



UNIVERSITÄT FÜR BODENKULTUR WIEN
University of Natural Resources
and Life Sciences, Vienna

Master Thesis

The Factors that Influence the Contribution of Non-Wood Forest Products to Rural Livelihoods and the Roles of Policies surrounding NWFPs in Bhutan

Submitted by:

Rixzin WANGCHUK

in the framework of the Master programme

European Forestry

in partial fulfilment of the requirements for the academic degree

Master of Science European Forestry (MScEF)

Vienna, September 2022

Supervisor:

Univ.Prof. Dipl.-Ing. Dr.nat.techn. Karl Hogl
Institute of Forest, Environmental, and Natural Resource Policy
Department of Economics and Social Sciences



Universität für Bodenkultur Wien
University of Natural Resources
and Life Sciences, Vienna

InFER | Institute of
Forest, Environmental, and Natural Resource Policy

Department of Economic and Social Sciences (WiSo)
Institute of Forest, Environmental, and Natural Resource Policy

Head of Institute: Univ.Prof. Dipl.-Ing. Dr.nat.techn. Karl Hogl
Supervisor: Univ.Prof. Dipl.-Ing. Dr.nat.techn. Karl Hogl
Co-Supervisor: Dipl.-Ing. Dr.Gerhard Weiss

Master Thesis

The Factors that Influence the Contribution of Non-Wood Forest Products to Rural Livelihoods and the Roles of Policies surrounding NWFPs in Bhutan

Submitted by:

Rixzin WANGCHUK

Matriculation Number: 12133989

Vienna, September 2022

Affidavit

I hereby declare that I have authored this master thesis independently, and that I have not used any assistance other than that which is permitted. The work contained herein is my own except where explicitly stated otherwise. All ideas taken in wording or in basic content from unpublished sources or from published literature are duly identified and cited, and the precise references included.

I further declare that this master thesis has not been submitted, in whole or in part, in the same or a similar form, to any other educational institution as part of the requirements for an academic degree.

I hereby confirm that I am familiar with the standards of Scientific Integrity and with the guidelines of Good Scientific Practice, and that this work fully complies with these standards and guidelines.

Vienna, September 2022

Rixzin WANGCHUK

Acknowledgements

I want to thank the Erasmus Mundus European Forestry Programme for providing me with the extraordinary opportunity to expand my horizons. Countless people supported my effort on this thesis. This work would not have been possible without the constant support, and assistance of my thesis supervisors, Dr. Karl Hogl for his broad-minded guidance, and Dr. Gerhard Weiss whose encouraging words and detailed feedback have been extremely vital to me.

A special thank you to my wife, Dipsika Rai, who provided wonderful assistance in translating interviews with the rural households of Pema Gatshel and was an amazing companion during my field research travels.

Furthermore, I would like to express my thanks to all the interviewees who participated in this study. The rural communities of Pema Gatshel, officials from the Social Forestry & Extension Division, Department of Agriculture Marketing & Cooperatives, and private enterprise representatives have all helped build this thesis with their time and interest.

Lastly, I would like to thank the rest of my family, especially my mother, for their constant, unconditional and loving support, and my father, late Dr. Sangay Wangchuk for providing me with the fortitude to continue at times when motivation was hard to come by. And my deepest gratitude to my friends, Marjukka Mähönen, Susanna Mähönen and Allu, without whom, this thesis would not have been possible.

Glossary of Bhutanese Terms

Chathrim	Act
Chiwog	Administrative division formed by a village or group of villages
Desho	Traditional paper
Gewog	Administrative division formed by a group of Chiwogs
Gup	Head of Gewog
Lhotsampa	Local dialect in Southern Bhutan
Poe	Traditional Incense
Sathram	Land title document
Thizin	Chairperson
Tseri	Shifting cultivation
Tsamdo	Pastureland
Tshangla	Local dialect in Eastern Bhutan
Tshogpa	Representative of Chiwog

List of Abbreviations

BAFRA	Bhutan Agriculture and Food Regulatory Authority
DAMC	Department of Agriculture Marketing & Cooperatives
DoFPS	Department of Forests & Park Services
DoT	Department of Trade
EDCU	Enterprise Development Coordination Unit
FNCRR	Forest & Nature Conservation Rules & Regulations
MoAF	Ministry of Agriculture & Forests
MoEA	Ministry of Economic Affairs
MoHCA	Ministry of Home & Cultural Affairs
MSPCL	Menjong Sorig Pharmaceuticals Corporation Limited
NWFP	Non-Wood Forest Products
RGoB	Royal Government of Bhutan
SFED	Social Forestry & Extension Division
SFS	Social Forestry Section
PGD	Pema Gatshel Division

Abstract

Non-Wood Forest Products (NWFP) provide important support to the livelihoods of rural communities in Eastern Bhutan. With limited room to expand agriculture and fragmented, small land holdings, many farmers supplement their earnings by harvesting NWFPs from neighbouring forests and selling them to markets domestically or in India. However, due to a variety of factors, there is still room for improving the effectiveness of NWFPs. This study investigated the role of NWFPs in supporting the livelihoods of the members of community based NWFP groups in Pema Gatshel, a district in Eastern Bhutan and the various factors that impact the management and marketing of NWFPs. The study also explored the role of policy support surrounding the NWFPs in Bhutan by investigating positive and negative outcomes of policies. The data was collected through literature reviews and qualitative place-based research methods such as semi-structured interviews. The findings suggest that NWFPs make a positive though not very significant contribution to the livelihoods of rural communities in Pema Gatshel. Several factors determine NWFP management, both positively and adversely, and the study was able to identify a number of new factors. The forest policies surrounding NWFPs have come a long way in supporting communities but still suffer from a lack of coordination and there is room for improvement in implementation.

Keywords: *NWFP Groups, Livelihoods, Forest Policies, Pema Gatshel, Eastern Bhutan*

Kurzfassung

Nichtholz-Waldprodukte (NHWP) sind ein wichtiger Beitrag für die Lebensgrundlagen der ländlichen Gemeinden in Ost-Bhutan. Mit begrenztem Raum zur Ausweitung der Landwirtschaft und fragmentierten kleinen Landbesitzungen ergänzen viele Landwirte ihr Einkommen, indem sie NHWP aus benachbarten Wäldern ernten und sie auf Märkten im Inland oder in Indien verkaufen. Aufgrund einer Vielzahl von Faktoren gibt es jedoch noch Spielraum für die Stärkung dieser Rolle der NHWP. Diese Studie untersuchte den Beitrag von NHWP zum Lebensunterhalt von Mitgliedern von NHWP-Gruppen in Pema Gatshel, einem Distrikt in Ost-Bhutan, und die verschiedenen Faktoren, die sich auf Management und Marketing von NHWP auswirken. Die Studie untersuchte auch die Rolle der politischen Unterstützung rund um die NHWP in Bhutan und deren positiven und negativen Wirkungen. Die Daten wurden durch Literaturrecherchen und qualitative lokale Forschungsmethoden wie halbstrukturierte Interviews erhoben. Die Ergebnisse weisen auf einen positiven, wenn auch nicht allzu bedeutenden Beitrag der NHWP zum Lebensunterhalt der ländlichen Gemeinden in Pema Gatshel hin. Mehrere positive und negative Faktoren bestimmen das NHWP-Management, wobei diese Studie eine Reihe neuer Faktoren identifizieren konnte. Die Forstpolitik rund um die NHWP zur Unterstützung der Bevölkerung hat eine lange Geschichte, leidet aber immer noch unter einem Mangel an Koordination und es gibt Raum für Verbesserungen bei der Politikimplementierung.

Schlüsselbegriffe: NHWP-Gruppen, Lebensgrundlagen, Forstpolitik, Pema Gatshel, Ost-Bhutan

Table of Contents

Affidavit.....	3
Acknowledgements.....	4
Glossary of Bhutanese Terms	5
List of Abbreviations	6
Abstract.....	7
Kurzfassung	8
Table of Figures.....	11
1. Introduction	1
1.1 NWFPs of Bhutan	1
1.2 NWFPs and Contribution to Livelihoods	2
1.3 Non-Wood Forest Product Management Groups.....	3
1.4 The Actors in the NWFP programme in Bhutan.....	4
1.5 Marketing of Non-Wood Forest Products	5
1.6 Identified Challenges in the NWFP Programme	6
1.7 Policies Surrounding NWFPs in Bhutan	7
1.8 Objectives and Research Questions.....	8
2. Methodology.....	8
2.1 Analysis Approach	8
2.2 Study area	9
2.3 Methodology.....	11
3. Results	13
3.1 How do NWFPs Impact Livelihoods	14
3.1.1 What are the different NWFPs harvested?.....	14
3.1.2 Income Contribution to Livelihoods.....	15
3.2 Factors Impacting NWFP Management and Marketing	16
3.2.1 Access to NWFP Resources	16
3.2.2 Marketing.....	18
3.2.3 NWFP Group Membership.....	21
3.2.4 Processing	23
3.2.5 Marriage and Children	24
3.2.6 Gender	25
3.2.7 Education	26
3.2.8 Presence of Local leaders.....	27
3.2.9 Climate Change	27

3.2.10 Roads and Transport	28
3.3 The Roles of Policies in NWFP management	29
3.3.1 Policy makers	29
3.3.2 Policy Implementers	35
3.3.3 Private Enterprise.....	39
4. Discussion.....	43
4.1 Impact of NWFPs on the Livelihoods of Rural Communities	43
4.2 Factors that Impact NWFP harvest	44
4.2.1 Access to Resources	46
4.2.1.1 Resource Availability	46
4.2.1.2 Harvesting Practices.....	47
4.2.2 Marketing.....	47
4.2.3 Marriage, Children and Gender	49
4.2.4 Education	50
4.2.5 Presence of Local leaders in NWFP management	50
4.2.5 Climate Change	51
4.2.6 Roads and Transport	51
4.2.7 Processing	52
4.3 Policy Roles	52
4.4 Limitations of the Research	54
5. Conclusions and Recommendations.....	54
6. References	56
7. Appendix	59
7.1 Questionnaires.....	59
7.2 Picture Bank:	70

Table of Figures

Figure 1. Earnings from the sale of NWFPs over the years excluding sales from cordyceps (SFED, 2019).....	2
Figure 2. Distribution of NWFP management and marketing groups in Bhutan	3
Figure 3. Number of NWFP management and marketing groups in different Dzongkhags of Bhutan	4
Figure 4. Timeline of NWFP Policy development in Bhutan (SFED, 2019)	7
Figure 5. Distribution of Languages used in Interviews by NWFP group members.....	12
Figure 6. Distribution of Respondents and corresponding sector	13
Figure 7. Coding results from interview transcripts	14
Figure 8. Distribution of gender among respondents from NWFP groups.....	25
Figure 9. Pema Gatshel Division Organogram (dofps.gov.bt, 2022).....	36
Figure 10. Roadblocks during data collection (Wangchuk, 2022)	70
Figure 11. Clearing roadblocks (Wangchuk, 2022).....	70
Figure 12. Face to face interviews with NWFP group members (Wangchuk, 2022)	71
Figure 13. Telephonic interview with NWFP group members (Wangchuk, 2022)	71
Figure 14. Attempts to cultivate Thoksampa on Private land in Shumar	71

1. Introduction

1.1 NWFPs of Bhutan

The term 'Non-Timber Forest Products' (NTFPs) encompasses all biological materials other than timber, which are extracted from forests for human use (De Beer and McDermott, 1996). It is a slightly confusing term as NTFPs are defined by what it is not (R.P. and E., 2000). While NTFPs are recognized as an umbrella term by the FAO (FAO, 2000), it differs from the term 'Non-Wood Forest Products' (NWFPs), where the use of all wood is excluded as opposed to the NTFP definitions stance of excluding only wood used as timber (FAO, 2001). The (FAO, 1999) defines non-wood forest products (NWFPs) as of biological origin other than wood derived from forests, other wooded land, and trees outside forests. For the purpose of this study, I shall utilize the FAO definition, as it is more suitable in the Bhutanese context.

Although poverty rates have improved in Bhutan over the years, there is still a higher distribution especially in eastern and southern regions of Bhutan (NSB, 2017). As a result of the mountainous terrains, much of the forest lands remain undeveloped (Price et al., 2011). To supplement their revenue streams, rural communities rely on the harvest and sale of Non-Wood Forest Products. However, due to several impeding factors such as the lack of knowledge or financing, most NWFP resources that are harvested are sold as raw materials and undergo very little to no processing (SFED, 2020). The farmers who primarily harvest these NWFPs also lack in general the means to properly market their yields and must rely on middlemen to make up for it. These factors hinder the potential earnings for farmers and as a result, these rural households find it difficult to sustain their interest in harvesting NWFP resources.

The cottage industries associated with NWFP use in Bhutan include bamboo and cane weaving, traditional paper, incense, essential oils, soaps, and herbal teas manufacture. Although these businesses have experienced somewhat steady success over the years, the expansion into creating new finished products has been slow. NWFP value chain studies in the past have investigated high potential NWFPs that have displayed a good potential for earning, therefore, there is a need to understand the impacts of lesser favoured or underutilized species. The impacts of policies on the use of NWFPs must also be considered for study; what positive and negative impacts can we discover the policies have had. There is

also a lack of data on the value and potential of NWFPs, and the lack of market research, information systems and commercial know-how (Gurung, 2017).

1.2 NWFPs and Contribution to Livelihoods

According to value chain studies (SFED, 2020) performed by the Department of Forests & Park Services and marketing data on quantities of NWFPs sold yearly in comparison to price per kg, the NWFPs enterprises in Bhutan with the highest potential for earning are *Cordyceps sinensis*, *Tricholoma Matsutake*, *Paris polyphylla*, traditional paper making, medicinal and aromatic plants and lemon grass oil production.

Through the recent years, NWFPs have been contributing steadily to rural livelihoods, though at a fluctuating manner (Figure. 1). In the year 2018, farmers in Bhutan sold NWFPs worth Nu. 11,983,270 (excluding the sale of cordyceps) which when compared to 2016 is much lower when Nu. 21,461,743 was earned. It is important to note however, that the values of NWFPs vary greatly depending on the species. Moreover, the availability of high value NWFPs are limited to certain geographical locations and microclimatic conditions. Thus, the need to explore the effectiveness of NWFPs marketing with NWFPs of comparatively lower value.

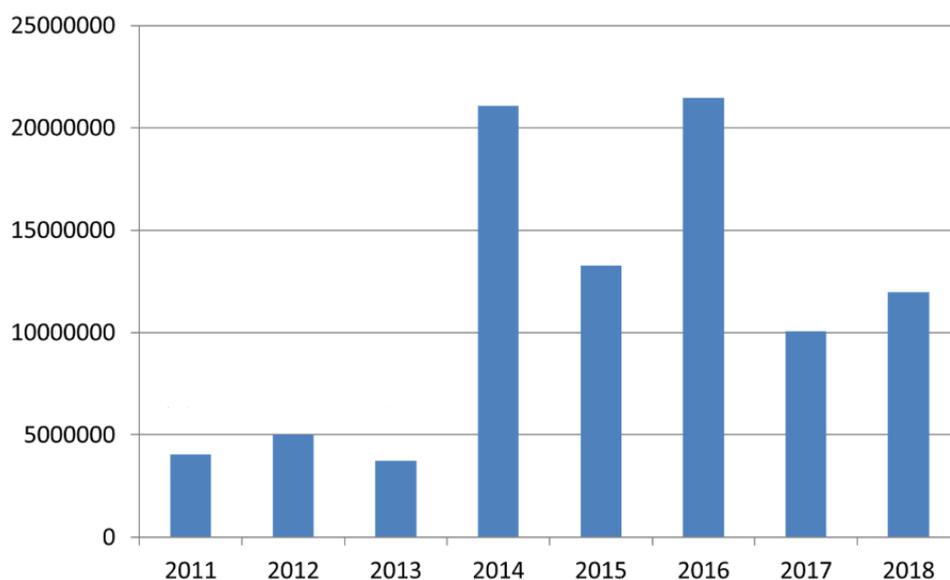


Figure 1. Earnings from the sale of NWFPs over the years excluding sales from cordyceps (SFED, 2019)

1.3 Non-Wood Forest Product Management Groups

Non-Wood Forest Products in Bhutan are harvested commercially through *NWFP Management and Marketing Groups*, also commonly known as *NWFP groups* and in Community Forests (DoFPS, 2017).

