PROMOTING HERBAL ENTERPRISE IN REMOTE REGIONS OF NEPAL FOR WOMEN AND YOUTH EMPLOYMENT

A study conducted as a part of the Daayitwa Nepal Public Policy Fellowship 2022, together with parliamentarian Hon. Kamala Roka

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Yours Sincerely,
Nischal Shrestha

Abstract

Owing to Nepal's elongated positioning in the central Hindu Kush Himalaya region (HKH), Nepal and her people have forged a rather unique relationship with Medicinal and Aromatic Plants (MAPs) which dates back at least thousands of years. A derivative of being located in one of the most unique ecological corners, biodiversity hub, and climate pockets of the world. It is home to many diverse, unique, high value and endemic MAPs with highly revered potency found naturally. Most of these MAPs are found in remote Western mid-hills of Nepal (Sub-tropical, Temperate, and Sub-Alpine regions) ranging to 1000-4500 M. Throughout time, people in these regions have developed a special attachment with these resources weaving plant, nature, people, and community together in one complete or total fabric of life. Furthermore, women of these regions are very important catalysts of its socio-economic, commercial, and cultural manifestations, who lie at the very epicenter of the incorporation of MAPs into many dimensions of life from harvest, and medicine, to cultivation, traditional knowledge, embroidery, and trade. Hence, the Nepal government has always understood the quintessential importance of MAPs for the creation of employment and generation of income in remote regions that promote fair, just, and equitable growth. However, the government has always lacked robust clarity, specificity, and clear vision at local and state level for the mobilization of these resources, especially given the recent advancement/disruptions in the global MAPs industry and evolving local dynamics of these remote regions which this study aims to dissect from top to bottom for clear contextual policy insights and way forward, especially for the pretext of women and youth employment.

Keywords: Hindu Kush Himalaya, Medicinal and Aromatic Plants, Western mid-hills, Women, and Youth Employment

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CHAPTER I: BACKGROUND AND CONTEXT

1.1 Nepalese overview: The 'Valuable' Nepalese MAPs ecosystem

225 million years ago, the Indian subcontinent was once a big island located off the Australian coast and separated from Asia by the Tethys Ocean. After the supercontinent, aptly named 'Pangea' started to break up into several parts, the Indian subcontinent plate started to drift northwards towards the Eurasian plate, moving towards the continent roughly at the rate of 9-16 cm every year.[1] Likewise, as the Indian subcontinent plate began moving towards the southern Euro-Asian plate around 80 million years ago, the Tethys Ocean Floor also began subducting northwards underneath Asia.[2] But not all subducting oceanic lithosphere of Tethys Ocean retracted to Earth's mantle, some ocean floor sediments remained and accreted to the larger Euro-Asian in a process called 'accretionary wedge'. These tattered accreted remains of the Tethys Ocean floor form now what we know as the mighty 'Himalaya'.[3]

Covering 2900 km in the North of the Indian subcontinent, the range acts as a barricade for moisture-stricken winds that blow north. Beyond, it lies the Tibetan (Qinghai-Xizang) Plateau and Hengduan Mountains of China, which adjoins the Qinghai-Tibetan Plateau in the South East, (Sa, 2020). Himalaya as a larger unit is referred to as the third pole of the planet that are home to the biggest rivers in Asia that provides water for a huge population across the Indian subcontinent and even the Tibetan plateau. The perennial major rivers of Asia like Indus River, Brahmaputra, Ganges, Yantzee, Yellow, Mekong, Irrawaddy are heavily dependent on the glaciers and ecosystems of the region (Sharma, Tse-ring, Chettri, & Shrestha). Its grandeur is so rich that it

[1] Pangea is a supercontinent that existed in late Paleozoic era to early Mesozoic era. In relation to current Earth almost all of the landmass existed around the equator surrounded by super oceans.

[2] See, A special report entitled "The Himalayas: Two Continents Collide by USGS (United States Geological Survey) 2015, Retrieved from: https://pubs.usgs.gov/gip/dynamic/himalaya.html

[3] An accretionary wedge or accretionary prism is the buildup of sediment accreted from an oceanic plate by the non-subducting plate during the process of subduction. Generally, materials in accretionary wedges are comprised of marine sediments scraped off in the process of subduction.

even helps in regulating the planet's climate. More than that, the range act as a climatic divide which impacts large systems and bodies of air and water circulation, which enables various meteorological conditions and climate subspaces to thrive. It also enables monsoons specifically in the southern side (South Asia) blocking the moisture-struck winds crossing the range north which allows enough precipitation in South but barren condition arise in the north of the range (Tibet). The region also has a huge geographic variation further enabling its rich climate and ecosystems. Owing to these several regions the third pole of the world is also recognized as one of the major 34 global biodiversity hotspots in the world. Its ecosystem is reported to enable the employment of approximately 1.3 billion people directly in Asia (Mast & Muthanarasimha, 2022).

In the upstream regions, they do more than just provide fresh water but they provide geological affluence, flora, fauna, unique biodiversity, energy, timber, knowledge, water bodies and other opportunities. Throughout time, people in these regions have developed a unique culture that weaves nature and people together in one fabric of life enabling complex social-ecological systems, distinctive human communities, and heritage. Owing to its resources, human heritage and biodiversity, it is also home to the world's most resilient traditional medicine systems such as Ayurveda, Tibetan, Chinese, and Unnai, and is home to some of the most exotic diverse plants and herbs found in the world. Nepal's rather elongated placement in the central Himalayan region means that this is how the story begins. To first understand the herbal resources of Nepal one must understand these humble roots, larger placement and its richness a derivative of being located in one of the most unique geographical and ecological corners of the world.

1.1.1 Nepal's dispersion of floral resources and plant heritage

Nepal, a country directly stacked between India and China lies at the center of the Himalayan region. It has extreme altitude variation, ranging from near sea level (~ 70 meters) to the very top of the world (8848 m). This paints a huge climatic difference and variation in topography that is responsible for diverse ecological pockets of lush flora to exist naturally. This has always meant that Nepal has always enjoyed a very unique, thriving, and prosperous biodiversity, in tandem of different living organisms. The country has four distinct physiographic zones; lowlands, mid-hills, high mountains, and high Himalayan ranges, each with its own unique climate characteristics which are discussed in the table below.

Table 1: Different Physiographic Zones of Nepal

Physiographic Zone	Surface Area (%)	Elevation (M)	Climate
High Himalayan	23	5000+	Tundra Type Artic
High Mountains	20	3000-4000 4000-5000	Alpine Sub Alpine
Mid Hills	30	2000-3000 1000-2000	Cool Temperate Monsoon Warm Temperate Monsoon
Low Lands (Terai and Siwalik HILLS)	27	500-1000 500 under	Hot Monsoon and Sub Tropical Hot Monsoon and Tropical

Source: Land Resources Mapping Project, Kenting Earth Sciences, (1986)

Owing to the enormous differences in topography and altitudes, Nepal has several distinct physiographic zones. Each zone comes with its own distinctive characteristics, advantages, disadvantages, and features. This also means that in turn, these distinct physiographic zones have a different number of ecosystems that are induced by the larger geography, climatic conditions, and ecology. The different pockets of the ecosystem spread throughout this central Himalayan state have their own uniqueness and filaments of biodiversity including plants and foliage. The below table labels the different numbers of the ecosystem classified as per various physiographic zones of Nepal.

Table 2*:* Different No of Ecosystems and Physiographic Zones of Nepal

PHYSIOGRAPHIC ZONE	No. of Ecosystems
Highlands	38
Mid Hills	13
Siwalik Hills **Low Lands**	13 10

Source: Bulletin de l'Association de géographes français (1970)

Each of these physiographic zones with its different ecosystem serves as an incubator for unique sets of bio-diversity to thrive, respectively, further influenced by its larger geography and climate links in relation to Euro-Asia. Below mentioned tables tries to paint a more comprehensive picture of the dispersion of floral resources as per different physiographic zones of Nepal. For easier distinction, the floral species are divided into four types (Bryophytes, Pteridophytes, Gymnosperms, Angiosperm and across three fundamental physiographic regions: Terai-Siwalik Hills, Mid Hills, and Highlands as tabulated below.

Table 3: Plant Species as per different Physiographic zones of Nepal

Plant Type	Terai and Siwalik Hills 1000m	Mid Hills 1000-3000m	High Hills 3000 M+
Bryophytes (liverworts,mosses)	61	493	347
Pteridophytes (ferns)	81	272	78
Gymnosperms (naked seed plants)	-	16	10

Angiosperms (flowering plants)	1,885	3,364	2,000+

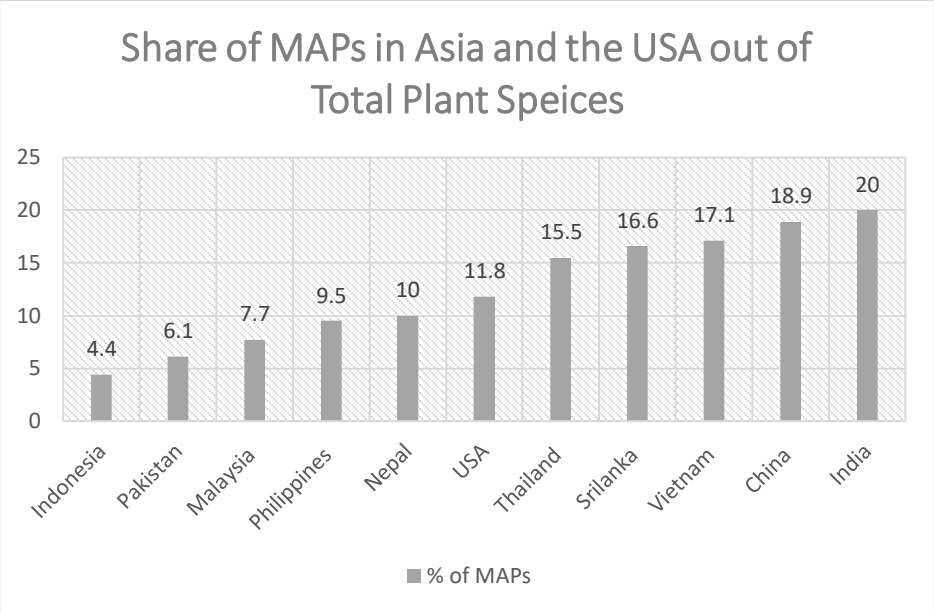
Source: Institute of National Medicine, University of Toyama

The table indicates that Mid hills(1000-3000m) with the cool temperate monsoon, warm temperate monsoon, and also subtropical zones (from 1000-2000m) are found to be the physiographic zone with the most species of recorded plant resources. Mid hills, followed by High hills as a physiographic region hold the highest level of diversity of plant resources in Nepal. Likewise, out of 246 plant species only available in Nepal, around 131 plants are endemic to high mountain areas with alpine and subalpine climates which highlights the clear significance of the regions. Hence, the most valuable regions for plant resources are clearly the Mid-Hills which hold a higher percentage of diversity in Nepal, and the high hills which hold the most unique plants in the country (See annex).

1.1.2 Nepal's valuable MAPs pocket and herbal heritage

Although Nepal is very small in comparison to India and China which together hold most MAPs (Medicinal and Aromatic Plants) resources in the world. Nepal's unique and rather elongated geographical standing in the larger Hindu Kush Himalaya and Pan-Himalaya region, and all of the ecological and biodiversity glory it has to offer means that it is home to more than 6,000 to 7000 species of plants. Out of which, it is reported that more than 2,000 are unique to the greater pan-Himalayan range and around 300 species are reported to be only found in Nepal (The World Bank, 2018). Nepal's share of total medicinal plants in terms of its plant resources, albeit of its size stands for 10%. However, Nepal's export of MAPs was only valued at US$ 12.9 Million representing only 0.44% of the world's export, ranking no 37 (GIZ, 2017). The below figure shows the total share of the percentage of Medicinal plants in selected countries with a high concentration of MAPs resources which clearly shows Nepal's impressive share.

Figure 1: Total Share of Medicinal Plants in Selected Countries



Source: (GIZ, 2017)

In a survey, conducted by the Government of Nepal, The Department of Plant Resources in 1970, it was published that, Nepal's MAPs species were estimated to be around 483. A more comprehensive database of MAPs in Nepal, MAPDON, paints a more ornate picture of 1624 species of MAPs found in wild. More recent, MAPs excursions studies indicate that Nepal has more than 1792 species of plants with Medicinal and Aromatic Properties. MAPs are chiefly available in 5 different physiographic zones in Nepal. The below table classifies the total percentage of MAPs in Nepal as per different types of the physiographic zones of Nepal.

Table 4*:* Medicinal and Aromatic Plants (MAPs) Distribution as Per Different Physiographic Zones of Nepal.

Physiographic Zone	**% of MAPs**
Alpine region 4000M+	7
Sub-alpine region 3000-4000M	18
Mid-Hills Temperate Region 2000-3000M	36

Mid Hills Sub-Tropical Region 1000-2000M	54
Tropical Region 1000+	49

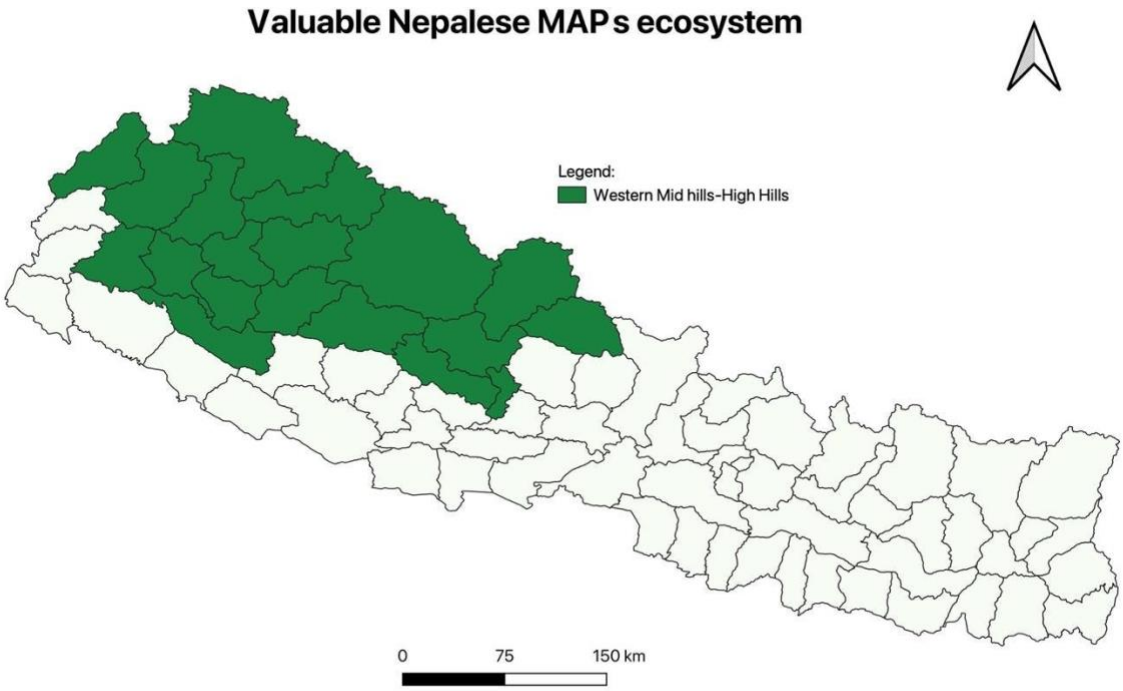
Source: (Gewali, Aspects of Traditional Medicine in Nepal, 2008)

As clearly indicated in the table, the subtropical regions and temperate regions of the Mid-hills seem to hold a higher percentage of MAPs in Nepal, thus making it the most valuable MAPs ecosystem in Nepal. If we dive even deeper, the same trend seems to follow for MAPs as the plant resources of Nepal. Meaning, various regions of Mid hills are shown to hold most diversity of MAPs whilst much research clearly indicates that higher regions such as the sub-alpine region hold the most unique and high-value MAPs that are endemic to Nepal (Bhattarai, 2007).

Adding more layers to observations, the Western Frontier of MAPs in Nepal has always been very unique. Whilst the Eastern regions are more ajar to the steady winds of the Monsoon that come from the Bay of Bengal every summer, which hits the North Eastern Himalayan region first and gradually makes its way towards the Central and Western regions of Nepal. The Western Frontier relatively speaking lies further away from the Oceans in comparison to its Eastern Counterpart and thus gets less precipitation, particularly in remote mountainous regions of Western Nepal, where the rugged mountainous landscapes act as a further barrier for winds to reach the region. These remote secluded mountainous regions of Nepal are also labeled as 'The Wild West of Nepal' which are home to the most highly valuable MAPs like (Ophiocordyceps sinesis), Jatamansi (Nardostachys grandiflora), and Panchaule (Dactylorhiza hatagirea) to name a few. Western Nepal has always been revered for their luscious quality and quantity of MAPs with famous potent medicinal properties, even widespread beyond Nepali borders. Notwithstanding, the phenomenon in summer, these regions are also-akin to Winter rains due to Westerlies; Prevailing winds in the Southern Hemisphere that gust from West to East which is weakest in the summer when the pressures are high on the poles but stronger in Winter. For Nepal, the winds generally originate from the Mediterranean Regions that bring modest precipitation and cold air along the North-Western regions of Nepal.

