

Strategic Segmentation Analysis: Nepal

Medicinal and Aromatic Plants

DECEMBER 2018



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Executive Summary

Medicinal and aromatic plants (MAPs) offer opportunities for sustainable economic growth in Nepal. Medicinal plants (botanicals or herbal drugs) are primarily used to maintain health or treat specific conditions in both traditional and modern medicine systems, while aromatic plants are primarily used in cosmetics (e.g., perfume), the food industry (e.g., spices, flavoring), and medicinal products (e.g., aromatherapy). MAPs are deeply rooted in Nepal's unique geographical location and cultural identity. In Nepal, most MAPs are collected in the wild by non-commercial farmers and landless people to generate supplementary incomes. Estimates suggest that MAPs-related industries account for at least 5 percent of Nepal's total GDP and a significant portion of government revenues levied through permit fees, royalties, and taxes.

Nepal currently does not hold a significant share of global markets for MAPs, but MAPs are relatively more important in Nepal's export basket compared with other countries. Nepal's reported exports of MAPs (HS 121190) totaled US\$6.48 million in 2016 and the country is ranked 49 in exports in this sector. At a country by country level, only Israel and Jordan rely to the same degree on these products for their national economy as Nepal.

The number of processors located in Nepal has grown significantly in the past decade but establishing long-term trade relationships in export markets has proven to be a challenge. Nepal's export performance of MAPs and essential oils has been erratic, with volatile year-on-year trade flows. Estimates suggest that the number of manufacturers along the MAPs value chain registered as members of the Nepal Herbs and Herbal Products Association (NEHHPA) grew from 20 in 2012 to 85 in early 2018. Nepali firms have had some success in diversifying export markets in recent years, but India remains by far the most important trade partner and destination in the MAPs value chain. Trade data indicate that Nepali products may enter a new market one year only to disappear the next.

Market access is affected by non-tariff measures in this sector. The public health aspect of these products makes them highly sensitive and more likely to be protected by barriers in destination markets. Firms in Nepal face difficulties proving compliance with buyer requirements.

Currently, Nepal primarily competes in the segment of raw and unbranded MAPs for the non-discerning user. This segment has minimal value addition and a high degree of global competition. This segment involves little to no primary processing and operates on a commodity business model. Regional wholesalers in India have almost all the bargaining power. The remoteness of other wild-harvested MAPs, seasonality, variable weather conditions, overharvesting, and high transportation costs make scaling up a major challenge in the near term.

This study identifies two segments where Nepal is well positioned to compete in the short to medium term: (i) lightly processed products for the discerning and conscientious consumer, specifically personal care products; and (ii) heavily processed, mass-produced products for non-discerning buyers, specifically Ayurvedic and traditional medicine products. The segments have been identified based on several factors not limited to current capabilities of Nepali firms, global demand trends, the evolution of international buyer purchasing criteria, relative knowledge and capital intensities of production, and the potential for attracting FDI in these segments.

Personal care products are an attractive market segment for individual Nepali entrepreneurs and micro, small and medium enterprises (MSMEs). Products in this segment (soaps, moisturizers, balms, essential oils) have few ingredients and relatively simple production processes, which make them suitable for production by MSMEs with limited capital. Despite low barriers to entry and high threat of substitutes, Nepali producers can leverage relationships with local harvesters and traders to buy high-value herbal ingredients at lower prices on the domestic market than competitors reliant on imports. Simple personal care products are often easier to be approved for sale in a new market compared with food supplements, herbal medicines, or other complex fast-moving consumer goods (FMCGs) with a therapeutic purpose. Nepal's positive country image for beauty and purity, its well-known cultural and healing traditions, and the potential for social impact through economic growth can all be combined to deliver a unique selling proposition USP for these products.

Nepali firms have the potential to integrate into regional and global value chains for traditional herbal and Ayurvedic medicinal products. Nepali manufacturers' success in competing with Indian imports of Ayurvedic medicine on the domestic market suggests competitiveness in this segment. Nepal is ideally positioned geographically between China and India to leverage its position as a key supplier in a regional value chains. Despite Nepal's restrictive investment climate, the broader health-care sector is attracting significant foreign direct investment (FDI) from Indian health-care providers. Domestic demand for health-care products and services is growing and offers a buffer to external shocks. Nepali manufacturers use a wide variety of MAPs in production of Ayurveda products, which suggests high potential for backward linkages.

While Nepali firms have the potential to compete successfully in the two identified segments, they face many challenges that need to be addressed. Many of the constraints in the MAPs value chains in Nepal are similar to those across the broader agribusiness sector. These challenges include issues with land rental and aggregating land; lack of investment in physical infrastructure; lack of R & D; distortions in input markets (fertilizer and seeds); poor extension services; inadequate support for building firm capabilities; weak quality infrastructure (for testing and certification) that restricts access to foreign markets; poor logistics; insufficient investment in supply chains; and poor access to finance for smaller players in the sector. Recommendations on interventions to address these constraints have been described in detail in the Nepal Country Private Sector Diagnostic. In addition, the GoN can also encourage and incentivize supplier development programs in the two identified value chains which provide the greatest opportunities for integration into global and regional value chains.

Sustainability of MAPs is a major concern, especially in higher elevation areas, and requires continued conservation efforts. Over-exploitation, poor harvesting practices, and climate change are negatively affecting certain species in specific regions. Strengthening the oversight and in situ management capacity of community forest user groups should be a top priority. Efforts need to be made to promote the cultivation of MAPs endemic to hilly and high elevation districts.

The government should ease trade frictions for suppliers providing raw materials to domestic manufacturers. A truck transporting MAPs from Surkhet to Kathmandu passes through 18 districts and is required to pay legal fees at 18 different district offices and at least 18 different checkpoints of forest rangers. The reorganization of central and regional governance provides a timely window to address cross-district trade issues and foster linkages between domestic MSMEs.

In the personal products segment, Nepali firms could benefit from a more conducive environment for e-commerce and skills development. Updating the legal framework for e-commerce, specifically international payment gateways, and establishing the infrastructure for digital signatures will facilitate Nepali firms to process transactions with individual final customers via online websites and retail platforms, opening new market access opportunities for these firms. Offering e-commerce and digital literacy training to domestic MSMEs could help strengthen their marketing skills and foster forward linkages. Partnering with the Nepal Agribusiness Innovation Center to offer personal and professional development courses targeting entrepreneurs in the boutique personal care product segment can help Nepali firms differentiate themselves from competition in this segment.

The Ayurvedic and traditional medicine products segment in Nepal could benefit from protecting Nepal's cultural heritage and traditional medicine systems, implementing intellectual property rights (IPR) polices to support private sector growth and attract FDI, and research support to identify the intensity of specific MAPs in their most common final products. The country's weak IPR framework limits the abilities of domestic MSMEs to develop unique products and brand identities. Weak IPR protection can also inhibit investment promotion, as international firms are less likely to invest in a country where protection of their IPR is not enforced. The National Intellectual Property Policy of Nepal 2017 provides for legal protections for geographical indications, traditional knowledge, and plant varieties and contains provisions for IPR protection in line with Nepal's international obligations. The policy will need to be supported by enacting an Intellectual Property Rights Law. There is little available public information on which specific MAPs are used in which formulations and final products, and this in an area that requires research support.

Global demand for MAPs, especially as inputs for more complex final goods, has been increasing steadily since the turn of the century. Nepal has the potential to tap into this demand and compete successfully in this market if the challenges faced by Nepali players in the MAPs value chains are addressed. An estimated 3,000 species of MAPs are traded internationally as raw material inputs to an exhaustively long list of products. Nepal's abundance of endemic MAPs, the country's long history of traditional medicine, and its international image as a place of wild landscapes and spiritual healing provide unique comparative advantages in today's global health and wellness industries.

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Acronyms

ABS	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization
CFUG	Community Forest User Group
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DFO	District Forest Office
DFTQC	Department of Food Technology and Quality Control
DPR	Department of Plant Resources
EIA	Environmental Impact Assessment
FMCG	Fast-Moving Consumer Goods
FNCCI	Federation of Nepalese Chamber of Commerce & Industries
GACP	Good Agricultural and Collection Practices
GHP	Good Hygiene Practices
GMP	Good Manufacturing Practices
GoN	Government of Nepal
GVCs	Global Value Chains
HACCP	Hazard Analysis and Critical Control Points
HS	Harmonized Commodity Description and Coding System
IEE	Initial Environmental Examination

IPPC	International Plant Protection Convention
IPR	Intellectual Property Rights
ISPM	International Standards for Phytosanitary Measures
MAPs	Medicinal and Aromatic Plants
MOFSC	Ministry of Forests and Soil Conservation
MOICS	Ministry of Industry, Commerce and Supplies
MRA	Mutual Recognition Agreement
MRL	Maximum Residue Level
MSMEs	Micro, Small and Medium Enterprises
NAIC	Nepal Agribusiness Innovation Center
NAMPA	Nepal Ayurvedic Medicine Production Association
NBF	Nepal Business Forum
NECTRADE	Nepal Enhanced Capacities for Trade and Development
NEHHPA	Nepal Herbs and Herbal Products Association
NPRL	National Plant Resource Laboratory
NQI	National Quality Infrastructure
NTFP	Non-timber Forest Products
NTIS	Nepal Trade Integration Strategy
PPD	Public-Private Dialogue
PRA	Pest Risk Analysis
R&D	Research and Development
SPS	Sanitary and Phytosanitary
TEPC	Trade and Export Promotion Centre
TGG-N	Transitioning to Green Growth: Natural Resources in Nepal Project
TRIPS	1994 Agreement on Trade-Related Aspects of Intellectual Property Rights
USP	Unique Selling Proposition
WBG	World Bank Group
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Context

The Government of Nepal (GoN) needs to foster new drivers of economic growth and competitiveness if it is to meet its objective of achieving middle-income status by 2030. Over the past decade, Nepal has been growing at an average of 4 percent—the slowest rate in the South Asia region—with among the lowest participation in global value chains (GVCs) compared with regional peers. However, Nepal sits strategically between two of the world's fastest growing economies in China and India, and enjoys preferential access to many of the world's top importing countries. Opportunities for greater participation and integration into global markets are there to be seized.

Spanning a long section of the narrow band of Himalayan biodiversity, Nepal's unique topography and varying climates have made it home to an estimated 6,000 to 7,000 higher species of plants.¹ Of these, nearly 2,000 are unique to the Himalayan range, with an even more distinct group of more than 300 species only found within Nepal (Joshi, Satyal and Setzer 2016). Collecting and using MAPs has been a part of Himalayan communities' lifestyles since ancient times. Early uses and the transmission of this knowledge formed the basis for some of the world's oldest health-care systems. Ayurveda, the traditional health system of India, is said to be the oldest system of preventative and curative treatment in the world, having been practiced for at least 5,000 years.

Today, many of these same MAPs are being harvested from the wild or cultivated for both traditional and more modern uses as natural ingredients in an ever-expanding range of manufactures. In Nepal, most MAPs are collected in the wild by non-commercial farmers and landless people to generate supplementary incomes. Based on estimates of formal and informal trade, MAPs-related industries account for at least 5 percent of Nepal's total GDP and a significant portion of government revenues levied through permit fees, royalties, and taxes (GIZ 2017).

From the development perspective, MAPs offer opportunities for sustainable economic growth. This can have a large impact on rural and marginalized communities in Nepal by helping to reduce poverty, create jobs, and preserve indigenous knowledge and cultural traditions. MAPs can also help communities and individuals address health-care needs while avoiding high costs and capital expenditures associated with modern conventional pharmaceutical drugs.

Nepal's potential for further developing its MAPs industry remains largely untapped, albeit not for a lack of recent effort and investment. The GoN has initiated various promotional policies and programs for the development of the MAPs industry, but their impact has been limited due to a long list of mitigating factors (e.g., lack of physical infrastructure and market connectivity, natural disasters, trade disputes with India) that have limited the possibility and effectiveness of implementation. Traditional practices remain the norm, with limited investment in modernization.

The main objective of this report is to provide a trade competitiveness analysis of the MAPs value chain, building on prior analysis and private sector consultation to identify binding constraints specific to Nepali stakeholders. The analysis can be used as an input in sector development strategies and trade policy dialogue, as well as in development partner coordination efforts in the design and implementation of projects targeting the MAPs sector. The report is based upon:

¹ See for example (Bhujju, et al. 2007).

- (i) a global strategic segmentation and competitiveness analysis of the MAPs industry (McKenna 2018);
- (ii) broad private sector consultation with Nepali stakeholders;
- (iii) consultations with foreign buyers and high-performing firms in target markets to identify key success factors and minimum buyer purchasing criteria, including voluntary standards;
- (iv) consultations with development partners engaged in the MAPs development projects; and
- (v) extensive desk analysis and literature review.

1. Industry Profile

Global demand for MAPs, especially as inputs for more complex final goods, has been increasing steadily since the turn of the century, despite a slight slowdown in the past two years. The industry centers around a group of large importers and exporters that have remained constant, including Germany, Japan, and the United States—three central nodes common to products heavily traded within global value chains (GVCs). Growth in emerging markets, boosted by the rising incomes of larger middle classes, also shows promising implications for both market and product diversification.

Industry definition

The medicinal and aromatic plants (MAPs) industry is comprised of multiple value chains involved in the collection, cultivation, manufacture, and sale of botanical entities primarily for therapeutic and aromatic purposes as components of natural, cosmetic, medicinal, and pharmaceutical products and services.

An estimated 3,000 species of MAPs are traded internationally as raw material inputs to an exhaustively long list of products (Schippmann, Leaman, & Cunningham, 2002). MAPs are most commonly traded to produce pharmaceuticals, dietary supplements, natural health products, cosmetics, personal care products, and flavorings. The multilateral Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) lists in its appendices 31,128 specific species of plants that have been internationally traded. Ethnobotanical and ethnopharmacological research continues to expand the international plant registry and to explore new uses. Around 2,000 new plant species are identified annually.

Research continues to improve extraction and distillation techniques for the isolation and use of active ingredients, as well as to verify claims of medicinal applications and efficacy. Kew Royal Botanic Gardens has identified 28,187 plant species recorded as being used medicinally (Kew 2017). However, the efficacy of many MAPs and related treatments remain untested, unproven, or are poorly monitored (Ekor 2014).

1.1. Definition²

Medicinal plants can be defined as those with botanical components proven or believed to be beneficial to health. They are also often called botanicals or herbal drugs. Medicinal plants are primarily used to maintain health or treat specific conditions, in both traditional and modern medicine systems around the

² The definition used for this report is based on an interpretation of multiple definitions offered in academic research, industry associations, and regulatory bodies. For consistency, this definition comes directly from McKenna's (forthcoming) report on the global MAPs industry.

world. Medicinal plants are either consumed raw, or in combination with other plants or ingredients. Value-added processing can be undertaken to create derivative dry and liquid substances, commonly used as inputs in pharmaceuticals, personal care products, processed food and cuisine, and other natural health products.

Aromatic plants can be defined as those produce or exude volatile compounds known as essential oils. An essential oil is a concentrated hydrophobic³ liquid with the tendency to vaporize easily, and dubbed ‘essential’ with reference to the fact that it captures the essence of a plants fragrance. Aromatic plants are primarily used in cosmetics (e.g., perfume), the food industry (e.g., spices, flavoring), and medicinal products (e.g., aromatherapy). Common aromatic plants include chamomile, lavender, mint, and rosemary.

One plant may classify as both medicinal and aromatic, and thus they are often treated as synonymous in sectoral analysis and trade studies. Similar studies also occasionally group MAPs together with agricultural commodities that can be processed into similar inputs to similar industries, especially those used in the personal care and food industries. Despite having similar value chains, this report attempts to illustrate how product segments and market potential for MAPs differs from other (e.g., fruit-and vegetable-derived) products—especially those that are collected in the wild versus those that are commercially cultivated.

The GoN has made similar efforts to distinguish MAPs from agriculture. In the Nepal Trade Integration Strategy (NTIS) 2016, MAPs are treated as a separate entity from other priority agricultural products, namely cardamom, ginger, and tea—commodities that are occasionally grouped together with MAPs in analytical work, policies, and sectoral interventions.

This report focuses on MAPs that are either fully or partly wild-harvested, exhibiting different value chain characteristics than agricultural products. A wild MAP is one that is generally not watered, fed, or otherwise managed.⁴ In the case of Nepal, wild MAPs are collected or harvested from community forests, national forests, and other public spaces. MAPs in the process of domestication or exotic species that are solely cultivated, such as lemon grass and Japanese mint, are included but not central to the analysis. In the same sense, products that are produced on a mass scale on commercial farms around the world are acknowledged and discussed, but are considered to follow business models and target segments more akin to large-scale agricultural commodities than MAPs.⁵

1.2. Global Overview

1.2.1. Supply

The global export market for MAPs totaled an estimated US\$2.59 billion in 2016.⁶ This figure represents only a subset of MAPs, defined in the Harmonized Commodity Description and Coding System (HS) under

³ Tending to repel or fail to mix with water.

⁴ Definition adopted from the California Certified Organic Farmers. More information available here: <https://www.ccof.org/faqs/what-wild-crop-and-how-does-one-get-certified-organic>

⁵ The MAPs ‘industry’ or ‘sector’ is more aptly defined when focusing on upstream production and final products with fewer stages of transformation. Conflating the MAPs industry with, for instance, the pharmaceutical industry is an oversimplification and unhelpful. So, while this report will discuss opportunities in these related industries, references to the ‘MAPs industry’ will refer primarily to upstream stages of harvesting and production, and MAPs prior to transformation into complex goods.

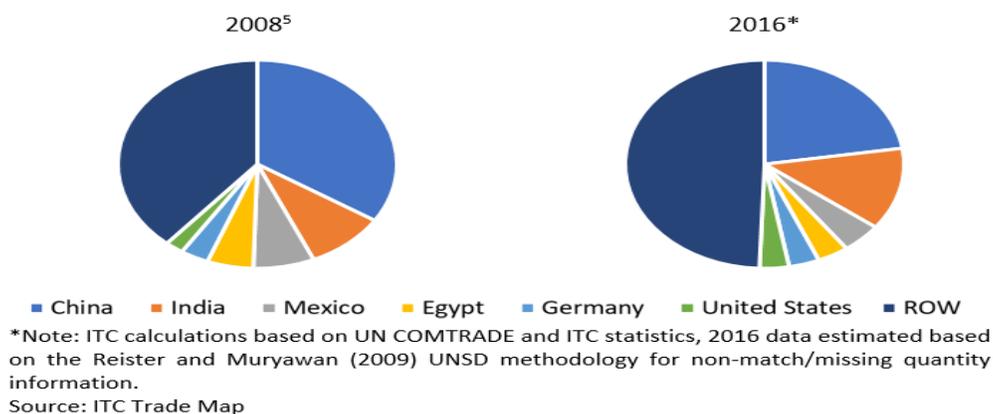
⁶ The size of the global market for MAPs is difficult to ascertain, largely due to the limitations of available domestic production and consumption, and international trade data. However, bilateral trade data does allow for a broad understanding of global

the code HS 121190, or plants and parts of plants (including seeds and fruits) ‘used primarily in perfumery, pharmacy or for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not cut, crushed or powdered.’ Licorice, ginseng root, coca leaf, poppy straw, and ephedra have their own classification at the HS 6-digit level. Other plants sometimes considered MAPs (e.g., cardamom, ginger, turmeric) also fall under separate HS chapters.⁷ Exports by volume had averaged just over 554,000 tons per year in 2005-10, before increasing substantially to an average of more than 667,000 tons in 2011-16, peaking at over 770,000 tons in 2014. Figure 2 shows the steady rise in the supply of MAPs on the international market until a slight downturn in 2014.

Most MAPs are collected in the wild, but this is beginning to change. Wild-collected species are generally more limited and only found during specific times of the year. Supply shortages are common. Climatic conditions play a dominant role in determining seasonal and yearly supply, and this is evidenced by fluctuations of total trade volumes, despite a relatively consistent growth in trade values. Concerns over sustainability, volatility, and vulnerability have led to greater investment in domestication and naturalization. Many species of MAPs are now cultivated, especially those used more intensively in industrial manufacturing.

