



MARKET SYSTEM ANALYSIS OF NEPALESE COFFEE



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Acronyms

BeaCoN	Beautiful Coffee Nepal
CCU	Coffee Cooperative Union
CDC	Coffee Development Center
CLR	Coffee Leaf Rust
CPG	Coffee Producer Group
CRC	Coffee Research Center
CTEVT	Council for Technical Education and Vocational Training
CVCDP	Coffee Value Chain Development Project
D CPA	District Coffee Producers' Association
DOA	Department of Agriculture
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FC	Fresh Cherry
FGD	Focused Group Discussion
FNCCI	Federation of Nepalese Chambers of Commerce and Industries
GATT	General Agreement on Tariffs and Trade
GB	Green Bean
GDP	Gross Domestic Product
GNI	Good Neighbors International
ICO	International Coffee Organization
ITC	International Trade Center
KII	Key Informant Interview
LRP	Local Resource Person
MIS	Market Information System
MOAD	Ministry of Agriculture Development
MT	Metric Ton
NARC	Nepal Agriculture Research Council
NCF	Nepal Coffee Federation
NCPA	Nepal Coffee Producers' Association
NPR	Nepalese Rupee
NTCDB	National Tea and Coffee Development Board
NTIS	Nepal Trade Integration Strategy
PCC	Primary Coffee Cooperative

PGS	Participatory Guarantee System
PMSA	Participatory Market System Analysis
SCA	Specialty Coffee Association
SCAA	Specialty Coffee Association of America
SCAE	Specialty Coffee Association of Europe
SCAJ	Specialty Coffee Association of Japan
USAID	United States Agency for International Development
USD	United States Dollar
WSB	White Stem Borer
WTO	World Trade Center

EXECUTIVE SUMMARY

A Prelude

The prospect for “Coffee in Nepal” derives from the fact it falls outside of the globally defined coffee belt around the equator. Coffee lovers around the world are increasingly getting fed up of the conventional aroma of the “coffee belt coffee” and are seeking respite in coffee that thrives on the chilling Himalayan breeze, nurtured under fully organic production regime by innocent and poor people soiling their hands with utmost care and unparalleled “Gorkha land honesty”.

Coffee farming in Nepal began in the late 1930s when Hira Giri brought few coffee seeds from Burma (now Myanmar) and planted in Aanpachaur area of Gulmi district. After that there has been no looking back despite occasional up and downhill rides and falls. We are now producing and selling coffee to over 30 countries around the globe and growing through the time ticks.

While the program is under way, a review study entitled “Market System Analysis of Nepalese Coffee” was awarded to Transcend Vision Nepal Pvt. Ltd on a competitive basis by the Coffee Value Chain Development Project (CVCDP) under EU Support to the Competitiveness of Quality Coffee in Nepal.

The specialist consultants deployed state-of-the-art methodology to carry out the study and the draft end-product has been presented for review. A total of 6 districts – Kaski, Syangja, Gulmi, Palpa, Lalitpur and Nuwakot districts were visited to observe various value chain points from cherry production to green bean production and beyond. PMSA workshops were also organized at Kathmandu and Kaski. This information coupled with the observations from the reviews constituted the primary basis for report preparation.

Salient features of the study

Under the European Union’s support to the competitiveness of quality coffee in Nepal, Good Neighbors International Nepal (GNI Nepal) in partnership with Beautiful Coffee Nepal (BeaCoN) has been implementing a two years long comprehensive project for development of value chain of Nepali coffee in mostly western region of Nepal. The Coffee Value Chain Development Project (CVCDP) incorporates 3,000 smallholder coffee farmers associated with 60 primary coffee cooperatives (PCCs) and a district level union of primary coffee cooperatives in each of the four target districts, Syangja, Kaski, Gulmi and Palpa. CVCDP also integrates the institutions and market actors involved in production, processing and marketing of coffee in Nepal. At the national level, the CVCDP aims at institutional strengthening of National Tea and Coffee Development Board (NTCDB) through the establishment of a comprehensive information management system.

The value chain Accounts

The value chain accounts start with the production and distribution of coffee nursery saplings grown by selected farmers. It is found that, a coffee sapling at the selling stage costs the producer Rs. 29 per sellable sapling. The support for production averaged Rs. 16 per sapling received in the form of seeds, polythene for poly pots and plastic sheets for sheds, transportation, etc. as observed in the project districts. The sapling is sold after 18 months at a prescribed rate of Rs.15 per sapling with a net margin of Rs.2 per sapling. The saplings producers are complaining about the narrow margin obtained after 18 months of operation and are demanding upward revision in sapling prices (suggesting Rs.20 per sapling).

On the real coffee bean producer front, there are large estate establishments to petty growers planting in few *Ropanies*¹, to random backyard planters perhaps experimenting for eventual expansion. Even the so-called estate like operations are found not putting all the stakes on coffee. The prices fixed for ripe cherry carried up to the pulping facility fetched a price ranging from Rs.88 to Rs. 92 per kg, as against the minimum support price of Rs.83 per kg set by the coffee price fixing committee of NTCDB for up to the current year. Most estate establishments had their own pulping facilities.

It is to be noted that, most areas under coffee plantations in Nepal are remote and scattered with poor access to vehicle transportation. The harvested (picked) cherries need to be pulped within 24 hours lest these will start fermenting within - thus seriously affecting the quality of the green beans.

Share in Value Chain

For computing the value enhancement, the cost and revenue data at each operation level - fresh cherry, parchment coffee, green beans, roasted beans were collected and compiled. The conversion rates were - 23 kg parchment from 100 kg fresh cherry, 18 kg green beans from 23 kg parchment coffee, and 14.3 kg roasted beans from 18 kg green beans. With associated pricing at each level, the share in net income was 35% at growers' level, 20% at PCC level involved in parchment level, 11% at CCU level involved in hulling and sorting, and 34% at traders' level involved in roasting. It is satisfying to note that the highest margins have accrued to the growers who are the poorest actors in the value chain.

¹ Ropani: Traditional land measurement unit in Nepal equivalent to 508.72 square meter

Table 1: Share of Cost and Revenues/Profits of Various Value Chain Actors on the Final Price of Coffee Equivalent to 100 kg Fresh Cherry

Actors	Product	Conversion equivalent (kg)	Price/kg	Associated cost /100 kg cherry equivalent (Rs)	Revenue from proceeds (Rs)	Value chain share (Rs)	Share in %
Farmer	Fresh cherry	100	85	4514	8500	3986	35
PCC	Parchment	23	570	10839	13110	2271	20
CCU	Green beans	18	900	15005	16200	1195	11
Traders	Roasted beans	14.3	1300	14770	18590	3820	34

Table 2: Recommendation for Overcoming Constraints at different steps of Nepalese Coffee Value Chain

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
Production	Farmers do not have access to quality planting material from credible and genuine source	<ul style="list-style-type: none"> - Improvement of growing condition of nurseries - Use seeds from identified mother plants. - Tracing the seed source - Upward revision of the price fixed for coffee saplings - Encouraging private sectors to establish large scale nurseries and provide in-bed services like technical support for lay-out, planting etc. 	<ul style="list-style-type: none"> - Development of certification system of nurseries - Development and dissemination of varietal catalog of all coffee varieties in use - Research on varietal identification. - Importation of CLR resistant varieties.
	Poor farming practices characterized by inefficient surface irrigation, improper pruning, training. Inadequate nutrient and disease management practice.	<ul style="list-style-type: none"> - Appropriate combination of water, plant nutrients, mulching, shade crops and efficient labor - Drip irrigation for more efficient use of water - Cultivation in contour strip in slope areas, use of A-frames for lay out - Proper use of farm waste, processing waste etc for making organic manure - Training/pruning and early identification and removal of borer infested plants - Encouraging large land holders and alternative income holders to participate in coffee farming 	<ul style="list-style-type: none"> - Development of proper extension tools to create and disseminate knowledge and technology to farmers, processors and traders - Introduction/selection and promotion of more productive and disease/pest resistant varieties
Processing	Inefficient processing	<ul style="list-style-type: none"> - Investing in efficient coffee hullers than cheaper rice 	<ul style="list-style-type: none"> - Continuation of tax exemption in import

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
	<p>machineries, manual pulping machine, rice hullers instead of coffee hullers</p>	<p>hullers and grading machines</p> <ul style="list-style-type: none"> - Dry processing in areas with acute water shortage - Training on machine operating skills and hiring skilled technicians - Establish pulping center with a long-term vision and availability of required facilities. 	<p>of coffee processing machineries</p> <ul style="list-style-type: none"> - Promoting import of machineries from more credible suppliers
	<ul style="list-style-type: none"> - Processors lack knowledge in certain fields like: - Machine operation, repairing - Roasting operation - Cupping - Coffee lab techniques 	<ul style="list-style-type: none"> - Organizing exposure visits - Training more people on special coffee skills - Training on roasting and cupping techniques 	<ul style="list-style-type: none"> - Incorporating special skills in CTEVT coffee technician training - Establishing regional and national cupping labs
	<p>Limited access to water, roads and other infrastructure</p>	<ul style="list-style-type: none"> - Carrying out the primary processing at PCCs by establishing pulping center locally (also reduces the cost of transportation) 	<ul style="list-style-type: none"> - Extending infrastructures like roads, water and electricity to coffee potential area. - Developing coffee zones/pockets and promoting mechanization in coffee production. Prime Minister Agriculture Modernization project can play an important role.
Trade and Market Access	<p>Lower quality coffee in domestic market</p>	<ul style="list-style-type: none"> - Organize interaction between suppliers, café owners, wholesalers and retailers - Provision of grading coffee based on quality 	<ul style="list-style-type: none"> - Development and strict implementation of Nepal standard coffee logo. - Setting minimum standard for coffee to be sold in domestic market to avoid use of broken beans in the ground coffee
	<p>Poor Traceability</p>	<ul style="list-style-type: none"> - Provision of compliance to maintain traceability by cooperatives - Traders should be required to exhibit the source and origin in their products 	<ul style="list-style-type: none"> - Strict implementation of Nepal Coffee logo

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
	Failure to take advantage of trade agreements and preferential market access	<ul style="list-style-type: none"> - Better awareness about the strict regulatory and administrative procedures to exporters 	<ul style="list-style-type: none"> - Provision of more uniform and convenient schemes
	Unfair competition	<ul style="list-style-type: none"> - Value chain actors should specialize in one particular function - Creating an innovation platform for all the market actors - Encouraging new entrants to be included in the common coffee platform - Nepal Coffee Logo implementation guidelines to be implemented with strict monitoring system. 	<ul style="list-style-type: none"> - Revising the minimum support price for fresh cherry as needed based on the quality and international scenario. - The provision for coffee entrepreneurs to be registered with NTCDDB should be implemented strictly - Creating and maintaining a Market Information System of Coffee
Organization and Institutional Development	Cooperatives lack motivation to solve immediate problems and to increase competitiveness of product	<ul style="list-style-type: none"> - Encouraging private sectors to enter into the market to increase the drive of competition. - Proper coordination between cooperatives and traders to avoid unhealthy competition which has resulted in astronomically increased price of Nepali Coffee. - Creating a village level innovative platform of stakeholders, cooperatives, farmers, private sectors etc. at local level that can jointly work for the promotion of coffee sector and also perform monitoring at local level 	<ul style="list-style-type: none"> - Award and Reward to best entrepreneurs
	Poor record keeping, business planning and product development capacity of cooperatives	<ul style="list-style-type: none"> - Training on entrepreneurship skills - Record keeping should be made mandatory for farmers as well as processors regardless of whether they are part of ICS or not 	<ul style="list-style-type: none"> Business Plan of CCU based on production plan of PCCs

CHAPTER 1: BACKGROUND

This report is produced after the field study, consultation and secondary data review for the Market System Analysis of Nepalese Coffee, initiated by Coffee Value Chain Development Project (CVCDP) implemented by Beautiful Coffee Nepal (BeaCoN) in partnership with Good Neighbors International (GNI) Nepal and with the financial support of European Union and GNI Nepal. The study team assessed the market system, demand-supply situations, and identified current constraints and opportunities in Nepali coffee sector. This study has also assessed the existing scenario of Nepali coffee sector, from both demand and supply sides, as well as analyzed the business intervention points, and proposed required improvements in policy measures, based on participatory market system analysis (PMSA). In addition, this report also documents major lessons learnt and recommends programmatic, policy and strategic options for development of Nepali coffee enterprise as well as guide to similar other projects in the future. The study has also provided some inputs on how to develop a sustainable value chain of Nepali coffee, from farm to final consumer, at different levels- local, regional and national. Similarly, assessment has been done towards tracing different ways to promote business development model and strategic opportunities for maintaining competitive price of Nepali coffee in domestic and international market.

1.1 Introduction

Agriculture is the largest and broadest sector in Nepal. Almost 66% of Nepal's population takes agriculture as main source of food, income and employment. This sector, however, is growing at a slower pace than rest of the sectors as agriculture is contributing only about less than one-third to Nepal's Gross Domestic Product (GDP). One of the major reasons could be low Government investment in this sector (around 3% of total government's outlays) (Adhikari, 2015). In addition, Nepal's topographical variations and socio-economic characteristics provide both constraints and opportunities for the development of agriculture sector. Limited arable lands in mid-hill region does not allow mass-level farming, thus increasing the cost of production. Nepal's unique microclimates and soil quality provides opportunities for crop-diversification, including the cultivation of high value crops (Day, 2016). On the other hand, increasing rural to urban and international migration is creating acute shortages of agricultural labor. Therefore, in order to increase the resource productivity within agricultural sector, proper identification and development of value chains within this sector is imperative. Moreover, high value commodity such as coffee can play significant role in income generation for smallholder farmers as well as contribute to national economy.

1.2 Need for market system development

An entrepreneur produces a product that has to ultimately reach the final consumer for the purpose of consumption/production to derive utility/return. This long process from producer to consumer can be broken down into several mutually exclusive sequences of activities. For example, a producer may produce paddy and sell it. S/he may also choose to process paddy and convert it into rice incurring some cost which will fetch more value than paddy. S/he may cook the rice and sell it in readily edible form for even more return. There is always some degree of value chain activities and value addition (crude to sophisticated) involved; but how effectively and efficiently the value adding is done, is the prime concern. Each sequence in the chain has cost and value addition.

In the developing world, high value agriculture is growing because of rising incomes, urbanization and changing consumption behaviors. At the same time, global trade liberalization has opened up new vistas including export markets leading to increased foreign direct investments. (FAO, n.d.) These changes pose challenges to small and poor farmers because high value agriculture often involves higher production costs and greater production and marketing risks. If these obstacles are not removed through close vertical linkages between farmers, processors, traders, retailers and buyers, there are chances that these small producers could be excluded from the supply chains. The increase in the production and consumption of these high value agriculture products has been accompanied by changes in food supply chains and changes in characteristics of products demanded (food safety, convenience and perceived qualities which are associated with price). The numbers of supermarkets and hypermarkets have grown rapidly as a transition from traditional stores and wet markets. The food standards have moved from public to private. Value addition in the food-processing sector has grown significantly in emerging economies (Gulati et.al., 2006).

1.3 CVCDP as a leading initiative

Under the European Union's support to the competitiveness of quality coffee in Nepal, Good Neighbors International Nepal (GNI Nepal) in partnership with Beautiful Coffee Nepal (BeaCoN), has been implementing a two years long comprehensive project for development of value chain of Nepali coffee in western region of Nepal. The coffee value chain development project (CVCDP) incorporates 3,000 smallholder coffee farmers associated with 60 primary coffee cooperatives (PCCs) and a district level union of primary coffee cooperatives in four districts, Syangja, Kaski, Gulmi and Palpa districts. CVCDP also integrates the institutions and market actors involved in production, processing and marketing of coffee in Nepal. At the national level, the CVCDP aims

at institutional strengthening of National Tea and Coffee Development Board (NTCDB) through the establishment of a comprehensive information management system.

The comprehensive working modality of CVCDP is attributed to its integrated approach in promoting Nepali coffee sector in order to reduce poverty and stimulate trade-led economic growth through strengthening capacity and competitiveness of small scale coffee farmers in western Nepal. The integrated approach includes value chain development interventions at farmer level, cooperatives levels, markets level, and at policy level. At farmer level, CVCDP intends to expand coffee cultivation and subsequently increase productivity per coffee bush and total production of fresh cherry. At cooperatives level, CVCDP has aimed to reduce the cost of production, and increasing the quality of coffee by institutionalizing the cooperative models in coffee collection, processing and marketing. CVCDP has, in the next level, envisioned helping farmers to implement internal control system for organic certification. Proper certification, recognition and branding are prerequisites for enhancing the competence of Nepali coffee in international markets.

The CVCDP project has realized that poor and small-holders must overcome a "real access gap" of being able to cost effectively transport their produce, before being able to address the "market efficiency gap" that revolves around being competitive with better organized, better informed and better capitalized producers. Hence, unless these small holders are organized and placed in suitable value chains, they cannot be lifted out of poverty. Therefore, this study is conceived as a dire need for the actors involved in coffee value chain development for identifying bottlenecks at different level of value chain of Nepali coffee as well as devising the areas of possible interventions.

The purpose of this study is to carry out an *analysis of market system for Nepali coffee*, the findings from which could serve as guide to develop better strategies for uplifting coffee sector in Nepal.

1.4 Objectives of the study

The major objective of the proposed study is to undertake an analysis of Nepali coffee's market system for identifying current constraints and opportunities to develop proper intervention models. The specific objectives of the study are as follows:

1. To assess current demand and supply of Nepali coffee in domestic and export market
2. To probe into existing constraints and opportunities in each value chain function of Nepali coffee.

3. To identify and capture the possible intervention/s (leveraging) points in different levels of value chain function of Nepali coffee.
4. To develop a well-defined list of business/market intervention models and strategies to maintain/enhance the current price of Nepali coffee in the market.
5. To identify the consumption and import pattern existing in domestic coffee market.
6. To assess actors' perception on quality parameters of Nepali coffee across the coffee value chain.
7. To assess the use and efficiency of Nepal coffee logo for market promotion of Nepali coffee

1.5 Scope of the study

Four districts of Western Nepal- Kaski, Syangja, Palpa, Gulmi, and two districts of central Nepal - Nuwakot and Lalitpur were considered for the study, hence the characteristics of coffee produced, and socio-cultural properties of coffee farmers considered in this study may vary across other parts of the country. Different districts have their own distinct practices and modality in coffee collection, processing and trading. Therefore, constraints inherent in value chains are specific to those modalities and practices of respective districts. The report has tried to analyze the common factors, constraints and opportunities throughout the coffee sector, as much as possible.

1.6 Limitations of the Study

Methodology used for the research was developed with consideration to time and resources provided by the proponent. Limitations in resources also limited the extent of primary data collection (household data was not collected). Also it should not be assumed by the stakeholders that a single study would have a full capacity to provide all kind of solutions to the problems that lie in value chain of entire coffee sectors in Nepal. This study can serve as milestone for future studies, policy formulation and strategy development for the enhancement of coffee sector in Nepal.

CHAPTER 2: STUDY METHODOLOGY

Coffee is a global commodity and its market involves range of traders, processors, producers of various scales and regions along the value chain. In such a complex chain with multiple actors, the principal constraints to competitiveness may lie within any part of the market system or the environment in which it operates. We have used the value chain approach to analyze the markets of Nepalese coffee for this study because this approach offers the scope to analyze the entire industry from market systems perspective with a focus on the end markets.

The purpose of market system analysis is to make a systematic assessment of current market system, its inputs, processes, actors and outcomes. Similarly, the analysis is also focused on value addition, product conversion, cost and return at each different functional level of value chain. The assessment has emphasized on various constraints in the functions at farmers, processor, traders and exporters' levels. On the other hand, the study has also concentrated itself in identifying various opportunities and leveraging points for further improvement in the value chain of Nepali coffee. The ultimate goal of market system analysis is providing a factual ground for the stakeholders to take appropriate actions for developing sustainable, inclusive, resilient and competitive market system in Nepali coffee sector.

2.1 Approach to Analyze the Market System

A Market System can be understood as a dynamic space, incorporating resources, roles, relationships, rules and results— in which private and public actors collaborate, coordinate and compete for the production, distribution and consumption of goods and services (USAID, 2006). The behavior and performance of these actors are influenced by other actors' decisions, by rules, incentives and the physical environment. Market systems are composed of vertically and horizontally linked firms and the relationships embedded in these linkages; end markets, input and support service markets; and the environment in which they operate, which may include socio-cultural, geographic and political factors, infrastructure and institutions (ibid). A systematic study of market dynamism, products, actors, rules and relationships between those actors, and study of the internal and external environments that directly affect that dynamism, comes under the framework of Market System Analysis (MSA), also generally understood as value chain analysis.

The purpose of MSA is to contribute in market system development to strengthen the product-to-market system. The objective is to increase incentives to the value chain to improve productivity, performance, and trade that ultimately provide economic returns for poor

producers. Market system analysis defines the interconnections in a market system using a framework of relationship, roles, rules, resources and results.

Following figure shows a generic framework of value chain in market system analysis, and the factors and relationships affecting value chain competitiveness. The framework has visually defined the major actors and their interconnectedness in the market system of a specific product.