Perhaps, when we glue all of this information together, it is easier for us to understand and categorize different frontiers of Nepal. Eastern Nepal relatively gets continual and reliant winds every summer and is not only wetter in comparison but houses more vigorous river basins and mountains with deeper permafrost that also helps to explain more densest pocket populations of Nepal to be concentrated along the Eastern side, more especially in the South Eastern Region. Regardless, relatively speaking, Western Nepal seems to have been blessed with more unique and delicate pockets of ecosystems that house more very distinctive and high-value plants and biodiversity. Hence, we can easily argue that Western Mid-Hill to high-hill of Nepal holds the most valuable Nepalese MAPs and plant resources, making it the most valuable MAPs ecosystem of Nepal. Other research also indicates that in Mid-Western Mid Hills around 85% of MAPs are harvested in the wild. It is also indicated that the Mid-Hill and High-hill of the Western Region of Nepal alone account for more than one-third of Nepal's trade volume, where a single district Jajarkot provides around US$ 13, 209 to the national economy (Chhetri, Shrestha, Thapa, & Timalsina, 2021) . Mid-Hills districts in Western Regions such as Mugu, Kalikot, Rukum East, Jajarkot, Rolpa, Parbat, Mustang, Surketh, Dharchula, Manang, Myagdi, Achham, Doti, Bajura, Bhajang, and southern parts of Dolpa, Jumla, Humla are among the most valuable Nepalese Maps ecosystems which lie in Western Mid-hill to high hill and when it comes to any policies regarding MAPs, this region of Nepal should play a central role, that has been supplying high-quality MAPs, within and out of Nepalese territory for thousands of years. The below figure shows the proposed valuable Nepalese MAPs ecosystems: Western Mid and High Hills.

Figure 2*:* The Proposed Valuable Nepalese Medicinal and Aromatic Plants Ecosystem



Source: Author

Many of the most unique MAPs of Nepal grow primarily in hilly and mountainous areas, in forests and meadows (also called Patans) above 2000 to 4,500 meters. These MAPs and wild herbs are mostly harvested from national or community forests in these regions and are generally considered to be a traditional and very much personal/cultural endeavor. As per Trade and Export Promotion Centre (TEPC), tropical/subtropical regions and Temperate regions of the Mid-West (East Centre West) have the highest concentration of qualitative MAPs which includes the youngest district of Nepal (77^{th}) East Rukum and several other districts like Jajarkot, Dharchula, Surketh, Myagdi, Achham, Dolpa, Jumla, Humla, and Kalikot (Chhetri, Shrestha, Thapa, & Timalsina, 2021).

MAPs in Western mid hills and high hills provide a very lucrative and viable mode of income to gratify the basic needs of poor and marginalized people in these areas and are also a critical source of revenue for the government. The below table gives the comprehensive distribution of MAPs found in these regions (Mid-Hills and High Hills) whose topography includes the sub-tropical

region (1000-2000M), temperate region (2000-3000M), and sub-alpine region (3000-4000m) as described below.

Table 5: Distribution of MAPs in larger Mid-Hills as per Physiographic Zone

PHYSIOGRAPHIC ZONE OF MID AND HIGH-ALTITUDE HILLS	**ALTITUDE**	**MAJOR MAPS AVAILABLE**
SUB-ALPINE REGION	3000-4500M	*Dactylorhiza hatagirea* (Panchaule), *Taxus wallichina* (Lauth Salla), *Rheum austral* (Padamchal), *Swertia chirayita* (Chiraito*)*, *Podophyllum (*Laghupatra*)*, *Paris polyphylla* (Satuwa),
TEMPERATE REGION	2000-3000M	*Swertia chirayita (Chiraito*), *Aconitum heterophylloides* (Nirmasi), *Digitalis purpurea* (Tilpushpi), *Berberis asiatica* (Chutro), *Valeriana jatamansii* (Sugandhawal)

Sub-tropical Region	1000-2000 m	*Terminalia chebula* (Harro), *Aegle marmelos* (Bel), *Terminalia belerica* (Barro), *Diospyros melanoxylon* (Tendu), *Azadirachta indica* (Neem), *Haldina cardifolia* (Haldu), *Rauvolfia serpentine* (Sarpagandha), *Phyllanthus emblica* (Amala)

Source: (Malla & Shakya, 1995)

The history and heritage of MAPs are also deeply associated with Nepalese people. People living in these areas have always relied on these plants for thousands of years, and their recorded traditional use dates back at least several centuries back. People living in these regions also have distinct and diverse sets of cultures and thus, their own respective pockets of socio-traditional nuances as well. Hence, it means different things to different groups of people with different intensity, especially in the western mid to high hill region.

The MAPs ecosystems found in Western Mid-hill and High-Hills are the most valuable for Nepal, the former being more diverse and later more unique and endemic, which has been putting Nepal on the map of the larger medicinal plant trade for centuries. MAPs that are found in this area are more than just plants, a part of daily life engraved in every strand of life from culture to trade to identity to tradition and economy.

1.2 MAPs in the 21st century: A Global Perspective

Since the turn of the 21st century, a clear trend of a surge in global demands for MAPs, particularly as inputs for more complex final goods and products can be clearly seen (World Bank, 2018). The industry largely is wrapped around the group of large industrialized importers and exporters like Germany, Japan, the United States, China, and India. These states are common nodes of the

medicinal plant global value chain (GVCs). The rise of new emerging markets and the middle class across the developing world in Asia, sustained by the rising incomes of middle-class families also show promising implications for the global market, product, and service diversification. Post Covid-19, industrialized country's health providers, research, and even market are increasingly paying more attention to various forms of traditional and plant-based medicine which were already a science 'phytomedicines' that blends traditional and modern medicine (Benarba & Pandiella, 2020). As a result of this new surge of openness and also need in some cases, from leading industrialized nations, more capital and technology are gradually being diffused in the last few decades and the market has been growing exponentially (Jitendra Srivastava, Lambert, & Vietmeyer, 1996).

The international herbal trade market is estimated to be at $25-30 Billion annually. The botanical review indicates that there are approximately 250, 000 to 350, 000 plant species, and only 35,000 species are reported to be used for various medical ailments globally. Out of which around 3000 are traded internationally in the form of raw material inputs for a wide range of products. These plants are mostly traded in unrefined, semi-processed; often in mixtures. From 1940 to 2014, almost 50% of biomolecules have been natural or derived products as approved by the United States Food and Drug Administration (Chhetri, Shrestha, Thapa, & Timalsina, 2021). Around 25% of allopathic drugs are today made of plant-related compounds and substances. Researchers believe that only 15% of the total medicinal plants have been subject to phytochemical analysis and only 6% have been subject to biological screening and pharmacological efficacy (Rauf & Khan, 2014).

As per a study that analyzed Global MAPs trends and issues, it is indicated that around 3,000 species of MAPs are traded thoroughly in the world as raw inputs for an ever-growing extensive list of products (Schippmann & Leaman, 2002). MAPs are mostly used to produce dietary supplements, pharmaceuticals, natural health products, cosmetics, personal care, perfume and flavoring. Hence, it can be mostly divided into four sections: Cosmeceutical, Pharmaceutical, Nutraceutical, and other Agro-based products.

1.2.1 Global Demand

Global Demand for MAPs has strikingly tripled in the span of the last 15 years (World Bank, 2018). The increase in price in relation to volume of trade indicates that demand of global MAPs is far outpacing supply. MAPs are of acute importance to different big global industries that mostly need a constant supply of these fresh inputs. The short shelf lives of MAPs as an input component and also their by-products have a distinct impact on the supply chains and GVCs (Subedi, 2001). The United States, Japan, Chinese Taipei, Singapore, Germany, and Hong Kong (China) imported more than US$ 100 Million of MAPs in 2016 (World Bank, 2018). The global MAPs import has been increasing by +3% since the 2010s and reached a volume of 673, 564 Tones in 2014, valued at a whooping US$ 2,724 Million. A trend of using special, exotic, and higher-value plants in natural medicine and perfumes can also be seen, which has been growing by the higher average value of +8% in the global MAPs trade (GIZ, 2017). The research also indicates that Japan has the highest per capita consumption of herbal medicines in the world. Moreover, whilst looking at imports in regards to volume, China and India are the largest exporters, third and fourth respectively as per 2016, UN ComTrade data. Most of the production in these states is geared to meet domestic demand as these two states have a huge heritage of herbal medicine and both entertain large swaths of processing industries. The global demand data also suggest that the market of primarily higher value MAPs is mostly high-income states. Regardless, a new trend of new emerging markets is also being seen in developing countries, especially in Asia with higher value MAPs product and service that is likely to grow more in the future (World Bank, 2018).

1.2.2 Global Supply

MAPs have mostly always been about heritage and traditions but as the world steps into the 21st century with Industrial background, as MAPs as a sector see a surge in attention, this is slowly beginning to change. Wild-collected MAPs are mostly only cultivated in limited amounts and at specified times because of these shortages in supply are very usual. Tough terrain, and severe climatic conditions especially in developing states play a very vital role in the determination of annual supply, which is very evident by elastic fluctuations of total trade volume, notwithstanding the steady and firm growth in trade synergy, especially for a state like Nepal. Because of issues such as this and the growth of the sector largely in the background, sustained concerns over

sustainability, volatility and susceptibility have increased investment in domestication and modernization of global supply. As a result of this, more and more species of MAPS, today are harvested using industrial/commercial processes more so in advanced economies with a huge healthcare industry and consumer base (GIZ, 2017). The supply of Global MAPs is mostly dominated by China, followed by India. China has mostly been able to export 185,000 tons of raw MAPs to the world since 2001, which is more than twice the total volume of MAPs exported by India. Moreover, India has also amplified its volume of MAPs export since the end of the 2000s by allocating huge investments in cultivation and domestication of MAPs for the home industry and also largely to tap into its export potential. In 2018, the government of India allocated 200 crore rupees (approx. US$ 30.8 Million) for organized cultivation of 'highly specialized medicinal and aromatic plants including promoting organic farming by Farmer Producer Organization (FPOs) and Village Producers Organization (VPOs).[4]

1.2.3 Global Industry Usages and Commercial Applications

Understanding the global trade dynamics of MAPs is inconsequential without comprehending the whole picture, namely its usage in different sectors and multiple industries of which, MAPs are a prerequisite. The main usage comes from pharmaceutical medicaments as its inherent use, and other niche sectors such as Beauty Personal Care (BPC), fragrance, food, and beverage fields. The below table lists primary industries with examples for which raw MAPs are vital input.

Table 6*:* Industry use and Commercial applications of MAPs

CATEGORY OF INDUSTRY	DESCRIPTION	EXAMPLES
ALLOPATHIC DRUGS	Biological compounds derived from botanical source used in modern medicines	Morphine, Aspirin, Paracetamol
TRADITIONAL MEDICINE	Medicine based often in traditional indigenous	Polyphenone E, Senekot

[4] See, Press Release entitled 'Summary of Budget 2018-2019' by Press Information Bureau, Government of India, Ministry of Finance. Retrieved from: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1518569

	knowledge obtained chiefly via botanical means, consisting more than one or two plants	
NUTRACEUTICALS	A supplementary diet with botanical extracts or nutrients	Chyawanprash, Amala Powder
FOOD ADDITIVES	Botanical purified mixtures that affect the taste, smell and other food characteristics	Carrageenan, Hop extract
DIETARY SUPPLEMENTS	Targeted herbal diet supplements that provide more nutrients	Flavocoxid
COSMECEUTICALS	Botanical Extracts that supplement cosmetic products	Lotus Herbal
FRAGRANCE AND PERSONAL CARE/HYGIENE PRODUCTS	Botanical compounds and extracts mostly used as essential oils among other forms for natural efficacy (including oral care, perfume, skincare, haircare, antiseptics, candles, vaporizer and soaps and detergents	Patanjali, Ustraa Ayurvedic

Source: Author based on World Bank (2018)

The trend of the consumer wanting more complex MAPs final products is clearly seen everywhere in the globe. Overall, good demand for MAPs in other consumer goods, medicinal and industrial final products has also invigorated positive market forecasts. If we take a closer look forecast may

vary in how the products, goods, and services are clustered in the MAPs but regardless stable growth across all of the categories of the industry is predicted.

Other trends in demographics and region, may affect small states like Nepal (again populations in East Asia, the rising middle-class boom in South East Asia and South Asia, large percentage of youth in the Indian subcontinent, rate of urbanization, rate of growth in medical infrastructure, climate change and pivot to sustainable products as well as a mode of living, seems to be present a very equitable and promising for opportunity developing states like Nepal.

1.3 The Role of Women and Youth

The Nepalese government has adopted plenty of vital normative regulations and frameworks that safeguard women's rights and empowerment which are the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), 2030 Sustainable Development Goals, Beijing Declaration and Platform for Actions, and UN Security Council Resolutions 1325 and 1820. Such kinds of pledges have also been etched in the Constitution of Nepal and strides are being made for the implementation of all laws and policies with regard to provisions on Women's empowerment. Nepal is an economy, where only 37% of the women work in Nepal whilst Women sport more than 53.91% of the entire population. An astounding 90.5% are considered to be informal workers, and only 9.5% seem to be formally employed. The pandemic has far exacerbated this number.[5] A fundamental constraint for Women's Empowerment, especially in the economic lens has also been the structural discrimination in society including caste-based and gender-discriminatory norms which might be more prevalent in remote regions of Nepal with little economic output. A recent survey by Asia foundation indicates, during Covid-19 among the respondents of the survey in SMEs, 37% of enterprises imposed pay cuts on their female workforce, in which 58% had sustained more than half in deduction of salary, and 5% of the workforce even had a 100% of their pay cut (The Asia Foundation, 2021). The youth of Nepal seem to have similar impediments, in a survey conducted by UNFPA, it was seen that among the

[5] See, the information portal by UNWOMEN, Asia, and the Pacific and the interview of H.E Pertti Anttinen. Retrieved from:https://asiapacific.unwomen.org/en/countries/nepal/about-un-women-nepal

And, https://asiapacific.unwomen.org/en/stories/take-five/2022/09/take-five-pertti-anttinen

respondents of the study, 40% of youths had not received any formal education, who mostly belonged to marginalized communities and 55% of youth respondents stated they do not contribute whatsoever in any form of household expenses. Only, 7% of those youths that were economically active were from agricultural fields (UNFPA, 2017). The patriarchal norms of Nepalese society present several structural challenges for youths and women of Nepal who are discriminated against for a plethora of reasons and circumvent their active participation in any social, economic, and communal decision-making spheres. Nepalese youth workforce faces issues due to their gender, caste, ethnicity, and other strands of society. Gender-based discrimination in Nepal especially in remote regions takes shape in many shapes that include gender-based violence, caste-based discrimination, mobility restriction, early marriage, typical beliefs, and social sanctions against youths and girls.

Gender inequality is very much magnified in the upstream MAPs sector, especially in so-called remote regions of Nepal, where women are the most tangled in the collection, procurement, and cultivation of MAPs. It is estimated that around one-quarter of the collectors of wild MAPs are women in 2005, which is likely to have increased more because of men overseas migration (Olsen & Bhattarai, 2005). Huge outward migration as highlighted by many stakeholders in the course of the study for the research phenomenon aptly named 'ek ghar ek America' has created a huge structural challenge in the promotion of herbal enterprise in the region and for any attempt women, especially women entrepreneurship is likely to play an integral role[6]. The most updated data, it is also indicated that around 77% of economically active women are believed to be taking part in the agriculture sector, taking up a previously male-centric sector. Women are primarily less likely to emigrate because of stereotypical notions and lack of formal education, especially in remote regions of Nepal. Huge numbers of women in such regions are illiterate and lack basic knowledge of entrepreneurship, and value addition, and are unfamiliar with financial responsibilities (UN Women 2017).

[6] Based on Field Notes of author

CHAPTER II: UNDERSTANDING POLICY, LEGISLATIVE FRAMEWORKS, AND GOVERNMENT COMMITMENTS

2.1 Government Commitments, Plans, and Legislative Frameworks

Nepal, owing to its rich heritage when it comes to MAPs, started experimental herbal farming of valuable MAPs as early as 1937. The history of any Nepalese commitment (policy, legislative, or strategies) commitments towards MAPs seems to have begun with the advent of the Department of Plant Resources back then known as the Department of Medicinal Plants in 1960. The institution is responsible for surveying, collecting, managing especially inventory of plant resources and establishing/operating botanical gardens in various regions of the country as well as conducting key chemical/biological and enhancing agrotechnology research for ideal utilization of MAPs with significant economic and medical output.

The government's strategy of five-year plans began in the 1950s, and albeit the plans did touch upon proper utilization and conservation of Forest Resources, MAPs as a sector were not paid much attention. It was only in 1988-89, The Forestry Sector Master Plan recognized the scope and scale of MAPs for economic development, as one of its major agendas. Consequently, the Eight Five Year Plan (1992-1997) tried to promote MAPs and herbal resources for the generation of employment and finance, especially for people of remote regions of Nepal as well as for the conservation of the ecosystem and biodiversity. The Ninth Five-Year Plan (1998-2002) saw MAPs as one of the exclusive sectors and ways to boost economic productivity in remote regions of Nepal for the upliftment of marginalized people. Similarly, the Tenth Five Year Plan (2003-2008) was incepted with the primary task of poverty alleviation in remote regions by promoting sustainable production, use, and also processing of MAPs (National Planning Commission, 2017). The Fifteenth Five-Year Plan (2019/20-2023/4) had a much more concise mandate for MAPs that saw the sector as an important tool of economic upliftment in remote regions of Nepal for both sustainable economic development and conservation of biodiversity under the light of UNSDG (United Nations Sustainable Development Goals). The plan also produced footstones for the commercialization of valuable herbs by value addition and processing under the campaign, "Make in Nepal, Use, and Export (Nepal ma Banau, Prayog ra Niryat Garau)" (National Planning Commission, 2021).

With the new federal structure that includes provincial, federal, and local level government, the state aims those resources required for forest management, sustainable development goals, and biodiversity conservation will be easily available which will aid to increase ownership of the public. Today, more than 30,000 forest user groups have proven to be very successful, that includes people from marginalized communities and women who are active in managing forests.[7] Below table shows the complete chronology of legislative framework, plans, and policy with regard to MAPs and Herbal enterprises including the aspiration of the process.

