

Annex II

Country Study on Nepal using Global Value Chain Analysis:

THE AGRO INDUSTRY (COFFEE AND GINGER PRODUCTS)²⁹

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1. Introduction

In developing countries, small and medium-sized enterprises (SMEs) are generally considered the engine of economic growth, as well as a means for poverty reduction by virtue of their numbers and their significant economic and social contributions. In Nepal, they account for 90 per cent of total enterprises, employ 95 per cent of the non-agricultural workforce and contribute 50 per cent of industrial value addition (Khatiwada 2001).

Economic liberalization and globalization have significant bearings on the performance and prospects of SMEs. At the macro-level, trade liberalization could benefit the country broadly through improved resource allocation, access to better technology, inputs and intermediate goods, economies of scale and scope, greater domestic competition and availability of favourable growth externalities such as transfer of know-how. Similarly, globalization can provide better access to markets and information, and may also facilitate a new physical or virtual proximity between global buyers and local firms (UNCTAD 2004). SMEs could benefit enormously from these processes, provided they improve their competitive strengths.

At the disaggregated and firm levels, at least in the short run, however, globalization may affect domestic firms both positively and negatively through increased foreign competition due to lower import tariffs, quotas and other non-tariff measures, lower production costs through cheaper imported inputs, increased export opportunities and reduced availability of local inputs (Tambunan 2008). In addition, the global system of market governance advocates macro policies that largely tend to be indifferent towards the microeconomic conditions of SMEs.

Thus, it is difficult to have an *a priori* judgment of the impact of liberalization and globalization on SMEs. Increased foreign competition in the domestic market may hurt some inefficient or uncompetitive SMEs while benefiting efficient or competitive ones. Empirical evidences show that in the short run SMEs may lose due to liberalization as it may work against scale efficiency (Tewari 2001; Tybout 2000). Therefore, it is necessary that SMEs are supported to upgrade their production capabilities, their access to human resources and new technology and their ability to improve the quality of their products so as to enable them to expand their base and sustain higher rates of export growth through participation in global and regional value chains (Kaplinsky, Morris and Readman 2002; Roberts 2000; Roberts and Tybout 1996). It means that it is imperative to improve the competitiveness of SMEs through addressing supply-side constraints and building up national productive capacity, as well as an efficient trading and transport infrastructure.

The present study, using value chain analysis, proposes national action plans for the improvement of the business environment for the facilitation of the Nepalese SMEs' access to regional and global markets. In particular, it presents a supply chain network of selected products, their supply capacity, policy and regulatory framework as well as an infrastructure and logistics system for the selected agro products in Nepal.

1.1. OBJECTIVES OF THE STUDY

The broad objective of the study is to analyze business environment within which Nepalese agro product SMEs, particularly those dealing in coffee and ginger products, are operating, and develop national action plan to enhance their competitiveness. The study also evaluates production capacity, export potential, supply chain networks, policy and regulatory frameworks and strengths, weaknesses, opportunities, and threats (SWOT analysis) for the coffee and ginger products sectors.

Other objectives of the study included assessing export potentials, identifying constraints/bottlenecks to export promotion and the value added and suggesting measures for implementing national action plans. To achieve the objectives, value chain and SWOT analyses were carried out.

1.2. METHODOLOGY

The export basket of Nepal contains more than 1100 products at HS 6 digit level, including agricultural and manufacturing products, both primary and processed. The regular macro-level export promotion strategies and programmes might be unable to address the firm- or product-level constraints and conditions for export promotion. It is neither practical nor feasible to develop export promotion strategies for all exportable products. Therefore, the study focuses on two targeted products with a high export potential that could contribute significantly to poverty reduction and social development of the country.

The following key criteria have been used to identify two out six short-listed products, namely: cardamom; ginger; medical plants (herbs) and essential oils; processed leather; tea; and coffee.³⁰

- a. Export potential
- b. Value added
- c. Job creation
- d. Linkages with other sectors
- e. Supply capacity
- f. Impact on gender empowerment
- g. Accessibility
- h. Government priority

Out of these products, ginger and coffee were selected by the Steering Committee of Nepal, chaired by the Secretary, Ministry of Commerce and Supplies and comprised of representatives from the ministries of commerce, industry, finance and agriculture, the private sector and the civil society organizations, including the study team (Box 1).

³⁰ ESCAP Mission had initially identified five potential products for consideration, namely: cardamom; ginger; medical plants (herbs) and essential oils; processed leather; and tea based on government priority, domestic value addition and potential for employment creation. The Steering Committee of Nepal added coffee to the list.

Box 1: Composition of the Steering Committee of Nepal

The Steering Committee, chaired by the Secretary, Ministry of Commerce and Supplies was formed to provide policy and operational guidance to the implementation of the project. The composition of the committee included:

Secretary, Ministry of Commerce and Supplies	Chairman
Joint-Secretary (Export Promotion, Trade and Transit Division), Ministry of Commerce and Supplies	Member
Joint-Secretary (Planning and International Trade Cooperation Division), Ministry of Commerce and Supplies	Member
Representative, Ministry of Industry	Member
Chief Executive Officer, Trade and Export Promotion Centre	Member
Chairman, South Asian Watch on Trade Economics & Environment	Member
Representative, Federation of Nepalese Chamber of Commerce and Industry	Member
Representative, Federation of Nepalese Cottage and Small Industry	Member
Representative, ESCAP	Member
Under-Secretary (Planning and International Trade Cooperation Division), Ministry of Commerce and Supplies	Member Secretary

The analysis was conducted through a combination of literature review and focus group discussions. The required data and information were collected through different sources, including the government, private sector and international organizations publications. The consultants on the project met and interacted with all possible value chain agents – farmers, traders, processors, exporters, service providers, international non-governmental organizations and government officials in focus group discussions. The focus group discussions were organized in Kathmandu for the coffee products sector and in Byas Municipality, Tanahu district for the ginger products sector. The events not only helped verify additional information, but also provided critical insights into the issues. Subsequently, the study was submitted at a national workshop and a subregional workshop in Kathmandu and Colombo, respectively, where key stakeholders conducted further review. Discussions and comments made at the workshops were all reflected in the final study.

1.3. LIMITATIONS

The study was conducted within a limited time frame and with little resources, which made it impossible to collect primary information through a structured questionnaire from all the actors. Similarly, it was impossible to observe all the processes included in the value chain, for example land preparation, farming, harvesting,

processing and so on. While interactions with stakeholders helped gain insights into the issues, such insights could not be considered as representing all nation-wide stakeholders.

2. Business Prospects for the Ginger and Coffee Products Sectors in Nepal

Sandwiched between two neighbours with giant populations—China to the north and India to the south, west, and east—Nepal has a population of about 27 million. The country is divided into three geographical regions: (i) the Himalayan range, covered with snow throughout the year; (ii) the valleys and hills; and (iii) the Terai belt, low and fertile land that borders India. While about 70 per cent of land area in Nepal is covered by hills and high mountains, only the remaining 30 per cent of land, found in the Terai belt is suitable for commercial agriculture. Over 56 per cent of the country's population lives in the hills and mountains and relies on subsistence farming in the absence of other economic activities. Since the Terai belt has highly fertile land compared to other regions, most economic activities are located there. Because of a difficult terrain, there is a lack of an efficient transport network in the hilly and mountainous regions.

Agriculture is the backbone of the Nepalese economy, making an important contribution to the national income and employment generation. In the 1950s, it contributed as high as 80 per cent to gross domestic product (GDP) and employed 90 per cent of the workforce. However, with a shift in government policy since the mid-1950s, its importance as a major contributor to GDP gradually declined and fell to 32.8 per cent by 2008/09 (MOF 2009a). Despite the fact, agriculture still provides employment for 67.1 per cent of the workforce—64.0 per cent in subsistence farming and 3.1 percent in market agriculture (CBS 2009). The share of manufacturing in GDP remains very small, at 6.8 per cent, while the services sector, largely based in urban areas, contributes about 60 per cent of GDP.

Total cultivated land in Nepal is a little more than three million hectares, but irrigation facilities are available only on one third of the cultivated land. Nepalese farmers have traditionally produced cereal crops, such as paddy, maize, millet, wheat and barley. However, they have been shifting to the exclusive production of or intercropping with cash crops, such as oilseeds, potato, tobacco, sugarcane, tea, coffee, ginger and horticultural products. The following section introduces coffee and ginger production in Nepal.

2.1. OVERVIEW OF MAJOR COFFEE PRODUCING COUNTRIES

Although there are between 25-100 different species of *Coffea* (coffee trees), the two most important species that are grown and traded internationally—*Coffea arabica* (Arabica coffee), which accounts for over 60 per cent of the world production and *Coffea canephora* (Robusta coffee). Two other species that are grown on a much smaller scale are *Coffea liberica* (Liberica coffee) and *Coffea dewevrei* (Excelsa coffee). These major species of coffee have different varieties and cultivars. For example, the

best known varieties of *Coffea arabica* are 'Typica' and 'Bourbon' but from these two varieties many different strains and cultivars have been developed, such as Caturra (Brazil, Colombia), Mundo Novo (Brazil), Tico (Central America), the dwarf San Ramon and the Jamaican Blue Mountain. Arabica coffee plants are often susceptible to attacks by pests and diseases.

Coffee is a tropical plant which grows between the latitudes of less than 25 degree north and less than 25 degree south of the Equator and requires very specific environmental conditions for commercial cultivation. Temperature, rainfall, sunlight, wind, and soils are all important but requirements vary according to varieties grown. Ideal average temperatures are 15-24 degrees Celsius for Arabica and 24-30 Celsius for Robusta, which can take hotter and drier conditions. Coffee plants are easily damaged by frost. In general, coffee plants need an annual rainfall of 1,500 to 3,000 mm; Arabica plants require less moisture than other species. The patterns of rainy and dry periods are important for growth, budding and flowering. Rainfall requirements depend on the retention properties of the soil, atmospheric humidity and cloud cover as well as cultivation practices.

Arabica coffee plants are best grown at higher altitudes (over 1,000 metres), often in hilly areas and, thus, produce superior quality beans of good flavour and aromatic characteristics. Robusta coffee, on the other hand, can be grown at lower altitudes (between sea level and about 800 metres), have higher yields and are more resistant to disease. But they produce beans of inferior taste in comparison with Arabica, usually with a woody, astringent flavour and with double amount of caffeine. As a result, Robusta beans command a lower price and are generally used for producing cheap instant coffee or to increase a caffeine 'kick' in products such as espresso. In terms of production markets, Arabica coffee is grown throughout Latin America, in Central and East Africa, in India and Nepal, and to some extent in Indonesia; while Robusta coffee is grown in West and Central Africa, throughout South-East Asia and in certain parts of Brazil, where it is known as Conillon.

The first coffee plantations were originally established in Ethiopia and the Arabian Peninsula. Today it is widely grown throughout tropical regions (ITC 2009). Coffee is produced in more than 70 developing countries while 45 countries are responsible for over 97 per cent of world coffee output. The world production of coffee is quite volatile and is extremely vulnerable to weather conditions. Global production during the period 2000/01 to 2010/08 was recorded in the range of 6.4 million MT to 8.0 million MT; however, the production sharply declined by 13.7 per cent in 2003/04, whereas it increased by 8.4 per cent in the crop year 2010/11 (table 1). Most of the world's coffee beans are produced in Latin America, which accounts for 61.9 per cent of global production; the shares of Asia and Africa are 25.5 per cent and 12.6 per cent, respectively (Roldan-Perez et al 2009). Brazil is the largest producer of coffee followed by Viet Nam, Colombia and Indonesia. In 2008/09 more than half of global coffee production was concentrated in these three countries (table 2).

Table 1: World coffee production, 2000/2001-2010/2011

Coffee year	Production Million Bags (60 kg)
2000/2001	113.0
2001/2002	107.7
2002/2003	123.2
2003/2004	106.3
2004/2005	116.2
2005/2006	111.3
2006/2007	128.9
2007/2008	120.0
2008/2009	128.4
2009/2010	123.0
2010/2011	133.3

Source: ICO (2011).

Table 2: Major coffee producing countries, 2010/2011

Country	Production Million Bags (60 kg)
Brazil	48.1
Viet Nam	18.5
Colombia	9.2
Indonesia	8.8
Ethiopia	7.5
India	5.0
Mexico	4.0
World	133.3

Source: ICO (2011).