Global supply is dominated by China, and to a lesser extent India (Error! Reference source not found. 1). Exports from China dipped by 18.6 percent from 2015 to 2016, and are down 28.6 percent since 2013. Despite these fluctuations, China has averaged more than 185,000 tons of raw MAPs since 2001—consistently more than double the total volume of exports from India. India has managed to increase total volumes of exports since the late 2000s by investing heavily in the domestication and cultivation of MAPs for use in domestic industries and the export market, with strong support from the government. The Government of India’s ‘Budget 2018’ includes 200 crore rupees (about US\$30.8 million) to support cultivation of MAPs and aid MSMEs in the production of essential oils, perfumes, and other value-added products (Business Today 2018).

Figure 1: Top world exporters of ‘Plants used primarily for perfumery, pharmacy or similar purposes (excluding ginseng roots, coca leaf and poppy straw)’ by volume, select countries



trends in supply and demand, although the HS classification system aggregates much of this data, making it difficult to identify trade of specific species.

⁷ Ginseng root is the highest earning MAP, totaling US\$528 million in 2016, with coca leaf earning US\$5.2 million.

Growth in demand has shifted production to new countries over the past two decades, as MAPs have moved from relatively minor products to crops worth cultivating. Investment in domestication and naturalization has allowed for commercial cultivation to grow where demand is high: namely, in advanced economies with large consumer bases and large health-care industries,⁸ or those well integrated into regional and global value chains for health and pharmaceutical products. This has begun to reduce China’s share in the global market.

Supply of essential oils and other botanical extracts derived from MAPs has also increased from some countries, as firms have upgraded processing capabilities within the value chain. In notable cases, exports of MAPs have decreased while exports of processed derivative products have increased. This has been particularly evident in countries with the capabilities to meet international standards on extracts, such as China, India, and South Africa. Table 1 illustrates how exports of MAPs have fallen for some major exporters, as the industry has moved to upgrade and specialize in processing, with varying degrees of success.

Table 1: Shifting export patterns for MAPs and related products, select countries, 2013-17

Exporter	Product								
	MAPs – excluding licorice, ginseng root, coca leaf, poppy straw, and ephedra (HS 121190)			Essential oils, excluding citrus fruit and mint (HS 330129)			Vegetable saps and extracts - excluding liquorice, hops and opium (HS 130219)		
	Total exports by value, 2017 (US\$ '000)	Annual growth in value in 2013-17 (%)	Annual growth in quantity in 2013-17 (%)	Total exports by value, 2017 (US\$ '000)	Annual growth in value in 2013-17 (%)	Annual growth in quantity in 2013-17 (%)	Total exports by value, 2017 (US\$ '000)	Annual growth in value in 2013-17 (%)	Annual growth in quantity in 2013-17 (%)
China	363,401	-21%	-23%	296,054	6%	2%	791,288	5%	8%
India	222,086	2%	-9%	73,483	8%	10%	189,185	-5%	-12%
France	21,290	-20%	-18%	399,892	12%	9%	22,231	54%	11%
Morocco	21,820	-10%	-11%	30,714	13%	8%	19,188	103%	88%
South Africa	4,262	-3%	-14%	8,510	14%	0%	7,123	22%	27%
United States	51,303	-6%	-15%	266,296	25%	32%	234,550	12%	-10%
Nepal	7,301	-12%	-8%	2,666	30%	33%	17	4%	N/A

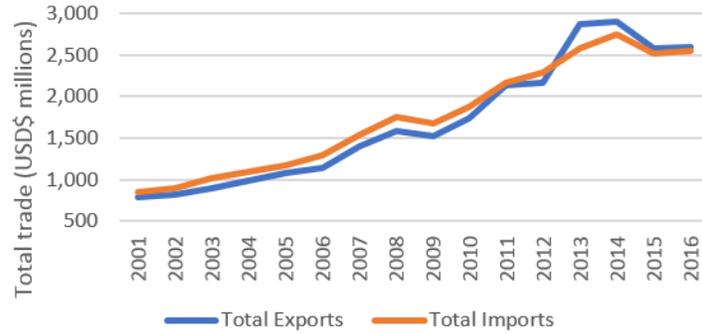
Source: ITC calculations based on UN COMTRADE and ITC statistics.

1.2.2. Demand

Global trade of MAPs has tripled by value over the last 15 years. Figure 3 illustrates the relatively steady growth of trade by value since the turn of the century. The sharper rise in prices compared with volumes suggests demand is outstripping supply, and that demand is relatively inelastic. MAPs are critical inputs to several large global industries that require consistent supplies of these inputs for business continuity. The perishability and short shelf-lives of some MAPs and their by-products are having a pronounced impact on the supply chains and the GVCs of these products, topics explored in later sections of this report.

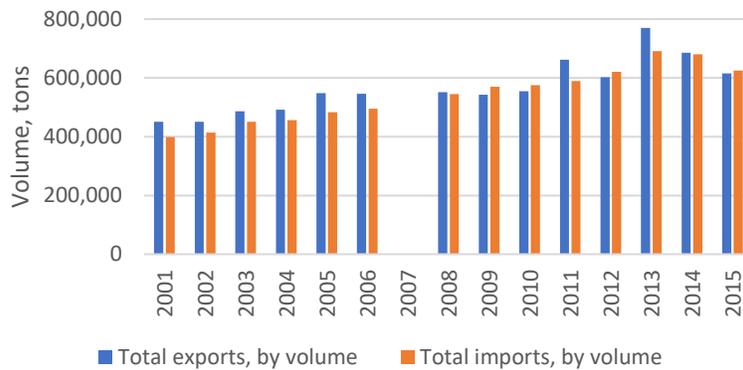
⁸ Across Europe, for instance, roughly 200 MAPs species are cultivated at commercial scale (GIZ 2017), primarily in France and Germany.

Figure 2: Total world trade 'Plants used primarily for perfumery, pharmacy or similar purposes (excluding ginseng roots, coca leaf and poppy straw)' by value, (US\$ million)



Source: ITC Trade Map.

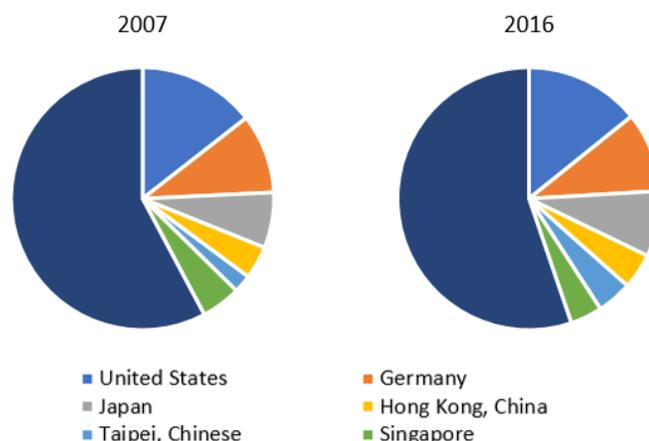
Figure 3: Total world imports and exports of 'Plants used primarily for perfumery, pharmacy or similar purposes (excluding ginseng roots, coca leaf and poppy straw)' by volume (tons), 2001-16



Source: ITC Trade Map.

The composition of imports by origin has remained largely unchanged over the past decade (Figure 4). Top importers by value include, in order of significance: the United States, Germany, Japan, Hong Kong (China), Chinese Taipei, and Singapore, all of which imported over US\$100 million in total value in 2016. Japan has the highest per capita consumption of botanical medicines in the world (GIZ 2017). When looking at imports by volume, China and India again emerge. In addition to being the world's largest exporters of MAPs by volume, China and India are the third and fifth largest importers by volume (2016), respectively. Much of the total production in these countries goes to meet domestic demand, as both have large processing industries. The dramatically lower unit values of imports compared with their peers suggests that both countries can rely on strong domestic supply, regional production, and the power of their central position as both top buyers and sellers in GVCs to negotiate low prices. It also suggests that the market for higher priced MAPs is still primarily in high-income countries.

Figure 4: Total imports of 'Plants used primarily for perfumery, pharmacy or similar purposes (excluding ginseng roots, coca leaf and poppy straw)' by value, by country (select countries)



Source: ITC Trade Map.

When looking at the global flow of raw MAPs, regional disparities are evident (Table 2). MAPs are traded along both regional and global value chains, with Asian countries positioned centrally in global networks. Asian countries, specifically East Asian and Southeast Asian countries, tend to source regionally and from relatively fewer trading partners—in part because of proximity to China and India, but also because many species of valuable MAPs are endemic to countries in this region. In Europe, MAPs travel nearly twice as far on average to reach their destination market. European countries are also much more likely to import products from multiple countries around the globe, resulting in much less concentration of supplier markets. In North American markets, products are truly sourced from around the world.

Table 2: Average distance of source countries and concentration of suppliers⁹, by country (2016)

Asia Region			European Region			North American Region		
Economy	Average distance of supplying countries (km)	Concentration of supplying countries	Economy	Average distance of supplying countries (km)	Concentration of supplying countries	Economy	Average distance of supplying countries (km)	Concentration of supplying countries
Japan	2,964	0.60	Germany	4,635	0.06	United States	9,469	0.11
Hong Kong, China	2,437	0.39	France	4,008	0.05	Canada	6,803	0.13
Chinese Taipei	1,668	0.80	Italy	4,314	0.09	Mexico	11,055	0.28
Singapore	2,462	0.29	Spain	4,484	0.10			
Korea, Republic of	2,181	0.58	United Kingdom	3,575	0.11			
Malaysia	3,523	0.50	Netherlands	4,265	0.07			

Countries exhibiting the fastest growth over the last five years are relatively small, non-traditional markets. Countries importing more than US\$5 million in raw MAPs with annual growth in import values above 10 percent between 2012 and 2016 include New Zealand, Sri Lanka, Denmark, Saudi Arabia, Chinese Taipei, Turkey, India, Austria, and Australia (in that order). Further market analysis would be

⁹ The concentration is based on the Herfindahl index.

needed to discern which particular MAPs are in the highest demand within these markets and why trade values have increased over the past five years.

Trade of MAPs is relatively insignificant without understanding the multiple products and industries to which MAPs are a critical input. Demand for MAPs comes primarily from pharmaceutical medicaments (HS 3003 and HS 3004), cosmetics (HS 3304), and the food and beverage sectors. Table 3 lists selected product classifications for which raw MAPs, essential oils, and botanical extracts are important inputs.

Table 3: Other sectors to which MAPs are an intermediate input

HS Code	Description	Total import trade by value (US\$ billion), 2016*
1302	Vegetable saps and extracts	5.44
2936	Provitamins and vitamins	6.91
3003	Medicaments consisting of two or more constituents mixed together	11.28
3004	Medicaments consisting of mixed or unmixed products	352.41
3301	Essential oils	4.62
3302	Mixtures of odoriferous substances	22.10
3303	Perfumes and toilet waters	16.78
3304	Beauty, make-up, and skincare preparations	42.70
3305	Preparations for use on the hair	12.81
3306	Preparations for oral or dental hygiene	5.60
3307	Other perfumery, toilet or cosmetic preparations, n.e.s.	11.08
3401	Soap	9.68

Sources: Author using ITC calculations based on UN COMTRADE and ITC statistics; total import trade represents the sum of reporting and non-reporting countries (mirror data).

Strong demand for MAPs in consumer goods, medicinal, and industrial final products has encouraged widely positive market forecasts. These forecasts differ in how they group the basket of goods and services considered MAPs, but stable growth is generally predicted across all market segments. Trends in demographics (aging populations in some regions, large percentage of youth in others), the Asian middle-class spending boom, urbanization, breakthroughs in medical R&D, and wider general knowledge and awareness of health issues all point to high potential for long-term growth in the industry (Euromonitor International 2018). Additional trends having an impact on the wider global industry are discussed in the World Bank’s global strategic segmentation for MAPs report (McKenna 2018).

2. Nepal Overview

Medicinal and aromatic plants are deeply rooted in Nepal’s unique geographical location and cultural identity. The varying elevations of the Himalayas, with their deep glacial and river valleys, dense forests and high deserts, make Nepal a world-renowned hotspot of biodiversity. The MAPs that grow in these areas are part of daily life for many ethnic groups in the country. Indigenous knowledge and long-practiced traditional uses of herbal medicine in the Himalayas provide Nepalis with valuable insight and a compelling story to share with the world.

Table 4: Plant-based non-timber forest products (NTFPs) and examples of species found in Nepal

Product	Examples of plant species used in these products and found in Nepal
Medicinal and aromatic plants	Kutki, chiraito, louth sallo, yarchagumba, panchaunle, pakhanved, haroo, baroo, amala, neem, silajit
Spices and flavors	Cinnamon, timur, amala, juniper, large cardamom
Herbal teas	Thyme, gurjo, gandhaino, tulsi, mint, cinnamon
Dyes and tans	Padamchal, chutro, majitho, louthsallo, banjh, thingre, sallo, okhar
Gums and resins	Chir pine, blue pine, sal
Incense	Jatamansi, juniper, sunpati, mahuwa
Essential oils	Jatamansi, sugandhawal, titepati, sunpati, juniper, wintergreen, sugandhakokila, abies, deodar, lauth sallo
Personal care products	Pangar, chiuri, rittha, amala, sikakai, naru
Ayurveda & traditional medicines	Kutki, chiraito, lauth sallo, yarchagumba, panchaunle, pakhanved, haroo, baroo, amala, neem, silajit

Source: Author, based on (Subedi 2006).

The significance of the MAPs sector in Nepal is difficult to disentangle from the broader agriculture sector. Taken as a whole, agriculture contributes roughly one-third of total value-added and provides two-thirds of the jobs in Nepal. Rising agricultural incomes over the past decade have been a major driver of poverty reduction (World Bank Group 2017). However, the sector is characterized by volatility, risk, and a lack of investment in productive factors. Nepal’s MAPs sector, especially MAPs being cultivated the Terai and the hilly regions, shares many of the common constraints inhibiting growth in the agriculture sector. These constraints—and what to do about them—are well captured in the World Bank Group’s 2017 Country Economic Memorandum and covered extensively in the World Bank Group’s 2016 report on “Sources of Growth in Agriculture for Poverty Reduction and Shared Prosperity”.

Nepal’s most unique MAPs grow predominantly in hilly and mountainous areas, in forests and grasslands above 2,000 meters (EPI 2017). Wild herbs are generally harvested from national and community forest land. An estimated 85 percent of all MAPs are collected in the far-western and mid-west development regions (GIZ 2017). Rural areas in these regions have the country’s highest levels of populations living in and vulnerable to extreme poverty.

Table 5: Select species of traded MAPs by topographic zone in Nepal

Terai Below 1,000 meters ¹⁰	Mid-Hills 1,000-3,000 meters	Himal (Mountains) Above 3,000 meters
Amala	Allo	Bisjara
Chamomile	Chiraito	Sugandhawal
Lemon Grass	Timur	Jatamansi
Mentha	Tejpat	Padamchal
Neem	Ritha	Kutki
Pipla	Dalchini	Yarshagumba
Tetepati	Loth Salla	Panchaule
Gurjo	Majitho	Laghupatra
Sarpagandha	Pakhanved	Atis
Bel	Jhyau	Gucchichyau

Source: (AEC/FNCCI 2006).

¹⁰ Meters above sea level.

The population of wild MAPs is believed to have declined in many regions, in part driven by market forces, and unsustainable collection and harvesting practices. Above 3,500 meters, the collection period runs from May until the first snow, usually in late September. Human population is sparse in these alpine regions. Mainly high value, underground plant parts are harvested from these alpine regions (Sharma and Kala 2017). In the lower temperate regions (2,000 to 3,500 meters), human population density is slightly higher, and some MAPs found in this region can be collected throughout the year. These are still relatively high value MAPs found in relatively low quantity. Below 2,000 meters, common agricultural systems are found, with populations dedicated to cultivation of multiple crops, including MAPs.

Collection and cultivation of MAPs provides important sources of income, livelihood improvements, and poverty reduction for rural households in high altitudes communities. Studies show 10 to 100 percent of households in Nepal’s mountainous regions are involved in the commercial collection of MAPs (FNCCI-AEC/NEHHPA 2012). In hilly regions, MAPs can account for up to 50 percent of annual household income (FNCCI-AEC/NEHHPA 2012). Recent analysis conducted by GIZ (2017) estimates 700 species of MAPs found in Nepal are used in the region’s Ayurvedic, Unani, and Siddha health-care systems, but estimates vary widely. Exports of pakhanved (rockfoil), timur (Nepalese pepper), tejpat (Indian bay leaf), and kaulo (persea) have been traditionally strong exports to India (GIZ, 2017). Growth in exports to China has been primarily driven by demand for yarshagumba (cordyceps).¹¹

The success of Nepal’s community forest user group (CFUG) model and the recent improvements in connectivity have helped to increase trade opportunities for rural communities across Nepal. The widening penetration of telecom services, coupled with the expansion of the road network, are driving economic opportunities in previously isolated and impoverished areas. With this connectivity has come technology and knowledge, which has dramatically altered the dynamics of the domestic supply chain for MAPs, helping upstream producers to access current market prices at specific transaction points and capturing more value for their products. However, the country’s mountainous terrain and underdeveloped infrastructure still increase the costs and slow the speed of transportation within and outside of Nepal. Transportation costs account for 20 percent of the input bill of agricultural exporters (Narain and Varela 2017). The closest seaport to Kathmandu, for example, is located south of Kolkata, India, over 1,000 km away and a roughly 23-hour drive, where delays and non-tariff barriers to trade are common.

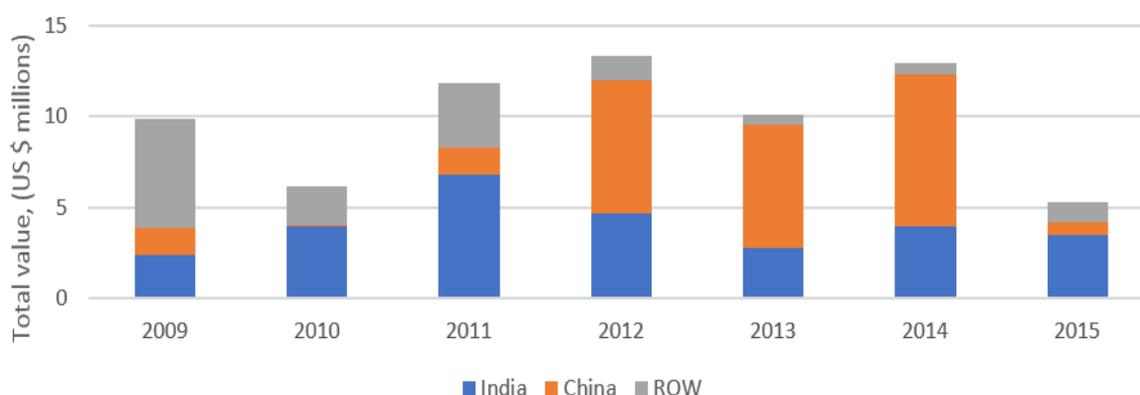
Market access is affected by non-tariff measures for more than three-quarters of exporters in the broader agriculture sector (ITC 2017). The public health aspect of these products makes them highly sensitive and more likely to be protected by non-tariff measures (NTMs). A recent ITC report on NTMs found that more than half of surveyed companies in Nepal faced difficulties proving compliance with buyer requirements and recommended more investment in national quality infrastructure to provide required testing and certification. In addition, the ITC recommended deeper engagement with India on transit and trade facilitation issues. If specific NTMs are to be removed, a more complete analysis of the impact needs to be conducted—not least on the potential negative environmental externalities of a spike in production.

¹¹ For a list of MAPs and their related products in Nepal, see (UNEP 2012).

2.1. Trade Performance & Competitiveness Benchmarking

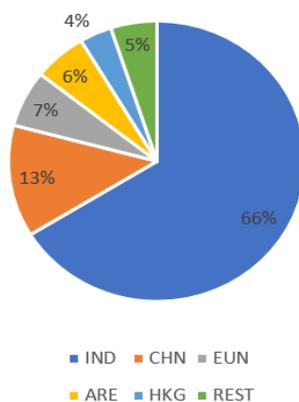
Nepal's reported exports of MAPs (HS 121190) totaled US\$6.48 million in 2016. This made Nepal the world's 49th largest exporter of MAPs, similar by market value to Argentina, Hungary, and Kazakhstan. Estimated export performance for 2017 shows a slight uptick from 2016. However, these numbers are a far cry from exports of MAPs between 2011 and 2014, when the country was earning US\$10-US\$13 million annually (Figure 5). All of Nepal's reported exports are classified under HS 121990, and have been since 2013.¹² Yarshagumba (cordyceps), ritha (soapnut), jhayau (lichens), kaulo (bay leaves), jatamansi (spikenard), and kutki (picrorhiza) are reportedly the top exports most years. Most of the yarshagumba, one of Nepal's most expensive per kilo exports, goes primarily to China, often unreported. The rest of the products go primarily to India. Just less than two-thirds (61.9 percent) of reported exports by value went to India, as exports to China have fallen sharply since 2014.