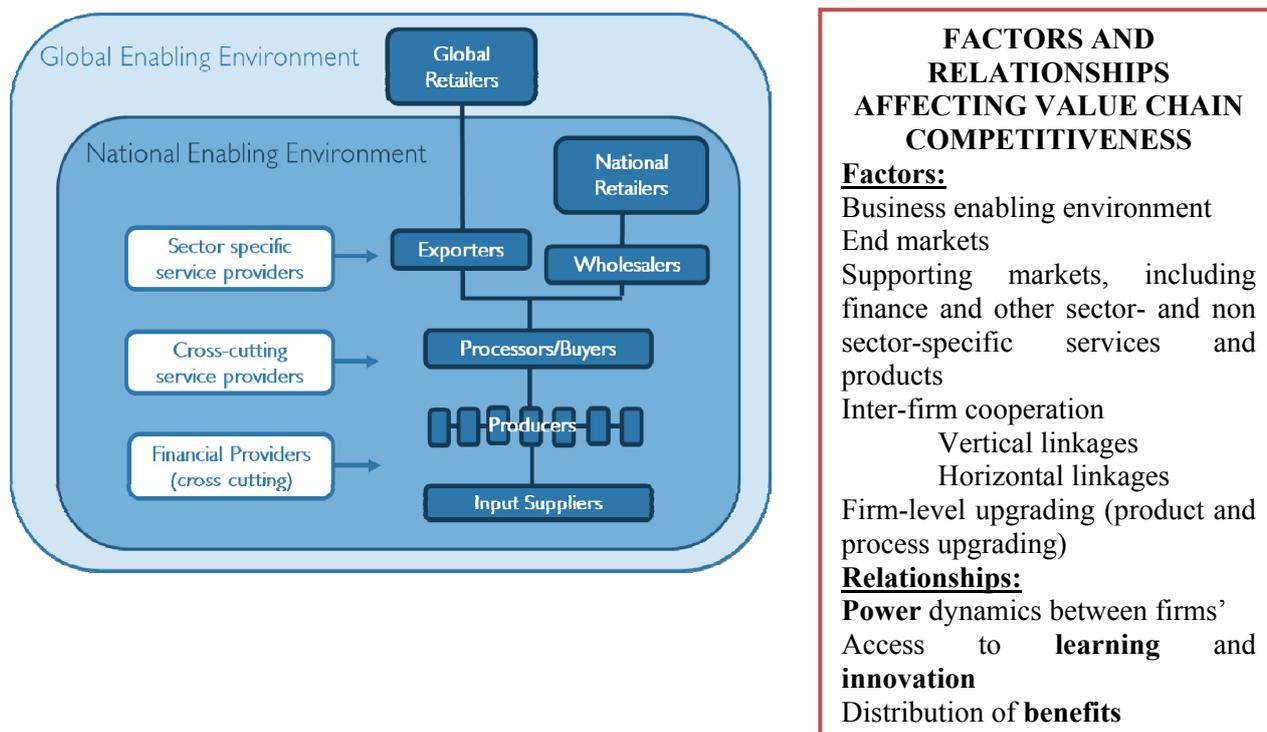


Figure 1: Framework of Value Chain in Market System

The vertical and horizontal relationships between the market actors are guided by a set of formal and informal rules and power distribution. Market system analysis carefully examines these relationships between market actors, and identifies significance of these relationships in context of inputs, product quality, price, demand, supply, and overall well-being of the otherwise vulnerable actors.

2.2 Criteria for defining the intervention space

One major objectives of this study is to identify proper intervention points in existing value chain of Nepali coffee sector on the basis of analyzing the constraints and opportunities.

A well-functioning market system should have three basic characteristics.

- **Competitive**—actors in Nepali coffee sector are able to effectively innovate, upgrade and add value to their products to match market demand and maintain or grow market share.

- **Inclusive**—delivering a sustainable flow of benefits to a range of actors, including the poor farmers, women and otherwise marginalized, as well as to society as a whole.
- **Resilient**—actors in Nepali coffee sectors are able to address, absorb and overcome shocks in the market, policy environment, resource base or other aspect of the system.

Defining the intervention space in a market system of Nepali coffee includes using a market system analysis approach to get a good understanding of market context, constraints, opportunities, and internal and external factors that affect the particular market and its actors at each level of value chain. Methodological goal in this context is using MSA to identify the key factors that influence market system and to develop intervention models, wherever necessary, for increasing the competitiveness, inclusiveness and resilience of the Nepali coffee sector.

2.3. Data collection process and tools

Various data collection tools were used in the study. These tools are discussed below:

2.3.1 National Consultative Meeting

This study was launched after conducting a national consultative meeting at NTCBD where major institutional stakeholders of Nepali coffee sectors were informed about the study, who also provided important feedbacks in study approach and major issues in Nepali coffee sectors that needed to be covered by the study. The national consultative meeting was held in the presence of government agencies including Department of Agriculture (DoA), National Tea and Coffee Development Board (NTCDB), representative from the European Union and supporting partners such as Helvetas Nepal and CVCDP staffs from GNI Nepal and BeaCoN. Business membership organizations-Nepal Coffee Producers Association NCPA, Coffee Cooperative Unions, FNCCI, as well as coffee traders and exporters were also consulted in the course of this study.

2.3.2 Participatory Market System Analysis (PMSA) workshop

Markets are complex systems with diverse actors having different needs and viewpoints. Effective analysis of complex system can only be ensured through listening to these diverse actors and triangulating the facts. Participatory Market System Analysis (PMSA) is a participatory method for analyzing complex market systems. Therefore, PMSA workshop is one of the important methods used for this study. First PMSA workshop was conducted on June 5th 2018 at Horticulture Research Center Pokhara, including all major actors in coffee value chain from western region. Similarly, second PMSA workshop was conducted on June 15th 2018 at International Club Lalitpur where all major stakeholders in coffee value chain at central region were participated.

Participants in PMSA were, first, divided in few heterogeneous groups so that each group contains stakeholders and actors from different stages of coffee value chain, namely: input suppliers, farmers, collectors, pulper operators, processors, traders, café owners and other supporting actors



Group Discussion during PMSA Workshop

such as government agencies. These heterogeneous groups were given a task to create a value chain map within coffee sector by defining roles, functions and relationship of each actor presented in the group. In the second session, new homogeneous groups were formed so that each group contains stakeholders and actors from the same stage of coffee value chain, namely: input suppliers group, farmers group, and processor group, traders group and group of institutional supporters. These homogeneous groups conducted rigorous discussion to identify existing constraints as well as opportunities and space of interventions in their respective functions. All of the groups presented their views in the floor and provided a forum for an extensive discussion, verification and inputs from entire participants. Representative from CVCDP facilitated the groups and the study team did detail note keeping of entire workshop.

The second PMSA was organized in International Club, Sanepa, Lalitpur on June 15, 2018. This PMSA aimed to gain perspective of big traders and hoteliers on existing situation, constraints and opportunities as the previous one had focused on coffee producers and processors. The PMSA observed fewer numbers of participants that made it more of a consultative meeting. There were seven participants in this workshop compared to twenty-five guests that had been invited. Instead of dividing participants to groups, issues were identified and existing situations and possible solutions to problems were discussed.

2.3.3 Key Informant Interviews

Key informant interview (KII) is an effective method of information collection where specific subject matter experts are interviewed in an intensive way, covering all dimensions of the issues being investigated. The study team has conducted numbers of in-depth interviews with focal

persons relating to one or more stages of coffee value chain as well as supporting organizations. Below are the list of key informants those were interviewed and their role in coffee value chain. Questionnaire and checklists used for KII are presented in Annex.

S.N	Name of Key Informants	Organization	Role in Coffee Value Chain
1.	Mr. Chandra Puri	Agriculture Development Officer, NTCDB Regional office Pokhara,	Enabler, supporter
2.	Mr. Sobhakhar Adhikari	Machhapuchchhre Coffee	Farmer, roaster, trader, café owner
3.	Mr. Bhojraj Poudel	Manager, Nirmal Pokhari Primary Coffee Cooperative, Kaski	Pulper, Collector, huller, exporter
4.	Mr. Khom Bahadur Gurung	Farmer	Production
5.	Mr. Indra Acharya	PCC, Annapurna 33	Nursery holder
6.	Mr. Phani Narayan Aryal	District Coffee Cooperative Union, Syangja	Collector, pulper, huller, roaster, trader
7.	Ms. Maya Tiwari	District Coffee Cooperative Union, Syangja	Collector, pulper, huller, roaster, trader
8.	Puspa Raj Poudel	Owner of one of the model farms in Kaski District, Pokhara 21	Farmer, pulper
9.	Mr. Bhaskar Gyawali	CCU, Gulmi	Collector, huller, roaster, trader
10.	Mr. Nil Kantha Gautam	CCU, Gulmi	Processor, Collector
11.	Mrs. Mana Bhattarai	PCC, Vodkua, Gulmi	Nursery Holder, large farmer
12.	Mr. Bal Bhadra Poudel	PCC, Barangdi, Palpa	Collector, pulper, huller, roaster, trader
13.	Mr. Sashi Badan Ghimire	CCU, Lalitpur	Collection, huller, trader
14.	Mr. Bal Bahadur KC	CCU, Lalitpur	Advisor
15.	Mr. Kumud Singh	Alpine Coffee	Owner



Interview with Key Informants and Farmers at CCU, Gulmi

2.3.4 Field observation and interview with farmers

In order to supplement and triangulate the information gathered from PMSA workshops and KIIs, and in order to get firsthand information on ground reality of coffee producers, the study team conducted field observations and interviews with coffee farmers in all study districts. Similarly, coffee processing units at DCCU and PCCs were also



Study Team at Coffee Orchard, Nirmal Pokhari, Kaski

visited during the course of study. Farmers and processing units associated with following coffee cooperatives were interviewed and their coffee orchards were observed.

- Nirmal Pokhari Primary Coffee Cooperative Kaski,
- DCCU Processing unit, Putalibazar, Syangja
- Primary Coffee Cooperative Karendada, Syangja,
- CCU Processing unit, Baletaksar, Gulmi
- Primary Coffee Cooperative Vodkuwa , Gulmi
- Primary Coffee Cooperative and processing unit, Barangdi, Palpa
- CCU processing unit, Chapagaun, Lalitpur

Smallholder farmers with traditional organic practices primarily do coffee farming in Nepal; therefore, group/cooperative model was developed in order to efficiently collect ripen coffee cherry, process them into various forms and for effective trade. However, it is being evident that private sector actors have initiated new large-scale coffee farming in Nepal. In order to obtain information on another dimension of Nepali coffee farming, the study team has visited large-scale coffee farm and conducted thorough investigation and interviews with private actors as well.

2.3.5 Interview with Coffee Consumers

Coffee consumers lie at the last stage of coffee value chain, but carry highest importance than any other actor in the chain. All the efforts in coffee value chain - farming, processing, quality control and management - have ultimate aim to provide a highest quality coffee to the

consumers. Therefore, it was necessary to obtain information from consumer perspectives, their preferences, knowledge and quality parameters for which they are willing to pay a certain price for a cup of Nepali coffee. Study team has interviewed 50 consumers at 20 coffee shops in Pokhara and Kathmandu. Similarly, costumers at different grocery stores in Kathmandu valley were also randomly interviewed.

2.3.6 Secondary data collection

This study is largely based on primary information, gathered directly from various actors in different levels of Nepali Coffee value chain. However, in order to observe wider scenario of Nepali coffee sector, a range of historical data have also been used that show the trend of production, exports and price of Nepali coffee in both domestic and international market. Similar historical data have been reviewed to identify gap in import and export of the coffee in relation to domestic consumption patterns. Data on import and export trend during the year 2009-2017 have been derived from Import/Export Data Bank of Trade and Export Promotion Center, government of Nepal. Whereas production related data are derived from multiple sources such as NTCBD, Ministry of Agriculture Development and National Agriculture Research Center (NARC).

One of the major limitations faced by the research team was inconsistency in coffee related data published by Planning Commission, Ministry of Commerce and Supplies and Nepal Tea and Coffee Development Board. For instance, Statistical Information on Nepalese Agriculture (Ministry of Agricultural Development, 2017) mentions total green bean production for fiscal year 2015/16 to be 532 mt. while coffee statistics of NTCDB mentions green bean production for same year as 434 mt. (NTCDB, 2018).

CHAPTER 3: THE COFFEE INDUSTRY

3.1. Coffee as a global commodity

Coffee is one of the most traded agriculture commodities of the world. International prices of coffee are based on International Terminal Markets in New York (Arabica) and London (Robusta)(ITC, 2018). About 70 percent of coffee produced in the world comes from Latin America and Africa (ICO, 2018), rest 30 percent is produced in Asia and Pacific region. Brazil is the world's largest producer and exporter of coffee followed by Vietnam.

3.2. History of Nepalese Coffee

Nepali coffee sector in the present day has complicated value chain process, from its origin at the farm, to a cup of final consumer. On the other hand coffee-drinking culture is being increasingly popular in Nepal among domestic consumers as well as among tourists and travelers. Although the very first coffee plant in Nepal was introduced in 1938, government of Nepal recognized it as cash crop later during the late 1970s by distributing seeds to the farmers in potential coffee growing districts in western region. Commercialization of coffee production was established in Nepal during mid1980s after Nepal Coffee Company started collecting dry cherry from the farmers and processed it for domestic consumption.

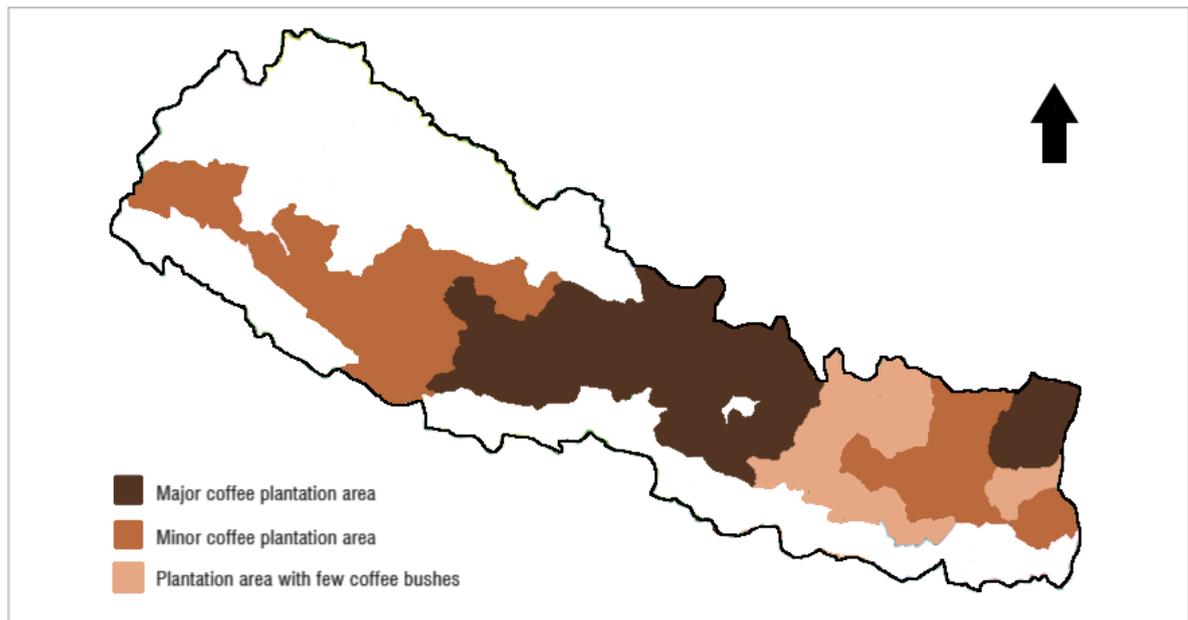


Figure 2: Coffee Production Districts in Nepal (ITC, 2018)

Grasping the opportunity of increasing domestic and international demand of Nepali coffee, government of Nepal established a national level authority – Nepal Tea and Coffee Development Board- in 1993, for promoting Nepali coffee sector by policy formulation, research and expansion, and market facilitation. On the other hand, during late 1990s, coffee farmers began to organize the collection and processing of coffee by establishing small cooperatives and groups at local levels, which had further extended coffee cultivation and increased overall production.

Nepali coffee sector gained special attention from domestic and international markets after private sector involvement in processing, marketing, trading and exporting increased significantly after 2000s. In order to promote research and extension for increasing the production of fresh cherry, Government of Nepal established Coffee Research Program in Gulmi in 2013. Currently, coffee production in Nepal has been extended to 41 districts occupying 2,600 hectares of land that directly involves approximately 32,500 farmers. Kavre, Panchthar, Sindhupalchowk, Lalitpur, Nuwakot, Lamjung, Gulmi, Syangja, Kaksi, Palpa and Arghakhachi are top coffee producing districts, occupying 65% of total plantation area and 67% of total production.

3.3 Nepalese coffee from farm to cup

3.3.1 Plantation

Coffee belongs to Rubiaceae family, of which two major species – *Coffea Arabica* and *Coffea Canephora*- are commercially grown worldwide. Nepal's topographical position, climatic variability – rainfall, temperature and humidity- as well as soil quality are highly suitable to grow *Arabica* species coffee at the altitude ranging from 800 to 1600 meters above the sea level.



Well-maintained Coffee Plantation at Nirmal Pokhari, Kaski

Arabica coffee is considered to have higher quality, which also enjoys higher price than *Robusta* coffee in global market. *Arabica* coffee has three major varieties – *Bourbon*, *Typica* and *Yellow*

Caturra- that are widely grown by Nepali farmers with some mix of locally crossed varieties. Majority of Nepali farmers apply organic practices in coffee farming, including organic land preparation, use of organic manure and organic pesticides.

Coffee seeds are normally planted in nursery up to the age of 18 months before a plant is shifted to an orchard. It takes 18 months more for a plant to be able to fruit cherries in an orchard. Typically, a coffee plant becomes fully matured at the age of 5 and continues fruiting up to the age of 40 or even further if orchard is properly managed with sufficient nutrient supply, plant pruning and pest control. Typical geographical characteristics, organic and environment friendly method of farming have provided Nepali coffee with special qualities in texture, earthiness, smell, taste and after-taste.

3.3.2 Harvesting and Processing

Organically produced at the remote mid hills of Nepal by small holder farmers, the coffee undergoes range of processes – pulping, fermentation, washing, drying, hulling, grading, roasting, and grinding – involving a series of actors – individual farmers, primary cooperatives, district cooperatives, private processor, traders, exporters and retailers.

In Nepal coffee is normally planted in orchard during the rainy season and harvested from October to February. Not all cherries on a plant ripe at the same time. Therefore farmer needs to repeatedly pluck ripen cherry throughout the harvesting period. A healthy and matured coffee plant yields up to 5-8 kilograms of fresh cherry in an average, in one harvesting season. A cross-section of a fresh coffee cherry is shown in following diagram:

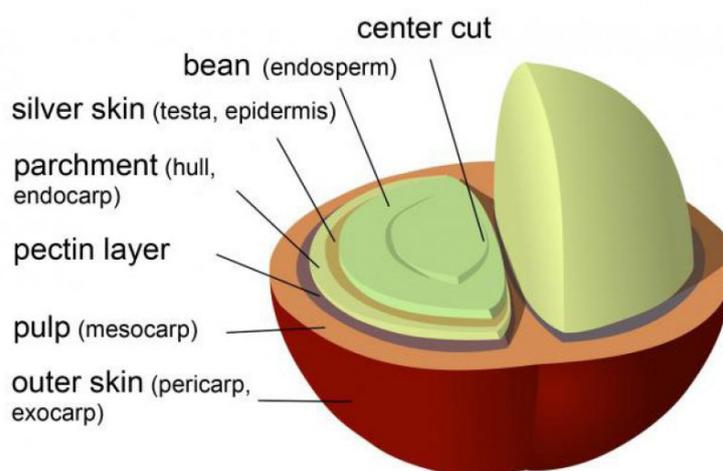


Figure 3: Cross-section Diagram of Fresh Coffee Cherry

Following steps are observed in coffee processing system after harvesting:

1. **Collection and Sorting:** Farmers bring their fresh cherry to pulping center within 24 hours of harvesting. Cherries are soaked in water for primary sorting where floating cherries are discarded and submerged cherries are selected for further processing.
2. **Pulping:** Pulping is a process to remove outer skin and pulp from a fresh cherry. To preserve the quality of coffee, it is required to complete the pulping process within 24 hours of harvesting lest the pulp inside begins fermenting thus affecting the quality of the final product.

Alternative processing

In Nepal, even a monkey did not spare the coffee cherry, eating as much as 300 gm of cherry in a day as evidenced in a coffee estate in Nuwakot. Monkeys can be nasty, but there is an animal locally called Bharse (Civet cat), a member of fox family, which is considered a natural fermenting agent. It is found to be used in chiuri and coffee. Bharse eats the coffee and chiuri pulp and releases the inside bean as dung , which when washed turns out to be a perfectly pulped beans. The use of this natural dynamics can be a topic for research towards the likelihood of effective use.



3. **Fermentation:** Pulping machine doesn't remove hard pectin layer. Therefore, pulped beans are stored in airtight storage for 24-48 hours to let natural fermentation that will loosen the hard pectin layer.
4. **Washing:** Fermented beans are then hand-washed to remove the loosen pectin layer, which results in parchment.



Dried Coffee Parchment at DCCU Gulmi

5. Drying: Wet parchment are first dried in shade and then shifted to sun-dry until the moisture level is between 11-13%. Dry parchment can be stored for longer duration compared to other forms of coffee.
6. Hulling: Green coffee bean lies inside a parchment. Dry parchment is hulled using a huller machine. Finally green coffee bean is obtained. The process is equivalent to removing paddy husk in order to get rice grain. Green beans of various sizes are graded (16, 14 and the rest) using a grading machine



Green Bean from DCCU Gulmi (Left); Huller Machine at Nirmal Pokhari PCC Kaski (Right)

7. Roasting and Grinding: Green beans are roasted in a roaster machine to achieve desirable roasting levels – low roast, medium roast and Dark roast. Different roasting levels provide different taste of final cup of coffee according to the choice of consumers. Roasted beans are finally grinded to get powdered coffee. With this powdered coffee, consumers use different techniques and combinations to make drinks of own respective preferences.

CHAPTER 4: GLOBAL AND NATIONAL TRENDS

Global and national trends in coffee production and consumption are observed to identify opportunities and possible threats for this sector. The Nepal Trade Integration Strategy (NTIS) 2016, has listed coffee as one of the potential export sectors. With increasing number of farmers, traders and café owners' involvement, investments are growing. Investments are also growing because Nepali coffee has received higher price compared to other international coffee. At present, the average international price of Nepali green bean stands at \$ 8 per kg compared to \$ 3.8 for other countries. Nepali coffee has received high price in international markets as it is specialty coffee and serves a niche market. However there are concerns that the price may not sustain if quality is not improved.

4.1 Global trends

Global trends in coffee shows that production has increased in 2016/17 compared to 2010/11. In 2016/17 world coffee production stood at 9.46 million MT. It is observed that 2.91 million MT is consumed domestically while 7.18 million MT is exported. Imports stand greater than exports at 7.6 million MT, around 2.55 million MT that is imported by countries are re-exported. The trend in consumption, exports, imports and re-exports are increasing worldwide.