Arabica is the dominant variety in coffee production. More than 60 per cent of coffee produced worldwide is Arabica, with Brazilian natural being the principal Arabica variety, though its share has declined in recent years compared to the 1980s and the 1990s. The remaining share is Robusta variety (table 3). Arabica is produced in Colombia, Kenya, United Republic of Tanzania, the Plurinational State of Bolivia, Burundi, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, India, Jamaica, Malawi, Mexico, Nicaragua, Panama, Papua New Guinea, Peru, Rwanda, Venezuela, Zambia, Zimbabwe, Brazil, Ethiopia, and Paraguay; whereas Robusta is produced in Angola, Benin, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Ghana, Guinea, Indonesia, Liberia, Madagascar, Nigeria, Philippines, Sierra Leone, Sri Lanka, Thailand, Togo, Trinidad and Tobago, Uganda and Viet Nam (ICO 2009).

Table 3: Coffee production by coffee bean type (in per cent)

Types of Coffee Beans	2005	2006	2007	2008
Arabicas	61.72	62.27	61.20	61.62
Colombian Milds	12.43	10.82	11.56	8.62
Other Milds	22.88	21.19	22.90	20.95
Brazilian Naturals	26.41	30.26	26.73	32.05
Robustas	38.28	37.73	38.80	38.83

Source: ICO (2009).

2.2. COFFEE PRODUCTION IN NEPAL

Coffee production does not have a long history in Nepal. A saint, Hira Giri of Gulmi district in western Nepal, is considered to be the pioneer of coffee cultivation in Nepal. He bought some coffee seeds from Myanmar and introduced them in Aanpchaure of Gulmi district back in 1938. Gradually, plantations of coffee started spreading to adjoining districts, such as Palpa, Syangja, Kaski and Baglung, and other districts.

As the climate and soil conditions in the mid- and high hills of Nepal are suitable for Arabica coffee, Nepal grows only the Arabica variety of coffee. Areas under coffee plantations have increased more than ten-fold between 1994/1995 and 2008/2009. In 2008/2009, a total of 557 MT of coffee was produced on 1,531 ha of farmland in Nepal (table 4). The average yield of green beans is about 300 kg per ha. Although the productivity has increased significantly over the period, it is lower than in major coffee producing countries such as Viet Nam and Indonesia. However, through proper management, adequate shading and manuring practices, the productivity level could go as high as up to 1,550 kg per ha (AEC 2006). Gulmi district produces the highest amount of coffee followed by Lalitpur, Kavrepalanchok, Syangja and Palpa. Lamjung, Gorkha, and Nuwakot districts are other emerging coffee producing districts (table 5).

Table 4: Coffee production in Nepal, 1994/1995-2008/2009

Year	Area (ha)	Production Dry Cherry (in MT)	Productivity (dry cherry kg per ha)
1994/1995	135.7	13.0	95
1995/1996	220.3	29.2	132
1996/1997	259.0	37.4	144
1997/1998	272.1	55.9	205
1998/1999	277.1	44.5	160
1999/2000	314.3	72.40	230
2000/2001	424.0	88.7	209
2001/2002	596.0	139.2	233
2002/2003	764.0	187.5	245
2003/2004	925.0	217.6	235
2004/2005	1 078.0	250.0	231
2005/2006	1 285.0	391.0	304
2006/2007	1 295.5	270.0*	347
2007/2008	1 145.0	265.0*	386
2008/2009	1 531.0	334.0*	364

* Parchment, average ratio parchment to dry cherry is about 0.6.

Source: NTCD (2011).

Table 5: District-wise production of coffee in Nepal, 2007/2008

Districts	Area (ha)	Production (MT)
Palpa	185.0	25.0
Gulmi	110.0	35.0
Arghakhangi	74.0	10.0
Syangja	205.0	29.5
Kaski	70.0	13.5
Parbat	40.0	5.0
Lamjung	148.0	8.0
Gorkha	97.0	5.0
Baglung	35.0	5.0
Tanahu	45.0	2.0
Myagdi	5.0	3.0
Sankhuwashava	18.0	3.0
Ilam	30.0	15.0
Khotang	7.0	2.0
Jhapa	2.0	1.0
Panchthar	8.0	2.0
Udayapur	2.5	2.0
Lalitpur	70.0	30.0
Sindhupalchok	77.0	17.0
Kavrepalanchok	116.5	30.0
Nuwakot	58.0	13.0
Dhading	16.0	7.0
Makawanpur	11.0	3.0
Others	20.0	10.0
Total	1 450.0	276.0

Source: MAC 2008.

2.3. OVERVIEW OF MAJOR GINGER PRODUCING COUNTRIES

Ginger, the underground stem, or rhizome, of the plant *Zingiber officinale Roscoe*, is a medicinal plant that has been widely used in Chinese, Ayurvedic and Tibb-Unani herbal medicines since antiquity to remedy a wide array of ailments that included arthritis, rheumatism, sprains, muscular aches, pains, common cold, flu-like symptoms, sore throat, headaches, painful menstrual periods, cramps, constipation, indigestion, vomiting, hypertension, dementia, fever, infectious diseases and helminthiasis. In addition to medicinal use, ginger is valued as an important cooking spice.³¹ Currently, there is a renewed interest in ginger, and several scientific studies have been conducted aimed at identifying ginger's active constituents and verifying their pharmacological properties in treating ailments and diseases. The main pharmacological characteristics

³¹ New World Encyclopedia. Available at www.newworldencyclopedia.org.

of ginger and compounds include immuno-modulatory, anti-tumorigenic, anti-inflammatory, anti-apoptotic, anti-hyperglycemic, anti-lipidemic and anti-emetic actions. Ginger is also a strong anti-oxidant and may either mitigate or prevent generation of free radicals. It is considered a safe herbal medicine with only a few and insignificant adverse/side effects (Ali et al. 2008).

Ginger has a long history of medicinal use in the preparation of many Ayurvedic formulations, the traditional medical discipline in India and Nepal. In the United States of America and Europe, remedies containing ginger are sold as nutraceuticals or over-the-counter medications for the treatment of nausea, motion sickness and migraine. Ginger is also listed in the *German Commission E Monographs* as an approved phytomedicine against dyspepsia and as a preventive remedy against motion sickness (Plotto 2004).

Ginger is cultivated in Nepal, Bhutan, India, China, Japan, Indonesia, Australia, Nigeria and the Pacific islands. India is the largest producer and consumer of ginger in the world. Out of the total production, about 30 per cent is used dry, while 50 per cent is consumed as a fresh product and the rest as seed material. Table 6 presents total areas under cultivation and production volumes of ginger in the world. It shows that in 2009 the area under ginger cultivation in the world was 273,736 ha. India has the largest area of ginger cultivation, constituting about 39.7 per cent of the total world area under ginger cultivation. World production of ginger was 1,615,974 MT in 2009. India had a predominant position in ginger production, contributing 23.5 per cent of the total world production in 2009 but productivity was very poor compared to that of the United States of America (FAO 2011).

Table 6: Area and production of ginger in the world, 2009

Year	Area (ha)	Production (MT)
1998	312 689	862 863
1999	308 409	948 720
2000	307 277	948 235
2001	318 776	986 267
2002	314 064	996 005
2003	338 106	1 150 820
2004	340 713	1 195 546
2005	365 002	1 321 790
2006	417 349	1 491 069
2007	270 007	1 581 392
2008	279 648	1 641 629
2009	273 736	1 615 974

Source: FAO 2011.

2.4. GINGER PRODUCTION IN NEPAL

Ginger is an important spice cash crop traditionally grown in the mid-hill areas of Nepal at altitudes of up to 1,500 meters, across the whole east-west length along the Siwalik. It can also be grown in the uplands of Terai. The intercropping of ginger with maize is a traditional method and the two form a suitable crop combination. Some farmers of Palpa are intercropping ginger with pigeon pea and okra. Ginger is being grown in coffee plantations and orange orchards as well (AEC 2006).

The production of ginger almost doubled in a decade to reach 174,268 MT in 2009; however, the growth is attributed more to the area harvested than to the growth yield. The growth yield is 3.0 per cent per year compared to 4.7 per cent of the growth of harvested area during 1998 to 2009. Ginger is produced all over the country except on high altitudes (table 7). The geographical distribution of ginger production shows its concentration in western mid-hills. Among the development regions, production is the highest in the eastern development region followed by the western, central mid-western and far-western regions. However, the productivity seems highest in the far-western development region followed by the central and mid-western regions. Among the districts, the most important ginger producing districts are Palpa, Nawalparasi, Arghakhanchi, Syangja, Kaski and Tanahu in the western development region, Salyan in the mid-western region, and Ilam in the eastern region (table 8).

Table 7: Production of ginger in Nepal, 1998-2009

Year	Area Harvested (ha)	Yield (kg/ha)	Production (MT)
1998	8 821	92 508	81 601
1999	8 821	92 732	81 799
2000	8 314	90 202	74 994
2001	8 956	94 201	84 366
2002	9 189	95 668	87 909
2003	11 830	127 298	150 593
2004	11 930	128 000	152 704
2005	12 000	128 500	154 200
2006	12 994	118 668	154 197
2007	13 025	122 000	158 905
2008	13 332	132 465	176 602
2009	13 808	126 208	174 268

Sources: FAO 2011.

Table 8: Geographical distribution of ginger production in Nepal, 2008

Development Regions	Area Harvested (ha)	Production (MT)
Eastern	4 119	51 956
Central	1 928	24 791
Western	5 136	46 848
Mid-Western	1 830	23 452
Far-Western	994	14 124

Source: MAC 2008.

Ginger is grown in tropical, subtropical and humid climate at an altitude of up to 1,500 metres. A well-distributed (eight to ten months) rainfall (1,500-3,000 mm) during the growing season and dry spells during land preparation and harvesting are required for good growth and yield of the crop. Dry weather, with temperatures in the range of 28-30 degree Celsius for about a month before harvesting, is ideal for ginger farming. High humidity throughout the crop growing period is necessary. Ginger gives high yield when planted at a depth of 30 cm in good, light, well-drained, loosely friable, rich in humus garden soil with a slightly acidic character.

Depending on the altitude and rainfall, planting is done from February to April. Farmers believe that early planted ginger escapes hailstorms and results in high yields. Rhizomes are planted in two-three rows in each bed and covered with soil. The spacing between rhizomes should be about 15 cm. In most areas, the whole unbroken rhizome is planted, which increases the recovery of the mother rhizome yield called *mau* extraction, an ancient practice in Nepal. However, there has been a widespread practice among small farmers of intercropping ginger with maize, beans and millets. When ginger is intercropped with other crops, inter-row distance is generally 60-90 cm. Immediately after planting, beds are covered with mulches consisting of forest leaves, straw, grass and other plant residue up to eight- ten cm. thick. Mulching protects seedlings from rain, prevents weed growth, keeps soil soft and moist and accelerates growth.

For fresh ginger, the crop should be harvested before full maturity, i.e., when rhizomes are still tender, with low pungency and fibre content, usually from the fifth month after planting. Such fresh and green ginger is used in pickles, candy preparation or cooking. In order to make preserved ginger, harvesting should be done between five and seven months after planting, while for dried spice and oil harvesting is best at full maturity, i.e., between eight to nine months after planting, when leaves become yellow. Rhizomes used as planting material should be harvested when the leaves become completely dry. The root and rhizome diseases, particularly bacterial wilt, soft rot and yellow are major troubles besides insect pests, such as white grub and shoot borer.

After harvesting, the ginger should be stored properly. There are three traditional methods of seed rhizome storage in Nepal. They are storage in soil pits, storage in a dry and shaded place and *in situ* storage. Instead of bearing storage costs, many farmers prefer *in situ* storage (delayed harvest) so that they can supply the product according to market demand and allow the rest of rhizomes to remain in the field. However, this method leads to rhizome rotting and rhizome sprouting in the course of time and also to harbouring insect pests.

