement and/or change (Rohde, et al., 2006).

Perhaps lessons need to be learnt from Mongolian Land Law of 1994, which provides for leasing pasture to individuals but making sure the lease regimes conform to “*traditional patterns of seasonal migration and pasture deferment*” (Fernandez-Gimenez, 1999, p.11). Traditional use regimes need to be respected but more importantly such policies and legislation should be more informed by research and not based on desktop assumptions that fail to understand the on the ground reality such as the primary reason for transhumance.

As conservation activities and pastoralism often occurs in the same areas such as the CPRs, compatibility and competition issues arise. The following section will discuss how a holistic approach may need to be considered; one that accommodates the pursuit of both pastoral livelihood as well as conservation objectives.

7.4.6 Connecting conservation with rural livelihood: Human - nature coupling

There is a sense of urgency to connect conservation with rural livelihoods for better sustainability of both. The current pace at which conservation and protected areas are being declared in Bhutan needs to be approached with caution. More than 50% of the nation's land area has been brought under some sort of protection and conservation (Choden, Samdrup, & Dhendup, 2010; DoFPS, 2010) in less than two decades since the start of modern conservation in Bhutan in 1993 (Wang, et al., 2006). As a consequence rural people, including TAP herders, face resource appropriation restrictions and ever

increased incidence of human-wildlife conflict with no compensation (Seeland, 2000), with implications to their food security and overall wellbeing, compounded by erratic weather and market uncertainties [Chapter 5].

In Bhutan, the forest and cattle grazing have evolved historically in tandem. Forest grazing and other forest uses have long been incorporated in Bhutanese farming systems (Giesch, 2000; Guenat, 1991) before the concepts of degradation and conservation emerged. Forest grazing constitutes a significant part of forage for cattle in Bhutan (Roder, 2002; Roder, et al., 2002; Roder, et al., 2001). The findings from this research indicate that TAP herders in Bhutan have used and managed these resources sustainably realising the repercussions that may befall them if not managed sustainably [Chapter 6]. The literature on whether grazing affects or benefits forest is inconclusive but there is agreement that it is dependent on historical use and intended objectives (Darabant, Rai, Tenzin, Roder, & Gratzner, 2007; Lunt, Eldridge, et al., 2007; Lunt, Jansen, et al., 2007; Schultz, et al., 2011)

Incorporating local people as partners in conservation programs and making sure their livelihoods are not compromised is crucial to avoid resulting poverty. Dong et al. (2011) and Liu et al. (2007), talk about human-nature coupling, whereby human and cultural needs are incorporated along with conservation objectives thus minimizing undesirable outcomes on the livelihood of human inhabitants in or near protected areas. The human-nature coupling is an interdisciplinary socio-ecological approach that addresses complex interactions and feedback between human and natural systems. It integrates various tools and techniques from different fields within social and ecological sciences thus offering unique interdisciplinary insights into complexities. The approach is context specific and longitudinal and has the potential for enhancing resilience and adaptive capacity of pastoralists and their livelihood against broader changes (Dong, et al., 2011; Liu, et al., 2007).

The human-nature coupling approach would most likely fulfil the objective of Bhutan's Middle Path strategy (RGoB, 1998) of environmental policy as the outcomes of current

approaches are potentially biased towards nature or environmental conservation. The reason behind the policy to restrict inter-Dzongkhag cattle migration stems from the view that TAP communities raise large numbers of local cattle that are seemingly causing environmental degradation as they graze in forests and *tsamdros*. This assumption is based on Hardin's 'Tragedy of the Commons' thesis about unmanaged open access resources (Hardin, 1968, 1998). However, pastures in Bhutan although a CPR, are owned by the state and leased to individuals or groups with usufructory rights. These pastures are managed with traditional practices and people have rights to use and alienate outsiders. Scholars, including Ostrom, have shown that the issues of the Tragedy of the Commons does not arise in all CPRs, nor does privatization or state ownership perform any better than locally managed CPRs (Ostrom, 2002, 2008) [See Chapter 2].

Rather, there may be several forms of management regimes and a combination of these regimes that work successfully at different places at different points in time (Basurto & Ostrom, 2009; Ostrom, 2000, 2010). State ownership is currently viewed as best for CPRs in Bhutan on the premise that it enables equity in access for resource appropriators. In contrast, privatization runs the risk of the land falling into the hands of a few affluent corporate or private business entities and this would have a huge impact on food security as farming is still largely subsistence in Bhutan.

The dominant view amongst Bhutanese policy makers about the extent of environmental degradation and assumptions that local people, mostly herders practicing transhumant pastoralism, are to be blamed is a perceived notion rather than an evidence-based research. Their view, supported and reinforced further by donor agencies, has influenced the image of the environment and urgency to push for protected area and conservation areas. The repeated portrayal of exaggerated environmental degradation by Bhutanese foresters and environmental agencies has helped shape the mind-set and acceptance in policy maker circles of its acceptance, as is the case elsewhere (Chambers, 1997; Kerven, et al., 2012; Leach & Mearns, 1996). This dominant view has also entered public discourse through media and policy discussion circles, changing public perceptions, and ignoring the sufferings of the local people because of their vocation (Brower, 2008; Lakoff, 2004).

The dominance of the environmental agenda over people and their wellbeing in Bhutan is similar to the interplay of knowledge and power in policy processes in environmental policies in other developing countries (Jones, 2009; KNOTS, 2006). The crisis narratives are often played out as a rationale for removing resource control from local users and placing them under national or international authorities' control (Jones, 2009; KNOTS, 2006). This trend of what Lakoff calls "ignoring the fact and accepting the frame", has led to an increase in the number of protected and conservation areas in Bhutan, resulting in an upsurge in wildlife populations causing increased incidences of human-wildlife conflicts, leaving rural populace including TAP herders worse off (Blench, 2005).

Although conceptually contested, there are, nevertheless, examples of successful efforts where people have managed to combine conservation with enhanced livelihoods (Fisher, 2008). Lessons need to be drawn from these successful ventures where local people's empowerment and initiatives combined with technical support and respect by development agencies, including the government for local traditional institutional arrangements, has produced positive outcome (Fisher, 2008).

The push for conservation areas increasingly encourage mobile pastoralists to settle down to sedentary systems with improved breeds of cattle and farming technology. The following section discusses how these mobile and sedentary systems may be integrated while acknowledging the fact that sometimes bio-physical and climatic conditions may have determining effect than politico-economic concerns.

7.4.7 Integrating intensive sedentarised modern and extensive mobile small holder systems

As more TAP households diversify into a range of livelihood alternatives, development programs need to adopt integrated farming systems approaches instead of focusing purely on pastoral systems (Bayer, 2010). Flexibility in livelihood options through a variety of choices enhances household's ability to cope with increased external stressors, with poorer households benefiting the most (Thornton, et al., 2007). Therefore, policies need not be limited to transhumance or sedentary options but provide a range of

livelihood options (Chambers, 1984), based on resource endowment, personal capability and household capacity. More focus needs to be given to destitute herders and poor former TAP households, so they are not worse off.

Smallholders make up approximately 2.5 billion people globally and manage an estimated 500 million farms, producing 80% of the food consumed in the developing world (International Fund for Agriculture (IFAD) & United Nations Environment Programme (UNEP), 2013). Increasing productivity of smallholder agriculture is more effective in reducing poverty than manufacturing and services sector. An increase by one percent per capita agricultural GDP can reduce poverty gaps five times more than other sectors (International Fund for Agriculture (IFAD) & United Nations Environment Programme (UNEP), 2013).

Small land based farming and extensive farming systems like TAP can be as effective as any other system. The key is to match and manage the number of animals that allows for robust and sustained regeneration of grazing resources, whilst conserving the health of the whole ecology including wildlife (Cribb, 2010). It is about treading the middle path, balancing sustainable ecosystems in tandem with development of rural livelihood akin to the Ecosystem Approach (EA) (Shepherd, 2008).

Intensification or mobile pastoral systems need not be exclusive as portrayed by the modernity and mobility paradigms (Kreutzmann, 2013; Moritz, 2012; Mortimore, 2005). Transhumant systems can continue to exist in remote areas whilst combining with more intensive input based systems in peri-urban areas (Moritz, 2012; Mortimore, 2005). Small and low input extensive farming systems common in developing countries are known to produce more food per unit area apart from their image of being greener with almost zero use of fossil fuel (Cribb, 2010). Pastoralism like TAP can produce reasonable amounts of produce that pastoralists can depend on, not only for their own nutritional needs but to provide a continuous stream of income albeit in varying amounts depending on herd size. This income is important for families to buy supplemental food and cover

other necessary costs such as paying rural tax, buying school uniforms and paying school fees, paying bus fares to go and see authorities in *Dzongkhags* or take the sick to hospital.

The literature suggests that some pastoralists in Africa are estimated to be producing twice or thrice as much protein per unit area as the range production systems in the United States and Australia with similar semi-arid and arid conditions (Bayer & Bayer, 2002; Hatfield, et al., 2006). Low input extensive animal systems also have low per unit area environmental pollution (Udo, et al., 2011). Incentives and mechanisms need to be put in place by the state structures to encourage farming communities to increase production and generate enhanced output within their capacity and that of the environment (Cribb, 2010; Sen, 1999).

In the Bhutanese context, low input farming systems could be made more sustainable by removing policy and technical obstacles, and providing appropriate technical advice. Wherever the land and people's capability permits, a certain degree of intensification should be pursued to grow produce surplus to feed the burgeoning middle class and urban population. The State will need to carefully open some areas with low conservation and biodiversity values for food production for farming purposes. The State should join farmers and start producing additional food, not to compete but to achieve self-sufficiency in food. This sort of policy direction would have far reaching impact in anchoring secure food production rather than leasing it to private and FDI corporate investors that grab the resources to grow non-essential crops which are often meant for export or transported back to the source of investment.

CHAPTER 8

CONCLUSION

This research has revealed that transhumant agro-pastoralism is an important part of the living cultural heritage in Bhutan that to date has been largely unrecognized. TAP in Bhutan is predominantly cattle-based with seasonal migration between specific pastures making it unique from most types of transhumant pastoral systems described in the literature. Their permanent settlements are in temperate villages as opposed to most highland systems where settlements are in lower valleys. In mountainous areas, where intensive mechanised farming systems are not suitable, TAP presents the most appropriate system to utilise ephemeral resources.

This study has shown that TAP herders have adapted their livelihoods to ecological niches at different altitudinal levels, used resources sustainably and synchronized their socio-cultural activities with seasonality of the practice. For generations, TAP families have supported the monastic and government structures thus underscoring the need for a greater recognition and legitimacy as a practice in Bhutan.

However, TAP is under increasing pressure and on a general decline as in many other parts of the world. TAP communities are faced with family labour shortages due to increasing participation of children and adults in education and alternative livelihood options. Urban life and non-pastoral opportunities are providing the pull factors while forest policies, drudgery of TAP practice, climate change and individual desire for better life act as the push factors drawing more people out of TAP practice. Inter and intra community heterogeneity in resource endowment and personal capabilities are resulting in different coping mechanisms. While the general trend is a decline in TAP, the practice continues and serves an important role as the mainstay for many pastoral households.

Bhutan is at a crossroads in political, socio-cultural and economic arenas; between a past that is more conservative with indigenous practices and a future which is more contemporary with a capitalist economy and Western influence. The transition needs to

be carefully handled; lest weaker sections of the society, especially the poor and remote citizens like TAP households with marginal holdings, are disadvantaged. Strategies are needed to increase livelihood choices for TAP households to enable them to either capitalize on livestock production and/or adopt suitable alternatives. Attention needs to be paid to those destitute herders retaining TAP with only a few animals as a result of lack of choice or inadequate resources endowment including land. Strategies are needed that allow herders to make informed choices about their futures.

Policies should facilitate transition through education, training, technical extension services and micro credit finance services. There is also a need to provide platforms where TAP and other herders can participate in decision making. Policies need to be evidence-based, adaptive and participatory and designed in a way that any alternatives suggested are evidence-based, within the pastoral communities' means and have government support.

It is necessary to explore policy options to facilitate pastoralists continued access to these resources, reduce risk of climate change and natural disasters and open new options such as eco-tourism. Ethnographic tours - living and moving with herds on the move and bringing them aboard on payment for ecosystem services (PES) are some possible options. Government will need to consider providing support in better management of the system holistically, as well as help in improving their migratory paths and resolving issues surrounding their access and conflicts with local people. Product packaging and storage for increased shelf life, and marketing and transport support will be essential for TAP to continue their livelihood and gain access to the conventional market economy.

Globally, the future and development in the pastoral systems seem to be clouded by mobility and modernization paradigms that are considered mutually exclusive and competing (Moritz, 2008). On one side are advocates of the mobility paradigm advocating the need for pastoral rights, removing policy constraints, and allowing pastoral mobility (de Haan, 1998; Niamir-Fuller, 2005). On the other side are modernists with modernization paradigms painting a neo-Malthusian picture that argue as the human

population continues to grow and resource size shrinks the extensive pastoral system has no future, and the only way to develop for them is to sedentarise, intensify and integrate cropping (Greenough, 2007; Moritz, 2008; Sandford, 2006) and urbanise (Kreutzmann, 2013).

This dichotomy resembles a football field where supporters from each side of the stadium are watching as pastoralists play with all the environmental, market and political changes, to carve out a living. The spectators are either cheering or booing every now and then when the situation on the ground changes and pastoralists either prosper or perish. This presents a fundamental problem and does not help in advancing development in pastoral areas and in generating a holistic concept of development acceptable to both teams but more importantly to the pastoralists.

Moritz (2008), in his review, clearly showed how past development projects have failed to make an impact on pastoral systems mainly because pastoral systems were not understood properly and development projects exclusively focused on sedentary systems or on national development, natural resources and wildlife instead of pastoral systems as a whole.

Generally, the major factor shifting the balance in the nomadism-sedentism continuum is considered to be related to government policies. Policies tend to persuade transhumant pastoralists to sedentarise their farms, reduce herd size, adopt exotic breeds, reorient their production systems and change land use pattern (Dyer, 2001; Farooquee & Rao, 1999; Lesorogol, 2003; Nori & Davies, 2007; Shaoliang, et al., 2007). However, this research has shown that mobile herders settle for a host of reasons in response to factors both exogenous as well as endogenous. It is important to note that when pastoralists see the benefits that are made possible through enabling policy environments, they increasingly settle and adopt sedentary farming practices. What it indicates is that because their resource sizes are small and risk too high, change is hard to adopt. However, once they see the possibility with tangible results, or face the inevitability with changing institutions and regimes governing the natural resources, pastoralists tend to be flexible and adopt

changes seemingly in a Boserupian model of technology adoption (Moritz, 2008; Moritz, et al., 2009).