Table 3: Global Trends in Coffee Trade (ICO, 2018)

Year	Production (Million MT)	Domestic consumption (Million MT)	Exports (Million MT)	Imports (Million MT)	Re exports (Million MT)
2010/11	8.38	2.54	5.82	6.55	2.04
2011/12	8.88	2.64	6.27	6.71	2.13
2012/13	8.99	2.72	6.66	6.79	2.17
2013/14	9.14	2.76	6.63	6.96	2.18
2014/15	8.94	2.83	6.88	7.20	2.35
2015/16	9.13	2.90	6.87	7.28	2.43
2016/17	9.46	2.91	7.18	7.60	2.55

Brazil is the largest producer and exporter of coffee throughout the world followed by Vietnam, Columbia and Indonesia. Brazil produces almost 30 percent of entire global coffee productions. In 2016 Brazil produced almost 3.06 Mil. MT of coffee compared to 1.77 Mil. MT produced by Vietnam. In 2016, Brazil exported around 2.06 Mil. MT of coffee compared to 1.65 million MT by Vietnam. It is observed that India exports more coffee than it produces. According to ICO database, India produced 0.35 Mil. MT coffee in 2016 but exported 0.37 Mil. MT. This is an example of re-export trade between nations.

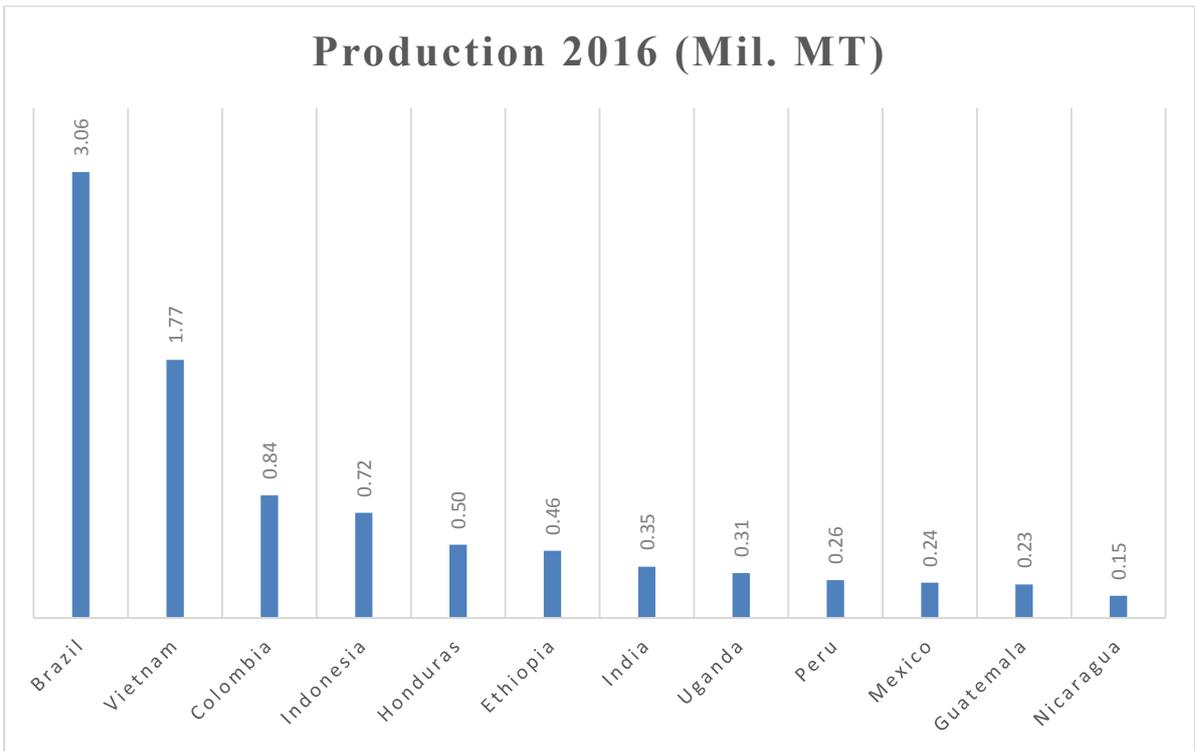


Figure 4: Major Coffee Producers of the World (ICO, 2018)

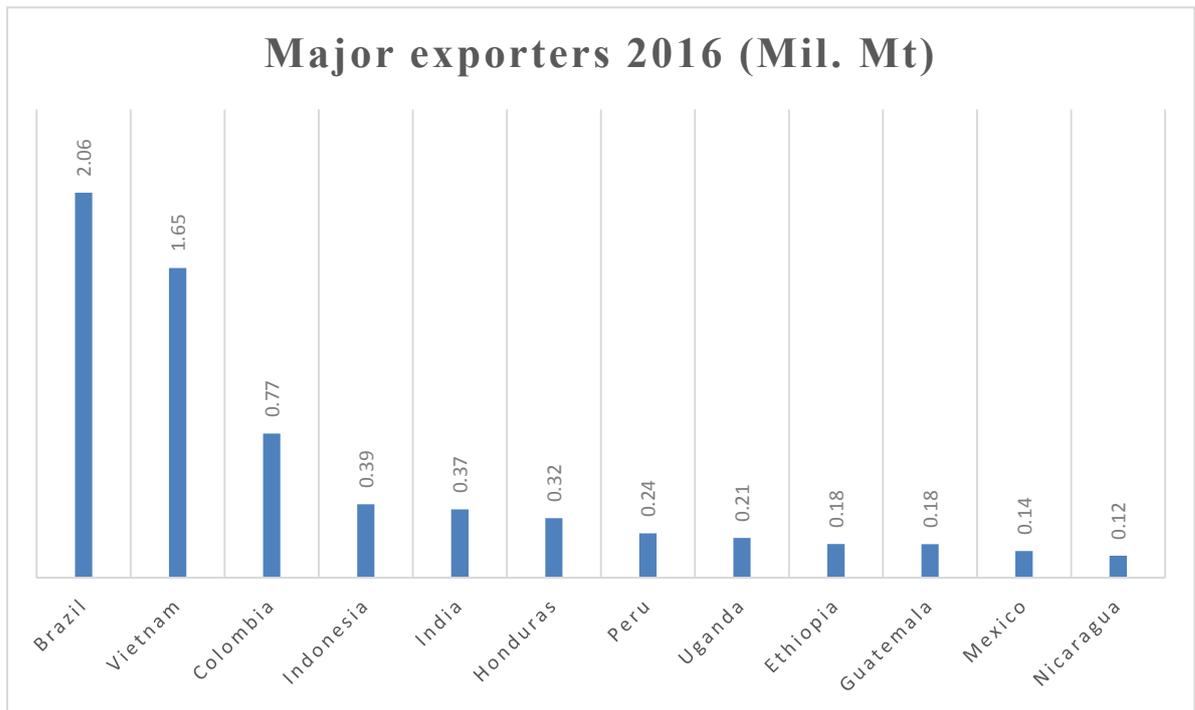


Figure 5: Major Coffee Exporters of the World (ICO, 2018)

Table 4: Nepal's Production Compared to other Countries

Green bean production – 2016	
Country	Production (MT)
 <u>Brazil</u>	3,019,051
 <u>Vietnam</u>	1,460,800
 <u>Colombia</u>	745,084
 <u>Indonesia</u>	639,305
 <u>Ethiopia</u>	469,091
Nepal	532
World	9,221,534

WHERE DOES NEPAL STAND?

The USA, Germany, Italy and Japan are the major coffee importers of the world (2013). The 2013 data shows that the USA is major importer with 1.62 Mil. MT followed by Germany, Italy and Japan. The imports of these countries have increased in 2016. However, the ICO has not segregated country wise data in case of European Union countries for 2016.

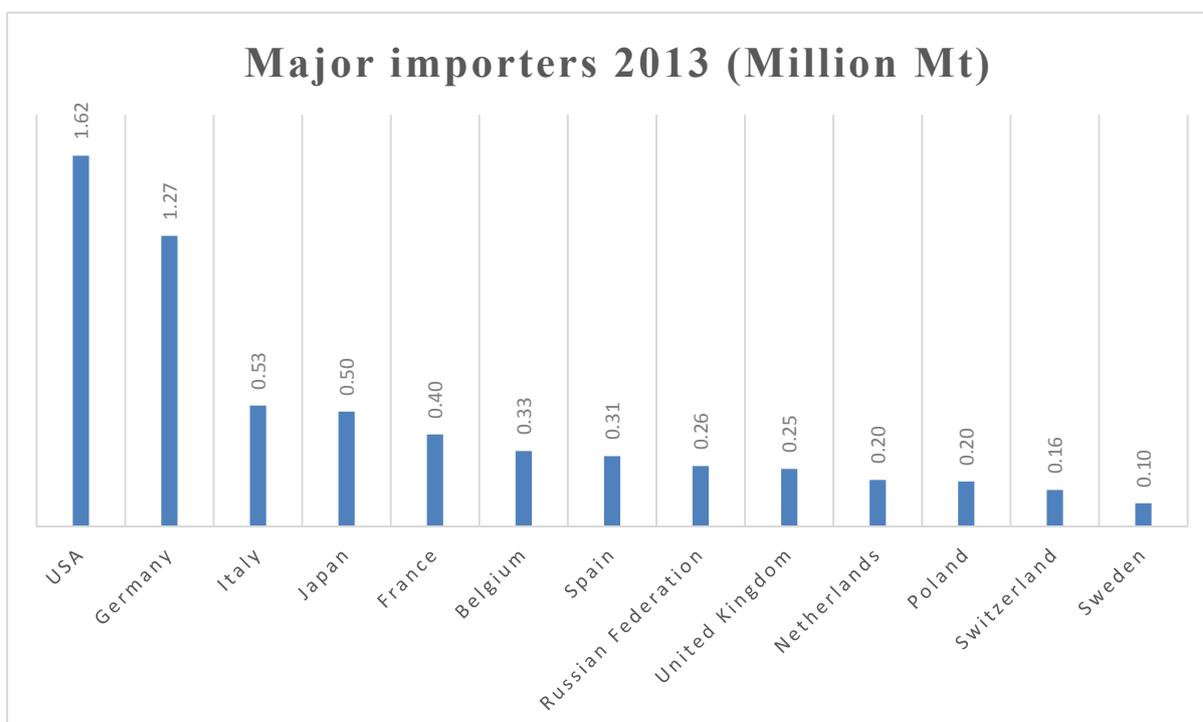


Figure 6: Major Coffee Importing Countries (ICO, 2018)

The price paid to growers of various coffee types had decreased in 2016 compared to 2012. In 2017 prices have increased. In 2017 the price of other mild type of coffee is highest at \$ 3.78 per Kg compared to lowest price paid to Robustas at \$1.88 per Kg.

Table 5: Price Paid to Growers (USD/Kg) (ICO, 2018)

Calendar years	Columbian Mild	Other Mild	Brazilian Naturals	Robusta
2012	3.67	3.28	2.90	1.66
2013	2.51	2.56	2.30	1.60
2014	3.52	3.15	2.13	1.48
2015	2.63	3.15	1.93	1.34
2016	2.72	3.07	2.17	1.33
2017	2.77	3.78	2.59	1.88

The retail price of roasted coffee stands at \$ 12.85 per Kg in 2016 compared to \$ 15.41 per Kg in 2011. The price received in 2011 by roasted coffee is also the highest price it has ever received in a decade. Since 2011, roasted coffee prices have gradually come down. In an overall the price of roasted beans is on an increasing trend.

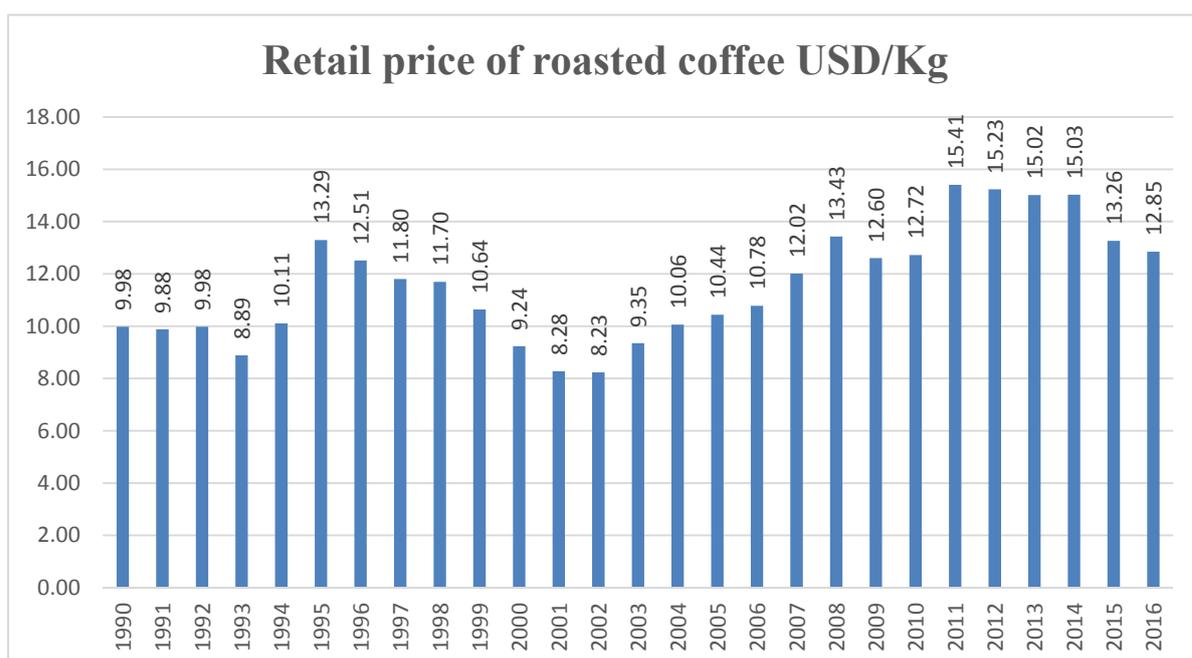


Figure 7: Retail Price of Roasted Coffee USD/Kg (ICO, 2018)

Nepal has very small share in global coffee export market. Conventional coffee growing countries have dominated international coffee market throughout last 2 decades. Similarly, India and China are emerging as mass scale coffee producers and exporters with relatively low price. It is a significant challenge for Nepal to compete with these large coffee exporting countries due to number of constraints in production side, minimum land availability as well as

low investment in coffee sector. Hence, rather than competing for mass export, Nepal can emphasize on producing high quality specialty coffee focusing on organic and fair trade practices.

4.2 National trends

Although coffee is one of the most widely consumed beverage around the world, in Nepal it is gradually gaining popularity. At present there is significant presence of Nepali filter coffee in Nepali market along with instant coffees from other countries. With increase in number of café and expansion of coffee culture, number of people consuming coffee is gradually increasing. Interaction with consumers and café owners in Kathmandu, Lalitpur and Pokhara pointed out that number of people consuming coffee has significantly grown in last five years. With the growth in coffee consumption, there also have been increase in Nepali coffee brands and suppliers.

Although Nepali coffee has been receiving high price compared to coffee of other countries, there are increasing concerns that the price may not sustain as quantity of production as well as quality has been gradually declining. Section below provides an overview of Nepali coffee sector.

4.2.1 Production

It has been estimated that in Nepal 0.17 million Ha of land is suitable for coffee farming (Consultative workshop, Kathmandu). At present coffee plantation has been done in almost 2618 Ha of land. Although being a relatively new crop, coffee farming is being practiced in 41 districts across the country. Syangja (310 ha) has the highest area of coffee production among the coffee planting districts followed by Panchthar (271 ha), Kavre (193 ha), Nuwakot (178 ha) and Gulmi (160). Syangja is also the highest producer of green bean at 41 MT (see ANNEX-1, table A2.).

The area of coffee plantation has increased by 9.95 percent from fiscal year 2014/15 to fiscal year 2015/16. With largest area increase observed in Bhojpur district. Average increase in plantation area is observed to be 17.15 percent. Green bean production has increased by 14.76 percent in 2015/16 compared to 2014/15. Green bean production was observed to be decreasing in 10 districts while in other districts it is observed to be increasing. The yield of green bean has increased by 15.79 percent and there has also been increase in number of coffee farmers by 1.23 percent.

Table 6: Summary of Deviations in Production Parameters from 2014/15-2015/16

Parameters	Increase (districts)	Decreased or constant (districts)
Area	Syangja, Panchthar, Kavre, Nuwakot, Gulmi, Arghakhanchi, Lamjung, Sindhupalchok, Palpa, Parbat, Dhading, Baglung, Tanahu, Myagdi, Sanhuwasabha, Gorkha, Pyuthan, Khotang, Bhojpur, Other districts	Kaski, Lalitpur, Ilam, Rasuwa, Makwanpur
Green Bean production (Mt)	Panchthar, Nuwakot, Lalitpur, Arghakhanchi, Lamjung, Palpa, Baglung, Rasuwa, Tanahu, Makwanpur, Myagdi, Sankhuwasabha, Pyuthan, Khotang other districts	Syangja, Kavre, Gulmi, Kaski, Sindhupalchok, Parbat, Dhading, Ilam, Gorkha, Bhojpur
Yield (kg/h)	Panchthar, Lalitpur, Lamjung, Palpa, Baglung, Rasuwa, Tanahu, Makwanpur, Myagdi, Sanhuwasabha, Pyuthan, Khotang other districts	Syangja, Kavre, Nuwakot, Gulmi, Kaski, Arghakhanchi, Sindhupalchok, Parbat, Dhading, Ilam, Gorkha, Bhojpur
Growers	Syangja, Panchthar, Kavre, Nuwakot, Gulmi, Kaski, Lalitpur, Arghakhanchi, Lamjung, Sindhupalchok, Palpa, Parbat, Dhading, Baglung, Tanahu, Gorkha, Pyuthan, Other districts	Ilam, Rasuwa, Makwanpur, Sanhuwasabha, Khotang, Bhojpur

Although coffee is a high value crop and it provides more income than other regular staple crops, farmers are still reluctant to plant coffee because it has a longer waiting period of three years compared to vegetables that yield in months. Lack of manpower, lack of quality seed and saplings, problem of leaf rust and stem borer were some other factors that has not motivated farmers to plant coffee to the extent possible

Table 7: Coffee Plantation Area, Production and Productivity (NTCDB, 2018)

Fiscal Years	Coffee plantation area (ha)	Production (MT)
1994/95	135.7	12.95
1995/96	220.3	29.20
1996/97	259	37.35
1997/98	272.2	55.90
1998/99	277.1	44.50
1999/00	314.3	72.40
2000/01	424	88.70
2001/02	596	139.20
2002/03	764	187.50
2003/04	925	217.50
2004/05	1078	250.00
2005/06	1285	391.00
2006/07*	1396	270.00
2007/08	1450	265.00
2008/09	1531	334.00
2009/10	1630	429.00

Fiscal Years	Coffee plantation area (ha)	Production (MT)
2010/11	1752	502.00
2011/12	1760	523.00
2012/13	1750	457.00
2013/14	1911	429.4
2014/15	2381	463.58
2015/16	2618	434.00
2016/17	2646	466.00

*After fiscal year 2005/06 production is calculated in terms of dry parchment that was calculated in terms of dry cherry before.

There is an increasing trend in production as well as productivity of coffee in last 20 years. Years 2005/06 and 2011/12 have been reported as years of highest productions. Proper orchard management, shed management, moisture and nutrient management are some factors influencing productivity of a plant. From the field visits, it was observed that white stem borers destroyed almost 10 to 20 percent of plants. Incidence of leaf rust was also observed to be increasing. This disease was also responsible for wiping out entire coffee plantation in Sri Lanka (ITC, 2018) . Experts suggested proper shed and moisture management and nursery management to prevent infestation of stem borers and leaf rust. Experts and growers also pointed out the need of research on this area and identifying species of coffee that were more resistant to these infestations.

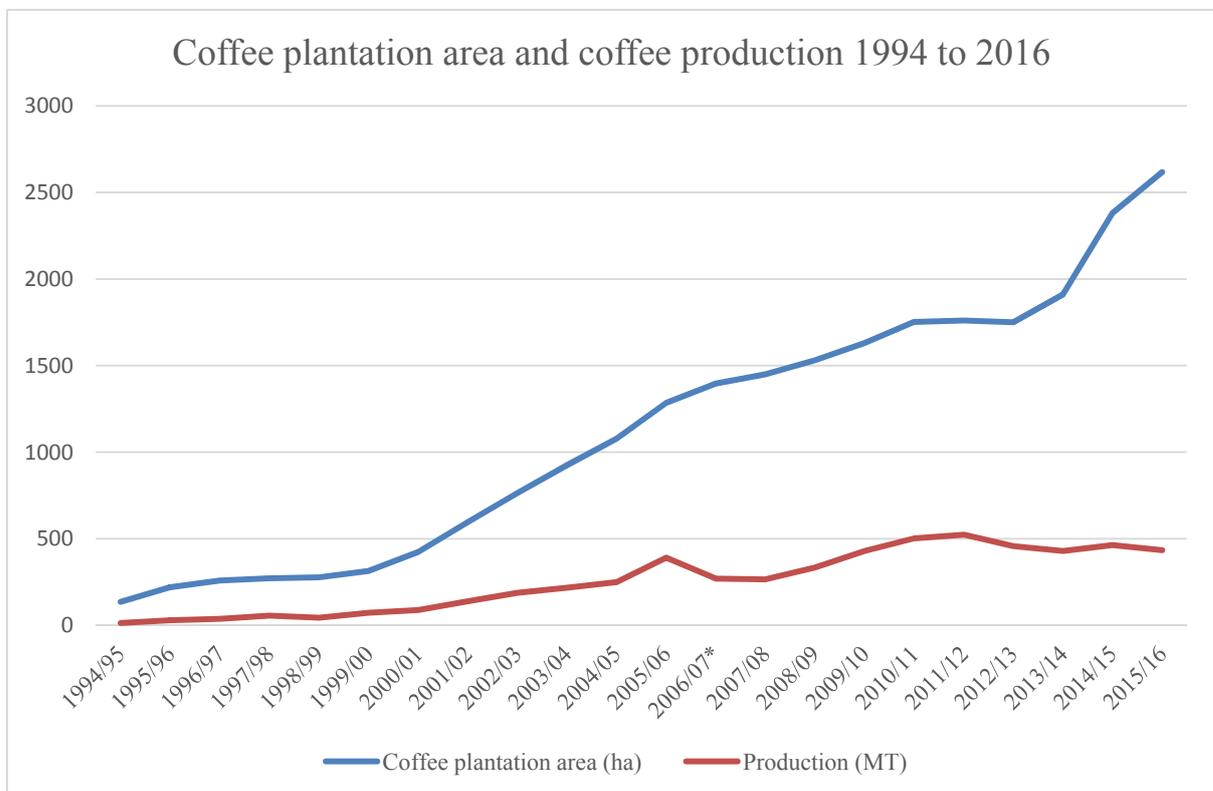


Figure 8: Coffee Plantation and Production Trend 1994-2016 (NTCDB, 2018)

Some experts pointed out that coffee was introduced in Nepal, as a plant that could mitigate soil erosion in the slopes, needed less maintenance and also could provide an alternative livelihood to farmers. Similar mindset still persists amongst farmers. Field observation also showed that farmers lacked good practice in orchard management that in turn decreased production or produced low quality berries.