Figure 5: Nepal's total exports of HS 121190, by value (2009-15)



Source: ITC Trade Map.

Figure 6: Decomposition of Nepal's Medicinal Plants (121190) exports by destination, 2015

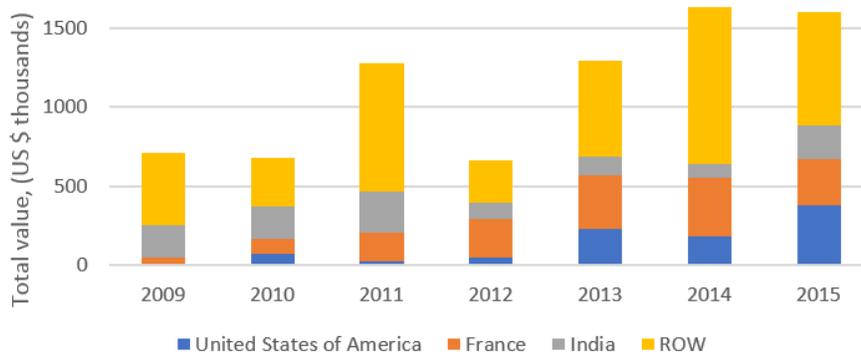


Source: WITS.

¹² Nepali producers are also active in the GVC for spices, exporting a reported US\$3.80 million worth of ginger in 2015. Like MAPs, most of this trade is in raw, unprocessed ginger exported directly to India. Turmeric and other spices also account for a small portion of trade.

Nepal's export performance of MAPs and essential oils has been erratic, with volatile year-on-year trade flows. UNEP (2012) estimated that around 10 percent of all MAPs collected and harvested were used to produce essential oils, medicinal products, and other value-added goods.¹³ This percentage has since increased, according to industry associations and manufacturers. The Nepal Herbs and Herbal Products Association (NEHHPA) reports a 15 percent increase in domestic trade of MAPs as inputs and final goods over the past 10 years for its members.

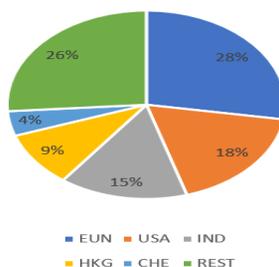
Figure 7: Nepal's total trade of essential oils (HS 3301), by value



Source: WITS.

Driven by government- and development partner-led efforts to increase the production and export of essential oils in Nepal, exports have now topped US\$1 million since 2013. Nepal's exports represent less than 0.1 percent of world exports, but producers have succeeded in diversifying export markets. India is an important buyer, but not the primary market for these products. Exports to central hubs in the GVC—the United States and the European Union—have grown significantly on aggregate since 2011. This indicates domestic capabilities to meet the safety and quality requirements of international regulators and buyers in more advanced destination markets.

Figure 8: Decomposition of Nepal's Essential oils (330129) exports by destination, 2015

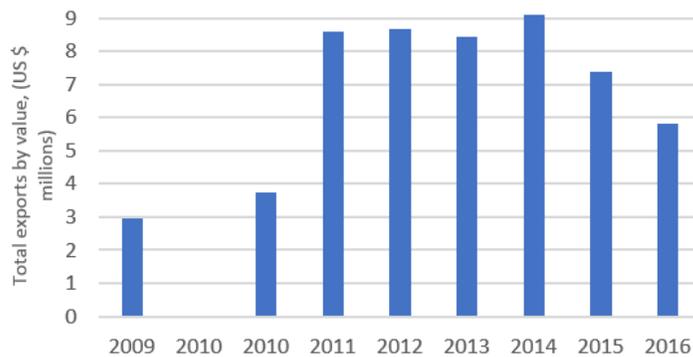


Source: WITS.

¹³ Nepali manufacturers have found limited success in FMCG exports. The country exports toothpaste (HS 330610) to India, mostly believed to be exported by large Indian manufacturers based in Nepal, similar to the case of medicaments. Large Indian multinationals have invested in production facilities in Nepal, both to reduce supply chain transactions and to capture domestic market share. Patanjali, for instance, has a subsidiary (Patanjali Gramodhyog) based in Nepal producing popular detergent and toothpaste, as well as scented soaps, shampoo, wrinkle cream, and juices. Smaller batches of exports include products such as shaving preparations, deodorants, and skin care products.

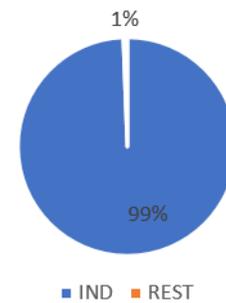
Nepal is also an exporter of medicaments, primarily Ayurvedic medicine, with 99 percent of products going to the Indian market (Figure 10). It is likely that most of this can be attributed to large Indian multinationals in the Ayurveda industry with production facilities in Nepal. India is home to the world's leading Ayurveda fast-moving consumer goods (FMCGs) and Ayurveda medicaments industry. These firms are primarily resource-seeking investors at this point in Nepal, choosing to source specific MAPs locally and then ship manufactured products back into the Indian supply chain. However, lead firms in the Ayurveda industry are expanding their footprint in South Asia to capture domestic markets as well. While there is a large gap in Nepal's reported data from 2003 to 2009 and discrepancies between reported and mirror data, domestic capabilities appear to have increased since 2010.

Figure 9: Nepal total exports of medicaments HS 3003, by value



Source: Mirror data, WITS

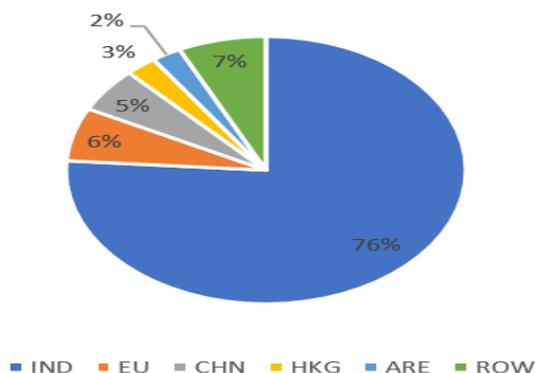
Figure 10: Decomposition of Nepal's Ayurvedic medicine (300390) exports by destination, 2015



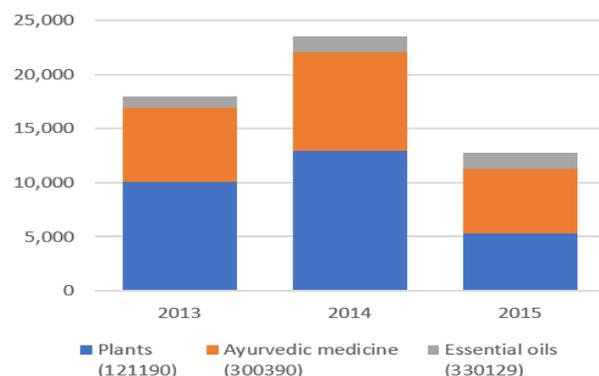
Source: WITS

Nepali firms have had some success in diversifying export markets in recent years, but India remains by far the most important trade partner and destination in the MAPs value chain. Figure 11 shows destinations for Nepal's top three medicinal products across these three stages of production in the value chain—raw MAPs, essential oils, and medicaments (Ayurvedic medicine)—with India accounting for 76 percent of exports. Figure 12 shows the relative values these top three medicinal products, highlighting the volatility in year-on-year MAPs trade. Annual supply has a strong impact on exports by value, but less of an impact on domestic production of other value-added medicinal products, which can import needed inputs.

Figure 11: Nepal's medicinal product exports by destination, 2015 Figure 12: Nepal's exports by year and by product (US\$ '000)



Sources: WITS.



Benchmarking Nepal's current exports with global competitors can be done by selecting a representative sample of key exports along the MAPs value chain: raw MAPs, essential oils, and medicaments consisting of two or more constituents mixed together.¹⁴ In taking the top export at the HS 6-digit level in each of these categories, one can evaluate Nepal in comparison to international peers. Figure 13 shows Nepal's rank in world exports, while Figure 14 shows the value Nepal captures in each US\$10,000 worth of global exports of these three medicinal products. At a country-by-country level, only Israel and Jordan rely to a similar degree on these products for their national economy as Nepal (Figure 15).

Figure 13: Nepal's rank in world exports of three medicinal products (rank normalized to 100)

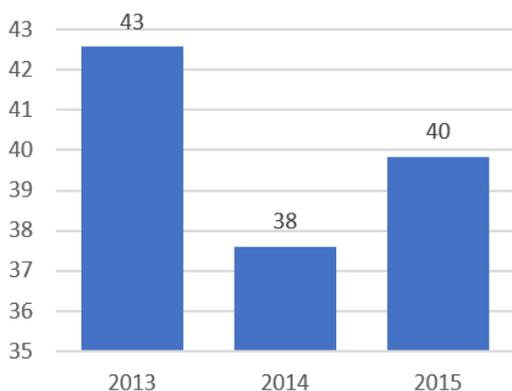
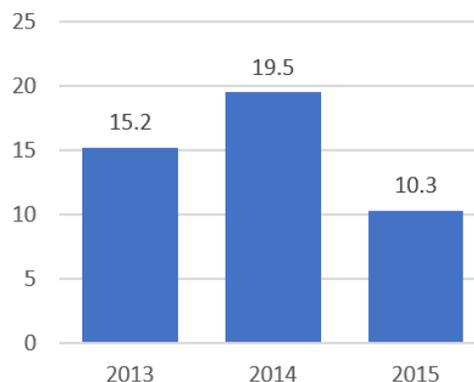
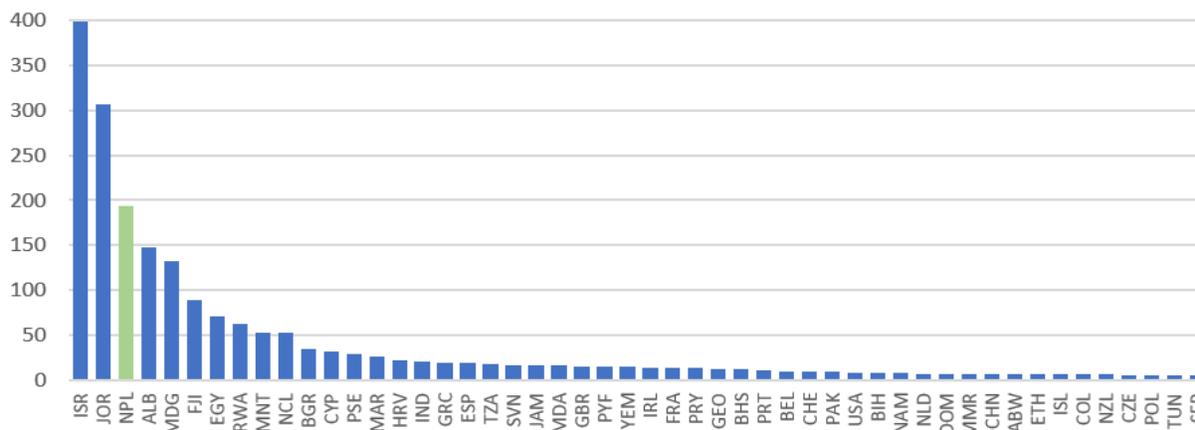


Figure 14: Nepal's share in world exports of three medicinal products (per US\$10,000 exported globally)



Source: WITS.

Figure 15: Medicinal products per US\$10,000 exports of the country (Top 50 with highest share, 2015)



Source: WITS.

¹⁴ Specifically: (i) **HS 121190** - Plants, parts of plants, incl. seeds and fruits, used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not cut, crushed or powdered (excl. ginseng roots, coca leaf, poppy straw and ephedra); (ii) **HS 330129** - Essential oils, whether or not terpeneless, incl. concretes and absolutes (excluding those of citrus fruit and mint); (iii) **HS 300390** - Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic uses, not in measured doses or put up for retail sale (excluding antibiotics containing hormones or steroids used as hormones, but not containing antibiotics, alkaloids or derivatives thereof, hormones or antibiotics or goods of heading 3002, 3005 or 3006)

The number of processors located in Nepal has grown significantly in the past decade, but establishing long-term trade relationships in export markets has proven a challenge. The number of manufacturers along the MAPs value chain registered as members of the NEHHPA grew from 20 at the time of the 2012 UNEP analysis to 85 in early 2018. Of these, 25 firms are exporting semi-processed products. However, Figures 16 to 18 illustrate how Nepali products may enter a new market one year only to disappear the next. If the GoN is truly concerned with market diversification and an over-reliance on India, policies will need to be put in place to strengthen export promotion activities in other foreign markets.

Figure 16: Sum of total number of destinations reached by Nepal exports of 3 medicinal products (Stock of destination product)

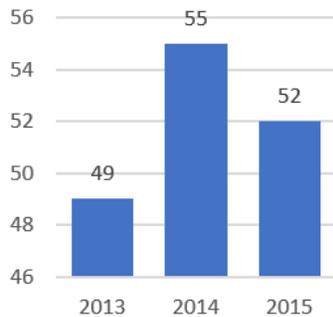


Figure 17: Sum of total number of new destinations reached and lost by Nepal exports of 3 medicinal products (Flows of destination product)

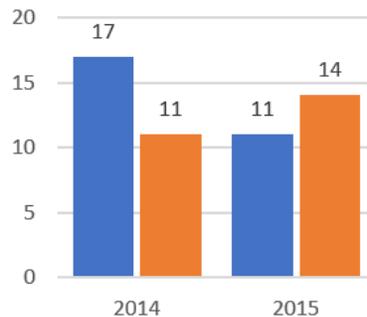
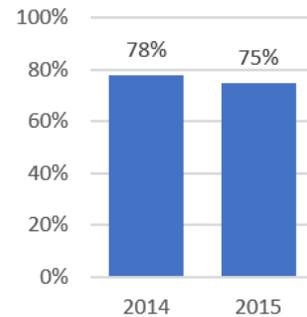


Figure 18: Survival rate (Percentage of destination product exports in t that survive in t+1)

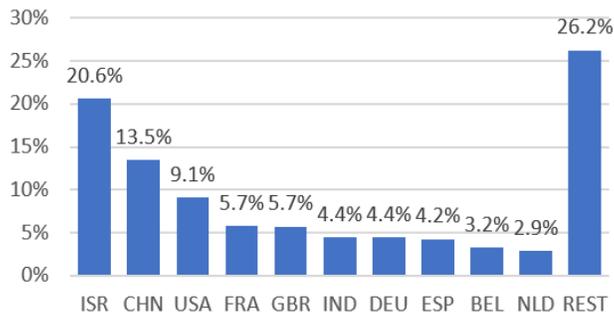


■ New destination_product
 ■ Lost destination_product

Source: WITS.

Nepal does not hold a significant share of global markets for medicinal products. In 2016, Nepal was responsible for a 0.2 percent share of world exports of raw MAPs (HS 121190), 0.1 percent of essential oils under HS 330129, and a minute 0.06 percent share of the global export market for medicaments (HS 330129). Figure 19 shows the total percentage market share of countries for all three products combined. China scores well for its share of raw MAPs (32.5 percent) and essential oils (17.9 percent), while France holds 18.6 percent for top share in essential oil, and Israel holds 28.4 percent for the top share of medicaments. Firms in the United States and the United Kingdom are also very competitive in these products.

Figure 19: Top exporters of three medicinal products (percent of world total exports of medicinal products, 2015)



Source: WITS.

Table 6: Other sectors to which MAPs are an intermediate input

HS Code	Description	Total import trade by value (US '000), 2016*	Nepal's export trade by value (US '000), 2016
1302	Vegetable saps and extracts	5,620,081	17
2936	Provitamins and vitamins	7,595,842	5
3003	Medicaments consisting of two or more constituents mixed together	14,031,344	6,943
3004	Medicaments consisting of mixed or unmixed products	357,909,143	162
3301	Essential oils	4,676,615	3,554
3302	Mixtures of odoriferous substances	22,049,658	103
3303	Perfumes and toilet waters	16,788,869	0
3304	Beauty, make-up, and skincare preparations	42,531,400	412
3305	Preparations for use on the hair	12,792,109	605
3306	Preparations for oral or dental hygiene	5,563,516	10,403
3307	Other perfumery, toilet or cosmetic preparations, n.e.s.	10,991,749	568
3401	Soap	9,618,794	267

Sources: Author using ITC calculations based on UN COMTRADE and ITC statistics; total import trade represents the sum of reporting and non-reporting countries (mirror data).

2.1.1. Government Strategy for the Sector

Government policies and development programs have been working to improve agricultural productivity across Nepal for many years, with mixed results. Specific efforts in the industry, for example, to improve harvesting methods to reduce wastage, improve distillation technology to boost quality, or introduce organic practices and certifications have shown encouraging results in pilots, but have not scaled to industry-wide impacts. An overview of Nepal's legal framework for the MAPs sector can be found in multiple other reports.¹⁵

The GoN's vision for the sector is laid out in the 2015 Trade Policy and the 2016 Nepal Trade Integration Strategy. The NTIS 2016 is a continuance of efforts to integrate and mainstream trade in national development goals, with a focus on enhancing export competitiveness by addressing cross-cutting issues and strengthening value chains of prioritized products (Box 2). MAPs are specifically identified as a "priority export potential sector," with emphasis placed on expanding cultivation of MAPs to new geographical areas. The Department of Plant Resources (DPR) in the Ministry of Forests and Soil Conservation (MoFSC) has prioritized 33 species for possible domestication and wider cultivation. Horizontal constraints in: (i) transport and trade facilitation; (ii) standards and technical regulations; (iii) sanitary and phytosanitary (SPS) measures; and (iv) intellectual property rights (IPR) are also targeted for reform. Key performance indicators and an action plan are outlined, with implementation and monitoring of the agenda being the mandate of the Ministry of Industry, Commerce and Supplies (MoICS).

Implementation of the NTIS has been less than successful in part because of difficulties in inter-ministerial coordination. Efforts to improve public-private dialogue have also been less than successful, leading to disagreement and divisiveness on the implementation of national project. Previous sector development plans sought to incentivize public-private partnerships (PPPs) at the community level, and to prepare special economic zones for production and management of specific MAPs (Sharma and

¹⁵ See (Sharma and Shrestha 2011) for background.

Shrestha 2011). Much of this was never implemented. A political economy analysis of why some of these strategies and projects have not met objectives are explored in forthcoming EPI analysis (EPI 2017).

Efforts to institutionalize public-private dialogue (PPD) have met many challenges. The Nepal Business Forum (NBF) was established in a process dating back to 2010, but has been mostly dormant since. Industry associations have expressed frustration with a lack of consultation in passing and updating legislation that impacts the market (Box 1), and a lack of confidence in the GoN's ability to act on policy recommendations. Thus, the private sector remains on the periphery of the policymaking process, with little input during policy development.

Box 1: Controversy over CITES legislation and resulting ban on jatamansi exports

The GoN passed new legislation to come into compliance with the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in May 2017. Prior to this time, the GoN had not had clear domestic policy on how to enforce articles of the convention. CITES is an international agreement aimed at ensuring international trade in specimens of wild animals and plants does not threaten their survival. It does so by classifying species into three appendices. Appendix I lists the most endangered species and those facing serious threat of extinction. Trade of Appendix 1 species is prohibited except in the case of non-commercial import, for scientific research, for example. Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. And Appendix III lists species already regulated by a Party to the convention, and where that Party(ies) requests assistance in preventing unsustainable or illegal exploitation.