It is evident from the restrictions on traditional pasture management regimes and lack of compensation of animals and crops lost to wildlife, TAP systems are not favoured by policy makers especially within the forest and environmental circles in Bhutan. However, pastoral systems play a crucial role in providing livelihoods to a considerable number of pastoral households and this research has shown that, despite its declining trend, the system persists after thousands of years and forms the mainstay of many herder households.

Clearly, as pastoralists diversify due to various reasons into a multitude of livelihood options thus blurring the mobile-sedentary dichotomy, the knowledge generation and development needs to move beyond the mobility-modernity paradigm dichotomy as well. The time has come for integration; integration of concepts and paradigms and integration of approaches – natural and social, as well as a balance of human and environmental needs. It is about respecting and incorporating the positive parts from each and blending them in a mosaic of theories and approaches using participatory inclusive process, offering technical choices, complementing local capability with government and development partner's support for institutional and financial growth.

Amongst the competing paradigms over CPRs, the governing of the commons plagued in the 'Drama of the Commons' (Ostrom et al., 2002); it is now time to strike a balance between the 'Tragedy of the Commons' (Hardin, 1968) and 'Tragedy of Responsibility' (Kreutzmann, 2013). Mobility and modernization need not be and should not be seen as exclusive. As nations advance and populations grow, integration will be needed based on resource endowment and people's capability. Research has shown how these integrations can be done thus avoiding the 'Tragedy of the Commons' (Devereux & Scoones, 2008; Moritz, 2008; Moritz, 2012; Mortimore, 2005).

There is a need to maintain a balance between decentralisation and central authorities' involvement to nurture and consistently democratise the sustainable resource

management in decentralised systems (Dörre & Borchardt, 2012; Kerven, et al., 2012; Kreutzmann, 2012b, 2013). If the interventions, such as brought about by LA 2007 in Bhutan, are not evidence-based, the very policy could result in degraded environmental outcomes it aimed to prevent. Experiences from collectivised systems from Soviet Era and poor implementation of decentralised regimes after the collapse of the collective system in central Asia highlight these imperatives (Crewett, 2012; Dörre & Borchardt, 2012; Fratkin, 1997; Sneath, 1998). In both the cases it led to containment of animals in small enclosures with little mobility causing over grazing and other degradation effects.

There is now a need to move beyond this dichotomy and ground arguments on empirical findings. The first step would be to acknowledge that there is competition as well as complementarity (Niamir-Fuller, et al., 2012). It is not one or the other either. There may be situations where intensification is needed simply because there is no space and mobility might create conflicts. However, there are also situations wherein local conditions, such as fragmented and steep terrain with seasonal temperature extremities, make mobility necessary. Policies in pastoral areas need to be based on the understanding of on the ground realities based on research rather than global narratives (Kerven, et al., 2012). It is also highlighted that policies and interventions should be more guided by evidences gathered from local conditions instead of overlaying global environmental and crisis narratives.

The following section provides some suggestions for areas needing further research on pastoralism generally, and TAP in Bhutan.

Climate change adaptation and resilience

Climate change is a global phenomenon. Limited research exists on how climate change is affecting pastoralists' adaptation and resilience particularly in the context of changing political ecology and declining agricultural investment from development partners. Studies also need to be done to find out if climate change is causing out-migration of pastoralists away from their pastoral areas.

As part of resilience research, the impacts of climate change and resource access on pastoralist's nutrition, especially children, needs to be studied because nutrition affects not only children's growth but also their ability to learn.

Impact of traditional and commercial diets on pastoralists

As pastoralists move to urban areas or sedentarise their diet composition and nutrition changes. How such changes are occurring and affecting pastoralists' wellbeing needs further study.

In Bhutan, the following studies are recommended to shed some more light on the past, present and future of transhumant agro-pastoralists and pastoralism in Bhutan.

Determine trends across Bhutan

Research is needed to study the national trends in TAP practice with data from across the country. Thorough statistical data compilation of number of households keeping cattle, total number of cattle (breed wise), number of cattle that migrate, actual number of herds that migrate, and data from 10 - 20 years may be needed to draw some long term predictions of likely future trends. A long term anthropological study such as ethnography to document their practices is crucial to inform history and educational material for children.

Empirical evidence for degradation debate

The areas in Bhutan that environment and forest officials perceive to have been degraded need to be monitored and compared with GIS images from the past to document the trends and authenticate if any significant changes in vegetation cover had occurred in TAP grazed areas. Previous maps and areas could be superimposed or layered on current farm or pasture areas in TAP *tsamdros* and homestead cropping fields to compare if forests have been degraded by grazing or restrictive policies have resulted in trees overtaking agricultural areas (mainly areas used for swidden cultivation for buckwheat).

Study of *norpons* and labourers

An in-depth study of *norpons* would be worthwhile to explore their transformation from officials to private herders, the process they experienced and their current status. The results may help in recognizing important contributions they made and highlight the importance of providing policy support for them to obtain a secure livelihood. Equally important would be a study on helpers or labourers that helped the *norpons* in the past.

Research on alpine yak transhumant systems

Similar research also needs to be extended into alpine yak transhumant systems to study the trends and identify factors driving any changes. The government places much emphasis on sustaining alpine yak systems but it is reported to be on the decline. It is therefore important to study the trends and identify factors driving the trends.

References

- Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development*, 29(10), 1649-1672.
- Agrawal, A. (2003). Sustainable governance of common -pool resources: Context, methods, and politics. [Article]. *Annual Review of Anthropology*, 32(1), 243-262.
- Agrawal, A., & Redford, K. (2009). Conservation and displacement: An overview. *Conservation and Society*, 7(1), 1-10.
- Akasbi, Z., Oldeland, J., Dengler, J., & Finckh, M. (2012). Social and Ecological Constraints on Decision Making by Transhumant Pastoralists: A Case Study from the Moroccan Atlas Mountains. *J.Mt. Sci.* 9:307-321. doi: 10.1007/s11629-009-2320-8
- Alary, V., Corniaux, C., & Gautier, D. (2011). Livestock's Contribution to Poverty Alleviation: How to Measure It? *World Development*, 39(9), 1638-1648. doi: 10.1016/j.worlddev.2011.02.008
- Allan, C., Curtis, A., Stankey, G., & Shindler, B. (2008). Adaptive Management and Watersheds: A Social Science Perspective. *Journal of the American Water Resources Association*, 44(1), 166-174.
- Andersen, K. E. (2011). Communal tenure and the governance of common property resources in Asia: Lessons from experiences in selected countries *Land Tenure Working Paper 20*. Rome: Food and Agriculture Organization (FAO) of the United Nations.
- Ardussi, J. (2000). The House of'Obs-mtsho--The History of a Bhutanese Gentry Family from the 13th to the 20th Century. *Journal of Bhutan Studies*, 2(1), 1-29.
- Ardussi, J. (2004). Formation of the state of Bhutan ('Brug Gzhung) in the 17th century and its Tibetan antecedents. *Journal of Bhutan Studies*, 2(2), 10-32.
- Arnold, E.R., & Greenfield, H.J. (2006). The Origins of Transhumant Pastoralism in Temperate South Eastern Europe: A Zooarchaeological Perspective from the Central Balkans, BAR International Series.
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Planning Association*, 35(4), 216-224.
- Axelby, R. (2007). 'It takes two hands to clap': How Gaddi shepherds in the Indian Himalayas negotiate access to grazing. *Journal of Agrarian Change*, 7(1), 35-75.
- Babbie, E. (2001). *The Practice of Social Research* (9th ed.). California: Wadsworth/Thomson Learning.
- Banjade, M. R., & Paudel, N. S. (2009). Mobile pastoralism in crisis: Challenges, conflicts and status of pasture tenure in Nepal mountains. *Journal of Forest and Livelihood*, 7(1), 49.
- Basurto, X., & Ostrom, E. (2009). The core challenges of moving beyond Garrett Hardin. *Journal of Natural Resources Policy Research*, 1(3), 255-259. doi: 10.1080/19390450903040447
- Bavikatte, K., & Jonas, H. (2010, July). How bio-cultural community protocols can empower local communities. *Endogenous Development Magazine*, 6, 30.
- Bayer, W. (2010). Strategy meeting on Pastoralism & Development: Agri Pro Focus.

- Bayer, W., & Bayer, W. A. (2002). *How Much participation? Experience with participatory approaches in pastoral settings*. Paper presented at the Strategic Innovations for Improving Pastoral Livelihood in the Hindukush-Himalyan Highlands, Lhasa, Tibet Autonomous Region, Peoples Republic of China.
- BBS. (2012, August 7). Tussle over Tsamdos, *Bhutan Broadcasting Service*. Retrieved from <http://www.bbs.bt/news/?p=16014>
- Beck, T., & Nesmith, C. (2001). Building on poor people's capacities: The case of common property resources in India and West Africa. *World Development*, 29(1), 119-133.
- Behnke, R. H. (1983). Production rationales: The commercialization of subsistence pastoralism. *Nomadic Peoples*, 14(1983), 3-34.
- Behnke, R. H. (1992). *New directions in African range management policy*: Overseas Development Institute.
- Behnke, R. H. (2011). Equilibrium and non-equilibrium models of livestock population dynamics in pastoral Africa: Their relevance to arctic grazing systems. *Rangifer*, 20(2-3), 141-152.
- Behnke, R. H., & Kerven. (2013). Counting the costs: replacing pastoralism with irrigated agriculture in Awash valley, north-eastern Ethiopia. IIED climatechange working paper No. 4. March 2013.
- Behnke, R. H., & Scoones, I. (1993). Rethinking range ecology: Implications for rangeland management in Africa. In R. H. Behnke, I. Scoones & C. Kerven (Eds.), *Range Ecology at Disequilibrium: New Models for Natural Variability and Pastoral Adaptation in African Savannas*. London: Overseas Development Institute.
- Beimatsho. (2008). Population, Pasture Pressure, and School Education: Case Studies from Nag chu, TAR, PRC. *Journal of the International Association of Tibetan Studies*, (4), 1-20. Retrieved from <http://www.thlib.org?tid=T5565>
- Biber, J.-P. (2008). Report on building an enabling environment for pastoral sustainable rangeland management through enhanced local-level advocacy based on sound knowledge management on the impact of current policies on pastoralism. Basel: European forum on nature conservation and pastoralism (EFNCP).
- Biddle, J. L. (1993). The anthropologists body or what it means to break your neck in the field. *The Australian Journal of Anthropology*, 4(3), 184-197.
- Birch, I., & Grahn, R. (2007). Pastoralism-Managing Multiple Stressors and the Threat of Climate Variability and Change *Fighting climate change: Human solidarity in a divided world*. New York: UNDP.
- Bishop, N. H. (1989). From zomo to yak: Change in a Sherpa village. *Human Ecology*, 17(2), 177-204.
- Black, A. W. (2000). Extension theory and practice: A review. *Australian Journal of Experimental Agriculture*, 40(4), 493-502.
- Blench, R. M. (2001) 'You can't go home again': Pastoralism in the new millennium., *Animal Health and Production Vol. 150*: FAO, United Nations.
- Blench, R. M. (2005). *Livestock predation in central Bhutan: The impacts of social and economic change*. work in progress. ODI. Cambridge. Retrieved from [http://www.rogerblench.info/Anthropology data/Text/Bhutan predators.pdf](http://www.rogerblench.info/Anthropology%20data/Text/Bhutan%20predators.pdf)

- Bloor, M., Frankland, J., Thomas, M., & Robson, K. (2001). *Introducing Qualitative Methods: Focus Groups in Social Research*: Sage Publications Ltd.
- Bonte, P., Guillaume, H., & Zecchin, F. (1996). Nomads: Changing societies and environments. *Nature & Resources; UNESCO Quaterly Journal on Environment and Natural Resources Research*, 32(1), 2 - 10.
- Boone, R. B., Burnsilver, S. B., Worden, J. S., Galvin, K. A., & Hobbs, N. T. (2008). Large-Scale Movements of Large Herbivores Livestock following changes in seasonal forage supply. *Resource Ecology*, 187-206.
- Bromley, D. W. (1992). The commons, common property, and environmental policy. *Environmental and resource economics*, 2(1), 1-17.
- Brottem, L., Turner, M. D., Butt, B., & Singh, A. (2014). Biophysical variability and pastoral rights to resources : West African transhumance revisited. *Human Ecology*.42:351 – 365. doi 10.1007/s10745-014-9640-1.
- Brower, A. (2008). Who owns the high country. *The Controversial Story of Tenure Review in New Zealand*. New Zealand: Craig Potton Publishing.
- Bryman, A. (2004). *Social research methods* (2nd ed.). Oxford: Oxford University Press.
- Buffum, B., Gratzner, G., & Tenzin, Y. (2009). Forest grazing and natural regeneration in a late successional broadleaved community forest in Bhutan. *Mountain Research and Development*, 29(1), 30-35.
- Campbell, A. (1994). Community first -Landcare in Australia. In I. Scoones & J. Thompson (Eds.), *Beyond farmer first: Rural people's knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.
- CAPRI. (2010). *Resource, rights and cooperation: A sourcebook on property rights, and collective action for sustainable development*. Washington, DC: International Food Policy Research Institute (IFPRI).
- Carr-Hill, R., & Peart, E. (2005). The education of nomadic peoples in East Africa: ADB/UNESCO-IIEP: Paris/Tunis.
- Casimir, M. J., & Rao, A. (1998). Sustainable herd management and the tragedy of no man's land: An analysis of West Himalayan pastures using remote sensing techniques. *Human Ecology*, 26(1), 113-134.
- Chadwick, B. A., Bahr, H. M., & Albrecht, S. L. (1984). *Social science research methods* (1st ed.). New Jersey: Prentice-Hall.
- Chakrabarti, A. (2011). *Transhumance, livelihood and sustainable development and conflict between formal institution and communal governance: An evaluative note on East Himalayan State of Sikkim, India*. Paper presented at the International Conference on Social Science and Humanity, Singapore.
- Chakravarti, B. (1981). *A cultural history of Bhutan: From pre-history to Padmasambhava* (2nd ed. Vol. I). Chittanranjan, West Bengal: Hilltop.
- Chambers, R. (1984). *Rural development: Putting the last first*. New York: Longman.
- Chambers, R. (1992). *Rural appraisal: rapid, relaxed and participatory*: Institute of Development Studies (UK).
- Chambers, R. (1997). *Whose reality counts?: Putting the first last*. London: Intermediate Technology Publications.