After the harvest, the fibrous roots attached to rhizomes should be trimmed off and the soil removed by washing. Rhizomes should be soaked in water overnight and then cleaned. The skin can be removed by scraping with sharp bamboo splits or wooden splice. Use of metallic knives should be avoided since they will discolour the rhizomes. Peeling or scraping reduces drying time, thus minimizing mould growth and fermentation. However, the scraping process tends to remove some of the oil that is concentrated in the peel. By removing the outside corky skin, the fibre content also

decreases. After scraping, the rhizomes should be sun dried for a week with frequent turning and hand rubbed to remove outer skin. This process is called unbleached ginger. Mechanical drying is rapid and gives more homogenous and cleaner product over the sun drying method where peeled ginger takes eight to nine days to reach moisture content of eight to nine per cent. To reduce losses in quality, cleaning and drying should be done as fast as possible after harvesting. To avoid discolouration, the temperature should not exceed 60 degree Celsius during mechanical drying. Proper care should be taken during the grading and packaging to supply quality ginger (Yadav et al. 2004).

Farmers in Nepal traditionally cultivate two landraces of ginger, namely, *Nase* rhizome containing more fibers, and *Bose rhizome*, which is fibreless or with negligible fibres. Ginger Research Programme, Kapurkot offered another ginger variety named Kapurkot Aduwa-1 in 2001; however, the demand for seeds of this variety of rhizome among farmers cannot be satisfied even now (AEC 2006).

2.5. EMPLOYMENT IN THE COFFEE AND GINGER PRODUCTS SECTORS

Coffee and ginger products are highly labour intensive and a large number of small farmers are involved in their production. Generally, small farmers employ household labour for production and post-production management; however, medium and large farmers use hired labour in their post-production and value added activities. Small farmers' family members do almost all the work – from land preparation to harvesting of the crops. Men generally purchase seeds and do the ploughing while both men and women do the hoeing and digging. Sowing, planting, manure application and harvesting are done by both men and women. Women do the weeding. While women generally dig out ginger from the field and do cherry picking, its sale is looked after by men.

International Trade Centre (ITC) estimates that ginger production requires around 66,600 people for two months per year, which is around 11,000 people as full-time employees at the current level of production (ITC 2007). Similarly, it is estimated that about 20,000 families are engaged in the production of coffee (Ghimire 2009) and that is the equivalent of more than 7,700 full-time employees (ITC 2007). In addition to direct employment, a large number of people are employed in different stages of value addition such as cleaning, packaging, transportation, loading and unloading. The Agro Enterprise Centre (AEC) of the Federation of Nepalese Chambers of Commerce and Industry estimates that promotion and diversification of coffee products into specialty and organic coffee products may engage 75,000 farm families, resulting in 460,000 people as beneficiaries – with 420,000 employment positions going to farmers' family members and 40,000 employment positions to processing and marketing (AEC 2006).

3. Export Potential and the Government Policy

While the total exports of Nepal declined by 0.2 per cent in 2007/08, the export of coffee and ginger increased by 168 per cent and one per cent, respectively, implying the significance of these sectors. The study evaluates the potential for export promotion

of coffee and ginger products based on export supply growth, global market situation and market access conditions. Government policies in agriculture and trade promotion are also reviewed.

3.1. EXPORT POTENTIAL FOR COFFEE PRODUCTS

Nepal Coffee Producers Association estimates that about 65 per cent of the production of coffee is exported to foreign countries. In 2007/08, a total of 112 thousand kg of coffee was exported with total proceeds reaching 107 million NRs. The trend in the growth of export both in volume and value is quite encouraging. During the last seven years export volume increased at an average annual growth rate of 71 per cent, whereas export value increased at a growth rate of 264 per cent indicating that Nepalese coffee exporters are getting better prices for their products (table 9).

Nepal exports only Arabica green beans of two varieties: decaffeinated (65 per cent) and regular. Destination-wise, export of coffee is presented in table 10. The major market for the Nepalese coffee is Japan for both decaffeinated (85 per cent) and regular varieties (50 per cent), followed by Germany for the former, Canada for the both, and the Republic of Korea for the latter varieties. Smaller volumes of coffee have also been exported to the United Kingdom and the United States of America.

Coffee is the second most traded commodity in the world after oil. It reached \$13 billion in international trade and about 80 per cent of the coffee's global production trades internationally (ICO 2011). World exports increased at an annual average growth rate of 26.4 per cent in value and 0.7 per cent in volume from 2000/2001 to 2009/2010, implying that the prices of coffee in international market increased over the period (table 11). As far as the global export market is concerned, the share of Brazil (32.1 per cent in 2009/2010) is the highest, followed by Viet Nam

Table 9: Coffee export of Nepal (green beans)

Year	Exports	
	Volume (kg)	NRs. Millions
2000/01	3 677	0.67
2001/02	9 075	2.45
2002/03	16 861	5.20
2003/04	25 295	5.94
2004/05	65 000	1.96
2005/06	91 500	27.67
2006/07	100 180	40.11
2007/08	112 000	107.80

Source: NTCDB (2009).

Table 10: Export markets for the Nepalese coffee, 2007/2008 (in thousands of Nepalese Rupees)

Countries	Regular unroasted	De-caffeinated unroasted
Canada	1 044	927
Germany	140	7 857
Japan	8 899	9 242
Republic of Korea	185	989
United Kingdom	98	–
United States of America	6	–
Total	10 372	19 015

Source: TEPC (2008).

(15.5 per cent), Indonesia (8.5 per cent) and Colombia (7.6 per cent) (table 12). Similarly, the United States of America is the largest importer of coffee followed by Germany, France, Italy, Japan, Belgium and Canada. The growth of imports in all major importing countries during 2004-2008 is quite high for both green bean and roasted coffee. Belgium recorded the highest growth of 34 per cent in the import of green beans whereas Japan topped the list with an average annual growth rate of 78 per cent for roasted coffee during 2004-2008 (table 13).

Table 11: World coffee export from 2000/2001 to 2009/2010

Year	Exports (US\$ billion)	Exports Million Bags	Average Price Cents/lb FOB
2000/2001	6.7	88.0	58
2001/2002	6.6	85.8	58
2002/2003	7.6	90.2	64
2003/2004	9.2	88.0	79
2004/2005	12.4	89.0	106
2005/2006	14.8	88.0	127
2006/2007	17.8	98.5	137
2007/2008	22.0	94.1	177
2008/2009	20.0	95.4	159
2009/2010	24.4	94.2	196

Sources: ICO (2011); ITC (2011).

Note: One bag contains 60 kg.

Table 12: World's top 10 coffee exporters, 2009

Country	Exports in thousands of bags
Brazil	30 207
Viet Nam	14 591
Indonesia	7 990
Colombia	7 196
India	3 901
Guatemala	3 446
Honduras	3 161
Peru	2 999
Ethiopia	2 904
Uganda	2 669

Source: ICO (2011).

Note: One bag contains 60 kg

Table 13: World's top 10 coffee importers, 2008

Country	Value in billions of dollars	Import Growth 2004-2008 (in per cent)	
		Green Bean	Roasted
United States of America	4.256	18.0	4.0
Germany	3.329	23.0	30.0
France	1.381	29.0	16.0
Italy	1.379	26.0	30.0
Japan	1.267	24.0	78.0
Belgium	1.206	34.0	20.0
Spain	0.669	21.0	25.0
United Kingdom	0.628	18.0	3.0
Austria	0.445	25.0	45.0

Source: ITC (2011).

All major importing countries levy zero duty in the imports of green coffee beans; therefore, any kind of tariff preference is irrelevant for Nepal. Nonetheless, Nepal, being a least developed country (LDC), enjoys duty-free access for roasted coffee under trade preference for LDCs in all major coffee importing countries. However, the preference margin is higher in Japanese markets compared to other markets (table 14).

Table 14: Market access conditions for the Nepalese coffee in major importing countries (tariffs in per cent)

Country	Green Beans			Roasted		
	Most Favored Nation Tariff	Pre-ferential Tariffs for GSP	Pre-ferential Tariffs for LDCs	Most Favored Nation Tariff	Pre-ferential Tariffs for GSP	Pre-ferential Tariffs for LDCs
United States of America	0	–	–	0.0	–	–
Germany	0	–	–	7.5	–	0
France	0	–	–	7.5	–	0
Italy	0	–	–	7.5	–	0
Japan	0	–	–	20.0	10	0
Belgium	0	–	–	7.5	–	0
Spain	0	–	–	7.5	–	0
United Kingdom	0	–	–	7.5	–	0
Austria	0	–	–	7.5	–	0

Source: ITC (2011).

The above tables demonstrate that the export of coffee from Nepal has been growing significantly and the markets are diversified. The world export market is encouraging and demand in major importing countries recorded double-digit growth. There are no tariff barriers for market access for the Nepalese coffee and the country enjoys significant tariff preferences in European and Japanese markets. Thus, a major challenge for promoting export is export quality for both specialty and organic coffee and meeting sanitary, phyto-sanitary and other standards.

The quality of coffee is determined by a combination of factors, including botanical variety, topographical conditions, weather conditions and care taken during growing, harvesting, storage, export preparation and transport. Botanical variety and topographical conditions are constants while weather conditions are variable and difficult to predict. Therefore, growing, harvesting, storage, export preparation and transport are variables that can affect the quality. Although Nepalese coffee producers and processors are not highly skilled and equipped with adequate expertise, Nepalese coffee is considered high quality because of suitable and diverse climatic conditions. Nevertheless, Nepalese producers are not that quality conscious and the presence of Ochratoxin A (OTA)³² has been found in Nepalese coffee in recent years (AEC 2006). Moreover, it is disheartening to note that there is no coffee quality standard introduced by any agency, private or public, in Nepal.

The International Coffee Organization (ICO) has adopted resolution 420, which recommends voluntary targets for the minimum quality export standards for both varieties of coffee, Arabica and Robusta. It calls on producing members to restrict the export of Arabica coffee with more than 86 defects per 300 g sample or the export of Robusta coffee with more than 150 defects per 300 g sample. The resolution also calls on members to prohibit Arabica or Robusta of any grade to be exported if the moisture level of beans is below eight per cent or above 12.5 per cent; it also includes a proviso that this should not affect the established, good and accepted commercial practices. Although specialty coffees that traditionally have high moisture content are exempted, resolution 420 requires all producers to clearly identify on the Certificate of Origin any coffee that does not reach the recommended standards.

Since consumer awareness on sanitary and phyto-sanitary standards of food items has increased, stringent food legislation is being introduced with a potential impact on the export of coffee. For example, Hazard Analysis Critical Control Points or HACCP system developed by Codex Alimentarius Commission has become a mandatory requirement in the markets of various countries since the 1990s and, particularly, for non-farm food businesses in the European Union since January 2006.

Despite the fact that coffee is mostly grown organically in Nepal, Nepal has not been able to export all the coffee as organic because of the problems with certification. Organic certification requirements cover not only on the product itself but also the intrinsic part of the production process and procedure. International Federation of

³² Ochratoxin A is one of the most abundant food-contaminating mycotoxins in the world. Studies have shown that OTA is potentially carcinogenic. Human exposure occurs mainly through consumption of improperly stored food products, including coffee.

Organic Agriculture Movements (IFOAM) has formulated basic standards for organic products. These standards are at the base of the legislation that has been introduced in the European Union (1992), the United States of America (2000), Japan (2001), and a number of other countries, including Argentina, Bolivia, India and Mexico that have created national legislation to regulate the market for organic products (ITC 2009).

Besides certifying coffee cultivation, all subsequent steps in production chain also have to be certified to get an organic product certificate. On-farm processing, storage, transport, drying and hulling, roasting, packaging, distribution and retailing all have to be certified organic. Contact with conventionally produced coffee should be excluded. Spraying or fumigation with toxic agents should not be permitted and special measures should be taken to prevent contact with areas where fumigation has taken place. Adequate records should be kept of incoming and outgoing coffee products so that the entire product flow could be documented and accounted for, such process referred to as traceability. All steps in the chain should, therefore, be documented and accounted for making it possible to trace back the origin of the product from one step to the next (track and trace), ensuring that no contamination with conventional coffee has occurred. This traceability minimizes the risk of fraud at all stages and is a very important part of the inspection process by certifying organizations (ITC 2009).