Table 7: Policy Chronology that affects MAPs in Nepal

YEAR	LEGISLATIVE FRAMEWORKS, PLANS AND POLICIES	ASPIRATION
1957	Private Forest Nationalization Act	Nationalization of all forest resources
1961	Forest Act	Operationalizing nationalization process.
1967	Forest Protection Act	Regulation on people's access and right to forest products (Judicial powers given to forest officials)
1970	Forest Product Rules (Sales and Distribution)	Licensing and permits for NTFPs
1973	National Park and Wildlife Conservation Act	Safeguarding ecology and biodiversity of special and vulnerable areas

[7] See, the fifteenth five-year plan (2019/20-2023/24) of Government of Nepal, Nepal Planning Commission. Retrieved from: https://npc.gov.np/images/category/15th_plan_English_Version.pdf

1976	National Forest Policy	Policy pivot to hill forest (1000m-3000m)
1982	Decentralization Act	Promoting civic involvement in the development activities of NTFPs and forest resources
1985	Seventh Five Year Plan	Promoting commercial cultivations of MAPs and herbal enterprise
1988	Master Plan for Forestry Sector	Emphasis on community style management of forest resources. Decentralized control and distinct focus on promotion of NTFPs and MAPs
1992	Liberal Industrial Policy	Signifance on development of MSMEs and agro based SMEs for employment in rural areas.
1992	Trade and Transit Agreement	Preferential good access of Nepal in Indian market (duty free & quota free access of MAPs in India)
1992-1997	Eight Fiver Year Plan	Promotion of MAPs as economic source and importance of conservation
1998-2002	Ninth Fiver Year Plan	Promoting MAPs as an exclusive sector for economic

		productivity in remote areas of Nepal, especially for marginalized community
1993	Environmental Impact Assessment Guidelines for Forestry Sector	Specific provisions for collecting and processing of MAPs such as Allo, Orchids, Lichens
1993	Forest Act	Promotion of community style management of forest with heavy regulation of peoples right to NTFPs
1993-1998	Nepal Environmental Policy and Action Plan	Promotion of NTFPs as vital source of income in remote areas and pivot to domestication and cultivation for enterprise promotion.
1995	Forest Regulation	Comprehensive description of restrictive measures for NTFPs and MAPs
2002	National Biodiversity Strategy	Systematic and Empirical approaches for promotion of NTFPs and Maps (equitable benefit sharing harvest)
2003-2008	Tenth Five Year Plan	Poverty alleviation using MAPs in remote regions using

		sustainable harvest and production practices
2005	Guidelines for NTFP based Enterprise	Promotion of NTFPs and MAPs enterprise using dynamic sustainable forest management principles
2006	Nepal Bio-diversity Strategy Implementation Plan	Conservation of biodiversity and promotion of NTFPs and MAPs enterprise in sustainable model
2015	Trade Policy	
2016	Nepalese Trade Integration Strategy (NTIS)	
2019-2023	Fifteenth Five Year Plan	MAPs and NTFPs as a tool to achieve UNSDG goal 2030 and growing value addition and processing capabilities

Source: Author Based on Medical and Aromatic Plants (MAPs) Stakeholder Directory, TEPC (Trade and Export Promotion Centre) and JABAN (Jadibuti Association of Nepal)[8]

Forest Act of 1993 and Forest regulation of 1995 safeguarded the development of MAPs and NTFPs-based enterprises whilst ensuring conservation and sustainable utilization. Nepal Biodiversity Strategy (2002) recognized MAPs as pride of national wealth and identity and emphasized equitable cultivation of MAPs for the community. Likewise, in 2002, the Government

[8] See, A special report entitled, "Medical and Aromatic Plants (MAPs) Stakeholder Directory" published by JABAN, TPP (Trade Promotion Programme) and GIZ (Deutsche Gesellschaft fur Internationale Zussammenarbei). Retrieved from: http://www.tepc.gov.np/tepc_pub/2014_MAPS_Stakeholder%20Directory.pdf

of Nepal formed the Herb and Non-Timber Forests Products Coordination Committee (HNCC) with the leadership of the Ministry of Forest and Soil Conservation which can provide an institutional framework for the promotion of herbal enterprises in the future. The committee includes diverse stakeholders from various government institutions, NPC (National Planning Commission), Nepal Academy of Science and Technology (NAST), and Asia Network for Sustainable Agriculture and Bioresources (ANSAB) (Gewali, Aspects of Traditional Medicine in Nepal, 2008).

2.2 Process of MAPs collection and trade

The Forest Act of 1993 and Forest Regulation 1995 regulate and operationalize the commercial trade of MAPs and NTFPs which includes harvesting, processing, and transportation (Trade and Export Promotion Centre, 2015). MAPs are usually gathered from national and community forest resources. The District Forest Office (DFO) of the region generally distributes permits for MAPs procurement from the state-owned forest, grasslands, and Community Forest User Groups (CFUGs). Gatherers of MAPs generally play royalty in relation to MAPs gathered (type of herb, origin) and quantity. Collectors and Traders generally pay the royalty for the MAPs to obtain release permits from DFO which is used as proof of royalty payment for domestic transportation. In the case of MAPs, which are premeditated for export, the exporter has to apply for a recommendation from DFO to the respective customs office at the Nepal-Indo border. Likewise, for the export of any processed MAPs, a certificate is required from the Department of Plant Resources (DPR) where on the basis of lab analysis, a satisfactory DPR certificate is issued for export. In accordance with the Plant Protection Act 1972, a Phytosanitary certificate (PC) is also required for the export of MAPs.

2.3 International Conventions and Charters

Nepal has been always working very closely with the rest of the global community since the 1950s for the conservation of its plant and MAPs resources and is a signatory to several conventions. Such affinity with the international community has always had a good amount of impact on Nepalese state policies and nodes for these conventions, domestically distributed among many government institutions. Nepal is a signatory to the Convention on Bio-diversity (CBD), the

Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), and the Plant Protection Agreement for South East Asia and the Pacific Region, in which the state-led policies for promotion, conservation and sustainable use of biodiversity resources are based upon (UNEP, 2012). The below figure based on the same study shows the comprehensive list of international conventions that Nepal is a signatory of that has an impact on MAPs.

Figure 3*:* List of International Conventions and Charters related to MAPs for Nepal

Source: Author Based on UNEP, 2012

CHAPTER III: PROBLEM STATEMENT AND METHODOLOGY

3.1 Problem Statement

The main goal of this study is to analyze, understand, assess and provide imperatives as well as policy road maps for legislative purposes in the topic of promoting herbal enterprise in remote regions of Nepal for women and youth employment. The study mostly focuses on herbal enterprise and MAPs resources of remote regions of Nepal which in this case is mostly focused on western mid hills and high hills of Nepal which are the argued biggest pockets of hotspots for MAPs in Nepal. Despite the repeated understanding of MAPs and NTFPs as an exclusive sector for rural poverty alleviation, and equitable, just, and sustainable development of Nepal not much has been achieved in the operationalization of sentiment. The sector has yet to be successfully tapped into and used as a tool for employment and revenue generation in remote corners that faces myriad of challenges such as climate change, over harvesting, waste management and access to capital.

3.2 Research Question

The all-encompassing and underlying question of the study is investigating measures to promote herbal enterprise in remote regions of Nepal for women and youth employment by understanding policy options at disposal, larger context of the issue, actions and outcomes that lead to achievement of policy goals. The question is austerely looked at legislative lens as it is chiefly designed to provide sustenance and inputs in the public policy process and discourses at the central level for the promotion of MAPs enterprise in remote regions of Nepal for the generation of employment.

3.3 Methodology

The research is mixed in nature and uses both qualitative and quantitative approaches. Quantitative approach is mainly only used to analyze existing secondary data to understand the relationships, interlinkage, and dynamics of different variables whilst the qualitative approach is mainly used for primary data collection for understanding context grand realities on the ground via in-depth interviews and Key Informant Interview (KII) using semi-structured questions. The field visit was

also carried out as part of the study, in East Rukum for a case study where data was collected, consensually recorded, and assessed. Primary data was mostly collected from different government institutions and stakeholders. Desk study also proved to be very consequential for the larger framing of the research and was done extensively by cataloguing Literature review. For data analysis, some statistical and descriptive tools were used, primarily some basic descriptive statistics have been used for several conclusions of collected primary and secondary data such as the conversion of data into a percentage, diagrams, and graphs.

CHAPTER IV: DATA ANALYSIS

4.1 Case Study: East Rukum: Untapped Gem and Land of Unparalleled Heritage

East Rukum, the 77th district of Nepal, lies in the western mid-hill region of Nepal. It is the only Himalayan state in Lumbini province and its luscious 'patan' or meadows have always been famous throughout the region, which attracts thousands in the annual Himalayan race in search of Yarshaghumba (Ophiocordyceps sinesis) or 'Jeewan Buti' in the local language. These mass gatherings that foten last for months at end is also called 'Buki' and is a socio-cultural phenomenon treasured by local alike as a part of their identity and culture. The total area of the region is 1181.70 km^2 and the altitude of the district varies from a whopping 950M- 7246 M of Altitude, which houses several unique ecosystems with a wide range of biodiversity.[9] The tallest mountain of the district named Putha Hiunchuli has an elevation of 7,246M, and the district is known for its 52 ponds and 53 hills. [10] The district has a rich, unique, and beautiful Kham Magar culture, which history goes back centuries. Its lifestyle in its many northern districts is still very authentic and traditional, and some continuous pockets of culture in several villages are so magnetic and rich in cultural history that it has attracted huge academic interest in the region as well (Leman, 2020).

The Kham Magar are the largest ethnic group in the district comprising around 50% of the population, followed by Chettri and Kami who sum up 19% and 17% of the population respectively.[11] Kham Magar are believed to be people of Mongolian descent who have lived in the regions going back centuries in the upper tributaries of Sani, Bheri, Bari Gad and Mari River.

Kham Magars are a specific ethnolinguistic community with four subtribes of Magar people that are: Budha, Gharti, Pun, and Rokka. Traditionally, they follow a transhuman pattern of life living, often isolated and distinct in culture from the Indo-Aryan influx. They are believed to have an

[9] See, Local Government Data Portal of Nepal. Retrieved from: https://sthaniya.gov.np/gis/

[10] See, Online portal of District Coordination Office, East Rukum. Retrieved from: https://dccrukumeast.gov.np/en/#

[11] See, Online portal of National Data Profile (2022)

animistic view of nature and ancient shamanic tradition which can be traced back to Central Asia that sports a unique history of its own (Waters, 1975).

4.1.1 Brief Look: East Rukum

East Rukum borders Myagdi, Baglung in East, Western Rukum in West, Dolpa in North and Rolpa in the South. Administratively, it is divided into three rural municipalities which are Sisne gaupalika, Bhume gaupalika,Putha Uttarganga gaupalika, and holds over 60% of Dhorpatan Hunting Reserve. The below figure classifies the different rural municipalities of Rukum East as per total area and population.

Table 8*:* General Administrative Population Classification of East Rukum

RuRal Municipalities	Area (Km^2)	Population Density	Population (2011)
Sisne	327.1	68	18,589
Bhume	273.7	50	16,497
Puthauttarganga	560.3	32	17,932
Total	1161.1	-	53018

Source: Ministry of Federal Affairs and General Administration (MOFAGA)

East Rukum lies in latitude 28°28'-28°51 N to 82°30-83°8 E longitude and accounts for only 0.78% of the entire Nepalese territory. It has farmable land of 20,265 Hec, and 56,383 Hec of Forest. Annually the district receives an average rainfall of 1600 MM (District Forest office , 2018). It has a rising education rate, especially for girls but systematic academic dropout is prevalent due to foreign employment. The prime source of income is Agriculture in the region, which primarily comes from Maize, Potato, Barley and trade of MAPs.

It has also been successful in practicing 'Organic Rukum' policy locally which restrict use of any harmful modern pesticides[12]. Likewise, it is connected to larger highway transportation system via Dang, Groahi to Dolpa (Connects to North-Southern region) Sahid Rajmarga and W.Rukum to Burtibang-Baglung-Pokhara via the new and much promising Madya Pahadi Rajmarga. Owing to its huge range of difference in elevation, its forest resources can be better classified in to six different range of forest which is described comprehensively in the below table.

Table 9: General Forest Resources Classification of East Rukum

Type of Forest	**Detail**
Sub-Tropical Broad Leaved Forest	1000-2000 M Alt. (Tuni, Utis, Jamun, Saj)
Subtropical Pine Forest	1000-2200 M Alt. (Khote Salla, Mauwa, Jamun)
Lower-Temperate Forest	1700-2700 M Alt. (Kafal, Bajo, Ayar)
Upper-Temperate Forest	2200-3000 M Alt. (Khasru, Laliguras, Okhar)
Temperate Conifer Forest	2500-3500 M Alt. (Dhupi Salla, Gobre Salla, Devdar, Chingure Salla)
Subalpine Forest	3500-4000 M Alt. (Laliguras, Bhoj Patra, Talis Patra)

Source: District Forest Office, East Rukum 2020-2021

4.1.2 MAPs of East Rukum

East Rukum, is a variety of MAPs including high-value to medium and small-value MAPs, notorious for their high efficacy and exquisiteness which attracts collectors from surrounding

[12] Based on field note and Interview, with Yagya Prakash Malla, Small Cottage Industry and Commerce Association, East Rukum

districts in its famous 'Buki Patan', especially in Pupal of Maikot[13]. The District Forest office (DFO) of East Rukum has also exclusively identified the primary MAPs of the region and the best time for harvest or collection which is mentioned below in the table.

Table 10*:* The list of primary MAPs available in East Rukum

MAPs	Scientific Name	Collection Time
Jhyawu	Parmelia nepalensis	November-April
Lokta	Daphne bholua	November-April
Kaulo	Machilus vilosa	December-April
Amala	Phyllanthus emblica	January-March
Rittha	Sapindus mukorossi	November-February
Tejpat	Cinnamomum tamala	October-March
Dalchini	Cinnamomum tamala	October-April
Tetapati	Artemisia indica	December-March
Sugandawal	Valeriana jatamansi	October-December
Pashanvedh	Bergenia ciliate	December-March
Bhojo	Acorous calamus	November-February
Chutro	Barberis aristate	January-March
Timur	Zanthoxylum aramatum	September-February
Kurilo	Asparagus recemosus	September-November

[13] Based on field notes of author

Sungava	Orchid spp.	January-March
Chiraito	Swertia chirayita	September-November
Allo	Girarinia diversifolia	December-April
Bhis	Aconitum spicatum	November-January
Lauthsalla	Taxus baccata	October-January
Kutki	Picrorrhiza kurroa	June-September
Bhutkesh	Saussurea bhutkesh	July-November
Jatamasi	Valeriana wallichii	June-September
Kaladana	Ipomoea nill	October-December
Sadharan Chyawu	Mushroom spp	April-August
Rato Chyawu	Ganodarma spp	April-August
Guchhi Chyawu	Morchella esculenta,	April-August
Satuwa	Paris polyphylla	September-November
Bhirmaha	Wild honey	April-June
Setakchini	Polygonatum spp	October-March
Silajit	Rock excude	July-November

Source: District Forest Office (DFO), East Rukum 2020-2021

Due to the recent reclassification in 2017 of the district and division of Rukum into two factions Rukum East which lies in Lumbini Province and West Rukum in Karnali Province, it is hard to measure the precise export of MAPs from the region but to understand the complete picture of

MAPs demand from the region, it is necessary to observe data before 2017 as well, owing to its large heritage associated with NTFPs and MAPs.

District Forest Office (DFO), Rukum in 2012/13-2016/17 started a Fiver Year Forest Management Plan to promote MAPs from the region which listed 58 different species of MAPs for the region for trade and observation. Out of the specified 58 species of MAPs, only 49 species were able to be harvested in good numbers and exported out of the district (District Forest office , 2018). As per the DFO in the time period, 2012-2013 the district was able to export Tejpat (19650K.G). Likewise in 2013-2014, it was able to export Rittha (36000 K.G). And, in 2014-2015 it was able to export Kawulo (46,700 K.G). In 2015-2016 the district was able to export Pashanvedh most (49400 KG). Which again aced the charts for the most exported herb from the district in 2016-2017 (47174 KG). From the recorded data of this period below table shows the most exported herb from the district in this time frame.

Table 11*:* Most Exported MAPS in terms of revenue from Rukum before bifurcation in 2017

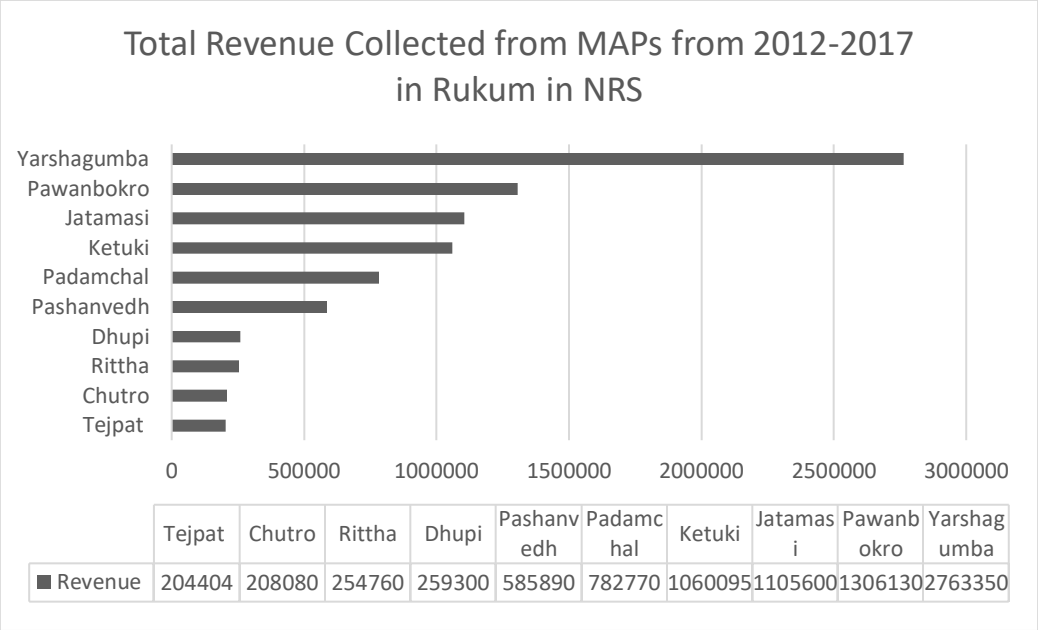
Fiscal Year	Most Exported MAPs from district	Revenue Collected (NRS)
2012-2013	Yarshagumba	656500 NRS
2013-2014	Kawulo	196400 NRS
2014-2015	Yarshagumba	927000 NRS
2015-2016	Yarshagumba	499500 NRS
2016-2017	Yarshagumba	493350 NRS

Source: District Forest Office, Rukum 2017-2018

The Five-Year Forest Management Plan from 2012/13-2016/17 also collected data and prioritized the top 10 of MAPs in terms of revenue performance for the district in the time frame. As per the data, the most total revenue was collected from Yarshagumba (27,63, 350 NRS) in the time frame and the least revenue was collected from Tejpat (2,04,404 NRS). The below figure shows the total

data from the Five-Year Forest Management Plan, Rukum in terms of total revenue collected in the period

Figure 4*:* The Total Revenue Collected from MAPs as per Five Year Forest Management Plan (2012/2013-2016/2017) in Rukum before bifurcation.



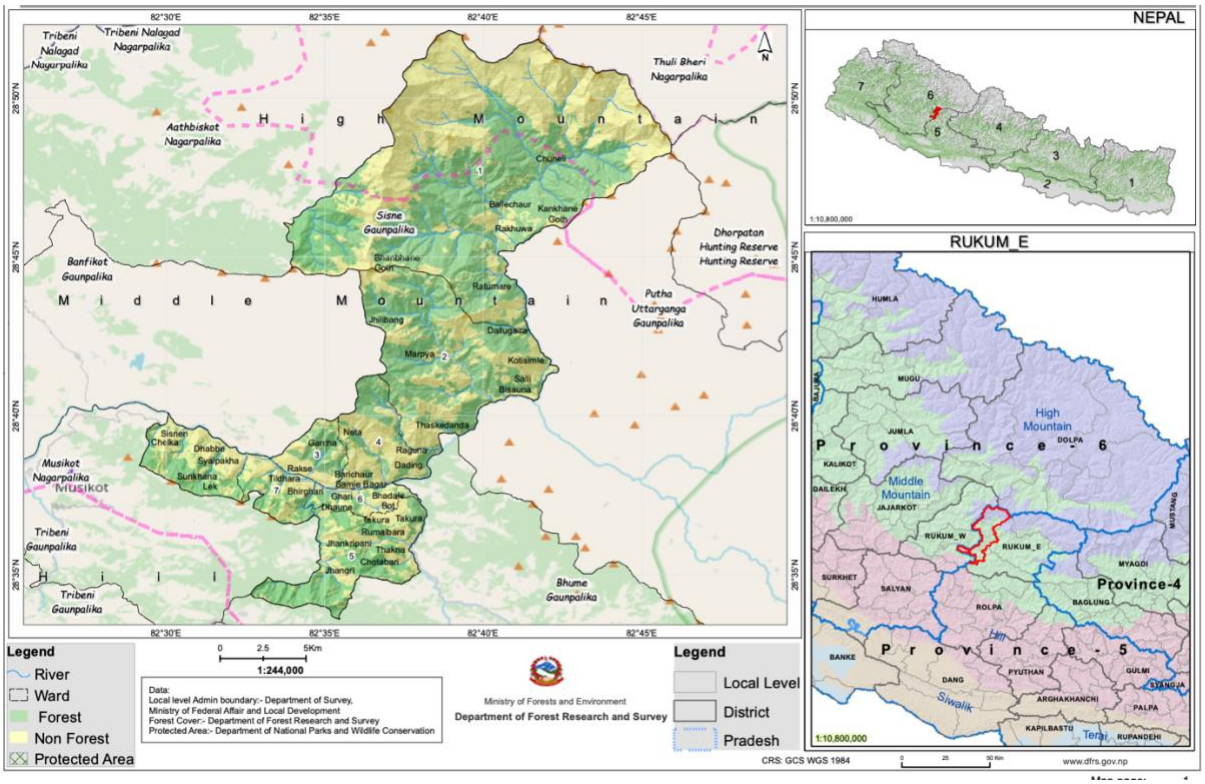
	Tejpat	Chutro	Rittha	Dhupi	Pashanvedh	Padamchal	Ketuki	Jatamasi	Pawanbokro	Yarshagumba
Revenue	204404	208080	254760	259300	585890	782770	1060095	1105600	1306130	2763350

Source: District Forest Office, Rukum 2017-2018

The data clearly indicates that the most valuable MAPs from the region are Yarshagumba (Ophiocordyceps sinesis), Jatamasi (Valeriana wallichii), Ketuki (Picrorrhiza kurroa), Padamchal (Rheum austral) and Pashanvedh (Bergenia ciliate). Which is open for value addition likewise Dhupi (Juniperus indica), Rittha (Sapindus mukorossi), Chutro (Barberis aristate), and Tejpat (Cinnamomum tamala) also fetched more than a decent amount which generally requires not that much technology and infrastructure for processing. To understand the complete picture of MAPs from East Rukum it is not only important to understand the high-performing MAPs but also the distribution of these MAPs as per different administrative units considering the wide range of geographical range differences the district boasts.

Sisne Rural Municipality

Figure 5: Forest cover map of Sisne Rural Municipality, Rukum East



Source: Ministry of Forests and Environment, Department of Forest Research and Survey

Sisne Rural Municipality has a total area of 327.1 km^2 and a total forest area of 50.56%. It has a total of 8 wards of which two wards 1 & 2 are classified to have Mountainous terrain whilst rest seem to have general mid-hilly terrain[14]. The rural municipality is home to the district headquarters in Rukumkot. Below mentioned in the table below attempts to show indicative MAPs of the region based on key informant interview, which are meant to be indicative data in nature rather than conclusive because of the limited sample size.

[14] Author field notes based on stakeholder interview.

Table 12: List of available MAPs in Sisne Rural Municipality

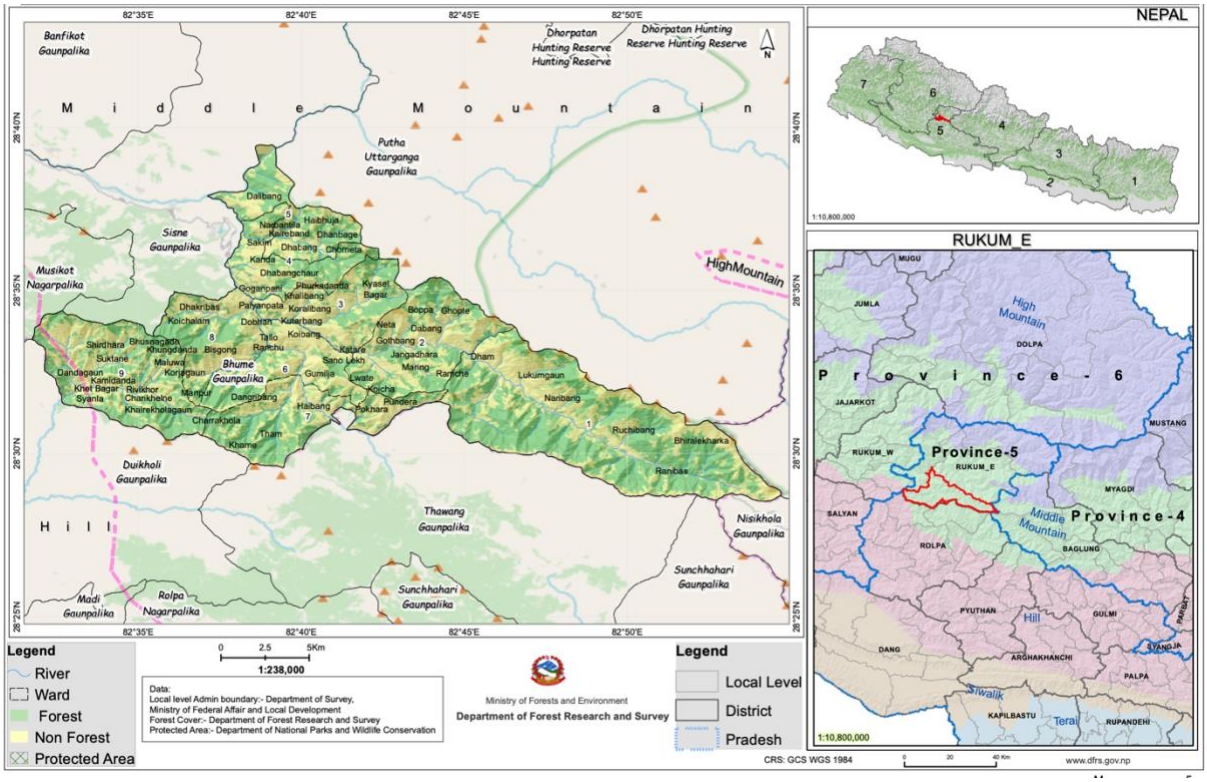
Name	Scientific Name	Geographical Terrain
Jhyawu	Parmelia nepalensis	General
Lokta	Daphne bholua	Mountainous
Kawulo	Machilus vilosa	General
Amala	Phyllanthus emblica	General
Tejpat	Cinnamomum tamala	General
Dalchini	Cinnamomum tamala	General
Tetapati	Artemisia indica	Mountainous
Sugandawal	Valeriana jatamansi	Mountainous
Pakhanvedh	Bergenia ciliate	Mountainous
Chutro	Barberis aristate	General
Timur	Zanthoxylum aramatum	General
Kurilo	Asparagus recemosus	General
Sungava	Orchid spp.	Mountainous
Chiratio	Swertia chirayita	General

Allo	Girarinia diversifolia	General
Bhis	Aconitum spicatum	Mountainous
Lauthsalla	Taxus baccata	General
KuTKi	Picrorrhiza kurroa	Mountainous
Bhutkesh	Saussurea bhutkesh	Mountainous
Jatamasi	Valeriana wallichii	Mountainous
Kaladana	Ipomoea nill	General
Sadaran Chyawu	Mushroom spp	General
Rato Chyawu	Ganodarma spp	General
Gucchi Chyawu	Morchella esculenta,	General
Satuwa	Paris polyphylla	General
Bhirmaha	Wild honey	Mountainous
SeTAKCHINI	Polygonatum spp	General
SILAJIT	Rock excude	Mountainous
YarshaGhumba	Cordyceps Sinesis	Mountainous

Source: Key Informant Interview

Bhume Rural Municipality

Figure 6: Forest cover map of Bhume Rural Municipality, Rukum East



Source: Ministry of Forests and Environment, Department of Forest Research and Survey

Bhume Rural Municipality has a total area of 273.7 km^2 and a total forest area of 47.78%. It has a total of 9 wards where most of the terrain is indicated to be general mid hill terrain disregarding few sections of the region like Simana and Lukum which are mountainous.[15] The table below shows indicative data of MAPs available in the region based on Key Informant Interview.

Table 13: List of available MAPs in Bhume Rural Municipality

Name	Scientific Name	Geographical Terrain
Jhyawu	Parmelia nepalensis	General
Kawlo	Machilus vilosa	General

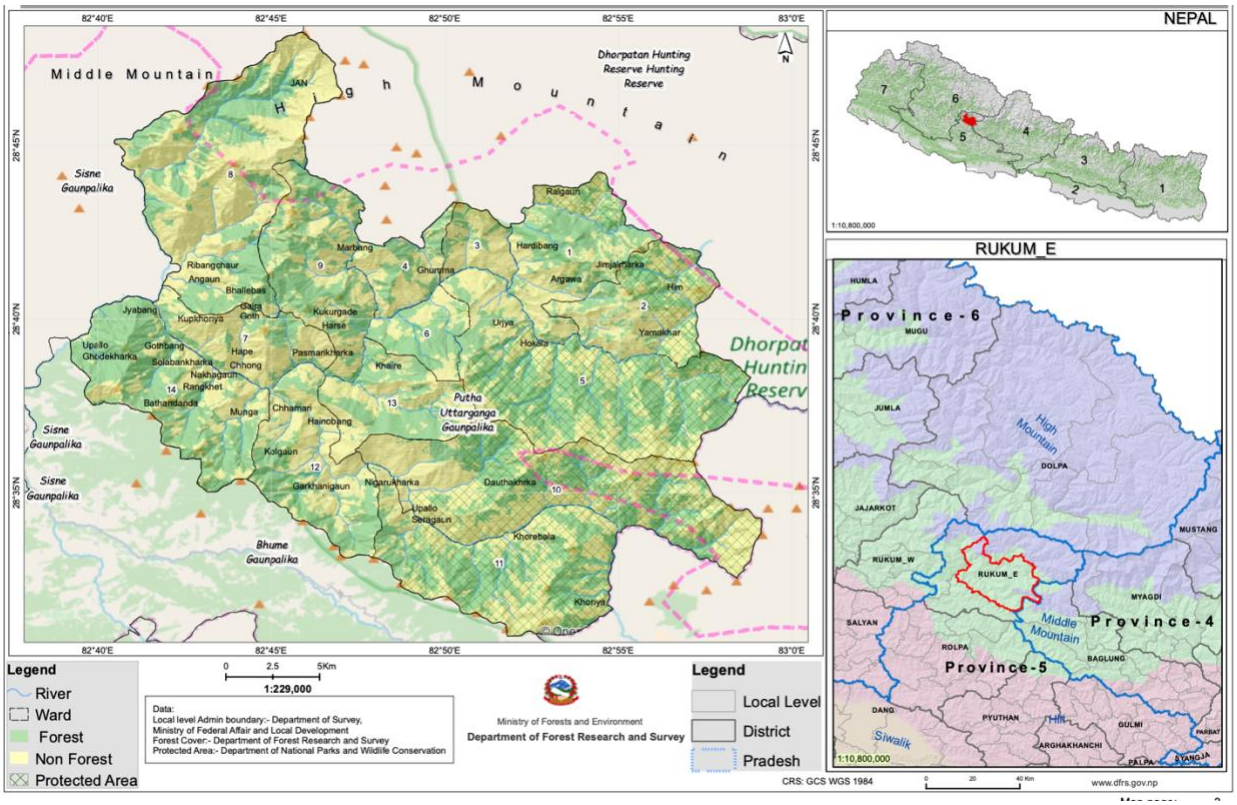
[15] Author based on field notes and Key Informant Interviews

AMALA	Phyllanthus emblica	General
Tejpat	Cinnamomum tamala	General
Dalchini	Cinnamomum tamala	General
Chutro	Barberis aristate	General
Timur	Zanthoxylum aramatum	General
Chiratio	Swertia chirayita	General
Allo	Girarinia diversifolia	General
Lauthsalla	Taxus baccata	General
Kaladana	Ipomoea nill	General
Sadaran Chyawu	Mushroom spp	General
Rato Chyawu	Ganodarma spp	General
Satuwa	Paris polyphylla	General
Bhir MAHA	Wild Honey	Mountainous

Source: Key Informant Interview

Putha Uttarganga Municipality

Figure 7: Forest cover map of Putha Uttarganga Municipality, Rukum East



Source: Ministry of Forests and Environment, Department of Forest Research and Survey

Putha Uttarganga Municipality has a total area of 560.6 km^2 and a total forest area of 46.19%. It has a total of 14 wards where most of the terrain is indicated to be mountainous. It is home to famous 'bukipatan' in the district such as 'Pupal Buki'[16] The table below shows indicative data of MAPs available in the region based on Key Informant Interview. It is situated 200 Km away from the federal capital, Dang. 54.3% of its population is Male whilst only 37.5% of its entire population is female[17]. Females are generally more exposed to MAPs procurement and harvest. The table below shows indicative data of MAPs available in the rural municipality based on Key Informant Interview.

[16] Author based on field notes and Key Informant Interviews

[17] See, The portal of Putha UttarGanga Rural Municipality. Retrived from: https://puthauttargangamun.gov.np

Table 14: List of available MAPs in Putha Uttarganga Rural Municipality

Name	Scientific Name	Geographical Terrain
Jhyawu	Parmelia nepalensis	General
Lokta	Daphne bholua	Mountainous
Tejpat	Cinnamomum tamala	General
Dalchini	Cinnamomum tamala	General
Tetapati	Artemisia indica	Mountainous
Sugandawal	Valeriana jatamansi	Mountainous
PakhanveDH	Bergenia ciliate	Mountainous
PaSHANVEDH	Berergenia ligualata	Mountanious
Chutro	Barberis aristate	General
Timur	Zanthoxylum aramatum	General
Kurilo	Asparagus recemosus	General
Sungava	Orchid spp.	Mountainous
Bojho	Acorous calamus	Mountainous
Chiratio	Swertia chirayita	General
Allo	Girarinia diversifolia	General

Bhis	Aconitum spicatum	Mountainous
Lauthsalla	Taxus baccata	General
Kutuki	Picrorrhiza kurroa	Mountainous
Bhutkesh	Saussurea bhutkesh	Mountainous
Jatamasi	Valeriana wallichii	Mountainous
Kaladana	Ipomoea nill	General
Sadaran Chyawu	Mushroom spp	General
Rato Chyawu	Ganodarma spp	General
Gucchi Chyawu	Morchella esculenta,	General
Satuwa	Paris polyphylla	General
Bhirmaha	Wild Honey	Mountainous
Setakchini	Asphaltum Punjabianum	General
Silajit	Rock excude	Mountainous
YarshaGhumba	Cordyceps Sinesis	Mountainous

Source: Key Informant Interview

4.2 Herbal Enterprise of East Rukum: Brief info and SWOT Analysis

A mixture of High-value and Low-value Herbal Enterprise

East Rukum is the only Himalayan district of Lumbini Province. It covers about 39% of the forest in province[18]. Its special geography and ecosystem further enable it to enjoy a tapestry of biodiversity. The district annually attracts thousands even out from the district and province in search of the 'Biological Gold' better known as Yarshaghumba (Ophiocordyceps sinesis).[19] Rukum is also home to illustrious 'buki patans' like Pupal meadow where thousands annually gather in hopes of collecting the valuable herb often camping there for several weeks to even months at end, creating striking sociocultural strokes. (Paudel, 2022). Yarshagumba is found on isolated patches across 3000-5000m in the northern area of district such as sparse in North of Sisne and plentifully in meadows of Putha Uttarganga and Dhorpatan Hunting Reserve.[20] Likewise, Khiraulo (Setakchini), Kutki, atis, panchunle, jatamansi and padamchal are also some of other high value MAPs found in the district which are mostly found in mountainous region of the. Some MAPs like Khiraulo are also increasingly getting collected in private lands (Dhorpatan Hunting Reserve, 2019).

Essentially, the herbal enterprise of East Rukum can be divided into two folds, one would be dominated by high-value MAPs, especially Yarshaghumba (Ophiocordyceps sinesis) quickly followed by other high value herbs as described above. Another would be dominated with low value MAPs and NTFPs such as Allo, Sisno, Wool and handmade products and Paper. Each has its own function and type of operation as enterprise whilst operation of high value MAPs is more scattered and independent as they generally consist of fewer entities and non-traditional operations mostly geared towards harvest and trade. The low-value MAPs and NTFPs-based enterprise in East Rukum run more traditionally creating more jobs and institutions by setting up base of

[18] See, Lumbini Province Forest Map, Ministry of Forests and Environment, Department of Forest Research and Survey

[19] The term was extracted from a feature report in The Diplomat entitled 'Yarshagumba: Biological Gold'. Retrived from: https://thediplomat.com/2014/08/yarsagumba-biological-gold/

[20] Based on author field notes

operations.[21] Devoid of plenty of infrastructure, expertise, capital and technology, low value MAPs have mostly been successful in manufacturing because they generally require less expertise, resources, and modern technology and can do with simple supplements of traditional. Owing to this dynamic most of the registered major herbal enterprises (MAPs and NTFPs) in East Rukum are based on allo, wool (carpet and clothing), sisno, allo and nurseries/jadibuti trade enterprise. Below mentioned are a complete list of total registered enterprises of East Rukum as per Department of Cottage and Small Industries, East Rukum. Keywords for the search included: Jadibuti related, Carpet, Allo, Paper, Sisno

Table 15: Registered MAPs Enterprise in East Rukum

Name	Type of Enterprise	Name, Address, Contact
Magar Allo Dhago Tan Kapada Bunai Udhyoj	Allo and Fabric House	Ashoka Gharti, Sisne 4 : 9867853794
Dhaka Allo Dhago Udyog	Dhaka and Allo House	Kalu Buda, Sisne 4: N/A
Didi Baini Galicha Tatha Radi Pakhi Udyoj	Carpet and Radipakhi	Dhan Kumari Jhakri, Putha Uttarganga 2: N/A
Raniban Allo Dhago Udyog	Allo and Fabric House	Devi Lakh Pun, Putha Uttarganga 1: 9864368536
Pupal Allo Dhago Lagu Udyog	Allo and Fabric House	Siran Lakh Buda, Putha Uttarganga 1: 9866866565
Palli Allo Kapada Udyog	Allo, Fabric and Clothing house	Pali Pun, Sisne 4: 9866215216
Narjita Allo Kapada Udyog	Allo, Fabric and Clothing house	Narjita Gharti, Sisne 4: 9847095927

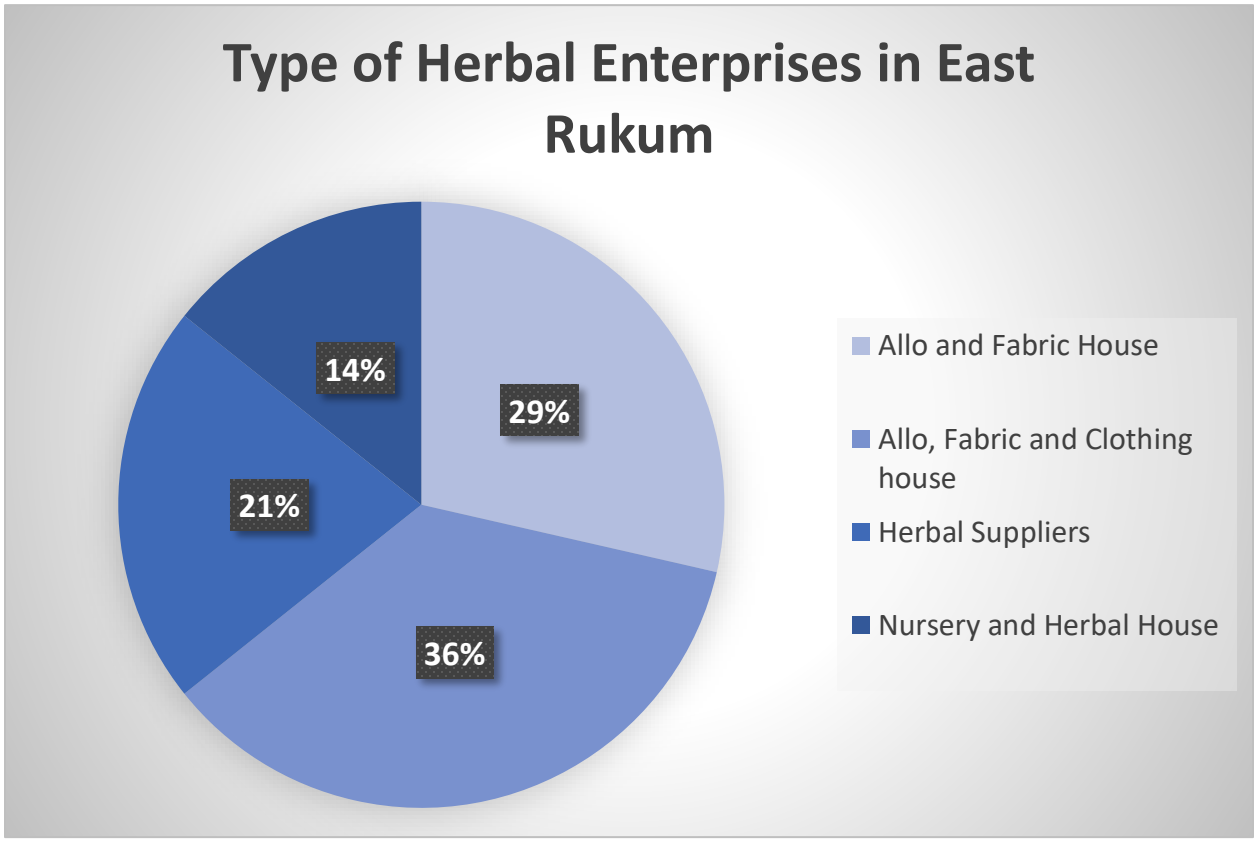
[21] Based on Author field notes and interviews.

Sera Bhang Allo Prasodhan Tatha Kapada Bunai	Allo, Fabric Clothing and production	Bharati Nepali, Bhume 5: 9867539283
Putha Himalai Nursery Tatha Jadibuti	Nursery and Herbal House	Bal Badhaur Buda, Bhume 2: N/A
Bhaibang Allo Udyog or Jheet Khola Allo Udyog	Allo, Fabric and Clothing house	Iman Shari Pun Bhume 3:
Cheepkhola Allo Kapada Udyog	Allo, Fabric, Clothing house	Tirtha Pun Magar, Sisne 2: 9847981027
Bhume Jadibuti Suppliers	Herbal Suppliers	N/A. Bhume 2: N/A
Amardhan Jadibuti Tatha Nursery Utpadan Farm	Nursery and Herbal House	N/A, Putha Uttarganga 1: N/A
Pupal Krishi Falful Tatha Jadibuti Upadan Farm	Agro, Nursery and Herbal House	N/A, Putha Uttarganga 1: N/A
Sahi Jadibuti Suppliers	Herbal Suppliers	N/A, Sisne 6: 9865619081
Ghumling Himal Pan Allo Udyog Farm	ALlo and Fabric House	N/A, Putha Uttarganga 10: N/A

Source: Author Based on Department of Cottage and Small Industries, East Rukum

As per the data, it is seen that Allo, Fabric and Clothing house account for 65% of total registered Herbal Enterprise in East Rukum, whilst Herbal suppliers, Nursery and Herbal house account for about 35% of registered herbal enterprises in East Rukum. Below pie chart comprehensively shows the type of Herbal Enterprise in East Rukum.

Figure 8*:* Type of Different Herbal Enterprises in East Rukum



Source: *Author Based on Department of Cottage and Small Industries, East Rukum*

SWOT Analysis:

Table 16: SWOT Analysis of Herbal Enterprises in East Rukum

Strengths	Weakness
● Unique pockets of climate and favorable geography= Tapestry of biodiversity	● Limited Unbalanced Infrastructure, Expertise, and Technology

● Organic Farming Practice, Authentic Culture, and Pure Heritage ● Famous 'Buki Patans' or meadows in Western Mid-Hills ● Diversity of existing herbal enterprises (Allo, Sisno-powder, Traditional Wool, Nursery and Jadibuti store, Ayurvedic Retail and other NTFPs based enterprise) and high valueMAPs Trade enterprise. ● Women-Led and Centric Enterprise (Allo, and Wool especially which require traditional knowledge. ● Availability of Small-Medium-High Value MAPs	● Inability to tap in to processing and value addition of high value MAPs ● Lack of MAPs and NTFPs resources distribution mapping and inventory for sustainable harvesting volumes and phenology of high value herbs (Yarshagumba, Padamchal, Khurilo) ● Inability to manage human, infrastructure and monitoring resources for annual harvesting seasons. ● Hard to Regulate: Dhorpatan Hunting Reserve and Buki-Patans ● Lack of Higher Education, Outwards Migration Flux ● Low level of market awareness ● Solid Waste Generation
Opportunities	**Threats**
● Conservation (sustainable harvest and proper equipment) and safety (insurance, healthcare, emergency facilities, protection, waste management for harvesters) ● Special Management framework of MAPs with Dhorpatan Hunting Reserve, Local	● Dire Climate Change forecasts ● Waste Management, Pollution, and Haphazard harvest ● Outwards migrations influx for work ● Natural Disasters and rugged geography ● Indian Market and Industry Encapsulation

Institutions, Local Community, DOF, COFUG and harvesters ● Specialized Training and Equipment for General Processing for Harvesters ● Comprehensive MAPs and NTFPs Resource Identification and Mapping ● Pilot Projects opportunities for enterprise-scale up and new enterprise for women entrepreneurship ● Revamping NTFP inventory techniques and production tools, training, manpower, and knowledge for local institutions and stakeholders ● International Certifications: Including branding certifications (Organic), FSC (Forest Steward Council), FDA, European Medicine Agency &Socio ethic security certifications ● Clustering of MAPs for operationalization and management plan to promote Herbal Enterprise ● Attractive employment and revenue generation in upstream high value MAPs enterprise and low value MAPs	● High Standard of barriers with strict rules for public health in developed countries (Traiff and Non-Traiff Barriers) ● Sustainable unmanaged meadows and buki (could lead to biodiversity crisis and soil erosion)

• Growth in conscious consumerism and nature-oriented buyers (organic over synthetic products)	

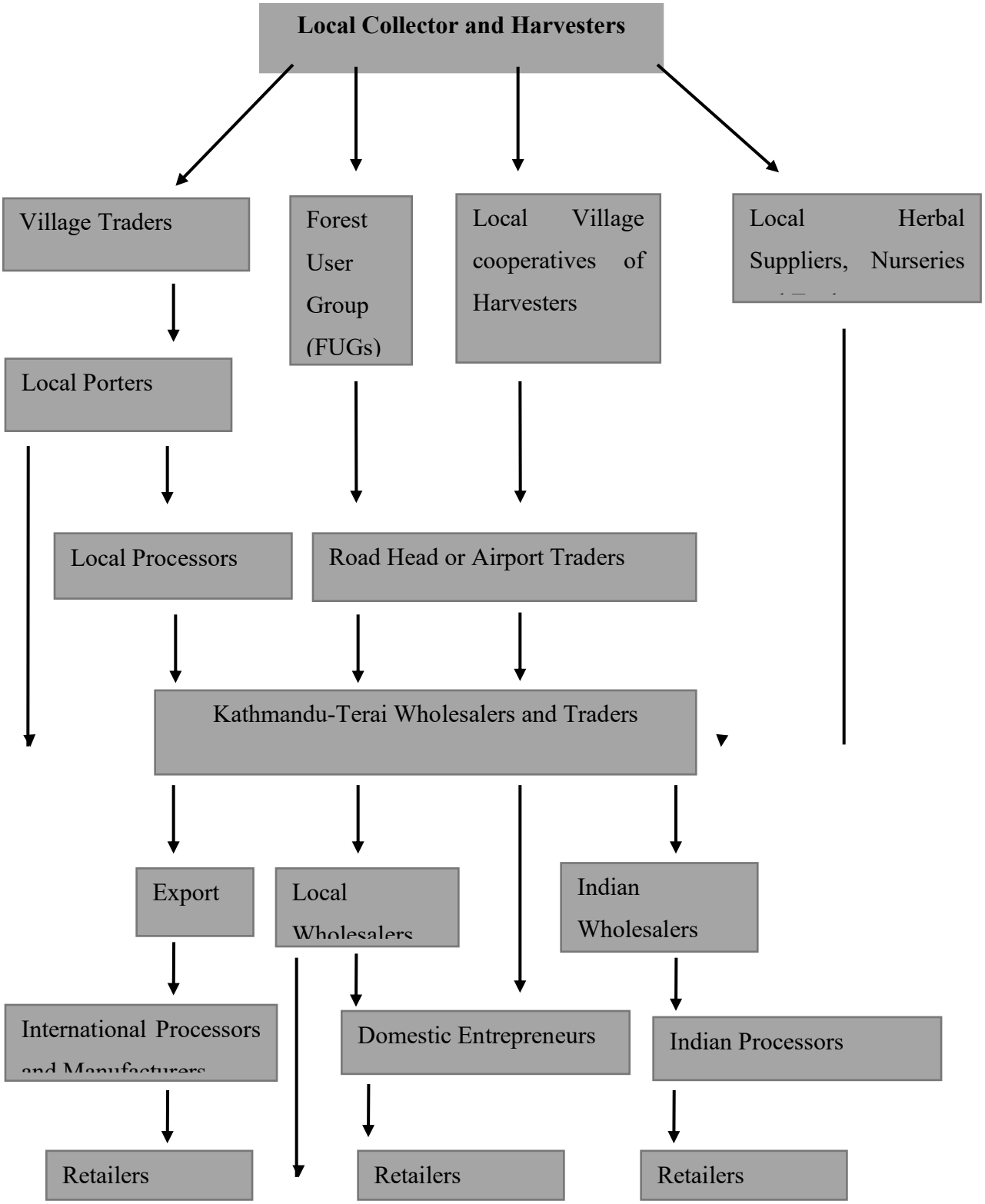
4.3 Herbal Enterprise from Remote Regions of Nepal

Nepal, owing to its geographical linkage and unique ecosystems, is home to rare medium to high-value herbs, especially in mid hills topography of Nepal ranging from 1000-4500m. In Nepal, more than 700 plants are used for Ayurvedic, Unnai, and Siddha Medicines (GIZ, 2017). Most of such high-value herbs are found in the succulent 'Patans' of these so-called remote regions of Nepal (Dhorpatan Hunting Reserve, 2019). These very 'patans' since antiquity have been always potent suppliers of MAPs in the region often traded into China, India, and largely the world via the ancient silk road as early as 728 A.D (Chapagain, Wang, & Pyakurel, 2021).

Regional Traders, Road Traders & Wholesalers make more money than harvesters upstream

The importance of MAPs has mostly always been underlying and understood. It is among 19 sectors identified to have a high potential for the economic transformation of Nepal (NTIS, 2010). Almost 80% of the remote population depends on NTFPs for their livelihood (Shrestha, Shrestha, & Shah, 2020). MAPs resources and more specifically herbal enterprises of remote regions of Nepal have been the focal point of much talk but very little action. Although it has been identified in the Master plan for the Forestry sector since 1988 and understood as means of generating employment in remote regions of Nepal later on, sufficient action and attention have not been given to its materialization. The problem mostly has been the same, regional traders make the most profit whilst the harvesters in remote regions make the least. From MAPs harvesting in the 'patans' of remote regions to its final form involves many stakeholders such as local harvesters, road and airport traders, exporters, and entrepreneurs. Each serves a distinct function in the larger MAPs market chain, which is comprehensively described below:

Figure 9: Medicinal and Aromatic Plants (MAPs) Market Chain

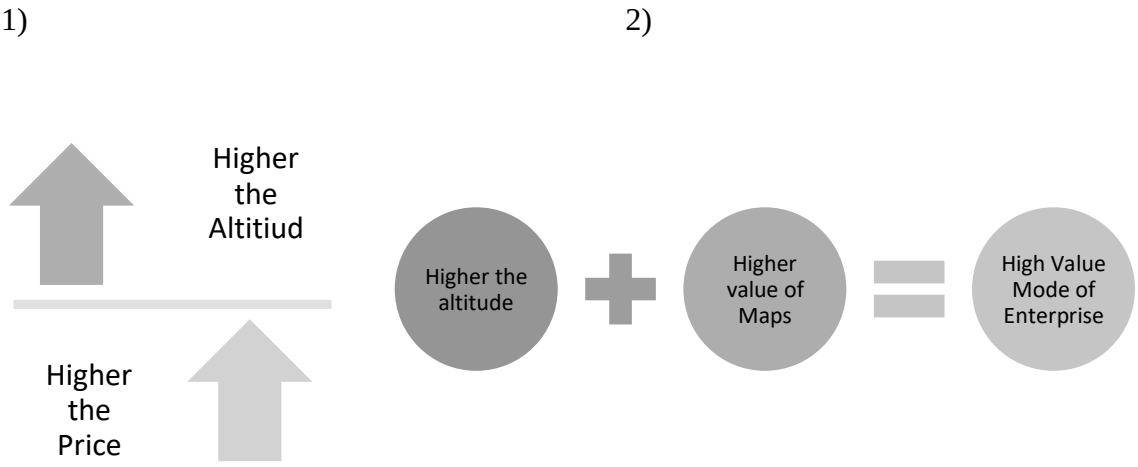


Higher the Altitude, less diversity of MAPs but more Commercial Value

Local harvesters who do the collecting of MAPs in such remote regions and difficult terrain do not get their fair share of the bargain in the larger market chain. Moreover, it is also seen that MAPs found in the remote region of Nepal tend to possess higher value (Chhetri, Shrestha, Thapa, & Timalsina, 2021). But, generally, harvesters in remote regions of Nepal have always been in an unfavorable position. They are big in number and each only offers a small scattered and sporadic quantity of MAPs. Hence, a sense of control for harvesters is very important for harvesters, and value addition via processing would be quintessential for the generation of employment.

The higher we go especially in the upstream region the diversity of MAPs declines with elevation but the commercial value is believed to increase exponentially (SAWTEE, 2011). Thus, leaving room for value addition that allows larger concentrations of finance to remain in upstream remote regions. Especially in temperate to sub-alpine regions of the mid-hills, the commercial values of Non-Timber Forest Products (NTFPs) are the highest. For instance: The price of Kurilo collected from Terai may have a very low-price bracket but something that is found in Alpine and Temperate regions such as Yarshaghumba (Ophiocordyceps sinesis), Jatamansi (Nardostachys grandiflora) and Panchaule (Dactylorhiza hatagirea) fetch very high value in price. Any enterprise efforts concentrated toward the region should be complementary to such natural dynamics and ultimately focus on the creation of a high-value mode of the enterprise or value chain, which enables competitive advantage of the region, whilst canceling weaknesses for sustainable creation of employment for women and youth employment.

Figure 10: Shows the conceptual relationship dynamics of MAPs at Higher altitude, their price, and the mode of the best-suited enterprise.



Source: Author

Most of the MAPs from remote regions end up getting exported to India and China in raw form

In 2018, Nepal exported 76% of its MAPs to India, and 2.5-3.5% to China (TEPC , 2019). The most exported crude form of MAPs is those found in remote regions of Nepal such as Pakhanved, Padamchal, Yarshaghumba, Rittha, Timur, Chiratio, Jatamasi, Kaulo and Ketuki. Of this region, MAPs such as Pakhanvedh (Rockfoil), Timur (Nepalese Pepper), Tejpat (Indian Bayleaf), and Kaulo (Persea) have traditionally been exported to India via domestic economic nodes whilst very high-value MAPs such as Yarshaghumba (Ophiocordyceps sinesis), is exported towards China (UNEP, 2012).

It is estimated that only 10% of the total quality of MAPs obtained in Nepal is used for the production of MAPs products like essential oils, medicinal products, nutraceutical products, and beauty products in small manufacturing units in Nepal (Chhetri, Shrestha, Thapa, & Timalsina, 2021) Most of the MAPs that end up in India and China are subject to heavy processing and manufacturing, goods of which are sold to the world including Nepal.

Low yields due to overharvesting, negligence, weather patterns, and pollution

What to harvest and how much to harvest, these things are generally determined by regional/ village traders and wholesalers who make more of a profit in the market chain and act as liaison for the larger market. The ecosystems in remote regions of Nepal are very fragile and bio-diversity plays a very integral role in the maintenance of the ecosystem. Haphazard and over-harvesting despite local government efforts is one of the chief regions of the sporadic availability of MAPs in remote regions of Nepal with more human settlements (Temperate to Sub-tropical Regions). Above 3500M, in the alpine region, the situation seems to be starker due to the availability of Yarshagumba (Ophiocordyceps Sinesis) also aptly called 'Jeewan Buti' in famous bukipatans of these areas. Due to its massive commercial value, largely the culture of charm towards the herb, and the tradition of going to 'buki' as well as festivities that are attached to the process, waste management today possess a huge problem in these delicate alpine ecosystems, where tens of thousands of people gather above 3500M in search of these valuable herbs. The waste residue, that are in turn left at such high altitudes, of a such long stay in droves, where biodiversity plays a key role in the maintenance of the ecosystem is not only contributing to the decline of the species itself but also has a lot of negative consequences for the entire environment. Many government officials and local institutions in the region have been advocating for a clean-up campaign, especially in the higher alpine regions where Yarshagumba is available.[22]

The cost of other required raw materials is high for remote herbal enterprise

Due to the secluded terrain of remote herbal enterprises, it is very hard for enterprises to get all the necessary materials or other goods that are required for the complete production of a unit in upstream regions. Because of this, the cost of the final product inevitably falls high. Traditionally, most of these final products were mostly always geared towards domestic consumption largely in the district and state which was also one of the reasons. For instance: A Chyuri-based soap enterprise was shut off because it needed to rely upon other raw materials required for processing that were brought from Dang, Nepalgunj, and Butwal. The operation was unsuccessful as domestically the final product was too expensive to compete with other products in the market. [23] Enterprises and Entrepreneurs lacked knowledge ideas, foresight, capital, and the right qualitative

[22] Based on Field notes and Interview with Janak Singh Saud (District Forest Office: East Rukum)

[23] Based on field note of Interview, with Yagya Prakash Malla, Udhyoj Banijya Association, East Rukum

training to look beyond this paradigm and target higher-value consumers in the country and abroad. To overcome this, it is also suggested that trade and enterprise in the remote area be done in those fields or niches where most of the raw materials and expertise required can be found in the district such as harvesting wools from sheep which can be used in multiple industries and mostly relies on traditional knowledge of women. [24]

A precursor to High-Value MAPs enterprise in remote regions: Allo, Paper, Wool, and Bamboo

Nepal is developing at its own pace; remote regions of Nepal have mostly been neglected but post-federalism some changes in terms of basic infrastructure can also be seen (Acharya, 2021). There has been considerable development in terms of connectivity via roads of the region to the rest of the country and due to the sharp rise in telecommunication and high-speed internet service a new renewed surge of eagerness for the development of such remote regions can also be seen (World Bank, 2018).

Regardless, boots on the ground, at present the remote herbal enterprise scene in such area of Nepal are mostly still stuck in the precursor to the high-value MAPs enterprise where the status quo is mostly dominated by low-value enterprises such as allo products, cotton manufacturing (Carpets, Traditional Clothing, and other forms of Clothing), bamboo products and other small medium enterprises that traditionally rely on little technology, fewer materials and less degree of processing which is complimentary of the status quo on the ground.

These forms of herbal enterprise that require less processing, capital, and technology also have huge potential for equitable growth of the region and is a proven way of providing employment for women and youths on the ground. Allo goods alone grew by more by 58.7% since the 2010s (SAWTEE, 2016). These goods don't only have good domestic markets, especially in the corporate realm but also enjoy high export opportunities. [25] The carpet industry is one of the most

[24] Based on field notes, observation and interview with Man Kaji Pun, Ward Chairman, Bhume 1, East Rukum

[25] Based on field note, conversation and interview with Tirtha Pun Magar, Samajik Bikas Pramukh, Gaukarya Palika Samiti, and Women Entrepreneur, East Rukum

prominent users of Allo in Nepal, which uses 120-160 metric tons of Allo Yarn, accounting for more than 80% of the estimated 150-200 metric tons of total production in the country (MEDEP, 2010). Likewise, the same study also indicates for handmade paper products the market that chiefly centers in states like Germany, the USA, France, Australia, and India has also increased by 8.3% since the last decade. The below table shows the value of handmade paper and Allo exports for 2010-2013.

Table 17*:* Top value of handmade paper products in exports 2010-2013

COUNTRY	**2010**	**2011**	**2012**	**2013**
USA	1,881,416	2,983,199	1,878,677	2,424,999
UK	1,085,313	536,674	493,842	1,049,307
FRANCE	434,535	502,984	450,971	550,165
GERMANY	436,447	544,555	581,411	398,087
INDIA	575,746	504,908	763,339	346,434

Source: TEPC 2022, http://www.tepc.gov.np

Table 18*:* Top value of allo, hemp and other natural fibers in exports 2010-2013

COUNTRY	**2010**	**2011**	**2012**	**2013**
USA	34,972	4,285	22,100	23,786
GERMANY	6,783	95,018	2,343	60,495
CANADA	144,243	3,389	2,122	30,201
UK	2,504	379	297	5209

Source: TEPC 2022, http://www.tepc.gov.np

There is a rising demand for goods made of natural fibers from plants such as allo and lokta paper which is especially promising for remote regions because they require few materials, technology, and expertise in manufacturing and because of their traditional affluence and potential to attract many entrepreneurs in remote regions of Nepal, especially women. [26] But, however, the sectors do have several challenges, especially in Allo where the process of making allo products is very painstaking from harvesting in jungles for women with no proper equipment and training, soaking drying, cooking, beating, washing, bleaching, spinning and finally weaving and kitting. The sector has many subsets of issues due to the prevalent use of traditional technology made of wood, women have a more difficult time in the final finesse of the product, as consumers increasingly demand more complex goods and finesse. In short, the sector needs talent, capital, and innovation to solve its problem of maximizing profit and generation of employment in remote regions of Nepal. Gender-responsive trade and domestic policies are required for women in such sectors for the generation of more employment in remote regions which incorporates the total needs of women including insurance, safety, access to capital, alternative credit, and immersive training programs.

Significance of 'Value addition' in the value chain

Nepal has a large share of higher plant species, especially in comparison to its size. Regardless most of the MAPs are exported in crude form with limited to no processing. MAPs from Nepal generally end up in India where regional traders from the region earn more than harvesters. Increase in processing capabilities and ramping production/manufacturing of finished products would stimulate positive changes in the economy. For instance: In 2006, Jatamansi plants were sold by locals in 50 NRS in crude form and the processed Jatamansi Oil in Nepal at the same year was sold for NRS 8,000-9000 (USD 111-125) per kg (Pokharel, Subedi, Sapkota, & Subedi, 2006).

In the backdrop of climate change and rise in conscious consumerism, there is a surging demand for environmentally friendly products made from MAPs in much of the developed Western world

[26] Based on field note, conversation, and interview with Tirtha Pun Magar, Samajik Bikas Pramukh, Gau Karyapalika Samiti and Women Entrepreneur, East Rukum

and in Asia's growing middle class. This demand in natural and organic products has opened a new structural opening of demand for MAPs and NTFPs for small to high-scale trading by manufacturers and traders. Consumers are demanding not only reassurances for products to be climate-friendly but just in socioeconomic lens for the overall overarching value of these products. Even with the status quo at present and undeveloped trade, NTFPs account for half of the household income in some of Nepal's remote hills and mountainous areas (UNEP, 2012).

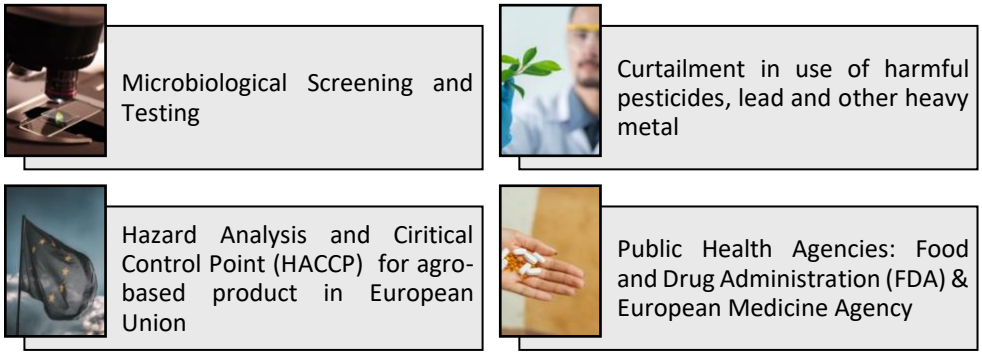
Nepal's attractive portfolio of MAPs and its pristine advantages, especially its long association of tradition and states global image enact a strong unique selling proposition (USP) and foreign investment, especially in remote regions of Nepal, done in the right way and in the right sections. From a policy-making perspective, it is very vital to comprehend how to better position Nepal's products and its services in compatible sections based on its current capabilities. Studies indicate that the best sector for Nepal to compete for employment generation in remote regions of Nepal are value addition spheres such as boutique, luxury wellness service section, personal care products, and fast-moving consumer goods (FMCGs), where previous success has also been seen in last decades, essential oils and semi-processed inputs for the manufacturer. Today, most of Nepal's focus has only been on competing in crude MAPs, with very little to primary processing which generates very low value, is exploited by the middlemen, and is very competitive especially given the proximity of industrial giants like India and China (World Bank, 2018).

Tariff and Non-Tariff barriers

The trade of MAPs from Nepal faces several tariff and non-tariff barriers in India and largely the global market. Tariffs are mostly seen to have an impact on trade with India and likewise non-tariff barriers generally affect high-value products in Western Countries (SAWTEE, 2011). MAPs from Nepal, especially essential oils face high customs duties in India and Bangladesh and low tariffs in Western markets such as the European Union, United States, Canada, and Australia. Tariffs hamper the trade and development of the sector with regard to the identification of products and maximizing profit by value addition. It generally also decreases incentives at home for processing MAPs, because of low investment return. Higher tariffs imposed by India also aid in the growth of illegal and unrecorded trade.

Moreover, Non-tariff barriers are likely to be more prominent, especially for the promotion of remote herbal enterprises as most developed states have a positive outlook on trade with Nepal. In the developed part of the world, the exports of MAPs face many non-tariff barriers including food, safety, health, and other requirements as imposed by importing countries. Without proper infrastructure and policy, it would be very hard to meet the requirements for enterprise and business which implies higher, just, and equitable processing standards. Certification and Laboratory measures are very much required for the solution of the problem. Haphazard harvesting and unsystematic processing as well as a lack of any quality control measures make obtaining international certification and license very difficult. Below mentioned are the primary requirements of developed Western countries.

Figure 11: Screening, Testing, Laboratory and Certification Measures for Western Markets



Source: Author based on UNEP

The significance of Community Forest User Groups (CFUG) and District Forest Offices (DFO)

Various DFO institution around the state is responsible for handing out collection permits for MAPs in national and federally controlled land. CFUGs issue collection permits in remote regions in a comparable process where traders normally submit an application with all necessary detail and pay a royalty deposit based on the type and volume which is used for the transportation and movement of MAPs. CFUGs and the role of DFO are very critical in the promotion of herbal enterprises in remote regions that can provide support measures, local regulations, and robust help in any other intervention program. They help upstream producers safeguard their right to access

MAPs, promote sustainable and systematic harvest, and in value addition as well as resource mapping of MAPs.The proven efficacy of the community forest user group (CFUG) model and recent enhancements in connectivity of these remote regions (including road connection, cellular, and internet connection) have sparked hope again for the increment of commercial activities with regards to MAPs enterprise. These disruptive opportunities, which were previously not accessible have aided in the transformation of required knowledge, networking, and opportunities hampering domestic supply chains of MAPs in these remote regions of Nepal aiding upstream procurers and producers to gain more knowledge regarding the market, prices, best practices to seize value and profit for their products and services. Transportation costs to the capital city, and to Kolkotta (The closest sea port of Nepal) is more than 1000 km away, which is more than a day of the drive where non-tariff measures and other hurdles are common and account for more than 20% of the entire production costs for remote farmers in the region (World Bank, 2017).

CHAPTER V: RECOMMENDATIONS

4.1 Promoting Herbal Enterprise in Remote Regions of Nepal

Nepal has created a long-term vision for a society that is devoid of all kinds of poverty and to achieve that various development strategies have been enacted and implemented to realize high and transformative economic growth with, a special focus on 'Social Equality for Poverty alleviation'[27] A study from ANSAB (Asia Network for Sustainable Agriculture and Bioresources) projected that almost 189,000 are dependent in the NTFPs and MAPs for their livelihood and employment, most of them reside in rural areas of Nepal. The government has not only understood the importance but in recent years some progress has been made like the expansion of forest areas and forest governing mechanisms which has had improve the livelihood of community living in remote areas below poverty line. The implementation of different buffer zone management programs for protected areas of Nepal such as National Parks, Conservation Areas and Hunting Reserve have also accelerated the involvement of people around these areas for both sake of conservation and monetary rewards. In the fiscal year 2019/2020 it was reported that the government promoted 2,004 micro and small industries based on forest enterprises. Likewise, IN 2019/2020 several activities concerning forests resources generated 5.3 million labor/day employment. Different MAPs processing and value addition enterprises produced 44.8 tons of aromatic oil and 4.965 millions of units in herbal care. The government is also currently improving the identification, management and in-situ as well as ex-situ conservation of Nepal's plant resources. As per the initiative, 165,000 herbarium specimens of 5,077 plant species are being timely managed and protected. The initiative also completed digitization of 30,070 herbarium specimens by 2019/2020. In 2019/2010, more than 1,507 MAPs samples were also studied, verified and endorsed for foreign export (Ministry of Finance, 2021).

Government policies and plans have always understood the significance of processing and manufacturing of MAPs. However, at the implementation level the government is only able to provide sporadic momentum and support for enterprises and industries based on NTFPs and

[27] The phrase was extracted from report entitled "Economic Survey 202/201" conducted by Ministry of Finance (MOF), Government of Nepal

MAPs. The effort, especially keeping the huge prospects in mind has not been sufficient. Although herbs and medicinal plants have been proposed in the Master Plan for the Forestry sector there has not been overall investment plans to promote herbal enterprise, nor has there been any sort of targeting lending program from any major financial institutions. The sector seems to lack a larger goal and clarity in terms of where we are, what we have, where we are going and what can be achieved which is very much essential for formulating the herbal sector in the context of Nepal.

4.2 Competitive Analysis of Remote Herbal Enterprise

Remote Herbal Enterprise today can be generally categorized into two folds, one focuses more on High-Value MAPs like Yarshagumba, Khurilo, Jatamasi, Padamchal, Kutki and less on value addition or only simple processing. The second kind of Herbal enterprise generally focuses more on low-value MAPs and NTFPs like allo, lokta, bamboo, sisno and wool but generally have a heavy but traditional value-addition process. Each sector has their own problem in remote regions of Nepal and has immense opportunities for employment generation and sustainable development. Both of these sectors tend to produce higher-value products with more monetary remunerations.

Remote Herbal Enterprise today chiefly competes in the raw trade of MAPs which receive little to no processing and are bought domestically by non-discerning buyers and by regional wholesalers. Value addition is almost non-existent in this segment and often MAPs have transported a whole and much margin is captured by regional wholesalers or local traders which leaves less room for value addition or employment generation.

MAPs of remote regions also go to more conscientious buyers and suppliers where buyers prioritize generally quality, purity and also sustainability over monetary remunerations but often these are only centered to few high value maps with large markets and demand proper storage, cleaning, fragmentation, sifting and separation which has not been able to been institutionalized by any enterprise in remote regions of Nepal. A clear demand for more such value additional measures is growing due to shifts in conscious consumerism, push from regulators and manufacturers but the region has not been able to capitalize on this due to lack of infrastructure, framework and plans. In home and in aboard, many new sophisticated MAPs enterprises are on rise, who have international standard operations, manufacturing practices and processing

capabilities and require such inputs but issues such as complete certifications including environment, ethical and herbal are challenges to be confronted.

Allo, Bamoboo, Sisno, and Wool based enterprises are prevalent herbal enterprises in remote regions of Nepal which represent low value herbal enterprises. Its primary success factor has been not being too dependent on outside raw resources as well as less modern tool required which is generally substituted with traditional practices. Women are mostly associated closely with this segment, especially with Allo who are involved in harvest, storing, processing, sewing, manufacturing and also entrepreneurship. Whilst low in comparison to high value exotic MAPs of the region but Allo, Wool based enterprise and handicraft market is also significant both at home and aboard. The region and its women have traditional heritage and cultural advantages often associated with traditional use. This segment not only already exists on the ground but enjoys a fair deal of entrepreneurship from women that require urgent investments, technology, guidance, and support. The sector urgently requires support to maximize their profit and penetrate the larger market as it still relies on a traditional form of harvest which is often painstaking, time-consuming, and very challenging. To harvest Allo women have to first harvest Allo from forests with little to no equipment and boil, beat as well as yarn among other things to make the final output to sew.

More secondary processing for remote herbal enterprises is also very essential for employment generation in remote regions of Nepal. The measures of value addition depend on the type of MAPs resource. There are other forms of stocking MAPs beyond only cutting, sorting, drying and stocking in small containers which although require more infrastructure, expertise, technology and capital which could be done in remote areas of areas surrounding such remote regions. A creation of a more diverse value chain is very essential for promoting herbal enterprises in remote regions. Additional secondary processing can include production of pure and Fresh liquid extracts, infusions, powders, compounds and other forms of extracts using heavier machines to cut, shred, grind, compress and store. Secondary processing not only increases potentiality of quality of the product making it fresher and purer but opens the door for entrepreneurship on large scales for remote regions. Both High value and low value herbal enterprise could immensely benefit from secondary processing, whilst enabling monetary remunerations to remain upstream or around the region whilst diversifying the value chain for remote regions. Secondary products such as essential oils, fresh extracts and powder could be plausible for remote herbal resources.

Competing on simple Cosmeceutical, Nutraceutical, Agro based products and Traditional Medicines are not something out of reach for herbal enterprises given proper market awareness, management, access to finance and leadership. However, problems are likely to mount in attitude/mindsets, lack of competitiveness understanding, lack of sustainable harvest, lack of entrepreneurial culture and networking. Any support measures that incorporate high skill enhancement of the enterprise and entrepreneurs in the region such as decision making, competitive analysis, networking and tenacity could help counter such risk.

Given its resource distribution, remote herbal enterprises can also compete on the value chain of boutique natural health, personal care, wellness and luxury products. Goods in this segment fetch a very high price, high level employment and low volume of final goods which targets consumers who seek boutique care and luxury. There is both huge domestic and international demand for this, especially keeping in mind remote regions' very unique and exotic herbs. It is clear that higher the altitude of MAPs in Nepal higher the monetary reward. Hence a natural advantage would be to enable such a high value enterprise which can channel obvious strengths of the region and create low-high value jobs. However, these products are more heavily regulated in different markets, competition is generally very high, and demand top notch quality and practice. Although the segment demands more high quality of processing and manufacturing standards, this segment could also be very attractive in terms of FDI attraction in the region owing to its competitive clear advantages and helps penetrate in multiple segments including hospitality and wellness.

Personal care products like soaps, lotions, balms, detergent, face wash are also a striking segment for remote herbal enterprises which is also best suited for entrepreneurship and SMEs. Remote regions' pristine image, purity, cultural and natural beauty could enact distinctive USPs for these products. This segment could also be very consequential for women and youth in the region. These products mostly have limited ingredients, a very easy production process, and limited expertise which make them very suitable for SMEs and MSMEs with limited capital and access. However, branding, marketing, communication, packaging and digital entrepreneurship are likely to play critical role for the success of such enterprises.

Traditional Medicines and Nutraceuticals are also important segments for herbal enterprise which in simple products don't require much high-tech processing or infrastructure. Many successful retail Ayurvedic stores in remote regions also indicate demand in the remote regions themselves and have good market elsewhere in Nepal and also abroad.[28] Some medicines only use a few products and remote regions would not need to rely on more goods from other parts of the country for completion of the product. Remote region's isolated image, traditional medicine heritage and spiritual cultural practice also give them an obvious competitive advantage. Ayurveda and Traditional Medicine has huge popularity both within the country, in the region and also the world largely. Post, Covid-19 domestic growth in alternative or traditional medicine and health care products also paints a lucrative picture for this segment. In many remote regions, where modern medicine is more difficult to access for all, traditional medicines, recipes and alternative or nutraceutical health care products played a very important role in Covid-19.[29]

4.3 Action Matrix

The below mentioned are the recommendation actions and their action matrix for the promotion of herbal enterprises in remote regions of Nepal for women and youth employment. Actions address multiple challenges from climate change, solid waste management, employment, research, insurance and certifications. Issue

Central Level:

ISSUE	**SPECIAL HIGH-VALUE HERBAL ECONOMIC POLICY FOR REMOTE HIMALAYAN REGIONS**
ACTIONS	● Identifying unique high-value NTFPs and MAPs in remote Himalayan regions of Nepal ● Clustering of special high-value Herbs as per segments and products and performance

[28] Based on an in-depth interview, Santosh. Chaudhary, Local Ayurvedic medicine and items retailer

[29] Based on Key Informant Interview, Tulla Raj Sunwar, District Administration Office, East Rukum

	● Competitive analysis of high-value herbs from remote regions ● Research, inventory, and sustainable harvesting and phenology of high-value MAPs ● Preferential trade for transport, logistics and customs for high value MAPs ● Encouraging entrepreneurship, manufacturing and specific value addition and processing of high-value MAPs ● Exclusive merit-based credit system to promote Himalayan herbal enterprise ● Insurance, training, safety and emergency services for harvesters ● Dedicated research centers for high value herbs from Himalayan region ● Pilot project and testing
POLICY TACT	● Socio-political abhiyaans like 'Himali Jadibuti ko digo upyaogh, samrachyan, arthikikaran ra biswa ma prawadan' ● Significance for National Goals and SDG goals 2030
DESIRED OUTCOMES	● Economic growth in remote regions of Nepal ● Safeguarding of high-value MAPs of the Himalayan Region ● Sparking women and youth entrepreneurship and creation of employment ● Promoting MSMEs and SMEs in remote regions ● Improving harvest practice of upstream collectors ● Strengthens conservation efforts in alpine to subalpine ecosystems ● Unified Policy for value addition and processing of exotic high-value MAPs of the Himalayan region
ACTION MATRIX	High Effort-High Reward (Major project)
ISSUE	Solid Waste and Pollution Management in High Altitude Meadows and 'Buki'

ACTIONS	● Civic awareness and mobilization for waste management, pollution in high ● Clean up Campaigns ● Rotation Harvesting ● Study and Research sustainable harvesting volumes for key high-value MAPs such as yarshagumba, padamchal, panchaule, pakhanvedh and other impacts such as soil-erosion
POLICY TACT	● Clean-up and sustainable harvest campaigns like: 'Jeewan Buti ko surakchya, afnai vabishya ko arakhchya', 'Buki safai abhiyaan'
DESIRED OUTCOMES	● Proper sustainable waste management in high altitude pastures and clean up. ● Dealing with bio-stressors such as soil-erosion ● Conserving high-value MAPs for future generations. ● Deaccelerating climate change impact
ACTION MATRIX	High Effort-High Impact (Major Project)

ISSUE	**ESTABLISHMENT OF HERBAL PROMOTION CENTRES (JADIBUTI PRAWADAN KENDRA)**
ACTIONS	● Establishing provisions, framework, and groundwork for Herbal Promotion Centers, ultimately in each province of Nepal in a feasible location for unified protection, research, and promotion of MAPs and MAPs, NTFPs as well as their enterprises. ● Further research for feasibility of HPC (Herbal Promotion Centers)
DESIRED OUTCOMES	● Proper sustainable waste management in high altitude pastures and clean up. ● Dealing with bio-stressors such as soil-erosion ● Conserving high value MAPs for future generation.

ACTION MATRIX	Low Effort-High Impact (Quick Win)

ISSUE	**ENABLING HOLISTIC CETRIFICATION FOR HERBAL PRODUCTS**
ACTIONS	● Revamping laboratory, testing, screening, and botanical infrastructures in Nepal ● Improving National Microbiological Screening and Testing Facilities ● Special provisions for FDA (Food and Drug Administration), HAACP (Hazard Analysis and Critical Control Point), European Medicine Agency ● Certification measures that conserve the competitive advantage of Nepal such as pure and organic ● Certification measure that affirms good conduct in terms of sustainability, climate protection, and socio-ethical value (insurance).
DESIRED OUTCOMES	● Promoting export of MAPs products and boosting demand in home ● Quality assurance of MAPs product ● Safeguarding of harvester's rights, ensuring fairness, branding and differential marketing
ACTION MATRIX	High Effort-High Impact (Major Project)
ISSUE	Ayurvedic and Herbal CorridoRs with India and CHINA FOr Common Destiny
ACTIONS	● Liasoning with Indian and Chinese partners for special economic corridors especially designed for the promotion of MAPs and NTFPs of India, China, and Nepal and deeper integration of value chain as well as market with each other

	● Devising a national strategy to compete and synergize MAPs products, market, and value chain with India and China ● Negotiate for better proposition Tariff and Non-Tariff barriers
DESIRED OUTCOMES	● Promotion of MAPs product for Nepal and deeper integration with India and China ● Technology and Talent Transfer
ACTION MATRIX	High Effort-High Impact (Major Project)

ISSUE	**PROMOTING WSME AND WMSME BASED ON INDIGENOUS HERITAGE**
ACTIONS	● Identifying various lucrative WSME and WMSE that operate with Indigenous knowledge and heritage ● Merit based alternative credit system for women-led enterprise with Indigenous heritage ● Merit based technical support, enhancing leadership, decision-making, and immersive training with a mentor model that allows networking and skill transfer
DESIRED OUTCOMES	● Promotion of women entrepreneurship ● Women's employment and empowerment ● Mobilization of entire human resources ● Aid to achieve SDGs 2030 and National development goals ● Safeguarding indigenous cultural practices of women
ACTION MATRIX	High Effort-High Impact (Major Project)

ISSUE	REDUCTION OF TRANSPORTATION TOLL COST IN DOMESTIC SUPPLY CHAIN
ACTIONS	● Modify the legal framework that allows multiple taxations along village and highway lines ● Ensuring transparency at tool booths and check points using various Realtime monitoring mechanisms and autonomous technologies ● Make the administrative process of DFOs, easier and simpler
DESIRED OUTCOMES	● Growth in domestic trade and entrepreneurship ● Increasing transparency at checkpoints
ACTION MATRIX	● Low Effort-High Impact (Quick Win)

ISSUE	RASTRIYA JADIBUTI DIWAS NATIONAL HERBS AND SPECIES DAY
ACTIONS	● Lobbying for Rastriya Jadibuti Diwas or National Herb Day
DESIRED OUTCOMES	● National Day of Recognition for Nepalese herbal heritage that in unique on its own in the pan-Himalayan region ● Promoting awareness, enterprise, and soft power of the Herbal sector ● Recognition of herbal resources from remote regions of Nepal
ACTION MATRIX	● Low Effort-High Impact (Quick Win)

Federal Level:

ISSUE	PROMOTING FEDERATION OF COMMUNITY FORESTRY USERS OF NEPAL (FECOFUN)

ACTIONS	● Promote FEOCFUN for better connection between forest user from all part of the country ● Allow FECOFUN to play more role to boost forest-based enterprise ● Consolidating data management of FECOFUN and accessibility of data for forest users across the country.
DESIRED OUTCOMES	● Promotion of NTFPs and MAPs ● Digitization of data between different forest resources users and institutions.
ACTION MATRIX	● Low Effort-High Impact (Quick Win)

ISSUE	**PROVINCE WISE FOREST ENTERPRISE TRADE FAIR**
ACTIONS	● Province wise different trade fairs and networking events for access to finance, marketing, and stakeholders meet in B2B (business to business) and B2C (Business to consumer) model
DESIRED OUTCOMES	● Promotion of NTFPs and MAPs ● Digitization of data between different forest resources users and institutions.
ACTION MATRIX	● Low Effort-High Impact (Quick Win)

Local Level (East Rukum):

ISSUE	**HERBAL RESOURCES COMPREHENSIVE MAPPING IN EAST RUKUM**

ACTIONS	● Comprehensive mapping of available MAPs resources in East Rukum as per different rural municipalities, altitude and detailing its usage, availability conditions for sustainable harvest and phenology ● Social survey for record and data entry ● Clustering herbal resources of East Rukum as per different lucrative segment and sectors of enterprise
DESIRED OUTCOMES	● Detail Mapping of MAPs and NTFPs resources of East Rukum ● Basis for promotion of herbal enterprises and clustering of herbal enterprise as per resources
ACTION MATRIX	● Low Effort-High Impact (Quick Win)

ISSUE	**SPECIAL JOINT COMMITTEE FOR MANAGEMENT OF IMPORTANT MEADOWS OR 'BUKI' IN EAST RUKUM**
ACTIONS	● Creation of a new suitable management framework, principles, and institutions with Dhorpatan Hunting Reserve, local government, stakeholders, and community for joint management of vital 'buki' for fairness, environment/biodiversity protection, emergency services, safety, research & data collection ● Provide infrastructure, human resources and other service as well as formal employment for the local community for community-based management of Buki ● Conducting studies on distribution, phenology, sustainable harvesting and management of human pressure on Yarshagumba ● Formulate strategies for solid waste management from Buki ● Provide training, equipment, emergency services and trust or relief funds for human casualty.

DESIRED OUTCOMES	● Proper, Fair and Sustainable Management of the famous 'Buki' that attracts thousands of people ● Conservation and sustainable harvest of Yarshaghumba (Ophiocordyceps sinesis) and other high value herbs ● Controlling social evils in Buki ● Control quota for number of harvesters to neutralize negative damage on rangelands and wildlife habitats ● Minimizing poaching and ensuring safety
ACTION MATRIX	● High effort-High Impact (Major Project)

ISSUE	**EX-SITU HARVEST STRATEGY FOR HIGH VALUE HERBS**
ACTIONS	● Research and study for feasible high value herbs with potential of ex-situ cultivation like Yarshagumba, Padamchal, Khiraulo to incept artificial farming ● Explore and map appropriate site for cultivation
DESIRED OUTCOMES	● Artificial farming of high value herbs to reduce stress in environment, and high altitude ecosystem ● Promotion of high value Maps trade
ACTION MATRIX	● High effort-High Impact (Major Project)

ISSUE	**PROMOTING LOW VALUE HERBAL ENTERPRISE IN EAST RUKUM**

ACTIONS	● Accelerating investment, technical support, capacity building measures and leadership growth for low value herbal enterprises in East Rukum ● Using of digital technology to promote low value herbal enterprise ● Initializing key training programs, alternative access to capital and supporting marketization and facilitating higher technology for smoother production and better output
DESIRED OUTCOMES	● Higher financial output of low herbal enterprise ● Marketization and increasing competitiveness of low value herbal enterprise
ACTION MATRIX	● High Effort-High Impact (Major Project)

CHAPTER V: CONCLUSION AND LIMITATIONS

5.1 Conclusion

Overall, the four 's' of promoting herbal enterprise in the 21st century is undoubtedly Smart, Safe, Social, and Sustainable. These are the values that are largely rewarded in the industry and by the consumers. Regardless, of the clear and fluid dynamics and relationship of MAPs in a remote region of Nepal and its best-suit model of enterprise, the people and enterprise in the area have largely not been able to reap the desired result as Nepal has mostly been competing on those segments that has traditionally always been unfavorable for harvesters upstream where profit is mostly made by regional wholesalers and traders. There hasn't been any meaningful progress in terms of value addition of MAPs found in the remote region. Hence, these areas have always had the highest rate of people living under the poverty line and are most vulnerable to extreme poverty (World Bank, 2017). To eliminate this first, a proper comprehensive mapping of resources and inventory is needed. The MAPs resources should further be catalyzed as per type of NTFPs (Bush, Shrubs, Tree, Plants) to accelerate women-centric policies for proper utilization. After comprehensive mapping, clustering of the available resources should also be done in these remote regions as per global trends, industry, market and unique proposition value of the plants. Generally, MAPs can be classified into Cosmeceutical, Pharmaceutical, Nutraceutical, and other Agro-based products. After successful clustering, plants and products with most efficacy for value addition, feasibility and market should be clearly identified, which could in future lead to pilot projects in most suitable remote regions which aim not only in trade, commerce and employment but also for conservation, education and well-being (Insurance and Sustainable Waste Management).

The availability of MAPs is also widely decreasing in the region and is considered to be very sporadic, especially by the locals mainly due to haphazard cultivation practices, climate change, and unstainable collection. High in such Mountainous areas, in the Alpine region, the population is very thin and people only flock to the such area for picking seasons which begins from May until the first snowfall, in Mid-to-late September. But extreme weather patterns and unpredictable seasons in recent decades have made the process very challenging. In temperate regions 2000-3000M, human density is relatively slightly higher but very sporadic and most of the youths are attracted to overseas employment some MAPs here, are collected throughout the year but the field

seems to be less and less lucrative for the coming new generation which requires a lot of traditional hard work. In sub-tropical regions (1000m-2000m) many agricultural systems are found where local people, especially men, are dedicated to the cultivation of multiple crops, including MAPs, and women here are mainly focused on sewing, handicrafts (allo), and wool products.