- Chambers, R., & Conway, G. R. (1991). *Sustainable rural livelihoods: Practical concepts for the 21st century*. IDS Discussion Paper 296. Institute of Development Studies, University of Sussex.
- Choden, S., Samdrup, T., & Dhendup, N. (2010). Analysis of the Contributions of Protected Areas to the Social and Economic Development of Bhutan at National Level. Thimphu: Wildlife Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Royal Government of Bhutan.
- Chophyel, P. (2009). Rangeland management in Bhutan *Consultancy report*. Thimphu: Ministry of Agriculture, Royal Government of Bhutan.
- Collins, K., & Ison, R. (2006, 4-7 June 2006). *Dare we jump off Arnstein's ladder? Social learning as a new policy paradigm*. Paper presented at the PATH (Participatory Approaches in Science & Technology) Conference, Edinburgh.
- Collins, K., & Ison, R. (2009). Jumping off Arnstein's ladder: social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance*, 19(6), 358-373. doi: 10.1002/eet.523
- Corbin, J., & Strauss, A. (1990). Grounded Theory Research: Procedures, Canons, and Evaluative Criteria. *Qualitative Sociology*, 13(1), 3.
- Cotula, L., Toulmin, C., & Quan, J. (2006). *Policies and practices for securing and improving access to land*. Paper presented at the International Conference on Agrarian Reform and Rural Development (ICARRD).
- Creswell, J. W. (1998). *Qualitative Inquiry and research design: Choosing among five traditions* (1st ed.). California: SAGE publications.
- Crewett, W. (2012). Improving the Sustainability of Pasture Use in Kyrgyzstan. *Mountain Research and Development*, 32(3), 267-274. doi: 10.1659/mrd-journal-d-11-00128.1
- Cribb, J. (2010). *The coming famine: The global food crisis and what we can do to avoid it*. Collingwood, VIC: CSIRO.
- Cruz, R. V., Harasawa, H., Lal, M., Wu, S., Anokhin, Y., Punsalmaa, B., . . . Huu Ninh, N. (2007). Asia. Climate Change 2007: Impacts, Adaptation and Vulnerability In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden & C. E. Hanson (Eds.), *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 469-506). Cambridge, UK.
- Dag Hammarskjöld Foundation. (2012) No future without justice: Report of the civil society reflection group on global development perspectives. In H. Melber (Series Ed.). *Development Dialogue* (June ed.). Uppsala, Sweden.
- Darabant, A., Rai, P. B., Tenzin, K., Roder, W., & Gratzer, G. (2007). Cattle grazing facilitates tree regeneration in a conifer forest with palatable bamboo understory. *Forest Ecology and Management*, 252(1-3), 73-83. doi: 10.1016/j.foreco.2007.06.018
- Davies, E. (1941). The patterns of transhumance in Europe. *Geography*, 26(4), 155-168.
- Davies, J., & Bennett, R. (2007). Livelihood adaptation to risk: Constraints and opportunities for pastoral development in Ethiopia's Afar region. *The Journal of Development Studies*, 43(3), 490-511.
- Davies, J., Niamir-Fuller, M., Kerven, K., & Bauer, K. (2010). Extensive livestock production in transition: the future of sustainable pastoralism. In *Livestock in a Changing Landscape, Volume 1, Drivers, Consequences, and Responses*. Steinfeld,

- H., H. A. Mooney, F. Schneider and L. E. Neville (eds). Washington, DC: Island Press.
- de Haan, C. (1994). An overview of the World Bank's involvement in pastoral development. *Pastoral Development Network Paper*, 5, 1-6.
- de Haan, C. (1998). *Balancing livestock and the environment: The grazing system*. Paper presented at the International conference on livestock and environment, Wageningen, the Netherlands.
- De Haan, L. J. (2000). Globalization, localization and sustainable livelihood. *Sociologia Ruralis*, 40(3), 339-365.
- Degen, A. A., Kam, M., Pandey, S. B., Upreti, C. R., Pandey, S., & Regmi, P. (2007). Transhumant Pastoralism in Yak Production in the Lower Mustang District of Nepal. *Nomadic Peoples*, 11(2), 57-85.
- Delgado, C. L. (2003). Rising consumption of meat and milk in developing countries has created a new food revolution. *J. Nutr.*, 133(11), 3907S-3910.
- Devendra, C. (2002). Crop-animal systems in Asia: implications for research. *Agricultural Systems*, 71(1-2), 169-177.
- Devendra, C., & Thomas, D. (2002). Crop-animal systems in Asia: importance of livestock and characterisation of agro-ecological zones. *Agricultural Systems*, 71(1-2), 5-15. doi: 10.1016/S0308-521X(01)00032-4
- Devereux, S., & Scoones, I. (2008). The crisis of pastoralism? Retrieved from http://www.future-agricultures.org/pdf%20files/The_crisis_of_pastoralism.pdf
- Dhakal, N. P., Nelson, K. C., & Smith, J. L. D. (2011). Resident well-being in conservation resettlement: The case of Padampur in the Royal Chitwan National Park, Nepal. *Society and Natural Resources*, 24, 597-615. doi: 10.1080/08941921003709633
- Dietz, T., Ostrom, E., & Stern, P. C. (2003). The struggle to govern the commons. *Science*, 302(5652), 1907-1912.
- Dietz, T., Ostrom, E., & Stern, P. C. (2008). The struggle to govern the commons. *Urban Ecology*, 611-622.
- Dikshit, A. K., & BIRTHAL, P. S. (2010). Environmental Value of Draught Animals: Saving of Fossil-fuel, and Prevention of Greenhouse Gas Emission. *Agricultural Economics Research Review*, 23(2), 227-232.
- Dixon, J. A., Gibbon, D. P., & Gulliver, A. (2001). *Farming systems and poverty: improving farmers' livelihoods in a changing world*. Rome & Washington D. C.: FAO and World Bank.
- DoFPS. (2010). Revised percentage of protected areas and biological corridors. Thimphu: Ministry of Agriculture and Forests, Royal Government of Bhutan.
- Dong, S., Wen, L., Liu, S., Zhang, X., Lassoie, J. P., Yi, S., . . . Li, Y. (2011). Vulnerability of worldwide pastoralism to global changes and interdisciplinary strategies for sustainable pastoralism. *Ecology and Society*, 16(2), 10.
- Dong, S. K., Wen, L., Zhu, L., Lassoie, J. P., Yan, Z. L., Shrestha, K. K., . . . Sharma, E. (2009). Indigenous yak and yak-cattle crossbreed management in high altitude areas of northern Nepal: A case study from Rasuwa district. *African Journal of Agricultural Research*, 4(10), 957-967.

- Dorjee, K. (1995). *An analysis of comparative advantage and development policy options in Bhutanese agriculture*. Doctor of Technical Sciences Dissertation, Swiss Federal Institute of Technology, Zurich. (Diss.ETH No. 11080)
- Dorji, J. (2003). *Lhop: A tribal community in South Western Bhutan and its survival through time*: National Institute of Education.
- Dorji, K. (2011). Rangeland Tenure Transfer: An Analysis of Policy and Legal Issues in Bhutan *Consultancy report* (pp. 120). Thimphu: Ministry of Agriculture and Forests.
- Dorji, T. (2002). *Yak production Systems in Bhutan*. Paper presented at the 5th TAPAFON meeting, Bajo, Bhutan. <http://www.fao.org/ag/AGP/agpc/doc/Proceedings/Tapafon02/tapafon3.htm>
- Dorji, T. (2011). *Genetic analysis of population structure of Bhutanese cattle reproduced by traditional cattle breeding systems*. PhD Doctoral Dissertation, Kobe University, Kobe.
- Dörre, A., & Borhardt, P. (2012). Changing Systems, Changing Effects-Pasture Utilization in the Post-Soviet Transition. *Mountain Research and Development*, 32(3), 313-323.
- Duangklad, P. (2010). *Land Grabbing and Food Security of Host Countries in Sub-Saharan African Case*. Central European University.
- Dunn, K. (2005). Doing Qualitative Research in Human Geography: Interviewing. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (2nd ed.). Melbourne: Oxford University Press.
- Dyer, C. (2001). Nomads and education for all: Education for development or domestication? *Comparative Education*, 37(3), 315-327.
- Dyson-Hudson, R., & Dyson-Hudson, N. (1980). Nomadic Pastoralism. *Annual Review of Anthropology*, 9(ArticleType: research-article / Full publication date: 1980 / Copyright © 1980 Annual Reviews), 15-61.
- Ellis, F. (1996). *Rural livelihood diversity in developing countries: Evidence and policy implications*: EMBRAPA-CPAF Amapa.
- Ellis, F. (1998). Household strategies and rural livelihood diversification. *The Journal of Development Studies*, 35(1), 1-38.
- Ellis, F. (1999). Rural livelihood diversity in developing countries: Evidence and policy implications *Natural Resource Perspectives* (Vol. 40): Overseas Development Institute (ODI).
- Ellis, F. (2000). The determinants of rural livelihood diversification in developing countries. *Journal of Agricultural Economics*, 51(2), 289-302.
- Ellis, J. E., Coughenour, M. B., & Swift, D. M. (1993). Climate variability, ecosystem stability, and implications for range and livestock development. In R. H. Behnke, I. Scoones & C. Kerven (Eds.), *Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Savannas*. London: Overseas Development Institute.
- Ellis, J. E., & Swift, D. M. (1988). Stability of African pastoral ecosystems: Alternate paradigms and implications for development. *Journal of Range Management*, 41(6), 450-459.
- Eneyew, A. (2012). Is settling pastoralists a viable livelihood strategy? Implication for policy dialogue. *Scholarly Journal of Agricultural Science*, 2(5), 94-102.

- Evans, E. E. (1940). Transhumance in Europe. *Geography*, 25(4), 172-180.
- FAO (2011). Pastoralism and rangeland management. In sustainable land management in practice: Guidelines and Best Practices for Sub-Saharan Africa. Retrieved from <http://www.fao.org/docrep/014/i1861e/i1861e10.pdf>.
- Farooquee, N. A. (1998). Development and the eradication of traditional resource use practice in the Central Himalayan transhumant pastoral society. *International Journal of Sustainable Development and World Ecology*, 5(1), 43-50.
- Farooquee, N. A., & Nautiyal, A. (1999). Traditional knowledge and practices of Bhotiya pastoralists of Kumaon Himalaya: The need for value addition. *International Journal of Sustainable Development and World Ecology*, 6(1), 60-67.
- Farooquee, N. A., & Rao, K. S. (1999). Conservation and utilization of indigenous cattle and livestock among the transhumant pastoralists of Kumaun Himalaya (India). *Journal of Environmental Systems*, 27(4), 317-329.
- Fernandez-Gimenez, M. E. (1999). Reconsidering the Role of Absentee Herd Owners: A View from Mongolia. *Human Ecology*, 27(1), 1-27. doi: 10.2307/4603306
- Fernandez-Gimenez, M. E., & Le Febre, S. (2006). Mobility in pastoral systems: Dynamic flux or downward trend? [Article]. *International Journal of Sustainable Development & World Ecology*, 13(5), 341-362.
- Fernandez-Gimenez, M.E. (2006). Land use and land tenure in Mongolia: A brief history and current issues. *USDA Forest Service Proceedings RMRS*, pp 30-36.
- Finan, T. J., & van Willigen, J. (1991). The pursuit of social knowledge: methodology and the practice of anthropology. In T. J. Finan & J. van Willigen (Eds.), *Soundings: Rapid and reliable research methods for practicing anthropologists (NAPA Bulletin 10)* (pp. 1-10). Washington DC: American Anthropological Association.
- Fischer, J., Stott, J., Zenger, A., Warren, G., Sherren, K., & Forrester, R. I. (2009). Reversing a tree regeneration crisis in an endangered ecoregion. *Proceedings of the National Academy of Sciences*, 106(25), 10386-10391. doi: 10.1073/pnas.0900110106
- Fisher, R. (2008). *Linking conservation and poverty reduction: Landscapes, people and power*: Earthscan/James & James.
- Foggin, M. (2012). Pastoralists and wildlife conservation in western China: Collaborative management within protected areas on the Tibetan Plateau. *Pastoralism: Research, Policy and Practice*, 2(1), 17. doi: 10.1186/2041-7136-2-17
- Foggin, M. J., & Torrance-Foggin, M. E. (2011). How can social and environmental services be provided for mobile Tibetan herders? Collaborative examples from Qinghai Province, China. *Pastoralism: Research, Policy and Practice*, 1(21).
- Fratkin, E. (1997). Pastoralism: Governance and development issues. *Annual Review of Anthropology*, 26, 235-261.
- Fratkin, E., & Mearns, R. (2003). Sustainability and Pastoral livelihoods: Lessons from East African Maasai and Mongolia. *Human Organization*, 62(2), 112-122.
- Fratkin, E., Roth, E. A., & Nathan, M. A. (1999). When nomads settle: The effects of commoditization, nutritional change, and formal education on ariial and rendille pastoralists. *Current Anthropology*, 40(5), 729-735.