“135. The local community group shall be given priority to manage and harvest NWFPs. In the event, the local community group are not interested, individual shall be considered.

139. Any area of State Reserved Forests suitable for control and management by NWFP Management Group may be designated as NWFP Management Unit, if it fulfils the criteria and principles set forth under Rule 137 of this Rules”

These groups are formed through a participatory system and each group has their own management plan which functions for a period of 5 or 10 years depending on the type of management area, after which it is subject to revision or is discontinued. The groups elect 3 executive members for their operation: the chairperson, secretary, and accountant. There are close to 160 *NWFP Management and Marketing groups* in Bhutan, with most of them operational in Eastern Bhutan (Figures 2 and 3). The most common NWFPs species include *Piper longum*, *Thysanolaena latifolia*, *Pouzolzia sanguinea*, *Plectocomia himalayana*, *Rubia cordifolia*, *Tricholoma matsutake*, *Paris polyphylla*, to name a few. In 2018, the groups of Pema Gatshel Dzongkhag earned an average of Nu. 36,000 per group through NWFP sales with little to no processing.

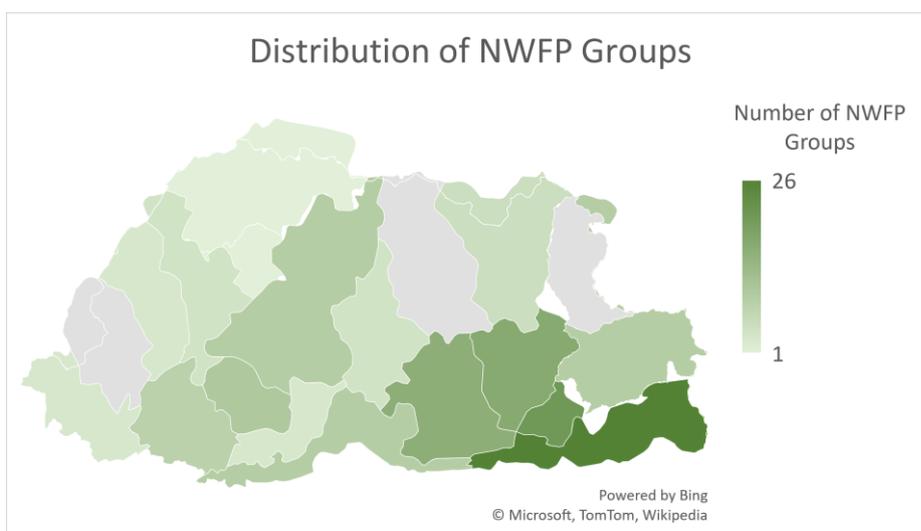


Figure 2. Distribution of NWFP management and marketing groups in Bhutan

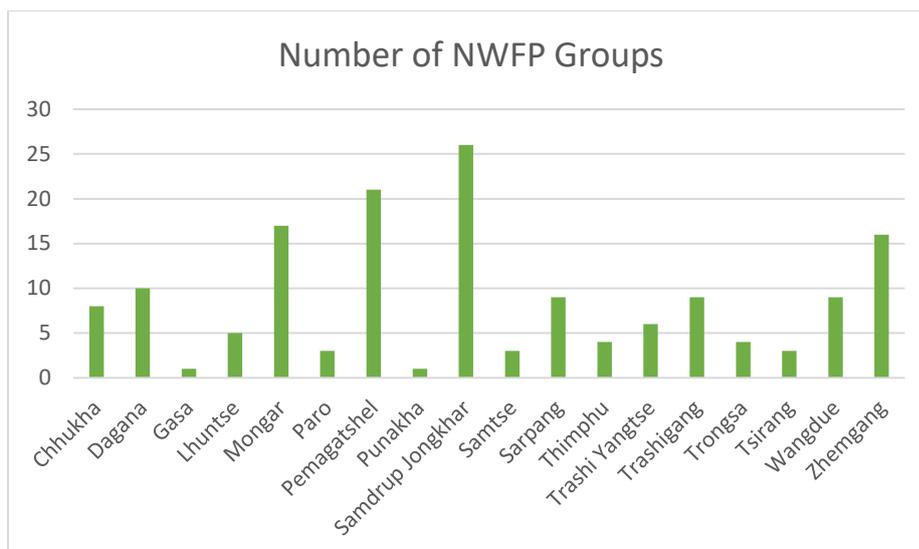


Figure 3. Number of NWFP management and marketing groups in different Dzongkhags of Bhutan

1.4 The Actors in the NWFP programme in Bhutan

The primary beneficiaries of the NWFP programme in Bhutan are the rural communities who trade these commodities for supporting their livelihoods. As most NWFP groups are found in the Eastern and Southern regions of Bhutan (SFED, 2020), it is important to understand the relation with poverty as these regions are found to have higher poverty rates as compared to the rest of Bhutan (NSB, 2017). The Department of Forests & Park Services (DoFPS), which oversees the social forestry programme, is the branch of the Ministry of Agriculture and Forests directly responsible for the NWFP programme and oversees the distribution of wild resources to interested parties. The Department of Agriculture Marketing & Cooperatives (DAMC) is responsible for supporting the marketing of harvested NWFPs.

The Department of Trade under the Ministry of Economic Affairs has funded various projects over the years that focus on improving livelihoods through the management of NWFPs. The Agency for the Promotion of Indigenous Crafts funds bamboo and cane weaving businesses in Eastern regions. The National Institute for Traditional Medicine and the Menjong Sorig Pharmaceuticals Limited company source much of their raw materials from wild resources with the help of farmers and have also set up schemes to provide trainings around sustainable harvesting. Other stakeholders are also involved in NWFPs in one way or another but share smaller roles and are only involved in a smaller capacity. Table 1 summarizes the stakeholders involved in NWFP management in Bhutan.

Agency	Mandates
Department of Forests & Park Services	Responsible for natural resource management and sustainable harvesting
Department of Agriculture Marketing & Cooperatives	Responsible for supporting Marketing of NWFPs
Department of Trade	Provides various licenses for enterprises
BAFRA	Issues Quarantine Certificates (Phyto-Sanitary) for export of NWFPs
MSPCL	Manufactures traditional medicine for indigenous public health services as well as NWFP-based commercial products
Various Projects	Provide funding support for rural livelihood programs
DCSI	Mandated to provide support to the NWFP-related enterprises such as policy and capacity building
The Department of Revenue and Customs (DRC)	Provides the customs services for export of NWFPs
NBC	Provides access and benefit sharing support to communities
Various NGOs	Support rural communities with livelihood improvement programs

Table 1. Stakeholders involved in NWFP Management and corresponding roles

1.5 Marketing of Non-Wood Forest Products

NWFP trade is complex and dynamic, influenced by a suite of interrelated factors (De Beer and McDermott, 1996). The marketing on non-wood forest products in Bhutan, at its current iteration still leaves a great room for improvement. Although certain policies and responsible agencies are in place for its effective distribution, in practice it is not as effective.

Certain royalty rates must be paid when collecting NWFPs commercially. These are small sums that are usually held at a 'per kg' basis and must be paid for NWFPs originating from the State Reserved Forest Lands. Due to the royalty rates on certain NWFPs not being updated since 2011, and most NWFPs without set permanent royalties, the government misses out on receiving meaningful earnings from commercial sale of NWFPs. In the opposite

side of the spectrum traders claim that the return on investment is too low due to high royalty rates for some NWFPs.

Due to the low literacy levels and lack of capital among NWFP collectors, there is a considerable dependence on traders and exporters (SFED, 2020). Middlemen who buy from various NWFP marketing groups and export to neighbouring countries, or in some instances, markets in Europe and farther reaches of Asia. This presents a problem where due to there being only a handful of traders specialized in certain NWFPs, and desperate farmers trying to find avenues to sell their harvests, the middlemen can vastly under pay to raise their profits. Due to a lack of value addition of the products, collectors also resort to selling raw materials instead of finished products, thus lowering their returns even more. Even in the existing forestry guidelines concerning the movement and export of NWFPs, a large emphasis has been placed on exporters due to their abundant role in the value chain.

The NWFP based enterprises in Bhutan also work in isolation from one another and make their own arrangements, formal and informal for sourcing raw materials (SFED, 2020), making it difficult to arrange support measures and building collaboration between private enterprise and communities.

1.6 Identified Challenges in the NWFP Programme

The non-wood forest product programme in Bhutan has faced various impeding factors over its development. According to the representatives of the Department of Forests and Park Services (Cheki, 2017), the lack of technology, economic and managerial skills, capital for investment for value addition and irregular supply and demand has been hampering what is otherwise a beneficial programme.

Due to the poor infrastructure in non-wood forest products, farmers and interested entrepreneurs alike face great difficulty in creating finished products that still find a market within Bhutan when imported from neighbouring countries. The cost of transportation is also high forcing NWFP collectors who are often farmers who have taken this as a part time undertaking, to rely on people who specialise in its transport but provide a much lesser share of the benefits.

When observing the competition with the foreign markets, i.e., China and India and to some degree, Nepal other issues can be identified which has hampered the realisation of the

potential of Bhutanese non-wood forest products. These include the ways small and medium sized enterprises are set up, lack of quality control, grading, etc. (Cheki, 2017).

Entrepreneurship culture in NWFP-related enterprise in Bhutan is underdeveloped (SFED, 2020). The younger generation of unemployed but creative individuals, do not prefer self-employment in businesses and poor social recognition for entrepreneurs dampens the entrepreneurship interests of the youths. This is elevated by the fact that the elderly involved in the NWFP business lack tradership skills and mindset. The forest regulations that deal with the trade of NWFPs in Bhutan is also not in synergy with the international regulations such as CITES.

1.7 Policies Surrounding NWFPs in Bhutan

Policies within the Department of Forests & Park Services concerning NWFPs have gone through various iterations over the decades (Figure 4). With a very strict emphasis on conservation, commercial harvest of NWFPs was limited until 2002 when the Community-based Natural Resource Management (CBNRM) framework was developed which legitimized rural communities' ability to reap benefits from their nearby natural resources (MoAF, 2011). Another significant milestone came in the 10th Five Year Plan (2008-2013) with the theme "Poverty Reduction" where the commercialization of NWFPs was identified as a major program. During this time the NWFP strategy and Interim framework would be developed, guiding the process of sustainable harvest and marketing. In 2008 the national strategy for the development of NWFPs was formed as a roadmap and to guide the way for NWFP development for the coming 10 years and coincided with the terms of the national 10th and 11th Five Year Plans.

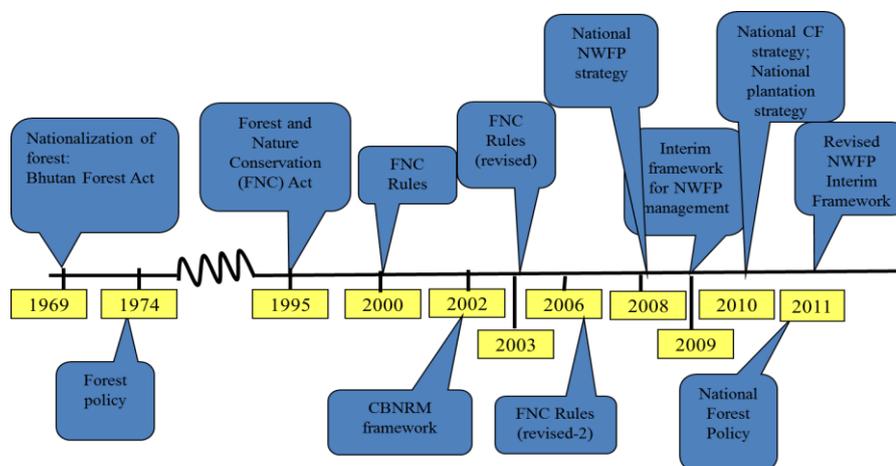


Figure 4. Timeline of NWFP Policy development in Bhutan (SFED, 2019)

The 'National Forest Policy of Bhutan' in 2011 further developed NWFPs importance in creating a sustainable economy and targeting rural livelihoods (DoFPS, 2011). It dedicates a section in the 'Forest Use and Priorities' chapter to Non-Wood Forest Products to provide broad guidance for Bhutan's NWFP management approach.

1.8 Objectives and Research Questions

The objectives of the thesis are the following:

- To assess the role of NWFPs on contributing to sustainable rural livelihoods.
- To identify the factors that impact the use of NWFPs in Bhutan.
- To evaluate the role of policy instruments in bringing about improvement in rural livelihoods.

- *The Research Questions for the thesis are:* How do Non-Wood Forest Products impact the livelihoods of rural people?
- What are the factors that impact the harvesting and marketing of NWFPs for livelihoods?
- In what ways do policies influence the harvest and sale of Non-Wood Forest Products?

2. Methodology

2.1 Analysis Approach

Several livelihood studies have been performed in Bhutan in recent years, but rarely from a forestry perspective. The literature on forest resources in community-based forest management settings focus primarily on timber resources. A study (Rahut, Behera and Ali, 2016) on whether forest resources help increase rural household income in Bhutan, takes a broad look into the impacts of non-wood forest products to household income in forest resource users of rural Bhutan. The study's findings use common household characteristics such as age, gender, size of households, etc. in its model to explain decision making in collecting forest resources to sustain their livelihoods. There is need to investigate other factors that affect NWFPs and decision making which occur in the process of harvest, processing, and marketing of NWFPs.

The studies on forest policies of Bhutan have, akin to livelihood studies, also focused heavily on timber resources and community forestry. The study (Moktan, Norbu and Choden, 2016) 'Community Forests Contribution to Household Income', identifies that to reduce income inequality, income diversification activities and market accessibility need to be targeted in rural households. This study, however, only looks at mushrooms as the NWFP commodity for income generation due to the areas of study being in Western Bhutan.

The study (Namgyel, 2005) 'Forest Policy and Income Opportunities from NTFP Commercialisation in Bhutan' takes an in depth look at the policies surrounding the NWFP programme at the time. The study analyses the policies of the time and recognises that although NWFPs have great potential, the focus is still on conservation and forest regulations are control oriented. As this study was performed before the development of major recent policies for NWFPs, a newer perspective would be necessary in determining the effects policies have on the harvesting and marketing aspects. In this study, I hope to highlight broader effects of current NWFP policies in Bhutan.

2.2 Study area

Bhutan is a small, landlocked nation nestled in the Himalayas with China to the north and India to her south. While the use of NWFPs for livelihoods has been recorded in most regions of Bhutan, for this study, I have focused on the Eastern region, where community groups are regarded more active and poverty is generally greater, therefore increasing the importance of NWFPs use (NSB, 2017)

The Dzongkhag of Pema Gatshel is found in the Eastern part of Bhutan with 11 sub-districts or Gewogs and a population of close to 25000 people within 4400 households. The elevation ranges from 1000 to 3500 meters above sea level and is heavily forested at about 88 % under vegetation. Within the Dzongkhag, I would like to focus on the NWFP groups found within the Gewogs of Nanong, Dungmin and Zobel.

Pema Gatshel provided a unique opportunity to perform a livelihood study in Bhutan. It is a Dzongkhag with a high poverty rate but at the same time, the second highest number of active NWFP management and marketing Groups. These communities have a long history of using their locally found NWFPs that they still pursue till this day. These groups pursue these ventures despite a lack of high income earning NWFPs like cordyceps and matsutake mushrooms. The concentration of groups with active participation in common pool resource

management coupled with low income and living conditions makes this a very compelling area to perform a livelihood assessment and carry out a policy analysis.