4.2.2 Export, Imports and Prices

Type of coffee exported and imported by Nepal is categorized in to six categories. They are:

- Neither roasted nor decaffeinated (green bean)
- Coffee
- Not roasted, decaffeinated
- Roasted and decaffeinated
- Roasted, not decaffeinated
- Instant coffee

Table 8: Exports and Imports of different Coffee Forms 2012-2017 (Ministry of Commerce and Supplies, 2018)

Product/Year	2012/13		2013/14		2014/15		2015/16		2016/2017	
	E	I	E	I	E	I	E	I	E	I
Neither roasted nor decaffeinated	82.22	3.13	38.36	17.46	44.32	63.86	58.03	59.40	31.59	70.75
Coffee	7.91	13.75	4.63	30.11	16.84	14.57	16.41	27.46	24.13	9.42
Not roasted, decaffeinated	1.05	16.60	12.69	16.60	43.38	17.57	8.86	30.94	35.96	98.20
Roasted and decaffeinated	1.05	16.60	12.69	16.60	43.38	17.57	8.86	30.94	35.96	98.20
Roasted, not decaffeinated	4.64	12.28	3.94	6.17	0.64	10.63	1.15	4.52	1.77	3.54
Instant coffee	-	23.92	-	14.44	-	73.08	-	19.63	-	41.80

E: Export in Metric Ton, I: Import in Metric Ton

Apart from instant coffee, Nepal imports as well as exports all other categories of coffee. However, if we look data over last 8 years (2009-2017), quantity of green bean import is increasing whereas quantity of green bean export is in decreasing trend. It is observed that in 2016 Nepal imported 9.42 MT coffee and 41.8 MT instant coffee. Although there has been an increase in domestic production of green beans, import of green beans is increasing rapidly. This could be due to the fact that while prices of green bean for Nepali coffee stood at Rs. 1235.34 per Kg on exports, prices were significantly low at Rs. 289.52 for imported green beans (2017). Almost 95.36 percent of green beans imported in Nepal in last 8 years (2009-2017) were

from India (Ministry of Commerce and Supplies, 2018). Nepali green beans are costly because of small-scale farming, organic practice, lower productions, and lack of agricultural infrastructures, labor costs and other factors that will be discussed later.

Figure 9: Green Bean Import-Export Trend by Quantity 2009-2017

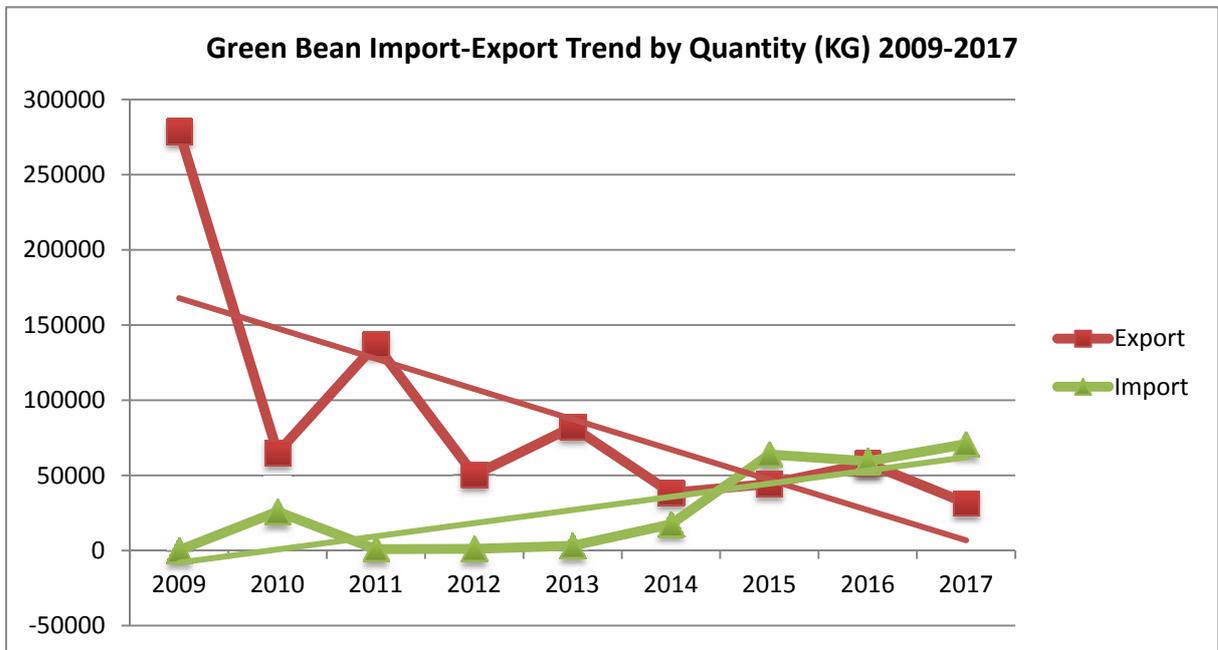
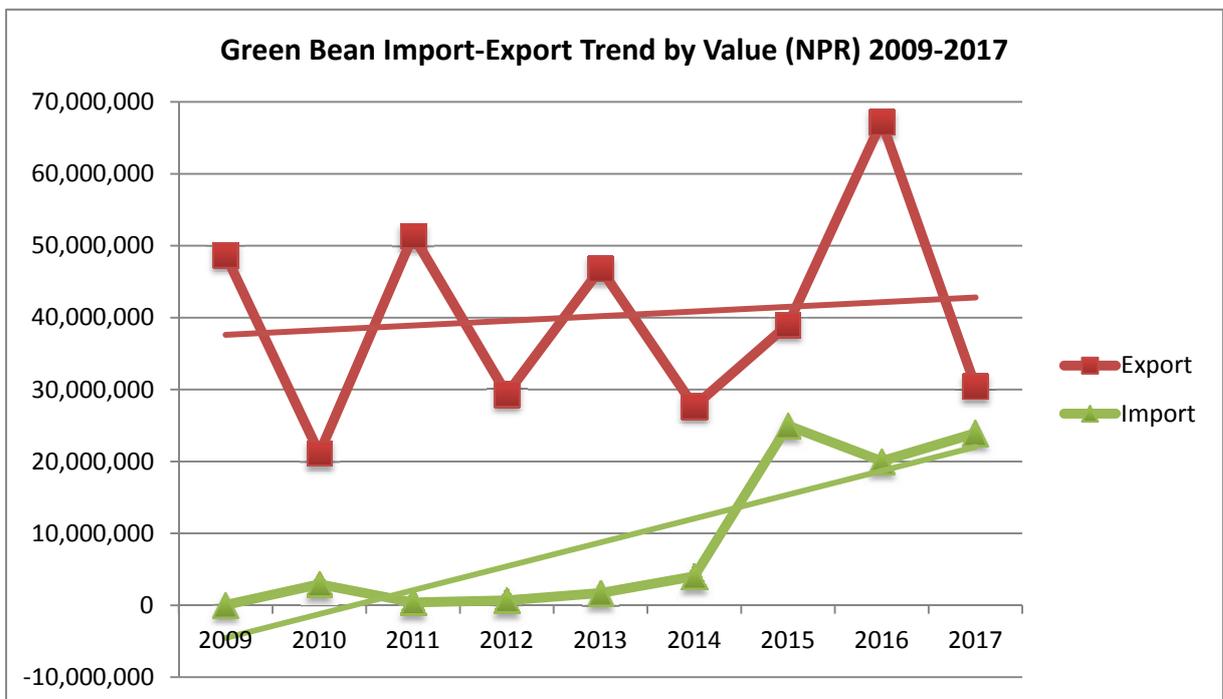


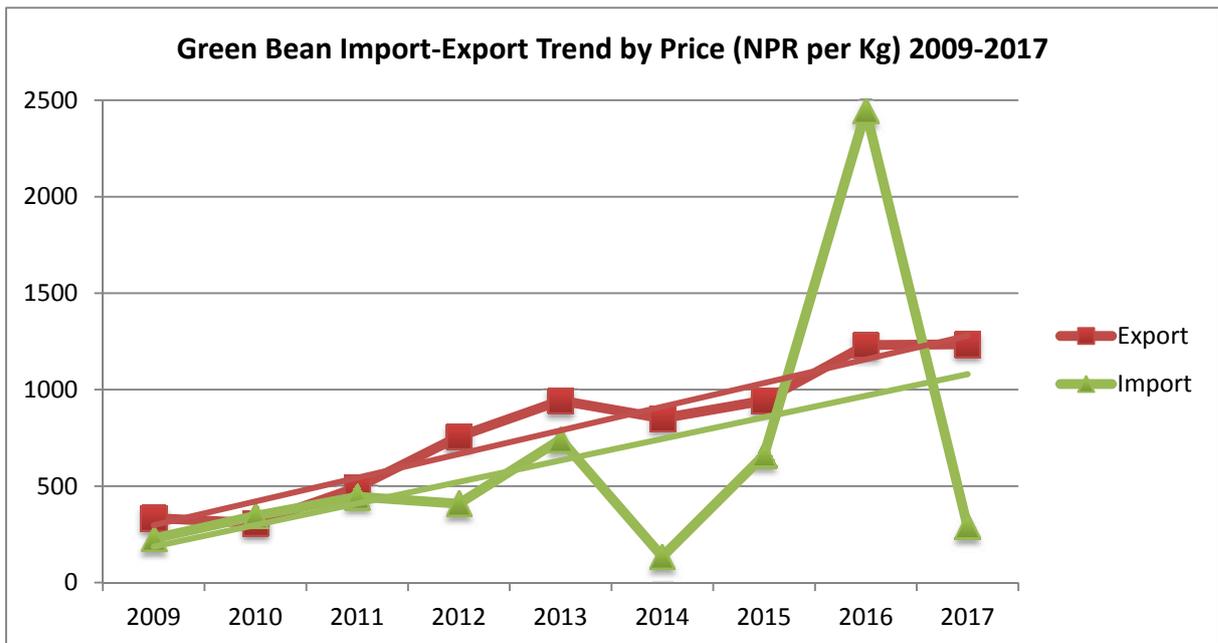
Figure 10: Green Bean Import Export Trend by Value 2009-2017



During the last 8 years (2009-2017) price for green bean is in increasing trend for both export and import. Export price of Nepalese green bean per kg was 945 NPR higher than the price of

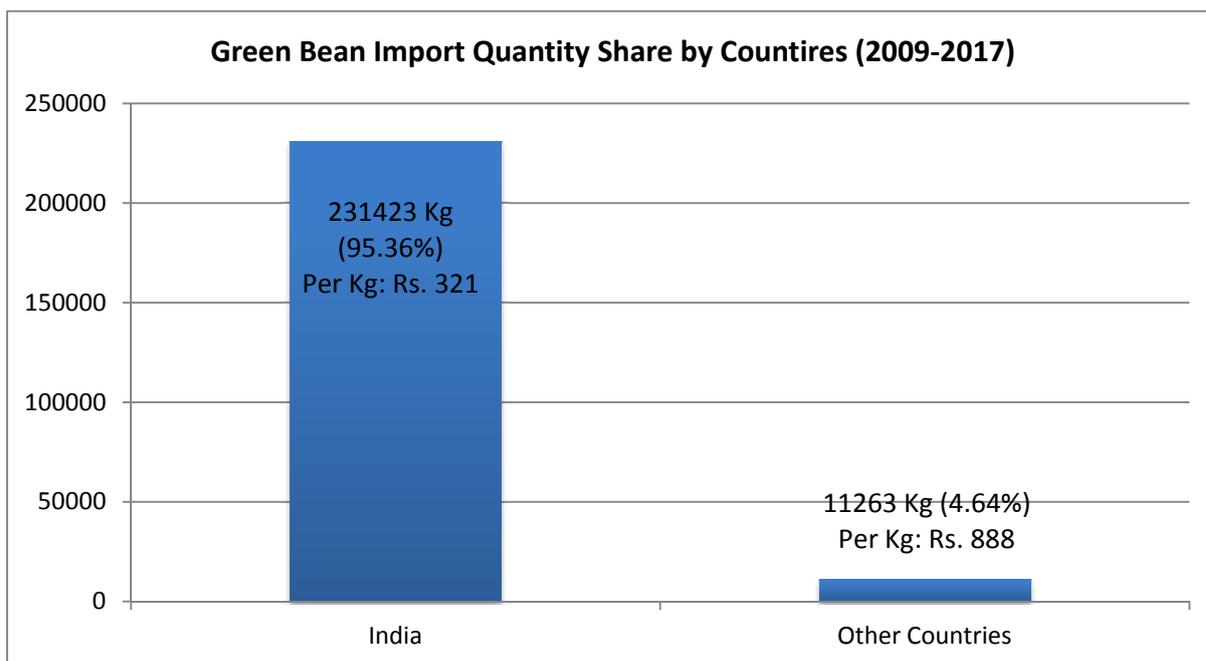
imported green bean in 2017. Whereas back in 2009 export price of Nepalese green bean was only 106 NPR higher than the price of imported green bean. If we look over quantities, export of Nepali green bean is in decreasing trend, while import of green bean is in increasing trend. This is attributed to increasing domestic consumption as well as very cheap green bean available in India.

Figure 11: Green Bean Import-Export Trend by Price 2009-2017



Aggregated data of green bean import in Nepal during 2009-2017 show that India has highest quantity share (95.36%) in comparison to rest of the countries including Japan, China, Brazil, Indonesia and nine other from where Nepal imports only around 4.64% of total quantity. Indian green beans are Rs. 567 per Kg cheaper than that from other countries in an average. However, if we compare India and China alone over the last 8 years, Chinese green bean costs Rs. 112 per Kg, whereas Indian green bean costs Rs. 321 per Kg. This again signifies that, in the future, it could be very challenging for Nepalese coffee to compete with our neighboring countries who produce large scale green bean in much lower price than we do.

Figure 12: Green Bean Import Quantity Share by Countries (2009-2017)



Following figures present top 10 countries from export data of last eight years (2009-17) in terms of quantity, value and price of Nepalese green beans that have been exported to those countries. The highest amount was exported to India (226.89 MT) followed by Germany and South Korea; while Nepalese green beans got the highest price in France (Rs. 3005/kg) followed by Qatar, the Philippines and Switzerland.

Figure 13: Top Countries by Green Bean Export Quantity 2009-2017

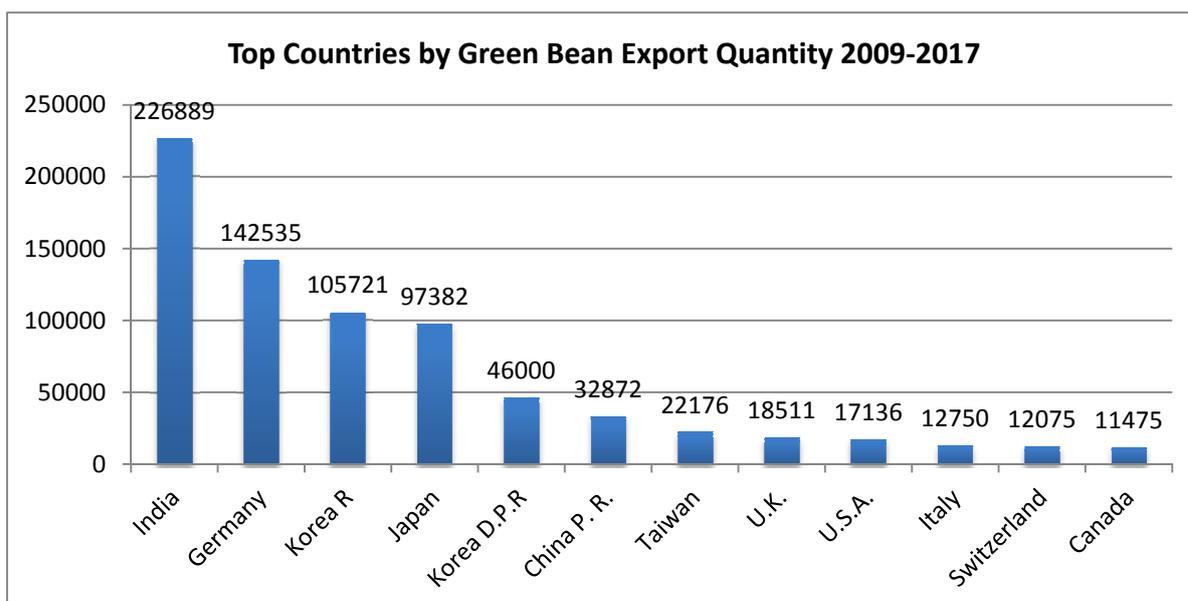


Figure 14: Top Countries by Green Bean Export Value (NPR) 2009-2017

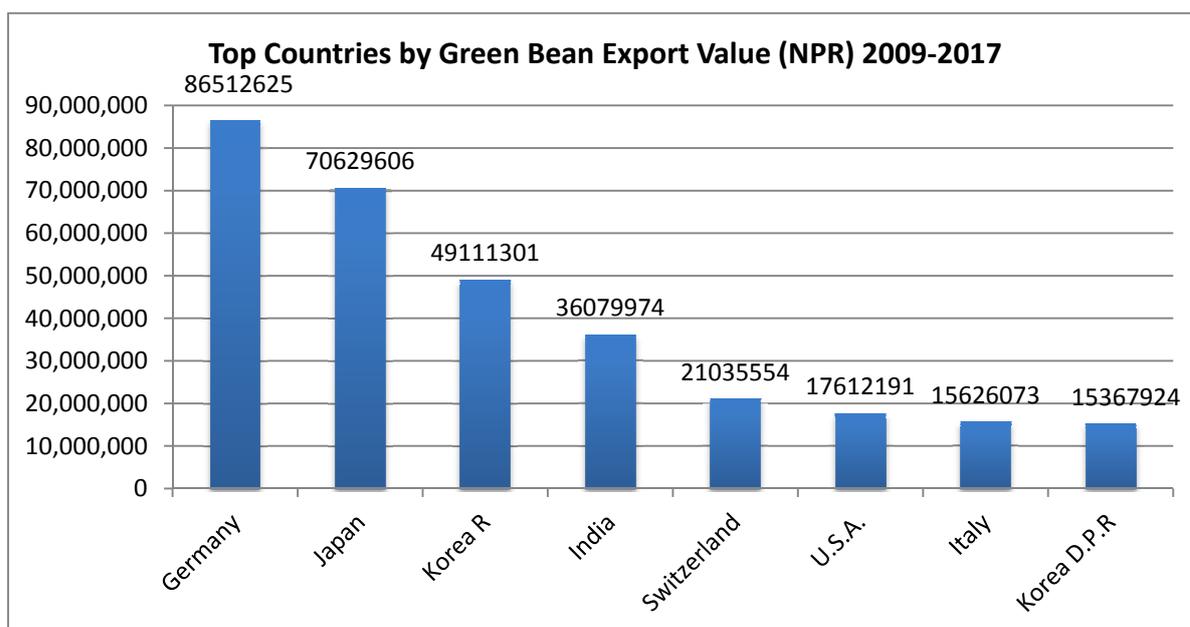


Figure 15: Top Countries by Green Bean Export Price (NPR per Kg) 2009-2017

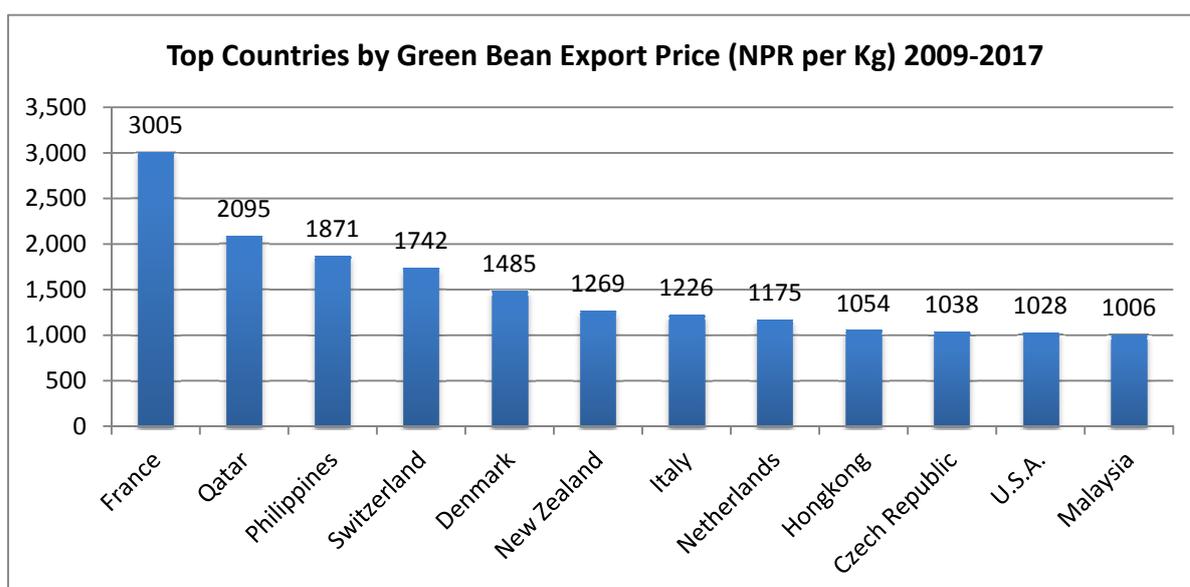


Table 9: Export-Import Quantity Gap (MT) of Different Categories of Coffee 2012-2017

Product / year	2012/13	2013/14	2014/15	2015/16	2016/17
Neither roasted nor decaffeinated	79.09	20.90	-19.53	-1.38	-39.16
Coffee	-5.84	-25.48	2.27	-11.05	14.71
Not roasted, decaffeinated	-15.55	-3.91	25.81	-22.07	-62.25
Roasted and decaffeinated	-1.60	-2.74	8.63	-5.06	-9.78
Roasted, not decaffeinated	-7.64	-2.23	-9.99	-3.37	-1.77
Instant coffee	-23.92	-14.44	-73.08	-19.63	-41.08

Export trends show that green bean has the highest rank on the basis of quantity exported and the value of export (quantity times price). However, price per kg of decaffeinated green beans were observed to be the highest. The data on Nepal's trading on decaffeinated green bean has not been verified by interaction with traders, as none of the traders during the study claimed to export decaffeinated green beans or roasted beans. In last 8 years Nepal has exported green beans to almost 35 countries.