- Fratkin, E., Roth, E. A., & Nathan, M. A. (2004). Pastoral sedentarization and its effects on children's diet, health, and growth among Rendille of Northern Kenya. *Human Ecology*, 32(5), 531-559. doi: 10.1007/s10745-004-6096-8
- Fresco, L. O., & Steinfeld, H. (1998). *A food security perspective to livestock and the environment*. Paper presented at the International conference on livestock and the environment, Wageningen, the Netherlands.
- Furze, B., DeLacy, T., & Birckhead, J. (1996). The social dimension of linking local level development and conservation through protected areas *Culture, conservation and biodiversity* (pp. 51-63). New York: John Wiley & Sons.
- Galvin, K. A. (2008). Responses of pastoralists to land fragmentation: Social capital, connectivity, and resilience. In K. A. Galvin, R. S. Reid, R. H. Behnke & N. T. Hobbs (Eds.), *Fragmentation in semi-arid and arid landscapes*. Dordrecht, the Netherlands: Springer.
- Galvin, K. A. (2009). Transitions: Pastoralists living with change. *Annual Review of Anthropology*, 38, 185-198.
- Gerber, P., Mooney, H., & Dijkman, J. (2010). *Livestock in a changing landscape: Experiences and regional perspectives* (Vol. 2). Washington: Island Pr.
- Giesch, C. (2000). *Evolution of the forest uses and their impact on the forest structure with regard to sustainability in central Bhutan*. Dissertation for Doctor of Technical Sciences. Swiss Federal Institute of Technology Zurich. Zurich.
- Goldstein, M. (1974). Tibetan speaking agro-pastoralists of Limi: A cultural ecological overview of high altitude adaptation in the Northwest Himalaya. *Objets et Mondes*, 14(4), 259-286.
- Goldstein, M. C., & Tsarong, P. (1983). Tibetan Buddhist monastism: Social, psychological and cultural implications. *The Tibet Journal. Library of Tibetan Works and Archives*. 14 -31.
- Goldstein, M. C., & Beall, C. M. (1986). Studying nomads on the Tibetan plateau. *China exchange news*. 14 (4).
- Goldstein, M. C. (2012). Change and Continuity in a Nomadic Pastoralism Community in the Tibet Autonomous Region, 1959–2009. In H. Kreutzmann (Ed.), *Pastoral practices in High Asia: Advances in Asian Human-Environmental Research* (pp. 257-272): Springer Science+Business Media B.V.
- Greenough, K. M. (2007). Development agents and nomadic agency : Four perspectives in the development “Market”. *NAPA Bulletin*, 27(1), 110-128. doi: 10.1525/napa.2007.27.1.110
- Grix, J. (2001). *Demystifying Postgraduate Research; From MA to PhD* (1st ed.). Birmingham: The University of Birmingham press.
- Grothmann, K. (2012). Population History and Identity in the Hidden Land of Pemakö. *Journal of Bhutan Studies*, 26(Summer Issue).
- Guenat, D. V. (1991). *Study of the transformation of traditional farming in the selected areas of central Bhutan: The transition from subsistence to semi-subsistence, market oriented farming*. Dissertation for Doctor of Technical Sciences. Technical Sciences. Swiss Federal Institute of Technology. Zurich.

- Gyaltsen, T., & Dorji, S. (2002). Observations on alpine grazing in Bhutan. *Journal of Bhutan Studies*, 7, 50-60.
- Gyaltshen, T., & Bhattarai, B. N. (2000). *Cattle migration system of western Bhutan: a case study*. Paper presented at the Fourth Meeting of Temperate Asia Pasture and Fodder Network (TAPAFON), Peshawar, Pakistan. A Case study retrieved from <<http://193.43.36.103/ag/AGP/AGPC/doc/pasture/peshawarproceedings/cattlemigration.pdf>>.
- Gyamtscho, P. (1996). *Assessment of the condition and potential for improvement of high altitude rangelands of Bhutan*. Doctor of Natural Sciences PhD Dissertation, Swiss Federal Institute of Technology, Zurich.
- Gyamtscho, P. (2000). Economy of yak herders. *Journal of Bhutan Studies*, 2(1), 1-45.
- Gyamtscho, P. (2002). Condition and Potential for Improvement of High Altitude Rangelands. *Journal of Bhutan Studies*, 7, 82-98.
- Gyeltshen, T. (2006). Post-Zhabdrung Era Migration of Kurmedkha Speaking People in Eastern Bhutan. *Journal of Bhutan Studies*, 15, 1-36.
- Hall, D. (2011). Land grabs, land control, and Southeast Asian crop booms. *Journal of Peasant Studies*, 38(4), 837-857.
- Hall, D., Hirsch, P., & Li, T. (2011). *Powers of exclusion: land dilemmas in Southeast Asia*. Singapore: NUS Press.
- Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243-1248.
- Hardin, G. (1998). Extensions of 'The tragedy of the commons'. *Science*, 280(5364), 682.
- Hatfield, R., Davies, J., Wane, A., Kerven, C., Dutilly-Diane, C., Biber, J. P., . . . Gura, S. (2006). Global review of the economics of pastoralism. *World Initiative for Sustainable Pastoralism/IUCN, Nairobi, Kenya*.
- Herskovits, M. J. (1926). The cattle complex in East Africa. *American Anthropologist*, 28(1), 230-272.
- Homann, S., Rischkowsky, B., Steinbach, J., Kirk, M., & Mathias, E. (2008). Towards endogenous livestock development: Borana pastoralists' responses to environmental and institutional changes. *Human Ecology*, 36(4), 503-520.
- Homewood, K., & Rodgers, W. A. (1984). Pastoralism and conservation. *Human Ecology*, 12(4), 431-441.
- Homewood, K., & Rodgers, W. A. (1987). Pastoralism, conservation and the overgrazing controversy. *Conservation in Africa: people, policies and practice*, 111-128.
- Homewood, K., Trench, P., & Brockington, D. (2012). Pastoralist livelihoods and wildlife revenues in East Africa: a case for coexistence? *Pastoralism: Research, Policy and Practice*, 2(1), 19. doi: 10.1186/2041-7136-2-19
- Howlett, M. (2009). Policy analytical capacity and evidence-based policy-making: Lessons from Canada. [Article]. *Canadian Public Administration*, 52(2), 153-175. doi: 10.1111/j.1754-7121.2009.00070.x
- ICIMOD. (2013). Gender and pastoralism in the Rangelands of Hindu Kush Himalayas: From the margins to new heights. A compilation of case studies from Bhutan, China and Nepal. International Centre for Integrated Mountain Development. Available at www.icimod.org/publications

- ILRI. (2007). *Livestock Asia: A strategy and action plan for research for poverty reduction* (pp. 28). Kenya: International Livestock Research Institute.
- IMF. (2012). *World Economic Outlook Database (World Economic and Financial Survey)*. Retrieved 11 Dec 2012, from International Monetary Fund <http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx>
- International Fund for Agriculture (IFAD), & United Nations Environment Programme (UNEP). (2013). *Smallholders, food security, and the environment* (pp. 6-34). Rome, Italy.
- Intigrinova, T. (2005). Transhumance in transition: Consequences of socio-economic reform. A case study of Khoito Gol, Buryatia. *Inner Asia*, 7(1), 87-105.
- Intigrinova, T. (2010). Social inequality and risk mitigation in the era of private land: Siberian pastoralists and land use change. *Pastoralism*, 1(2), 178-198. doi: 10.3362/2041-7136.2010.011
- Iselin, L. (2011). Of horses and motorbikes: Negotiating modernities in pastoral Amdo, Sichuan province. *Journal of the International Association of Tibetan Studies*(6), 429-450.
- Jacobson, S. K. (1999). *Communication skills for conservation professionals*. Washington, DC: Island Press.
- Janesick, V. J. (2004). *"Stretching" Exercises for Qualitative Researchers* (2nd ed.): Sage Publications, Inc.
- Jenny, A. L., & Egal, F. (2002). Household food security and nutrition in mountain areas: an often forgotten story. *Nutrition programmes service, FAO-ESNP, Rome*.
- Jerneck, A., & Olsson, L. (2008). Adaptation and the poor: Development, resilience and transition. *Climate Policy*, 8(2), 170-182.
- Johnsen, K. I., Alfthan, B., Tsogsaikhan, P., & Mathiesen, S. D. (Eds.). (2012). *Changing Taiga: Challenges to Mongolian reindeer husbandry*. Norway: United Nations Environment Programme, GRID-Arendal.
- Jones, H. (2009) Policy-making as discourse: a review of recent knowledge-to-policy literature. In S. Cummings & T. Stanton (Series Ed.). *Joint ODI-IKM Working Paper 5*. Bonn, Germany: IKM Emergent Research Programme, European Association of Development Research and Training Institutes (EADI),.
- Jones, P. G., & Thornton, P. K. (2009). Croppers to livestock keepers: livelihood transitions to 2050 in Africa due to climate change. *Environmental Science & Policy*, 12(4), 427-437.
- Kaimba, G. K., Njehia, B. K., & Guliye, A. Y. (2011). Effects of cattle rustling and household characteristics on migration decisions and herd size amongst pastoralists in Baringo District, Kenya. *Pastoralism: Research, Policy and Practice*, 1(1), 1-16.
- Kakinuma, K., & Takatsuki, S. (2012). Applying local knowledge to rangeland management in northern Mongolia: do 'narrow plants' reflect the carrying capacity of the land? *Pastoralism: Research, Policy and Practice*, 2(1), 23.
- Kamara, A. B., Swallow, B., & Kirk, M. (2004). Policies, interventions and institutional change in pastoral resource management in Borana, southern Ethiopia. *Development Policy Review*, 22(4), 381-403.

- Kates, R. W. (2000). Cautionary tales: Adaptation and the global poor. *Climatic Change*, 45(1), 5-17. doi: 10.1023/a:1005672413880
- Kelly, P. M., & Adger, W. N. (2000). Theory and practice in assessing vulnerability to climate change and facilitating adaptation. *Climatic Change*, 47(4), 325-352. doi: 10.1023/a:1005627828199
- Kemp, M. (2012). "Up to Their Necks" - A Short and Very Anecdotal Study of Indebtedness in Selected Farming Villages. Vientiane: Sub Sector Working Group on Farmers and Agribusiness (SWGAB).
- Kerven, C., Channon, J., Behnke, R., & Channon, S. (1996) Planning and policies on extensive livestock development in central Asia. *Working paper 91*. London: Overseas Development Institute (ODI).
- Kerven, C., Steimann, B., Ashley, L., Dear, C. & Rahim, I. (2011). Pastoralism and Farming in Central Asia's Mountains: A Research Review. *MSRC Background Paper No. 1*. September 2011. http://www.ucentralasia.org/downloads/pastoralism_and_farming_in_central_asia_mountains.
- Kerven, C., Steimann, B., Dear, C., & Ashley, L. (2012). Researching the Future of Pastoralism in Central Asia's Mountains: Examining Development Orthodoxies. *Mountain Research and Development*, 32(3), 368-377.
- Kingdon, J. W. (1984). *Agendas, alternatives, and public policies*. Boston and Toronto: Little, Brown and Company.
- Koocheki, A., & Gliessman, S. R. (2005). Pastoral nomadism, a sustainable system for grazing land management in arid areas. *Journal of Sustainable Agriculture*. 25(4). 113-131. doi: 10.1300/J064v25n04_09.
- KNOTS. (2006). *Understanding Policy Processes: A Review of IDS Research on the Environment*. Sussex: IDS.
- Kreutzmann, H. (2012a). Pastoral Practices in Transition: Animal Husbandry in High Asian Contexts. In H. Kreutzmann (Ed.), *Pastoral practices in High Asia: Advances in Asian Human-Environmental Research* (pp. 1-29). Berlin: Springer Science+Business Media B.V.
- Kreutzmann, H. (2012b). Pastoralism: A Way Forward or Back? In H. Kreutzmann (Ed.), *Pastoral practices in High Asia: Advances in Asian Human-Environmental Research* (pp. 323-336). Berlin: Springer Science+Business Media B.V.
- Kreutzmann, H. (2013). The tragedy of responsibility in high Asia: modernizing traditional pastoral practices and preserving modernist worldviews. *Pastoralism: Research, Policy and Practice* 3(7). doi: 10.1186/2041-7136-3-7
- Lakoff, G. (2004). *Don't think of an elephant: Know Your Values and Frame the Debate*: Chelsea Green Publishing.
- Leach, M., & Mearns, R. (1996). Environmental change and policy. In M. Leach & R. Mearns (Eds.), *The lie of the land. Challenging received wisdom on the African environment* (pp. 1-33). Oxford: James Currey.
- Lees, S. H., & Bates, D. G. (1974). The origins of specialized nomadic pastoralism: A systemic model. *American Antiquity*, 187-193.

- Lesorogol, C. K. (2003). Transforming institutions among pastoralists: inequality and land privatization. *American Anthropologist*, 105(3), 531-541.
- Lincoln, Y. S., & Guba, E. G. (2000). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.). California: Sage Publications, Inc.
- Lingard, L., Albert, M., & Levinson, W. (2008). Grounded theory, mixed methods, and action research. *BMJ*, 337. doi: 10.1136/bmj.39602.690162.47
- Liu, J., Dietz, T., Carpenter, S. R., Alberti, M., Folke, C., Moran, E., . . . Lubchenco, J. (2007). Complexity of coupled human and natural systems. *Science*, 317(5844), 1513-1516.
- Lund, H. G. (2007). Accounting for the world's rangelands. *Rangelands*, 29(1), 3-10.
- Lund, H. Gyde. (2014) rev. Definitions of agroforestry, farm forestry, forest health, sustainable forest management, urban forests, grassland, pasture, rangeland, cropland, agricultural land, shrubland, and wetlands and related terms [Online publication], Gainesville, VA: Forest Information Services. Misc. pagination. <http://home.comcast.net/~gyde/moredef.htm>.
- Lunt, I. D., Eldridge, D. J., Morgan, J. W., & Witt, G. B. (2007). Tuner review No. 13: A framework to predict the effects of livestock grazing and grazing exclusion on conservation values in natural ecosystems in Australia. *Australian Journal of Botany*, 55(4), 401-415. doi: <http://dx.doi.org/10.1071/BT06178>
- Lunt, I. D., Jansen, A. M. Y., Binns, D. L., & Kenny, S. A. (2007). Long-term effects of exclusion of grazing stock on degraded herbaceous plant communities in a riparian Eucalyptus camaldulensis forest in south-eastern Australia. *Austral Ecology*, 32(8), 937-949. doi: 10.1111/j.1442-9993.2007.01782.x
- Macfarlane, A. (1989). Some background notes on Gurung identity in a period of rapid change. *Kailash*, 15(3-4), 179-190.
- Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in educational research*, 16(2), 193-205.
- Maitima, J. M., Rakotoarisoa, M. A., & Kang'ethe, E. K. (2010). Responding to changing markets in a context of increased competition for resources. In P. Gerber, H. Mooney, J. Dijkman, S. Tarawali & C. de Haan (Eds.), *Livestock in a Changing Landscape: Experiences and Regional Perspectives* (Vol. 2, pp. 4). Washington: Island Press.
- Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. [Qualitative research series]. *The Lancet*, 358, 483-488.
- Marshall, N. A. (2011). Assessing Resource Dependency on the Rangelands as a Measure of Climate Sensitivity. [Article]. *Society & Natural Resources*, 24(10), 1105-1115. doi: 10.1080/08941920.2010.509856
- Mathias, E. (2008). Endogenous livestock development: Strengthening local initiatives, using resources sustainably: League for Pastoral Peoples and Endogenous Livestock Development, Ober-Rsmstadt, Germany & ELD Network, Leusden, Netherlands.
- Mathou, T. (1999). Bhutan: Political reform in a Buddhist monarchy. *Journal of Bhutan Studies*, 1, 114-144.