Organic products imported into the European Union must have been produced in accordance with the European Union regulation on organic food (EC 834/2007). This regulation provides that a non-European Union country can get an approval if its production system complies with principles and inspection measures equivalent to those laid down in the European Union regulations. According to such regulations, the following standards must be followed:

- Cultivation of vegetables, green manures or deep-rooting plants in an appropriate multi-annual rotation programme;
- Incorporation in the soil of organic material, organic livestock manure and vermicompost;
- Pests, diseases and weeds to be controlled by using appropriate varieties, rotation programmes, biological pest control, mechanical practices and flame weeding;
- Seeds and propagation materials organically produced;
- Use of non-organic fertilizers, pesticides and biological pest control methods is limited.

In the United States of America, National Organic Program (NOP) has been established under Organic Food Production Act. Organizations that are fully NOP-compliant (certified) may label their products or ingredients as organic, and may use the 'USDA Organic Seal' on organic products in the country, irrespective of whether they are produced domestically or are imported.

Japanese Agricultural Standard (JAS) for Organic Agricultural Products entered into force in April 2002. Enacted by the Ministry of Agriculture, Forestry and Fisheries, JAS regulates the production and labelling of organic food items produced in Japan.

Although coffee is not grown in Japan, JAS nevertheless also covers organic coffee (and tea) under 'organic agricultural products.' Only Ministry-accredited certifying bodies may issue JAS organic certification for coffee to be imported into Japan.

3.2. EXPORT POTENTIAL FOR GINGER PRODUCTS

World trade in ginger was estimated at \$578 million in 2008 and the quantity traded was 2.223 million tonnes (table 15 and FAO 2011). The growth of world ginger exports was one per cent in value terms and nine per cent in volume terms during the period 2004-2008 (ITC 2011). China is the major supplier in world ginger markets followed by Thailand, Nepal and the Netherlands (table 16). Despite the fact that ginger accounts for just more than one per cent of national exports, Nepal ranks as the third largest exporter of ginger in terms of volume and the sixth largest exporter in terms of value in the world market. The fact implies that the price Nepal is getting for its exports is substantially lower than that of the world average.

Table 15: World export of ginger, 2001-2008

Year	Value in millions of dollars
2001	123.1
2002	121.1
2003	132.4
2004	286.5
2005	321.7
2006	248.0
2007	264.6
2008	578.4

Source: ITC (2011).

Table 16: Top 10 ginger exporting countries, 2009

Country	Quantity (tonnes)	Value (in thousands of dollars)	Unit value (dollars/tonnes)
China	341 388	284 454	833
Thailand	49 808	24 932	501
Nepal	26 724	5 209	195
Netherlands	18 364	25 835	1 407
India	12 175	14 279	1 173
Ethiopia	10 752	6 531	607
Indonesia	7 326	3 391	463
Nigeria	4 256	4 431	1 041
Brazil	3 952	3 892	985
Fiji	1 037	3 270	3 153

Source: FAO (2011).

Nepal's export market for ginger is primarily India although it has also been exporting to Japan and the United States of America in smaller quantities (exports of less than half a million NRs. in 2007/2008). Raw and dry ginger export constitutes about a half of Nepal's total export of spices to India. Export of raw ginger constitutes about 85 per cent and the remaining percentages of ginger export are divided between semi-

processed and dry product, i.e., *Suntho*. It is reported that more than 60 per cent of the total production of ginger is exported to India as fresh or dry product. Ginger export trend in terms of value is very erratic. From 2011 to 2008 it has showed an annual growth of as high as 75 per cent in 2006/2007 and a decline of 33 per cent in 2004/2005 (table 17). Such volatility in exports could not be explained just by the volatility in production; it could be explained partly by the internal security measures, the political situation and by an imposition of sanitary standards by the Indian Government.

Table 17: Ginger export to India
(in millions of NRs.)

Year	Total	Dried Ginger	Fresh Ginger
2001/2002	288.4	80.5	207.9
2002/2003	423.8	108.4	315.4
2003/2004	365.1	78.0	287.1
2004/2005	241.1	80.1	161.0
2005/2006	337.4	62.2	275.2
2006/2007	590.9	49.6	541.3
2007/2008	597.2	54.0	543.2
2008/2009	403.1	68.0	335.1

Source: MOF (2009b).

Northern Indian markets of Gorakhpur, Varanasi, Lucknow, Kanpur, Patna, Jaipur and Delhi are major destinations for Nepalese ginger. India is a large and dynamic market for Nepalese ginger. A number of long established markets for Nepalese ginger in India are currently under threat from the increased domestic production, especially from the towns of Cochin in southern India and Bangalore in south-eastern India (ITC 2007). The major competitors in the Indian markets are China, Nigeria, Myanmar and Ethiopia.

Japan, followed by the United States of America, the United Kingdom and Bangladesh, are the major importers of ginger in the world. In these countries, ginger is imported processed rather than fresh. However, in South Asia, in countries such as India, Pakistan and Bangladesh, fresh ginger constitutes a major chunk of ginger imports. The growth rates of ginger imports are high in Bangladesh, the United Arab Emirates, Germany, the Netherlands, the United Kingdom, and Malaysia; moderate in Pakistan, the United States of America and India; and negative in Japan (table 18).

Table 18: Top 10 importers of ginger, 2009

Country	Import value (in millions of dollars)	Import growth (2004-2008) (per cent)
Japan	90.7	-12.0
United States of America	43.2	14.7
Bangladesh	35.6	732.4
Pakistan	28.9	23.6
Netherlands	24.7	46.2
United Kingdom	24.2	41.2
United Arab Emirates	22.8	177.0
Malaysia	21.0	37.1
Germany	15.9	59.9
India	12.3	8.5

Source: ITC (2011).

The market access conditions for the Nepalese ginger in major importing countries show that Nepal enjoys duty-free access in

developed economies, such as Japan, the United States of America, the Netherlands and Germany under the Generalized System of Preferences (GSP) for least developed countries. Nepal also enjoys a zero duty in the Indian market under a bilateral trade agreement and the margin of preference for Nepal is higher in India compared to other South Asian least developed countries. Pakistan also provides preferential access for least developed countries under the Agreement on South Asian Free Trade Area (SAFTA). However, there is no such tariff preference in the Bangladeshi and Saudi Arabian markets (ITC 2011).

The above analysis shows that tariff barrier is not a major constraint for Nepal in promoting exports of ginger. The challenge is in the diversification of the value added products and the markets. Ginger in Nepal is traded in fresh, dry and processed forms. About 85 per cent of ginger is traded fresh and the remaining volume is distributed between the dry and a negligible quantity of processed forms. Similarly, more than 99 per cent of ginger is exported to India. However, product diversification and value added is the precondition for market diversification.

In Asia and the Pacific, most of the consumption of ginger is in the fresh form but in other countries consumption of processed ginger, such as paste, oil, oleoresin, candy, etc., is on the increase. For example, ginger can be preserved in syrup as in China. Australia has also developed the ginger industry and it exports mostly candied rhizomes, reputed to have 'superior and consistent quality.' Ginger oil can be received by steam distillation of grind paste or dried powdered ginger, which is used as a flavouring agent for soft drinks and ginger beer and in food preparation. Similarly, ginger oleoresin can be obtained by extraction from dried ginger pulverized to coarse powder and added organic solvents like ethanol or acetone. However, one needs to note that oil obtained from dried rhizomes yields 1.5 per cent to 3.5 per cent on the dry weight basis and 0.4 per cent on the green weight basis while oleoresin content ranges from 3.5 to 9.5 per cent. With the increasing ginger production, India and Hawaii (the United States of America) have started to produce ginger paste as a value added product. However, it is difficult to maintain stability in flavour and quality and preserve ginger paste for a long time.

To enter new markets Nepal needs to diversify processed ginger products. It is imperative for Nepal to explore export potentials in the Asia-Pacific markets for fresh ginger and in other markets for processed ginger, including organic ginger products. However, exporters need to comply with sanitary and phyto-sanitary standards.

3.3. THE GOVERNMENT POLICY

Agricultural Perspective Plan (APP) launched in 1995, is the Government's key policy document on agricultural and rural development, but it has only been partially implemented. The strategies outlined in the APP were expected to lead to a technology-based green revolution in agriculture, which would raise outputs and incomes through increased use of yield increasing inputs (fertilizer, improved seed, reliable irrigation) and promotion of off-farm activities. The strategy was regionally differentiated between the Terai (focusing on high yielding input-based food grain production) and hilly and mountainous areas (focusing on horticulture and other cash crops, including ginger and

coffee, as well as on livestock production in prioritized pocket programmes). The APP envisaged significant increases in public and private investments and an integrated package approach to exploit complementarities between public and private investments and with other sectors such as transport and energy. The APP included explicit investment targets focused on four priority inputs: fertilizer, irrigation, technology and infrastructure (HMG/ADB 1995).

National Planning Commission of Nepal adopted a three year interim plan (2007/2008-2009/2010) in which it spelled out one of its strategies for commercial agriculture as establishing and strengthening competitive agriculture value chains on products with comparative advantages. The plan also included creating partnerships among the Government, cooperatives and the private sector for sustainable development of commercial agriculture by establishing, developing and strengthening larger pocket areas based on geographic, technical and economic feasibilities. The plan has also identified priority agricultural crops and commodities for mission programmes by choosing ginger and coffee products and proposed to accomplish the mission by addressing various stages of the products' value chains, among others. To achieve this, the plan has adopted the policy of providing high quality seeds, better irrigation facilities, agricultural credit, technological development and dissemination, extension services, better marketing management system and regulations and human resource development (NPC 2007).

Trade Policy 2009 has also identified ginger and coffee as products for export promotion. Regarding ginger products, the policies included production expansion based on providing financial support, technology and quality seeds, establishment of market system, improvement in the quality of production and processing of ginger, introducing quality certification, training farmers during all stages from production to marketing, value addition and product and market diversification. Regarding coffee products, the document emphasized providing high quality seeds and seedlings, identification of new areas for highland and organic coffee production, adoption of new technologies for coffee production, processing and grading and assistance to farmers in the formation of farmers' cooperatives (MCS 2009). The Government has also enacted Coffee Policy 2003 aiming at increasing the participation of private and cooperative sectors in coffee production, processing and trade, developing coffee sector in a sustainable manner, creating income and employment opportunities, reducing poverty and promoting coffee exports. The policy has also identified strategies and policies in production and processing, market and market promotion and institutional development (MAC 2003). However, it is yet to be implemented because of the absence of implementing policy regulation.

Direct support to farmers and processors included Government provided interest subsidies for the loans taken by coffee producers. The budget speech of 2009/2010 has initiated a programme of providing 25 per cent subsidies on the cost of machinery and equipment to coffee and ginger processing industries. It has also introduced 100 per cent subsidies for the registration of a trademark 'Nepalese Coffee' in international markets. However, there is no similar support programme designed for the ginger sector.

The Government policies on the development of coffee and ginger sectors are positive and progressive, but in comparison with policies of other Asian coffee and ginger producing countries are still inadequate and policies' implementation is sluggish. There is no government support for planting seeds and seedling, technology adoption and adaptation, quality upgrading and market development, while government initiatives on product research and development, processing technology and human resource development are disappointing.

4. Value Chain Analysis

Value chain has been defined by Michael Porter as a tool for analysis that 'disaggregates a firm into its strategically relevant activities in order to understand the behavior of costs and existing and potential sources of differentiation' (Porter 1985). He claims that value chain allows us to diagnose the competitive advantage of a firm or industry and to enhance the advantage by tailoring the value chain. However, there have been significant developments since Porter introduced the concept and a broad approach to value chain looks at the complex ranges of activities implemented by various actors (suppliers, primary producers, processors, traders, service providers, etc.) to deliver raw material to retail market of the final product. The broad value chain starts from the production system of raw materials and moves along the linkages between enterprises engaged in trading, assembling, processing, etc. This broad approach not only looks at the activities implemented by a single enterprise but also includes all its backward and forward linkages, up until the level at which the raw material produced is linked to the final consumers (Roldan-Prez et al. 2009).