Table 10: Export Trends Summary for Different Categories of Coffee 2009-2017

EXPORT (2009- 2017)					
Type	Quantity rank	Value rank	Price rank	Price trend	Number of countries
Neither roasted nor decaffeinated	1	1	4	Increasing	35
Coffee	2	3	5	Increasing	17
Decaffeinated, not roasted	3	2	1	Increasing	19
Roasted and Decaffeinated	4	4	2	Increasing	18
Roasted, not decaffeinated	5	5	3	Increasing	19

Import trend shows that the import of green bean has been increasing in last 8 years. The price of imported green bean is at an increasing rate. However, the price of imported green bean is lower compared to roasted beans. Apart from green beans, Nepal is also large importer of filter coffee and instant coffee. In 2016 Nepal imported almost 41.8 MT of instant coffee. Instant coffee is imported from six countries. The import of instant coffee from Malaysia is the largest at 21.35 MT. Instant coffee and tea are the major competitors of Nepali filter coffee. With expansion of coffee culture, it is likely that more Nepali consumers will prefer filter coffee compared to instant coffee.

Table 11: Import Trends Summary for Different Categories of Coffee 2009-2017

IMPORT (2009-2017)					
Type	Quantity rank	Value rank	Price rank	Price trend	Number of countries
Neither roasted nor decaffeinated	1	2	4	Increasing	15
Coffee	2	1	3	Increasing	23
Decaffeinated, not roasted	3	5	5	Decreasing	14
Roasted and decaffeinated	5	4	1	Increasing	12
Roasted, not decaffeinated	4	3	2	Increasing	17

4.2.3 Domestic Consumption

The amount of coffee that does not leave Nepal is taken as a proxy measure for domestic consumption. This measure has been annually increasing. The domestic consumption was

estimated by adding imports to production and subtracting exports. Also the coffee that has not been exported could be lying as stock processed or unprocessed. Based on these estimates, percentage of imported coffee has been gradually increasing in Nepal. Majority of Nepali people prefer instant coffee compared to filter coffee. Instant coffee is convenient to use and doesn't need any equipment such as coffee maker, filters and mocha pots at home. On the other hand, number of café using Nepali coffee was observed to be on the rise. Café where Nepali coffee are being sold, have advertised local brands and encouraged the customers for consumption of domestic coffee.

Table 12: Domestic Coffee Consumption in Nepal 2012-2016

Fiscal Years	Production (MT)	Domestic consumption (MT)	Imported %	Domestic production %
2012/13	457	408.54	17.92	17.92
2013/14	429.4	442.86	20.59	20.59
2014/15	463.58	456.39	40.31	40.31
2015/16	434	476.92	31.61	31.61
2016/17	466	564.25	41.61	41.61

On an average the price of an Americano in café ranged from Rs. 50 to Rs. 130, while the price of normal coffee (Nescafe) ranged from Rs. 30 to Rs. 50. Consumers were willing to pay almost Rs. 100 for a cup of Americano and thought that present price for a cup of Americano is expensive. The price of Americano is over Rs. 100 in most café. Increasing café culture and consumption of coffee among youth shows that there is still demand for Nepali coffee in domestic market. However, there were also some cafés those reported that the quality of Nepali coffee is not consistent hence the café preferred Indian coffee beans. Average price of roasted Nepali coffee bean is Rs.1200 per kg.

CHAPTER 5: MARKET SYSTEM ANALYSIS OF NEPALESE COFFEE

5.1 Market map

Markets are more than just the transactions between buyers and sellers. It is a dynamic space where market actors exchange goods, services, information within a set of rules and regulations. The interrelationships between the market actors, service providers, stakeholders and the governing rules determine how a market system works. Following coffee market map was constructed using a participatory method to demonstrate the Market Systems of Nepalese Coffee.

The core market is the space where the commodity is produced, processed, traded and consumed. The interrelationship between markets actors, the functions they perform and value addition at each step are demonstrated the core market component. Various business services provided to the core market actors by service providers are demonstrated in the Business Service Providers component and the roles of various stakeholders in the market system are demonstrated in the Business Enabling Environment component.

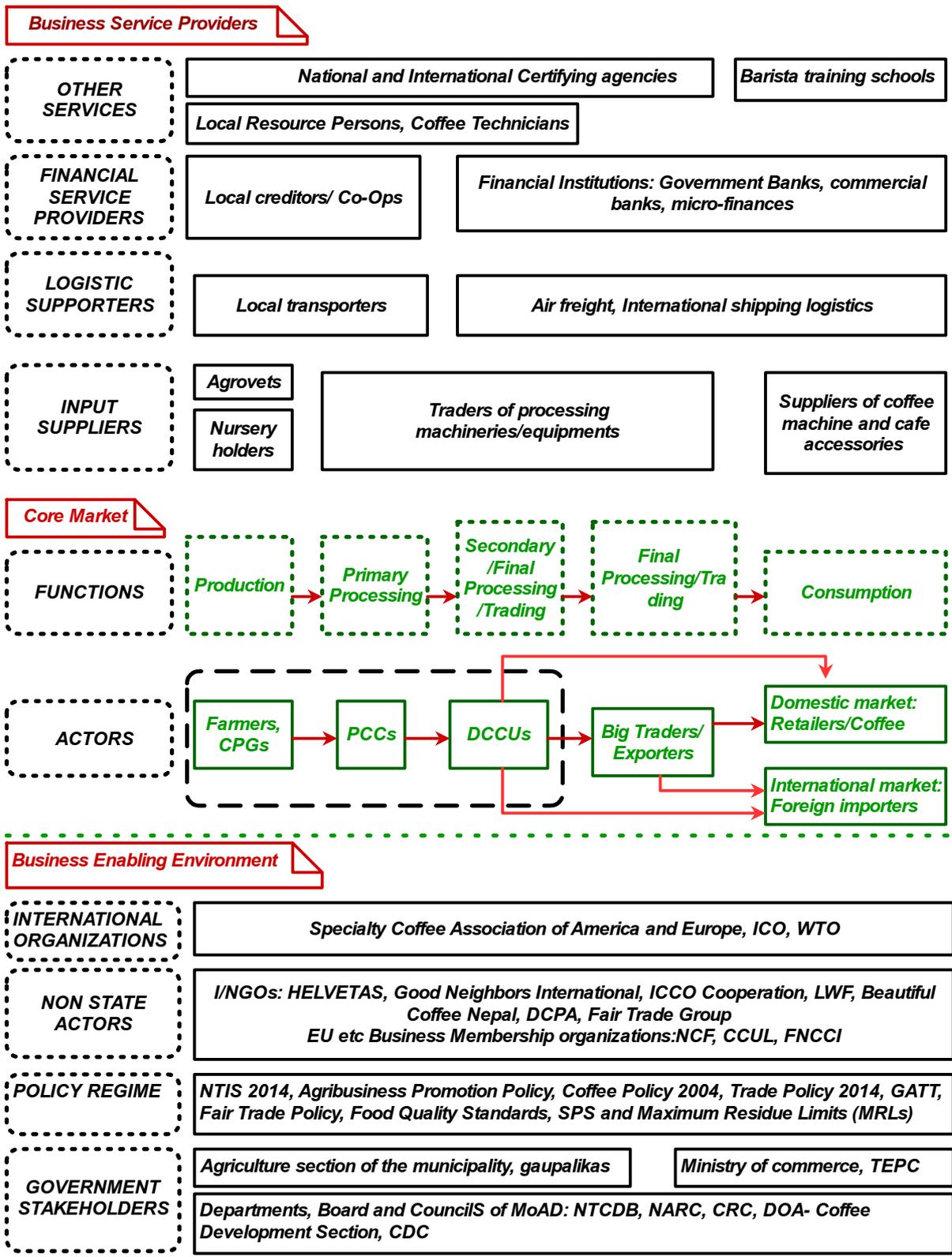


Figure 16: Market System Map of Nepalese Coffee

5.1.1 The Core market

5.1.1.1 Growers

More than 32,000 smallholder farmers from 41 districts of Nepal engaged in coffee farming in more than 2,000 ha of farmland. These farmers are growers and the primary actors of Nepalese Coffee value chain. Farmers, in major coffee growing districts, organized in Coffee Producer Groups (CPGs) either sell fresh cherry to the Coffee Cooperatives (PCCs) and individual collectors or perform primary processing in the own group.

Farmers buy coffee saplings at NRs 15 per sapling from local nurseries and plant those during the rainy season. The imputed subsidy value is 49% of the total production cost which is estimated at Rs.29 per sapling. Since coffee plants need shade plants for quality production, farmers also need to manage shade plants like: Jackfruit, Ipil-lipil, Badahar, silver oak etc in their orchard, a year prior to plantation. The observations from the production farms visited showed a rather cursory attention to the selection and maintenance of shade trees. As a result, the cases of over and under shading were found. A rather low green bean output and the infestation of white stem borer is attributed, among others, to this observed phenomenon. Coffee saplings are planted 2.5 m X 2.0 m apart (row to row and plant to plant). In a well-designed lay out, pits 0.5 m deep and 0.5 m in diameter are made 1 month prior to planting saplings. The topsoil and sub-soil are kept separately. The top-soil mixed with 5 kg of well decomposed compost is then used to fill the pits and sub-soil is filled on top. Saplings are planted at the center of each pit. Orchard is irrigated regularly during the dry season and weeding is also done on a regular basis.

Normally, it takes 3 years for a coffee plant to start bearing fruit. In the first three years, the management practice involves manure application, irrigation and weeding. Coffee plants are top-stopped when it reaches a height of 5 ft to facilitate fruit picking. Proper training and pruning are required for optimum production. Without this, the coffee plants grow up to a height of 15 ft., rendering the cherry harvest difficult and involving more labor cost in harvesting.

On the third year, farmers take the first harvest, while the coffee trees reach maturity on the fifth year. It is only on the fifth year a coffee tree starts to bear fruits properly ranging from 5-8 kg in an average, in a properly managed orchard. Fruit picking starts early in the autumn and lasts till the end of winter. Since coffee fruits do not ripe evenly, they have to be picked carefully and for several times. Hand-picked fresh and ripe cherries are then transported to the pulping center within 24 hours where they are pulped immediately. Farmers are getting NRs 90 to 110

per kg of fresh cherry on cash right away from the pulping center, while the minimum support price fixed by NTCDB price fixing committee is Rs. 78 and 83 per kilogram of fresh cherry.

In an average, small farmers cultivate coffee in around 1 Ropani of land, which theoretically has 100 plants. The normal spacing is 2 x 2 square meter without intercrop and 2 x 2.5 m with intercrop. Hence, a Ropani of well-managed coffee orchard provides an income of around NRS 45,000 to 70,000 per annum to a farmer starting from the third year and onward.

Besides this, farmers who have applied for group certification through Coffee Cooperative Union (CCU) must also confirm to the standards specified for organic certification of coffee and maintain a daily logbook recording all the farm activities in a given standard format. Since coffee producer farmers are also members of PCCs, they are bound to sell their products to PCCs. Farmers who sell their product to pulping centers operated by PCCs, do not breach this contract because of the additional support they get from the PCCs and CCUs.

5.1.1.2 Primary Coffee Cooperatives (PCC)

As of the recent data, there are about 124 PCCs operating in the 41 coffee producing districts. The primary function of the PCCs is to collect the fresh cherry produced by the farmers and carry out the primary processing (pulping of fresh cherries) and supply the parchment coffee to the CCUs. PCCs get advance cash for buying the estimated amount of fresh cherry before the pulping season from the CCUs. Farmers are provided with cash in hand after sorting and weighing the fresh cherry immediately. Pulping machines are allocated by the PCCs and benefits are shared according to the agreement between pulper operator and the PCCs. Usually pulper operators get up to an amount of NRs 50 per kg of parchment they supply to the CCUs.

5.1.1.3 District Level Coffee Cooperative Union (CCU)

CCUs are district level union of the PCCs within each district. They have defined roles in production, processing and trading of coffee. At district level, they coordinate with the CPGs, PCC, and local stakeholders to facilitate the production, processing and marketing of coffee. At national level they coordinate with coffee promotion projects, donor agencies, national stakeholders, international and domestic market actors etc. for promotion and trading of Nepalese coffee. There are 12 district level CCUs operating at 12 large coffee producing districts namely Gorkha, Lamjung, Tanahu, Parbat, Kaski, Syangja, Palpa, Gulmi, Nuwakot, Lalitpur, Kavre, Sindhupalchok.

DCCUs have following specific roles:

- To provide technical support and services to CPGs for production of quality coffee
- To facilitate the Internal Control System and certification by third parties

- To buy fresh cherries from the farmers at fixed prices in a sustainable and transparent way
- To develop the institutional capacity of CPGs and PCCs so as to benefit the coffee producer farmers
- To ensure farmers get paid instantly in cash as soon as they deliver fresh cherry to the pulper operator by providing cash advance to the pulper operator
- To ensure farmers get prices no less than minimum support price fixed by NTADB for fresh cherry
- To ensure a production environment free from child labor and gender discrimination
- To carry out the secondary processing (Hulling) of coffee
- Marketing promotion of Nepalese Coffee in sustainable manner
- Adoption of fair trade principle in production and processing

5.1.1.4 Large Traders and Exporters

A substantial number of big traders and exporters trade in Nepalese coffee, many of whom were the pioneers of coffee trade in Nepal and have been involved in promoting coffee farming and trade for a long time now. Some of the private companies also have large farms in some parts of the country. However, most of them specialize at wholesaling and export of Nepalese Coffee. Many traders have also facilitated the international certifying processes and have been trading organic coffee too.

Despite the institutionalization of cooperatives model in trading of coffee during the last decade, these private and individual traders continue to co-exist in the coffee market and the number is increasing. Very often, they work together with the cooperatives and operate on fair trade principles so as to provide reasonable benefits to the farmers.

Due to the perishable nature of roasted beans, traders export major part of coffee in the form of green beans and a small amount as roasted beans. Japan, Germany, Switzerland, U.S.A. and Korea are the major importers of Nepalese coffee. Exporters claim to have exported green beans to big companies like Ataka, Nippon Coffee, Vol Café etc.

5.1.1.5 Domestic Consumers

An increasing number of coffee consumers, Café as well as coffee retailers in major cities of the country have resulted in an increased consumption of coffee in the domestic market. Around 60% of the total production is now consumed in the domestic market. Despite the growing demand for coffee in the domestic market, traders continue to export coffee to international market because Nepalese coffee enjoys premium price in international market thus bringing more returns from export.

Case story 1: Prosperity with coffee

Machhapuchhre Organic cafe is a coffee store/café in a busy street close by the lakeside. Even in a tourist lean season, the café is frequented by a good number of customers. Mr. Shovakar Adhikari, the proud owner of this café, says his product has 4.5 stars and excellent reviews on tripadvisor and that's what makes him confident that the coffee he roasts and brews is actually high in quality. He, his wife and two full time employees run the café, which is only a small part of his business. With annual sales of 15 to 20 tons of green beans, as claimed by Mr. Adhikari, the company seems to be doing well now, but things were way different when Mr. Shovakar started his first coffee business. After years of foreign employment in Korea, he returned with a determination to start a business in coffee. At that time, limited farmers had been producing coffee in scattered areas and in small quantities. There were very few people who knew how to process coffee. Without any technical knowledge of the processing technology, it was obviously a big risk for him to start a coffee business but he decided to go for it. A training on hand roasting of coffee organized by Helvetas Nepal further provided an impetus to his new venture. To start with, he bought his first lot of coffee from farmers for Rs 14,000 and started roasting them at home in small metal vessels. He seldom got tired of trying new tricks and methods to get the roasting right. Despite a lot of hard work put at improvising the roasting method, he was not able to reach the perceived perfection. The turning point of his business career came when he got a JICA funded opportunity to visit Japan to see the advances in coffee industry. This opportunity helped him to learn different avenues about coffee processing, and also helped him to transform his business. A small business that started at Rs 14,000, now has an annual turnover in millions. Many other entrepreneurs like him put their hard work in promoting coffee sector during the unfavorable times which has now resulted in the growth of coffee sector to this level. Mr. Shovakar thinks individual traders like him are very important for the growth of coffee sector. But, he also acknowledges the contribution of many cooperative leaders and their organization in the promoting coffee in Kaski district in the past. Having walked the rough road together with them earlier, they are more like partners than competitors to him and he is always eager to work together with the cooperatives in future too.

On the other hand, a substantial amount of coffee is imported every year by importers to meet the domestic demand for coffee. Instant coffee is one of the mostly used forms of coffee in Nepal. A kilogram of roasted beans cost around NRs 1,200 to 1,600 in the retail stores. A cup of Americano costs NRs 120 to 170 in Coffee Cafes.

5.1.1.6 International Consumers

Nepalese coffee commands a premium price in the international market, being branded as Himalayan Arabica coffee. It has less caffeine, better taste and is organic in nature. In the recent times, due to decreased production Nepalese traders and cooperatives are not being able to supply enough green beans to their international import partners, which simply show that there is room for increasing the production to a much larger scale.

Nepalese coffee has a good review in the international market. There is no such mechanism to estimate the demand for Nepalese Coffee, but increasing number of organic product consumers and popularity of fair trade movement globally, allows us to fairly assume that demand for Nepalese coffee will not decrease in the near future.

Nepalese coffee exporters and traders, during the study, repeatedly claimed that the demand for Nepalese coffee is exponentially larger than the current export. It is still a topic of discussion

whether mass production to meet the demand helps to exploit the unmet demand or it hampers the industry by driving the price down. However, the export prices are sufficiently high and a slight decline with increased volume could benefit a larger number of Nepali coffee producers. Alternatively, improving the quality of products might also help to maintain the high price.

5.1.2 Business Service Providers

5.1.2.1 Input suppliers

- **Nursery holders:** In each project district, there are a number of farmers assigned by the CCU to establish nursery for coffee seedlings. CCUs provide trainings, technical support and quality seed to the nursery holders. CCUs in the project districts also provide necessary inputs like nets, plastic sheets, polybags and other infrastructures in subsidized price. Nursery holders are obliged to provide quality coffee seedlings to the local farmers recommended by CCUs. The subsidy level for nursery sapling producers is estimated to be over 60 percent. The sapling producers claim that their margins are quite low and hence are demanding to increase selling prices of Rs.20 at the least.
- **Agro-vets:** Agro-vets have rather limited roles in coffee farming areas since coffee production is a low input technology utilizing local resources. However, there are some inputs that are not locally available for eg. Copper Sulphate and lime for Bordeaux mixture. Sprayer pumps and secateurs, scissors for pruning are some other inputs that Agro-vets can supply to the farmers. They also supply input materials like polybags, nursery nets, plastic sheets etc for coffee nurseries.
- **Suppliers of processing machineries and equipment:** Coffee processors are supplied with processing machineries like: pulping machine, hullers and roasters and equipment like moisture meter by medium and large traders based on big cities.
- **Suppliers of coffee machines and café accessories:** In the recent time, an increasing number of coffee machine and café accessories suppliers have been established in response to the increasing consumption of coffee in the domestic market. These suppliers trade in espresso machines, mocha pots, French press, coffee filters and coffee makers.

5.1.2.2 Financial Service providers

PCCs provide saving and credit services to the member farmers, although this is not their primary function.

Financial service however is very important for CCUs and PCCs who need to invest frequently on assets, infrastructure and services. Processing of coffee is quite complex procedure requiring several equipment, machineries and technical manpower. Cost of infrastructure and machineries is therefore quite significant in the production cycle. As of to date, donor agencies and development programs have heavily funded many CCUs especially in the form of machinery and equipment support. However, CCUs must find a more sustainable way to fulfill their financial needs in future.

A number of financial institutions are now extending their service to the rural areas targeting the rural population. This includes micro-finances and also the branches of various commercial banks. These institutions can provide solution to the financial needs of CCUs and PCCs. There were instances of CCUs taking big loans from commercial banks in some districts but those were just exceptions. In practice, it is very difficult for cooperatives to take loans because most of the cooperatives do not have properties that can be kept as collateral.

5.1.2.3 Logistic supporters

- **Local transporters:** At local level porters hired on wage basis are the only option available. Local transporters are involved in transporting parchment and green beans to the regional and national markets. Inadequate transport infrastructures in the rural areas limit the access to market for many rural coffee growers.
- **Airfreight and shipment logistics:** A fair amount of coffee reaches international market through air passage. However, medium and large transporters provide shipment logistic service for land routes such as ports in India.

5.1.2.4 Other services

- **Local Resource Persons:** LRPs are leader farmers from villages who are trained well in various aspects of coffee production. Each CCU trains a number of local farmers and hires them to provide technical support to other farmers. They are also hired by various coffee development programs and stakeholders for providing extension service. Although many educated young girls are available and willing to work as LRPs, experience shows that investing in training them is not so productive because they tend to move to another location after getting married. Due to this problem, some villages lack experienced technicians to provide technical support for new farmers.

5.1.3 Business enabling environment

5.1.3.1 Government stakeholders

Councils, boards and departments of the MOAD such as: NARC, NTCDB and DOA, Coffee and Tea Development Section have been providing research and extension service to the coffee sector. The Agriculture Section of municipalities and rural municipalities under the new local government structure are responsible for implementing coffee related programs at local level.

5.1.3.2 Development Partners

NGOs and INGOs such as HELVETAS, Beautiful Coffee Nepal, Good Neighbors International, ICCO Cooperation etc. have been supporting local communities to promote community-led coffee development initiatives through their programs. EU has also been funding these activities. Similarly, some other agencies like LWF, Save the Children are also implementing similar programs.