- Mays, N., & Pope, C. (1995). Rigour and qualitative research. *Biomedical Journal*, 311, 109 - 112.
- McAllister, R. R. J. (2010). Livestock mobility in arid and semi-arid Australia: Escaping variability in space. *Pastoralism*, 1(1), 37-54.
- McAllister, R. R. J., Gordon, I. J., & Janssen, M. A. (2005). *Trust and cooperation in natural resource management: The case of agistment in rangelands*. Paper presented at the International Congress on Modelling and Simulation, Melbourne, Australia.
- McGahey, D. J. (2011). Livestock mobility and animal health policy in southern Africa: the impact of veterinary cordon fences on pastoralists. *Pastoralism: Research, Policy and Practice*, 1(14). doi: 10.1186/2041-7136-1-14
- McLean, J., & Straede, S. (2003). Conservation, relocation, and the paradigms of park and people management--A case study of Padampur villages and the Royal Chitwan National Park, Nepal. *Society & Natural Resources*, 16(6), 509-526.
- McVeigh, C. (2004). Himalayan herding is alive and well: The economics of pastoralism in the Langtang valley. *Nomadic Peoples*, 8(2), 107-124.
- Mearns, R. (1993). Territoriality and land tenure among Mongolian pastoralists: variation, continuity and change. *Nomadic Peoples*, 33(73-103).
- Mearns, R. (2004a). Decentralisation, rural livelihoods and pasture-land management in post-socialist Mongolia. *European Journal of Development Research*, 16(1), 133-152. doi: 10.1080/09578810410001688770
- Mearns, R. (2004b). Sustaining livelihoods on Mongolia's pastoral commons: Insights from a participatory poverty assessment. *Development and Change*, 35(1), 107-139. doi: 10.1111/j.1467-7660.2004.00345.x
- Meir, A. (1986). Demographic transition theory: a neglected aspect of the nomadism-sedentarism continuum. *Transactions of the Institute of British Geographers*, 199-211.
- Mertens, D. M. (2005). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (2nd ed.). California: Sage Publications, Inc.
- Mertz, O., Mbow, C., Reenberg, A., & Diouf, A. (2009). Farmers' perceptions of climate change and agricultural adaptation strategies in rural Sahel. *Environmental management*, 43(5), 804-816.
- Meyer, M. C., Hofmann, C. C., Gemmell, A. M. D., Haslinger, E., Häusler, H., & Wangda, D. (2009). Holocene glacier fluctuations and migration of Neolithic yak pastoralists into the high valleys of northwest Bhutan. *Quaternary Science Reviews*, 28(13-14), 1217-1237.
- Miehe, G., Miehe, S., Kaiser, K., Reudenbach, C., Behrendes, L., & Schlütz, F. (2009). How old is pastoralism in Tibet? An ecological approach to the making of a Tibetan landscape. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 276(1-4), 130-147.
- Millar, J., & Connell, J. (2010). Strategies for scaling out impacts from agricultural systems change: the case of forages and livestock production in Laos. *Agriculture and Human Values*, 27(2), 213-225.
- Millar, J., & Photakoun, V. (2008). Livestock development and poverty alleviation: revolution or evolution for upland livelihoods in Lao PDR. *International Journal of Agricultural Sustainability*, 6(1), 89-102.

- Millar, J., Photakoun, V., & Connell, J. (2005). Scaling out impacts: A study of three methods for introducing forage technologies to villages in Lao PDR: ACIAR Working Paper.
- Miller, D. (1995) Herds on the move: Winds of change among pastoralists in the Himalayas and on the Tibetan Plateau. *Discussion paper MNR 95/2*. Kathmandu: ICIMOD.
- Miller, D. (2008). *Drokpa: Nomads of Tibetan plateau and Himalaya*. Kathmandu: Vajra.
- Milligan, S., & Binns, T. (2007). Crisis in policy, policy in crisis: understanding environmental discourse and resource-use conflict in northern Nigeria. [Article]. *Geographical Journal*, 173(2), 143-156. doi: 10.1111/j.1475-4959.2007.00231.x
- Mishra, D. K. (2011). Behind Dispossession: State, Land Grabbing and Agrarian Change in Rural Orissa. *Land Deal Policies Initiatives. Institute of Development Studies, University of Sussex*.
- Misra, M. (2009). Mobile pastoralists in Iran's arid lands. *International Journal of Environmental Studies*, 66(3), 357-370.
- MoA. (2009a). *RNR Census 2008*. Thimphu, Bhutan: Policy and Planning Division, Ministry of Agriculture.
- MoA. (2009b). *RNR sector 10th plan (2008 - 2013); enabling farming communities to overcome poverty*.
- MoEA. (2012). *2012 Graduates Orientation Presentation*. Thimphu: Ministry of Economic Affairs, Royal Government of Bhutan Retrieved from http://www.moea.gov.bt/?page_id=172.
- Moktan, M. R., Norbu, L., Nirola, H., Chhetri, D. B., Rai, T. B., & Rinchen. (2006). Migratory cattle grazing: an ecosystem approach to livelihood. *Bhutan Journal of Renewable Natural Resources*, 2(1), 18-28.
- Moktan, M. R., Norbu, L., Nirola, H., Dukpa, K., Rai, T. B., & Dorji, R. (2008). Ecological and Social Aspects of Transhumant Herding in Bhutan. *Mountain Research and Development*, 28(1), 41-48.
- Molden, D. (2013, 3-9 June). Mountain people less resilient to climate change. *The Corporate Weekly*, 3, 4-5.
- MoLHR. (2012). *Labour force survey report*. Thimphu: Ministry of Labour & Human Resource, Royal Government of Bhutan.
- Moloney, J. S. (2012, June 2012). Land Grabs and Food Sovereignty. *International Viewpoint Online magazine*, IV449.
- Montero, R. G., Mathieu, J., & Singh, C. (2009). Mountain Pastoralism 1500 -2000: An introduction. *Nomadic Peoples*, 13(2), 1-16.
- Moritz, M. (2006). Changing contexts and dynamics of herder-farmer conflicts across West Africa. *Canadian Journal of African Studies*, 40(1), 1-28.
- Moritz, M. (2008). Competing paradigms in pastoral development? A perspective from the Far North of Cameroon. *World Development*, 36(11), 2243-2254.
- Moritz, M. (2012). Pastoral intensification in West Africa: implications for sustainability. *Journal of the Royal Anthropological Institute*, 18(2), 418-438. doi: 10.1111/j.1467-9655.2012.01750.x

- Moritz, M., Kyle, B. R., Nolan, K. C., Patrick, S., Shaffer, M. F., & Thampy, G. (2009). Too Many People and Too Few Livestock in West Africa? An Evaluation of Sandford's Thesis. [Article]. *Journal of Development Studies*, 45(7), 1113-1133. doi: 10.1080/00220380902811058
- Mortimore, M. (2005). Dryland development: success stories from West Africa. *Environment: Science and Policy for Sustainable Development*, 47(1), 8-21.
- Morton, J. (2010). Why Should Governmentality Matter for the Study of Pastoral Development? [Article]. *Nomadic Peoples*, 14(1), 6-30. doi: 10.3167/np.2010.140102
- Mulder, M. B., Fazio, I., Irons, W., McElreath, R. L., Bowles, S., Bell, A., . . . Hazzah, L. (2010). Pastoralism and Wealth Inequality. *Current Anthropology*, 51(1), 35-48.
- Myers, N. (1988). Threatened biotas: "hot spots" in tropical forests. *Environmentalist*, 8(3), 187-208.
- Namgail, T., Bhatnagar, Y. V., Mishra, C., & Bagchi, S. (2007). Pastoral nomads of the Indian Changthang: Production system, landuse and socioeconomic changes. *Human Ecology*, 35(4), 497-504.
- Namgay, K., Millar, J., Black, R., & Samdup, T. (2013). Transhumant agro-pastoralism in Bhutan: Exploring contemporary practices and socio-cultural traditions. *Pastoralism: Research, Policy and Practice*, 3(1), 13.
- Namgyal, T. (2011, November 13). Mongar's oldest woman, *Kuensel*. Retrieved from <http://www.kuenselonline.com/2011/?p=20817>
- Nautiyal, S., & Kaechele, H. (2007). Adverse impacts of pasture abandonment in Himalayan protected areas: Testing the efficiency of a natural resource management plan (NRMP). *Environmental Impact Assessment Review*, 27(2), 109-125.
- Nautiyal, S., Rao, K. S., Maikhuri, R. K., & Saxena, K. G. (2003). Transhumant pastoralism in the Nanda Devi Biosphere Reserve, India: A case study in the buffer zone. *Mountain Research and Development*, 23(3), 255-262.
- Negi, C. S. (2007). Declining transhumance and subtle changes in livelihood patterns and biodiversity in the Kumaon Himalaya. *Mountain Research and Development*, 27(2), 114-118.
- Nelson, D. R., Adger, W. N., & Brown, K. (2007). Adaptation to environmental change: contributions of a resilience framework. *Annual Review of Environment and Resources* 32, 395-419. doi: 10.1146/annurev.energy.32.051807.090348
- Neuman, W. L. (2003). *Social Research Methods* (5th ed.). Boston: Library of Congress Cataloging.
- Niamir-Fuller, M. (1999a). *International aid for rangeland development: trends and challenges*. Paper presented at the VIth International Rangeland Congress, Brazil.
- Niamir-Fuller, M. (1999b). *Managing mobility in African rangelands*. Paper presented at the Property Rights, Risk, and Livestock Development in Africa, Feldafing, Germany.
- Niamir-Fuller, M. (2005). Managing mobility in African rangelands. *Collective Action and Property Rights for Sustainable Rangeland Management*. CAPRI research brief. CAPRI.
- Niamir-Fuller, M., Kerven, C., Reid, R., & Milner-Gulland, E. (2012). Co-existence of wildlife and pastoralism on extensive rangelands: competition or compatibility? *Pastoralism: Research, Policy and Practice*, 2(1), 1-14.

- Ning, W., & Richard, C. E. (1999). *The privatisation process of rangeland and its impacts on the pastoral dynamics in the Hindu Kush Himalaya: The case of Western Sichuan, China*. Paper presented at the 6th International Rangeland Congress, Townsville, Australia.
- Norbu, L. (2002). Grazing Management in Broadleaf Forests. *Journal of Bhutan Studies*, 7.
- Nori, M., & Davies, J. (2007) Change of wind or wind of change? *Climate change, adaptation and pastoralism*. Nairobi: WISP, IUCN.
- Noy, C. (2008). Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research. *International Journal of Social Research Methodology*, 11(4), 327-344. doi: 10.1080/13645570701401305
- NSB. (2007a). *Population projections Bhutan 2005 - 2030*. Thimphu: National Statistics Bureau, Royal Government of Bhutan.
- NSB. (2007b). *Poverty analysis report 2007*. Thimphu: National Statistics Bureau, Royal Government of Bhutan.
- NSB. (2007c). *Statistical Yearbook of Bhutan 2007*. Thimphu: National Statistics Bureau, Royal Government of Bhutan.
- NSB. (2008). *Socio-economic and demographic indicators 2005*. Thimphu: National Statistics Bureau, Royal Government of Bhutan.
- NSB. (2012). *Statistical Yearbook 2012*. Thimphu: National Statistical Bureau, Royal Government of Bhutan.
- O'Brien, M. J., & Holland, T. D. (1992). The role of adaptation in archaeological explanation. *American Antiquity*, 57(1), 36-59.
- Oba, G. (2012). Harnessing pastoralists' indigenous knowledge for rangeland management: three African case studies. *Pastoralism: Research, Policy and Practice*, 2(1). doi: 10.1186/2041-7136-2-1
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Cambridge University Press.
- Ortner, S. B. (1989). Cultural politics: Religious activism and ideological transformation among 20th century Sherpas. *Dialectical Anthropology*, 14. 197 - 211.
- Ortner, S. B. (1995). The case of disappearing Shamans, or No individualism, No relationalism. *Ethos* 23 (3) 355 - 390.
- Ostrom, E. (2000). Private and common property rights. *Encyclopedia of Law and Economics*, 2, 332-379.
- Ostrom, E. (2002). Common-pool resources and institutions towards a revised theory. In B. Gardner & G. Rauser (Eds.), *Handbook of Agricultural Economics* (Vol. 2, pp. 1315-1339): Elsevier Science B.V.
- Ostrom, E. (2008). *Governing the commons: The evolution of institutions for collective action* (22 ed.). New York: Cambridge University Press.
- Ostrom, E. (2010). Analyzing collective action. *Agricultural Economics*, 41(supplement s1), 155-166. doi: 10.1111/j.1574-0862.2010.00497.x
- Ostrom, E., Dietz, T., Dolsak, N., Stern, P. C., Stonich, S., & Weber, E. U. (2002). *The drama of the commons*: National Academies Press.