The primary NWFPs traded in the study area are *Pouzolzia sanguinea* locally called Yongiba and *Rubia cordifolia* also locally known as Laniro (SFED, 2020). These NWFPs are harvested by the NWFP management and marketing groups according to sustainable harvesting principles set in the Interim Framework for the Management and Marketing of NWFPs 2011. Laniro was traditionally used in Bhutan for colouring fabrics and wooden floors, and in ceremonies to colour eggs (MoAF, 2016). Yongiba is primarily used in Bhutan as a binding agent for traditional, Buddhist incense sticks. The following harvesting prescriptions have been described in the framework:

Scientific Name	Local Names	Harvesting Guidelines
<i>Pouzolzia sanguinea</i>	Chibley (Lhotsampa) Yongiba Yangziba Yongeebu (Tshangla)	Cut the plant at 10 cm above the ground level (the left stump will coppice in the following growing season). Do not damage the remaining young stands/ seedlings/ saplings Felling of surrounding trees to ease harvesting is prohibited. Leave at least 10% of the plants to allow natural regeneration. Harvesting of roots is strictly prohibited for ecological reasons
<i>Rubia cordifolia</i>	Tsoy (Dzongkha) Majito (Lhotsampa) Laniro (Tshangla)	Use sharp scissors for the harvesting of the upper part of the plant. Cut the plant at 5 cm above ground level. Leave at least 10% of the plants without collecting or harvesting any raw materials from them (these plants shall act as seed plants for natural regeneration). Do not collect roots. Do not uproot entire plants

Table 2. Harvesting guidelines of Yongiba and Laniro according to the Interim Framework for the Management and Marketing of NWFPs 2011

2.3 Methodology

The study follows a 'Case-study' approach. A case study is the exploration of 'a bounded system' which can be defined in terms of time and place (e.g., an event, an activity, individuals, or groups of people) over time and through detailed, in-depth data collection involving multiple sources of information that are rich in context (Creswell, 2012). (Stoecker, 1991) differentiated intensive and extensive case studies where in the former, the aim is at understanding the case from the inside by providing a thick, holistic, and contextualized description and interpretation. Extensive case studies on the other hand aims at advancing or generating theory by comparing several cases to achieve generalization. For the purposes of this study, I have applied an intensive study where I focus on *Pouzolzia sanguinea*, also known as 'Yongiba', and *Rubia cordifolia*, known as 'Laniro', in the region of Pema Gatshel as the primary commodities for the study.

The interview guidelines were developed through extensive literature reviews of studies on livelihoods of rural communities, non-wood forest products and forest policies in Bhutan. Qualitative methods such as semi-structured interviews, individual discussions and key individual interactions were employed.

Three different questionnaires were developed. The first one on Livelihoods was employed on NWFP Group members of Pema Gatshel. The second, for Private Enterprises was used in interviewing Incense Manufacturing Units in Pema Gatshel. The third, Policy Implementers, was used in interviewing policy makers and implementers in the forestry and marketing departments. A face validity was obtained from a panel of five experts from the Ministry of Agriculture and Forests, Bhutan. This was done in order to test for relevance of questionnaires in the context of Bhutan.

The agencies identified for these interviews are:

- I. Social Forestry & Extension Division, Department of Forests & Park Services
- II. Department of Agriculture Marketing & Cooperatives
- III. Pema Gatshel Forestry Division, Department of Forests & Park Services
- IV. Local Incense manufacturing companies

The questionnaire on policy effects on rural communities asks participants on the effects of policy instruments in Bhutan. Policy instruments are those techniques of the government that, one way or another, involve the utilization of state authority or its conscious limitation (Howlett, 2005). Support in different forms, such as subsidizing transport, assisting marketing, providing trainings, providing support in getting the rural communities organized, creating cooperatives,

etc are various identified methods for supporting NWFP development (Adam, Pretzsch and Pettenella, 2013). The policy instruments in the context of this study have been arranged as the following:

1. Regulatory: FNCRR 2017, Interim Framework for Management & Marketing of NWFPs 2011
2. Economic: Subsidies, Tax breaks, soft loans, direct payments
3. Informational: Trainings, Advocacy campaigns, Online databases

The essential citations are presented in the Results chapter. For maintaining anonymity, only the initials of the interviewees, and their Gewog of residence are given along with the citations.

Through a purposive sampling method, the households selected from the areas above were members of *Non-Wood Forest Product Management and Marketing groups* in the Gewogs of Dungmin, Khar, Nanong, Shumar, Yurung and Zobel. Interviewees from these six Gewogs from the eleven Gewogs of Pema Gatshel were interviewed either in person or through telephonic methods (Figure 5).

The language used for the interviews of community members and incense manufacturing unit was in Tshangla/ Sharchop or Dzongkha and required translation into English for transcription. The interviews with the forestry division, social forestry and marketing department were held in Dzongkha and English.

Language Used in Interview

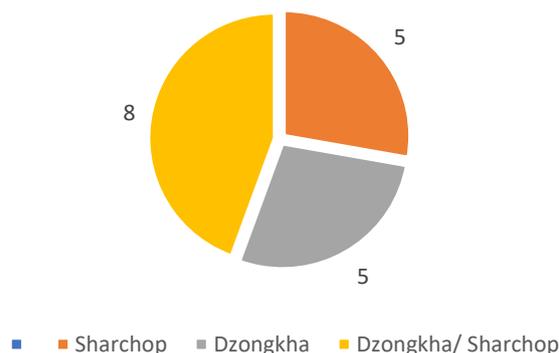


Figure 5. Distribution of languages used in interviews by NWFP group members

Coding or 'labelling' was done with the transcripts to extract codes and determine patterns from the texts as systematic coding is an essential part of traditional content analysis (Eriksson and Kovalainen, 2008). Deductive coding was used in cases of identified factors based on common decision-making characteristics, e.g., gender, education, etc. An inductive coding

method gave rise to new codes and was followed by creation of themes to determine new factors. To facilitate the coding process, the software ATLAS.ti (™) was used.

A qualitative thematic analysis method was used for analysing emerging themes that were organized into different categories that determine the contribution of NWFPs to rural livelihoods, the factors that impact NWFP management and marketing and role of policy instruments in NWFPs. (Eriksson and Kovalainen, 2008) define thematic analysis as “A form of analysis which has the theme or category as its unit of analysis, and which looks across data from many different sources to identify themes (it is similar in this way to content analysis)”.

3. Results

The participants for this study were to answer the research questions of how NWFPs impacted livelihoods of the communities of Pema Gatshel: What factors impact the harvest and marketing of these NWFPs and what role do policies and stakeholders play in these scenarios? 18 NWFP Management and Marketing Group Members were interviewed to explore livelihood effects of NWFPs and the factors that determine NWFP use. Two Officials from the forestry departments headquarters with one Officer from the Department of Agriculture and Marketing Cooperatives answered questions suited for policy makers and three Forest Rangers as implementers of forestry policies. one representative of the Private Sector, an incense manufacturing unit owner was also interviewed.

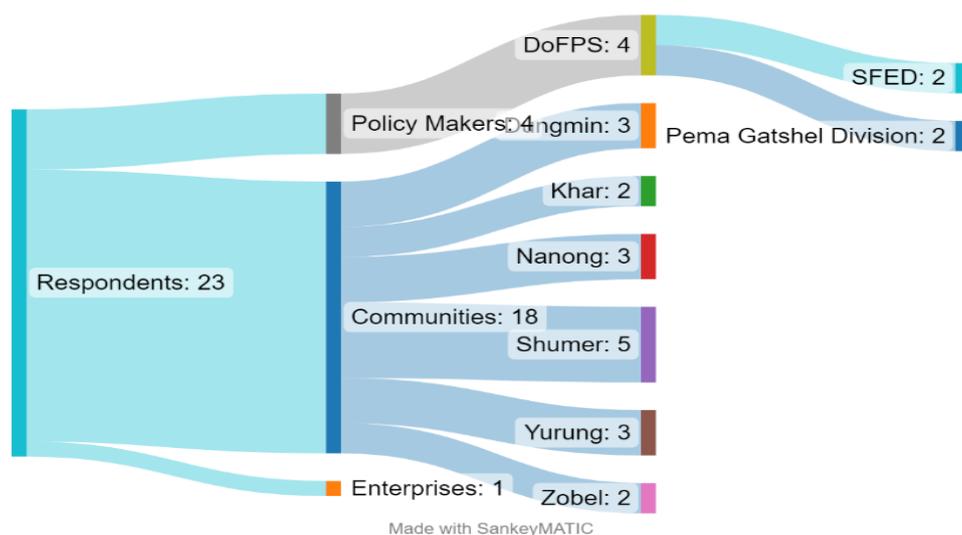


Figure 6. Distribution of Respondents and corresponding sector

The coding of the interviews resulted in 762 codes. These codes were grouped into the categories: 'Effect on Livelihoods', 'Factors for NWFP Use' and 'Policy Effects'. The thematic analysis of these codes resulted in 16 themes and 5 sub themes (Figure 7).

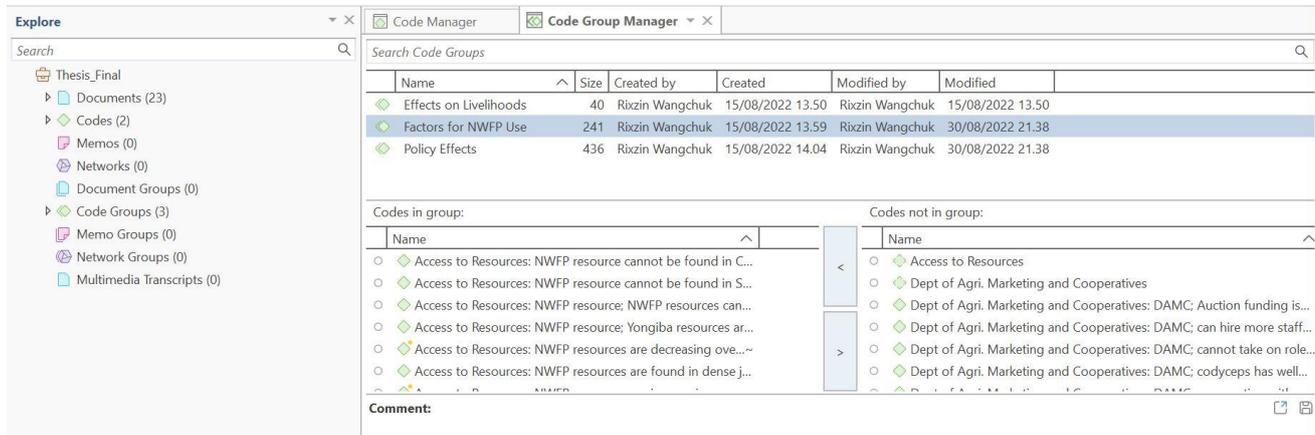


Figure 7. Coding results from interview transcripts

3.1 How do NWFPs Impact Livelihoods

3.1.1 What are the different NWFPs harvested?

The households interviewed relied on different sources of income to provide for their livelihoods. NWFPs were a versatile way to ensure yearly income for these families and among these, the interviewed households indicated that *Pouzolzia* and *Rubia* are the most important ones. These NWFPs are all collected for commercial purposes and do not see much if any domestic use. The only NWFPs collected by the communities for consumption are nakey (*Diplazium spp.*), patsha (*Plectocomia himalayana*) and damroo (*Elatostema spp.*) and are as such unregulated. The formation of the NWFP management and marketing group was the initiation for the communities into starting the collection of these previously unknown resources, *Pouzolzia* and *Rubia*.

I collected before for Thar zo (cane weaving). Now I am a member of the NWFP group as well as Tshogpa of the Gewog. I collect Yongiba and Laniro. It has been around seven years. We mainly do it for trade purpose as it gives us extra income. (SW, Yurung)

NWFP such as fern and mushrooms are also collected for domestic only and not for trade. (NR, Zobel)

3.1.2 Income Contribution to Livelihoods

The households indicated that they earned from the sale of Yongiba and Laniro, amounts as low as Nu. 10,000 to Nu. 40,000 per year. However not all groups receive the same amounts for the sale of these NWFPs due to varying availability of resources. In terms of estimated contribution to yearly income, the contributed varied slightly among the respondents; with estimates as low as 20% in Nanong to as high as 80% for a household's yearly income in Yurung. Interestingly, 5 households also mentioned the practice of harvesting and selling Thoksampa (*Paris polyphylla*) in the past but had since stopped because of the depletion of these resources.

I feel that it contributes a lot to my income. I would say that it contributes around 80% of my household income. (SW, Yurung)

We used to collect Thoksampa. (DZ, Shumer)

The sale of NWFPs like Laniro and Yongiba by these collectors contributed to the households in different ways. Some households indicated that they could purchase household items through their earnings. Others indicated that the profits helped them pay the expenses for their children's upbringing for the year which includes food and studies. When asked to compare on the benefits of the commodities, Pouzolzia and Rubia, the group members indicated that Laniro earns the households more income in a year than Yongiba.

Yes, it helps to buy household items such as rice cookers and radio. Yes, we make little profit. (W, Dungmin)

Comparatively, Yongiba doesn't earn much for me as I don't collect much of it. For me it is Laniro that is a better earner. (TL, Nanong)

In terms of quantities of Yongiba and Laniro harvested in a year, the amount harvested varied within the communities. According to the data provided by the Pema Gatsel Division on

harvested NWFPs in 2021, the communities harvested close to 450kg of Yongiba and 400 kg of Rubia on average except for Khar Gewog which harvested close to 10000 kgs of Rubia

3.2 Factors Impacting NWFP Management and Marketing

This theme helps us understand the various factors that impact NWFP harvest and sale in the community groups of Pema Gatshel. Through the priori coding and thematic analysis of the interviews, we have distinguished the following factors and their effects on how NWFPs are harvested, what steps are taken afterwards, how is marketing done, and what improvements can be made to the process/ value chain.

3.2.1 Access to NWFP Resources

Harvesting NWFPs is a challenging task which involves not only collecting the resource but traversing the forests to reach them. In this theme, we explore the challenges and nuances of accessing these resources and how the resources have changed over the years.

The respondents overwhelmingly indicate that the wild resources of Yongiba and Laniro have been decreasing over the years. Thoksampa (*Paris polyphylla*), which is a high value NWFP found in many districts of Eastern Bhutan, has all but vanished from their immediate area. In the Gewogs of Khar and Shumar, harvest of NWFPs has been suspended due to rapid depletion. The sole collector of *desho* (*Daphne bholua*) amongst the respondents has also halted collection for the resource for the time being. Some members in other communities are aware that halting the collection of NWFPs could benefit the group in the long run.

Yes. I used to collect a little previously but since I'm growing old, I have stopped. We are also not allowed to collect it for 5 years by the Tshogpa. Forest office reviewed the plans and gave trainings and recommended to halt for regeneration of the Yongiba and Laniro resources. (TW, Shumer)

These recommendations came from the forest officers who were consulted on the matter, who also recommended collecting NWFPs alternatively and not annually. In Yurung, the group has halted operations due to a dispute between the group's executive members.

Yongiba harvest is also difficult because it grows on steep areas. Because of the steepness of the growing area, a lot of times, the collectors must leave the resources unharvested to avoid the risk of falling. Laniro is regarded to be easier to harvest than Yongiba as it found more abundantly and grows on flatter areas. Having tools and equipment would benefit collectors greatly. The resources are also far from where they live and requires a lot of walking to reach. The harvest of Yongiba and Laniro is done in the winter, and the collectors go whenever possible within the growing season. This ranges from once a season up to five times.

The resources are quite far. If we go in the morning, we only get back by night. (TW, Shumer)

We need to go to steep areas, then pull down from the treetop. It's bigger in steeper areas. (TD, Shumer)

The reasons believed by the farmers, for decreasing quantities of NWFPs were varied. Most agree that this is because of the increase in collectors over the years. So far, the emphasis was on quantity and not quality and this along with the yearly allowance for harvesting has also depleted the areas. One household mentioned that this could be attributed to people not following proper sustainable harvesting practices taught to them. A few say that it is the increased wild animals in the areas that have led to NWFPs disappearing. The NWFP resources are also exclusively harvested from the wild because the members struggle with cultivating these resources due to a lack of capacity. Previous attempts to grow Yongiba on private land were met with less than favourable results since the stems were much smaller than the ones in the forests.