Value chain analysis or commodity chain analysis disaggregates the global structure of fabrication, trade and consumption of commodities and allows for the identification of factors and geographical divisions (Tuvhag 2008). Value chain analysis has been widely adopted by researchers, industry and development practitioners to understand the political economy of contemporary global production systems and has been also used as a tool to analyze different aspects of chain coordination and governance. Value chain analysis has three key elements: (a) barriers to entry and rent; (b) governance; and (c) systemic efficiency (as opposed to point efficiency, meaning that the links of the complex value chain need to be integrated to make them efficient) (Kaplinsky 2000). At the most basic level, it systematically maps the actors participating in the production, distribution, marketing and sale of a particular product. This mapping assesses the characteristics of actors, profit and cost structures and flows of goods throughout the chain, as well as employment characteristics and the destination and volumes of domestic and foreign sales (Kaplinsky and Morris 2001). Secondly, it can play a key role in identifying the distribution of benefits to different actors in the chain. It means that, through a value chain, one can determine who benefits from participation in the chain and also assess which actors benefit from the government interventions or support. Thirdly, it can be used to examine the role of upgrading within the chain, i.e., improvement in quality and product design and identification of product regulations, entry barriers, trade restrictions and standards. Fourthly, it can highlight the role of governance in the value chain. Governance in a value chain refers to the structure of relationships and coordination mechanisms that exist between its various actors. The following analysis focuses on the first two aspects.

4.1. ANALYSIS OF THE COFFEE PRODUCT VALUE CHAIN

Coffee product value chain is the sequence of stages involved in delivering coffee products to the final consumer. It includes production (cultivation, harvest and initial processing), roasting, distribution and consumption.

Coffee production takes place in coffee estates and small farms. This stage involves planting, growing and harvesting of the coffee cherry and initial processing of separating coffee beans from the skin and pulp of the cherry. The stage is finished with the production of green beans.

Since coffee is largely consumed in non-producing countries, it is exported to consumer mostly in the form of green beans. Several firms may be involved in the international trade of coffee including exporters, importers and roasters. The trade can also occur directly between a grower and a roaster. Moreover, growing and roasting can be vertically integrated under single ownership and management.

Green beans should be processed to display its aromatic and flavour characteristics. This processing is called coffee roasting and consists of heating coffee beans that transforms the physical and chemical properties of the green beans and turns them into roasted coffee beans.

Finally, coffee is ground and brewed for consumption as a hot or cold beverage. Brewing includes the use of a dip brewer, an espresso machine, a French press or a vacuum pot, among other methods. Coffee may be further processed to make instant coffee, which only requires adding water to consume.

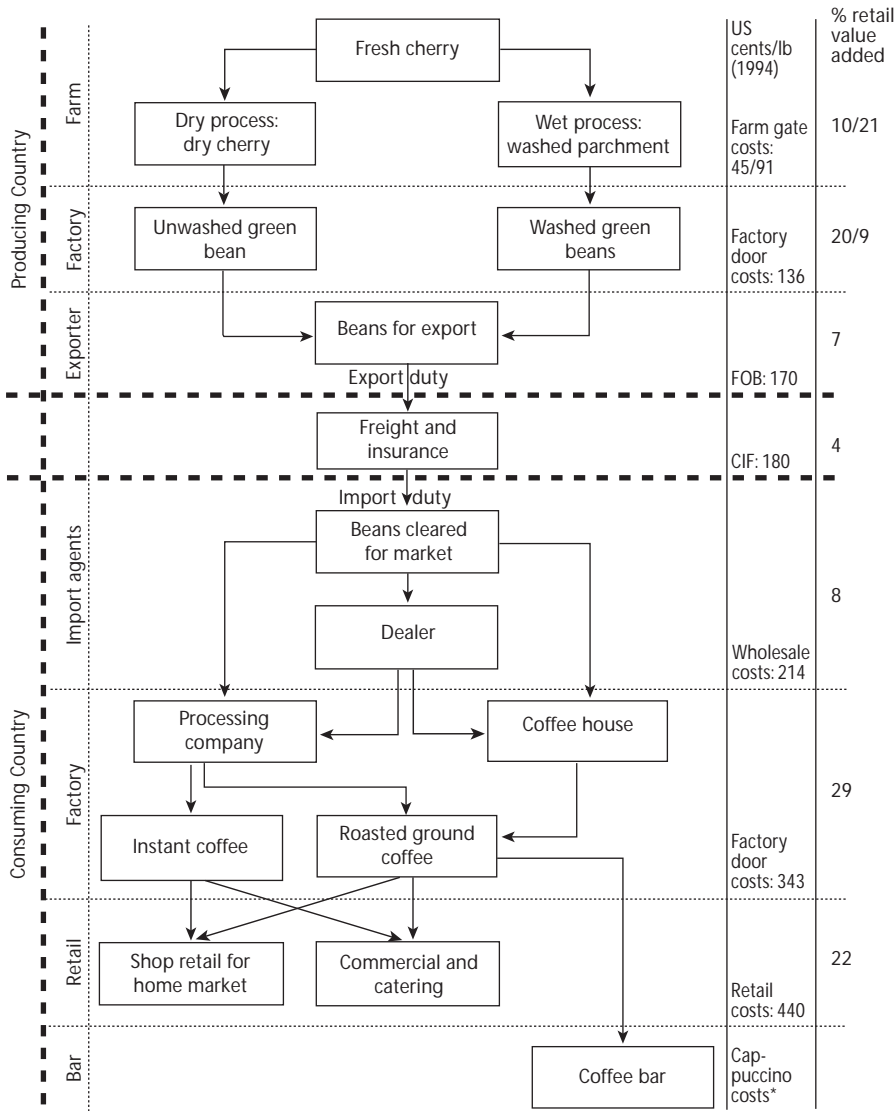
Fitter and Kaplinsky (2001) have mapped the major inter-country input-output relations in the coffee value chain presented in figure 1. Various stages of a value chain include the following:

- Farmers either pick and dry process or pick and wet process coffee cherries, receiving a *farm-gate price*.
- The cherries are then dry or wet processed to receive coffee beans at *factory gate price*.
- Coffee beans then go to an intermediary for export, reflected in *fob prices*.
- Coffee beans are shipped to importing countries at *cif prices*.
- Importers sell coffee beans at *wholesale prices*.
- Roasters process coffee beans and sell them at *factory gate prices*.

Retailers sell coffee beans to the public for domestic consumption and restaurants, caterers and coffee bars for out-of-home consumption at retail prices.

Fitter and Kalinsky (2001) found that not only have coffee producers experienced declining share of returns, but also a rising share of the total value chain returns has gone to roasters and retailers in the high income consuming countries, who were able to protect themselves from competition by introducing product-related

Figure 1: The coffee value chain³³



* Costs variable but very high. Include: overheads, advertising other products (i.e., milk), and the 'experience' of the coffee bar. (see breakdown of the price of a cup of coffee)

³³ Source: Fitter and Kaplinsky (2001).

branding barriers entry. It is estimated that farmers only get 10 per cent of final product prices and total returns in producing countries are less than 40 per cent of the final product prices.

4.2. VALUE CHAIN ANALYSIS OF THE COFFEE SECTOR IN NEPAL

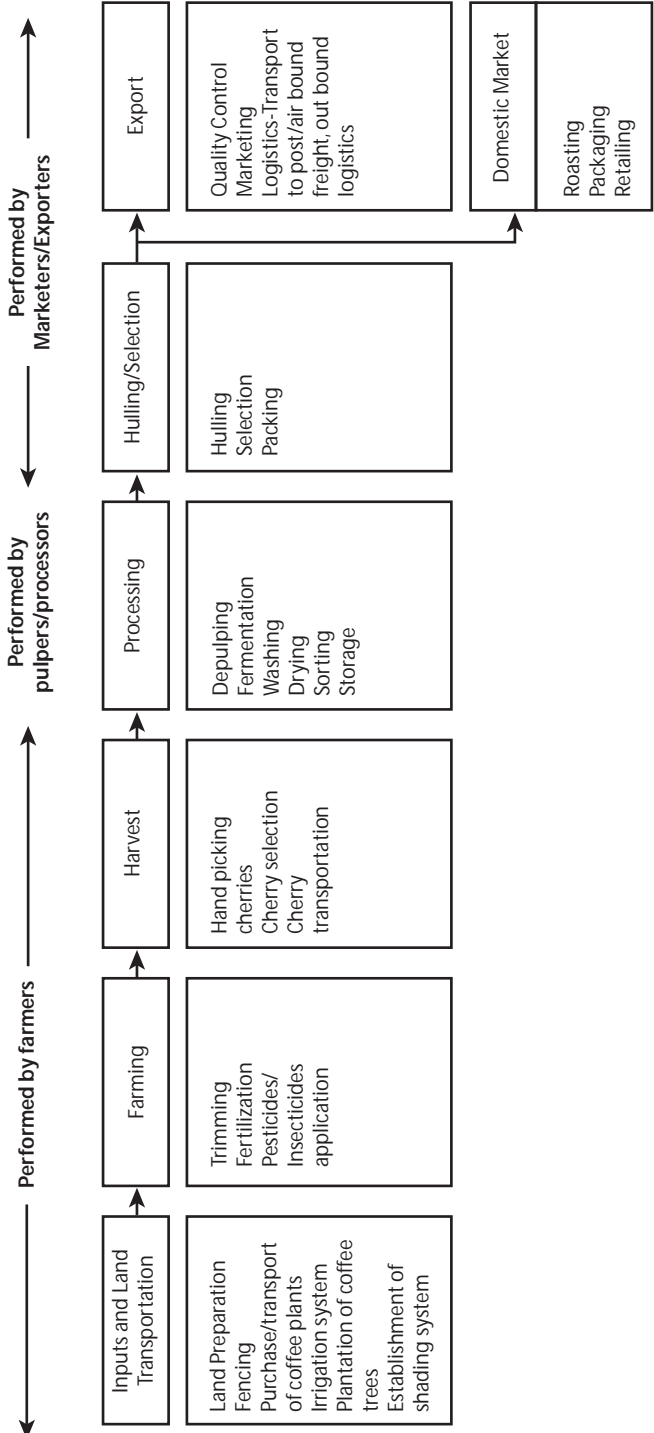
In a simplified model of Nepal's participation in the global coffee value chain, the first stages include artisanal process of planting and growing coffee plants, then hand picking and seizing and afterwards drying, washing and cleaning coffee beans. The process requires a farmer's constant attention, assuring good quality coffee. Local farmers, sometimes through cooperatives, sell the cherry to pulpers or operators, who in turn sell them to processors/marketers. After hulling and quality control, it is exported as roasted or green beans or sold on domestic market after roasting, grinding and packaging. An exporter channels the coffee either to roasters or to other brokers or intermediaries. About 65 per cent of the total coffee production is exported while 35 per cent is consumed domestically. Coffee value chain map is presented in figure 2.

Farmers play an important role in the coffee value chain because they take part in production phase, the first phase in the chain. There are more than 21,000 farmers producing coffee in 40 districts of mid hills. Lalitpur, Gulmi, Palpa, Syangja, Kaski, Kavrepalanchok, Sindhupalchok, and Arghakhanchi are well-known districts for coffee production and farmers of Baglung, Parbat, Dhading, Gorkha, Lamjung, Tanahu, Rasuwa, Nuwakot, Okhaldhunga, Ramechhap and Ilam have also started growing coffee recently. An average coffee farmer belongs to lower middle class and owns 1.4 ha of land consisting of bari grassland (non-arable land with steep and moderate slopes, prone to soil erosion, which is used for cultivation of maize, millet, beans and mustards) and arable land divided in almost equal parts/segments (AEC 2006). Since coffee farming gives returns only after three to four years of plantation, poor farmers are rarely engaged in coffee farming, as they need immediate returns from their land and labour. Some of exporting enterprises, e.g., Highland Coffee Promotion Company Limited and Plantec Coffee Estate have also started coffee farming on a large scale by leasing land from farmers/government agencies.

All cherries are handpicked by farmers/hired workforce. Farmers often pluck all berries on each branch and do not distinguish between ripe and green cherries. Such practice has resulted in quality variation of coffee beans.

The focus group was informed that the expansion of coffee farming is being carried out by farmers despite any scientific proof of the suitability of the land and climate conditions to such type of farming. Pioneers of coffee farming had adopted the farming and processing system imported from El Salvador and they have been modifying the system on hit-and-trial basis ever since. Some farmers are emulating such farming system. There has not been any scientific research on the farming methods in Nepal and the appropriate method for coffee farming in terms of attaining optimum yields and better quality and minimizing plant diseases is yet to be found.