- Pachauri, R. K. (2007). *Climate Change 2007: Synthesis report. Contribution of working groups I, II and III to the fourth assessment report of the intergovernmental panel on climate change* (Vol. 446): IPCC.
- Pain, A., & Pema, D. (2004). The matrilineal inheritance of land in Bhutan. *Contemporary South Asia*, 13(4), 421-435.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*: Sage Publications, Inc.
- Phuntsho, K. (2013). *The History of Bhutan*. Noida, UP: Random House India.
- Pinstrup-Andersen, P. (2002). Food and Agricultural Policy for a Globalizing World: Preparing for the Future. *American Journal of Agricultural Economics*, 84(5), 1201-1214.
- Pinstrup-Andersen, P., Pandya-Lorch, R., & Rosegrant, M. W. (2001). Global food security: A review of the challenges. *The Unfinished Agenda. IFPRI, Washington*, 7-17.
- PPD. (2008). *Compendium of Renewable Natural Resources Statistics*. Thimphu: Policy and Planning Division, Ministry of Agriculture, Royal Government of Bhutan.
- Pretty, J. (2008). Agricultural sustainability: Concepts, principles and evidence. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1491), 447-465.
- Pretty, J. N., & Chambers, R. (1994). Towards a learning paradigm: New professionalism and institutions for a sustainable agriculture. In I. Scoones & J. Thompson (Eds.), *Beyond farmers first: Rural peoples knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.
- Putnam, R. D. (1993). The prosperous community: Social capital and public life. *The American Prospect*, 13(4), 35-42.
- Ray, C. (1999). Towards a Meta-Framework of Endogenous Development: Repertoires, Paths, Democracy and Rights. *Sociologia Ruralis*, 39(4), 522-537. doi: 10.1111/1467-9523.00122
- RCSC. (2012) *Bhutan Civil Service Rules and Regulations 2012*. (6th ed., pp. 430). Thimphu: RCSC.
- Reid, H., Huq, S., Murray, L., Ciptet, D., Roberts, J. T., Khan, M., . . . Ayers, J. (2004). *Adaptation day at COP9*: London: IIED.
- RGoB. (1995). *The Forest and Nature Conservation Act of Bhutan 1995*. Thimphu: Ministry of Agriculture and Forests, Royal Government of Bhutan.
- RGoB. (1998). *The Middle Path: National Environment Strategy for Bhutan*. Thimphu: National Environment Commission, Royal Government of Bhutan.
- RGoB. (1999). *Bhutan 2020: A Vision for Peace, Prosperity and Happiness*. Bangkok: Keen Publishing.
- RGoB. (2009a). *Tenth five year plan (2008 - 2013)*. Thimphu: Gross National Happiness Commission, Royal Government of Bhutan.
- RGoB. (2009b). *Tenth five year plan (2008 - 2013) (Vol. I: Main Document)*. Thimphu: Gross National Happiness Commission.
- Rhodes, N. (2000). The monetisation of Bhutan. *Journal of Bhutan studies*, 2(2), 85-103.
- Rinzin, C., Vermeulen, W. J. V., Wassen, M. J., & Glasbergen, P. (2009). Nature Conservation and Human Well-Being in Bhutan: An Assessment of Local

- Community Perceptions. *The Journal of Environment & Development*, 18(2), 177-202.
doi: 10.1177/1070496509334294
- Robertson, B., & Pinstrip-Andersen, P. (2010). Global land acquisition: Neo-colonialism or development opportunity? *Food Security*, 2(3), 271-283.
- Roder, W. (2002). Grazing Management of Temperate Grassland and Fallows. *Journal of Bhutan Studies*, 7, 44-60.
- Roder, W., Gratzer, G., & Wangdi, K. (2002). Cattle grazing in the conifer forests of Bhutan. *Mountain Research and Development*, 22(4), 368-374.
- Roder, W., Wangdi, K., Gyamtsho, P., & Dorji, K. (2001). *Feeding the herds: Improving fodder resources in Bhutan*. Kathmandu: ICIMOD.
- Rodriguez, L. (2008). A global perspective on the total economic value of pastoralism *Global synthesis report based on six country valuations, WISP, IUCN: Nairobi*.
- Roe, E., Huntsinger, L., & Labnow, K. (1998a). High-reliability pastoralism versus risk-averse pastoralism. *The Journal of Environment & Development*, 7(4), 387-421.
- Roe, E., Huntsinger, L., & Labnow, K. (1998b). High reliability pastoralism. *Journal of Arid Environments*, 39(1), 39-55.
- Rohde, R. F., Moleele, N. M., Mphale, M., Allsopp, N., Chanda, R., Hoffman, M. T., . . . Young, E. (2006). Dynamics of grazing policy and practice: environmental and social impacts in three communal areas of southern Africa. *Environmental Science & Policy*, 9(3), 302-316.
- Roling, N. (1994). Facilitating sustainable agriculture: Turning policy models upside down. In I. Scoones & J. Thompson (Eds.), *Beyond farmer first: Rural people's knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.
- Rosegrant, W. M., & Thornton, P. K. (2008). Do higher meat and milk prices adversely affect poor people? *id21 insights: research findings for development policy makers and practitioners*, 72. Retrieved from www.id21.org website:
<http://www.eldis.org/id21ext/publications/insights72.pdf>
- Rosen, T., Hussain, S., Mohammad, G., Jackson, R., Janecka, J. E., & Michel, S. (2012). Reconciling Sustainable Development of Mountain Communities With Large Carnivore Conservation. *Mountain Research and Development*, 32(3), 286-293.
- Rota, A., & Sperandini, S. (2009) Livestock and pastoralists. *Livestock Thematic Papers - Tools for Project Design*. Rome: IFAD.
- Roth, E. A. (2000). On pastoralist egalitarianism: Consequences of primogeniture among the Rendille. *Current Anthropology*, 41(2), 269-271.
- Salzman, P. C. (1967). Political organization amongst nomadic people. *Proceedings of American Philosophical Society*. 111(2).115-131. Retrieved from <http://www.jstor.org/stable/986038>.
- Salzman, P. C. (1995). Studying nomads: an autobiographical reflection. *Nomadic Peoples*. 36/37. 157 -166.
- Samdup, T., Udo, H., Eilers, C., Ibrahim, M., & van der Zijpp, A. (2010). Crossbreeding and intensification of smallholder crop-cattle farming systems in Bhutan. *Livestock Science*, 132(1), 126-134.

- Samdup, T., Udo, H. M. J., Ibrahim, M. N. M., & van der Zijpp, A. J. (2010). A conceptual framework to assess development of smallholder crop-cattle farming systems in Bhutan: Sustainable Development or Gross National Happiness. *Journal of Faculty of Agriculture, Shinshu University*, 46(1), 123- 136.
- Sandelowski, M. (2000). Focus on Research Methods: Whatever happend to qualitative description? *Research in Nursing & Health*(23), 334-340.
- Sandford, S. (1983). *Management of Pastoral Development in the Third World*. London: John Wiley and Sons.
- Sandford, S. (2006). Too many people, too few livestock: the crisis affecting pastoralists in the Greater Horn of Africa *Future Agricultures Consortium debate*. Brighton: Institute of Development Studies, University of Sussex.
- Sansoucy, R., Jabbar, M., Ehui, S., & Fitzhugh, H. (1995). *The contribution of livestock to food security and sustainable development*. Paper presented at the Livestock development strategies for low income countries: A joint FAO/ILRI rountable on livestock development strategies for low income countries Addis Ababa, Ethiopia. <http://www.fao.org/wairdocs/ILRI/x5462E/x5462e04.htm>
- Scharf, K. M., Fernandez-Gimenez, M. E., Batbuyan, B., & Enkhbold, S. (2010). Herders and hunters in transitional economy: The challenge of wildlife and rangeland management in post-socialist Mongolia. In J. T. du Toit, C. Richard & J. C. Deutsch (Eds.), *Wild Rangelands: Conserving wildlife while maintaining livestock in semi-arid ecosystems*. Chichester: WILEY-BLACKWELL.
- Scherr, S. J. (2000). A downward spiral? Research evidence on the relationship between poverty and natural resource degradation. *Food Policy*, 25(4), 479-498.
- Schultz, N. L., Morgan, J. W., & Lunt, I. D. (2011). Effects of grazing exclusion on plant species richness and phytomass accumulation vary across a regional productivity gradient. *Journal of Vegetation Science*, 22(1), 130-142. doi: 10.1111/j.1654-1103.2010.01235.x
- Scoones, I. (1993). Why are there so many animals? Cattle population dynamics of in communal areas of Zimbabwe. In R. H. Behnke, I. Scoones & C. Kerven (Eds.), *Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Savannas*. London: Overseas Development Institute.
- Scoones, I. (1994). Economic and ecological carrying capacity applications to pastoral systems in Zimbabwe. In E. B. Barbier (Ed.), *Economics and Ecology:New frontiers and sustainable development*. London: Chapman & Hill. (Reprinted from: 1994).
- Scoones, I. (2008). Is pastoralism a viable livelihood option? *id21 insights: research findings for development policy makers and practitioners*, 72(6). Retrieved from <http://www.eldis.org/id21ext/publications/insights72.pdf>
- Scoones, I., & Thompson, J. (1994a). Introduction. In I. Scoones & J. Thompson (Eds.), *Beyond farmer first: Rural people's knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.
- Scoones, I., & Thompson, J. (1994b). Knowledge, power and agriculture -towards a theoretical understanding. In I. Scoones & J. Thompson (Eds.), *Beyond farmer first: Rural people's knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.

- Scott, J. C. (2009). *The art of not being governed: An anarchist history of upland Southeast Asia*: Yale Univ Pr.
- Seeland, K. (2000). National Park Policy and Wildlife Problems in Nepal and Bhutan. [Article]. *Population & Environment*, 22(1), 43-62.
- Sen, A. (1982). *Poverty and famines: An essay on entitlement and deprivation*. New York: Oxford University Press.
- Sen, A. (1999). Famines and other crises. In A. Sen (Ed.), *Development as Freedom*. New York: Alfred A. Knopf.
- Shah, P. (1994). Village-managed extension systems in India: implications for policy and practice. In I. Scoones & J. Thompson (Eds.), *Beyond farmer first: Rural people's knowledge, agricultural research and extension practice*. London: Intermediate Technology Publications.
- Shaoliang, Y., Ning, W., Peng, L., Qian, W., Fusun, S., Geng, S., & Jianzhong, M. (2007). Changes in livestock migration patterns in a Tibetan-style agropastoral system: A study in the three parallel rivers of Yunnan, China. *Mountain Research and Development*, 27(2), 137 - 145. doi: 10.1659/mrd.0832
- Sharma, V. P., Köhler-Rollefson, I., & Morton, J. (2003). Pastoralism in India: A scoping study: Ahmedabamad, India & Ober-Ramstadt, Germany: Indian Institute of Management and League of Pastoral Peoples.
- Shepherd, G. (2008). *The ecosystem approach: learning from experience*. Gland, Switzerland: IUCN.
- Shucksmith, M. (2000). Endogenous development, social capital and social inclusion: perspectives from LEADER in the UK. *Sociologia Ruralis*, 40(2), 208-218.
- Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, 16(3), 282-292. doi: 10.1016/j.gloenvcha.2006.03.008
- Sneath, D. (1993). Social relations, networks, and social organisation in post-socialist rural Mongolia. *Nomadic Peoples*, 33 (193-207).
- Sneath, D. (1998). State policy and pasture degradation in inner Asia. *Science*, 281(5380), 1147.
- Sneath, D. (2003). Land Use, the Environment and Development in Post-Socialist Mongolia. *Oxford Development Studies*. Carfax Publishing. 31 (4), 441 -459.
- Sofaer, S. (2002). Methodology matters: Qualitative research methods. *International Journal for Quality in Health Care*, 14(4), 329-336.
- Start, D. (2001). The rise and fall of the rural non-farm economy: Poverty impacts and policy options. *Development Policy Review*, 19(4), 491-505.
- Steinfeld, H. (1998). *Livestock and global change*. Paper presented at the International conference on livestock and the environment, Wageningen, the Netherlands.
- Stur, W., Khanh, T. T., & Duncan, A. (2013). Transformation of smallholder beef cattle production in Vietnam. *International Journal of Agricultural Sustainability*. 11: 4. 365 - 381. doi 10.1080/14735903.2013/779074.
- Sun, X. (2009). Nomadic Pastoralists Adapting to the Challenge of Sedentarization in Arid Area of East Africa. *Kyoto Working Papers on Area Studies: G-COE Series*, 35, 1-19.

- Sutcliffe, S., & Court, J. (2005). Evidence-Based Policymaking: What is it? How does it work? What relevance for developing countries? : Overseas Development Institute (ODI).
- Tambe, S., & Rawat, G. S. (2009). Ecology, economics, and equity of the pastoral system in the Khangchendzonga national park, Sikkim Himalaya, India. *Ambio*, 38(2), 95 - 100.
- Tashi, S. (2012, 28 October). Local authorities, residents await solution to land problem, *Bhutan Times*, pp. 1-2.
- Thomas, D., Zerbini, E., Parthasarathy Rao, P., & Vaidyanathan, A. (2002). Increasing animal productivity on small-mixed farms in South Asia: A systems perspective. *Agricultural Systems*, 71(1-2), 41-57.
- Thornton, P. K., Boone, R. B., Galvin, K. A., Burnsilver, S. B., Waithaka, M. M., Kuyiah, J., . . . Herero, M. (2007). Coping strategies in livestock-dependent households in east and southern Africa: A synthesis of four case studies. *Human Ecology*(35), 461-476. doi: 10.1007/s10745-007/9118-5
- Thwaites, R., de Lacy, T., Hong, L. Y., & Hua, L. X. (1998). Property rights, social change, and grassland degradation in Xilingol Biosphere reserve, Inner Mongolia, China. *Society & Natural Resources*, 11(4), 319-338.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357. doi: 10.1093/intqhc/mzm042
- Tshering, N. (2008). *Livestock production: Social, Religious and Economic Aspects*. Thimphu: Department of Livestock.
- Tshering, P. (2005). *The Interaction of Grazing and Competition in the Conifer Forest of Bhutan*. Master of Science in Mountain Forestry, University of Natural Resources and Applied Life Sciences, Vienna. Retrieved from <http://www.boku.ac.at/h912/fored/research/Thesis%20Phento%20Tshering.pdf>
- Tucker, R. P. (1986). The evolution of transhumant grazing in the Punjab Himalaya. *Mountain Research and Development*, 6(1), 17-28.
- Turner, M., Chuki, S., & Tshering, J. (2011). Democratization by decree: the case of Bhutan. *Democratization*, 18(1), 184-210.
- Udo, H., Aklilu, H., Phong, L., Bosma, R., Budisatria, I., Patil, B., . . . Bebe, B. (2011). Impact of intensification of different types of livestock production in smallholder crop-livestock systems. *Livestock Science*(139), 22-29. doi: 10.1016/j.livsci.2011.03.020
- UNDP, & RGoB. (2008). Bhutan's Progress; Midway to millenium development goals. Thimphu: Gross National Happiness Commission.
- Upton, C. (2008). Social capital, collective action and group formation: developmental trajectories in post-socialist Mongolia. *Human Ecology*, 36(2), 175-188.
- Upton, C. (2010a). Living off the land: Nature and nomadism in Mongolia. *Geoforum*, 41(6), 865-874. doi: 10.1016/j.geoforum.2010.05.006
- Upton, C. (2010b). Nomadism, identity and the politics of conservation. *Central Asian Survey*, 29(3), 305-319.