I feel we get less NWFPs now. Since we collect them every year, I feel it is declining in quantity. (UN, Khar)

Yes, Yongiba yields have decreased drastically as compared to before. We don't get much. It could be because of uprooting during collection. (NC, Dungmin)

When we try to grow it here near our house, the size is very small. (DZ, Shumer)

The members also had better sense of ownership in the past when they had *tsamdo* and *tseri* rights. Now with everything being SRF land, no one shares the responsibility. In this regard,

people would be more responsible to their surroundings if they had rights to leaf litter collection restored.

Before when public had rites to tseri and tsamdroland we used to take care of our own area.
(W, Dungmin)

According to the collectors, the harvesting of Yongiba and Laniro was done according to sustainable harvesting guidelines set by the forestry department and all interviewees were aware of the recommended harvested techniques. For Yongiba, the harvesters leave uncut, 10 cm from the ground, so that the resource may regenerate for the coming years. In case of Laniro, similar harvesting techniques of leaving 5 cm uncut was prescribed. Most of the interviewees were seasoned harvesters whose experience ranged from 7 to 12 years. In the recent years however, there was less collection as group members were not allowed to coordinate activities due to the pandemic.

Interestingly, almost half the collectors mention that they harvest NWFPs from their own private registered land and did not rely solely on state reserved forests, even though all groups have designated areas from which they can harvest for commercial purposes. The ones harvesting from only private lands are not allowed to harvest from areas belonging to other group members. A few of the members also practice shifting cultivation, which has been outlawed, and harvest their NWFPs on these tseri (shifting cultivation) lands.

We collect it from our own forest where we have Sathram. (TP, Shumer)

Harvesting is done by whoever is available at the time. Sometimes it is the respondent alone in some situations and in others, family members who are free. Collection is done by households individually but on rare occasions, as a group. Some members point out that experience makes a huge difference in the ability to harvest NWFPs.

3.2.2 Marketing

The marketing of harvested NWFPs is a crucial part of the value chain. Having the correct market information and receiving a fair price for selling NWFPs can make a huge difference in the impact of NWFPs to their livelihoods. In this theme we look at the marketing of NWFPs in the communities of Pema Gatsel, in regard to Yongiba and Laniro and further derive factors that affect marketing.

3.2.2.1 Price Setting

For most of the interviewed communities, the selling of NWFPs is organized by the executive members of the group, be it the chairperson, treasurer, or secretary. The rates per kilogram of NWFP, the date for selling, the logistical arrangements, etc. are set beforehand and the community members are informed after these decisions have been made.

The Thizin, he notes the amounts collected by everyone. Then informs us on the price. The price is set by the Thizin and the dealer. (ST, Nanong)

As such, the rates for NWFPs are not permanent and has to be renegotiated every year. The royalties paid for NWFPs are also discussed beforehand. In most communities, the royalties of Nu. 2 per kg for Yongiba and Nu. 16 per kg for Laniro are paid by the trader. The members recognize the effectiveness of selling through auctions instead of to one trader, however, this has been difficult to organize without the support of governmental agencies. In the past, a few of these communities, like those in Yurung were able to sell bamboo and cane resources through auctions. Due to the recent pandemic, there were disruptions to the trade when prices received for the NWFPs were reduced in conjunction with very few traders reaching out to the PG communities.

Yes, there would definitely be an advantage to us. it would help us get a better sum for our produce. for example, when selling potatoes in Samdrup Jongkhar, we get a much better price when auctioning them instead of selling directly to middlemen. in the same way I believe it would benefit Laniro and Yongiba as well. (TW, Nanong)

There are no places to collect. It is collected from forest only and due to covid we are not able to walk around so collection also reduced. And the buyers are also not able to collect on time due to pandemic. (W, Dungmin)

3.2.2.2 Role of Trader

Once the NWFPs have been harvested and the prices are finalized, the selected trader comes to their villages to buy the NWFPs, which has its advantages and drawbacks. Due to a lack of knowledge on the proper market channels outside Bhutan's borders, the communities of Pema

Gatshel struggle to sell their produce on their own. An experienced trader removes this barrier and can reliably find a desired market and take on the risks associated with it. Most of the households in Pema Gatshel also do not own any vehicles and have a difficult time reaching the markets. After the harvests, the group members come together to sell their produce at a designated time and location and sell their produce at the same rates. After which a small amount of the sales, usually about 5% is deposited into the NWFP group funds which can be used by the members in the future. The communities of Nganglam, which is in the Pema Gatshel Dzongkhag but falls under a different administrative jurisdiction has different traders. Only when these traders are unable to visit their areas, do they contact the local incense manufacturing unit.

We sell it as a group. The chairperson of the group coordinates the time. And the dealer arrives at the HHs house to collect and buy. (ST, Nanong)

Yes, if Jamtsho cannot take our collected Yongiba then the incense factory takes some. (TD, Shumer)

All communities that relied on external traders mentioned that they sold their produce exclusively to an individual. This person is a licensed trader of forest produce and has discouraged any other interested traders for trading in the area. The members know that selling their own produce would be more profitable, however this has proved difficult. Attempts to sell the produce themselves were thwarted in the past when this trader found out and threatened to report them to the authorities.

That (other dealers) would be nice, but I believe he does not allow other dealers to come here. (DZ, Shumer)

The respondents have indicated that a lack of market knowledge and not having a trade license are the reasons for not marketing their own produce. To add to this, there are also too many formalities associated with selling their harvests and a few have added that having an easier system to acquire permits would benefit them. The mentioned trader has also openly discouraged selling products via auction according to one member from Shumer. The prices received by the communities from this trader are also unsatisfactory. Only one member stated that they were satisfied with the current arrangements.

Yes, the dealer pays us very little, we can't sell it ourselves because we don't know where to sell. (ST, Nanong)

I am not satisfied with the prices, and I believe the prices should be better. (TL, Nanong)

3.2.2.3 External Support

From the interviewed community members, only one indicated that they have heard of the Department of Agriculture Marketing & Cooperatives, a governmental agency responsible for the marketing and promotion of renewable natural resources-based enterprises, and up to this point, none have received any training on product development or marketing their produce. Households in Shumer also mentioned that the forestry department has helped them in the past to sell their produce. I shall explain further the roles and involvement of the DAMC, their regional divisions as well as forestry department in the policies theme.

When asked about product development, the responses indicate that most individuals know the immediate use of Yongiba and to some extent of Laniro. However, all members say that they do not have the knowledge or capital to create finished products from their resources and that they could greatly benefit from having a production unit established locally and product development trainings to go with it.

They inform us on the products made from the NWFPs because we don't have the equipment (machines) for production, we cannot make anything. (TL, Nanong)

A member Shumer also recalls having sold Thoksampa illegally to an unnamed trader in neighbouring Samdrup Jongkhar in the past when these resources were still in the forest.

3.2.3 NWFP Group Membership

In this theme, we asked questions surrounding the Non-Wood Forest Product Management and Marketing Groups and associated benefits, why they joined these groups, suggestions for improvements, etc.

Being in the group has brought some benefits to NWFP management. Most respondents mention that the instance of illegal harvest no longer exists since the formation of the group as the management plans have strict guidelines and by-laws protecting the areas and the members. The few cases of illegal harvests are perpetrated by people from outside the groups.

There are no instances of illegal harvesting since we have made rules (by-laws), only the members have been collecting. (TW, Nanong)

The most common benefit for the interviewees were monetary gains, however a few of them mention of other types of benefits. This is mostly possible through collecting membership fees usually annually. Only 2 respondents mention that there are no additional benefits to being a group member. One member from Shumer reports that it is difficult to gain tangible benefits from being a group member, while another mentions that they feel more included in society because of working in a group.

We get loans from the group. One or two people even got loans to buy vehicles. (LN, Khar)

It is worth it because we the group helps us equally without differentiating between wealth. (ST, Nanong)

As for why they joined the group, most indicate that they joined to earn additional income while a few report that they succumbed to peer pressure into joining the NWFP group. Although this was not a common sentiment, 3 members are aware of the benefits of joining a community-based group.

I joined because there is chance to earn better income. I can use the earnings for my kids. (LN, Khar)

The executive members in the group, i.e., the chairperson, the secretary and treasurer were elected when forming their by-laws for the management plan. From the 18 interviewees, only one was an executive member (secretary) of their respective group. He feels that although there are no additional financial benefits to being an executive member, the experience he has received over the years is valuable.

No difference in terms of monetary benefits. But as a secretary we get opportunity to work around and gain experience conducting meetings. (UT, Dungmin)

While the members indicated positive effects of being in the group, 2 members, from Shumer and Dungmin mention that they don't understand how the funds deposited are utilized by their group. The executive member interviewed also said that their funds collected over the years is not utilized. The members of Dungmin and Shumer also speak of possible corruption within the groups, where the executive members and government staff are colluding with traders to set unfavourable prices. The member from Dungmin goes on to say that having an improved, transparent accounting system can benefit the group members greatly.

The 10 % amount deducted is explained to the group members during the meeting. Nu.100 per year is collected from the group members as maintenance fee. It's been around 6 years. Currently the fund collected is still with us as no group member availed for loan till date. (UT, Dungmin)

I feel even the secretary and chairperson take some share from the royalty collected from group. I feel there is corruption in the group administration. (W, Dungmin)

The group officials do not provide details about the accounts and the bookkeeping history to the group members. (W, Dungmin)

One from Dungmin reports that the public has no say in the management of these NWFPs, and that no matter their ideas or preferences, they must abide by what the higher ups in the govt tell them. One member also said that having direct financial support from the government would benefit them greatly.

3.2.4 Processing

In this theme, we explore how processing makes a difference to NWFP management and marketing. All interviewees from the NWFP groups indicate that the harvested Yongiba and Laniro were semi- processed, before selling them. This has become a standard practice in the region and the traders would only purchase their harvests if it has been processed and packaged.

For the communities in PG, whenever Yongiba is harvested, it is first pounded, which makes it easier to debark. The outer epidermis is cut into smaller, more manageable pieces and the rest is discarded. These are then dried and then packed to be sold on a kg basis. Laniro also sees basic processing like that of Yongiba, however, it is a simpler process. The harvest is simply cut into pieces, dried, and then packaged for selling.

We then pound the plant, debark them, throw away the inner part and dry the outer part. (TW, Nanong)

The process does not incur any additional costs as it is done by the harvesters and their family members themselves and no household hires additional personnel to carry out basic processing.

It is done by us in the family, we don't hire anyone from outside. (TW, Nanong)

Processing the materials ends at the basic level. When asked about more advanced processing and product development techniques, the response unanimously tell us that they lack the knowledge, skill and capital to further develop the harvested NWFPs into finished products of their own, which we shall discuss further in the upcoming topic.

The members of PG have learned about processing through alternative ways such as inquiring other group members, as no trainings or information was provided to them through government agencies and NGOs.

3.2.5 Marriage and Children

The views of marriage and having children and their effects on the management of NWFPs was varied. From the respondents, opinions were divided on whether marriage made any difference, especially when harvesting NWFPs. Those for the idea that marriage was a factor, argued that married couples can harvest more and can support each other more. Interestingly, all respondents who don't feel marriage is a factor were sole collectors from their households and don't rely on anyone else.

Yes, marriage makes difference as we can collect more if we are with partners. (UT, Khar)

Marriage makes a difference. Having a spouse allows us to go more frequently into the forests and collect more. (ST, Nanong)

In regard to children, and their role in NWFP harvesting and marketing, the 5 respondents mentioned that they involve their children in the harvesting of NWFPs, indicating that children can be beneficial to NWFP management. However, the responses from some interviewees view children as effecting NWFP management negatively. These households point out that having smaller children who need constant care, is detrimental to effectively harvesting Yongiba and Laniro.

Yes, I have a 16-year-old who helps in the holidays. (LN, Khar)

I had small kids before so I couldn't go to the forests so much in the past. I could get 40 kgs when I took my children with me. (DZ, Shumer)

3.2.6 Gender

This theme identifies the roles of men and women in NWFP management. NWFP harvest has been further categorized into traversing forests and collecting the resources. A few members felt that gender made a difference when it comes to collecting, NWFPs. Six members felt that men are better at traversing the forests and can get around easier compared to women. However, they also state that women in general are better in collecting the resources from the wild. Figure 8 shows the gender distribution of the interviewees from the NWFP management and marketing groups.

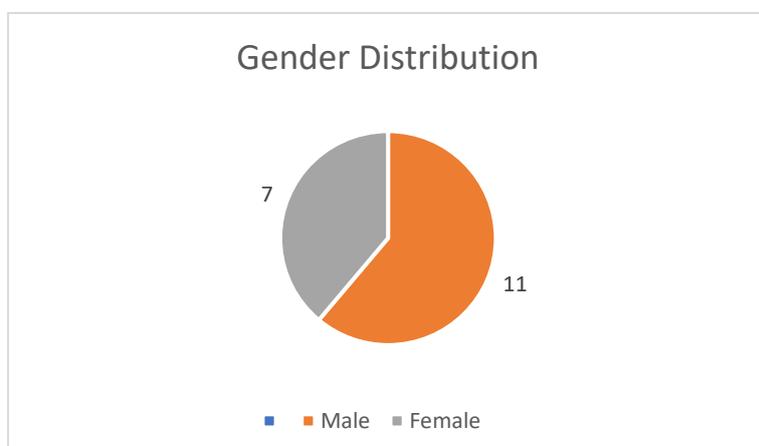


Figure 8. Distribution of gender among respondents from NWFP groups

Wild resources such as Yongiba are said to be found on difficult terrain, such as cliffs and steep hills. In these conditions, it is easier for men to collect these resources than women.

Yes definitely. Since I'm divorced, I cannot go into thick (big) forests. In households where there are men (husbands), they can go deep into the forests. (TL, Nanong)

My wife is better, because by nature they are detailed and even pick small plants, while males neglect small plants and go for only bigger plants. (SW, Yurung)

3.2.7 Education

Overall, the community members of Pema Gatshei who were interviewed were not formally educated or educated only till the lower secondary level and only a handful with non-formal education (NFE) background.

The views on the effects of education on NWFP management and market were divided. While less than half of the respondents believed that education and trainings make no significant differences, the ones who said that education does make an impact gave interesting revelations. 6 respondents indicated that having a higher level of education helps understand trainings as well as management plan and other policy documents better. As policy documents are written in English or Dzongkha, and the local dialect of the region is Tshangla/ Sharchop, only people with some level of formal education can read and understand these writings. One respondent even said that education allows for better understanding of the rules that are in place.

Interestingly, all the respondent's mentioning education was not important were themselves uneducated and answered in respect to harvesting only.

Education makes a difference because educated people understand more as they can read the management policies provided in English. (NR, Zobel)

No, education doesn't make much difference. Both educated and uneducated collect the same amount. (NC, Dungmin)

However, what is most interesting, is that a few respondents convey that education is in fact detrimental to harvesting NWFPs. Those that are more educated have a more difficult time, traversing the woods and harvesting NWFPs than their less educated neighbours.

No, in fact educated people would have an even more difficult time collecting NWFPs since they will have trouble travelling in the forest. (DZ, Shumer)

3.2.8 Presence of Local leaders

It was considered generally that having local leaders involved in non-wood forest product harvest and sale benefits the groups positively. These local leaders can provide information, can help with coordination official work, and even instil motivation. Some felt that local leaders have more authority and can help with the implementation of plans better.

Yes, the presence of local leaders in group as members make difference to the group. They contribute to the group. They look after the comfort of the group and the coordination process. (SW, Yurung)

From the interviewees, one respondent was a Tshogpa of a Gewog. His interview is interesting because he is one of the few respondents aware of the policies surrounding NWFPs in Pema Gatshel, of which I shall present in further detail in the chapters below.

Yes, we have a chathrim (rule) book, all members know about it. It was developed in consultation with the group members. It is in both English and Dzongkha. I am aware of the policies on harvesting NWFPs and sustainable management. (SW, Yurung)

3.2.9 Climate Change

In the theme of Climate Change, the participants were inquired on whether they felt climate change had occurred in Pema Gatshel or not. If climate change makes any difference to NWFPs resources. In terms of the perceptions towards climate change, most participants

believe that climate change has indeed occurred in their area. While there were quite a few that believed that climate change has no effect on the yields of non-wood forest products, others mention that climate change has led to the decrease in resources. They claim that rainfall and sunshine have become more erratic over the years, not to mention the increased intensity of rainfall. And, climate change leading to a higher, influx of animals into the resource areas.