Figure 2: The coffee sector value chain



Initially there were five players/stakeholders in the coffee sector value chain, namely farmers, collectors, pulpers, processors and traders. However, in the past few years some collectors have also started pulping ripe cherries and delivering them to processors. The process is common in wet processing systems, which covers nearly 80 per cent of the market. However, in some places farmers bring ripe cherries/dry cherries to collectors, who in turn (after drying ripe cherries if needed) take them to processors directly. Such procedure prevails in the dry processing system that accounts for nearly 20 per cent of the market share. In both dry and wet processing systems, the processors act as traders and sell the final product either on domestic and/or international markets.

Coffee farmers sell ripe cherry to pulper operators at pulpers' gate. The pulping stage is the crucial stage for determining the quality of coffee. It involves sorting, water soaking, pulping, fermentation, washing and drying. Pulpers sell parchment to processors/marketers. After processing and packaging, processors/marketers sell coffee in domestic or international markets.

Processors or exporting companies often buy parchment from collectors or get cherries from their own farms. Processors are also involved in processing and packaging of coffee in different size packages and putting brand labels.

It was reported in the focus group discussion that there has not been any research on the use of technology in pulping, hulling and drying. Participants in the discussion complained that the Government does not provide any support for farming and processing. On the contrary, they view government policies as a bias against the coffee sector. For example, the import of machinery for pulping, drying, grinding and roasting has normal custom duties up to 30 per cent, while other machinery importing industries have much lower custom duties.

In order to prepare coffee beans for marketing in the domestic market or for export, marketers/exporters reprocess the coffee collected from processors to meet export standards and classify the coffee into different quality categories. But even after reprocessing, the coffee still has many imperfections, due to inadequate technology. The coffee export is often affected by three problems: humidity, black and broken beans, and impurities. Additionally, contamination with Ochratoxin A is also seen as a problem (AEC 2006).

Coffee is exported mostly on *fob* Kolkata basis. However, some exporters also export by air. Transporting coffee is costly. The extra cost involved in export includes the movement of fumigated container (for conventional coffee) from Kolkata to Kathmandu and back, the cost of ventilated container and a detention charge. Exporters also have to pay taxes/fees at customs points. Since there is no national agency in Nepal that certifies both the quality of coffee and the country origin of producer, it has been reported that imported coffee, mostly coming from India, has been marketed and exported overseas as the Nepalese coffee.

An indicative value added/profit in different supply chains of the coffee sector is presented in table 19. The table shows that coffee growing is more profitable for farmers compared to growing alternative crops. Farmers get 150 per cent return on

Table 19: Value added in the coffee sector supply chains (inclusive of profits)

Stages	Index	Percentage of value added and profits
Cost of production	100.0	–
Sale proceeds of growers/farmers	250.0	150.0
Sale proceeds of pulpers/operators	322.2	28.8
Sale proceeds of processors/marketers	355.5	10.3
Sale proceeds of domestic retailers	611.1	71.8
Sale proceeds of exporters	648.8	82.5

Source: The author's calculation based on AEC (2006).

their investment. The return in exporting coffee in international market is higher than the return in marketing it in domestic market. However, the quality of exported coffee is also high compared to the quality of coffee sold in domestic market.

In 1990 the farmers of Palpa district established Coffee Entrepreneurs Association, Palpa for promoting coffee production and distribution. In 2001 the initiatives of the farmers of Palpa and farmers of other districts resulted in the establishment of a Federation of Nepalese Coffee Producers Association, an umbrella organization of coffee producers, traders and exporters. At present, 14 district-level coffee entrepreneurs' associations, 750 coffee producers' groups and cooperatives and about 20,000 farmers are affiliated with the Federation. The objectives of the Federation include: improving quality and standards of Nepalese coffee, institutionalizing commercialization of coffee in a sustainable manner, developing infrastructure for coffee production and distribution and protecting the interests of coffee farmers.

National Tea and Coffee Development Board (NTCB) was established in 1993 under Tea and Coffee Development Board Act 1993. Its functions include: formulating and implementing tea and coffee development policies; identifying problems and providing recommendations for the development of tea and coffee sectors; providing support to enterprises in using tools and equipment for tea and coffee production and processing; bringing in technical know-how and skills to farmers, entrepreneurs and relevant organizations; and networking and cooperating with all stakeholders in tea and coffee sectors.

4.3. MAJOR CONSTRAINTS TO THE COFFEE SECTOR DEVELOPMENT IN NEPAL

The favourable natural conditions, enjoyed by the coffee industry in Nepal, create an advantage over other coffee exporting countries. These conditions are a product of the right altitude, latitude, climate, soil type, the surrounding environment and default organic farming practices. In spite of being blessed with favourable natural environment, the Nepalese coffee industry has been facing problems in all parts of its value chain, including production, processing and marketing. In addition, there are some institutional problems too.

As there has not been any research on the suitability of soils for coffee production, coffee tree planting has been done sporadically, all over the mid-hills, without any pocket areas selected for coffee development. As the production is thinly distributed among small growers, the farmers are not aware of the quality of the coffee produced as there is no agency to certify the quality of coffee. Similarly, there has not been any research on improving the quality of seeds and seedlings and there is no institutional mechanism to provide/distribute quality seeds/seedlings or the required nutrients/organic fertilizers and pesticides. There is no financial incentive to upscale production such as an easy access to and lower cost of finances. Participants in the focus group discussion also mentioned that coffee plants were infected by White Stem Borer.³⁴ But there were no experts who could advise farmers on how to control the pest.

In processing coffee beans, there is a lack of adequate machines, equipment and accessories for pulping, washing and drying. There has not been any significant research on the suitability of the machines used in coffee processing. There is a lack of skilled workforce to do the processing and the accredited laboratory to control the quality. After the processing is finished, storage at appropriate temperatures becomes another problem, which, if not solved, exposes coffee beans to fungus and moulds and thus causes Ochratoxin A.

Exporters and traders are facing a number of problems both in domestic and export markets. There is no quality and market regulation in the domestic market resulting in substandard imported products entering the market. Similarly, there is no testing laboratory for certification, including cup testing, to ensure coffee beans quality. In addition, exporters are facing high costs for certification, transportation (including fulfilling requirements for ventilator containers) and packing materials as well as experiencing problems with warehousing system. Exporters are also required to pay local taxes, both formal taxes levied by the state and informal taxes imposed by multiple private actors. There is also no institutionalized system providing export market information.

Though the Government has enacted the Coffee Policy 2003, but due to a lack of implementation guidelines the policy is in limbo. During focus group discussion the participants complained that National Tea and Coffee Board (NTCB) was preoccupied by the activities of tea promotion and coffee-related issues were put on the back burner.

4.4. VALUE CHAIN ANALYSIS OF THE GINGER SECTOR IN NEPAL

The ginger produced in Nepal has been traditionally traded domestically as well as exported to India. Therefore, both Nepalese and Indian functionaries are engaged in creating a value chain map – the Nepalese functionaries are engaged in production and collection stages and the Indian functionaries in wholesale and retail stages. Though the linkages between the actors are traditionally deeply rooted but the chain

³⁴ A disease caused by an insect *Xylotrechus quadripes*, that affects the stem and sometimes the root of Arabica coffee plant. It is one of the most destructive pests affecting Arabica coffee plants in India, resulting in not only the loss of the current crop but also in uprooting of infested plants and replacing them with new trees.

provides more value to the Indian traders and wholesalers than to the Nepalese producers (Full Bright Consultancy 2008). The Agri-Business and Trade Promotion Multipurpose Cooperative reports that scientific method of cultivation, improved varieties, grading and modern packaging methods are not practiced by farmers as well as by traders (ABTRACO 2005). Traders reported that because of these problems up to 20 per cent of the product was wasted every year and the Nepalese ginger fetched a comparatively lower price than the ginger produced in the hills of India.

There are three types of farmers engaged in ginger production: (a) small farmers with subsistence ginger production; (b) small commercial farmers with small production volume but still targeting the market; and (c) large-scale commercial production farmers. The produce from the first category of farmers generally does not enter the market or enters in a very limited quantity, targeting local *hat-bajar* market. Small and large-scale commercial farmers sell most of their produce to various market intermediaries.

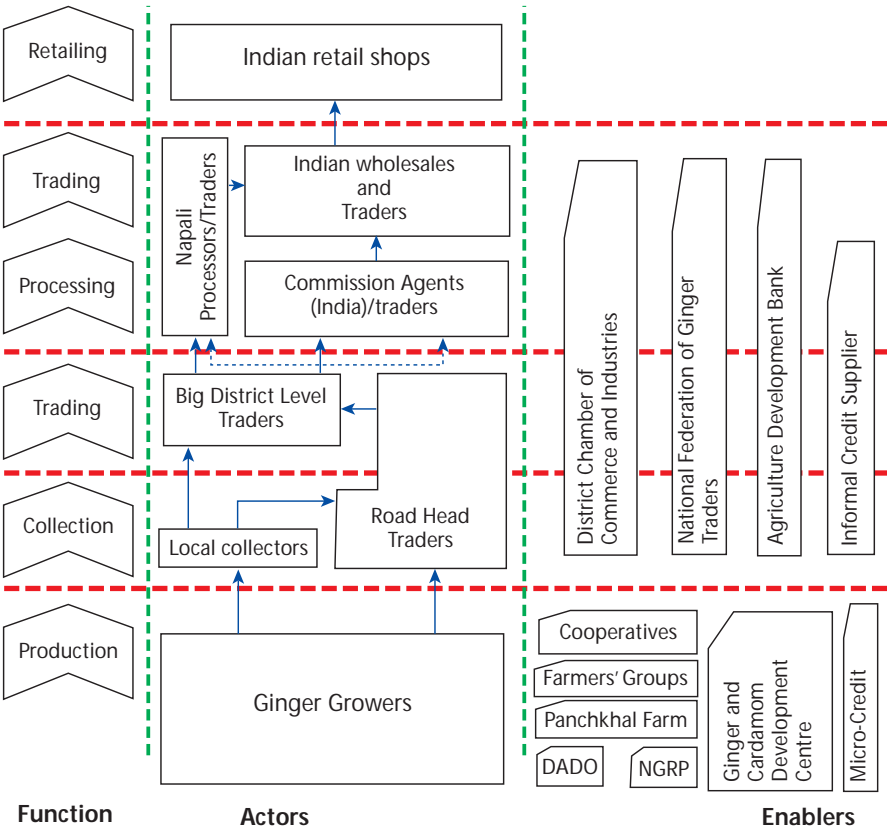
Many farmers clean ginger by removing dirt and soil immediately after harvesting. About half of the farmers sell ginger immediately after harvesting and the rest store their produce either inside or under houses in jute bags or in pits. Only commercial farmers do sorting and grading of ginger according to product size (AEC 2006).

Market information is generally inaccessible to small farmers and they have to depend on the information provided by collectors, while large farmers do use information technology such as phones, radios and TVs to get the latest market information.

Small traders and big producers residing in same village would occasionally be involved in ginger trading. Local traders generally collect ginger from producers and transport it to the district-level traders and wholesalers. In addition to the village-level collectors, some shopkeepers on highways/roads are also engaged in ginger trading. These traders have a permanent base of regular customers/farmers. Road head traders are important market functionaries in ginger marketing and a large part of the produced ginger flows through them. Farmers deliver ungraded ginger to the road head traders and it is there, where the preliminary grading is performed. Cut, rotten and spoiled rhizomes are graded out. The grading may be carried out on their premises or when the product reaches the district market but in both cases road head traders pay for grading (labour cost plus weight loss). These traders have limited storage facilities and keep ginger until they have filled a full truck or tractor load. In many cases the road head traders make purchases using the capital provided by big traders as short-term loans. The interest rate is quite high, around two per cent per month (Full Bright Consultancy 2008).

Local traders collect ginger from local collectors and sell them to wholesalers/exporters stationed in bordering cities. These traders deal in big quantities and possess some sort of storage facilities. However, the storage facilities are not adequate for storing fresh ginger for a long time and losses are reported to be quite high for delayed shipments.

Figure 3: The ginger sector value chain



Source: Full Bright Consultancy (2008).