- Upton, C. (2011). Adaptive capacity and institutional evolution in contemporary pastoral societies. *Applied Geography*, 33, 135-141. doi: 10.1016/j.apgeog.2011.10.008
- Upton, M. (2004). The role of livestock in economic development and poverty reduction *Pro-Poor Livestock Policy Initiative* (Vol. Working Paper 10): FAO.
- Ura, K. (1993). The nomads gamble: Pastoralists of northern Bhutan. *South Asia Research*, 13(2), 81-100.
- Ura, K. (2002). The herdsman's dilemma. *Journal of Bhutan Studies*, 7, 1-43.
- Ura, K., Alkire, S., & Zangmo, C. (2012). GNH and the GNH Index. Retrieved from <http://www.ophi.org.uk/wp-content/uploads/Ura-et-al-Bhutan-Happiness-Chapter.pdf>
- Ura, K., & Kinga, S. (2004). *Bhutan–Sustainable Development Through Good Governance*. Paper presented at the Scaling up Poverty Reduction: A Global Learning Process and Conference Shanghai.
- Vermeulen, E. (2004). Dealing with doubt: Making decisions in a neonatal ward in The Netherlands. *Social Science & Medicine*, 59(10), 2071-2085. doi: <http://dx.doi.org/10.1016/j.socscimed.2004.03.010>
- Wahlquist, H. (1996). Nomadism on the Tibetan high plateau. *Nomadism pa den tibetanska hogplatan*, 116, 93-111.
- Wang, S. W., Lassoie, J. P., & Curtis, P. D. (2006). Farmer attitudes towards conservation in Jigme Singye Wangchuck National Park, Bhutan. *Environmental Conservation*, 33(2), 148-156.
- Wang, S. W., & Macdonald, D. W. (2006). Livestock predation by carnivores in Jigme Singye Wangchuck National Park, Bhutan. *Biological Conservation*, 129(4), 558-565. doi: 10.1016/j.biocon.2005.11.024
- Wangchuk, L. (2008). *Facts about Bhutan: The land of Thunder Dragon* (1st ed.): Absolute Bhutan Books.
- Wangchuk, S. (2005). *Indigenous Natural Resource Management Institutions of Bhutan*. Thimphu: DSB publication.
- Wangchuk, T. (2000). Change in the land use system in Bhutan: Ecology, history, culture, and power. *Journal of Bhutan Studies*, 2(1), 54-85.
- Wangchuk, T. (2004). Predator-prey dynamics: The role of predators in the control of problem species. *Journal of Bhutan Studies*, 10, 68-89.
- Wangdi, K. (2002). *Agro pastoralism; Towards an efficient exploitation of fodder resources*. Paper presented at the 5th meeting of Temperate Asia Pasture and Fodder Network (TAPAFON) Bajo, Bhutan. www.fao.org/ag/agp/AGPC/doc/Proceedings/Tapafon02/tapafon2.htm
- Waters-Bayer, A., & Bayer, W. (1992). The role of livestock in the rural economy. *Nomadic Peoples*, 31, 3-18.
- Watson, C. (2010). Gender Issues and Pastoral Economic Growth and Development in Ethiopia *Background note for a study of "Pastoral economic growth and development in Ethiopia"*. Addis Ababa: DFID & Government of Ethiopia.
- West, P., Igoe, J., & Brockington, D. (2006). Parks and peoples: the social impact of protected areas. *Annu. Rev. Anthropol.*, 35, 251-277.

- Westbrook, L. (1994). Qualitative Research Methods: A Review of Major Stages, Data Analysis Techniques, and Quality Controls. *Library and Information Science Research*, 16, 241-254.
- WISP. (2008) Sustainable pastoralism – Moving forward with appropriate policies. *World Initiative for Sustainable Pastoralism Policy note 9*. Kenya: IUCN, GEF (UNDP)
- Wurzinger, M., Okeyo, A. M., Semambo, D., & Sölkner, J. (2009). The sedentarisation process of the Bahima in Uganda: An emic view. *African Journal of Agricultural Research*, 4(10), 1154-1158.
- Yi, S., Wu, N., Luo, P., Wang, Q., Shi, F., Zhang, Q., & Ma, J. (2008). Agricultural heritage in disintegration: Trends of agropastoral transhumance on the southeast Tibetan Plateau. *The International Journal of Sustainable Development & World Ecology*, 15(3), 273-283.
- Young, H., Jaspars, S., Brown, R., Frize, J., & Khogali, H. (2001). *Food security assessments in emergencies: a livelihoods approach*: Overseas Development Institute.
- Zoomers, A. (2010). Globalisation and the foreignisation of space: seven processes driving the current global land grab. *The Journal of Peasant Studies*, 37(2), 429-447.

Appendices

Appendix A: Herders' in-depth interview guide

Kuzuzangpo! I am Kuenga, how are you doing today?

I am doing a research on Transhumant Agro-pastoralism in Bhutan and I am here to learn about this practice. I have learnt from the Gup, Tshogpa, and others that you know quite well about the practice. I want to hear it from you please. The information is for my studies and I will use it for my thesis and any journal and conference publication arising out of this research. This will also help in documenting our rich culture for purpose of preserving it and for reference by future generations.

So will you please share with me what you know about cattle migration, the history, socio-economic and cultural practices around it please?

[Meanwhile, I will offer some Doma (betel nut), as a gesture of good will (it is tradition in Bhutan to offer doma if one is used to consuming that to establish friendly environment and start conversations). After getting his/her consent to share his/her views, I will then let him/her know that each interview will take about 1-2 hours and that I may come back to get some more information if I have missed something. I will also let him/her know that the conversation is being recorded and seek his/her consent for that, assuring privacy and confidentiality all the time. If he/she is not comfortable with the conversation being recorded, the recorder will be turned off and as much points I can catch shall be written down on the researchers note book.]

Guiding questions:

Q1. How many years ago do you think this transhumant agro-pastoralism started? Did your parents and grandparents practise it too? Can you explain why do villagers migrate with cattle?

Q2. What are the months during which people migrate with their cattle from the village here to the south and vice versa? You can mention the Bhutanese months.

Q3. Where do you usually go? Can you name all the tracks you follow and which places the herds are usually taken in winter, how many days spent at each place?

Q4. How many days does it usually take to reach the camps in the south? Does it differ from the number of days it takes to come back?

Q5. Normally during migration, what different roles do men and women play? Who in the household is involved in migration? What happens to the children and elderly when migration occurs?

Q6. What are some of the problems people face during migration? Which one is easier -up migration in spring or down migration in autumn?

Q6. What sort of interactions do they have with communities living along the routes or those living nearby at your winter camps? eg Friendship building, share cropping, business (barter and cash), etc.

Q7. What sort of cultural practices do you have around the time of migration? Religious rituals, sports, dances, picnics, packing their stuffs, rations etc.?

Q8. What is the trend in migration - increasing or decreasing? What could be the reasons for increase or decrease?

Q9. Which policies or legislations concerning cattle and migration are people aware of? Do the policies have any effect on migration? If so please explain or give some examples?

Q10. Do you think the climate is changing or not? Explain with examples whatever you feel?

Q11. What changes are seen in migration culture due to development? How does it affect/change your livelihood?

Thank you so much for you time and rich information.

Appendix B: Agency in-depth interview guide

Q1. When do you think cattle migration practice must have started? About how many years ago?

Q2. Which system or routes of cattle migration are you familiar with? Can you please describe some? The system, no. of days, seasons/months?

Q3. How do you see transhumant agro-pastoralism as a livelihood option? What are its strengths? What is (if any) its social and cultural importance to Bhutan?

Q4. What according to you are its drawbacks? What are the main problems with migration?

Q5. What in your opinion are current developing trends? Is migration increasing or decreasing or about the same? Why? Do you think it will die out gradually or will it last? What kind of future do you see for migration?

Q6. How did people from different Dzongkhags end up owning *tsamdro* or usufruct rights over *tsamdro* in a different Dzongkhag instead of people from that Dzongkhag?

Q7. How do you think we can resolve these issues?

Q7. Do you think the provision of Land Act 2007 on banning inter-dzongkhag cattle migration 2018 is possible? Would it be logical? Please explain the reasons...

Q8. Do you think cattle migration practice and environmental conservation can complement each other? Why? Why not?

Q9. What is your opinion on discussing the legislations / policies with the people that will be affected prior to finalization? Do you think this is being done?

Q10. Do you think climate change is real? If so how do you think it might affect the migratory herders?

Q11. Do you think development has any effect on transhumant agro-pastoralist? If so how do you think they are being affected? How can we mitigate such problems?

Q12. What is your view on human-wildlife conflict? How are the livestock dependent farmers being affected by it? How should we manage it?

Thank you so much for your time.

Appendix C: Household survey questionnaire

Questionnaire for gathering socio-economic data on transhumant agro-pastoralist of Bhutan

Respondent# _____ Village _____ Geog _____

POPULATION DYNAMICS

1. Please give some details of your household(HH) members

Sl#	HH member code	Level of education*	Migration Yes/No	M/F	Age	Reasons for leaving (if left school)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

**Level of Education Codes (1=never been to school 2= religious, monks/nun/lama/primary school 3=secondary/University)*

***Please mention what the particular persons' role in the family is; student, works in the field, looks after kids or looks after the cattle etc.*

Education

1. In your opinion, does migration affect children's education? (Circle the right letter)

- a. Yes, it does b. No, it doesn't

2. If yes how does it affect children's education? (Circle the right letter)

- a. Children need to leave before the final exams to join the family in migration
 b. Children run away from school to be with the family

- c. Children need to help the family in migration due to shortage of labour
- d. Children are not interested in school when parents leave down south
- e. Others please specify...

3. How do you manage the kids to school when migration season starts before school season ends? (Circle the right number)

- a. Leave the children behind as paying guest in private house
- b. Take the children out of school and take them with us
- c. Children stay in school in government boarding facility
- d. Children stay back on their own, at home or in a make shift huts, to finish exam
- e. Children stay behind with an adult member at home or in a make shift huts to complete exams and join the family gradually
- f. Others (Please specify)..

4. Do children often get failing grades due to migration? (Circle the right letter)

- a. Yes, they fail because they leave before the final exams and eventually leave school for good
- b. No, they don't fail though not with very good marks due to lack of final exams
- c. Yes, occasionally when faced with labour shortage in family and kids need to join to help the family with migration
- d. No. kids are arranged to complete their exams irrespective of family labour situation in migration
- e. Others, please specify..

Land holding and land use

1. How many acres of land do your family own?

Sl #	Land Category	Acreage /langdo*	Slope (note estimate degree of slope)
1	Dry land		
2	Wetland (incase if they own some in the south)		
3	Tsamdro (Pasture land they used to have user rights)		
4	Improved pasture		
5	Others		

**langdo is a traditional measurement -an area two bullocks can plough in a day 1 acre= 3 langdos (dry land)=4langdos (wetland)*

2. Do you have enough land in the village for your household? (Circle the right number)

1. Yes 2. No

3. Do you produce enough from your land for your family all year round? (circle the right answer)

1. Yes usually 2. No, not enough (Reasons.....)

4. If not, how do you manage to feed the family? Where does the money to buy food for the other days come from? (circle the right answer)

- a. From orange /cash crop business
- b. Daily wage labour to neighbours
- c. Contract labour in construction
- d. Get loan from financial institutions
- e. Borrow from neighbours
- f. From cordyceps collection
- g. Other

5. Do you own any farm machinery such as power tillers, thrashers, floor mill etc.? (circle the right answer)

- a. Yes b. No if yes, please specify which.....

Livestock population

Please mention how many animals do your family own?

1. Cattle herd dynamics

<i>Sl #</i>	<i>Animal category</i>	<i>Siri</i>	<i>Mithun</i>	<i>Exotic Crossbred</i>	<i>others</i>
1	Cows (Milch)				
2	Cows (not milking)				
3	Young stock including calves				
4	Bulls /bullocks				
5	Total				

2. What and how many other animals do your family own?

Sl #	Animal type	Number of Animals
1	Horses	
2	Mules	
3	Donkeys	
4	Pigs	
5	Poultry birds	
6	Dogs	
7	Cats	
8	Goats	
9	Sheep	
10	Others	

Livestock production

- What is the average daily milk production of your cows? (litre or kg or bottle/day) (a bottle is 750ml).
 - Siri Cows _____
 - Mithun cows _____
 - Exotic Crossbred cows _____
- What is the Milk to Butter and cheese ratio? (say how much milk would be required to produce 1 kg butter & how many balls of cheese can be produced from that same quantity of milk)?
 i.e., 1kg butter =kgs or bottles or litres of milk = will produce.....balls of cheese

Economy

- On an average how many cows in milk did the family have in the last one year?
 Cows in Milk = _____Siri cows.
 _____Mithun Cows
 _____Exotic Crossbred cows.

2. What is the estimated family's average annual income from the nonfarm activities as an added benefit of migration? (Orange business/cane works/cordyceps, mushroom/tourist transport/others)? (circle the right number and specify)
 1. BTN 20,000 or less
 2. BTN 21,000 - 30,000
 3. BTN 31,000 -40,000
 4. BTN 41,000-50,000
 5. BTN 51,000 or more

3. What does your family usually do in these off farm activities (ask only if applicable)? (Circle the right letter).
 - a. Portage or packaging labor b. Petty contract c. In-charge/manager on daily wage
 - d. Sell your own orchard produce e. Others (please specify).....