In Alpine regions of such remote area's cultivation and harvest of MAPs, especially (Ophiocordyceps sinesis), Jatamansi (Nardostachys grandiflora), and Panchaule (Dactylorhiza hatagirea) are seen to be very lucrative which provides a consequential source of income, livelihood, and finance for most marginalized people even those even without lands. The MAPs found in these high grasslands of Nepal, even with little systematic processing and management can create green jobs for the most vulnerable communities but, much has been understood but little actions seem to have been taken. Hence, existing enterprises in high value MAPs focus less on value addition, only simple processing and focus more on trade creating very minimum jobs along the way and smaller base of operations. In lower sub-tropical regions, more low value MAPs are found, which go through higher degree of processing and value addition that is primarily due to less amount of other good required for final product, less technology which can be supplemented via traditional practices. It is already creating employment and women entrepreneurship in remote regions. This segment also allows more room for women and youth employment and has a USP for women's employment and entrepreneurship.

In high value, herbal enterprise women generally work in lower brackets such as harvesters and collectors. The most value in the chain is generated by regional and wholesale traders which traditionally have been men-dominated spaces. Ergo, specific policies towards women entrepreneurship and women-led enterprise are a must when it comes to the promotion of herbal enterprise in remote regions that both promotes and safeguard women's enterprise, knowledge, identity and practice.

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Appendix

Appendix A: Consent Form

Consent Form

Promoting Herbal Enterprise for Women and Youth Employment in East Rukum

I ……..., agree to participate or agree in the research project titled 'Promoting Herbal Enterprise for Women and Youth Employment in East Rukum' conducted by Nischal Shrestha who has discussed the research project with me.

I have had the opportunity to ask questions about this research and I have received satisfactory answers. I understand the general purposes, implications, and methods of the research. It is my understanding that this survey/questionnaire has been designed to gather information regarding Herbal Enterprise, Herbal Collection/Traders, Farmers, and Women/Youth employment in East Rukum.

I consent to participate in the research project and the following has been explained to me:

- the research may not be of direct benefit to me
- my participation is completely voluntary
- my right to withdraw from the study at any time without any implications to me
- the risks including any possible inconvenience, discomfort, or harm as a consequence of my participation in the research project
- what I am expected and required to do
- whom I should contact for any complaints about the research or the conduct of the research
- I am able to request a copy of the research findings and reports

- security and confidentiality of my personal information.

In addition, I consent to:

- audio-visual recording of any part of or all research activities (if applicable)
- publication of results from this study on the condition that my identity will not be revealed.

Name:

Signature/Initials or Sign of consent:

Date:

By signing/printing above, you are agreeing 1) to participate in this study, and 2) that you have read and understand all of the information provided on this form.

Appendix B: Interview Questionnaire for Farmers, Sellers, Collectors of crude MAPs *(further tweaked to each participant)*

English Version

General Information

Name:

Age:

Sex:

Occupation:

Major source of income:

No of Family Members:

Other members of the Family (in the Herb sector:):

Education:

Main source for information: Radio, TV, Social Media, Internet, Village Institutions and Spaces

Main source of communication: Physical, Phone, Radio, TV, Internet, Social Media, In-person

Specific Information

A) Do you use Herbs for your domestic use?

B) How long have you and your family been doing this?.....

C) Do you feel the Herbal sector will play an important role for upcoming generations?

D) Which Herbs do you trade/collect/sell the most?

E) Which Herbs are most profitable?

F) Is this sector seasonal? Or are some Herbs available every season?

G) Are proper equipment, training, and safety measures important in this sector?

H) Would you be interested in government initiatives to learn how to add value to crude herbs for better economic gain?

I) In your sector pick the biggest challenges that you are facing: (Any Three)

1. Technology 2. Finance 3. Climate Change 4. Infrastructure 5. Knowledge, Management, and Idea

J) In your view, every year what is affecting the availability of picking/selling or collecting herbs: (Any Three)

1. Lack of Technical Equipment 2. Climate Change 3. Lack of supportive measures (Government)
4. Health and Safety Reasons 5. Knowledge and Idea 6. Human Resources

K) What kind of support would you like to see from the government: (Any Three)

1. Knowledge/Workshop/ Training 2. Road & Infrastructure 3. Herbal Resources Conservation and Proper/Sustainable Management 4. Health and Safety Measure support
5. Easier Finance or Access to Capital 6. Any other? (If yes specify)

J) Do you think trading in raw form or value addition of any kind would be more beneficial for you?

K) Are you interested in Farming using Organic chemicals and promoting your village to be Pure, Organic, and Natural Village?

L) If government conducts Women centric initiatives and special policies for training,finance, and capacity enhancement for Herbal Entrepreneurship like ‘ Ek Ghar Ek Nari’ Will you or anyone in your family be interested?

M) Do you believe in the big role that women and youth play in Herbs collecting, selling, and trading sector?

N) Do you feel that Government should come up with different policies and strategies for unique high-value herbs of the region for better financial benefit?

O) Would you be interested in learning different use of Digital technological tools?

P) Would you say every village needs a 'Jadi Buti Promotion Centre' with equipment, knowledge training, training, financial access, and health and safety measures (emergency) ?

Q) Do you participate in Buki? How often??.....

Nepalese Version

नाम:

उमेर:

लिङ्ग:

पेशा:

आम्दानीको प्रमुख स्रोत

परिवार सदस्य संख्या

जडीबुटी क्षेत्रमा परिवारका अन्य सदस्यहरू काम गर्छन्? कति?:

शिक्षा:

जानकारीका लागि मुख्य स्रोत: रेडियो, टिभी, सामाजिक सञ्जाल, इन्टरनेट, गाउँका संस्था र जनता

सञ्चारको मुख्य स्रोत: भौतिक, फोन, रेडियो, टिभी, इन्टरनेट, सामाजिक सञ्जाल, व्यक्तिगत

Specific Information

1) के तपाइँ आफ्नो घरेलु प्रयोगको लागि जडीबुटी प्रयोग गर्नुहुन्छ?

2) तपाईं र तपाईंको परिवारले कहिलेदेखि यो गर्दै हुनुहुन्छ?

3) जडिबुटी क्षेत्रले आगामी पुस्ताका लागि महत्वपूर्ण भूमिका खेल्नेछ भन्ने लाग्छ ?

4) तपाई कुन जडिबुटीको सबैभन्दा धेरै व्यापार/सकलन/बिक्री गर्नुहुन्छ?

5) कुन जडीबुटी सबैभन्दा लाभदायक छन्?

6) के यो क्षेत्र मौसमी हो? वा हरेक मौसममा केही जडीबुटीहरू उपलब्ध छन्?

7) के यस क्षेत्रमा उपयुक्त उपकरण, तालिम, सुरक्षा र स्वास्थ्य उपायहरू महत्त्वपूर्ण छन्?

8) राम्रो आर्थिक लाभको लागि कच्चा जडीबुटीहरूमा मूल्य कसरी थप्ने भनेर जान्नको लागि सरकारी पहलहरूमा तपाईं इच्छुक हुनुहुन्छ?

9) तपाईंको क्षेत्रमा तपाईंले सामना गरिरहनुभएको सबैभन्दा ठूलो चुनौतीहरू छान्नुहोस्: (कुनै तीन)

1.प्रविधि 2. वित्त र पूँजी 3. जलवायु परिवर्तन 4. पूर्वाधार 5. ज्ञान, व्यवस्थापन, र विचार

10) तपाईको विचारमा, प्रत्येक वर्ष जडीबुटी उठाउने/बेच्ने वा सङ्कलन गर्ने उपलब्धतालाई कुन कुराले असर गरिरहेको छ: (कुनै तीन)

1. प्राविधिक उपकरणको अभाव 2. जलवायु परिवर्तन 3. सहयोगी उपायहरूको अभाव (सरकार)

4. स्वास्थ्य र सुरक्षा कारणहरू 5. ज्ञान र विचार 6. मानव संसाधनको अभाव

11) तपाईं सरकारबाट कस्तो प्रकारको सहयोग हेर्न चाहनुहुन्छ: (कुनै तीन)

1. ज्ञान/कार्यशाला/प्रशिक्षण. 2. सडक र पूर्वाधार विकास 3. जडिबुटी श्रोत संरक्षण र उचित/दिगो व्यवस्थापन 4. स्वास्थ्य र सुरक्षा उपाय समर्थन. 5. सजिलो वित्त वा पूंजीमा पहुँच 6. कुनै अन्य? (यदि हो भने निर्दिष्ट गर्नुहोस्)……

12)कच्चा हर्बल व्यापार वा कुनै पनि प्रकारको मूल्य अभिवृद्धि प्रविधिमा व्यापार गर्नु तपाईंको लागि बढी लाभदायक हुन्छ जस्तो लाग्छ?

13) के तपाई अर्गानिक रसायन प्रयोग गरेर आफ्नो गाउँलाई शुद्ध, अर्गानिक र प्राकृतिक गाउँ बनाउन प्रवर्द्धन गर्न चाहनु हुन्छ?

14) सरकारले हर्बल उद्यमशीलताका तालिम, वित्त र क्षमता अभिवृद्धिका लागि महिला केन्द्रित अभियान जस्ता 'एक घर एक नारी' र विशेष नीतिहरू सञ्चालन गरेमा के तपाईं वा तपाईंको परिवारका कोही इच्छुक हुनुहुन्छ?

15) जडिबुटी सङ्कलन, बिक्री र व्यापारको क्षेत्रमा महिला र युवाहरूले खेल्ने ठूलो भूमिकामा के तपाईं विश्वास गर्नुहुन्छ?

16) राम्रो आर्थिक लाभको लागि यस क्षेत्रका अद्वितीय उच्च मूल्यवान जडिबुटीहरूको लागि सरकारले विभिन्न नीति र रणनीतिहरू ल्याउनु पर्छ जस्तो लाग्छ?

17) के तपाई डिजिटल टेक्नोलोजिकल उपकरण र नेतृत्व विकासको विभिन्न प्रयोग सिक्न इच्छुक हुनुहुन्छ?

18) प्रत्येक गाउँमा उपकरण, ज्ञान तालिम, अन्य

तालिम, वित्तीय पहुँच र आपतकालिन अवस्थामा स्वास्थ्य र सुरक्षा उपायहरू सहितको 'जडी बुटी प्रवर्द्धन केन्द्र' आवश्यक छ भनी भन्नु हुन्छ?

19) के तपाईं Buki मा भाग लिनुहुन्छ?

<u>Appendix C: Interview Questionnaire for Traders, MSMEs, Home-based Enterprise</u> *(further tweaked to each participant)*

English Version

Name:

Age:

Sex:

Occupation:

Enterprise Name:

Enterprise Established Date:

Type of Business: (B2B, B2C):

Number of Family:

Education:

Main source for information: Radio, TV, Social Media, Internet, Village Institutions and Spaces

Main source of communication: Physical, Phone, Radio, TV, Internet, Social Media, In-person

Main Market:

Specific Information

How many numbers of employees?

How many numbers of Business locations do you have?

Do you own the company premises? If rented how many years…….If bought how many years…….

Do you want to expand your factory or business?

What are the challenges facing your expansion? If yes……..

Do you have a computer, Internet, or Laptop service in your office?

What are the numbers of the products or services that you have?

What is your most expensive product or service? In number aprox……

What is your least expensive product of service? In number approx……

What is your production or service capacity in a month?.....

Do you use any kind of marketing strategy to boost your product or service? Yes what……

Is this your main source of income?

Are you happy with the income your business is generating?

Are your customer growing?

What is your biggest challenge?

1) Access to Finance and Capital 2) Access to Market and Domestic Awareness 3) Business Marketing Strategy 4) Management, Capacity and Technical Business Skills 5) Lack of Roads and Infrastructure. 6) Lack of Technology and Machines

Do you think the Internet and social media can help boost your business?

What are the things the government needs to focus on for promoting your business?

If the government were to make an institution like 'Jadi Buti Enterprise Promotion Centre' to help support enterprise from finance, and capital to technology and leadership, will it be helpful for people like you and other similar enterprises?
If the government starts annual herbal enterprise trade fair in East Rukum be helpful for you?
Would you say these are the values of your enterprise Smart, Safe, Sustainable, Social?

Nepalese Version

नाम:

उमेर:

लिङ्ग:

पेशा:

उद्यम नाम:

उद्यम स्थापना मिति:

व्यवसायको प्रकार: (B2B, B2C):

परिवार संख्या:

शिक्षा:

जानकारीका लागि मुख्य स्रोत: रेडियो, टिभी, सामाजिक सञ्जाल, इन्टरनेट, गाउँका संस्था र जनता

सञ्चारको मुख्य स्रोत: भौतिक, फोन, रेडियो, टिभी, इन्टरनेट, सामाजिक सञ्जाल, व्यक्तिगत

मुख्य बजार:

Specific Information

1) कति संख्यामा कर्मचारी छन?

2) तपाईसँग कतिवटा व्यापारिक स्थानहरू छन्?

3) के तपाइँ कम्पनी परिसरको मालिक हुनुहुन्छ? कति वर्ष भाडामा लिएको हो भने…… कति वर्षमा किनेको हो भने ……।

4) के तपाई आफ्नो कारखाना वा व्यवसाय बढाउन चाहनुहुन्छ?

5) तपाईको विकासका चुनौतीहरु के के छन्? यदि हो भने……

6) तपाईको अफिसमा कम्प्युटर, इन्टरनेट वा ल्यापटप सेवा छ?

7) तपाईंसँग भएका उत्पादन वा सेवाहरूको संख्या के हो?

8) तपाईको सबैभन्दा महँगो उत्पादन वा सेवा के हो? कति?.....

9) तपाईको सेवाको सस्तो उत्पादन के हो? कति?.....

10) एक महिनामा तपाईको उत्पादन वा सेवा क्षमता कति छ?.....

11) के तपाइँ तपाइँको उत्पादन वा सेवालाई बढावा दिन कुनै पनि प्रकारको मार्केटिङ रणनीति प्रयोग गर्नुहुन्छ? यदि हो भने कुन……

12) यो व्यवसाय तपाईको आम्दानीको मुख्य स्रोत हो?

13) के तपाई आफ्नो व्यवसायबाट हुने आम्दानीबाट सन्तुष्ट हुनुहुन्छ?

14) के तपाईको ग्राहक बढ्दै छ?

15) तपाइँको ग्राहक वा सेवा वृद्धि दर संग खुसी हुनुहुन्छ

16)तपाईको सबैभन्दा ठूलो चुनौती के हो?

1) वित्त र पूँजीमा पहुँच 2) बजार र घरेलु जागरूकतामा पहुँच 3) व्यापार मार्केटिंग रणनीति 4) व्यवस्थापन, क्षमता र प्राविधिक व्यावसायिक सीपहरू 5) सडक र पूर्वाधारको अभाव। ६) प्रविधि र मेसिनको अभाव

17) के तपाइँ इन्टरनेट र सोशल मिडियाले तपाइँको व्यवसायलाई बढावा दिन मद्दत गर्न सक्छ जस्तो लाग्छ?

18) तपाईको व्यवसाय प्रवद्र्धनका लागि सरकारले के के कुरामा ध्यान दिनुपर्छ?.....

19) सरकारले 'जडी बुटी इन्टरप्राइज प्रमोशन सेन्टर' जस्तो संस्था स्थापना वित्त, पुँजीदेखि प्रविधि र नेतृत्वसम्म सहयोग पुरयाउने को लागि गर्‍यो भने तपाईजस्ता अन्य उद्यमीलाई सहयोग पुग्छ?

20) सरकारले पूर्व रुकुममा वार्षिक जडीबुटी उद्यम व्यापार मेला सुरु गरेमा तपाईलाई सहयोग पुग्छ?

Appendix D: Comprehensive classification of Plant Resources In Mid-Hills

Subtropical Zone (1000-2000M)	**Temperate Zone (2000-3000)**
Forest Type: Pinus roxburghii, Schima wallichii, Castanopsis indica, Castanopsis tribuloides, Lyonia ovalifolia, Eurya acuminata, Quercus glauca, Schima wallichii-Castanopsis indica hygrophile forest; Schima-Pinus forest, Enlistee cupola, Persia odoratissima, Persea duthiei, Rhododendron arboreum, Lyonia ovalifolia, Pyrus pashia	**Forest Type:** Rhododendron arboreum, Rhododendron barbatum, Lyonia spp., Pieris formosa; Tsuga dumosa forest, Acer campbellii, Acer pectinatum, Sorbus cuspidata, and Magnolia campbellii
Plant Type: Cretaeava unilocularis, Trewia nudiflora, Premna interrupta, Ulmus lancifolia, Ulmus chumlia, Glochidium velutinum, Callicarpa arborea, Toona ciliata, Ficus spp., Mahosama similicifolia, Trevesia palmata, Xylosma longifolium, Boehmeria rugulosa, Scheffera venulosa, Michelia spp., Casearia graveolens, Rhus wallichii, Actinodaphne reticulata, Sapimum insegne, Alnus nepalensis, Ardisia thyrsiflora, Ilex spp., Macaranga pustulata, Trichilia cannoroides, Celtis tetranda, Wenlendia puberula, Saurauia nepalensis, Ligustrum confusum, Zizyphus incurva, Camellia kissi, Hymenodictyon	**Plant Type:** Abies pindrow, Betula utilis, Buxus rugulosa, Benthamidia capitata, Corylus ferox, Deutzia staminea, Euonymus tingens, Abies spectabilis, Acanthopanax cissifolius, Coriaria terminalis, Fraxinus macrantha, Dodecadenia grandiflora, Eurya cerasifolia, Hydrangea heteromala, Ilex dipyrena, Ligrestum spp., Litsea elongata, Juglans regia, Michelia doltsopa, Myrsine capitallata, Neolitsea umbrosa, Philadelphus tomentosus, Osmanthus fragrans, Prunus cornuta, Rhododendron campanulatum and Vibernum continifolium.

flaccidum, Maytenus thomsonii, Zanthoxylum armatum, Rhus succednea, Eurya acuminata, Myrsine semiserrata, Sloanea tomentosa, Symplocus spp., Cleyrea spp. and Hydrangea aspera	