Nardostachys jatamansi or *Nardostachys grandiflora*, known in Nepal as jatamansi, was listed in Appendix II in 1997. The GoN's new legislation strictly banned export of both Appendix I and II species, meaning jatamansi, a high-value, heavily traded MAP, became illegal to trade overnight. This came as a surprise to most collectors and traders. Private sector associations claimed the new law was passed without any private sector consultation, and estimated that 200 MT of raw jatamansi was immediately made commercially unviable. Jatamansi is perishable, and quality and appearance deteriorate with time and decay. An estimated 30,000 households have been impacted by the ban, with the most worrisome effects in the high Himalayan regions where households earn 18 to 20 percent of their income through trade of MAPs, including jatamansi. The GoN has called the ban on jatamansi a mistake and an unintended error in the drafting of the new law. It has promised a quick reversal.

Source: (Shukla 2017, CITES 2018)

Box 2: NTIS 2016 recommended actions for increasing exports and improving value chains of MAPs

Short-term Actions: 2016-17

- Action 1: Implement GACP widely
- Action 2: Ensure easy availability of Pest Risk Analysis (PRA) for major MAPs
- Action 3: Ensure robust legal provisions to protect indigenous rights and intellectual property rights (IPR)
- Action 4: Ensure benefit to the indigenous population from the Access and Benefit Sharing Act
- Action 5: Develop policy environment to encourage better collection and extensive processing of MAPs
- Action 6: Empower DPR to issue internationally recognized certificates for cultivated MAPs

Medium-term Actions: 2018-20

- Action 1: Promote MAPs cultivation
- Action 2: Establish proper storage facilities at collection and trading areas to reduce wastage of MAPs
- Action 3: Establish proper storage facilities at key customs points to reduce wastage of MAPs
- Action 4: Establish testing facilities for MAPs at key customs points

Source: GoN.

The MoICS is focused on value addition and diversification away from the Indian market, and in particular the power of Indian buyers. The Enhanced Integrated Framework-supported team managing

the Nepal Enhanced Capacities for Trade and Development (NECTRADE) project recognizes the challenges, primarily related to quality assurance and the ability to standardize product at scale across geographies. The newly elected GoN has announced, at the time of writing, proposed revisions to the National Forestry Plan—a major piece of framework legislation for the sector—and had circulated the proposal for public comment.

Interventions to strengthen Nepal’s MAPs value chain have historically been donor-driven. The GoN and the domestic private sector have had limited financial capacity to invest in fixing market failures. Domestic traders and wholesalers have shown little interest in upgrading capabilities, in part due to capture by India. Only in recent years have development partner-driven projects helped to increase the production of essential oils by supplying distillation units across the country. Foreign investors have been reluctant to invest in Nepal, likely due to political instability and a lack of market connectivity in the past.

Increasing FDI is a key performance indicator in the NTIS 2016, and a shift in policy to better facilitate investment could help to promote integration into GVCs, faster growth, and job creation in Nepal. If measured as a proxy for integration into GVCs, the lack of FDI into Nepal’s MAPs sector exemplifies the country’s position on the periphery of the global trade network, despite the use of many of its raw materials in the production chain. Recent World Bank analysis has laid out the case for substantial investment policy reforms if Nepal is to attract more FDI, including the need to open up some service sectors (e.g., transport and logistics) to more competition (Narain and Varela 2017, World Bank Group 2017). Over the medium term, centralizing investment promotion activities under one authority and implementing coordination mechanisms with export promotion would reduce inefficiencies generated by overlapping mandates and allow for more transparent allocation of resources (Gomez-Mera 2016).

2.1.2. Relationships Among Actors

Most MAPs are collected in the wild by non-commercial farmers and landless people to generate a supplementary income (Probst, 2011). Figure 20 provides representations of the MAPs value chain in Nepal. The actors along these chains are summarized in the typology presented in Table 7. Historically, Nepalese harvesters are price-takers, at the mercy of traders who themselves often have little bargaining power versus larger regional (Indian) wholesalers. Collectors and farmers of cultivated MAPs receive unpredictable and, at times, unfair compensation. However, relationships between these actors are strong in Nepal, and in many cases forged from generation to generation.

Table 7: Typology of actors along the MAPs value chain in Nepal

Type	Sub-Type	Specific-Type	Key features
Harvester	Collector	Opportunistic	Undertakes collection along with other activities, e.g. high altitude herders.
		Dedicated	Undertakes collection as specific main activity, eg in small groups traveling to remote areas with the primary purpose of collecting.
	Domesticator	Adaptive	Plants or transfers natural regeneration, and protects medicinal plant species between agricultural fields. Usually at lower altitudes.
		Commercial	Cultivates medicinal plant species on agricultural land in smallholder plantations or in home gardens. Only found at lower altitudes.
Trader	Sub-Local	Itinerant	Moves from village to village beyond the road network; usually covers many districts. Often focused on selected high-value products. Harvesters always actively contacted. Rare.
		Permanent	Permanent presence. May or may not receive or distribute advances; harvesters may be contacted actively or passively. May act as broker or commission agent. Common.

	Local	Specialist	Located in or near district of origin; average catchment area of 1–3 districts. Trading exclusively in medicinal plants. Rare.
		Generalist	Located in or near district of origin; average catchment area of 1–3 districts. Trading a number of items besides medicinal plants. Common.
Wholesaler	Local	Specialist	Located in or near major productoin areas; average catchment area of 2–6 districts. Trading exclusively in medicinal plants. Rare.
		Generalist	Located in or near major productoin areas; average catchment area of 2–6 districts. Trading a number of items besides medicinal plants. Common.
	Regional	Commission	Located in India or China; national level catchment area. Facilitates fee-based sale of central wholesalers' products.
		Ordinary	Located in India or China; national level catchment area. Buys products directly from local wholesalers.
		Combined	Located in India; national level catchment area. Acts as a combination of at least two of the following: ordinary wholesaler, commission wholesaler, wholesaler vertically integrated with production companies or retailers.
	Global	Specialist	Located across the globe; trading exclusively in specific specieis of MAPs. Rare.
Generalist		Located across the globe; trading a wide range of MAPs in raw and/or processed forms, including essential oils and botanical extracts for intermediate input use or as final goods. Common.	
Manufacturer	Local	Direct	Located in or near district or origin for basic secondary processing (e.g., essential oils), or located in Kathmandu for more complex manufacturing. Buy directly from CFUGs, cooperatives, or individual harvestors. May have direct (i.e. family) connection to origin area. Rare.
		Indirect	Located mostly in Kathmandu. Rely on buying from local traders or local wholesalers. Common.
	Regional	Direct	Located primarily in India or China. Buy directly from CFUGs, cooperatives, or individual harvestors; incentivized to secure supply of rare MAPs (e.g., yarshagumba). Rare.
		Indirect	Located primarily in India or China. Rely on buying from regional wholesalers and their own domestic producers. Common.
	Global	Direct	Located across the globe; buy directly from CFUGs, cooperatives, or individual harvestors in Nepal and/or other countries. Often part of sustainable sourcing or corporate responsibility principles desgined to differentiate a brand or product quality. Rare, but increasinlgy more common.
		Indirect	Located across the globe; buy from regoinal and global wholesalers. Most often driven to secure supply at the lowest possible price, but also demand compliance with safety and quality standards. Common.

Source: Author, expanding on (Olsen and Bhattarai 2005).

Profit margins in collection and harvesting have been found to be extremely low especially when distances travelled and time spent are factored into calculations (Bussmann and Sharon 2009). Few Nepalis along the value chain understand how Nepal's MAPs are used once they leave the country. In almost all cases, no direct linkages exist between producers and foreign manufacturers or the brands closer to final demand (Gurung 2013, GIZ 2017).

Competition between dedicated and opportunistic collectors has altered harvesting cycles and practices. Collection may occur prior to MAPs reaching maturation, reducing regeneration and overall population (Sharma and Kala 2017). In high altitude environments where ecosystems may be more fragile, MAPs trade is particularly threatened (Ghayur and Belt 2009).

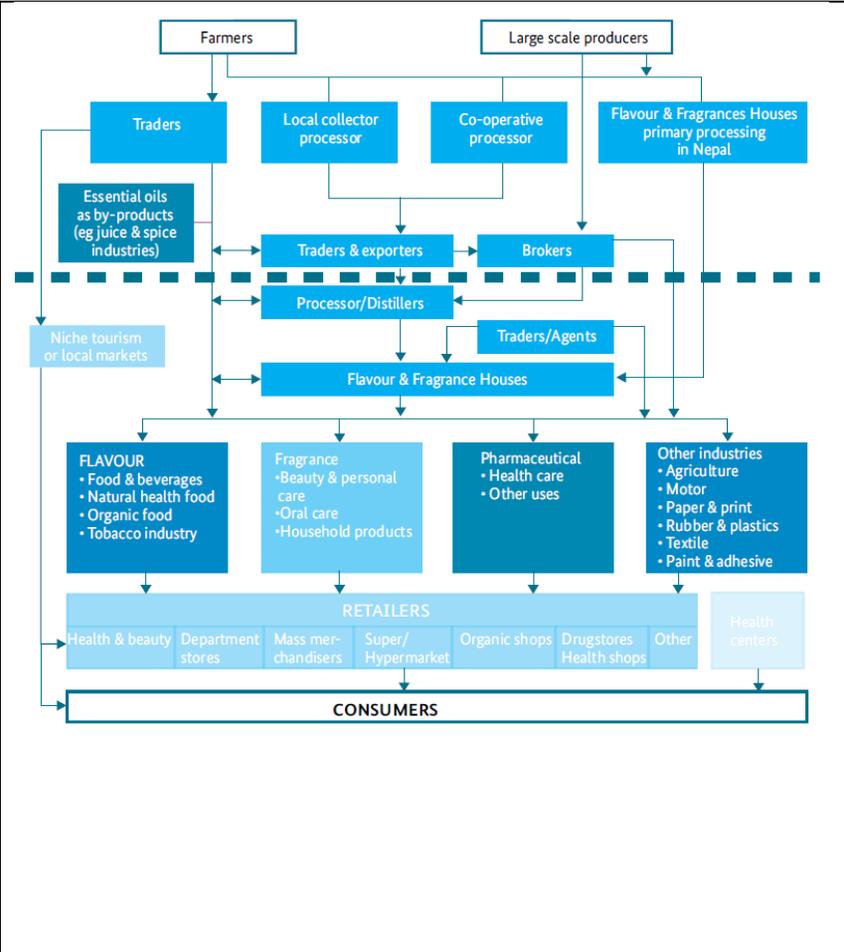
Very few MAPs are cultivated in Nepal. Several attempts by international development organizations to encourage cultivation in rural areas as a means of generating income have been thwarted by the need for sustenance and a bias toward cash crops. Shahidullah & Haque (2010) found that even when MAPs are cultivated, implying that the return is equal to or more than that for traditional cash crops, producers have not always benefited. A long supply chain dominated by middlemen (e.g., local traders, regional wholesalers, Indian commission agents), together with the lack of market information, means that most growers do not have bargaining power to realize a fair value for their products.

Regional wholesalers often control pricing information and can capture large profit margins (Olsen and Helles 2009). Roughly half of traded MAPs go through commission agents in India. These agents pay half of the value of the goods upon delivery and the remainder after sale, minus a 5 to 6 percent brokerage fee. Local traders who consolidate large numbers of sales from harvesters into large lots and sell them to central wholesalers may not necessarily have bargaining power. While there are several examples of local traders exploiting their relationship with harvesters, this exploitation is usually predicated on large distances from harvesters to central markets and/or situations where local traders have the monopoly on transportation. Other studies have found that local traders often make low or even negative net margins at times. These small operating margins can be a result of the oligopolistic nature of regional wholesalers and the fact that wholesalers often provide credit to local traders, thus increasing their power and reducing their number of sales options (Olsen and Helles 2009).

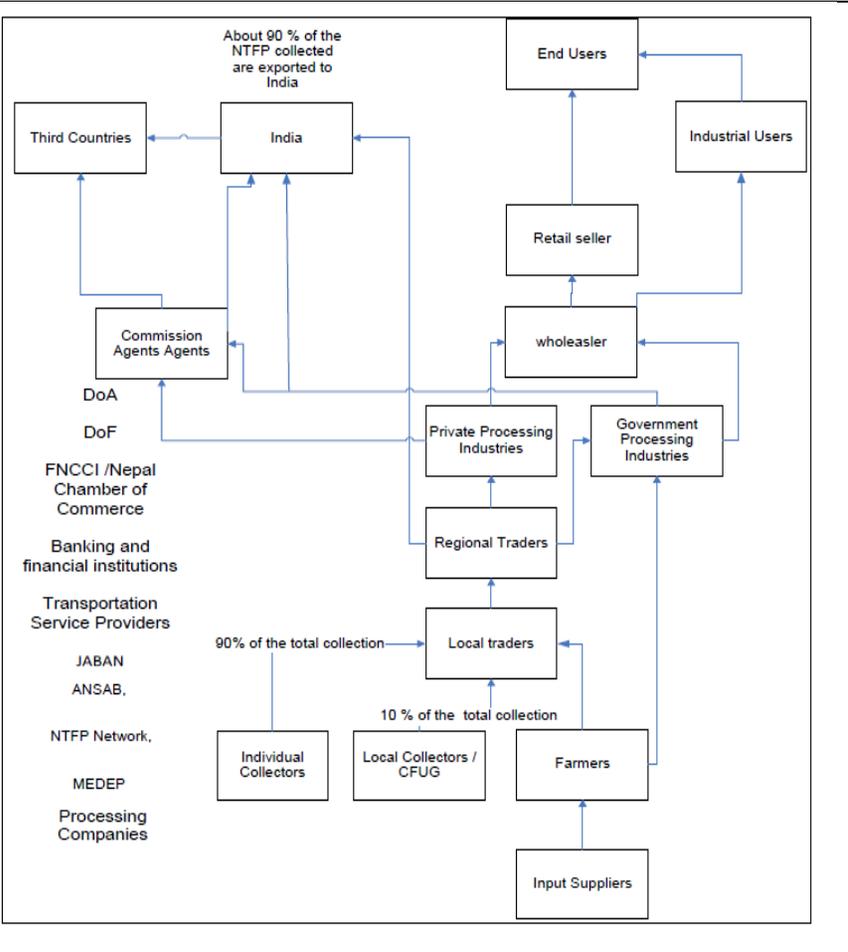
Local traders and wholesalers are also a dynamic factor in the local value chain. The overall business model for these traders has not changed for decades, but they have had to adapt as the playing field has become more even. As new roads have opened access to new communities, traders have moved to establish new and better connections with harvesters. As mobile penetration has expanded into remote areas and helped harvesters better understand pricing, traders have adapted to provide other services, such as storage or distillation.

District Forest Offices (DFO) and Community Forest User Groups (CFUG) also play a critical role in the governance of actors along the MAPs value chain in Nepal. DFOs issue collection permits for MAPs in national forest and other federally-controlled lands based on demand and in accordance with their five-year plans. CFUGs issue collection permits via a similar process for MAPs in community forests. Applicants (normally traders) need to submit an application with details on the type(s) of herb(s) to be collected, the quantity, and the purpose of the collection, either for domestic use or for export. A royalty deposit is paid based on the type of MAP and the expected amount of collection. After collection, the royalty slip is used to obtain the legally required transportation permit to transport the MAPs out of the district of origin. These permits are checked at checkpoints throughout the country, usually at the edge of national and community forests. Informal payments are common to facilitate passing through quickly.

Figure 20: Representations of MAPs value chain in Nepal



Source: (GIZ 2017).



Source: (infoDev 2013).

2.1.3. Gender Dynamics

Gender inequality is a major problem in Nepal, one further complicated by social structures that discriminate based on ethnicity, caste, and regional cleavages. This problem is magnified in the upstream MAPs sector, where women are actively involved in the collection and the cultivation of MAPs. Around one-quarter of collectors of wild MAPs were women in 2005 (Olsen and Bhattarai 2005), and that percentage has increased with the out-migration of men from rural communities.

Significant male emigration from Nepal’s rural and remote areas has created serious vulnerabilities for the women they leave behind (USAID 2015). In MAPs-growing regions, this has resulted in more women taking on the collection and production of MAPs. The most recent available government census data reports that 77 percent of economically active women are engaged in agriculture, in part as a result of the out-migration phenomenon (UN Women 2017). Women are less likely to emigrate in search of work, and thus many remain dependent on agriculture for their livelihoods. Sociocultural and institutional barriers continue to limit women’s access to education, particularly in the Terai and remote mountainous areas. Many are often illiterate, have little if any entrepreneurial experience, and are unfamiliar with handling income and family finances.

Madhesi and Dalit women in the agricultural Terai region are the most marginalized and excluded (iDE 2017). Downstream, men are three times more likely to hold a management position than a woman (UN Women 2017). Just over one in five firms have a woman in an ownership position, and only 17 percent of private firms have a woman in a top management position (WEF 2016). These burdens and constraints have resulted in an increasing number of women also seeking employment opportunities abroad. According to UN Women (2017), many leave through unregulated or unofficial channels, making the total number difficult to track, and exposing many women to risks of sexual exploitation, forced labor, and abuse.

Women’s participation in economic activities are limited by a lack of employment or alternative livelihood opportunities (UN Women 2017). One major reason for this is a cultural expectation of the role of women in household responsibilities (e.g., unpaid, home-based work). According to Nepal’s 2013 Millennium Development Goals Progress Report, 74.8 percent of unpaid family labor is carried out by women—much higher than the global average.

Progress has been made in terms of legal frameworks, but in practicality there has been little progress, according to stakeholders interviewed for this report. Nepal ranks 144 out of 188 countries on the Human Development Index. Multiple domestic and international organizations are working to empower women,¹⁶ as both entrepreneurs and customers, to have stronger participation in value chains. However, access to technology, finance, and markets remain significant barriers to trade for women producers.¹⁷

¹⁶ For example, the International Fund of Agricultural Development has funded a project which will close in early 2018 that sought to support small scale producers organized in groups, with a high proportion of women and vulnerable members, to be better able to respond to market demand and opportunities. See <http://www.hvap.gov.np/content.php?id=108>

¹⁷ More data here on wage gap, employment gender ratios in manufacturing: [http://cbs.gov.np/image/data/Manufacturing/Development percent20of percent20Manufacturing percent20Industries percent20in percent20Nepal, percent202014/Development-of-manufacturing-industries-in-Nepal.pdf](http://cbs.gov.np/image/data/Manufacturing/Development%20of%20Manufacturing%20Industries%20in%20Nepal,%202014/Development-of-manufacturing-industries-in-Nepal.pdf)

3. Competitiveness Analysis of Strategic Segments

The following section provides an overview of segments of the global market for MAPs, as developed for the WBG’s global competitiveness analysis (McKenna 2018). Each segment has a different value chain and requires a different mix of capabilities to be competitive. Value-chain structure is dependent not only on the final products or services produced, but also on the user group and/or target market of those products and services. Deconstructing the notion of a ‘sector’ or ‘value chain’ into the activities necessary to deliver products and services to market allows for a more instructive lens on whether or not a country has the capabilities to optimally compete in a given segment. By better identifying comparative advantages and constraints on economic growth, policymakers can develop and implement more effective growth strategies.

A primary impetus for this analysis is to better understand how total value addition and the distribution of the value differ across segments, and where opportunities lie for Nepali individuals and firms to capture more of this value in the near term. Competitive dynamics differ between segments, especially in terms of the bargaining power of each actor along each node of the production chain, buyer purchasing criteria, key success factors, and other larger exogenous trends at play. These dynamics are explored at length in the World Bank’s global MAPs competitiveness analysis (McKenna 2018). In line with the WBG’s ‘Twin Goals’, this report seeks to illustrate how these competitive dynamics impact actors in the bottom 40 percent of Nepal’s income distribution involved in tasks along the value chain.

Table 8 illustrates a simplified version of strategic segments in the global MAPs industry, applied to the Nepali context.¹⁸ The World Bank’s global competitiveness analysis of MAPs (McKenna 2018) provides a more detailed explanation of the products, services, users, and target markets that define each segment, as well as some of the competitive dynamics within the industry. The following sections of the report apply the competitiveness methodology to these segments in the Nepali context, focusing specifically on which segments Nepal is currently competing in, and in which segments its firms may find more attractive opportunities in the future.

Nepal’s natural bounty of MAPs, its long history of traditional medicine, and the country’s international image make for a strong unique selling proposition (USP) and business case for investment—in the right segments. Understanding how Nepal can position its products and services in the most attractive segments based on its current capabilities is critical. Similar to any low-income country with a large percentage of the poor reliant on agriculture, there is strong justification for supporting growth in the broader sector. Development objectives—raising incomes to alleviate poverty, expanding nutritional health, and spurring structural transformation into higher productivity activities—are shared objectives. The pathways and the necessary interventions are not, however, identical.