4. How do you rank the following income sources by importance to your household? Please rank on a scale of 1 to 3.
(1.Less important 2. Important 3. Highly important)

Cattle	Crops	Casual labor	NWFP	Off farm activities

HOUSING

Researcher to observe and (√) tick the appropriate answer

Type of house	Single storey traditional	
	Double storey traditional	
	Triple storey traditional	
	Shed/hut	
Building material	Mud wall	
	Brick wall with concrete	
	Planks/bark wall	
Floors	Cemented	
	Planks	

	Mud floor	
Drinking water facility	Indoor tap facility	
	Outdoor individual tap system	
	Outdoor community shared tap system	
	Outdoor traditional system	
Toilet facility	In door contemporary with water facility	
	Indoor but traditional with no water system	
	Outside the house but separately built contemporary	
	Outside the house but separately built traditional with no water system	
	No, toilet, its open in the field or under the tree	

SOCIAL SERVICE FACILITIES

1. Do you have school facility in your village? (circle the right answer)
 - a. Yes
 - b. No

2. If yes, what level of schooling do you have in the village?
 - a. Community primary
 - b. Lower Secondary
 - c. Middle Secondary
 - d. Higher Secondary

3. If there is no school in your village, how many hours do children have to walk to school? (circle the right answer)
 - a. Less than 1 hour
 - b. 1hour
 - c. 2hours
 - d. 3hours or more

4. Do children walk to school everyday? (circle the right answer)
 - a. Yes they walk everyday
 - b. No, they stay in school and come only in weekends and holidays
 - c. Other

5. If they stay in school how do they arrange living? (circle the right answer)
 1. There is school boarding facility
 2. As paid guest in private house
 3. Put up in make shift huts and adults accompany to take care of small children
 4. Other?

6. Do you have a health facility in your village? (circle the right answer)

1. Yes 2. No

7. If not, how many hours do you have to walk to the nearest health facility? (circle the right answer)
- a. Less than 1 hour b. 1 hour c. 2 hours d. 3 hours or more.

TRANSHUMANT AGRO-PASTORALIST PRACTICE

1. Do you practice migration with your animals? (circle the right answer)
- a. Yes - people and animals (go to Q2)
 - b. Yes, but people only to engage in cash generation activities but cattle sent with others (go to Q2)
 - c. No, never practised migration
 - d. Used to but stopped some years ago (go to Q3)
 - e. Yes, but thinking of stopping and being sedentary
 - f. Stopped for some time but thinking of resuming again
2. If you still practise migration or stopped but thinking of restarting migration again, what are some of your reasons for migration? (tick the relevant boxes)

<i>Sl #</i>	<i>Reasons</i>	
1	Because it is the tradition and that's all you know	
2	Due to shortage of feed in winter in the Village	
3	To avoid the cold temperature in winter	
4	No apparent reason, just for family vacation	
5	To generate cash from orange/other business	
6	Others...	

3. If you have stopped migration or thinking of stopping it, what are the reasons for that? (tick the relevant boxes)

<i>Sl #</i>	<i>Reasons</i>	
1	Land act 2007 (<i>tsamdro</i> taken over by government)	
2	Too much restriction from Foresters	
3	Availability of enough land in the village vis-à-vis enough food for HH and	

	fodder for animals	
4	Cash generation from orange has vanished due to poor price and low productivity	
5	Cash generation opportunity is very competitive with too many people involved	
6	Vegetable production has been very lucrative	
7	I bought land near the road where I grow vegetables and sell which is enough to sustain the family	
8	Winter is not unbearably cold anymore and possible to grow some crops in winter in village	
9	Others...	

4. Do cattle suffer from diseases as a result of migration? (Circle the right number)
a. Yes b. No
5. If yes, which diseases do your cattle suffer from as a result of migration? (circle the relevant number)
1. Foot and Mouth disease
2. Hemorrhagic septicemia
3. Black quarter
4. Rabies
5. Other
6. Do you agree that Migration causes the spread of diseases especially FMD and Rabies? (circle the relevant number)
1. Agree 2. Do not agree 3. Not sure
7. Do you treat your animals before / after migration? (circle the relevant number)
1. Yes 2. No
8. If not why do you not treat your animals before/after to migration? (circle the relevant number)
1. Extension service not available/not reliable/no regular schedule
2. It affects milk production
3. Never heard about it
4. Others

9. How do you treat your animals for diseases? (Circle the right letter)
 - a. Seek extension service
 - b. Treat with your own traditional knowledge based formula
 - c. Do nothing and let the animal recover on its own

10. If you don't seek extension service, what could be some of the reasons?
 - a. Extension service not available
 - b. Extension service not reliable
 - c. Veterinarian treatment affects milk production
 - d. Never heard about it

AWARENESS ON LEGISLATION AND POLICIES PERTAINING TO TRANSHUMANT PRACTICE AND THEIR POTENTIAL IMPACTS

1. Are you aware of recent government policies and legislation concerning forest conservation and pasture management? (circle the relevant number)
 1. Yes
 2. No

2. If yes, can you name some of these policies and legislations that you are aware of? And what do you know about these policies and legislations? And how do you feel about these?

3. If yes, where did you hear about this Acts or Policies? (circle the relevant letter)
 - a. From BBS television
 - b. From Radio
 - c. From Extension agent
 - d. From Dzongkhag legal office personnel
 - e. People from departments came to discuss with us prior to finalization
 - f. People from departments came to sensitize us after the Acts are passed by National Assembly.
 - g. From MP or earlier National Assembly member
 - h. Friends and family
 - i. Others

4. How do you think this policies and legislations might affect your family and your livelihood?

5. Do you think Forest protection, wild life protection & biodiversity conservation are important?
 1. Yes, it is very important
 2. No, not so important
 3. I don't know
6. Do you normally support these policies, rules or legislations? If so how? If not why not?

7. Do you think your views and views of your colleague farmers are being heard by the policy makers? (circle the relevant number)
1. Yes, we are being heard.
 2. No, our voices are not represented

8. Are there some forums or avenues by which people like you could voice your problems, or be part of the policy or program processes? If yes which ones and explain briefly how it works?

9. Do you believe that Cattle Grazing in forest is causing destruction to forest? (circle the relevant number)
1. Yes
 2. No, don't agree
 3. Don't know

If yes, how?.....

If not why not?.....

10. Do you think that herders are selfish, ignorant and cut down trees at campsites, water sources, and do excessive lopping?

11. What are some of the *tsamdro* management practices herders like you practise?

HUMAN- WILDLIFE CONFLICT

1. How serious is human-wildlife conflict in your village and/or in the winter herds? (circle the relevant numbers)
1. Not serious
 2. Serious but manageable
 3. Very serious and affecting our livelihood

2. How many animals on average do you lose to wild predators every year? (circle the relevant letter)

- a. 1 animal
- b. 2 animals
- c. 3 animals
- d. More than 3 animals

3. How many animals in total did you lose last year? (enter the number)

_____cows, _____bulls, _____calves, _____horses,
 _____mules, _____donkeys, _____pigs, _____birds

4. Do you think the situation is improving or worsening every year? (circle the relevant number)
1. Improving
 2. Getting worse
 3. Not sure

5. Is there a compensation scheme to compensate for your losses?
6. If yes, do you think you are being compensated fairly for the losses?
7. How do you think we can resolve this issue of human-wildlife conflict?

******TASHI DELEK******

Appendix D: Focus group guiding questions

For the pastoralists from north

1. How is cattle raising doing in your community? Is it improving/benefiting families?
2. How important has cattle become, especially migratory herds, to families, relative to crops and other opportunities?
3. What do you think of the future? Do you think migration culture will carry on for many years?
4. Do you know or can guess how many years it might continue to exist?
5. Which communities live near your camps in the south?
6. Do you ever have *tsamdro* use conflicts with these people?
7. If yes, how do you solve such issues? Who is involved, who does what and what is agreed as a solution?
8. If not, did you hear or were there ever incidences that they might have complained about you to authorities, Central government, Dzongkhag administration or Geog administration?
9. What is happening with the *tsamdros* left by those who stopped migration?
10. Is anybody using it? What sort of arrangements is made for its utilisation?

For southern farmers

1. What do you do for your living?
2. How important is livestock relative to crops and other off farm opportunities?
3. How do you see the future of cattle rearing in your community? Would people continue to depend on it and in the extensive system or adopt a different system which would require less space?
4. Where do you graze your cattle?
5. What would be an average herd size in your community?
6. Do people own larger herds and stay in camps in *tsamdros* with the animals?
7. Do you think people in your locality have enough *tsamdros* for their animals to graze?
8. Do people from other districts migrate to your locality?

9. If yes, what do you feel about that?
10. Has there ever been a conflict with those people?
11. If yes, are such incidences a recent event or have they always existed that way?
12. If it is an old issue how has it been addressed in the past?
13. What do you feel about the past arrangements?
14. If the problems are new, how is it being resolved or not resolved?
15. Who is involved, who does what and what happens?
16. How do you think it can be resolved?
17. What is happening with the *tsamdros* of those who stopped migration?

Appendix E: Research information sheets

E1: INFORMATION STATEMENT FOR KEY INFORMANTS

Principal Investigator: Kuenga Namgay, PhD Candidate, Charles Sturt University

Title of Research Project:

Transhumant agro-pastoralism in Bhutan: Does it have a place in the 21st century?

Purpose of Research:

This research aims to fill in the knowledge gap pertaining to changes in the livelihoods of transhumant agro-pastoralists in the literature pertaining to changes occurring as a result of government policies, climate change and modernization. The study will be conducted across six study villages, viz. Bempu, Papali, Tshebji, and Damchena villages in the west and Doshi and Urchi villages in central east part of Bhutan. The project will attempt to provide a detailed account of the livelihoods, impacts of migration on livelihood, and cultural practices of the migratory communities. Further this research will explore how current government policies may influence the future system of cattle migration, based on firsthand information and available secondary data, to determine how well they are positioned to function in the 21st century.

The research will contribute to the wider literature on the pressures faced by transhumant agro-pastoralists in the region, and solutions to assist them adjust to changes. It will inform government policy makers of the context and importance of the transhumant agro pastoralist systems and invoke the need to give due consideration of pastoralists' livelihood in developing policies, legislation, and designing projects and programs for poverty alleviation.

Information to be read out to participants in local language (*since most of the participants are expected to be illiterate or semi-literate, this is to be read out to them before participating in in-depth interviews*)

Kuzuzangpo! (Greetings in Bhutanese language-Dzongkha)

As you know, my name is Kuenga Namgay. I am from Dungna. I am currently pursuing a study in Charles Sturt University in Australia and I am doing research on practices of Transhumant Agro-pastoralism in Bhutan. Basically, I want to know how cattle migration started, how long has it been a practice and how do you exactly practise it? I have chosen your villages since I know most of you have large numbers of cattle and practise migration; it is very relevant to my research. Today I am here as a student, I am not here as a civil servant, therefore, you can feel free to share your views frankly. Besides, your identity will be kept confidential. I want to understand in detail and document this migration practice so we know it, and do not forget it even if people stop migration in future for some reasons. This is a very important knowledge and we need to document it so that in future our children and

researchers can use this knowledge. Besides, this will also help to advise policy makers in government. Therefore, I need you to tell me as vividly as possible the information you have on this transhumant agro-pastoralist practice.

This in-depth interview shall take several hours but you can take breaks or stop when you have something else to do. I could always come back to ask you more.

However, please be informed that your participation is voluntary and you are free to choose not to participate or leave any time during the discussions in case you feel uncomfortable or not interested, without any penalty. Any information you contribute to the discussion will be held confidential and only indirect quotes will be used where necessary in the thesis. Nevertheless, those who choose to participate and share your knowledge, your time spent will be compensated financially at an equivalent rate @BTN500/day (8hrs)/person (AUD 12.5) per day at Royal Government of Bhutan's per diem rate.

What happens to information from the interviews and workshop?

As the principal investigator I am responsible for all data collection, data entry, data analysis and safe keeping of data. Transcripts of the interviews will not be available to anyone other than me and my supervisors (Dr Joanne Millar, Dr Rosemary Black, Dr. Tashi Samdup).

The information provided in interview is confidential and personal details will not be published.

However, anonymous direct quotes from conversation may be included in the doctoral dissertation and in journal articles arising from the research. No names or other identifying information will accompany these quotes if used, and these will not reveal any personal identifiable information. All transcripts and recorded materials of all interviews will be maintained under lock in principal supervisor's office for five years. After 5 years, all the transcripts will be shredded and destroyed and recorded materials shall be deleted from the computers.

If anything about this is unclear, or you need more information, please feel free to contact me or my supervisors:

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NOTE: Charles Sturt University's Ethics in Human Research Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

Executive Officer,
Human Research Ethics Committee,
Office of Academic Governance
Charles Sturt University, Panorama Avenue
BATHURST, NSW 2795
Australia
Phone: (02) 6338 4628
Fax: (02) 6338 4194

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

E2: INFORMATION STATEMENT FOR AGENCY INFORMANTS

Principal Investigator: Kuenga Namgay, PhD Candidate, Charles Sturt University

Title of Research Project: Transhumant Agro-pastoralism in Bhutan: Does it have a place in the 21st century?

Purpose of Research:

This research aims to fill in the knowledge gap pertaining to changes in the livelihoods of transhumant agro-pastoralists in the literature pertaining to changes occurring as a result of government policies, climate change and modernization. The study will be conducted across six study villages, viz. Bempu, Papali, Tshebji, and Damchena villages in the west and Doshi and Urchi villages in central east part of Bhutan. The project will attempt to provide a detailed account of the livelihoods, impacts of migration on livelihood, and cultural practices of the migratory communities. Further this research will explore how current government policies may influence the future system of cattle migration, based on firsthand information and available secondary data, to determine how well they are positioned to function in the 21st century.

The research will contribute to the wider literature on the pressures faced by transhumant agro pastoralists in the region, and solutions to assist them adjust to changes. It will inform government policy makers of the context and importance of the transhumant agro pastoralist systems and invoke the need to give due consideration of pastoralists' livelihood in developing policies, legislation, and designing projects and programs for poverty alleviation.

What happens to information from the interviews and workshop?

As the principal investigator I am responsible for all data collection, data entry, data analysis and safe keeping of data. Transcripts of the interviews will not be available to anyone other than me and my supervisors (Dr Joanne Millar, Dr Rosemary Black, Dr. Tashi Samdup).

The information provided in interviews, survey, and focus group is confidential and personal details will not be published.

However, anonymous direct quotes from conversation may be included in the doctoral dissertation and in journal articles arising from the research. No names or other identifying information will accompany these quotes if used, and these will not reveal any personal identifiable information. All transcripts and recorded materials of all interviews and focus group discussion will be maintained under lock in principal supervisor's office for five years. After 5 years, all the transcripts will be shredded and destroyed and recorded materials shall be deleted from the computers.

If anything about this is unclear, or you need more information, please feel free to contact me or my supervisors:

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NOTE: Charles Sturt University's Ethics in Human Research Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

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Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.