Commission agents play a vital role in marketing channels. Basically all exportable ginger go to various terminal markets in India through commission agents stationed in border cities in India. The commission agents generally do not own the product but arrange sales on behalf of owners/traders, working on commission and bearing no risk. For this service, they charge 10 per cent commission on the total sales value. Nepalese exporters do washing, grading and repacking before handing over the shipment to Indian wholesalers.

Unlike coffee farmers, ginger growers are not well organized. Nepal Ginger Producers and Traders Association was established in 2005 to promote ginger product in Nepal but its activities cover only the eastern part of Nepal. NGOs/INGOs and other support groups have assisted farmers organizing informal groups but these groups are mostly inactive. However, recently ginger farmers started forming cooperatives, although the effectiveness of such cooperatives is negligible compared to cooperatives of vegetable growers.

There are only a few ginger producers' associations at district levels, such as in Palpa and Ilam districts. Some of district chambers of commerce and industries are active in promoting the ginger business. However, these organizations do not have meaningful coordination and linkages with the public sector and other support agencies to enhance the value chain (Full Bright Consultancy 2008).

Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives is entrusted with the task of providing pre-cultivation, cultivation, harvesting and post-harvesting services to farmers. However, due to limited financial and human resources the services are inadequate. Instead, farmers get 'embedded' services from input suppliers. For example, information and protection measures against pests and plant diseases are provided by pesticide retailers. Unfortunately such information is biased and the quality of services is poor.

District Agriculture Development Office (DADO) is also implementing various activities on ginger product promotion, such as farmers' group formation, providing advice to farmers, training and technology demonstrations. Ginger and Cardamom Development Section (Directorate of Vegetable Development within the Department of Agriculture) is engaged, among other things, in collection and selection of ginger varieties, technology generation, production and distribution of quality planting materials and providing training and technical know-how to farmers. Spices Development Centre, Panchkhal and National Ginger Research Programme are public sector agencies engaged in promotion and development of ginger product.

An indicative value added at different stages of ginger sector value chain, based on a study in Phidim, Panchthar district in east Nepal, is presented in table 20. The Table shows that farmers incur major expenditures in the cost of seeds (around 38 per cent), labour (26 per cent), fertilizer (19 per cent) and land rent (13 per cent). A margin received by the farmers is about 25 per cent of the wholesale market price in India. Local traders are generally involved in collecting and transporting ginger to local market centres and their margin is about four per cent of the wholesale market price in India. The local traders and wholesalers are two key players in ginger product marketing and bear the costs of short-term storages, transportation, washing, grading, packaging, etc. They also have to pay taxes, both formal and informal, also, the cost of customs clearance. The margin at this level of the value chain is reported to be around nine per cent of the Indian wholesale market price. An Indian commission agent stationed in Naxal, a nearby Indian wholesale market, receives a 10 per cent margin on this nearest Indian market wholesale price. An important finding, emerging from the analysis, shows that the costs incurred in customs clearance, transportation and tax collection by different groups make the marketing cost quite high. Similarly, the losses at the marketing level are also high due to inadequate post-harvest management at the production level. Also, the commission charged by wholesalers and commission agents is relatively high due to a lack of market information among upstream value chain actors.

Table 20: The ginger sector value chain (Phidim, Panchthar), (in NRs. /kg)

Farmers/ Growers		Local Traders/ Collectors		Wholesaler/ Exporters		Indian Commission agent	
Items	Cost	Items	Cost	Items	Cost	Items	Cost
Production Cost		Assembling Costs		Load/unload	0.19	Commission	4.32
Land rent	1.92	Bag	–	Short term storage	0.05		
Seed	5.39	Grading/ Packaging	–	Transport	1.25		
Labour	3.69	Collection/ Transportation	1.50	DDC tax	0.25		
Fertilizer	2.73	Acquisition costs	25.0	Other local informal taxes	0.34		
Total production cost	13.73	–	–	Customs clearance	1.15		
Post production cost	–	–	–	Cleaning, grading, packaging cost (India)	0.89		
Post harvest transportation	0.47	–	–	Acquisition cost	28.25		
Total Farm level costs	14.20	Total local trade level cost	26.50	Total Wholesaler/ Exporter cost	32.37		
Losses	–	Losses	–	Losses (8%)	2.58		
Margin	25.00	Margin	1.75	Margin	3.93		
Farm gate price		Assembler level price	28.25	Wholesale level price	38.88	Price at Indian wholesale market	

Source: Full Bright Consultancy (2008).

4.5. MAJOR CONSTRAINTS TO THE GINGER SECTOR DEVELOPMENT IN NEPAL

In spite of the fact that ginger is an important cash crop for the Nepalese farmers, no major breakthrough has been made so far in boosting its production and export. Since it is a vegetatively propagated crop, a lack of knowledge in selecting high-yield varieties and other mistakes, committed in the past, must have contributed to poor results. The major constraints to ginger production and export increase are as follows:

Small land holdings. Because of the terrain, the size of land holdings is very small and farmers are producing many crop varieties on the same piece of land. Therefore, commercialization of crop/variety on a large scale is very difficult unless the Government supports the system of contract/ lease farming;

Unavailability of quality planting material and other inputs. Although National Ginger Research Programme is mandated to conduct research on ginger, it has recommended so far only one variety of ginger, Kapurkot-1. Good quality, high-yielding and disease resistant rhizomes are not available to farmers. In addition, inputs like manure, pesticides and herbicides are rarely used;

Pest infestation. High rainfall and inappropriate storage facilities cause heavy infestation with weeds, pests and diseases and lead to nutrient leaching;

Lack of funding. Although ginger is one of the major cash crops for rural farmers, farmers are not getting any financial support from the Government to purchase quality seeds and other inputs. A scheme should be created to provide soft loans to farmers;

Problems in processing and marketing. Successful ginger growing depends on adequate processing units, marketing and transport facilities. Presently, there are hardly any cold storage facilities available and a few existing processing units are not functioning up to the desired capacity. All ginger producing pockets are not well connected to a transport network and the majority of farmers do not get access to collection centres;

Lack of laboratory testing facilities. The major export market for the Nepalese ginger is India. Indian Quarantine Act requires ginger to be tested in the laboratory and the quality ensured before importation. There is no such facility in Nepal or at least none that fulfills Indian requirements. In order to export ginger to India, exporters are required to send a sample to an Indian laboratory and get the laboratory report, which takes about three weeks. Moreover, a higher quality standard would be required to export to developed countries.

5. SWOT Analysis

SWOT analysis is a simple framework for generating strategic alternatives from a situation analysis. It is a strategic planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a business venture. It involves identifying favourable and unfavourable internal and external factors helping to achieve the objectives of a business venture. The strengths and weakness related to the business venture are internal factors whereas the opportunities and threats from the outside environment are external factors. The results are often presented in the form of a matrix. This section presents the SWOT analysis for the coffee and ginger product sectors.

5.1. SWOT ANALYSIS OF THE COFFEE SECTOR

The favourable climate, the rate of growth in coffee production and export the interest and passion on the part of the Nepalese coffee farmers and the identification of coffee as a priority product for development — all point to its potential, emerging as an important enterprise. Therefore, it is necessary to identify and analyse the strengths, weaknesses, challenges and opportunities of the coffee sector, so that the necessary steps required for its development are taken out on time. The study has identified the following major strengths, weaknesses, opportunities and threats.

Strengths

- Availability of favourable climatic and other natural conditions for the production of high quality coffee, including specialty coffee, in most districts of the mid-hills.
- Existence of a well-established institutional base, e.g., Federation of Nepalese Coffee Producers Association and Nepal Tea and Coffee Development Board and the willingness and the ability of all stakeholders, including the Government, the farmers, the private sector, the non-governmental organizations and the donor community to participate in coffee product promotion.
- Availability of numerous cheap workforce for coffee farming and production with the farming system being 'organic' by default.
- Availability of farmers and processors having basic understanding of coffee production and the gradual emergence of professional pulpers, processors and roasters.
- Emergence of the Nepalese coffee as a highland organic coffee brand in export markets and the increased demand for such specialty coffee.
- Possibility of intercropping with other food crops.
- Coffee production as a potent instrument to alleviate poverty in rural areas by creating employment and generating income in marginalized groups.

Weaknesses

- Low export volume.
- Minimum research and development on the suitability of land, seeds and seedlings varieties, farming techniques and processing and roasting technologies.
- Lack of skilled manpower.
- Lack of awareness among farmers of the importance of quality resulting in quality variation.
- Lack of supply of quality inputs, such as seeds and seedlings, nutrients, organic fertilizers, insecticides and pesticides.
- Lack of coffee product standardization, quality laboratories, certification agencies and market regulation.
- Inadequate government support in land acquisition, farming, processing, and marketing.
- Insufficient information on production, processing, marketing, and domestic market.
- Discontinuity of the initiatives on coffee development by international non-governmental organizations and development partners.
- Insufficient coordination among government agencies and private sector players.

Opportunities

- High-income elasticity and the growing demand in domestic and international markets, although at a slow rate.
- Ample opportunities for entering into new niche markets in the United States of America, the European Union and the Gulf countries with specialty and highland organic coffee.
- Favourable climatic conditions and a high potential for growing specialty and highland organic coffee for the international market.
- Increasing demand and price for specialty and organic coffee.
- Growing interest and activity of producers' associations both at the district and national levels and farmers/private sector in coffee production.

Threats

- Increasing migration of the workforce overseas and to urban areas may result in a decrease of labour force for coffee farming and an increase in the wage rate.
- Income elasticity of the coffee sector is positive and greater than one and, thus, any volatility in global economic situation impacts the demand for coffee.
- Unilateral trade liberalization and tariff reduction under the World Trade Organization may erode the margin of preference that the Nepalese coffee has been enjoying in export markets.
- Most coffee exporting countries are promoting coffee with the help of strong government intervention and support; hence, lack of resources to provide support to the coffee sector may adversely affect the competitiveness of the Nepalese coffee.
- Nepal specializes in the production of Arabica variety so the increased production and aggressive marketing of Robusta at the global level may affect the demand for Arabica coffee.
- Increasing quality consciousness of the consumer in the export markets may pressure governments concerned into adopting unilaterally higher level of sanitary and phyto-sanitary standards.
- High variations and unpredictability in quality may be detrimental to acquiring brand status in the international market.

5.2. SWOT ANALYSIS OF THE GINGER SECTOR

Ginger is one of the main cash crops supporting the livelihood and improving the economic level of many rural households in Nepal. Its development would contribute in creating employment and raising income and standard of living of rural dwellers. The following section deals with the strength, weaknesses, opportunities and threats of the ginger sector in Nepal.

Strengths

- The climatic and soil conditions for the production of ginger exist in many districts in Nepal and the supply capacity could be enhanced with the appropriate interventions.
- Traditional spices in South Asia include ginger as a major component and, therefore, demand in the domestic and export market is stable. In addition, the medicinal value of ginger has also helped increase the demand.
- It could be traded in raw or semi-raw form without any sophisticated processing.
- Farmers are aware of the production system, and are organized through cooperatives and district-level associations.
- Most of the ginger producing pockets, e.g., Palpa in the west and Ilam in the east of Nepal are well connected to the transportation system and market network, including domestic retail and wholesale markets as well as northern Indian markets.

Weaknesses

- Most of ginger produced in Nepal have high fibre content and is considered inferior in quality compared to ginger produced in South India, but farmers are not aware of the importance of quality.
- The prices farmers receive from collectors are highly volatile and this is a disincentive for ginger farming.
- Farmers are not well organized and transport their produce to the collection centres on their own, paying high transportation costs.
- Shortage of the minimum essential services required for the farmers, including the inputs such as: seeds and fertilizer, irrigation facilities, marketing services, credit, and market/price information.
- Farmers use traditional farming methods and do not possess the adequate knowledge of and techniques in production, grading, packaging, and post-harvest handling.
- Prevalence of rhizome rot disease causes significant losses during both growing and storing stages.
- Farmers use traditional method of drying (*Suntho* making) ginger, which makes it unacceptable for industrial use.
- Farmers and other entrepreneurs are unaware of ginger processing technology and value added secondary ginger products.

Opportunities

- High and increasing demand in northern cities of India for the Nepalese ginger.
- Government has identified ginger as one of priority products for development and committed to provide facilities/services to farmers/traders.