¹⁸ Peripheral industries that use MAPs as inputs in their production chain will be excluded in consideration of time and space. For example, aromatic plants used in ornamental and decorative flower arrangement will be deliberately excluded. With unlimited resources, a strategic segmentation analysis would be applied to individual plant species or genera of interest.

Table 8: Strategic segmentation of the MAPs industry

		Users/Market		
		Non-Discerning Buyer	Conscientious Buyer	
Product and/or Service	Unbranded	Raw	ND1	C1
	Unbranded and/or Branded	Lightly Processed/ Regulated	ND2	C2
	Branded	Heavily Processed/ Regulated	ND3	C3
		Products + Service	ND4	C4

Source: Author.

Segment ND1: Basic raw materials, with little to no primary processing

Segment ND1 is defined as raw MAPs, or those that have received only the most basic primary processing, and are bought by non-discerning buyers. Most products in this segment are collected or farmed by conventional practices, not organically produced or certified. They may or may not go through basic ‘reconditioning’¹⁹—steps taken to remove foreign matter, sterilize contaminants, and bring the product into conformity with specifications or standards. But most are sold unsorted and ungraded.

Value addition is almost non-existent in this segment, and most of the value is often captured by the local trader or wholesaler. Competition in this segment is increasingly global, as more affordable and new technologies allow for domestication and naturalization of species in new locations, eroding the bargaining power of harvesters as products becoming increasingly commoditized. Segment ND1 is a classic example of a captive suppliers (harvesters) reliant on downstream buyers (traders and wholesalers). In developing countries, where wild harvesting is still more common, traders are the dominant buyer in this segment. Unless harvesters have rare or scarce MAPs, they often have little if any bargaining power in the value chain. In Nepal, exporting wholesalers are estimated to capture around a 30 percent margin (GIZ 2017).

Segment C1: High quality raw materials

Segment C1 comprises raw MAPs that undergo more sophisticated primary processing to ensure a higher quality raw material, and are supplied to buyers that prioritize quality, sustainability, and adherence to international best practice. Actors in this segment compete less on price, and more on quality—purity, cleanliness, documentation, and reliable communication. Plants will go through reconditioning—cleaning, fragmentation, sifting, and separation. The resultant product is then ready for onward processing or even direct consumption.

Demand for these value-added tasks is increasing due to a mix of pressures from regulators, manufacturers, and consumers. Buyers of MAPs in Segment C1 are conscientious of their sourcing policies and are likely to prefer reliable producers. The difficulty in meeting the requirements and the cost of

¹⁹ Reconditioning involves removing foreign matter (e.g., stones), insects, fungal contaminants, and bacteria.

certification schemes makes these raw materials rarer on the market, and thus gives suppliers in this segment slightly more bargaining power—and thus an ability to capture more value—than those in Segment ND1.

The most sophisticated firms in this segment have world-class operations, producing raw materials of exacting standards and the highest quality via contained and controlled production processes. Meeting the requirements of international certification schemes is a challenge even for the most sophisticated producers. In Germany, for example, only 10 percent land cultivating MAPs is organically certified. Multinational buyers may provide extension services and other programs to promote and monitor responsible and sustainable practices throughout their supply chains. Others invest heavily in identifying alternative (more affordable) species or in R&D to design synthetic substitutes, eroding the market position of upstream collectors and farmers of some MAPs in some regions.

Segment ND2: Bulk extracts and semi-finished inputs

Products in Segment ND2 are differentiated from those in ND1/C1 by more complex secondary processing. The number of possible value-added tasks depends on the plant. Beyond simply cutting, drying, and sorting, comminution or micronization—the cutting, shredding, grinding, milling, and sieving done to break a plant into smaller particles—is carried out. Additional processing could include production of fresh liquid extracts,²⁰ aqueous extracts (e.g., infusions, decoctions), tinctures, or dry extracts, such as spray-dried powders.²¹ These processes maintain or increase the quality of the product, while ensuring compliance with minimum regulatory requirements. The necessary investment costs vary depending on the desired output and the technology used, and can range from a few hundred US dollars into the millions.

Investing to upgrade into secondary processing is not necessarily a guarantee that the actor will be able to capture more value. Most downstream manufacturers and lead firms prefer to control the production environment, reduce reliance on suppliers, and eliminate risks of product contamination by carrying out their own secondary processing. Competitive rivalry in this segment is also likely to increase. On the one hand, many governments are incentivizing domestic actors to upgrade in the value chain by expanding secondary processing capabilities. On the other hand, increasing demand for traceability from regulators, manufacturers, and consumers, is driving firms to shorten supply chains, leading to a rise in consolidation via acquisition.

Products in Segment ND2 are most often intermediate inputs, with (domestic) wholesalers and manufacturers being the primary buyers. Essential oils are one of the most common secondary products, and can be considered a sub-segment within both Segment ND2 and C2. An estimated 65 percent of essential oils are produced in developing countries because of the availability of raw product and low labor costs (GIZ 2017). The top importing and exporting countries for essential oils closely mirror those for MAPs. The limited availability of some MAPs used as the raw material in the production of essential oils creates a natural barrier to entry, as well as the fact that the raw materials often need to be processed quickly (e.g., near origin) to maintain utmost quality. The low-volume, high-price nature of essential oils

²⁰ Valuable extracts can include alkaloids, glycosides, organic acids, resins (including resin acids, resin alcohols and hydrocarbon resins), volatile oils, sugars (including starches, inulin, gums and phlegmatic, etc.), amino acids, proteins and enzymes, tannins, plant pigments (including chlorophyll, carotenoids, flavonoids, beet red bases and quinones, etc.), oils and waxes, and inorganic ingredients (trace elements). See: https://www.chemicalbook.com/ProductCatalog_EN/1524.htm

²¹ A more complete explanation of processing of MAPs can be found in (Commonwealth Secretariat 2001).

coupled with relatively simple, and cheap processing technologies makes this a commonly prioritized task for upgrading in the value chain in developing countries that export MAPs.

Segment C2: High quality extracts and simple personal care products

Firms in Segment C2 source raw MAPs and secondary products (from Segments ND1, C1, and ND2), provide quality analysis and quality control, carry out their own secondary processing, document supply chain compliance, attain certifications, and multiple other value-added tasks (CBI Market Research 2016). Unlike producers of bulk extracts in Segment ND2, the reputable wholesalers or botanical specialists of Segment C2 have well-audited quality and supply-chain management systems in place. These are high-capacity, mostly medium- and large-sized companies that operate regionally, if not globally. The global trends of regulators increasing scrutiny on consumer safety, and consumers driving brands to expand natural and/or organic product offerings, has helped to drive growth in this segment.

Value addition is significantly higher and producers in Segment C2 have significantly more bargaining power than those in the first two segments. Competitive rivalry is also reduced, as the knowledge and capital investments necessary to ensure quality create strong barriers to entry. Upstream collectors and harvesters may be able to increase value capture if they can differentiate their raw material (e.g., by geographic indication or verified quality). Manufacturers and brands in Segment C2 may source directly from upstream actors to ensure a certain quality, amount, or product with unique provenance that offers a USP to downstream buyers and consumers.

In addition to high quality bulk extracts, Segment C2 includes a sub-segment of branded personal care and cosmetic products that can be produced with limited technology and/or less regulatory scrutiny. This includes products such as simple soaps, creams, lotions, scrubs, and other basic beauty products. More complex personal care products that have certain chemical ingredients or make therapeutic claims have stricter regulatory guidelines, and therefore fall into Segments ND3/C3. Value addition can also be very high in these products, most often captured by the manufacturer or brand.

Segment ND3: Heavily processed, mass produced products for non-discerning buyers

This segment consists of products produced at on a mass scale, requiring intensive investments in knowledge, capital goods, labor, and natural resources. Products in Segment ND3 are often final goods, with the end consumer being the primary buyer. This segment includes the major multinational industries: FMCGs, pharmaceuticals (and traditional herbal medicines), herbal supplements, cosmetics, and food and beverage manufacturers and brands. Most firms active in this segment are medium- to large-size multinationals, and both vertically and horizontally integrated from the manufacturing to the retail tasks of the value chain.

Lead firms in this segment specialize in manufacturing supply-chain management and maximizing efficiency of production. They are likely to produce dozens, if not hundreds of products. With economies of scale being a key competitive advantage, automation is a major feature of these operations. As the technical and regulatory complexity of production increases, the product development, procurement, testing, and regulatory compliance costs becomes a major barrier for SMEs. Thus, barriers to entry in this segment are relatively high, with a low threat of new entrants. The more stringent the regulations, the more likely it is that a firm will move to vertically integrate into upstream production, or consolidate its supply chain to fewer, more reliable suppliers.

MAPs collectors and farmers, especially those in developing countries, have very little bargaining power if they are supplying these industries. They are unlikely to have any relationship with the manufacturers, with multiple transactions before raw materials ever reach major manufacturers. Prices are determined on the global commodity market, and transmitted via wholesalers and traders.

Segment C3: Heavily processed, mass produced luxury products targeting niche markets

Products in this segment are high-price, low-volume final goods targeting users who are seeking luxury or indulgence. These products are more difficult to procure raw ingredients and extracts for, more scientifically complex, more difficult to manufacture at scale, and/or more difficult to document regulatory compliance for than those in Segment C2. Firms active in this segment are likely active across multiple segments. Similar to Segment ND3, these firms leverage technical expertise in procurement, logistics, and R&D to compete.

Firms competing in this segment need to either be globally recognized luxury brands or develop strategies to differentiate their product from common goods. Companies operating in Segment C3 stake their entire reputation on superior quality management systems that ensure the best ingredients create the best final product for the consumer. Supplying manufacturers in Segment C3 requires vigilant adherence to product and process standards. Brands capture the largest percentage of the value in this segment, but similar to Segment C2, manufacturers and brands may be incentivized to integrate upstream producers into their value chain to meet regulatory and/or consumer demands.

Segment ND4: Basic natural health and wellness services

Segment ND4 captures business models where the services are equally if not more important than the MAPs product. These business models are built upon servicification: the combination of herbal products with related services.²² In health care, for example, practitioners will compound herbal products or offer other MAPs-related final goods to patients, blending professional expert opinion and medical diagnosis services with the sale of a recommended product. Examples of these types of service providers include acupuncturists, herbalists, or naturopaths. In segment ND4, the doctor would likely be ‘the local neighborhood doctor’ and the products unbranded. The patient or client may have little concern—for instance, perceiving an ailment to be mild and generic—over the quality or origin of the accompanying product.²³ Educational and training services are also an increasingly common service provided by lead firms across multiple segments of this industry.

Segment C4: Boutique natural health and wellness services

Segment C4 consists of integrated products and services that target conscientious consumers, maximizing value addition by capitalizing on health and wellness trends. While Segment ND4 would include local herbalists, a doctor falling into Segment C4 would be a renowned expert, with a long waiting list, offering services of the highest quality to exclusive clientele. The explosive growth of the spa industry is a major trend in Segment C4. An affordable and accessible day spa in one’s local neighborhood would

²² As mentioned in the above descriptions of some segments, services are common to some business models. For instance, firms in Segments ND2/C2 producing extracts as intermediate inputs may also offer processing services to MSMEs. Services could include basic reconditioning and sterilization, pharmaceutical-grade comminution, or professional business services, including laboratory testing, certifications, and guidance on export processes.

²³ The AHPA has issued a white paper to guide qualified practitioners who compound herbal formulations for clients based on one-on-one consultations, available [here](#).

fall into Segment ND3, whereas a consumer looking for a 5-star experience at a renowned hotel during an expensive vacation would be considered a conscientious buyer within Segment C4.

3.1. Where is Nepal currently competing and is this optimal?

Nepal is primarily competing in Segment ND1—the segment with the least value addition in the analysis and the highest degree of global competition. This segment operates on a commodity business model. Regional wholesalers in India have almost all the bargaining power. With many Nepali wholesalers feeling their negotiating power shrivel as downstream manufacturers vertically integrate and consolidate power in the value chain, primary processing has become one of the few remaining value-added tasks in upstream stages. In addition to this, naturalization of commonly traded MAPs is expanding around the globe, increasing the number of competitors and driving down prices with additional supply.²⁴

The remoteness of other wild-harvested MAPs, seasonality, variable weather conditions, overharvesting, and high transportation costs mean it will likely be difficult for Nepal to increase exports of non-cultivated MAPs along the extensive margin. The relative scarcity of many MAPs, the wide expanses of territory from which they are collected, and the limited capacity of poor Nepali households that harvest them, make such scaling up a major challenge in the near term. Expansion of cultivation, productivity improvements, and better post-harvest practices is helping to increase total production, but only of a select few products, mostly in the Terai. Interventions in the sector have focused on increasing exports to boost upstream incomes, but this approach risks encouraging unsustainable over-harvesting.

Most interventions in the country have been targeting upgrading potential in this segment (from ND1 to C1), helping collectors and farmers to improve harvesting and post-harvesting practices. However, even if Nepali harvesters can ensure and maintain quality, they will need internationally recognized verification of that quality. The lack of a national quality infrastructure (NQI) limits this option in the near term. Developing internationally accredited quality assurance services is a multi-year process. And while a few domestic manufacturers and international firms do prioritize quality products, these buyers are rare in Nepal. Local traders and regional wholesalers tend to value quantity over quality.

Local traders and regional wholesalers provide critical services, and their role is unlikely to change in the near term. Many reports call for reducing the power of ‘middlemen’ in the belief that this will increase value capture for upstream harvesters. This is counter-intuitive to the nature of the supply chain and fails to consider the political economy of the industry in Nepal. The low volume of many of these MAPs, the wide range of areas they are collected, and the difficulties in accessing these areas, make it likely that aggregation will still be a premium service. Despite common complaints and a general lack of trust, harvesters and traders have a symbiotic relationship. Local traders and wholesalers have been in this industry for generations.

Transforming the current structure of this value chain in Nepal will be difficult in the near term without mechanisms in place to reduce risk for harvesters and traders. Harvesters often rely on traders to buy *any* quality and quantity of MAP they can bring to market each season. Knowing they will still receive

²⁴ According to interviews with JABAN, China is currently Nepal’s top competition for production of cultivated MAPs, but India is also investing heavily in cultivation, as the line between FMCG and Ayurveda firms continues to merge.

some payment for their product and that the trader will continue to buy from their community helps establish trust. Traders also provide advance payments and other incentives to producers throughout the year. Selling to a new buyer jeopardizes a harvester's relationship with his/her local trader. If there is no long-term certainty in the buyer's interest and ability to continue to purchase, switching costs are often considered too risky.

Nepali cooperatives and CFUGs are also active in Segment ND2 producing essential oils and selling these as inputs to manufacturers. Processing raw MAPs into essential oils has helped producers reduce the burden of transporting bulky, raw MAPs to market, to extend the shelf-life of products, and to capture more value through higher market prices for some oils. However, producers have thus far been unable to obtain and/or maintain internationally recognized certification for product quality needed to compete in Segment C2; and the wider domestic private sector has not shown strong interest in investing in the necessary technology and skills to upgrade into other, more complex extracts beyond essential oils.

Trends in this segment suggest Nepali producers are likely to face strong competition and increasing challenges in the near term. Almost all production of essential oils is done in a fragmented network of outdoor distillation units spread across the country, meaning upstream producers are still reliant on traders and wholesalers to bring their product to market. The few firms that specialize in exporting essential oils do so via business-to-business models, without a focus on building a consumer-facing brand identity. To sell to international buyers in segments willing to pay premiums for these products requires ensuring quality from harvest through to production to sale, linkages that do not currently exist in the Nepal value chain. In addition, the country's poor NQI and the prohibitive cost of importing these services from India or Thailand makes verifying the quality of Nepal's essential oils and botanical extracts very difficult for MSMEs. As large international buyers face increasing regulatory and consumer pressure for greater traceability in supply chains, Nepali producers will need to better document origin and quality of their products. Meanwhile, governments around the world are working to incentivize their own domestic producers to upgrade into the essential oils, creating more supply on the global market, and more competition based on both quality and price.

Nepal has been successful in competing in Segment ND3 versus regional multinationals in some FMCG and Ayurveda products. Domestic manufacturers of Ayurveda products and parapharmaceuticals have managed to carve out an estimated 20 percent of the domestic market over the past 10 years from what used to be nearly 100 percent Indian firms.²⁵ Top Indian multinationals Dabur India Ltd and Patanjali Ayurved have also invested in the country, in part for access to critical MAPs inputs, but also in attempts to fortify domestic market share. Nepali firms do not compete in Segment C3.

Nepal is currently competing in Segment ND4 by exporting trained doctors and other service providers (e.g., trained masseuses) around the world. This is not a formalized industry per se. The total number of Nepalis in the diaspora working in the health-care and health-services industry abroad is unknown, but not believed to be large. The scalability of such services exports and the economy-wide impact of potential job creation, poverty reduction, and a more equitable distribution of wealth via this segment are limited.

Exporting basic Ayurveda health-care services also shows limited attractiveness, with many of the principles and approaches widely known, well-studied, and often appropriated by interested foreign practitioners. Despite the rising popularity of non-conventional health care in high-income countries, a

²⁵ According to one of the country's leading manufacturers of Ayurvedic medicine.

viable business model for providing Ayurveda services abroad is not yet possible with Nepal's regulations on establishing businesses. Looking forward, virtual health-care services and diagnostics may become increasingly common and popular on the market. Already, mobile apps and web-based services platforms are being rolled out by major health-care and insurance providers in high-income countries. How these platforms will be monetized and how they will be regulated, both domestically and internationally, is not yet clear.

Nepal is not currently competitive in the boutique, luxury wellness service segment. As the birthplace of Buddha, Nepal's cultural identity is rooted in spiritual enlightenment and healing, which suggests there is opportunity in this segment. However, the country's current lack of connectivity with high-income countries, poor infrastructure, and underdeveloped high-end tourism industry are major impediments. Most tourists travel to Nepal for rugged outdoor adventure, not pampering and relaxation. As in Segment ND4, Nepal is currently exporting human capital, providing, for example, trained masseuses to hotels and spas in the Middle East. Again, however, the scalability of such services exports and the economy-wide impact of potential job creation, poverty reduction, and a more equitable distribution of wealth via this segment are limited.

4. Which Segments Are Most Attractive for Upgrading and Pro-poor Growth in the Near Term?

The following section provides further analysis of two segments where Nepal is currently relatively better positioned to compete in the near term. This is not to say that other segments cannot or will not generate revenue, job growth, and exports, but rather that to compete in those segments will be more challenging. The following two segments (C2 and ND3) were chosen based on insights drawn from the global industry deep dive and the strategic segmentation, including but not limited to: (i) current capabilities demonstrated by firms on the domestic market; (ii) global demand trends; (iii) the evolution of international buyer purchasing criteria; (iv) relative knowledge and capital intensities of production; and (v) potential for attracting FDI.

4.1. Segment C2: Simple personal care products

Personal care products—soaps, moisturizers, balms, essential oils and others—are an attractive market segment for individual Nepali entrepreneurs and MSMEs. Research by Morgan Stanley in late 2016 showed the global beauty industry has grown at a steady rate of 5 percent per year over the past decade, with little impact from the global financial crisis (Morgan Stanley 2016). Indeed, over the past five years, more local entrepreneurs have begun developing, marketing, and exporting high-quality, natural personal care products. Some have been certified organic or have other internationally recognized certifications.

Nepal's positive country image for beauty and purity, its well-known cultural and healing traditions, and the potential for social impact through economic growth can all be combined to deliver a USP for these products. Many international brands, in Ayurveda and cosmetics in particular, are already using MAP ingredients from Nepal and leveraging the country's image as a place of natural purity and beauty to enhance the image of their products. Foreign demand for Nepal's handmade, natural products is demonstrated by their popularity with tourists. By establishing linkages with harvesters and focusing on

developing products made from MAPs only found in the higher hilly and Himal areas, these producers could differentiate themselves from other products on the market.