5.1.3.3 Policy Regime

National Trade Integration Strategy has prioritized coffee as a potential commodity. National policies like Trade Policy, Coffee Policy, Agribusiness promotion policy, Coffee Quality Standard etc. are instrumental in providing direction for future interventions.

5.2 Governance structure of organic coffee value chain

"Governance" refers to the nature of relationships between buyers and sellers, including the extent of their interactions with one another (AFE, 2014). A "Balanced Governance Structure" commonly occurs between market actors in the fair trade coffee value chain.

At the suppliers' end, Coffee producers organized in small groups, PCCs and then into CCUs exist as the units of production, green bean being the ready-to-sell product. At the consumers' end, multiple buyers exist in the domestic as well as international market. It appears that Nepalese coffee caters to the demand of a niche market; the group of coffee consumers who prefer organic coffee or exclusively the Organic Himalayan Arabica Coffee. To ensure that consumers get the right product, there is information flow in both directions. The industry operates on fair trade principles.

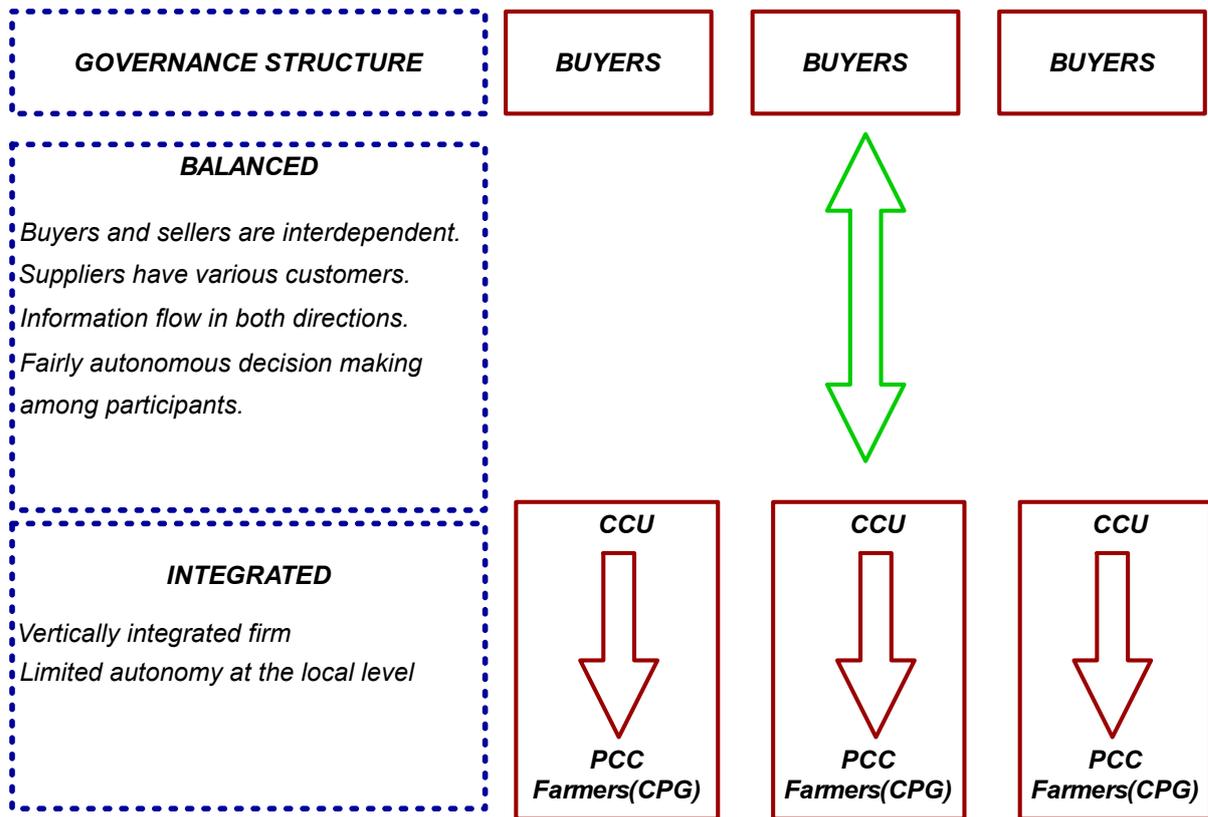


Figure 17: Governance Structure of Organic Coffee Value Chain

Characteristics of a “Balanced Governance Structure”

- Buyers and sellers are interdependent.
- Suppliers have various customers.
- There is intense information flow in both directions.
- Both sides have capabilities that are hard to substitute.
- Commitment to solve problems through negotiation rather than threat.
- There is fairly autonomous decision making among participants.
- There is cooperation but no one dominates.
- Direct trade, no involvement of middlemen.

5.3 Share of Value Chain Actors on the Final Price

There are several steps involved in coffee processing before they finally reach the consumers’ cup. Farmers produce fresh cherry and sell as it is to pulping centers. Primary processing (pulping) is carried out in pulping centers, where the fresh cherries are transformed to parchment coffee. Hulling centers carry out the secondary processing (Hulling) and sell green beans to traders. Traders either export the green bean to international importers or roast the green beans and sell it in the domestic market.

The following table uses cost of production/operation calculated on the basis of primary data collected during the field visit. The prices are also based on the real data collected. ICO's conversion rates are adjusted to calculate the conversion equivalent.

Table 13: Share of Cost and Revenues/Profits of Various Value Chain Actors on the Final Price of Coffee Equivalent to 100 kg Fresh Cherry

Actors	Product	Conversion equivalent (kg)	Price/kg	Associated cost /100 kg cherry equivalent (Rs)	Revenue from proceeds (Rs)	Value chain share (Rs)	Share in %
Farmer	Fresh cherry	100	85	4514	8500	3986	35
PCC	Parchment	23	570	10839	13110	2271	20
CCU	Green beans	18	900	15005	16200	1195	11
Traders	Roasted beans	14.3	1300	14770	18590	3820	34

This table shows that cost of production for 100 kg fresh cherry equivalent, varies along the chain and so does the price. Cost of production is comparable between the other actors except the farmers. At the farmers' front the cost of production is quite low. But compared to the costs revenue is relatively high. In summary, farmers get the highest share (35 %) of the final price. Despite the higher costs of production traders (roasters) enjoy the second largest share at 34 %. PCCs and CCUs, who carry out the pulping and hulling, get 20 % and 11 % share of the final price respectively. This, however, indicates that if secondary processors have the capacity to conduct the final processing, they can significantly increase their share of the final price in the value chain. It also suggests that farmers get higher share at the cost of PCCs and CCUs who work for the welfare of its members.

Although PCCs and CCUs have influential role in the value chain governance, they don't have monopoly over the price/revenue.

CHAPTER 6: CONSTRAINTS TO COMPETITIVENESS IN NEPALESE COFFEE

6.1 Production constraints

Despite a high demand for Nepalese coffee, production stands at a meager 496 tons of green beans. The production and productivity follow a decreasing trend. A variety of factors linked with the production function are constraining the growth of coffee farming in Nepal.

6.1.1 Slow adoption rate

Adoption of coffee farming is very slow. Around 32,000 farmers in the mid hills cultivate coffee in 2646 ha of land. This is very small growth in many years compared to other commercial crops. Coffee unlike other high value crops takes relatively longer duration to get returns from investment. Additionally, coffee is a new crop for majority of farmers. In absence of proper knowledge on coffee cultivation, they are reluctant to choose this new enterprise by abandoning the cultivation of conventional crops like maize and wheat.

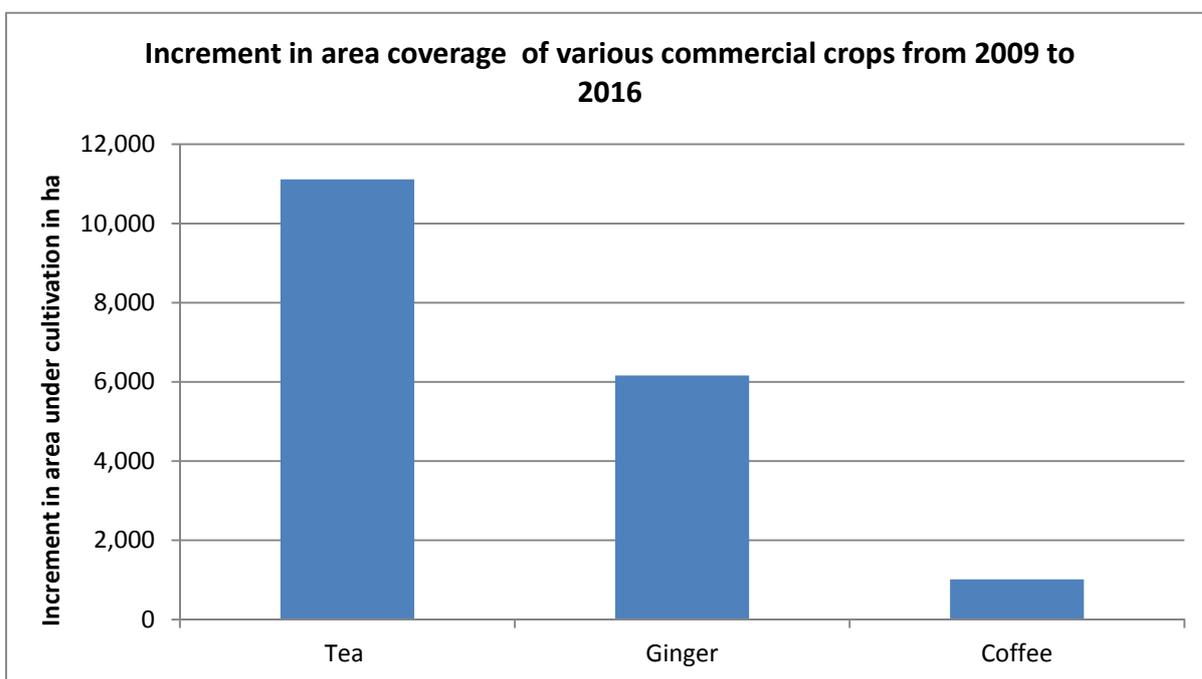


Fig 6.1 Increase in the area under cultivation of various commercial crops grown in Nepal (Source: Data from various sources; NTCDB, Ginger VCA report HVAP, 2009 to 2016)

6.1.2 Poor planting materials

Healthy and productive coffee plant starts from the seed. So, quality planting material is vital to the sustainability of Coffee industry. The seriousness of this fact however has neither been realized by the coffee entrepreneurs nor by the stakeholders.

The supply of planting material currently is haphazard, unmonitored and unregulated. Under the current practice there is no way that a farmer can be sure about; which variety s/he is buying? Is it genetically pure? Does the nursery follow best practices for raising healthy disease-free plants? What is the agronomic performance of the variety s/he is using?

According to international standards, a proper nursery should ensure the following:

1. **Nursery Standards:** The nursery follows best practices for raising healthy, disease-free plants.
2. **Genetic Purity:** The coffee variety has been identified using proper methods so farmers can be certain they are buying the correct variety.
3. **Education:** The nursery informs the farmers about the agronomic performance of different varieties available to farmers so they can make an informed choice.
4. **Breeder's Rights:** The nursery gives credit to breeders and ensures their rights are respected.

Production of planting materials is highly regulated through certification systems and monitored by Government in major coffee producer countries. Coffee nurseries for instance, in Kenya are guided by Coffee General Regulation and Arrangements. The county government licenses coffee nurseries by providing "coffee nursery certificate" and authorizing the nursery holder to operate a coffee nursery. No person, other than the Kenya Agricultural Research and Livestock Organization or its authorized agents operating laboratories or tissue culture units under their supervision, is allowed to issue certified coffee seeds or seedlings for multiplication in any coffee nursery to any other grower or for export.

The provision also requires the person to be trained and registered with the Authority in collaboration with the relevant County to establish or operate a coffee nursery.

Nepal should also learn the importance of maintaining nursery qualities from similar policies around the world.

6.1.3 Poor Cultivation Practice

Layout and spacing

The recommended spacing for planting coffee plants, 2.5 m between plants and between rows was not found to be practiced in small as well as large farms. For slopes above 15 degrees it is recommended that planting should be done in contour strip. This contour pattern of plantation has not been practiced in reality. It is important for minimizing soil erosion and managing irrigation. Contours can be simply designed by using A-frames.



Fig 6.2 Orchard layout using A-frames (World Agroforestry Center, 2018)

Irrigation

Shortage of water is a major problem in many coffee production areas, which is also one of the major reasons for limited productivity. Further, coffee farmers have been using an inefficient irrigation system, where coffee plants are supplied with water whenever there is excess of water available at household. Irrigation using garden pipes was commonly observed, which is also labor consuming.

Twisting, unopened buds or dried flowers are typical damages caused by high water shortage resulting in yield loss of up to 50%. (NaanDanJain, 2009) Proper management of irrigation can thus reduce the yield loss to a large extent.

Organic manure and FYM

It is estimated that for every 6,000 kg of ripe coffee cherry (1 ton of green bean) removed from the plants, approximately 40 kg nitrogen (N), 22 kg phosphorus (P) and 53 kg potassium (K) must be replaced yearly. This requires that the coffee plants be supplied with a good amount of nutrients every year. It is estimated that 5 to 8 quintals of manure is required for supplying optimum amount of nutrients for 1 Ropani of coffee orchard per year (Winston, 2005). Although coffee is cultivated in a livestock integrated farming system, seasonal crops like maize and wheat are often prioritized for application of FYM and organic manure.

Labor inefficiency

Given the size of the farm and the number of coffee plants in an average sized coffee orchard, the labor requirement of existing coffee farms should be easily available in farming households. Though, farmers complained about the labor shortage in the areas visited. Migration of younger generation to the cities and abroad has also created a labour vacuum in the coffee growing areas. Coffee farming is labour intensive and there are certain steps like cherry picking, pruning etc., where labours require certain set of skills. For instance, an average labour should be able to pick 45-90 kg cherries in a day, while the observed rate is only 25-30 kg per day. The problem needs to be addressed through various measures targeted to youth population such as collateral free loan, trainings and orientation in coffee farming as well as trainings and equipment support for different processing steps of coffee.

Disease and pest

Coffee White Stem borer is a devastating pest in coffee farming that has destroyed the coffee plantation severely in many districts. A damage of 20 to 60% of the orchard was reported at various locations. Though, cooperatives and stakeholders have been assisting farmers to get rid of the infested plants, a proper technology to manage this pest has not been developed and the problem is increasing.

White stem borer is a beetle that lays eggs in the cracks and grooves of the bark. When the eggs are hatched the larvae eats into the branch and then the trees stop producing fruit and, eventually die. The problem is more widespread at lower altitudes. It is very difficult to control the pest especially in organic environment since pesticides can't be used. The control measure practiced so far is to identify in early stage and cut and burn the whole plant. Farmers who have only a few coffee plants do not bother to cut and burn the infested plants. This is further accelerating the spread of this pest.

Pick the cherries which have this color: Case from Rwanda

Sustainable Harvest is a company founded by David Griswold in 1997. The company pioneered in forming direct relations with coffee farmers and creating a transparent supply chain. Rather than reaping profits, the company reinvested profits in agronomy training so that farmers could improve the quality of coffee and earn more in international markets. The company is supporting cooperatives in Rwanda. One of the initiatives taken by the company was to make farmers understand that coffee was different from corn. Farmers practiced "strip picking" cherries which caused inconsistency in taste of the roasted coffee. In order to change this practice, red colored silicon bracelets were given to farmers that said "Pick the ripe cherries which have this color" in English and local language, which was constant reminder to pick only scarlet hued ripe cherries and not the unripe ones. This initiative alone increased the quality of coffee substantially.



Source:Wallace, 2017

Coffee leaf rust is another major problem in coffee cultivation. It is a disease caused by a fungus, Hemileiavastatrix, and is a major problem in coffee growing areas. This disease is more prevalent in Lalitpur, Syangja and Kaski districts. This disease is spreading rapidly since the spores of this fungi spread through air.

6.2 Constraints of processing

6.2.1 Processing machineries

Pulping, hulling and roasting are the three main steps of processing coffee. It is still difficult for processors to get high quality pulper, dryer, grader, huller and roasting machines that are more efficient. Most of the machineries that are imported come from India, China, Turkey and Italy. There is a very narrow range of choice because only few companies trade in coffee machineries. Alpine Coffee, a major supplier of coffee processing machineries claim that it is the one and only company that specializes in trade of coffee machineries. The supplier however says that the demand for these machineries is still very low and buyers prefer to buy cheaper and less efficient machineries rather than the more efficient and expensive ones. For instance, a proper coffee hulling machine costs twice the price of a rice huller/polisher used for hulling coffee in many places. Buyers still prefer to buy low priced rice hulling machine without considering the

fact that more efficient machinery can save enough money to finance more expensive machinery.

Many CCUs and PCCs of the study area were using machineries funded by various development programs and Government. Most of them are old technology and less efficient. Processors often complained about the processing losses due to low quality machineries. Pulping machines used in many cooperatives are manual and less efficient. In the mid-hills water shortage is a common problem. Pulping of cherries require a lot of fresh water. Dry processing can be carried out in places where there is acute shortage of water. It is recommended that investments be made in more efficient and high capacity machineries considering the fact that the industry is growing.

6.2.2 Technical knowledge

Coffee industry is one of the most dynamic industries and coffee processing is a complex technology. Since Nepalese coffee is highly regarded as a specialty coffee in the international markets, it is further important for us to maintain the quality through proper technology. To keep up with the expectations of niche market consumers, processors must conform to the various standards of high quality specialty coffee. For this the industry needs manpower with certain set of skills. There are some vital steps in coffee processing where there is a lack of technical manpower:

- Machine operators, repairers
- Roasting operators
- Q-graders

6.3 Constraints to trade and market access

6.3.1 Low quality coffee in the domestic markets

It was a trend of past for traders and cooperatives to export the high quality coffee to international market and the low-grade rest to the domestic market. The trend has changed in the recent years due to the demand of high quality coffee in domestic market but many Cafes still complain about the quality of Nepalese coffee they receive. Due to the lack of enough supply, the ground coffee available in the market is in many cases mixture of broken low quality coffee. A Café owner from Sinamangal and another one from Lazimpat shared about how they had to switch to an Indian Coffee brand due to the low quality of Nepalese coffee they received earlier.

6.3.2 Segregation of private sector

It was observed that there is a very poor participation of private sectors in the national coffee platform. Although it is mandatory for all coffee entrepreneurs to be registered with NTCDDB, there are only 20 entrepreneurs actually doing so. Many private sector actors who have involved in trade and marketing since the initial days of development of coffee sector are found to be actively participating in the national platform. But it was realized that there has been little efforts to include new entrants in the common platform. Conversion of Nepal Coffee Producers' Association (NCPA) to Nepal Coffee Federation (NCF) and reorganization of NCF can be regarded as positive move, when Central Coffee Cooperative union (CCCU) is being inactive, but ensuring the participation of new entrants should be prioritized for avoiding fragmentation of the coffee sector.

6.3.3 Unfair competition

The coffee market in Nepal has a fair presence of private sector traders. Some of them have been operating in coordination with cooperatives and some others independently. Although the existing market system promotes healthy competition most of the times, there are occasional instances of unfair competition between them. Some cooperatives complain about the traders offering higher prices to the farmers in order to occupy larger market. Although this trend benefits the farmer in short run, it may disrupt the existing market system in the long run hampering the coffee industry as a whole. One instance of such trend was found in Lalitpur district, where CCU Lalitpur had to offer higher prices to the farmer at one point of time to compete with the traders. Under existing condition, farmers get a good share of the final price of coffee. Maintaining this price is very important for sustaining the industry which requires the cooperatives to invest in increasing competitiveness of the product. We found that competitive market has helped to promote innovations in some coffee producing areas. Healthy and fair competition should be ensured through policies.

6.3.4 Lack of a proper market information system

Several stakeholders are involved in promotion of coffee sector. Trade and Export Promotion Center (TEPC), Ministry of Commerce, NTCDDB, Customs, CBS collect and share information on various aspects of the coffee market like: export-import volumes/values, production, productivity etc. Besides there are many other agencies working on this sector who have their own mechanism to manage coffee database. However, there is poor coordination between these stakeholders in pooling the market information for the beneficiaries.

A major problem for new entrants in coffee industry is the lack of a proper market information system that provides information of price, market centers and buyers, quality and quantity requirement of market, required technology etc.

6.3.5 Poor Traceability

Traceability guarantees food safety and is integral to organic and fair-trade systems. In the absence of a proper mechanism to trace the origin of products like coffee, it is not possible to sell specialty products in both domestic and international markets.

Currently, some cooperatives selling organic/fair trade coffee in the international market have been found to have maintained traceability up to PCC level, but for the rest of the coffee, there is no way a consumer can trace its origin.

An increasing number of traders now buy coffee from various locations but sell them under a common brand. As in case of Kaski district, a single trader claimed to have sold more coffee than the entire production of the district, while the PCC/CCU of sell only a fraction of their production to that particular trader. This is an example of how coffee is becoming untraceable in the recent times.

6.3.6 Failure to take advantage of trade agreements and preferential market access

Nepal has signed 17 trade agreements and two transit agreements, which have provided the country with improved access to regional and global markets. In the coffee export sector, Nepal faces 0 % tariff under the bilateral trade agreement with India; under *Most Favored Nation* regimes in the EU and United States markets; and under the preferential tariff for least developed countries in Japan and the Republic of Korea. The benefits of these preferential market access provisions, however has been utilized minimally. Although coffee export can be an important source of foreign exchange, the export only stands at 20 % of total coffee production.

6.4 Constraints related to organizational management

6.4.1 Lack of motivation

Institutionalization of cooperative model for production and trade of coffee started less than a decade ago. Before that, it was the traders who were governing the coffee value chain. During that period there were several incidences of farmers not getting fair prices or payments being delayed. The rise of cooperative-led trade in coffee sector was actually farmers' response against the monopoly of traders. Cooperatives have an influential role in the value chain governance

now. The role of cooperatives however, remains more focused on the marketing and pricing of coffee while the production part gets lower priority. This might be one of the reasons why the sector hasn't seen much growth in a long time. The production and productivity hasn't increased much and adoption rate is very low.

It is felt that cooperatives still need support to grow, as institutionalization process was just started few years before. Cooperatives however should develop a subsidy graduation plan for future to be able to operate independently.