Yes, there is definitely a change. For example, on the timing for rain and also, the sun is more erratic, and we can get unpredictable climate conditions. But I feel climate change does not have any effect on the quantities of Yongiba and Laniro over the years. (TW, Nanong)

In the past we used to get about 3 months of continuous rain but now it is erratic. (DZ, Shumer)

3.2.10 Roads and Transport

The respondents from the communities agree that roads make a difference in the management of NWFPs. Through improved roads connecting the villages to urban settlements, the NWFP groups have successfully marketed their harvested yields for over 10 years. Due to road connectivity, buyers can come door to door to sample and buy their products and in the current arrangement, the trader visit each village to negotiate prices and purchase directly from the communities. Having a road also lessens the time to reach their produce to the marketplace and not let their produce spoil on the way.

With roads, the community has a lot of advantages. When marketing, it used to take us 2 hours by horse before, or sometimes it was a one-day journey to reach anywhere. But now, we can travel to and fro in a single day. (TW, Nanong)

In regard to the harvest and sale of Laniro and Yongiba, the timing favours these NWFPs as they are harvested and sold in Winter and as such does not suffer from too many setbacks due to poor road conditions. We shall look at the harvest of NWFPs in more detail in the section 'Access to NWFP Resources'.

3.3 The Roles of Policies in NWFP management

3.3.1 Policy makers

In this theme, we explore the findings on how policies on NWFPs are formed, who forms them and why. The agencies interviewed as 'Policy makers' were the Social Forestry & Extension Division (SFED) of the forest department (DoFPS) and the Department of Agriculture Marketing & Cooperatives (DAMC).

3.3.1.1 Social Forestry and Extension Division

The Social Forestry and Extension Division (SFED) main role is to make policies related to social forestry activities, which include NWFPs. As stated earlier, the SFED oversees the formation of NWFP management & marketing groups across the country and sees themselves less and less involved in the implementation of these policies, which are taken up by field offices of the DoFPS such as territorial divisions and protected areas.

These policies focus on sustainable management of NWFPs marketing, and even domestication for developing enterprises. The program of non-wood forest products for the department of forests, is a new one and therefore in the short years of development, the SFED has had to take up multiple roles; that is from harvesting, product development to even marketing.

In order to receive funding for the program, the SFED relies not only on the Royal Government of Bhutan for support, but also on projects, such as from AFOCO, WWF and SNV. These fundings have been instrumental in developing policy frameworks and in times even for infrastructure development and product diversification in rural communities. In addition, the funding has even supported domesticating non-wood forest products, the formation of groups and resource assessments. In rare occasions projects also support rural community's directly with technical backstopping provided by foresters, such as through the Helvetas project.

For now, it is important to get our group support in terms of establishment so in that way donor and project support is very important. If we don't manage the resources in the wild and leave it for nature, there would be exploitation by a few individuals, so it is important that communities

work together in order for those resources to be sustainably managed and even in terms of how do we upscale those small-scale enterprises. (SP, SFED)

The members of SFED fully believed that the non-wood forest product program has been essential to livelihoods, especially those in Pema Gatshel. Not only to rural livelihoods but even in urban areas, a lot of people depend on NWFPs for nutrition, for example, in the weekend vegetable markets. Even people harvesting mushrooms earn a great deal annually. Non-wood forest products are also important for the ecology.

The SFED believes that the livelihoods of PG have been impacted because of the sustainable nature of NWFPs. The fact that there is a high variety in these areas help with the marketing situation. In Pema Gatshel, the SFED, in 2016, organized a buyer seller meeting between the communities and potential traders.

I believe it (NWFP programme) is very important for rural communities, especially those residing in various remote areas. (SP, SFED)

Another reason could be the high diversity of NWFPs found in Pema Gatshel, where there are at least 12 species that can be harvested by the same group. (TD, SFED)

For the immediate future, the SFED plans on creating a platform through which traders can communicate directly with harvesters. As of now, the SFED has also been responsible for marketing NWFPs and one of the policies to be reviewed is which NWFPs can be allowed to be sold in raw form, and which have to be processed before selling.

The basis for policy decision making in the SFED is through the drive of decentralization, which began in the late 80s and early 90s. The five-year plans eventually are focused into further detail in the annual performance agreements (APA) of the different offices. The SFED is deeply involved with the communities harvesting non-wood forest products since the 10th and 11th five-year plans. The SFED directly was involved in group formations, but slowly, as the years have progressed, the implementation has been handed over to field offices.

It is guided by the five-year plans, its themes and objectives. These are guided by the APA programme. If a particular activity is in the five-year plan policy, it can be incorporated into the APA and if this plan can be in the departmental APA, then it can be in the divisional APA. Then we can plan activities for our section this is how the activities are guided. (TD, SFED)

There are many organizations working towards sustainable harvest and sale of non-wood forest products in addition to the department of forests. This includes non-governmental organizations such as Tarayana Foundation, business like Bio-Bhutan, etc. Regarding the different organizations working with NWFPs, most of them now realize that working in isolation is challenging and the need for collaboration is very important.

I think we do have regular stakeholder meetings, but this is not enough because organisations work in isolation in most cases. (SP, SFED)

The SFED also constantly collaborates with private individuals to link them with harvesters. However due to COVID there was a lack of willing traders. The SFED also coordinates workshops for entrepreneurs and for them to meet with potential raw material suppliers. The SFED has also supplied tools and equipment for harvesting NWFPs over the years.

The SFED has also been providing various product development trainings over the years and had slightly halted these activities due to the recent pandemic. But plans to resume these activities are in place. Regarding enterprise development and the support, they receive, there is room for improvement. Some enterprises do receive enough support if they follow the proper channels. But unfortunately, the funds get distributed too thinly and no group benefits effectively.

I believe some groups do not receive the required amount. Only a bits and pieces by different organizations but if we can pull in all the resources together, we can look at those groups where it is feasible and find them funding support. (SP, SFED)

The Ministry is also discouraging the export of NWFPs in raw form and encouraging people to set up plantations for NWFPs. There are many youths who are interested in taking up non-wood forest products as a viable enterprise. However, when it comes to completing the venture, they usually fall short. Regarding entrepreneurship culture, the current traders do not have the required skill or any formal training to be very effective nor do they have a business plan for the long run. Most entrepreneurs are in it for the short-term benefits and leave this business whenever it gets difficult. To improve the system the interim framework recently was upgraded and now includes more species that can be harvested and streamlines a lot of the

older rules. This framework also includes non-wood forest products which can and cannot be sold without processing.

We are already thinking of what products can be made from Rubia. The ministries policy is that we try to discourage people to export NWFPs in raw form. The minister has been encouraging people to go for plantations. (TD, SFED)

They (youths) can jump from one activity to another at any time and they cannot take on activities with a full focus. (TD, SFED)

The SFED believes that product development should not be the focus and instead be taken up by other organizations like the Ministry of Labour or the Department of Cottage and small Industries. The SFEDs plans now include setting up community-based resource management which means mapping out high value non-wood forest products such as *putishing* (*Neopicrorhiza scrophulariiflora*). According to the SFED, the success and failure of groups depends on having a clear vision and enthusiasm. Donor support is also an extremely important factor to the program and without it most activities cannot be implemented. The main reasons for groups becoming inactive, could be marketing issues. Groups can fail when the demand for resources drops. Auctions are a good way to get fair market prices and the other way would be through value addition. Sometimes the groups also fail to function due to governance issues.

In some cases, groups are formed because there is a huge demand for a particular resource in that year and if there is no demand in the following years this is where the group stops functioning. (SP, SFED)

And sometimes groups fail to function as a group due to governance issues. When they do not have proper executive members to lead the group this is where they fail to function. (SP, SFED)

The NWFP program has not been able to get the full attention of the ministry, nor the department, and in times of economic recovery from the pandemic, it would be very important to recognized potential of non-wood forest products. In view of the SFED, the policies now are very enabling for the people. They see a great need, for an inventory for non-wood forest products, the likes of which are in place for timber resources. The formation of non-wood forest product groups has had a direct impact on the livelihoods of PG.

I feel like the program itself has not been able to get attention from the ministry and the department, so if the department recognizes how important the NWFP development is, be it in economic recovery be it in livelihoods, I believe human resources and budget can be taken care but right now I don't feel gets the same importance as to timber species. (SP, SFED)

The SFED is under the impression that there is still a lot of room for improvement regarding implementation of its policies. For improving things in the field, the field staff should also be updated in their technical knowledge and not just the communities. In terms of adoption of innovations, the non-wood forest product programs adoption of the latest technology is very slow, and a lot of the experts of the country lack, the capacity to implement any new technologies. Due to this, it has been very difficult to compete with international markets in India and China even though the products are very similar in nature.

3.3.1.2 Department of Agriculture Marketing and Cooperatives

The Department of Agriculture Marketing & Cooperatives (DAMC) is a governmental organization within the Ministry of Agriculture and forests tasked with overseeing the marketing of products from agriculture, livestock and forestry sectors. This organization provides assistance to farmers in selling their produce should they face difficulties in finding markets.

The DAMC oversees the marketing of Renewable Natural Resources (RNR) products which include forestry products such as NWFPs. Whenever necessary, the DAMC provides market information, and if required, organizes auctions or even buyer – seller meetings. The DAMC also aids in exporting NWFPs to foreign markets. For rural Dzongkhags, the regional offices are responsible for representing the DAMC such as the Regional Agricultural Marketing and Cooperatives Office (RAMCO).

According to the interviews,, the DAMC has not intervened in Pema Gatsel in service of NWFPs due to a lack of manpower, low quantities of production and prioritization of other agriculture and livestock commodities. Fundings for auctions are borne by the respective divisions involved as stakeholders for the auctioned commodity.

When already a lot of commodities like Chili's, spinach, etc are highly challenging and need our attention daily, this really spread the department thin. When the department is already

struggling because of a lot of other high value commodities it is difficult to focus on NWFPs.
(TP, DAMC)

The DAMC recruits their staff from different backgrounds; horticulture, forestry, agriculture, etc. to find the most suited workers. The DAMC also works with exporters and believes that without the private sector, the DAMC themselves cannot find market channels for many important products. The DAMC also cannot take up the role of exporter for most produce. Regarding NWFPs, the DAMC so far has only been involved with cordyceps sinensis and lemon grass oil and believes that the commodities in Pema Gatschel can market themselves.

Because we made the positions in the DAMC multi entry meaning that people from forestry or agriculture can apply for posts here and can become marketing officers, and it is an indication of the scope of our office including NWFP commodities as a priority to the department.

I feel they (exporters) play a very important role almost as much as a department itself. From the MoAF we have departments like BAFRA, DoFPS who liaise with farmers then we do auctions but at the end of the day without exporters our products and commodities go nowhere.
(TP, DAMC)

For coordinating enterprise development, the Enterprise Development Coordination Unit (EDCU) has been recently established with the mandate to facilitate the implementation of enterprise development in the MoAF. The EDCU will provide monetary, educational, support, and recommend businesses to banks for loans. The EDCU is currently facing difficulties in acquiring funds to support enterprises although it has support from different projects.

The DAMC still faces challenges in implementation. As livestock and agriculture departments require immediate attention, they have not been able to focus time and attention on forestry commodities. As the quantities of forest products are low in comparison, the DAMC cannot justify taking on forestry commodities now. The DAMC feels that their services are not needed in marketing other NWFPs and feels that other products can market themselves.

I believe that the departments intervention has mostly been for cordyceps auctioning. With regard to other produces maybe there was never a need, being in the third year of my service at the department I think that NWP produces like bamboo or picking up by themselves without intervention from the DAMC. (TP, DAMC)

The DAMC, as the forest department, also suggest that there is a lack of coordination with other agencies and more collaboration is needed. Some of the high value NWFPs with good potential such as *Putishing* are also in the protected list and cannot be formally traded.

And I think this is a good thing to admit that there has been no proper working relationship on the functions

Sometimes when species are restricted, we cannot move forward as well. (TP, DAMC)

There is also the need to streamline group formation as the DAMC, DoFPS, and other MoAF offices are all focused on creating farmers groups for separate commodities. The DAMC registers farmers groups according to the National Cooperative Act which are similar to ones established by the DoFPS.

For the immediate future, the DAMC shall place a marketing in remote Dzongkhags under the Dzongkhag administration as an extension to the more rural areas and Pema Gatshel is included as one of the Dzongkhags. They also hope to develop courses on marketing to be given to the farmers directly and has designs on establishing cultivation of orchids for commercial purposes.

We are recruiting 10 Dzongkhag marketing officers who will be put in place in priority districts like Chuka, Pema Gatshel is also selected along with Trashigang, Mongar, etc. (TP, DAMC)

3.3.2 Policy Implementers

3.3.2.1 Pema Gatshel Division

The Pema Gatshel Division (PGD) oversees the forestry operations of the Pema Gatshel Dzongkhag. The divisions technical section which houses the Social Forestry Section, is the headquarters and plans operations for implementation by the field range offices (Figure 9).

The Social Forestry Section (SFS) of the division oversees the planning and monitoring of the social forestry activities of the Dzongkhag, and the implementation is done by the range offices, which include the Pema Gatshel Range Office and the Nganglam Range Office.

According to the official from the Pema Gatshel Forest divisions Social Forestry Section, the SFS proposes for the budget required to carry out field activities and plans out their APA according to recommendations from the field.

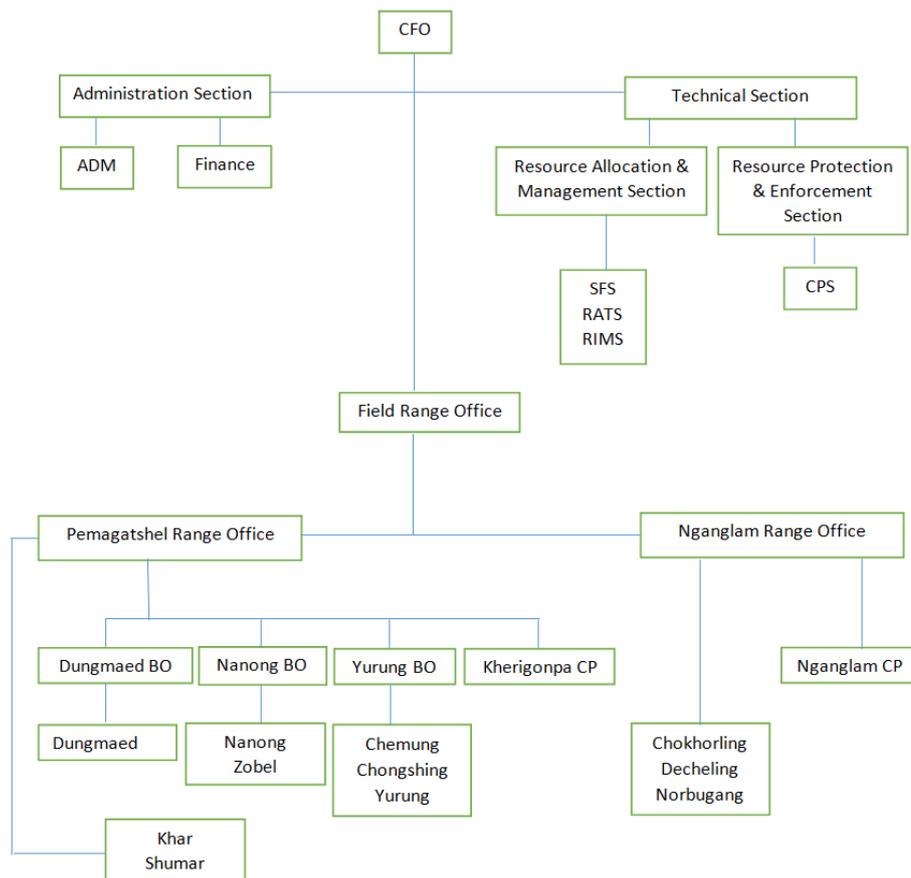


Figure 9. Pema Gatshel Division Organogram (dofps.gov.bt, 2022)

The PGD has taken up the role of advocating communities on social forestry, setting up NWFP groups, revising management plans, providing trainings on harvesting and bookkeeping and finally provide support in marketing as well. The PGD provides the permits for harvesting and transport of NWFPs and any other support to communities when requested. When revising the NWFP management plans, the groups are consulted on any necessary changes to be made to the by-laws.

However, since the division lacks authority or capacity on enterprise development, any potential entrepreneurs are forwarded to the DoFPS for further consultation. Enterprise development is a challenge in Pema Gatshel due to the people being uneducated. More educated, youth should take up enterprise development according to the PGD.

We will support these ventures but since we don't have the authority to approve these businesses, our best course is to recommend and forward to relevant agencies. (TN, Range Office)

The PGD plans out its activities for the APA according to the available budget. The amount received is enough to establish new groups and revise old management plans. However, according to the SFS, it is not enough to support other endeavours like product development and enterprise establishment. Due to the SFS being a dedicated section in the division for SFS activities, there is enough manpower in planning and monitoring the NWFP programme. So far projects like the BFL and AFOCO have been instrumental in providing budgetary support over the RGoB funding. However, BFL budget does not follow a financial year structure and instead follows a calendar year style.

Regarding timing if it were up to only one individual it would be too heavy a workload however, since our office here is also divided just like our headquarters offices in two different relevant sections, the workload is shared equally, and the time being dedicated is also appropriate.

When communities show interest and approaches for creating groups, we forward their applications to the department and propose for budgetary support. (TP, SFS)

The PGD believes the NWFP programme is crucial for the livelihoods of rural communities in PG. As there is a heavy focus on conservation of resources, it is important to focus on livelihoods as well. The policies in place are guided by the principles of Gross National Happiness. These are reflected in the Five-Year Plans which is then distilled into the Annual Performance Agreements.

Yes, these need to be reflected in the APA to show progress. For e.g. We have one group for revision this year and it is reflected. (TP, SFS)

The NWFP programme activities are mostly guided by the interim framework and the FNCRR. The harvesting trainings have contributed to the longevity of the groups. However, for marketing, there is still a reliance on traders although the preference would be to auction the materials. Poor road conditions also discourage auctioning. PGD lacks the information on market channels to provide to the farmers. So far, only *pipila* (Piper spp.) has been auctioned.

For other NWFPs, the quantities are not actionable, this coupled for poor roads and cost of transport it does not look feasible. (TP, SFS)

The division faces various challenges when implementing their activities. It is difficult to support interested enterprises as there is no budgetary support available. Most of the households in the east are poor and cannot invest in businesses. Due to communities only harvesting and selling wild resources, they are in danger of depleting. It is important to spread awareness on harvestable and economically viable plants and develop businesses on them.

But due to lack of budget and less awareness among the public it is quite difficult to set anything up.

In my opinion the communities here only collect NWF like Rubia and Pouzolzia from the forest and do not propagate these themselves which leads to the question of sustainability. (TP, SFS)

According to an official from the Pema Gatshel Range Office, a lot of the times, enterprise development for communities is top down and struggle to succeed. There are no NWFP based community enterprises in PG. To add to difficulties, the COVID-19 pandemic has also caused disruptions to the planned activities. One of the main issues is that there are too many groups in Pema Gatshel now, the community forests have very little NWFPs resources.

However due to the pandemic as we were not allowed to have public gatherings, we could not see this through, and the funding was diverted to a different program.

In the current situation in Pema Gatshel, the groups are mostly saturated, and we can find them in almost all areas wherever they are needed. (TP, SFS)

As most management plans are in English, they are difficult for the communities to understand. There is also a lot of rural to urban migration, therefore the educated people capable of running NWFP businesses are limited and also leading to the emergence of fallow land.

Mostly in English or half-translated, however I have requested for the Gewogs under my jurisdiction to have Dzongkha translations.

Rural – urban migration is an issue; lots of people are migrating away. (TP, SFS)

3.3.3 Private Enterprise

3.3.3.1 Private Incense manufacturers

Incenses have been used in Bhutan since time immemorial and forms a vital part of Buddhism in Tibet, Nepal, and Bhutan. These incenses trace their origins to Tibetan medicine. In Bhutan, assorted incense manufacturing enterprises have risen over the years that follow the same principles found in Tibetan incense making processes.

An incense manufacturing unit in Pema Gatshel was interviewed to gain insight into how the policies surrounding NWFPs, affect the private industry. This unit named 'Zangthe Poezoekhang', produces traditional Tibetan Buddhist incense in different variations according to the occasion; *Jaju poe* and *Cheju poe*.

The incense manufacturing unit uses Yongiba as an important ingredient for creating the final product, as a binding agent which holds the rest of the ingredients together. For this unit, the proprietor did not receive any informational or financial support from the government when establishing his unit and instead, had to be taught these techniques from monks in India. He uses his skills to produce various types of incense of differing religious significance. The traditional incense making process is skill intensive, however, most new incense units ignore these processes in favour of commercial production.

I got trained by a lam from Kalimpong on how to make incense in traditional Buddhist way.

No, I was not aware of support. I got a standard loan. I am aware of such support now. (NJ, Incense Factory)

The proprietor of this unit does not hire any outside help and produces everything himself. He only relies on outsiders for collecting raw materials, but the formalities for getting the proper permits are done by himself. These permits were difficult to acquire in the past but has since been quicker. The raw materials are expensive, especially juniper and cypress. When attempting to purchasing Yongiba from the community groups nearby directly, he was confronted by the local trader, who threatened him with legal ramifications. He was not allowed to purchase Yongiba from the communities due to a lack of trade license, even though he would be permitted to do so with a simple transport permit. As a result, he had to resort to buying these materials from this trader, who sold it to him at a much more inflated price. If the

groups do sell to him, he gets in touch with the executive members to set up the transaction. The NWFP groups only contact him when the local trader has not purchased their materials. He acquires around 100 to 300 kg of Yongiba in a year.

He buys for Nu. 50 from the communities and sells for 150 – 200 per kg to me.

Yes, I have to go to the executive members, the chairperson and accountant and discuss with them. They bring the materials to one house and then I buy it. (NJ, Incense Factory)

This business is profitable, but he does not keep track of his production figures. As long as his family needs are fulfilled, he is satisfied. He does, however, also practice farming to keep a steady yearly income. His upkeep is expensive but manageable, and most of his expenses are on electricity as water needs are fulfilled. He has also replaced his machinery to use electricity instead of firewood.

I use a machine to heat the water so no need for firewood.

If there's a lot of work, then it's quite expensive. In a month about 2500 to 1500, 1600 per month is electricity costs. (NJ, Incense Factory)

The proprietor is aware of the different regulations surrounding the incense making business but not so much about financial support available to him. So far, he has had to take out a regular business loan for which he needs to pay interests.

The process for filing taxes has recently been revised to make proceedings easier. The unit in PG also pays less in taxes now. The overall process for getting a trade license has also improved, but still is very bureaucratic and involves a lot of steps. Although the trade office Samdrup Jongkhar declared that they had machinery available to interested incense makers, when he arrived there, they told him that they ran out and could not support him. As of now he feels that no one is willing to help these businesses as no trainings or financial benefits have been given so far. When asked if he was aware of financial support mechanisms in the time of establishing his business, he points out that he was not informed.

There was a fixed amount for the license before around 6000 – 7000 per year now about 1000 to 2000 per year for the last 2 years. (NJ, Incense Factory)

One of the major challenges besides acquiring raw materials is marketing his incense. Due to a saturated market with sub-par products, he faces difficulties selling his incense, even though they are manufactured in the traditional and proper method. He tried to sell his wares in Bumthang once but was unsuccessful and now only sells within Pema Gatsel. He also believes that the forest policy of only being able to buy raw materials from groups has hindered his business and other businesses struggle similarly as well. Another challenge he initially faced, was the lack of experience and scarcity of information on setting up his unit.

There are just too many companies now.

These factories don't use traditional Buddhist proportions so there is no religious benefit. Different types of poe are also used for different types of ceremonies and offerings and prayers. (NJ, Incense Factory)

3.3.3.2 NWFP Communities

In this theme, we explore the perceptions of the community members on the policies that surround NWFPs and how they affect them. How much do they know about these decisions, and do they have any recommendations for changing them?

Most of the community members were unaware of the general NWFP policies that affected them other than the existence of NWFP groups and a few acknowledged that they understood regulatory policy instruments and how they have been formed. Only 3 members acknowledged that they were informed on Community Forestry rules and regulations, even though all interviewed members were from the NWFP groups. One member recalled that the local leader, the *Gup*, informed them of the benefits of joining a CF and NWFP groups when the group formation meeting occurred.

No, sorry I don't know so much about any such policies. (TP, Shumer)

Yes, there are many policies in place. In our area there is no community forests even though we are aware of this programme. (TW, Nanong)

In terms of financial policy instruments, almost all community members were unaware of the tools available to them such as loans, projects, financing, etc., with only a handful aware of the possible options available to them. It was also indicated that due to the existing policies and bureaucracy, the group members were forced to sell to middlemen and could not harvest the NWFPs themselves.

Not aware of such policies. Just heard of loan without interest but not much. (UT, Dungmin)

The general view was that the community members were consulted when making these policy decisions and traditional knowledge is considered, especially when forming by-laws for CF and NWFP management plans. However not all shared a positive view on this mentioning that although they were consulted, their inputs were hardly implemented and that some members were still waiting for support after they put up their requests. The members also share the sentiment that foresters aid whenever they are in need. Some members also feel that they do not have much of a choice in following forestry procedure and must abide by the rules.

Yes, they do come from time to time to consult us on various matters and take our opinions.

(LN, Khar)

We feel that they consult us but do not incorporate our inputs. (DZ, Shumer)

Regarding informational policy instruments, the members unanimously acknowledge that they have received training on the sustainable harvest of NWFPs, provided by the forestry office. No trainings have been received however, on product development, marketing and enterprise development. One member pointed out that the language of the training materials has been an issue and they would benefit from having them in Dzongkha.

The foresters provided us with training on the CF on how to collect, how much to cut, what to leave. We collect based on this. (TW, Nanong)

One member interestingly stated that they have not been allowed to harvest and export marijuana and other banned medicinal plants even though it would bring a lot of monetary benefits to them.

4. Discussion

4.1 Impact of NWFPs on the Livelihoods of Rural Communities

The harvest and sale of NWFPs makes a positive impact to the livelihoods of the communities of Pema Gatshel, however, the impact is not very significant. Of the households interviewed, only one respondent mentioned they earned 80% or more of their yearly income from NWFPs sales and another mentioned that their yearly income share from NWFPs was around 50%. The rest of the respondents indicate that only a small portion of their income is derived marketing NWFPs. Selling Yongiba and Laniro earns these households, Nu. 10,000 to 15,000 per year with only one indicating they earn close to Nu. 40,000. This income helps them not only buy household items, but also ease their expenditure on their children's schoolwork. The studies, (Adam, Pretzsch and Pettenella, 2013; R.P. and E., 2000) also concluded that while income from NWFP marketing by itself does not contribute to a large scale, it does alleviate poverty in rural households. Apart from these contributions, at the current arrangement, there is not many other contributions. These agree with previous value chain studies (SFED, 2020) in Bhutan. Harvesting NWFPs is also a difficult and laborious task and difficult for those who are older.

A factor contributing to many NWFP groups functional in Pema Gatshel is the large diversity in harvestable resources. The communities have a slightly broader choice for earning income in times of low demand (FAO, 1996). The households interviewed relied on different sources of income to provide for their livelihoods. NWFPs were a versatile way to ensure yearly income for these families and among these, Yongiba (*Pouzolzia sanguinea*) and Laniro (*Rubia cordifolia*) are the crucial commodities. From the two, Laniro was the more preferred NWFP as it is more abundantly available and is easier to harvest and process.

The opportunities for income generation are limited in Pema Gatshel. These farmers rely on growing corn, potatoes and to supplement their diets, rely on NWFPs like nakey (*Diplazium spp.*) and damroo (*Elatostema spp.*) as well as the earnings from selling other NWFPs.

Due to over-harvesting, a high earning commodity, *Paris polyphylla*, is no longer a viable resource, when in the past it was a significant contributor to the livelihoods of rural communities in the east. These findings coincide with the value chain study of *Paris polyphylla* (SFED, 2020) mentioning that overharvesting and harvesting outside proper seasons has led to the decline of wild resources.

The earnings are also severely hampered due to the fact that NWFPs are sold in raw or semi-processed form, or, without manufacturing finished products. The returns from processed NWFPs are significant in terms of improved livelihoods (Meinhold and Darr, 2019). The lack of knowledge on what items can be made from them, coupled by the lack of capital to invest in developing an enterprise, has led to a heavy reliance on middlemen who pay far less to the communities than they would receive from their Indian counterparts. The trainings received by the communities so far are mostly on sustainable harvest of NWFPs and do not prepare them for taking advantage of enterprise developing opportunities. The overall costs for harvesting and basic processing are insignificant as only family members are engaged, however, this also means there are no opportunities for generating employment.

In recent years, resource depletion has also severely hampered NWFP management and in several Gewogs, the NWFP groups have been suspended for the resources to regenerate, even though sustainable harvesting trainings have been given by the forest offices. This is compounded by the fact that communities lack the capacity to cultivate their own NWFPs, and whatever small landholdings they have is used for agriculture and livestock. This also extends to the amount of time that can be dedicated to forestry-based activities. Most farmers focus on their farms and livestock and cannot make much time that is needed in the NWFP groups which involves various meetings, discussions, traversal into the forests, processing, etc. and there is a difficulty in prioritizing those activities they require. This is also pointed out in the study (R.P. and E., 2000) where he mentions that households choose other means of earning a living, such as agriculture, and opt out commercial NWFP harvest. The amount paid as daily wage for unskilled labour of Nu. 215 a day or USD 95 a month is not enough to compensate the loss of a day's earnings from farm work.

4.2 Factors that Impact NWFP harvest

The harvest and trade of NWFPs in Pema Gatshel are influenced by many different elements. These factors have positive and negative influences on the NWFP management. The study (Rahut, Behera and Ali, 2016), implies that within the Bhutanese context, characteristics such

as *gender, education* and size of households, and by extension the aspects that effect size of households such as *marriage* and *children* are elements that impact NWFP management. This study identifies several other factors influencing NWFP use which include *Access to resources, Marketing, NWFP group membership, processing, presence of local leaders, climate change and roads and transport*. These have been listed in the table (Table 3) below and subsequently explained further:

#	Factor	Effects
1.	Access to resources	
1a.	Resource availability	Abundance of resource is required to sustain NWFP group harvests.
1b.	Harvesting practices	Collecting according to sustainable harvesting guidelines has a positive impact on the sustainability of NWFPs. Regular trainings are required to update farmers on harvesting prescriptions.
2.	Marketing	
2a.	Price Setting	The ability to effectively negotiate prices affects the livelihoods of the whole group. Group executive members take on the responsibility on most occasions.
2b.	Role of trader	Traders ease the burden of finding markets and transporting harvested materials. But farmers can find themselves at the mercy of these entrepreneurs.
2c.	External support	Funding, informational, and regulatory support received from governmental and non-governmental organizations can determine longevity of these NWFP groups.
3.	NWFP group membership	Benefits for participation in the NWFP groups are mostly limited to monetary benefits. Executive members gain positive experience. People mostly join the groups only to earn additional income.
4.	Processing	Processing raw NWFPs to semi-processed or processed form improves prices received when marketing.
5.	Marriage and Children	Marriage and children are seen as positive factors and higher quantities of NWFPs can be harvested with more people. Having smaller children, however, impedes NWFP collection.
6.	Gender	Males are generally better at harvesting due to the ability to traverse the difficult terrain to harvest NWFPs.

7.	Education	Higher education impedes NWFP harvest but is a positive factor for marketing NWFPs and understanding policies.
8.	Presence of Local leaders	Having local leaders involved in NWFP management is a positive factor provides information.
9.	Climate change	Climate change has occurred in the area and has led to decrease in available resources.
10.	Roads and Transport	Availability of roads affects the marketing of NWFPs positively.

Table 3. List of Factors determining harvest and marketing of NWFPs derived through thematic analysis of transcript codes

4.2.1 Access to Resources

4.2.1.1 Resource Availability

Yongiba is considered more difficult to harvest than Laniro in general, both in terms of availability and location. This makes it even more difficult as the resources are decreasing in the wild at a rapid rate. Because of the steepness of the growing area, a lot of times, the collectors must leave the resources unharvested to avoid the risk of falling. Laniro is regarded to be easier to harvest than Yongiba as it found more abundantly and grows on flatter areas. Exploring possibilities to cultivate these resources could greatly reduce the risks faced by the communities. This may be explained by the study (Meinhold and Darr, 2019) which mentions that poor producers do not have resources to cultivate the resource on their lands and rely on increasingly scarce wild resources. Although a few households attempted growing Yongiba on their own land, the results were less than promising as the stems were substantially smaller than the ones found in the wild. Educational support from governmental agencies and NGOs would be required as the community lacks the knowhow on growing them properly.

The forestry division of Pema Gatshel is aware of the concerns of sustainability. To address the dwindling resources, besides giving trainings on harvesting, the forestry offices have also recommended the groups halt operations for a few seasons or to harvest in alternate years. Despite all members being aware of sustainable practices, these wild resources have been decreasing steadily. This was also found true in a study (Adam, Pretzsch and Pettenella, 2013), where it is mentioned that production systems that rely only on wild resources, are more vulnerable to having their reserve of resources depleted. The decrease in resources in Pema Gatshel could be due to the increase in collectors over the years. Most households use

their family members to collect since the main goal is quantity and not quality. The NWFPs are also collected on a yearly basis which does not let the plants recover. Some collectors also fail to follow proper sustainable harvesting practices.

4.2.1.2 Harvesting Practices

The practice of shifting cultivation was still present in some communities of Pema Gatshel, indicating the dependence on subsistence farming (FAO, 1995), although the practice has been banned since 2006 (DoFPS, 2017). People felt more responsible with rights to woodlots and shifting cultivation in the past but have lost that sentiment since the land belongs completely to the government. In this regard, people would be more responsible to their surroundings if they had rights to leaf litter collection restored. This sentiment is also shared by the study (CIFOR, 2009) saying that secure tenure for communities serve to promote good management. Presently, the communities although members of NWFP groups, largely depended on private land to collect their resources and stated that not enough NWFPs could be found in CF and SRF lands provided to them.

The communities in Yurung also suspended their activities due to an ongoing dispute between the executive members. Disputes leading to groups dissolving has been a problem in Bhutan in the past as well, for example the Lemon Grass Cooperative dissolution in Mongar. Without proper leadership or interventions from the authorities, there is a serious risk of permanent damage to the outlook of the community members.

These NWFPs, Yongiba and Laniro, are harvested in the winter and due to this, there are no challenges posed by heavy rains and bad road conditions. However, traversing the forests is still a challenge and at times the harvesters need to spend hours reaching the resources before they can begin harvesting.

4.2.2 Marketing

4.2.2.1 Price Setting and Role of Trader

The marketing of Yongiba and Laniro in Pema Gatshel is done through traders who travel to the villages and buy these NWFPs from the communities and at the present arrangement, the communities share a common trader. Although the trader coming to the households made it

easier, the prices offered by this trader was very low compared to the rates he received when selling in India. When market information is limited coupled with presence of financial constraints, middlemen may sometimes be the only pathway for producers to access markets (Meinhold and Darr, 2019). The prices are negotiated between the executive members of the NWFP management and marketing groups and the traders. While all members within a group received the same amounts per kg harvested, these amounts differed across the groups in the Dzongkhag. The groups received different rates ranging from Nu. 25 in Yurung to Nu. 60 in Shumer.

In the past the selling of Thoksampa was informal, individuals sold this resource to a trader in Samdrup Jongkhar but this no longer the case.

This trader also discouraged the group members from auctions and did not allow them to sell their produce to the nearby incense factory who uses Yongiba as a raw material for his products. Certain group members also pointed out that the cases of corruption with executive members involve this individual. Overall, the group members are unsatisfied with this arrangement, but have not been able to find alternatives. A lack of information on foreign market channels, and trade licenses have stopped these farmers from marketing their own produce. An attempt was made by one of the group members the past to transport these NWFPs, however this trader threatened to inform authorities on their lack of proper documentation, who could not get the proper requirements as there were too many formalities to fulfil. As found also by the study (R.P. and E., 2000), efforts to reduce over exploitation by middlemen are hampered by overly bureaucratic processes. The pandemic also greatly affected the marketing of NWFPs as the communities struggled to find traders for their resources and the prices, they received were also much lower than previous years.

4.2.2.2 External Support

Auctioning the harvested NWFPs would have a better outcome for them but the amounts are too low for the DAMC to intervene. The forest department would have to prioritize these NWFPs, and officially request for DAMCs assistance for the DAMC to take action. The DAMC currently has not made interventions in this regard. The communities would benefit from information on market channels, having auctions organized, etc, however due to a lack of personnel and poor attention on the value of NWFPs, this has gone unrealized. For improving access to markets, the communities need informational support, not only on market channels, but to also on how to create products of desired quality (Adam, Pretzsch and Pettenella, 2013). This would give collectors a stronger bargaining power with traders.

Producing finished products from the NWFPs would benefit the communities immensely (FAO, 1996). However, the farmers lack the skills and knowhow to manufacture and package these products. A study, (Marshall, Newton and Schreckenber, 2003) mentions that in general, product marketing and sale are the most significant factors constraining NWFP commercialization. The forest department has periodically given product development trainings for bamboo, cane, and herbal tea production enterprises in other Dzongkhags and even though having a local incense manufacturing unit could help, due to the lack of formal education and dedication to agriculture, this may not be a viable option (SFED, 2020). The record keeping of transactions by the NWFP groups is also weak, and the information is disseminated to the members irregularly. Regular book and record keeping trainings are provided by the SFED, but still lacks meaningful impacts.

4.2.3 Marriage, Children and Gender

Married couples could harvest more NWFPs than those unmarried or no longer married. Having an extra member of the family meant that they could harvest alternately or have more collectors at the forests at the same time. Married people also supported each other more to balance out home and external work activities. This also supports the idea that more people can harvest more NWFPs.

Children are also beneficial to NWFP management. The households involve their children whenever possible. School going kids especially are engaged in collection during the winter holidays but conversely, having smaller children who require constant supervision, means that the adults cannot spend time in the forests to collect these NWFPs. This supports the findings of (Rahut, Behera and Ali, 2016) stating that the size of the household has a positive and significant effect on forest income generation.

There are no assigned roles amongst the gender regarding NWFP management. Men and women equally shared the responsibility of harvesting, processing, and selling their produce. Men in general are considered better at harvesting NWFPs because they can more easily traverse the forests and can carry heavier loads. The terrain also makes it more difficult for women, with steep slopes and hills to be navigated to harvest Yongiba. When processing these NWFPs, gender made no difference as it was done by whichever family member was available at the time. As marketing arrangements were made by the respective NWFP groups chairperson, the harvesters did not have much of a role in this stage.

4.2.4 Education

Education is an important factor in NWFP management. Collectors with some levels of formal education were more receptive to trainings and their context. In terms of harvesting NWFPs, education has an inverse effect since those educated are not engaged in Yongiba and Laniro harvesting. This could be because of them finding better income generating avenues as opposed to laborious NWFP work. A study (Bista and Webb, 2006) also mentions that education provides off farm opportunities that lessen the dependence on NWFPs.

Educated individuals also understood the various policies and rules around NFWPs better. As most of the members in the groups of Pema Gatshel were uneducated, they struggled and were unaware of the different NWFP based benefits they could derive. The various documents used in NWFPs management such as the collection permits, transport permits, group by-laws, etc., were published in mostly English and occasionally Dzongkha. This creates a barrier for people to understand the regulations since the dialect spoken in these regions, Tshangla/ Sharchop, is different and without a formal education, understanding written texts is unlikely.

The governmental agencies like the SFED also have difficulty establishing NWFP based enterprises in rural Bhutan since most people are uneducated and lack the capacity to create products that can compete with the foreign markets (SFED, 2020).

4.2.5 Presence of Local leaders in NWFP management

The involvement of local leaders benefits the NWFP groups. These local leaders are usually educated individuals and are familiar with their constituents and their needs. Local leaders within the groups command more authority and can enforce by-laws more easily and provide other kinds of support such as information on harvesting times, marketing arrangements. These 'Good Practices' by local governance benefit rural populations through multiple systems such as helping with coordination of any official works, monitoring and evaluation, etc. (MoHCA, 2021).

4.2.5 Climate Change

Climate change has led to more erratic weather conditions for the communities of Pema Gatshel. High relief and high gradients make mountain ecosystems sensitive to temperature and precipitation changes (Diaz, Grosjean and Graumlich, 2003) especially so in the case of Bhutan (Chhogyel and Kumar, 2018). The district of Pema Gatshel, excluding the Nganglam sub-district, shares such features and is vulnerable to effects of climate change as well. The general perception of the NWFP group members is however, that the decline of NWFP has not been caused by climate change. As the group members asked on the resources only responded in context of Yongiba and Laniro, and these resources have only been collected in the since they were introduced for commercial purposes approximately 10 years ago, it could make sense that these harvesters have not regarded these factors as effecting NWFPs. A few respondents did, however, point out that irregular rains and stronger sunshine may have impacted NWFP availability.

4.2.6 Roads and Transport

The profitability of NWFPs extraction is heavily influenced by proximity to markets (R.P. and E., 2000). The existence of roads has greatly benefitted the communities and their ability to support their livelihoods. The development of farm roads has cut journey times on horse by days and greater quantities can be transported as well. Traders can arrive at the villages directly with their vehicles to inspect, sort and purchase their produce. Roads also provide easier access to schools where in the past, the absence of roads was a major barrier for receiving education in rural Bhutan. Furthermore, having vehicles is not a luxury available to everyone and therefore not everyone can afford to take full advantage of these facilities.

Another role of farm roads in Bhutan could be the perpetuation of poverty in high rainfall areas. According to an impact study (Helvetas, 2014), there is high cost of service delivery to maintain farm roads due to monsoon rains, which can be seen as a driver of poverty in Bhutan. In the summer months, the roads in Pema Gatshel sustain damage from landslides due to constant rain which makes them difficult to traverse. Accidents are frequent and it is generally advised not to travel in these seasons. For the NWFPs of Yongiba and Laniro, as the harvest and sale are done in winter, these difficulties are avoided.

4.2.7 Processing

The basic processing of NWFPs is inexpensive and has become standard practice in the rural communities of Pema Gatshel. The process includes members of the household without the need to hire additional people. According to (Meinhold and Darr, 2019) NWFP value addition often remains limited due to financial constraints and therefore the traditional, labour-intensive processing with basic, outdated equipment also may not achieve the quality demanded by higher return markets.

The processing of NWFPs, in Pema Gatshel is limited to basic of sizing and drying and packing into rudimentary containers such as sacks. This is not done to increase the earnings, but as a necessity as it cannot be sold otherwise. It is a laborious task which yields very little income for its effort. The farmers lack the knowledge on any additional possible processing and product development.

4.3 Policy Roles

The policies in Bhutan have come a long way in inclusiveness and decentralization, with constant updates to involve regular citizens in the decision-making processes that govern their lives (Namgyel, 2005). Within the NWFPs programme, the inclusion into the Social Forestry programme has allowed people to not only earn additional income, but also participate in the formation of the by-laws that govern the NWFP harvest. Following the trend of decentralization, the planning of NWFP group formations has been delegated to field offices who propose for their own budgets and plan their achievements in conjunction with the headquarters targets. While the focus in Bhutan's forest policies have slowly shifted from the primarily focusing on timber resources and species conservation to livelihood development programmes since the late 2000s, there is still room for improvement in aspects of coordination and inter agency collaboration.

According to the SFED, the NWFP programme in Bhutan still does not receive enough attention from the department of forests and therefore faces difficulties securing the funding required to improve implementation. Although sustainable harvesting is promoted by the forest department, the field realities suggest that enacting these policies needs refining. Setting up NWFP groups without proper resource assessments can also be detrimental to the wild

resource availability as it is important to determine the biologically sustainable harvest levels of a product (FAO, 2001).

The selling of NWFPs in eastern Bhutan still suffers setbacks. Most NWFPs are being exported in raw form and although measures are being developed to tackle them, certain impeding factors are in the way. Creating new enterprises faces challenges such as poor levels of education, no funds for investing, no information on foreign markets, etc. The government can support the marketing aspects for these communities by providing market information and establishing supervised trading sessions in remote areas (De Beer and McDermott, 1996).

Currently, the DoFPS provides information whenever possible, on harvest but there limited informational support on marketing, product development, enterprise development aspects. Marketing, done solely by the farmers and the DoFPS has proved ineffective as seen in the current situation (SFED, 2020). The regulations, system of permits, and bureaucracy is difficult for rural people to follow. A study (Fernandes et al) also agrees that bureaucratization makes it difficult for poorer households by either making them go into debt to pay for transaction costs or rely on middlemen. There is need for interventions from the DAMC, who face a swathe of challenges in incorporating NWFPs into their workplan. Although there are good programs set up for marketing Cordyceps and Mushrooms, the DAMCs lack of manpower, poor outreach, and prioritization of agriculture and livestock commodities have prevented them from incorporating these NWFPs into their yearly workplans. Efforts by the DAMC in the past to include high value medicinal plants was also thwarted due to these species being protected. The study (Weiss *et al.*, 2017) also found that institutional barriers exist that can favour conservation over activities that benefit the general public.

In order to coordinate the development of renewable natural resources enterprises, the Enterprise Development Coordination Unit was created in 2020 and aims at supporting interested entrepreneurs with informational and possibly funding support (DAMC, 2022). However, it faces similar challenges of lack of availability of funds to provide to proponents.

Although the group members feel consulted on the formation of policies, it is limited to by-laws formation in the group formation stage. These people, who are involved with harvesting NWFPs, i.e., the communities themselves, are not aware of most of the existing policies, especially on financial instruments and limited awareness on informational support. This brings to question the role of decentralization in forest policies. (Fisher, 1999) in his study mentions that in Asia and Pacific regions, the devolution of power has only occurred in a limited scale and responsibility to protect these resources have been handed over without the power to make decisions.

The local industries have seen positive changes in recent years in certain aspects; taxes have been lowered and the process to acquire licenses are quicker. However, there is still little to no outreach to these industries on supporting them after their businesses are established. Marketing is still an issue and in the case of incense, with the domestic market saturated with similar products, factories that use older, more intense techniques and higher numbers of raw materials, struggle as a result. With Bhutan's ambitions for economic recovery after the recent pandemic, supporting local industries would be vital. For the time being, certain brands of incense, with greater resources for merchandising, have found domestic and international markets online through business portals.

4.4 Limitations of the Research

This study takes a qualitative approach and may include a few subjective elements. The open-ended nature of some of the questions posed to the participants relies on the participants experience, of which can be varied. A mixed approach would give a more complete understanding of the impacts NWFPs can have on livelihoods and the extent of the influence of factors determining NWFP use.

As the study was performed in the eastern Dzongkhag of Pema Gatshel, the results of this study cannot be generalized to other regions of Bhutan, mainly those with varying socio-economic conditions and species of NWFPs available.

Due to the COVID-19 pandemic, a number of otherwise irregular issues are highlighted in the study such as the difficulty finding traders, inability to host public gatherings, etc.

5. Conclusions and Recommendations

NWFPs make a positive impact to the livelihoods of the communities of Pema Gatshel, even though the benefits are not very significant. The ability to sell a variety of produce from the wild helps soften the effects of unstable demands.

The resources in the state reserved forests handed to NWFP groups are dwindling and, in some areas, harvesting has been halted completely. The forest division of Pema Gatshel also shares concerns of sustainability, and that the Dzongkhag should no longer expand on the number of NWFP groups in Pema Gatshel. Although NWFP harvesting is done according to

prescriptions, without proper resource assessments, it is not possible to determine how much can be sustainably harvested yearly. In this regard, carrying out an extensive NWFP resource management, similar to what the National Forestry Inventory fulfils for timber resources, would greatly improve the setting up of accurate harvesting limits from the groups. Resource inventories for NWFPs are often complicated because of the nature of NWFPs: different life forms, different parts of plants, sometimes difficult to detect, seasonality, and scattered/and or clumped distribution, etc. (SFED, 2011).

There is room for governmental intervention towards marketing the NWFPs of Pema Gatshel. Although auctions have been conducted in the past in Pema Gatshel, these have been limited to pipla (*piper longum*) and agriculture commodities and the quantities of other NWFPs is deemed too low for auctions to be feasible. The forestry department could look into prioritizing these NWFPs by involving the DAMC in the marketing scene in similar strategies that benefit cordyceps, matsutake and lemon grass oil.

Policies have developed over a short period towards enabling the use of NWFPs, but the rural households not only are unaware of most policies set up for their benefit, but moreover the context with which they are made. It would benefit the forestry department greatly to further inform people on their opportunities by updating the field staff with the information vital to the programme and passing it on to the communities. With a good deal of agencies working towards assisting rural lives, all in isolation towards their own goals, collaboration and information sharing seems still needed at the national level.

6. References

- Adam, Y. O., Pretzsch, J. and Pettenella, D. (2013). Contribution of Non-Timber Forest Products livelihood strategies to rural development in drylands of Sudan: Potentials and failures, *Agricultural Systems*, 117, pp. 90–97. doi: 10.1016/j.agsy.2012.12.008.
- Bista, S. and Webb, E. L. (2006). Collection and marketing of non-timber forest products in the far western hills of Nepal, *Environmental Conservation*, 33(3), pp. 244–255. doi: 10.1017/S0376892906003195.
- Cheki K. (2017). Non-Wood Forest Products need attention, *Kuensel*, August 29, 2017. <http://www.kuenselonline.com/non-wood-forest-products-need-attention/> accessed 11.08.2022.
- Chhogyel, N., Kumar, L. (2018). Climate change and potential impacts on agriculture in Bhutan: a discussion of pertinent issues. *Agric & Food Secur* 7, 79.
- Chidumayo, E. N. and Gumbo, D. J. (2010). *The Dry Forests and Woodlands of Africa: Managing for Products and Services*. doi: 10.4324/9781849776547.
- CIFOR. (2009) *Realising REDD+: national strategy and policy options*, Realising REDD+: national strategy and policy options. doi: 10.17528/cifor/002871.
- Creswell, J.W. (2012). *Qualitative Inquiry and Research Design*, 3rd edn. Thousand Oaks, CA: SAGE.
- De Beer, J. H. and McDermott, M. J. (1996) *The Economic Value of Non-Timber Forest Products in Southeast Asia*, International Union for Conservation of Nature and Natural Resources, p. 197. Available at: <https://portals.iucn.org/library/sites/library/files/documents/1996-020.pdf>.
- Department of Agriculture Marketing & Cooperatives. (2020). “About the EDCU”. Website <https://www.damc.gov.bt/edcu/> accessed 17.07.2022.
- Diaz, H. F., Grosjean, M. and Graumlich, L. (2003) Climate variability and change in high elevation regions: past, present and future, 2001(Chapter 13), pp. 1–4.
- DoFPS (2011): *National Forest Policy 2011*, Ministry of Agriculture and Forestry, Royal Government of Bhutan. website <https://www.dofps.gov.bt/acts-rules-regulations/> accessed 02.06.2022
- DoFPS (2017) ‘*Forest and Nature Conservation Rules & Regulations OF Bhutan, 2017*’, pp. 1–374.

- Eriksson, P. and Kovalainen, A. (2015). *Qualitative Methods in Business Research*. 2nd Edition. SAGE Publications, Ltd. (UK).
- FAO. (1995). *Shifting Cultivation in Bhutan: A Gradual Approach to Modifying Land Use Patterns*, website <https://www.fao.org/3/V8380E/V8380E00.htm> accessed 12.08.2022
- FAO. (1996). *Non-Wood Forest Products of Bhutan*, RAP Publication, p. 37.
- FAO. (1999). Towards a harmonized definition of non-wood forest products. *Unasylva* 50(198):63-64.
- FAO. (2000). *Harvesting of Non-Wood Forest Products*. website <https://www.fao.org/3/y4496e/Y4496E00.htm#TOC> accessed 11.03.2022
- FAO. (2001). *Resource Assessment of Non-Wood Forest Products: Experience and Biometric Principles*, Food and Agriculture Organization of the United Nations. ISBN 925104614X, 9789251046142.
- Fisher, R. J. (1999). Devolution and decentralization of forest management in Asia and the Pacific, *Unasylva*, 50(199), p. 3.
- Gurung, T. R. (2017). *Community-Based Non-Wood Forest Products Enterprise : A Sustainable Business Model*. Dhaka: SAARC Agriculture Centre, ISBN 978-984-34-3141-7.
- Helvetas. (2014). *Impact Assessment of Pro Poor Policy Interventions: Rural Livelihood Project (RLP) Phase II*. Ministry of Agriculture & Forests, Royal Government of Bhutan.
- Howlett, M. (2005) 'What is a policy instrument? Tools, mixes, and implementation styles', *Designing Government: From Instruments to Governance*, (April), pp. 31–50.
- Marshall, E., Newton, A. C. and Schreckenber, K. (2003) 'Commercialisation of non-timber forest products: First steps in analysing the factors influencing success', *International Forestry Review*, 5(2), pp. 128–137. doi: 10.1505/IFOR.5.2.128.17410.
- Meinhold, K. and Darr, D. (2019) 'The processing of non-timber forest products through small and medium enterprises-A review of enabling and constraining factors', *Forests*, 10(11). doi: 10.3390/f10111026.
- MoHCA. (2021). *65 Good Practices of Local Governments*, website https://www.mohca.gov.bt/?page_id=278 accessed 06.09.2022.
- Moktan, M. R., Norbu, L. and Choden, K. (2016) 'Can community forestry contribute to

- household income and sustainable forestry practices in rural area? A case study from Tshapey and Zariphensum in Bhutan', *Forest Policy and Economics*, 62, pp. 149–157. doi: 10.1016/j.forpol.2015.08.011.
- Namgyel, P. (2005) 'Forest Policy and Income Opportunities from NTFP Commercialisation in Bhutan', International and Rural Development Department, PhD(May), p. 284.
- NSB. (2017) Bhutan Living Standards Survey. National Statistics Bureau, Royal Government of Bhutan website <https://www.nsb.gov.bt/publications/bhutan-living-standard-survey->
- Price, M. F. et al. (2011) *Mountain Forests in a Changing World* Mountain Forests in a Changing World Realizing values, addressing challenges, FAO/MPS and SDC, Rome. Available at: http://www.fao.org/fileadmin/user_upload/mountain_partnership/docs/FAO_Mountain-Forests-in-a-Changing-World.pdf.report/ accessed 20.05.2022
- R.P., N. and E., H. (2000) Commercialisation of non-timber forest products: review and analysis of research. doi: 10.17528/cifor/000723.
- Rahut, D. B., Behera, B. and Ali, A. (2016) 'Do forest resources help increase rural household income and alleviate rural poverty? Empirical evidence from Bhutan', *Forests Trees and Livelihoods*, 25(3), pp. 187–198. doi: 10.1080/14728028.2016.1162754.
- SFED (2011). *Interim Framework for the Mangement and Marketing of NWFPs in Bhutan*, Social Forestry & Extension Division, Ministry of Agriculture and Forests
- SFED (2019). Information available at SFED, unpublished. Department of Forests and Park Services, Ministry of Agriculture and Forests, Royal Government of Bhutan.
- SFED (2020) 'National Strategy for Non-Wood Forest Products Development 2020'. Social Forestry & Extension Division, Ministry of Agriculture and Forests
- SFED (2020) 'Case Study; Rural enterprise development of NWFPs', Social Forestry & Extension Division, Ministry of Agriculture and Forests
- Stoecker, R. (1991) 'Evaluating and rethinking the case study'. *Sociological Review*, 39(1): 88–112.
- Weiss, G. et al. (2017) 'Non-Timber innovations : How to innovate in side-Activities of forestry Case study Styria, Austria.' *Austrian Journal of Forest Science*. 2017. 231-250.

7. Appendix

7.1 Questionnaires

Questionnaire on the Role of NWFPs & Factors for Improving NWFP Management in Bhutan

Date:..... Dzongkhag:.....

Gewog:..... Village:.....

Place of Interview:

Interviewee:

Sl. No.	Question	Response
Income and Impact		
<i>General questions</i>		
1.	Do you collect NWFPs? Why? What purpose?	
2.	In how far would you say that products from the forest have some importance for your household?	
3.	Are you/members of your household collecting any products from the forest, and which ones?	
4.	How do you feel NWFPs have impacted your income?	
5.	Do you believe harvesting and selling Yongriba has made any positive impacts to your household?	
6.	How do you think the NWFPs have developed in the past? Vs recently. (May reveal explanations or reveal factors)	
<i>Detailed Questions</i>		
i.	Do you feel harvesting NWFPs and selling is profitable? Can you say more/explain?	<input type="checkbox"/> Yes <input type="checkbox"/> No Explanation:

ii.	How much/ what share from years earnings, does your household earn in a season from NWFPs?		Sources of income breakdown
iii.	What is your purpose for collection?		
iv.	How much/ what share of your total yearly earnings is from the sale of yongriba (<i>Pouzolzia</i>)?		
Harvesting			
<i>General Questions</i>			
1.	How is harvesting of NWFPs carried out?		
2.	How is Yongiba harvested?		
<i>Detailed Questions</i>			
i.	Are you married?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
ii.	How do you feel this impacts the harvest of NWFPs?		
iii.	Do you have children?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
iv.	How many?		
v.	Who is the head of HH?		
vi.	How many HH members are involved in harvesting yongriba?		
vii.	Who in your HH is most proficient in harvesting yongriba?		
viii.	Do you include children in harvesting NWFPs?		
ix.	What is the role of men in NWFP management?		

x.	What is the role of women in NWFP management?	
xi.	Where do you collect NWFPs?	GRF, CF, NWFP area?
xii.	Where do you collect yongriba?	
xiii.	How often do you collect?	
xiv.	How much do you earn in a season?	
xv.	Can you tell me about availability of NWFPs from past as compared to present?	
xvi.	Have you heard of any instances of illegal harvesting?	
Education and training		
1.	Are you formally educated? Up to what level?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Do you have any training on NWFP management?	
3.	Do you feel education is important for NWFP management?	
4.	In which aspects?	
5.	How has education impacted your NWFP management process?	
Marriage and Children		
1.	How do you marriage and kids feel this changes NWFP management?	

Processing		
1.	What kind of processing is done by yourself in your HH (or together with other HH)?	
2.	Who does the processing?	
3.	Does it bring any changes in income?	
4.	Does it add additional costs when processing and sorting?	
5.	Is it worth it overall? What are the pros and cons?	
Location and Transport		
1.	Do you feel the terrain and location could have an impact on NWFP management and sales? And how is it in your situation/for you?	
2.	Do you feel access to roads and transport services have an impact on NWFP management and sales?	
Marketing arrangements		
1.	Basic marketing arrangements	
2.	How do market the collected NWFP and yongriba specifically?	
3.	Who is responsible for marketing the NWFPs?	
4.	Reliance on 3 rd party? What kind of arrangement is in place?	
5.	In your HH. Furthermore it would be interesting to learn if there are any collaborations/associations etc. for joint marketing in the community??	

Labour and Wage Costs		
1.	Do you hire labour outside your immediate family for harvesting purposes of yongriba?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	If yes, how much does it cost to hire an individual?	
3.	Do you feel this significantly impacts your final earnings?	
Climate change		
1.	Have you noticed changes in yongriba yields over the years?	
2.	Do you feel the climate of the area has remained the same in the past 20 years?	
3.	How do you feel about climate change and how the NWFPs are responding?	
Policy		
<i>General Questions</i>		
1.	Are you aware of policy measures in effect regarding NWFPs?	
2.	Do you feel they are beneficial or hinder NWFP management?	
3.	Do you know of any other policies outside NWFPs that hinder NWFP management?	<i>List examples for people to find</i>
4.	Why have you registered to the NWFP group? What benefits do you derive? Is it worth it?	
5.	Local leaders are important decision makers. Do you think they effect NWFP management in any way? Does the group have any power dynamics?	

<i>Detailed Questions</i>		
i.	What are the financial policies in NWFPs that you are aware of?	
ii.	What financial support do you receive?	
iii.	What are those you are aware of that you do not receive?	
iv.	What are the educational, training and informational policies that you are aware of?	
v.	What education or training did you use or did you not use? Which kind of information services are relevant for you?	
vi.	What are the regulatory policies that you are aware of?	
vii.	What regulatory policies do affect you (or the community) in NWFP collection, management or trade?	
viii.	Do you think changes in policy could be made to improve management and marketing of yongriba?	
ix.	Any idea of policies that benefit NWFPs or livelihoods?	
x.	What can you tell me about local knowledge on NWFPs?	

xi.	Do you feel the policies have incorporated local knowledge?	
xii.	Do you feel people are consulted on creation of policies regarding NWFPs?	
Closing question and thank you.		
<i>Is there anything else you find relevant for the topic and which we missed to talk about?</i>		
<i>Many thanks for your time and answers!</i>		

Questionnaire on the Policy Support in NWFP Development

Date:.....

Agency:.....

Ministry:.....

Place of interview:

Interviewee:

Sl. No.	Question	Response
Role of Organization and Policy Support		
1.	What is your organization's role regarding the NWFP programme?	
2.	And what is your role?	
3.	How does your organization receive or arrange for funding the NWFP programme? how far they are involved in other policy instruments (formulation and implementation)	
4.	To what extent is your organization involved with the people who manage and harvest NWFPs?	
5.	How important do you believe NWFPs are for livelihoods?	
6.	What are some of the most important NWFPs in your opinion for Bhutan in general, and for Pema Gatshel communities	
7.	What are some of the less important NWFPs?	
8.	How important do you believe NWFPs that are considered less important or of	

	lower potential, are to the NWFP programme and to rural livelihoods?	
9.	What kind of policy support does your organization provide to the NWFP programme?	
10.	On what basis do you make policy decisions regarding NWFPs? And in which way, what are the procedures... and who is involved in those processes?	
11.	How would you describe your organizations plans for developing the NWFP programme in the future?	
12.	How much time, budget and manpower would you say, your organization dedicates towards the NWFP programme?	
13.	Do you feel new, willing NWFP based enterprises receive enough practical support?	
14.	What is your organizations means to support up and coming enterprises interested in NWFP processing?	
15.	How do you feel is the best way to support these new enterprises?	

16.	How effective do you believe is the implementation of the policy instrument/ support measure?	
17.	What impacts do you believe your organization has in the area of interest (Eastern Bhutan)?	
18.	Do you feel the support could be changed/ improved/ streamlined in anyway?	

Questionnaire on Enterprise Development

Date:.....

Enterprise:.....

Place of interview:

Interviewee:

Sl. No.	Question	Response
Enterprise		
1.	Do you manufacture incense?	
2.	If yes, do you use Yongiba?	
3.	Do you collect it yourself?	
4.	Do you buy it from locals?	
5.	Are they from nearby groups?	
6.	Is it easy to get raw materials?	
7.	How much do pay for raw materials?	
8.	What quantity can you get in a year?	
9.	How do you use yongiba?	
10.	Availability of other resources?	
11.	What is your process for getting a license?	
12.	Was it easy to set it your business?	
13.	Did you receive any financial aid?	
14.	Did you receive training in any field?	
15.	Do you know all the regulatory do's and don'ts in the NWEFP business?	
16.	Are you aware of any other kinds of support that is available to other businesses like yours?	
17.	Are you aware of support received by other businesses?	
18.	Do you think outside organizations can help you more to develop your business?	
19.	Do you hire outside help?	

7.2 Picture Bank:



Figure 10. Roadblocks during data collection (Wangchuk, 2022)



Figure 11. Clearing roadblocks (Wangchuk, 2022)



Figure 12. Face to face interviews with NWFP group members (Wangchuk, 2022)



Figure 13. Telephonic interview with NWFP group members (Wangchuk, 2022)



Figure 14. Attempts to cultivate Thoksampa on Private land in Shumar