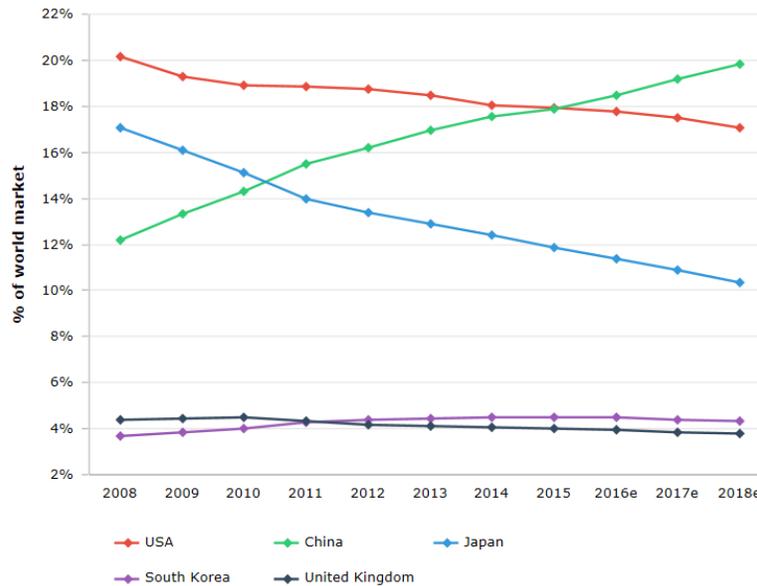
Many personal care products have few ingredients and relatively simple production processes, meaning the cost structure of the industry is suitable to MSMEs with limited capital. Barriers to entry are low. The competitive landscape can be difficult to navigate. On the one hand, anyone with access to the internet and a few simple ingredients can begin to experiment with creating their own personal care products; and on the other hand, lead FMCG firms invest millions in R&D each year to develop new product lines that target this segment. The threat of substitutes is also high, as the relative low cost and non-essential need of the products allows consumers to switch easily between brands or forego buying them at all for certain periods of time. Despite these unattractive forces at play, Nepali producers can leverage relationships with local harvesters and traders to buy high-value herbal ingredients at lower prices on the domestic market than competitors reliant on imports. The opportunity for direct sales and business-to-consumer business models also allows producers to cut out downstream buyers, and thus capture more value.

Simple personal care products are often easier to be approved for sale in a new market than food supplements, herbal medicines, or other complex FMCGs with a therapeutic purpose. Nepali firms will need to assess whether making medicinal claims is worthy of the regulatory burden. There are ways to market a product and its active (established) ingredients without making explicit health claims and thus avoiding stricter regulation.²⁶ For firms with more capacity and those willing to invest in the necessary testing and trials, there may be longer-term gains from innovation and the creation of intellectual property. At this point in time, it is unlikely that many Nepali firms active in this segment have such capacity.

The high value-to-weight ratio of boutique personal care products allows Nepali producers to leverage existing air freight logistics to overcome connectivity issues with nearby markets. East Asia, and particularly China's growing consumer class, offer rare opportunities in the near- to medium-term. The most recent data from the Chinese National Bureau of Statistics reports the market reached over US\$35 billion in 2016. Recent market analysis by the Hong Kong Trade Development Council finds that the herbal cosmetic products currently account for about 20 percent of the Chinese market, much lower than the 50 to 60 percent common in the United States and Japan, suggesting room for significant growth (HKTDRC Research 2017). Chinese consumers have a well-known preference for foreign brands, believed to be of higher quality than domestic brands. Morgan Stanley's AlphaWise survey of Chinese consumers in 2016 found that 84 percent of respondents planned to buy more expensive or similarly priced skincare brands in the coming year (Morgan Stanley 2016). The executive summary read plainly: "The companies that can offer premium brands sold via online channels stand to capture the hearts and wallets of these discerning beauty-product [Chinese] consumers."

²⁶ CBI Market Intelligence also has helpful studies on promising markets and export opportunities for personal care products, including [skin conditioning](#), [anti-ageing](#), [antioxidants](#) and [essential oils for fragrances](#).

Figure 21: Growth of demand for cosmetics in China, % of world market



Source: Euromonitor, Morgan Stanley Research.

To be successful in this segment with this strategy, world-class branding, marketing, and packaging are key success factors.²⁷ Social media and the internet are powerful tools to attract consumers in this market. Very few Nepali firms have invested in web design or social media marketing. This is low cost and can be advantageous in building a brand. Photos and videos of the products, their origins, the production process, and the communities that produce the products (or benefit from sales) are relatively simple to make and can provide powerful messaging. Targeted social media advertising techniques have helped to launch new brands in industries with powerful incumbents, requiring little investment—or even raising investment with pre-order sales through crowdfunding websites such as Kickstarter.

Responsive communications are also a key success factor in this segment—not only business-to-business, but also business-to-consumer and vice versa. A failure to monitor one’s brand on the internet could be detrimental if negative news starts to go viral. A firm in this segment needs to have open channels for feedback, and to leverage this feedback to improve existing and develop new products. Marketing one’s products as a luxury item means consumers are likely to have questions on what exactly makes the product so special. Having the necessary research, documentation, and marketing materials to answer those questions is important. Competitive advantage can be built by focusing on reliability, service-orientation, and innovation (CBI Market Intelligence 2015).

Organic certification is not essential for competitiveness in this segment—at least not for now. Consumer preferences for organic, fair trade, and other certified cosmetic products may vary by product and will need to be monitored. Currently, the parameters and requirements for organic certification of most wild-harvested products have not been agreed on internationally, or even at the national level. While many manufacturers promote brands around natural products and responsible sourcing, there are limitations to the extent that any company can source the needed supply of organic-certified product.

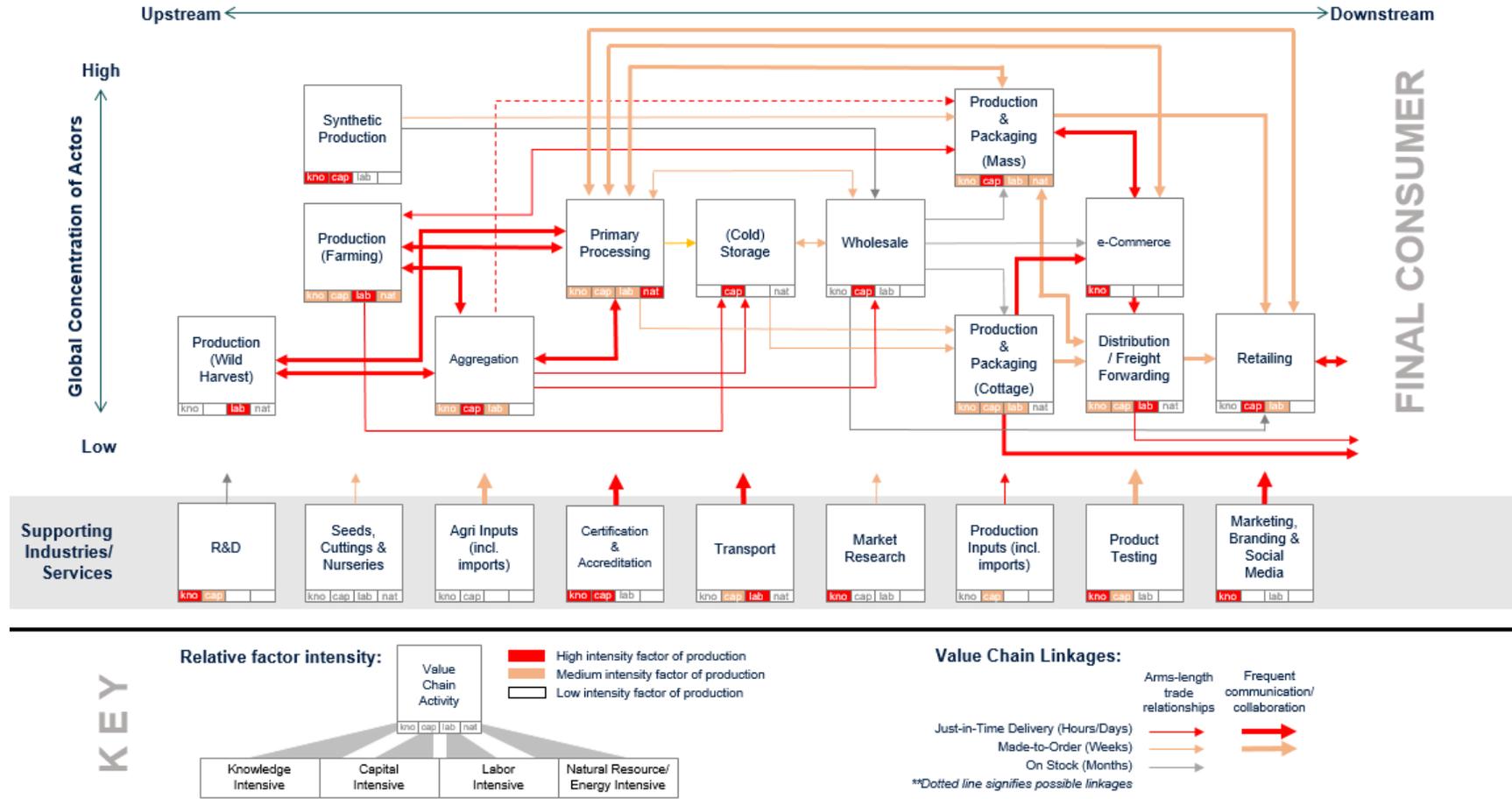
²⁷ CBI Market Intelligence has additional tips here: <https://www.cbi.eu/market-information/natural-ingredients-cosmetics/trends/>

However, as supply chain technologies evolve and become cheaper, traceability requirements will increase.

The market is saturated with ‘natural’ products: a successful brand needs to do more. Nepali entrepreneurs can benefit from the current market trend and consumer preference for natural products with ‘a story’. Often termed ‘provenance’, the origins of a product or a company can provide a unique value proposition. With consumers demonstrating a willingness to try new products in this segment, leveraging the ‘good-ness’ of the company can help to attract new buyers, distribution partnerships, and final consumers. Nepal is home to many entrepreneurs and SMEs whose businesses have evolved out of a family history with traditional practices. Others have built their business on a social enterprise model, employing mostly women from rural communities and disadvantaged groups. Effectively marketing the provenance of such businesses can help differentiate Nepali MSMEs in a crowded market.

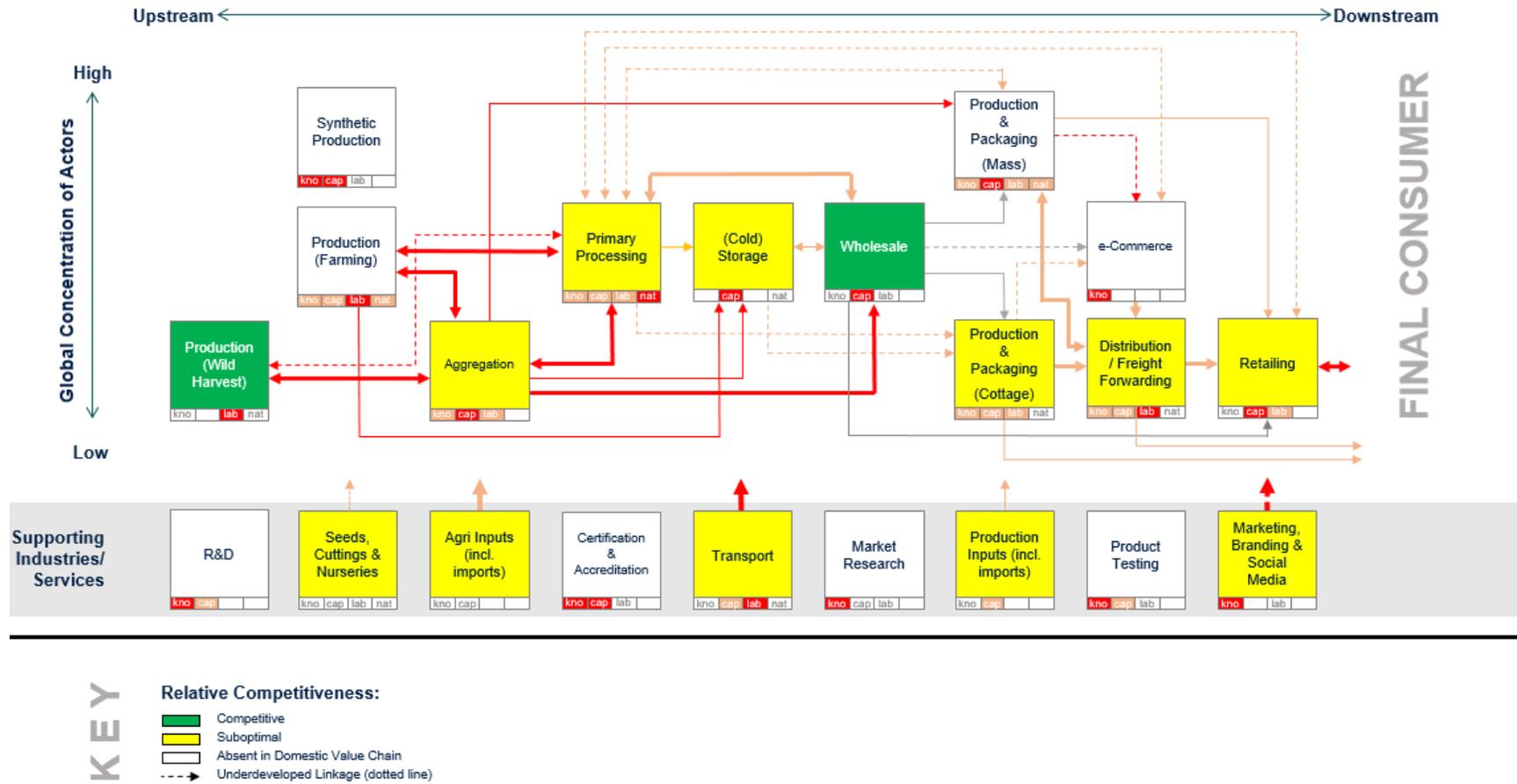
Figure 22 illustrates a schematic GVC for boutique personal care products followed by a depiction of Nepal’s competitiveness within each activity along the chain. The relatively low concentration of global actors involved in many of the activities along the chain highlights the lower barriers to entry in the segment. The thickness of the lines connecting boxes represents the relational linkages between activities, in this case highlighting how the product needs to move quickly from supplier to buyer at many upstream stages of production in this industry. Nepal’s relative strengths in upstream production—a result of being a geographic home to many MAPs—and in the wholesale trade are evidenced as globally competitive (green).

Figure 22: Mapping the global value chain for Simple, Boutique Personal Care Products in Segment C2



Source: Author.

Figure 23: Benchmarking Nepal's capabilities in the global value chain for Simple, Boutique Personal Care Products in Segment C2



Source: Author.

4.2. Segment ND3: Heavily processed, mass produced products for non-discerning buyers—specifically, Ayurvedic and traditional medicine products

Nepali manufacturers' success in competing with Indian²⁸ imports of Ayurvedic medicine on the domestic market suggests competitiveness in this segment. By becoming competitive on the domestic market versus imports from large, sophisticated Indian firms, Nepali firms demonstrate the capability to compete in the Indian market and other foreign markets for these products. However, taking a whole of supply chain lens, the greatest potential for boosting the incomes of upstream producers, improving quality, introducing new technologies, and creating new jobs in the near term would be through attracting foreign investment into the country. FDI is often a key driver of integration into GVCs (Taglioni and Winkler 2017). Foreign-owned firms are some of the most productive in Nepal, including in the MAPs sector, and have been conduits for technology transfer, improved business practices, and market access (World Bank Group 2017).

Ample opportunity exists for Nepali firms to integrate into the regional and global value chains for traditional herbal and Ayurvedic products. A single Nepali firm is unlikely to grow into a global lead firm in traditional medicine products in the near term, in part due to the advantages Chinese, Indian, and even Western manufacturers/brands have over Nepal (e.g., current market position, better NQI, better connectivity, higher investment in R&D, larger domestic market, etc.). However, Nepal is ideally positioned geographically between China and India to leverage its position as a key supplier in a regional value chain. Considering the difficulty in exporting from Nepal high-quality raw products compliant with SPS regulations, other NTMs, and internationally recognized certifications, investing in a production facility in Nepal could provide return on investment for a foreign brand.

Ayurveda's popularity in India, Nepal, and Sri Lanka is already attracting FDI to the region. Nepal's restrictive investment climate has helped to protect local manufacturers from global competition in the past, but high tariffs on imported medicines have encouraged Indian Ayurveda firms, Dabur and Patanjali, to invest in the country. The broader health-care sector is attracting significant FDI from Indian health-care providers, such as Escorts Fortis (Royal Norwegian Embassy 2014).

Even without FDI, growing consumer demand in China presents an opportunity for integration into regional value chains beyond the Indian market. China's Ministry of Finance reduced import tariffs on 187 consumer goods—including pharmaceuticals, food, and health supplements—in December 2017 to spur domestic consumption (BBC 2017). Nepal is already a supplier of raw MAPs to China. By developing contractual arrangements with Chinese manufacturers, Nepali exporters may be able to strengthen forward linkages and increase the flow of knowledge, capital, and technology within more sophisticated downstream firms in the value chain. China Aid has already funded the construction and equipping of the Nepal Center for Ayurvedic Medicine, which has a hospital and research laboratories tasked with creating an inventory of medicinal herbs and their uses in Nepal.

Domestic demand for health-care products and services is growing and offers a buffer to external shocks. Traditional medicine is still extensively used in Nepal, despite the increasing availability of conventional modern medicine. Nepalis are spending more on health-care products and services, with the contribution of health services to GDP growing by a CAGR of 2 percent in 2004-14. Public perception varies

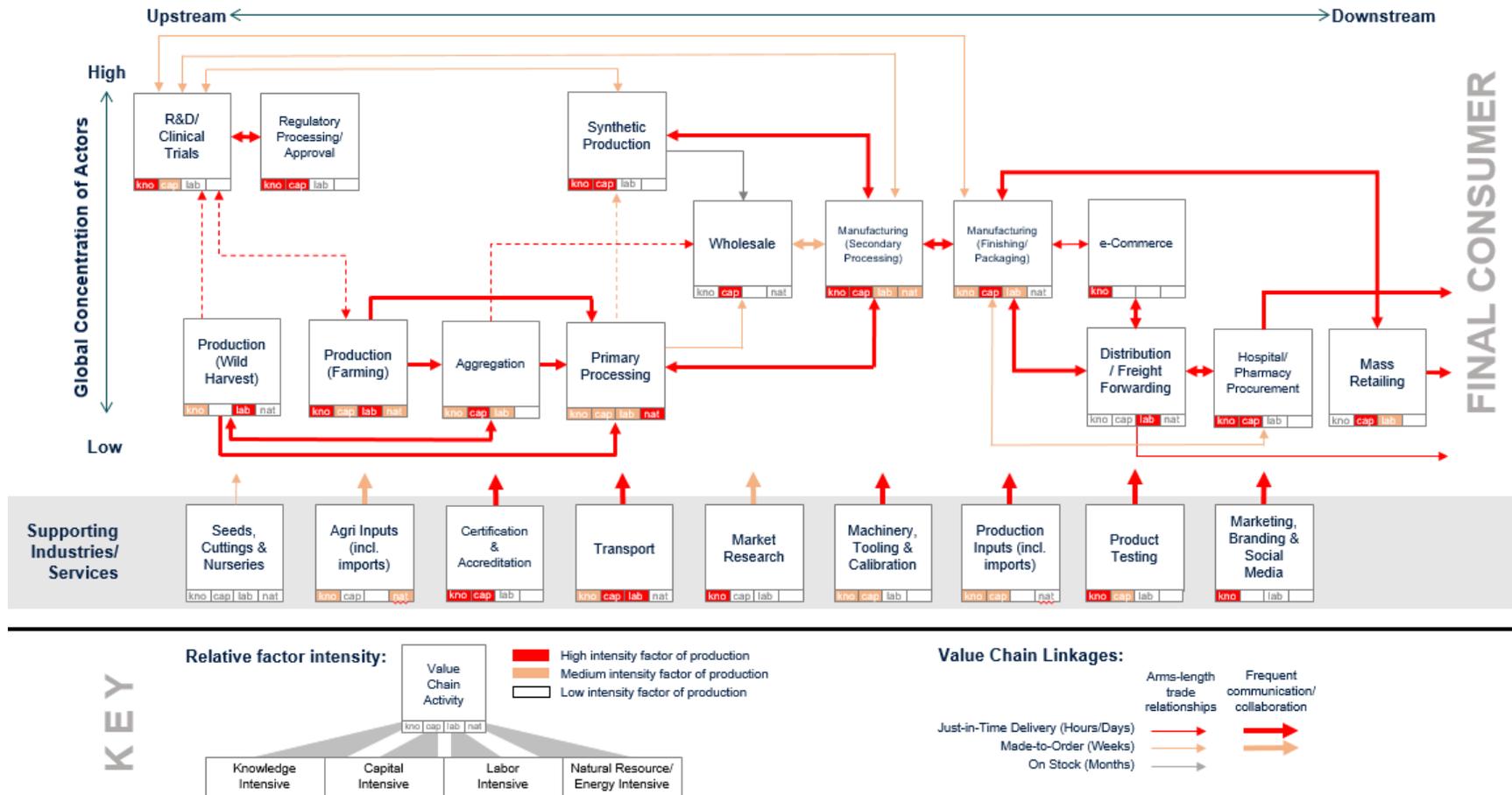
²⁸ Major firms active in the Indian herbal medicine market include Dabur India, Daiichi Sankyo, Emami, Mondelez India, Patanjali, and Proctor & Gamble (PGT Healthcare).

by location but, in general, there is a high degree of trust in the efficacy of traditional remedies, and in some areas allopathic medicine is still not widely available or affordable. According to the Nepal Ayurvedic Medicine Production Association (NAMPA), domestic manufacturers produce Ayurvedic medicines worth around NPR 15 billion per year (about US\$138.9 million) (Aryal 2018). Consistent and/or growing domestic demand can provide local manufacturers and service providers a buffer against external shocks.

Nepali manufacturers use a wide variety of MAPs in production of Ayurveda products, which suggests high potential for backward linkages. In a 2006 analysis of 15 Kathmandu-based manufacturers, an average of 68 MAPs were used by each firm, with a high of 189 (AEC/FNCCI 2007). Manufacturers in Nepal primarily rely on local and regional wholesalers, and report difficulties in directly sourcing from local harvesters or remote communities. However, this situation may change as infrastructure investments improve connectivity in remote regions. Higher domestic demand will increase competition upstream, providing further opportunities for harvesters to increase margins.

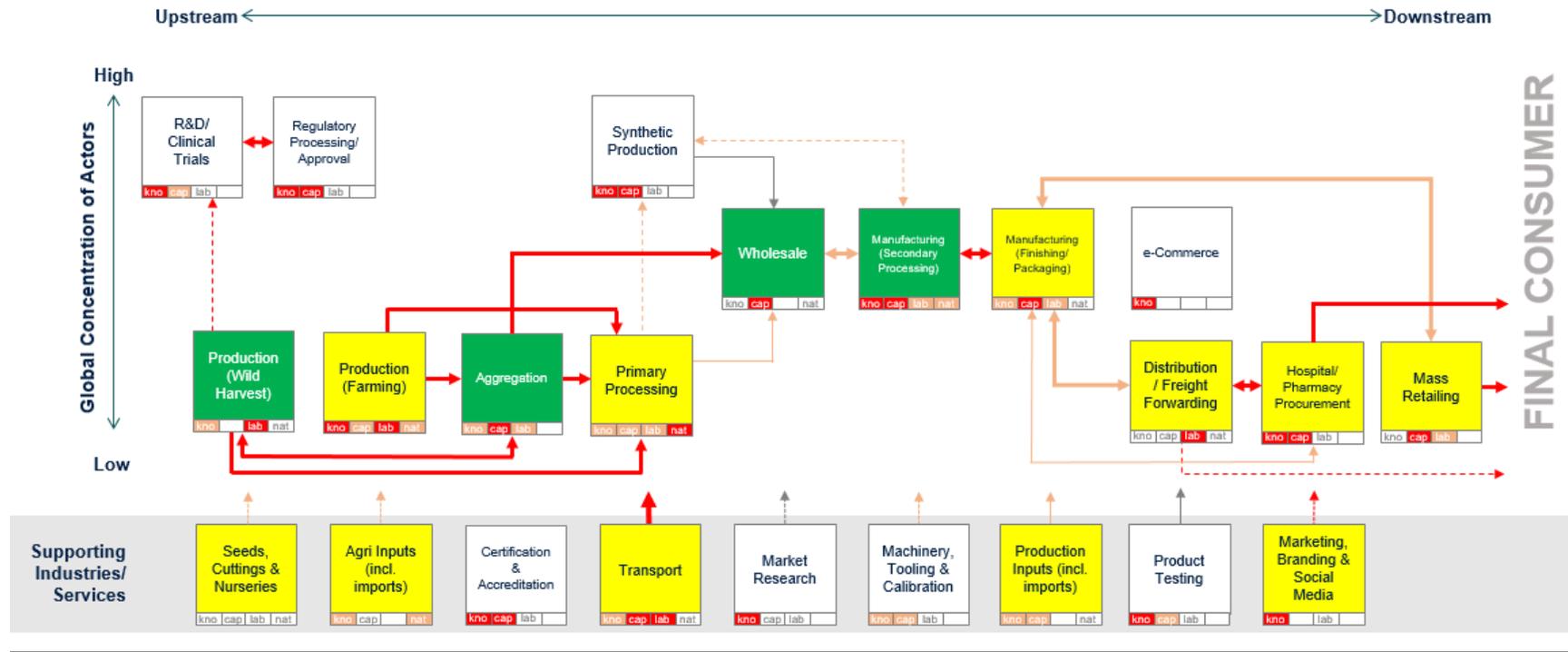
Figure 24 again represents a schematic GVC for Ayurvedic medicine followed by a depiction of Nepal's competitiveness within each activity along the chain. Compared with boutique personal care products, linkages between activities in the production of Ayurvedic medicines are slightly more straightforward, as the raw product moves into manufacturing. However, the relative factor intensities associated with each activity are notably much different, with higher knowledge and capital intensities most prominent. Benchmarking Nepal's competitiveness in this value chain highlights how the country possesses many of the capabilities needed to compete in certain activities, thus suggesting potential for upgrading and greater value chain integration.

Figure 24: Mapping the global value chain for Ayurvedic Medicine within Segment ND3



Source: Author.

Figure 25: Benchmarking Nepal's capabilities in the global value chain for Ayurvedic Medicine within Segment ND3



KEY

Relative Competitiveness:

- Competitive
- Suboptimal
- Absent in Domestic Value Chain
- Underdeveloped Linkage (dotted line)

Source: Author.

5. Horizontal Challenges to Competing in Target Segments

Many of the challenges actors in the MAPs value chain are confronted with are identical to those across the broader agribusiness sector. These include: (i) issues with land rental and tenure; (ii) lack of investment (especially in storage); (iii) no R&D of improved seed varieties; (iv) poor quality planting materials and agro-chemical inputs; (v) poor extension services; (vi) poor agricultural practices; and (vii) contamination along the value chain (Mghenyi 2016, infoDev 2013). The ADB’s “High Mountain Agribusiness and Livelihood Improvement Project” studied six different value chains, including MAPs, and identified common constraints including: (i) fragile community groups and cooperatives; (ii) lack of physical infrastructure (especially year-round roads and storage facilities); (iii) lack of technical training; (iv) lack of R&D; (v) lack of coordination along the supply chain and noncompetitive arrangements; (vi) no vertical upgrading; (vii) poor monitoring and evaluation of programs; and (viii) poor policy implementation (ADB n.d.).

The NTIS 2016 and multiple development reports on MAPs extensively cover policy recommendations to overcome horizontal challenges. This report will not revisit these recommendations at length or critique the numerical order in which they have been prioritized. Rather, the following section will highlight the most critical near-term barriers to competitiveness, and thus economic growth, within the identified attractive segments. A summary of constraints more specific along MAPs value chains can be found in Box 3. Deeper analysis of constraints within these segments is possible with firm-level data.

Box 3: Common constraints across Nepal's MAPs industry

- Upstream sustainability
 - Unsustainable, poor collection practices
 - Distorted market incentives premature and over-harvesting
 - Poor post-harvesting practices
 - Disappearance of indigenous knowledge
 - Lack of documentation (traceability)
 - Lack of control over and difficulty enforcing sustainable practices on public land in remote areas
 - Enforcement of conservation policies leading to illegal trade
 - Problems with permits, initial environmental examinations (IEE) and environmental impact assessments (EIA)
- Lack of data
 - Lack of natural capital accounting, no natural resource inventory
 - Inconsistent and inaccurate data collection at DFOs
 - Lack of documentation
 - Limited R&D into improved seeds, cultivation, traditional medicine, etc.
 - No database of Pest Risk Assessment
 - Lack of data validation
- Domestic market failures
 - Low/limited capacity in management of CFUGs
 - Poor road network, lack of (competitive) domestic transportation services in remote areas
 - Minimal incentive to improve quality or vertically integrate
 - Contamination along the value chain
 - Lack of NQI

- Poor standards, lack of recognized international certifications
- Minimal storage facilities, owned by traders
- Multiple taxes and fees at district and regional level, prevalence of informal payments
- Smuggling and illegal trade of protected species
- Minimal legal protection of IPR
- Inability to scale up due to sustainability concerns
- Access to finance, non-inclusion in other agriculture schemes
- Challenges for exporting
 - Lack of documentation (traceability)
 - Limited-to-no linkages with international buyers/manufacturers
 - Weak 'quality culture', poor standards
 - Value lost through poor practices, not preserving or adding value via quality
 - Lack of professional management skills, poor communication
 - No international recognition/accreditation of laboratories, lack of equipment and competent staff
 - Lack of recognized international certifications
 - Minimal legal protection of IPR, lack of registered trademarks or geographical indicators on foreign markets
 - Problems attaining transit permits in India (Uttar Pradesh, Uttarakhand)
 - Discretionary non-tariff barriers imposed by India

Source: Author, (Sher, et al. 2014), (infoDev 2013), (ADB n.d.), (FNCCI-AEC/NEHHPA 2012), (Shahidullah and Haque 2010), (Kop, Alam and Piters 2006) (Sharma and Shrestha 2011, UNEP 2012).

Sustainability of MAPs is a major concern, especially in higher elevation areas, and this has been a primary motivation for stricter regulatory measures. Over-exploitation, poor harvesting practices, and climate change are negatively affecting certain species in specific regions. Several guidance protocols exist for wild-harvested MAPs, as discussed in previous sections. The GoN is party to several international conventions that seek to address these issues by protecting biological diversity and supporting sustainability. It has put in place laws and regulations to thwart unsustainable practices in threatened areas. These measures have often been perceived as burdensome or inappropriate by the private sector.

The GoN will need to continue to strengthen conservation efforts, even if it means reduced trade flows in the near term. Continuing to strengthen the oversight and in situ management capacity of CFUGs should be a top priority. This will require more and better data on resources within each community forest, especially for the design of CFUG five-year management plans. Data used for the creation of these plans are often limited, outdated, or based on remote desk research. New pilot studies could be conducted in a subset of community forests, integrating conservation assessments with market research on a select list of highly demanded MAPs unique to Nepal's hilly and high Himalaya regions.

Refocus efforts for cultivation to MAPs endemic to hilly and high elevation districts. Efforts to promote cultivation have been most successful in the Terai, but only for a small number of globally common aromatic plants (e.g., chamomile and mentha). The Department of Plant Resources (DPR) is seeking to expand cultivation of 33 species, but there has been little cost-benefit analysis of cultivation in hilly and high Himalaya areas.²⁹ Despite this, individual harvesters have been investing in cultivation of MAPs with high demand in these remote regions. More needs to be done to support these individuals, including

²⁹ See (AEC/FNCCI 2006) and (UNEP 2012) for cost-to-benefit sample of satawari/kurilo, tejpat, ritha, amala, chamomilla matricaria, lemon grass, and mentha arvensis.

wider dissemination of learning materials designed specifically for low-literacy target groups and exploring the possibility of insurance schemes.

The GoN should ease trade frictions for suppliers providing raw materials to domestic manufacturers.

Forthcoming analysis by EPI shows that an average truck containing MAPs must pass at least 18 districts to transport goods from Surkhet to Kathmandu. The trucker will have to pay legal fees at 18 different district offices and at least 18 different checkpoints of forest rangers, which can cost up to NRS 200,000 (EPI 2017). According to traders and producers in Kathmandu, it is often cheaper to export MAPs to India, and then re-import the same product from Delhi to Kathmandu. The reorganization of central and regional governance provides a timely window to address cross-district trade, with the objective to foster linkages between domestic MSMEs.

Nepal is unlikely to increase exports of MAPs-derived products without investing in quality infrastructure to certify that these products meet the standards of foreign markets.

Nepal's MAPs and essential oils are perceived to be of high quality on international markets. However, quality parameters still need to be documented to buyers and respective authorities in destination markets.³⁰ The lack of accredited laboratory competencies has been a major bottleneck for trade, as products cannot be effectively tested, and thus the quality of those products cannot accurately be measured.³¹ Improved competencies in the country's NQI and an effective national accreditation body will help to drive international recognition of documentation from Nepal (ITC 2015). Additional efforts will need to be made to bring Nepali standards into alignment with international best practice and those of target destination markets.

Developing competencies within the NQI is a long-term endeavor, requiring committed leadership, institutional coordination, and targeted investment.³² Capacity gaps and weaknesses within the NQI have been well documented.³³ The World Bank's 2016 report, "Sources of Growth in Agriculture and Poverty Reduction and Shared Prosperity", provided a list of necessary actions:

³⁰ An overview of these requirements can be found in Gurung's 2013 study of Nepal's MAPs sector commissioned by the National Metrology Institute of Germany (PTB), see pages 85-88.

³¹ There is limited laboratory capacity for testing and monitoring pesticide residues, mycotoxins, and microbial contamination as per Codex standards/EU requirements. The existing laboratories lack both high precision and basic instruments and equipment's to test for diseases, pesticide levels, microbial contaminations, heavy metals, etc. The Central Food Research Laboratory has made recent progress in this area, attaining accreditation in 80 parameters, including 13 pesticides and 3 heavy metals (lead, cadmium, and arsenic). The ability to test for these contaminants is crucial to complying with various standards in export markets and is therefore necessary for promoting Nepal's products and ultimately accessing export markets. (World Bank Group 2016)

³² ITC and PTB (2016) identified seven current projects or programs that in some way deal with strengthening quality infrastructure.

³³ Nepal's current SPS system has major capacity gaps and weaknesses in World Trade Organization (WTO) compliance, namely: (i) the SPS system is not risk-based; (ii) the food control system is mainly focused on quality requirements, not on food safety requirements; (iii) SPS agencies and laboratories suffer from frequent rotation of staff; (iv) insufficient capacity in plant pest surveillance and diagnostics; (v) no capacity to control pesticides; (vi) SPS import inspection is hardly in place and ineffective; and (vii) there is at present limited testing capacity and accreditation for food safety parameters in microbiology, pesticide residues, veterinary drug residues, heavy metals, other pollutants, and mycotoxins (World Bank 2015c). Field-interviews and additional analysis show that two interventions could have a great impact in compliance with international standards: standards harmonization and international accreditation (see a more detailed discussion in Policy Note 2). See full report:

- (i) Operational plan for monitoring contamination in value chains of major commodities
- (ii) Building the capacity of laboratories to test for the presence of important contaminants
- (iii) Building human capacity for conducting testing, coordinating SPS issues, and enforcing inspections
- (iv) Establishing a local laboratory accreditation board to facilitate mutual recognition agreements (MRA)
- (v) Compliance with international standards for pest management: International Plant Protection Convention (IPPC)/International Standards for Phytosanitary Measures (ISPM)
- (vi) Strengthened SPS enquiry point at Department of Food Technology and Quality Control (DFTQC)
- (vii) SPS diplomacy for export promotion
- (viii) A national strategy for SPS information management, SPS risks communication, and traceability system

In the near term, digitization of laboratory procedures and the introduction of a laboratory information management system could help to reduce complications with testing and documentation. Supporting domestic producers of boutique personal care products and Ayurvedic medicines will also help to avoid some of the major non-tariff barriers common to the export of raw MAPs in segment ND1—specifically, SPS issues.

Supporting Nepali firms in registering trademarks, copyrights, and geographical indications in foreign markets are potential mechanisms for Nepali firms to strengthen their brand identities and increase value addition. NEHHPA is working with GIZ to register a "Nepal Herbs" trademark in 10 countries, including China, India, Hong Kong, and Singapore. The use of this trademark will be only available to firms that meet established quality criteria. The trademark logo on exported products can help to differentiate Nepali exports from competitors'. Ensuring the correct use and consistently verifying the quality of products seeking to use the logo will be critical to the viability of the trademark.

Supplier development programs can help develop capabilities along the supply chain. Supplier Development Programs supported and incentivized by the GoN can help develop SME and other supplier capabilities, particularly for the Ayurvedic and Traditional Medical products and Personal care segments which appear to provide the greatest opportunities for integration into regional and global value chains.

Packaging investment climate reforms with clear communication on upstream conservation efforts can help to attract FDI from lead firms by showcasing how Nepal's MAPs sector is in alignment with responsible sourcing policies and social impact efforts of lead firms. The relatively peaceful results of the most recent election are a positive sign for potential investors. According to the WBG's *Global Competitiveness Report 2017/2018*, which surveyed 750 multinational investors and corporate executives, political stability, security, and a stable regulatory environment are the most common factors in deciding whether or not to invest abroad.³⁴ A synthesized list of near-term actions that could be taken to address these horizontal challenges relevant to the identified segments can be found in the action matrix in Section 7.

<https://openknowledge.worldbank.org/bitstream/handle/10986/24979/From0evidence00integration0strategy.pdf?sequence=1&isAllowed=y>

³⁴ Full report available [here](#).

6. Segment-specific Recommendations

6.1. How can Nepal begin to strategically develop and strengthen capabilities in the ‘simple personal care products’ segment?

The most beneficial action by the GoN to help unlock growth opportunities for domestic MSMEs would be to update the legal framework for e-commerce, and specifically international payment gateways. The inability for Nepali firms to process transactions with individual final customers via online websites and retail platforms is a major constraint for this segment, and one of the key enablers for most successful start-ups in this segment around the world. A growing number of countries are allowing duty free e-commerce purchases, opening new market access opportunities. The GoN is making progress on the legal framework, for instance by establishing the infrastructure for e-signatures. Further efforts will be required to bring Nepal into the new digital economy.

Offering e-commerce and digital literacy (e.g., coding camps) training to domestic MSMEs could help to strengthen marketing skills and foster forward linkages with domestic service providers. Connecting domestic manufacturers with local service suppliers (e.g., web development services, marketing and advertising specialists) will help to capture more downstream value addition. Additional opportunities exist for organizing seminars with executives and technical staff of foreign lead firms to present on industry trends and best practices.

Partnering with the Nepal Agribusiness Innovation Center to offer personal and professional development courses targeting entrepreneurs in the boutique personal care product segment. Nepali firms can differentiate themselves from competition by ensuring clear and timely communication with customers. Language and intercultural customs can be major barriers for MSMEs in developing countries, but they are often not the biggest problem in communication. According to multiple firms interviewed for this report, basic communication failures—unreturned calls, unanswered emails, lack of online information, delayed shipment of samples, poor documentation, etc.—are the primary reason downstream buyers are unable or unwilling to find new suppliers further up the supply chain or in emerging markets. Little leniency exists during this process. Effectively communicating in a timely manner is a critical determinant of a firm’s ability to integrate into a GVC.

The GoN should streamline procedural formalities for incentive schemes designed to promote certification of products and encourage investment in capital goods. According to interviews with industry associations and individual manufacturers, the application process for the certification grant scheme is too burdensome on small businesses and entrepreneurs. Of the few Nepali firms that acquire an internationally recognized certification, many of these lapse due to an inability to fund recurring verification by accredited foreign conformity assessment firms. Recognizing that domestic conformity assessment services will need time (and more demand) to develop, government support for exporting firms will be needed in the near term. The duty-drawback system also needs to be reviewed to ensure that it is widely known and accessible to micro- and small-sized entrepreneurs.

6.2. How can Nepal begin to strategically develop and strengthen capabilities in the ‘heavily processed, mass produced products for non-discerning buyers’ segment—specifically, Ayurvedic and traditional medicine products?