Niche markets such as fair trade and organic consumers favor the cooperative model. So, there is a big opportunity for cooperatives to occupy specialty market. Although some cooperatives are motivated to develop new products for instance, bird-friendly (as claimed by Jureli Coffee) and peaberry specialties targeted for these niche markets, the efforts are inadequate and short term.

6.4.2 Poor business development capacity

Besides some ICS implementing CCUs, cooperatives lack proper record keeping systems. This problem was also found in large farms visited. Without proper business plans and product development strategy, it is difficult for enterprises to respond to the needs of emerging markets. Cooperatives also do not seem to have proper plan to tap the growing domestic demands.

There is a mandatory provision for all PCCs/CPGs to have a proper production plan. CCUs make their business plans based on the production plans of PCCs/CPGs. This however, has neither been practiced nor been monitored.

6.5 Policy constraints

6.5.1 Infrastructure for Coffee Cultivation Area

Coffee policy 2003, which is supposed to be the guiding policy for the overall development of Nepalese Coffee sector, emphasizes on giving coffee cultivation area, the priority for infrastructures like: road access, electricity, irrigation and communication. However, this has not yet been translated into action. Coffee, in Nepal, is exclusively cultivated in the hilly areas, where it is difficult to extend infrastructure owing to the difficult terrain and undulated topography. A majority of the rural farmers will not be able to adopt coffee farming unless they do not have access to these infrastructures.

6.5.2 Land access for small holder farmers

The coffee sector development in Nepal can significantly contribute to poverty alleviation, only if the issues of small holder, resource-poor farmers are addressed. One of the key issues that are constraining small holder farmers from adopting coffee farming is unavailability of sufficient land. Farmers who only have a few *ropanies* of land will obviously be reluctant to allocate a big plot for coffee cultivation. Policies to provide public and private land on lease for coffee farming have only been limited in paper.

6.5.3 Poor progress on the research front

NARC, Coffee Development Center, Coffee Research Center, NTCDB and its two regional offices have the institutional capacity to carry out technical research in coffee sector. Despite the presence of a number of these institutions, coffee research has seen no progress in many years. Although the coffee policy emphasizes the development and dissemination of modern and improved technologies in coordination with the Government and private sector through focus on research, there is limited research in this area. There was a varietal trial in NTCDB regional office Pokhara, which was an orchard under the dense cover of Litchi trees.

6.5.4 Issues on the implementation of national logo in exportable Coffee items.

A collective trademark Nepal Coffee was introduced some years ago through collaborative effort of TEPC, NCPA and NTCDB. NTCDB renews the Logo in the name of COLLECTIVE MARK in Department of industry while NCPA grants the Nepal Coffee logo to products that are organic and meet the other international quality standards. NCPA has also been authorized to register the trademark abroad. NTCDB is concerned about NCPA granting logo to exporters without abiding by the government rule during registration of the trade mark abroad. NCPA on the other hand blame NTCDB for not renewing the logo. This issue hindered the effective implementation of the logo in the past. A guideline to facilitate the branding process is about to be finalized soon which might resolve the issue.

CHAPTER 7: RECOMMENDATIONS

7.1 Focus on productivity enhancement

Appropriate combination of water, plant nutrients, shed crops and efficient labor will obviate all concurrent problems in productivity. Such a combination will also reduce the infestation of white stem borer, which is currently plaguing the Nepalese coffee farming. To conserve water in irrigation, the practice of mulching will be essential. The target productivity will have to be at least 5 kg average fresh cherry per coffee bush. This should not be impossibility. According to the records, productivity has been reported to be over 10 Kg per bush that is equivalent to per Ropani gross income of around Rs. 45,000 per ropani with about half the sum spent in the production package. This achievement alone will be instrumental in reducing poverty in the area.

7.2 Irrigation management

Where there is shortage of water, an appropriate size of rainwater collection tank is recommended. Drip irrigation has been successfully managed in many coffee plantations around the world. Drip systems are the most efficient irrigation method. The power consumption is also minimal. (Marrouelli and Silva, as cited in Naandanjain, 2009) It is estimated that localized irrigation like drip systems have irrigation efficiency of 80 to 95 % compared to only 40 -75 % in surface irrigation method. Mulching practice conserves moisture in the soil. Some alternative water management practices like pit digging for ground water recharge may also be practiced for efficient use of water resource.

7.3 Provision of shade

Shade for coffee bush is essential. The choice of shade trees should have following requirements:

- Income generating to complement the return from coffee;
- Root zone not competing with coffee for nutrients and should rather supplement such as by the leguminous shade trees;
- Foliage not dense enough to fully obstruct the exposure of coffee bushes to sunlight needed for photosynthesis – without which there will be no fruiting. This includes the optimum pruning of the shed trees. So, there is a need to strike a balance between shade and sun.

- In light of the above, the following shed trees are recommended, Siris, a leguminous plant which can provide nitrogen to the coffee bush, jack fruit.
- Not to be included in shade trees are pines (because it renders the soil to be acidic), Saal trees. Where feasible, avocado and macadamia could be lucrative options. It is a deep-rooted tree, and the fruits are highly valued.

7.4 Fertilizer management

Traditionally, livestock litter, dung and cow urine are the main sources utilized by farmers for preparing manure while many other degradable materials like: farm wastes, coffee pulp, husk, straw, biogas slurry etc go unutilized in the farm. Use of nitrogen fixing shade plants like Ipil lipil and Faledo can be beneficial in stocking the soil with additional nitrogen. Each bush should receive about 7-8 kg of well-decomposed organic fertilizer per year.

7.5 Trained Work force

Coffee farmers/workers need a certain set of skills to carry out many operations like pruning and fruit picking. Training the workers properly can solve the problem to some extent. Further, scientific layout of the orchard and management of more efficient irrigation system can also reduce the labor requirement of coffee farms. Prompt action can reduce many costs. Pruning at proper time can help to reduce labour requirement. Selection of uniformly ripening variety can reduce cost for picking fresh cherry. Trained and efficient workers are needed to handle all cultural operations

Covering an extra mile

Khom Bahadur Gurung from Pokhara Lekhnath Metropolitan -33, had no idea about coffee farming until a nursery holder in his village asked him about how the villagers are making income from this new crop. Maize farming around his homestead brought very small income for his household. Instantly, he decided to plant coffee in a small piece of land. After getting basic training from the PCC, he gained some idea about farming coffee, but he went beyond what he learned in the training to raise the plants. When he started coffee farming he was told that coffee plants will start to bear fruits only after the third year but to his own surprise and the villagers', those coffee plants started to flower the very first year. Despite having used the same planting material, 50% of his coffee plants are heavily fruited and are better than in many other three year old orchards in the village. Mr. Gurung attributes much of his success to the hard work he put on irrigation, weeding, fertilizing and taking care of the coffee plants. He has now learnt that growing crops is like raising a child. They respond very well to the quality of care given to them. Some technicians suggested him to thin his fruits to get sustained yield, but he is sure that if he continues to give the same amount of care to them the coffee bushes will certainly continue to give high yields. "I go to the orchard every day and observe each plant carefully. I remove the weeds, manure the plants whenever necessary, and irrigate them. That's how I have set a new record in this vilage" says Mr. Gurung who is a retired British Gurkha. He says – going an extra mile in any endeavor is what I have learned from British Gorkha norms.

7.6 Intercrops

It is recommended to practice intercropping to enhance the profitability per unit land. Peas and beans as intercrops enhance soil nitrogen. The spice crops like ginger, turmeric are other productive alternatives. Chilly keeps away the animals and birds besides adding to the farm income. There will be a need to add more crop nutrients if intercrops are grown so that these crops do not share nutrients from the coffee bush.

7.7 Suitable varieties

7.7.1 Fruiting pattern

A coffee farmer located in a distance of over 5 km with no access to transport means cannot afford to harvest two kg cherries and transport that to a nearest pulping center. This will not be an economically acceptable proposition. For such a farmer, coffee varieties that ripen more uniformly are needed. Although experts suggest there is no such varieties available at present, choosing the relatively better varieties might be an option.



Berries maturing in tandem and maturity at different times with a branch node

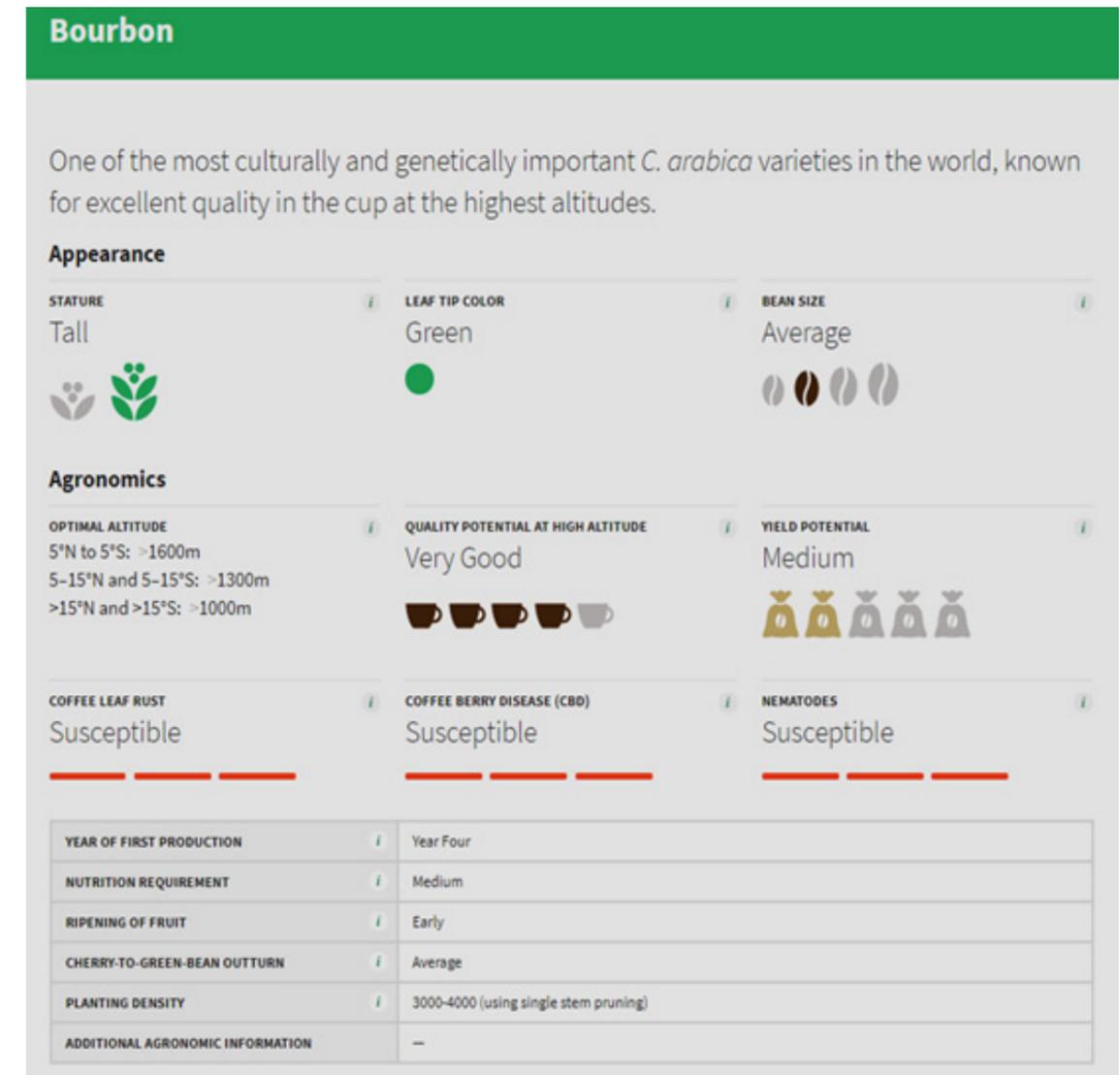


Figure 18: A Typical Catalogue of Bourbon Variety (World Coffee Research, 2017)

7.7.2 Developing varietal catalogue

It is also recommended that a varietal catalog be developed and disseminated. It should be a catalog with detailed list of all varieties currently in use and new varieties being imported, explaining the appearance like: stature, leaf tip color, bean size and their agronomics like: yield potential, quality potential, optimal environment for cultivation and susceptibility to pest and diseases.

7.8 Processing

Two processes are followed – wet and dry. In the dry process, the cherries are dried under the sun or with the use of mechanical means to reach a moisture level of 11 percent before hulling. The wet process on the other hand involves pulping, washing, fermenting and drying before hulling. It will be necessary to pulp the cherry within 24 hours of harvest – lest the pulp will

begin to ferment inside affecting the quality of the coffee beans. Both processes are equally efficient. Where water shortage is acute, the dry process will be the obvious choice.

7.8.1 Economic Use of By-products

Pulp (from pulping) and husks (from huling) are the by-products from coffee processing. An observation in Alpine Coffee Estate in Nuwakot district has shown that pulp can be used as fuel in bio-gas which is reported to increase bio-gas output by about 20 percent. The pulp can also be also used in confectionery industries as useful additions in cakes, candies and chocolates. Husks can be used as litters for layer chickens and pulps can be simply composted for making manures.

7.8.2 Improvement in hulling

Hulling, machines are used to hull the coffee to convert parchment coffee to green bean. Because of the inappropriate size, capacity and less skilled operation, the output is sub-optimal represented by high percentage of broken beans. Although the broken beans are also marketed, they command a price less than half the full. In a controlled setting, an experiment to document the proportion with 2,700 kg of hulled coffee was conducted a year ago. The result was 1,050 kg 16 grade wholesome beans (38.9%), 1,090 kg 14 grade green beans (40.4%), 385 kg broken beans (14.3%) and 175 kg husks and pea-berries (6.5%). The high broken bean percentage was found to be due exclusively to inefficient huller. The normal percent of broken beans should have been about 5 percent maximum.

Table 14: Different forms of green bean obtained in grading process

Size	16 sized	14 sized	Broken	Husk & peaberry	Total
Quantity (kg)	1050	1090	385	175	2700
Percent	38.9	40.4	14.3	6.5	100.0

Source: Gulmi Coffee Cooperative, 2018

7.9 Trade and market

7.9.1 Development of Market Information System

Market information system is a process of systematic collection, analysis and dissemination of market information, which enables all market actors in efficient decision making. It is recommended that a proper Market Information System should be established to collect, process and disseminate information on

- Market centers and buyers
- Quality and quantity requirements of market
- Legal and policy provision to market the products

- Market actors and marketing channels
- Distribution channel and transportation
- Warehouse and storage facilities

7.9.2 Improving the domestic market of Nepali coffee

- Expand Coffee shops in tourist trails;
- Persuade Govt. offices and donor offices and Boarding schools to use Nepali coffee;
- Arrange food festivals featuring Nepali coffee,
- Use of logo and advertisements to upscale Nepali coffee consumption harping on the encouraging results of Nepali coffee in cupping test.

7.10 Policy recommendations

7.10.1 Need for an Integrated Approach

The Coffee Policy 2003 envisages making the coffee enterprise more sustainable and attractive. Nepalese Coffee is in its infant stage and it is not possible to achieve this goal without channeling large investments into this sector. At this time, when there is a vast demand for Nepalese coffee but a limited production, it would be crucial to focus investments on the production side; for increasing acreage, promoting wider adoption, farmers' training, improved farming technologies and research. This requires an integrated approach that looks at the coffee industry in a holistic manner. Increased trade and export of coffee is only possible when production is increased. Stakeholders of coffee sector must focus on strengthening the value chain of coffee by addressing constraints lying at various levels through coordinated actions. For this there should be close coordination between coffee promotion programs of Ministry of Agriculture and Ministry of Trade and Commerce.

7.10.2 International Collaboration

Coffee is a globally traded commodity. Nepalese coffee is exported to limited countries and has not reached many potential countries where number of fair-trade and organic coffee consumers is increasing. This highlights the importance of Inter-Governmental trade cooperation aimed at exploring new markets and strengthening the existing ones. Technical support from international research institutions like World Coffee Research and specialty coffee associations like SCA and SCAJ might be helpful in strengthening the research capacity and technological advancement of coffee sector.

7.10.3 Organic and fair-trade coffee for Specialty market is the roadway

The world coffee market is dominated by a limited number of countries that produce coffee in quantities much larger and incomparable to that of Nepal. With India and China also planning to

increase acreage, it will be impossible for Nepal to compete with them in the conventional coffee market. However, trend shows that despite the decreasing export quantities, the price of Nepalese coffee has seen a substantial increase in the last decade. This implies that we can focus on increasing or maintaining the quality of our coffee and selling good coffee to the specialty market. Coffee promotion program should therefore focus on supporting fair trade organic coffee production and trade.

7.10.4 Central Role of NTCDB

There are several advantages of having a separate body to promote a particular sector in Agriculture. Presence of NTCDB therefore does not only indicate coffee sector falls under high priority of the Government but also highlights the importance of coffee in boosting the economic development of the country. NTCDB should play a central role in promoting coffee sector as a whole and particularly in coordinating with various stakeholders to address the constraints at various levels. A proactive role of NTCDB in responding to the emerging issues and needs will be crucial for overall growth and sustainability of this sector

Table 15: Recommendation for Overcoming Constraints at different steps of Nepalese Coffee Value Chain

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
Production	Farmers do not have access to quality planting material from credible and genuine source	<ul style="list-style-type: none"> - Improvement of growing condition of nurseries - Use seeds from identified mother plants. - Tracing the seed source - Upward revision of the price fixed for coffee saplings - Encouraging private sectors to establish large scale nurseries and provide in-bed services like technical support for lay-out, planting etc. 	<ul style="list-style-type: none"> - Development of certification system of nurseries - Development and dissemination of varietal catalog of all coffee varieties in use - Research on varietal identification. - Importation of CLR resistant varieties.
	Poor farming practices characterized by inefficient surface irrigation, improper pruning, training. Inadequate nutrient and disease management practice.	<ul style="list-style-type: none"> - Appropriate combination of water, plant nutrients, mulching, shade crops and efficient labor - Drip irrigation for more efficient use of water - Cultivation in contour strip in slope areas, use of A-frames for lay out - Proper use of farm waste, processing waste etc for making organic manure 	<ul style="list-style-type: none"> - Development of proper extension tools to create and disseminate knowledge and technology to farmers, processors and traders - Introduction/selection and promotion of more productive and disease/pest resistant varieties

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
		<ul style="list-style-type: none"> - Training/pruning and early identification and removal of borer infested plants - Encouraging large land holders and alternative income holders to participate in coffee farming 	
Processing	Inefficient processing machineries, manual pulping machine, rice hullers instead of coffee hullers	<ul style="list-style-type: none"> - Investing in efficient coffee hullers than cheaper rice hullers and grading machines - Dry processing in areas with acute water shortage - Training on machine operating skills and hiring skilled technicians - Establish pulping center with a long-term vision and availability of required facilities. 	<ul style="list-style-type: none"> - Continuation of tax exemption in import of coffee processing machineries - Promoting import of machineries from more credible suppliers
	<ul style="list-style-type: none"> - Processors lack knowledge in certain fields like: - Machine operation, repairing - Roasting operation - Cupping - Coffee lab techniques 	<ul style="list-style-type: none"> - Organizing exposure visits - Training more people on special coffee skills - Training on roasting and cupping techniques 	<ul style="list-style-type: none"> - Incorporating special skills in CTEVT coffee technician training - Establishing regional and national cupping labs
	Limited access to water, roads and other infrastructure	<ul style="list-style-type: none"> - Carrying out the primary processing at PCCs by establishing pulping center locally (also reduces the cost of transportation) 	<ul style="list-style-type: none"> - Extending infrastructures like roads, water and electricity to coffee potential area. - Developing coffee zones/pockets and promoting mechanization in coffee production. Prime Minister Agriculture Modernization project can play an important role.
Trade and Market Access	Lower quality coffee in domestic market	<ul style="list-style-type: none"> - Organize interaction between suppliers, café owners, wholesalers and retailers - Provision of grading coffee based on quality 	<ul style="list-style-type: none"> - Development and strict implementation of Nepal standard coffee logo. - Setting minimum standard for coffee to be sold in domestic market to avoid use of broken beans in the ground coffee
	Poor Traceability	<ul style="list-style-type: none"> - Provision of compliance to 	<ul style="list-style-type: none"> - Strict implementation of

Value chain points	Constraints	Suggested short term interventions	Suggested long term interventions
		maintain traceability by cooperatives - Traders should be required to exhibit the source and origin in their products	Nepal Coffee logo
	Failure to take advantage of trade agreements and preferential market access	- Better awareness about the strict regulatory and administrative procedures to exporters	- Provision of more uniform and convenient schemes
	Unfair competition	- Value chain actors should specialize in one particular function - Creating an innovation platform for all the market actors - Encouraging new entrants to be included in the common coffee platform - Nepal Coffee Logo implementation guidelines to be implemented with strict monitoring system.	- Revising the minimum support price for fresh cherry as needed based on the quality and international scenario. - The provision for coffee entrepreneurs to be registered with NTCDDB should be implemented strictly - Creating and maintaining a Market Information System of Coffee
Organization	Cooperatives lack motivation to solve immediate problems and to increase competitiveness of product	- Encouraging private sectors to enter into the market to increase the drive of competition. - Proper coordination between cooperatives and traders to avoid unhealthy competition which has resulted in astronomically increased price of Nepali Coffee. - Creating a village level innovative platform of stakeholders, cooperatives, farmers, private sectors etc. at local level that can jointly work for the promotion of coffee sector and also perform monitoring at local level	- Award and Reward to best entrepreneurs
	Poor record keeping, business planning and product development capacity of cooperatives	- Training on entrepreneurship skills - Record keeping should be made mandatory for farmers as well as processors regardless of whether they are part of ICS or not	Business Plan of CCU based on production plan of PCCs