- A rate of return in ginger production is higher compared to the rate of return in the production of cereal products.
- Market access condition in export market is favourable for Nepal as it enjoys high tariff preferences in the Indian market.
- Private sector institutions, e.g., Agro Enterprise Centre, provide market/price information to farmers/traders; there is also a well established coordination mechanism with government agencies, e.g., Agro-business and Marketing Development Directorate.

Threats

- China has been aggressively entering into the ginger market and there is a risk of displacement of Nepalese ginger from the Indian market by an over-supply of better quality cool season products from Tibet of China.
- In order to diversify the product by moving upwards in the value chain, the product has to meet sanitary and phyto-sanitary standards as well as other quality standards.
- Insufficient and interrupted supply of electric power used for ginger processing.

6. Future Thrust and Business Plans

6.1. THE COFFEE SECTOR: FUTURE THRUST

Interventions in the followings areas of production, processing and marketing would go a long way in the promotion and development of coffee product in Nepal, which might eventually reduce costs and improve quality and efficiency.

Survey, analysis and farming model: There is a need for a survey and analysis of lands suitable for coffee growing and the development of area-specific farming system model under a cluster approach.

Introduction, evaluation and improvement: There is a need for research on the varieties of coffee, their productivity, susceptibility to diseases, cup quality suitable for Nepalese climatic situation and soil conditions. Similarly, commercialized nurseries with proper monitoring of the quality of seedlings need to be widely established.

Awareness and skill development: Only producers in the organized sector are aware of the importance of the quality of coffee while small farmers give least importance to the quality matters. Therefore, there is a need for creating awareness in the quality of coffee and training all actors involved in the value chain – farmers, pulpers, and processors – on how to improve, maintain, and preserve the quality of coffee. Also, there is a need for imparting knowledge to the farmers on the farming of coffee. Introduction of a course on coffee in Agricultural Colleges would help to create the trained workforce for the coffee sector.

Certification of coffee products: The Nepalese coffee is by default organic but due to the absence of a certifying agency, the bulk of coffee is exported as conventional

coffee. The future action should be focused on establishing legal and institutional frameworks for certification and labelling of coffee. There should be a regular monitoring of coffee quality marketed in domestic and/or export markets. Similarly, supply of organic fertilizers, pesticides and insecticides should also be ensured and cup testing laboratories should be widely established. In this regard, support to the farmers in establishing internal control system (ICS) is crucial.

Processing and storage system: Participants in the focus group discussion argued that coffee processing system adopted in Nepal was brought in from El Salvador more than a decade ago and there has been no improvement in the system since then. Research is needed for improving coffee processing system, in particular introducing new pulping and solar drying methods. Intervention is also required for better storage of coffee so that fungal infection and mould could be reduced.

Reducing transport and transaction costs: The distance between a farm and a processing unit is high in most of the rural areas and, due to a lack of road connections, coffee is transported through portage. In this context, harmonization of the rural road transport programme with coffee production sites would go a long way to lower transportation costs. Traders are required to pay District Development Committee taxes even for bringing cherry for processing. In addition, they have to pay taxes to non-state actors as well. An empty ventilated container has to be brought to Kathmandu from Kolkata by exporters and sent back to Kolkata with coffee beans. A proper warehousing facility is also needed in the airport for air transport.

Institutional development: There is a need for coordination between and among government agencies such as Ministry of Agriculture and Cooperatives, National Planning Commission, National Tea and Coffee Development Board, District Agriculture Development Office, Federation of Nepalese Chambers of Commerce and Industry, Federation of Nepalese Cottage and Small Industries, Federation of Nepalese Coffee Producers Association and district-level chambers. There is also a need for the establishment of a resource centre and institutional support for coffee producers. The technical support for this may be sought from development partners including ESCAP and FAO.

6.2. THE COFFEE SECTOR: BUSINESS PLAN

Table 21: The coffee sector: business plan

Objectives	Actions Recommended	Responsible Institutions
Increasing production of high quality coffee to 3,000 MT in 10 years' period	Establishing high level Coffee Development Committee under the Chairmanship of Member, National Planning Commission to coordinate and monitoring the activities listed below.	National Planning Commission
	Establishing and strengthening of Coffee Resource Centre for identification of suitable land,	Ministry of Agriculture and Cooperatives

Table 21: (continued)

Objectives	Actions Recommended	Responsible Institutions
	varieties, farming system, collecting and disseminating of coffee-related information	
	Establishing commercial nurseries in major coffee producing pockets and providing high yielding and disease resistant varieties	Ministry of Agriculture, National Agriculture Research Centre, National Tea and Coffee Board, National Coffee Producer's Association, Coffee Resource Centre
	Developing technical expertise in coffee farming and up scaling extension services	Ministry of Agriculture and Cooperatives, National Coffee Producers' Association, Universities, Centre for Technical Education and Vocational Training (CTEVT)
	Providing training to farmers, pulpers, and processors, including organizing study visits in coffee producing countries	Department of Agriculture, District Agriculture Development Office, National Tea and Coffee Development Board, National Coffee Producers' Association, Federation of Nepalese Chamber of Commerce and Supplies
	Improving existing and introducing new and appropriate pulping, drying storage, and roasting technology	Ministry of Agriculture and Cooperatives, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries, National Coffee Producers' Association
	Provisioning of cheap and easy access to finance	Ministry of Agriculture and Cooperatives, Ministry of Finance, Nepal Rastra Bank
	Creating awareness in specialty coffee and organic farming and provisioning of organic fertilizers, pesticides and insecticides	Ministry of Agriculture, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries, National Coffee Producers' Association
	Strengthening of organic certification system	Ministry of Agriculture and Cooperatives, National Coffee Producers' Association
	Supporting farmer groups in the establishment of Internal Control System	Ministry of Agriculture and Cooperatives, District Agriculture Development Offices, District Coffee Producers' Association

Table 21: *(continued)*

Objectives	Actions Recommended	Responsible Institutions
Increasing export to four per cent of total export in 10 years period and diversifying export markets	Encouraging contract and lease farming, including leasing of government land and community forest	Ministry of Agriculture and Cooperatives and other Ministries/Agencies
	Supporting coffee producers in the establishment of cup testing laboratories	Ministry of Agriculture and Cooperatives, District Agriculture Development Offices, National Tea and Coffee Development Board, District Coffee Producer's Associations
	Linking coffee producing pockets with rural transport system and promoting gravity rope way	National Planning Commission, Ministry of Physical Planning, Ministry of Agriculture and Cooperatives
	Establishing Coffee Development Board as an exclusive body for coffee development and market regulation	Ministry of Agriculture and Cooperatives, National Tea and Coffee Board
	Enforcing Implementing Regulation for Coffee Policy 2003 and implementation of coffee development strategy	Council of Ministers, Ministry of Agriculture and Cooperatives
	Exploring new export markets and developing inventory of sanitary and phyto-sanitary and other standards required in export market	Ministry of Commerce and Supplies, Trade and Export promotion Centre, Federation of Nepalese Chamber of Commerce and Industries
	Rationalizing tariffs on the import of machinery and packaging material	Ministry of Finance, Ministry of Agriculture and Cooperatives
	Reducing transaction costs including abolishing local taxes	Ministry of Finance and Ministry of local Development
	Supporting private sector in acquiring appropriate containers	Ministry of Finance, Ministry of Agriculture and Cooperatives
	Support in acquiring logo and brand name for Nepalese coffee	Department of Industry, Ministry of Agriculture and Cooperatives, National Coffee Producers' Association
	Improving warehouses at major customs points	Ministry of Finance, Department of Customs
	Promoting FDI	Department of Industry, Federation of Nepalese Chamber of Commerce and Industries

6.3. THE GINGER SECTOR: FUTURE THRUST

Identified below are the areas where intensive intervention could increase production and productivity in the ginger sector.

Survey, analysis and farming model: There is a need for survey and analysis of lands suitable for ginger growing and the development of area-specific farming system model under a cluster approach.

Introduction, evaluation and improvement: Introduction of indigenous and exotic high-yielding strains of ginger suitable for Nepalese climatic and soil conditions. Selective breeding should be done for high-yield, better quality varieties with resistance to biotic and abiotic stresses.

System management research: There is a need to develop micro propagation and other propagation methods for rapid mass multiplication. Use of integrated pest management (IPM) and integrated nutrient management system is required.

Post-harvest management: There is a need to develop quality control measures, adequate packing and storage techniques. Similarly, there is a need for modern technology for processing and preservation of value added products.

Establishment of a laboratory for product certification: In the global trading system, non-tariff barriers, such as sanitary and phyto-sanitary, have become the major market access constraints after tariff reduction. Therefore, there is an urgent need for the establishment of a well-equipped laboratory for certification of products. The Government should also initiate the process for concluding Mutual Recognition Agreements (MRAs) with major importing countries.

Skill development and technology transfer: There is a huge need for strengthening the extension system for transfer of technologies and providing training to farmers.

Emphasis on organic farming: Ginger production in Nepal is organic by default as ginger farmers in the country use neither chemical fertilizers nor chemical pesticides. They only use locally available farmyard manures (cow dung, pig manure, poultry manures, etc.). Considering the increased demand for organic produce in the world, farmers could hope to get better returns for their produce. But first and foremost, they need to have proper organic certification for their products.

Diversification of products: Nepal exports ginger mostly in raw or semi-raw form without any significant value added. In order to increase export proceeds from ginger products, Nepal should focus on both the value added and diversification of products in its production structure.

6.4. THE GINGER SECTOR: BUSINESS PLAN

Table 22: The ginger sector: business plan

Objectives	Actions Recommended	Responsible Institutions
Creating 200,000 full time employment opportunities in rural areas in 10 years	Establishing high level Ginger Development Committee under the Chairmanship of Member, National Planning Commission to coordinate and monitoring the activities listed below.	National Planning Commission.
	Establishing and strengthening of Ginger Resource Centre for the identification of suitable land, varieties and farming system.	Ministry of Agriculture and Cooperatives.
	Introducing new exotic high yielding varieties of ginger.	Ministry of Agriculture, National Agriculture Research Centre, Ginger Resource Centre.
	Developing technical manpower and upscaling extension services.	Ministry of Agriculture and Cooperatives, Centre for Technical Education and Vocational Training (CTEVT).
	Training farmers in the new ginger farming system, including the system management.	Department of Agriculture, District Agriculture Development Office, District Ginger Producers' Association and District Chambers.
	Introducing new processing technology and supporting farmers/cooperatives in the application of such technologies.	Ministry of Agriculture and Cooperatives, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries, District Ginger Producers' Association, Cooperatives.
	Providing cheap and easy access to finance.	Ministry of Agriculture and Cooperatives, Ministry of Finance, Nepal Rastra Bank.
	Creating awareness in organic farming and providing organic fertilizers, pesticides and insecticides.	Ministry of Agriculture, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries, District Ginger Producers' Association.
	Strengthening organic certification system.	Ministry of Agriculture and Cooperatives.

Table 22: (continued)

Objectives	Actions Recommended	Responsible Institutions
Increasing export of ginger to five per cent of total export through increased exports of processed products in 10 years.	Supporting farmer's cooperatives and agriculture product trading centre(s).	Department of Agriculture, District Agriculture Development Office, District Ginger Producers' Association.
	Strengthening ginger market information system and establishing ginger trading centre(s).	Agro Enterprise Centre, Department of Agriculture.
	Encouraging contract and lease farming.	Ministry of Agriculture and Cooperatives and relevant government Ministries/ Departments.
	Creating awareness in export potential of processed ginger products.	Ministry of Agriculture and Cooperatives, Ministry of Commerce and Supplies, Trade and Export promotion Centre, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries.
	Expanding and strengthening quarantine laboratory services at customs points and initiating process for mutual recognition agreement with major importing countries	Ministry of Agriculture and Cooperatives, Ministry of Finance and Ministry of Commerce and Supplies
	Organizing study tour for potential investors to ginger processing centres.	Ministry of Agriculture and Cooperatives, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries.
	Providing support/ incentive in production of secondary products.	Ministry of Agriculture and Cooperatives, Ministry of Industry, Ministry of Finance.
	Establishing strategic alliance with ginger traders of the South Asia region and promoting FDI in ginger processing.	Trade and Export Promotion Centre, Department of Industry, Federation of Nepalese Chamber of Commerce and Industries, Federation of Nepalese Cottage and Small Industries.