Protecting the IPR of Nepal’s cultural heritage and traditional medicine systems will require greater support for research and more active participation in international fora. The issue of protecting the IPR of traditional health-care systems has been taken up by multiple international fora, including the World Health Organization (WHO), World Intellectual Property Organization (WIPO), and the World Trade Organization (WTO). With the growing popularity of non-conventional and natural health care, these bodies are seeking solutions that both allow IPR protection of indigenous peoples and local communities’ health-care heritage, as well as global access to this knowledge to foster research, development, and innovation (WHO 2013, WIPO n.d.). The WHO’s *Traditional Medicine Strategy 2014-2023* outlines key policy challenges for countries with traditional health-care systems, and recommends the following series of actions:

- Build the knowledge base on traditional medicine to allow appropriate national policies that understand and recognize the role and potential of traditional medicine.
- Strengthen the quality assurance, safety, proper use, and effectiveness of traditional medicine by regulating products, practices, and practitioners through education, training, and skills development.
- Promote universal health coverage by integrating traditional health-care services into national health-care service delivery and self-health care (WHO 2013).

The NTIS 2016 has a full chapter on intellectual property and specifically mentions the potential for an improved legal framework to protect genetic (natural) resources. It calls for six actions, some of which have been taken. In March 2017, the GoN released the National Intellectual Property Policy of Nepal, within which are legal protections for geographical indications, traditional knowledge, and plant varieties. This is encouraging, but more will need to be done to bring Nepal into alignment as a signatory to the 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and its responsibilities as a member of the WIPO convention. The NTIS 2016 also calls for finalizing and adopting legislation to make Nepal a signatory to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity.

The GoN should bolster its capacity to effectively implement and enforce IPR policies, which can help to support private sector growth and attract FDI in the near term. Enforcement of IPR violations on the domestic market has been sporadic and penalties are often inconsequential (US International Trade Administration 2018). The country’s weak IPR framework limits the abilities of domestic MSMEs to develop unique products and brand identities, leading to copycat products of varying quality on the market. If Nepali manufacturers are to leverage opportunities via tourism and the country’s brand image, poor quality or fraudulent products on the market could have deleterious effects on brand reputation. Weak IPR protection can also inhibit investment promotion, as international firms are less likely to invest in a country where protection of their IPR is not enforced.

FDI into Nepal’s Ayurvedic practitioners and manufacturers could help to facilitate knowledge and technology transfer, improving the overall competitiveness of Nepal’s exports regionally and globally. While it may be a challenge for a Nepali firm to grow to the scale of some of its current Indian competitors, the success of a company such as Patanjali illustrates the potential for growth for firms capable of building

a brand identity closely tied to Ayurveda and deep-rooted traditions. FDI into local firms, or the introduction of competing firms will also provide opportunities for strengthening backward linkages with upstream harvesters and producers of semi-finished MAPs products, as evidenced by the current supply chain strategy of Dabur.

Sponsoring wider participation in international bodies devoted to developing pharmacopeias could also help Nepal improve the quality of Ayurvedic medicine it produces and consumes. Participation with the Indian Pharmacopeial Commission is a clear starting point, considering the potential market for Ayurveda exports to the growing Indian market. However, further participation in other bodies of high-income countries could also help to facilitate knowledge transfer and quality improvements in Nepal’s domestic manufacturing sector. For example, the US Pharmacopeial convention (USP) has 458 voting members, but only five participating organizations from the South Asia region.³⁵

Additional research could help to identify the intensity of specific MAPs in their most common final products. Beyond simple Ayurvedic formulations and taking into consideration conventional modern medicines, there is little available public information on which specific MAPs are used in which formulations and final products. According to interviews with Nepali exporters, most exported MAPs are used as inputs to cosmetics, personal care products, and Ayurvedic medicine on the Indian market—but this is anecdotal evidence. More detailed evaluation of the final use of Nepal’s raw materials, including which specific Ayurvedic medicines on the Indian market they are most commonly used as inputs in, could be valuable information for those seeking to compete on regional markets.

7. Action Matrix

The following recommendations are offered with a vision to near-term results (within three years). Many broader recommendations, for example attaining international accreditation of more testing parameters within the National Plant Resources Laboratory and international recognition of test results are critical actions that will require sustained commitment and investment over many years. Other economy-wide actions, for example improving road infrastructure in remote regions, are well known to government and thus not repeated here.

HORIZONTAL ACTIONS

Issue	Improve upstream collection practices
Action	<ul style="list-style-type: none"> • Sensitize farmers and local traders to GACP • Develop GACP individual self-paced learning tools for harvesters and traders with low literacy
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Forests and Soil Conservation • District Forest Offices • Ministry of Agricultural, Land Management and Cooperatives

³⁵ Members as of November 27, 2017, include: Indian Pharmacopeial Commission, Indonesian Pharmacopeia Commission, Pharmacy Council of India, Bulk Drug Manufacturers Association (India), and the Indian Drug Manufacturers' Association.

Issue	Strengthen conservation efforts in hilly and high Himalaya regions
Action	<ul style="list-style-type: none"> • Pilot data collection and conservation assessments (resource inventory, vegetation maps, potential growing areas, etc.) in representative sample of districts to identify and target specific locations vulnerable to overexploitation and unsustainable practices • Strengthen support for CFUG five-year management plans, including through the use of development partner expertise • Strengthen management of CFUGs by developing and introducing digital tools for the establishment of a community of practice network
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Forests and Soil Conservation • Ministry of Agricultural, Land Management and Cooperatives • Potential for Public-Private Partnerships and/or development of private sector solutions

Issue	Foster cultivation of rare, unique endemic MAPs
Action	<ul style="list-style-type: none"> • Reduce the number of targeted MAPs for trade development from 33 to 5-10, and refocus efforts for cultivation of species endemic to communities located in hilly and high elevation districts • Develop an action plan for promotion of cultivation for targeted MAPs
Responsible Agency	<ul style="list-style-type: none"> • Department of Plant Resources • Ministry of Agricultural, Land Management and Cooperatives

Issue	Reduce transaction costs along domestic supply chain
Action	<ul style="list-style-type: none"> • Review and revise decentralized legal framework to eliminate multiple taxation by village and district development committees during the transportation of goods within country • Revise administrative procedures for obtaining release permits and paying royalties to District Forest Offices to reduce frictions when transporting products across districts within the country • Increase transparency at checkpoints by establishing real-time monitoring systems and anonymous feedback hotlines to reduce instances of informal fee collection
Responsible Agency	<ul style="list-style-type: none"> • Department of Plant Resources • District Forest Offices • Ministry of Finance

Issue	Strengthen government National Plant Resources Laboratory
Action	<ul style="list-style-type: none"> • Improve transparency and record-keeping of sample testing by digitizing receipt of samples and throughout testing processes to release of results • Adjust staff rotation policies to reduce turnover of existing manpower and the need for training staff anew
Responsible Agency	<ul style="list-style-type: none"> • Department of Plant Resources

Issue	Support private sector laboratories
Action	<ul style="list-style-type: none"> • Foster ‘quality partnership’ programs between entrepreneurs/firms and local laboratories • Review and revise policies for technical assistance and capacity building to ensure inclusive programs that are also open to high-capability private laboratories
Responsible Agency	<ul style="list-style-type: none"> • World Bank Group and development partners • Ministry of Industry, Commerce, and Supplies

Issue	Expand and improve protection of intellectual property rights (IPR)
Action	<ul style="list-style-type: none"> • Support Nepal Herbs and Herbal Products Association (NEHHPA) in market surveillance of new ‘Nepal Herbs’ collective trademark • Support firms with trainings on how to register trademarks and copyrights in foreign markets • Finalize the Access and Benefit Sharing Act
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Industry, Commerce, and Supplies • NEHHPA • Federation of Nepalese Chamber of Commerce & Industries (FNCCI)

Issue	Foster private sector linkages with tourism sector
Action	<ul style="list-style-type: none"> • Formalize a relationship between domestic manufacturers of personal care products and tourism promotion agencies
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Industry, Commerce, and Supplies • Trade and Export Promotion Centre (TEPC) • Ministry of Culture, Tourism and Civil Aviation

SEGMENT C2: BOUTIQUE PERSONAL CARE PRODUCTS

Issue	Strengthen legal framework for e-commerce
Action	<ul style="list-style-type: none"> • Update legal framework to facilitate use of international payment gateways
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Finance • Nepal Rastra Bank • Ministry of Communication and Information Technology

Issue	Foster digital literacy for e-commerce
Action	<ul style="list-style-type: none"> • Develop and deploy e-commerce and digital learning courses specifically focused on website development, branding, marketing, and data protection • Partner with Nepal Agribusiness Innovation Center (NAIC) to provide personal and professional development courses targeting entrepreneurs in the boutique personal care product segment

Responsible Agency	<ul style="list-style-type: none"> • Ministry of Communication and Information Technology • Department of Cottage and Small Industries, Ministry of Industry, Commerce, and Supplies • NAIC • FNCCI • TEPC
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Issue	Streamline incentive policy procedures
Action	<ul style="list-style-type: none"> • Review and revise grants scheme for certification of agricultural/MAPs products to make the process simpler for farmers and MSMEs • Review and revise tariff structure and duty-drawback scheme for imported capital goods
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Agricultural, Land Management and Cooperatives • Department of Cottage and Small Industries, Ministry of Industry, Commerce, and Supplies • Ministry of Finance

SEGMENT ND3: AYURVEDIC AND TRADITIONAL MEDICINAL PRODUCTS

Issue	Improve investment attractiveness
Action	<ul style="list-style-type: none"> • Intensify reform efforts to ease <i>Doing Business</i> in Nepal, specifically on the issues of obtaining construction permits and connecting to the national electric grid
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Industry, Commerce, and Supplies

Issue	Introduce and improve quality control in manufacturing processes
Action	<ul style="list-style-type: none"> • Develop co-financed, industry-wide training and certification program for GMP, HACCP, and other internationally recognized standards for management systems
Responsible Agency	<ul style="list-style-type: none"> • Ministry of Industry, Commerce, and Supplies

Issue	Improve knowledge and evidence base for traditional medicine
Action	<ul style="list-style-type: none"> • Conduct study to identify the intensity of specific MAPs in their most common final products • Sponsor participation of Nepali Ayurveda experts in international (Indian and Chinese) pharmacopeia fora
Responsible Agency	<ul style="list-style-type: none"> • Department of Ayurveda, Ministry of Health and Population

8. References

- ADB. n.d. *High Mountain Agribusiness and Livelihood Improvement Project : Agricultural Value Chain Analysis*. Manila: Asian Development Bank.
- AEC/FNCCI. 2006. *Compilation and prioritization of ten important NTFPs of Nepal for commercial promotion through private sector investment*. Kathmandu: Agro Enterprise Centre and Federation of Nepalese Chambers of Commerce and Industry .
- AEC/FNCCI. 2007. *Value Chain Perspectives on Present Status, Issues and Support Needed for Selected Agro and Forest Commodities*. Kathmandu: Federation of Nepalese Chambers of Commerce and Industry, Agro Enterprise Center, USAID.
- Aryal, B. P. 2018. *GMP for Ayurvedic products from next year: DDA*. January 20. <http://www.myrepublica.com/news/34689/?categoryId=81>.
- BBC. 2017. *China cuts import tariffs on almost 200 consumer goods*. November 24. <http://www.bbc.com/news/business-42107311>.
- Bhujyu, U. R., P. R. Shakya, T. B. Basnet, and S. Shrestha. 2007. *Nepal Biodiversity Resources Nook*. Kathmandu: UNEP and MoSTE.
- Business Today. 2018. *Budget 2018: Key takeaways from Modi government's last full budget*. February 2. <https://www.businesstoday.in/union-budget-2018-19/news/union-budget-2018-key-takeaways-modi-jaitley-middle-class/story/269523.html>.
- Bussmann, Rainer, and Douglas Sharon. 2009. "Markets, Healers, Vendors, Collectors - The Sustainability of Medicinal plant Use in Northern Peru." March. <http://www.bioone.org/doi/pdf/10.1659/mrd.1083>.
- CBI Market Intelligence. 2015. *CBI Competition: Natural Ingredients for Health Products in Europe*. https://www.cbi.eu/sites/default/files/market_information/researches/competition-europe-natural-ingredients-health-products-2015_0.pdf.
- CBI Market Research. 2016. *Market Information: Natural Ingredients for Health Products*. September. <https://www.cbi.eu/node/1924/pdf/>.
- CITES. 2018. "What is CITES? ." *Convention on International Trade in Endangered Species of Wild Fauna and Flora*. <https://www.cites.org/eng/disc/what.php>.
- Commonwealth Secretariat. 2001. *A guide to the European market for medicinal plants and extracts*. London: Commonwealth Secretariat.
- Ekor, M. 2014. "The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety." *Frontiers in Pharmacology* <https://doi.org/10.3389/fphar.2013.00177>.
- EPI. 2017. *Political Economy Analysis of MAPs Sector in Nepal*. Mimeo, Kathmandu: Economic Policy Incubator - Nepal.
- Euromonitor International. 2018. *The Changing Global Consumer Landscape*. February 10. <https://blog.euromonitor.com/2018/02/changing-global-consumer-landscape.html>.
- FNCCI-AEC/NEHHPA. 2012. *NTFPs/MAPs Business Promotion Strategy (2012-2016) - From Private Sector Perspective*. Kathmandu: FNCCI.
- Ghayur, Alam, and John Belt. 2009. "Developing a medicinal plant value chain:." <http://www.fao.org/3/a-at334e.pdf>.
- GIZ. 2017. *MAPs and Essential Oils from Nepal: Market Analysis and Market Entry Strategies in Five Selected Markets*. Bonn, Germany: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

- GIZ. 2017. *MAPs and Essential Oils from Nepal: Market Analysis And Market Entry Strategies in Five Selected Markets*. Bonn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
- Gomez-Mera, L. 2016. *From Evidence to Policy: Supporting Nepal's Trade Integration Strategy - Trade Promotion Agencies [Unpublished Report]*. Washington, DC: World Bank Group.
- Gurung, K. 2013. *Study on Quality Issues of Medicinal and Aromatic Plants (MAPs) Sector in Nepal*. Online. : The Physikalisch-Technische Bundesanstalt (PTB) .
- HKTDC Research. 2017. *China's Cosmetics Industry*. Hong Kong: Hong Kong Trade Development Council.
- iDE. 2017. *Nepal*. <https://www.ideglobal.org/country/nepal>.
- infoDev. 2013. *Promoting Agribusiness Innovation in Nepal: Feasibility Assessment for an Agribusiness Innovation Center*. Washington, DC: World Bank.
- ITC. 2015. *Managing Quality in Nepal: A directory of services for SMEs*. Geneva: International Trade Centre (ITC).
- ITC. 2017. *Nepal: Company Perspectives. An ITC Series on Non-Tariff Measures*. Geneva: International Trade Center.
- Joshi, R., P. Satyal, and W. Setzer. 2016. "Himalayan Aromatic Medicinal Plants: A Review of their Ethnopharmacology, Volatile Phytochemistry, and Biological Activities." *Medicines* (3)1-55.
- Kew. 2017. *State of the World's Plants*. London: Kew Royal Botanic Gardens.
- Kop, PETRA VAN DE, GHAYUR Alam, and BART DE STEENHUIJSEN PETERS. 2006. "DEVELOPING A SUSTAINABLE MEDICINAL-PLANT CHAIN IN INDIA." <http://library.wur.nl>. <http://library.wur.nl/WebQuery/edepot/137770>.
- McKenna, M. 2018. *Global Strategic Segmentation Analysis: Medicinal and Aromatic Plants*. Mimeo, Washington, DC: World Bank.
- Mghenyi, E. 2016. *Nepal : Sources of Growth in Agriculture for Poverty Reduction and Shared Prosperity (English)*. Washington, DC: World Bank Group.
- Morgan Stanley. 2016. *Beauty in the Eye of the Chinese Consumer*. November 4. <https://www.morganstanley.com/ideas/china-beauty-market-consumer-boom>.
- Narain, A., and G. Varela. 2017. *Trade Policy Reforms for the Twenty-First Century: The Case of Nepal*. Washington, DC: World Bank Group.
- Olsen, C. S., and N. Bhattarai. 2005. "A Typology of Economic Agents in the Himalayan Plant Trade." *Mountain Research and Development* Vol 25(1): 37-43.
- Olsen, Carsten Smith, and Finn Helles. 2009. "Market efficiency and benefit distribution in medicinal plant markets: empirical evidence from South Asia." <http://www.tandfonline.com>. July. <http://www.tandfonline.com/doi/pdf/10.1080/17451590903063129?needAccess=true>.
- Royal Norwegian Embassy. 2014. "Business Conditions and Sector Potentials in Nepal: A Guide for Norwegian Companies." Kathmandu.
- Schippmann, U., D. J. Leaman, and A. B. Cunningham. 2002. *Impact of Cultivation and Gathering of Medicinal Plants on Biodiversity: Global Trends and Issues*. Rome: FAO.
- Shahidullah, A. K. M., and C. Emdad Haque. 2010. "Linking Medicinal Plant Production with Livelihood Enhancement in Bangladesh: Implications of a Vertically Integrated Value Chain." <http://journal-tes.dk>. [http://journal-tes.dk/vol_9_no_2_page_16/no%20%20Shahidullah%20\(small\).pdf](http://journal-tes.dk/vol_9_no_2_page_16/no%20%20Shahidullah%20(small).pdf).
- Sharma, N., and C. P. Kala. 2017. "Harvesting and management of medicinal and aromatic plants in the Himalaya." *Journal of Applied Research on Medicinal and Aromatic Plants* Online.

- Sharma, P., and N. Shrestha. 2011. *Promoting Exports of Medicinal and Aromatic Plants (MAPs) and Essential Oils from Nepal*. South Asia Watch on Trade, Economics and Environment (SAWTEE).
- Sher, Hassan, Ali Aldosari, Ahmad Ali, and Hugo J de Boer. 2014. "Economic benefits of high value medicinal plants to Pakistani communities: an analysis of current practice and potential." *www.ncbi.nlm.nih.gov*. October. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4199063/>.
- Shukla, A. 2017. "Jatamansi New Plague for Private Sector in Nepal." *Medium*. June 5. <https://medium.com/@aruna.shukla33/jatamansi-new-plague-for-private-sector-in-nepal-b58b3c4b5c00>.
- Subedi, B. P. 2006. *Linking Plant-based Enterprises and Local Communities to Biodiversity Conservation in Nepal Himalaya*. New Delhi: Adroit Publishers.
- Taglioni, D., and D. Winkler. 2017. *Making GVCs Work for Development*. Washington, DC: World Bank Group.
- UN Women. 2017. "Nepal: Gender Equality and Social Inclusion (GESI) Profile ." *UN Women*. August 31. <http://www2.unwomen.org/-/media/field%20office%20eseasia/docs/publications/2017/09/nepal-gesi-profile.pdf?la=en&vs=5735>.
- UNEP. 2012. *Green Economy Sector Study - Biotrade: Harnessing the potential for transitioning to a green economy - The Case of Medicinal and Aromatic Plants in Nepal*. United Nations Environment Programme.
- US International Trade Administration. 2018. *Nepal - Protecting Intellectual Property*. February 14. <https://www.export.gov/article?id=Nepal-Protecting-Intellectual-Property>.
- USAID. 2015. "Nepal Fact Sheet: Gender Equality, Female Empowerment, and Social Inclusion." *USAID*. December 29. <https://www.usaid.gov/nepal/fact-sheet/gender-equality-female-empowerment-and-social-inclusion>.
- WEF. 2016. "The Global Gender Gap Report 2016: Nepal Country Profile." *World Economic Forum*. <http://reports.weforum.org/global-gender-gap-report-2016/economies/#economy=NPL>.
- WHO. 2013. *WHO Traditional Medicine Strategy (2014-2023)*. Hong Kong: World Health Organization.
- WIPO. n.d. *International Property and Traditional Medical Knowledge: Background brief no. 6*. http://www.wipo.int/export/sites/www/tk/en/documents/pdf/background_briefs-e-n6-web.pdf.
- World Bank Group. 2017. *Climbing Higher: Toward a Middle-Income Nepal*. Country Economic Memorandum, Washington, DC: World Bank Group.
- World Bank Group. 2016. *Nepal: Sources of Growth in Agriculture for Poverty Reduction and Shared Prosperity*. Washington, DC: World Bank Group.