Table 16: Sustainability Matrix with Intervention Models

Interventions	How the recommended interventions contribute to		
	Competitiveness	Resilience	Inclusiveness
Improvement of growing condition of nurseries	Better plants supplied to the farmers leading to good quality coffee	Improves resilience of plants	Opportunity for households with less amount of land to be involved in nurseries
Tracing the seed source as well as collecting the seeds from identified mother plants.	Enhances the authenticity and credibility of nurseries and the product they supply		
Upward revision of price fixed for coffee saplings.	Ensures adequate incentives to the nursery enterprises to produce high quality saplings	Ensures the sustainability of coffee nursery enterprises	
Development and dissemination of varietal catalog of all coffee varieties in use	Helps to maintain genetic purity and thus the uniformity of product		Poor farmers have the opportunity to make informed choice
Appropriate combination of water, mulching, plant nutrients, shade crops and efficient labor	Increases productivity and quality		
Drip irrigation for more efficient use of water	Increases productivity and quality	- Conserves water - Conserves energy	Ensures participation of women (with possibility of automation)
Introduction/Selection and promotion of more productive and disease/pest resistant varieties	Increases productivity and quality	Shields the farmers from losses due to disease/pest	Ensures participation of female (as tougher tasks like spraying can be avoided)
Early identification and removal of borer infested plants	Reduces crop losses		
Cultivation in contour strip in slope areas, use of A-frames for lay out	- Increases productivity - Saves labor	- Conserves environment by reducing soil erosion - Saves water	Ensures participation of women
Investing in efficient coffee hullers and graders than cheaper rice hullers	Reduces losses and cost of production.	Saves energy	
Dry processing in areas with acute water shortage	Increased storage life	Saves water	Remote farmers have access to coffee market
Training on machine operating skills and hiring skilled technicians	Reduces losses Improves quality	Saves energy, resources	
Organizing exposure	Increases quality	Builds capacity of	

Interventions	How the recommended interventions contribute to		
	Competitiveness	Resilience	Inclusiveness
visits		community	
Training on roasting and coffee cupping techniques	Increases quality	Builds capacity of community	
Carrying out the primary processing at PCCs by establishing pulping center locally (also reduces the cost of transportation)	Reduces losses Maintains quality	Conserves energy	Poor community have access to coffee market
Awareness program on quality of Nepalese coffee	Ensures quality		
Organize interaction between suppliers, café owners, wholesalers and retailers	Facilitates market	Fosters fair trade Builds trust	
Provision of grading coffee based on quality	Ensures quality and consistency	Ensures sustainability of domestic market	
Value chain actors should specialize in one particular function	Ensures quality and consistency	Ensures sustainability of market	
Creating an innovation platform for all the market actors	Creates space for innovation		Enhances participation
Encouraging new entrants to be included in the common coffee platform	Maintains consistency		Enhances participation
Encouraging private sectors to enter into the market to enhance the drive of competition	Promotes innovation and competitiveness	Creates an environment of check and balance	
Providing incentives to Executives of Cooperatives	Promotes innovation and competitiveness		Enhances participation
Training on entrepreneurship skills	Enhances quality	Builds the capacity of communities	
Record keeping should be made mandatory for farmers as well as processors regardless of whether they are part of ICS or not		Builds capacity of communities	Strengthens communities

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ANNEX-1

Table A1. Global trends (ICO, 2018)

Year	Production (Million MT)	Domestic consumption (Million MT)	Exports (Million MT)	Imports (Million MT)	Re exports (Million MT)
1990/91	5.59	1.17	4.84	4.45	0.53
1991/92	6.07	1.22	4.56	4.28	0.59
1992/93	5.93	1.26	4.70	4.75	0.64
1993/94	5.44	1.27	4.51	4.63	0.66
1994/95	5.59	1.28	4.24	4.50	0.77
1995/96	5.22	1.36	4.07	4.34	0.69
1996/97	6.20	1.43	4.66	4.67	0.75
1997/98	5.98	1.47	4.82	4.86	0.85
1998/99	6.54	1.52	4.82	4.97	0.91
1999/00	7.89	1.55	5.17	5.13	0.92
2000/01	6.82	1.63	5.37	5.26	1.01
2001/02	6.49	1.71	5.45	5.34	1.12
2002/03	7.37	1.74	5.33	5.48	1.18
2003/04	6.31	1.80	5.18	5.60	1.28
2004/05	6.98	1.90	5.47	5.75	1.30
2005/06	6.68	2.01	5.25	5.78	1.44
2006/07	7.75	2.11	5.50	6.09	1.57
2007/08	7.37	2.23	5.78	6.28	1.72
2008/09	8.04	2.32	5.86	6.41	1.93
2009/10	7.67	2.41	5.77	6.27	1.91
2010/11	8.38	2.54	5.82	6.55	2.04
2011/12	8.88	2.64	6.27	6.71	2.13
2012/13	8.99	2.72	6.66	6.79	2.17
2013/14	9.14	2.76	6.63	6.96	2.18
2014/15	8.94	2.83	6.88	7.20	2.35
2015/16	9.13	2.90	6.87	7.28	2.43
2016/17	9.46	2.91	7.18	7.60	2.55
2017/18	9.58	2.94			

Table A.2 Major coffee production area, production, yield and growers

S N	Districts	2014/15				2015/16				% Increase from 2014/15 to 2015/16			
		Area (ha)	GB Prod. (mt)	Yield (kg/ha)	Growers (No.)	Area (ha)	GB Prod. (mt)	Yield (kg/ha)	Growers	Area (ha)	GB Prod. (mt)	Yield (kg/ha)	Growers
1	Syangja	290	50.5	174	3,311	310	41	132	3313	6.90	-18.81	-24.05	0.06
2	Panchthar	250	12.5	50	712	271	21	77	900	8.40	68.00	54.98	26.40
3	Kavre	186	40	215	3,250	193	38	197	3261	3.76	-5.00	-8.45	0.34
4	Nuwakot	162	28.1	173	1,375	178	29	163	1379	9.88	3.20	-6.07	0.29
5	Gulmi	150	35.1	234	1,780	160	35	219	1789	6.67	-0.28	-6.52	0.51
6	Kaski	146	30.1	206	4,242	146	30	205	4248		-0.33	-0.33	0.14
7	Lalitpur	130	23.59	181	980	130	28	215	980		18.69	18.69	0.00
8	Arghakhanchi	126	28.75	228	1,652	131	29	221	1656	3.97	0.87	-2.98	0.24
9	Lamjung	126	18.4	146	1,333	131	25	191	1341	3.97	35.87	30.68	0.60
10	Sindhupalchok	117	30	256	1,572	128	19	148	1578	9.40	-36.67	-42.11	0.38
11	Palpa	115	27.3	237	2,271	119	30	252	2278	3.48	9.89	6.20	0.31
12	Parbat	85	18	212	1,913	92	16	174	1916	8.24	-11.11	-17.87	0.16
13	Dhading	69	18.25	264	726	71	15	211	728	2.90	-17.81	-20.12	0.28
14	Baglung	60	14.3	238	1,331	62	15	242	1338	3.33	4.90	1.51	0.53
15	Ilam	60	19.2	320	715	60	19	317	715		-1.04	-1.04	0.00
16	Rasuwa	44	7	159	362	44	12	273	362		71.43	71.43	0.00
17	Tanahu	31	2.37	77	612	38	9	237	621	22.58	279.75	209.79	1.47
18	Makwanpur	30	11	367	812	30	12	400	812		9.09	9.09	0.00
19	Myagdi	28	7	250	471	31	10	323	492	10.71	42.86	29.03	4.46
20	Sanhuwasabha	28	6	214	368	28	31	1107	368	0.00	416.67	416.67	0.00
21	Gorkha	25	5.5	320	734	33	5	152	741	32.00	-9.09	-31.13	0.95
22	Pyuthan	25	8	320	412	26	10	385	415	4.00	25.00	20.19	0.73
23	Khotang	17	4.6	271	278	21	5	238	278	23.53	8.70	-12.01	0.00
24	Bhojpur	11	3	273	162	15	2	133	162	36.36	-33.33	-51.11	0.00
	Other districts	70	15	214	812	170	46	271	910	142.86	206.67	32581	12.07
	TOTAL	2,381	463.56	5,599	32,186	2618	532	6483.15	32581	9.95	14.76	15.79	1.23

Source: Ministry of Agricultural Development, 2017

Table A 3. Annual cost of operation and revenues of a pulping centre with a capacity to pulp 2 tons of fresh cherry

S.N.	Cost Headings	Unit cost	Quantity	Total Cost	Life	Total Cost per year
	Fixed Costs					
1	Pulping Machine	35000	1	35000	4	8750
2	Processing Shed	60000	1	60000	15	4000
3	Sorting Container	2000	1	2000	5	400
4	Fermentation tank	15000	1	15000	5	3000
5	Water storage tank	12000	1	12000	8	1500
6	Drying facility	5000	1	5000	3	1667
7	Equipment (Moisture meter)	8000	1	8000	10	800
8	Storage facility	20000	1	20000	15	1333
9	Weighing machine	10000	1	10000	5	2000
	Operation Cost					
1	Fresh cherry	85	2000			170000
2	Water supply	800	5			4000
3	Electricity	1000	5			5000
4	Labor cost	1200	5			6000
5	Packaging materials	10	100			1000
	Total cost per year					209450
	Revenue					
1	Sales of parchment	570	444			253333
2	Sales of by product (pulp)	5	1000			5000
	Total revenue per year					258333
	Net profit					48883
	Cost of production per 23 kg parchment					10839.04
	Returns from 23 kg parchment					13110

Note: The calculations are based on the actual data collected from a pulping centre in Nirmalpokhari, Kaski

Table A4. Annual cost of operation and revenues of a hulling center with a capacity to hull 3000 kg parchment

S.N.	Particulars	Unit Cost	Quantity	Total cost	Life	Cost per year
1	Hulling machine	300000	1	300000	15	20000
2	Grading machine	150000	1	150000	15	10000
3	Processing platform	60000	1	60000	10	6000
4	Weighing machine	10000	1	10000	5	2000
5	Storage facility	20000	1	20000	15	1333
6	Equipment (moisture meter)	8000	1	8000	10	800
	Operation Cost					
1	Parchment	570	3000			1710000
2	Packaging material	10	50			500
3	Electricity	1200	5			6000
4	Labor cost					45000
5	Transportation					24000
	Total cost per year					1825633
	Revenue					
1	Sales of green beans (A grade)	900	2190			1971000
	Total revenue per year					1971000
	Net profit					145367
	Cost of production of 18 kg green beans					15005
	Revenue from sales of 18 kg green beans					16200

Note: Based on the data collected from Hulling centre in Nirmalpokhari, Kaski

Table A 5. Annual cost of operation and revenues of a roasting operator with a capacity to roast 200 kg of green bean

S.N.	Cost Headings	Unit cost	Quantity	Total Cost	Life	Total Cost per year
	Fixed costs					
1	Roasting machine	800000	1	800000	10	80000
2	Processing platform	100000	1	100000	10	10000
3	Gas Cylinder with regulator	6000	1	6000	5	1200
4	Packaging machine	40000	1	40000	5	8000
	Operation Cost					
1	Green bean	850	2000	1700000		1700000
2	Electricity					3600
3	LPG	1500	1			1500
4	Labor cost	900	15	13500		13500
	Total cost per year					1817800
	Revenue					
1	Sales roasted beans	1300	1760			2288000
	Total revenue per year					2288000
	Net profit					470200
	Cost of production of 14.3 kg roasted beans					14770
	Revenue sales of 14.3 kg roasted beans					18590

Note: Based on data collected from CCU Lalitpur

Table A 6. Variable Production cost

Variable Production Cost per Ropani							
Particulars	Small		Medium		Large		Weighted av.
Proportion	0.8		0.15		0.05		
Variable Cost	Qty	Value	Qty	Value	Qty	Value	
Planting Material (Rs.)	83	1245	85	1275	85	1275	1251
Manure		600		700		800	625
Plant protection		300		275		250	294
Labour (days)							
Planting	3	900	3	963	3	875	908
Weeding	1	300	1	350	1	350	310
Irrigation	5	1500	5	1750	5	1750	1550
Mulching	1	300	1	300	1	350	303
Prunning	5	1500	5	1750	5	1500	1538
Picking	5	1500	5	1750	5	1750	1550
Transportation	3	900	3	1050	3	1050	930
Total labour cost		6900		7913		7625	7088
Others (5%)		107		113		116	108
Total cost (Rs.)		9152		10275		10066	9366
Output (cherry)	3	18675	3	19422	3	20916	18899
Net profit (Rs./rop)		9523		9147		10850	9533
Total cherry production 1 ropani							208
Cost of production of 100 kg cherry							4514
Revenue from sales of 100 kg cherry							8500

ANNEX-2

Checklist for FGDs in the Coffee farmers group

Name of the group:

Address:

Number of participants:

Contact details of the participants:

A. Value chain mapping of the coffee

Develop an aggregate value chain map as well as specific value chain map for coffee produced in the village

Activity	Actors/ Number	Quantity/ Number	Price	Service providers	Constraints
Input Supply					
• Seed					
• Fertilizer/micro-nutrients					
• Organic -Pesticides					
• Training					
• Loan/Credit					
• Other equipment					
Collection/collectors (PCC)					
Trading/Trader					
Processing/Packaging					
Retailing					
Wholesaling					
Exporters					
Consumption/Consumers					

B. Information on cropping system and farmers involvement

1. What percentage of the farmers in your village has received training on coffee farming?
From where do you get such trainings?
2. On an average, what proportion of the total land of a household is used for coffee farming?
Is coffee farming increasing, decreasing or same, compared to the last three years?
3. What is the average annual production of coffee in this village? (cherry)
4. Do you get demands of coffee before production season? How the next level actors approach you? How selling price is determined? (negotiation)
5. Is there any coffee nursery in your village? How many farmers are engaged in such nursery business?

6. What is the average income from coffee farming for majority of the households in your village?
7. What innovative technologies that farmers apply for coffee farming? (Tools, pest control practices, fertility management, shading)
8. What are the major problems that you are facing for producing your coffee? What can be done (from the stakeholders including the project) for improving coffee farming in this village?

Opportunities	Major constraints	Strategies/actions needed to overcome the constraints

C. Processing/Value addition, grading, packaging and marketing

9. Do you also perform cleaning, grading and processing of the coffee? To which extent? What tools do you use?
10. Is there any processing/value addition facility for the coffee that you grow? What products are prepared after processing/value-addition and where/how are they sold? How do the farmers handle their produces if they do not get the buyer or in low price conditions?
11. How do farmers transport coffee to the collection center or the market? What is the post-harvest loss?
12. Where and how do you sell your product? Who fixes the price? Do you get the money instantly after you sell your product? Are you happy with the prices that you get for your produces?
13. What are the end markets for your product?
14. Can you sell your produces to the buyer that you want to sell or who offer you higher prices?
15. Do you get market and price information for the coffee? If yes, how do you get it?
16. Do you have quantity and price contractual agreements with the buyers for selling coffee? If yes, what kind of agreements that you have with them?
17. Do you also get input and credit supports from the buyers during production seasons? Does it compel you to supply the product to them in low price?
18. What do you do if you are offered low prices or no any demand for the coffee that you produce?
19. Do you have any idea what helps you get the higher prices for your coffee?

20. What are the major constraints that you are facing for marketing of your product?

D. Institutions and access to input market, and related services

21. How far are the agriculture service centers (ASCs) located from your place? Do you get any supports from ASCs? If yes, what kind of support services have you received so far?

22. Do you get any support services from the local municipality offices? If yes, what are those?

23. What institutions are working in your village for promotion of coffee farming? How are you linked to those institutions?

24. Is there any mechanism (Innovation Platform) that brings and engage public, private and community actors on board for discussions and working towards promotion of the coffee value chain?

25. How are farmers of one group/cooperative linked to other groups/cooperatives of the same or different villages? Is there any networking of the farmers of this village with other farmers? How do you get benefits from such networks?

26. How do you obtain the agricultural inputs for producing coffee? How many and how far are the agro-vets and other input suppliers located in/from your place? Are you able to get timely supply of the inputs from the existing agro-vets and input suppliers? Are you happy with the available services? What constraints have you faced in obtaining such services?

27. Do you have any access to the credit for farming activities? Have you taken any credit for coffee farming? If yes, then from where and what is the interest rate?

28. What kind of farm machineries that you have and lend/use for coffee farming?

E. Risk perceptions and mitigation strategies

29. What are the major risks associated with production and marketing of coffee?

30. How do you minimize those risks?

31. Have you heard about agricultural insurance? What is the percentage adoption of crop insurance for coffee farming in this area? If no, why farmers don't insure your crop?

F. Gender participation and alternative opportunities

32. In what activities female have more participation in coffee farming? Please provide information specific to the crop.

33. What kinds of supports are needed in improving coffee production and income generation?

34. What other opportunities/farming alternatives that you feel could be important for you for increasing your income?

ANNEX-3

Guideline for Participatory Market System Analysis Workshop:

Objectives:

- To probe into existing constraints and opportunities in each function of value chain of Nepali coffee.
- To identify and capture the possible intervention (leveraging) points in different levels of value chain function of Nepali coffee.
- To develop a well-defined list of business/market intervention models and strategies to maintain the current price of Nepali coffee in the market.
- To assess actors' perception on quality parameters of Nepali coffee across the coffee value chain.

Expected Participants:

- Producer farmers, Nepalese Coffee Producers Association (NCPA)
- Processors (local as well as commercial)
- Traders (small, medium and large)
- Primary Coffee Cooperatives (PCC)
- Service providers (input suppliers, financial service providers, organic certifiers)
- Stakeholders (NTCDB, National Coffee Research Program)
- HELVETAS, CoPP, AEC- FNCCI

Method:

- Formation of groups
- Group work on "Participatory market mapping" (heterogeneous group) and "Analysis of business development services" (homogeneous group).
- Presentation of group-work
- Reflection and summing up

Tools:

1. Participatory market mapping:

Objective: to visualize product flows, business development services, and inputs along the

market chain, from producers to processors to traders/exporters, from diverse points of view.

Time: 1.5 hour activity comprising of group work and plenary

Materials: flip charts and markers

Process: Participants are divided into 2-3 groups having members from each functional categories of the market chain and ask them to draw the market chain, as they know it. As the process advances, other questions are asked that provide additional details. These details are then added to the basic market chain initially drawn. At the end, each group explains its vision of the market chain in the plenary session. To get additional information on key topics, the facilitator will ask some of the following questions:

- What are the functions of each of the actors (participants) in the market chain? How do they relate to one another?
- Are relations good, average, or poor? Why?
- What are the characteristics of the product?
- How much does it cost to produce (in each link of the market chain)
- What are the buying and selling prices at each stage of the market chain?
- Are they stable during the year, or do they fluctuate?
- How efficient (yields by area planted, conversion factors, etc.) activities in the market chain?
- What is the distribution of the total income from the market chain between the actors?
- Which groups gain more and which less, and why?
- Who (in each link of the market chain) supports you?
- How do they support you?
- What services do they offer (in each link of the market chain)?
- What is the quality of the services offered?
- What is the form of payment at each stage of the market chain?
- What are the quality requirements?
- What is the buying frequency?
- Describe the relations between market chain actors
- Are they happy with the existing relationships?

2. Analysis of Business development services:

Objective: to make a simple list of business development services that exists along the market chain and to qualify their quality and identify gaps for future improvements.

Time: 1.5 hour

Materials: flip chart and markers

Process: Continuing with the same groups used for mapping, the groups should proceed to examine supply and demand of formal and informal business development services in each function of the market chain. The session will be facilitated by the study team members by asking some of the following questions. Results will be organized in a matrix (Table 1 and 2) and presented in a plenary.

Facilitation questions:

- Who supplies services to this link in the market chain? ·
- What services are supplied?
- What cost does this service have?
- How useful is this service?
- Does it solve your problem?
- What services are supplied to each link in the market chain (production, post-harvest, processing, marketing, business organization)?
- Who are the clients of the service?
- What portion of the service cost does the service client cover?
- What portion is covered by other sources (donor or government subsidy)?
- How effective is the service?
- Does it manage to solve the problems of the client?
- How much does it cost to supply the service?

Table 1. Matrix of the analysis of services received (by clients)

Service by link of the market chain	Supplier	Cost	Recipients' perspective	Comments
Production				
Processing				
Marketing				
Organization				

Table 2. Matrix of the analysis of services supplied

Service by link of the market chain	Clients	Cost	Suppliers' perspective	Comments
Production				
Processing				
Marketing				
Organization				

ANNEX-4

Checklist - Key Informant Interview

PCC, DCCU

- What are the functions PCCs and DCCUs do? In which level of coffee value chain do PCC and DCCUs lie? How PCC and DCCU are involved in this value chain of coffee (do you have single role or multiple roles in coffee value chain?)
- Please explain the current situation of coffee production in this area?
- How it is changing? A brief evolution story? Change in farming techniques, materials, processing techniques, policy and management? Change in farming size, farmers' involvement, productivity.
- What percentage of the farmers in your village has received training on coffee farming? From where do you get such trainings?
- What is the average annual production of coffee in this village? (your last year data/record/file)
- Do you get demands of coffee before production season? How the next level actors approach you? How selling price is determined?
- What is the current practice for pricing of coffee at farm-gate, cooperative-gate, processor-gate? Who determine the price? What are other factors associated with cost of value addition?
- Is there any coffee nursery in your village? How many farmers are engaged in such nursery business?
- How organic coffee farming is being practiced? What are the constraints and opportunities associated with existing organic certification for the farmers? What is your proposed solution from farmer's perspective?
- What policies and regulations from the government benefit your business ? (registration, inspection, subsidies, incentives etc)
- What are the current policy obstacles?

Coffee Processor

- Please explain what is your position in coffee value chain? What function do you perform? Do you have multiple roles (for example as collector, as processor, as trader ?)
- Which type of processing do you perform? (pulping, hulling etc?) Please explain the technical process. (raw material, process and output)
- What is your technical capacity in processing (kg/day ?), is your unit occupied throughout the year, please explain the seasonality of your processing function.

- Is your processing function demand driven? Or supply driven? What determines how much to process and when?
- What is the current practice for pricing of your raw material? Who determine that? You or raw material supplier?
- What are the costs for value addition in your function? (operation, maintenance, labor, capital, raw material etc)
- How do you sell your products? Who determines the price, how? Have you organized in an association? What is the role of association in determining the price?
- What are the constraints, problems in your function? (supply side, technical aspects and demand side?) How do you think these problems can be sorted out?
- What policies and regulations from the government benefit your business? (registration, inspection, subsidies, incentives etc)
- What are the current policy obstacles? What are the current technical obstacles? What the current financial obstacles? And what do you suggest for overcoming those obstacles?

ANNEX-5

Some glimpses from the fieldwork:

