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A STUDY ON DEVELOPING STRATEGY TO EXPLORE THE FEASIBILITY OF MAINSTREAMING AND LINKING (COOPERATIVE) PROCESSING UNITS IN THE TEA SECTOR IN THE ONGOING COC STRATEGIC (SUPPLY CHAIN) ACTIVITIES IN ILAM AND PANCHTHAR DISTRICTS

(Final Report)

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EXECUTIVE SUMMARY

This report has focuses on developing strategy to explore feasibility of mainstreaming and linking (cooperative) processing units in the tea sector in the ongoing CoC strategic (supply chain) activities in Ilam and Panchthar districts. Small processing units are latest innovations in tea sector as a safety net against the possible hassles on supplying the green leaves in the nearby (mainly bought leaves) factories and exploitations by the large processing units on the prices of green leaves. These processing units are following almost similar process on tea processing except that rolling is done by hand rather than machine.

Homestead tea processing is traditionally done in both Ilam and Panchthar districts in a small scale to meet household demand for made tea, to provide gift to relatives nearby or outside the districts and manage as a cottage industry. This is quite common initiative in both districts. There are only a few cases where such small scale processing has been done in more organised manner. There are 13 small processing units in Ilam districts and such units do not exist in Panchthar district. Absence of small processing units in Panchthar district is mainly attributable to lack of entrepreneurial farmers and entrepreneurial environment, low scale of tea production, relatively better procurement and other services provided by existing large processing units, etc. Of the 13 small processing units, two are currently closed, two more are under construction and only 9 were operating at the time of survey conducted for this study. The two small processing units stopped operation (i) due to lack of sufficient green leaves nearby to provide full employment to workers involved and (ii) emerging opportunity to sale green leaves in relatively better price in CTC factories in Jhapa.

The small processing units are very simple structure, registered in District Cottage and Small Industries Office with an average daily processing capacity of about 123 kg of green leaves thereby producing 23 kg of made tea and about 2 kg of dust tea. None of these small processing units are operating at full capacity owing to lack of facilities such as working capital finance, technology, marketing channels, certification and quality assurance and control mechanism and packaging. Average total capital investment per small processing units is Rs. 585,040. On an average 64% of the capital investment have been financed out of loans from formal and informal sources. Four out of nine small processing units has been able to access finance from formal sources.

Average total annual fixed cost of these small processing units is estimated at Rs. 382,173 and that of average annual variable cost at Rs. 450,467. Average annual gross revenue of these small processing units was estimated at Rs. 936,636. This implies that currently all the nine small processing units are operating at breakeven level, given that the tea processed by these units is sold at the current price of Rs. 450/- per Kg. At times some of these small processing units are facing problems on marketing of their products.

Market and market channel for the made tea and its by-product produced by the small processing units are not very well established. Support to develop the market channel is one of the biggest challenges for strengthening the small processing unit in orthodox tea sector. These processing units do not follow the scientific method on pricing of their products they are always price taker and set the price using information of selling price of the big factories. Like the typical large processing units, processing techniques adopted by these small processing units comprises of six steps namely (i) withering, (ii) rolling, (iii) fermentation, (iv) drying, (v) grading and (vi) packaging. Only differences are that rolling is manually done in the small processing units.

The major constraints/challenges experienced by the small processing units are related to capacity utilization, raw materials, finance, technology, human resources, market linkages, certification and quality assurance. The proprietor of the small processing units are confident of processing high standard tea but because of financial constraints

(working capital loan) coupled with technology and assured market, they are not been able to utilize their potentials to the optimum level. All the proprietors of the small processing units are aware about the CoC and all of them are willing to be integrated into the CoC (supply chain) activities. They are willing to expand their enterprise in future if enabling environment for their operation and management is created and they could be able to be linked with CoC's strategic (supply chain) activities.

The small processing units are the creation due to compulsion rather than luxury to safeguard against uncertainty on sale of green leaves due to lack of transport, strike, bandhas, etc. and insurance against forced sale or uncertainty of payments and/or low or no purchase from factory. All these processing units are at infancy stage and they are still operating on trial and errors and lack competitiveness. There is a need to enhance competitiveness of these units through the provisions of better and continuing access to credit facilities, establishing new market linkages between producers and international markets, and adjusting production according to the quality demanded by the target markets with regard to taste, residue values, appearance etc. The HOTPA and HIMCOOP are the two main intermediaries for promoting orthodox tea and one way or other these processing units must be linked with them for their growth and development.

Financial and economic cost benefit analysis of these processing units uncovered that investment on such unit is financially viable, economically attractive, socially acceptable, technically sound and environment friendly but despite growing interest for the growth and development of such units, their stability and continuity is often questionable. As most of these units are located in areas where there are already large processing units in operation, they have not served as marketing outlets for the farmers growing tea in remote areas or in areas with poor infrastructure. Despite this, in general mainstreaming and linking small (cooperative) processing units in the tea sector in ongoing COC strategic (supply chain) activities are feasible.

Proprietors involved in managing small processing units have willingness and interest to mainstreaming and linking with on ongoing CoC strategic (supply chain) activities. This requires that there should not be any barrier to entry on CoC strategic (supply chain) activities and transparency on certification process should be ensured in addition to simplifying the entire certification process. There is a need to institute for HACCP certification by the small processing units as well. HIMCOOP should expand its area of operation to bring small processing units as part of their marketing initiatives and open membership to these proprietors as well. There should be rapid understanding of technological progress in the process of small scale tea processing which need to be observed and accepted by these proprietors/entrepreneurs.

In order to provide stability to small processing units and ensure continuity on their operation, support should be geared on creating enabling environment so as to ensure their stability and continuity. There should be external support in areas such as access to finance (working capital), upgrading current status of processing units (technology), market linkages, quality assurance and certification.

As most of these units are located in areas where large processing units already exist, in general they are not meeting the demand of the farmers growing tea in remote areas where they are been able to produce leaf in quantities and transportation is a problem. There is a need to expand the frontier of small tea processing units further out in remote areas where demand for such processing units is high. In general, there is already inconsistency on the processing capacity of the existing factories and supply of green leaves. Some areas have less supply than processing capacity while reverse is the case in other areas. As far as possible, a right balance on potential supply of green leaves and existing processing facility should be maintained. Therefore, there is a need of a master plan on growth projection with right balance of market absorption and green leaves

supply. For instance, emergence and growth of such processing units should be supported in Panchthar district.

It is true that there is demand for such processing units in remote areas where such units are not coming up voluntarily while current processing units exist in areas where other larger processing unit also exist and their existence is not fully justified, however, these units have a greater role to ensure balance on price of green leaves in the bought leaves factories. If the principles of Corporate Social Responsibility (CSR) are properly applied in the tea processing by large processing units, there will no further demand for such small processing units in both districts. If CSR is not properly enforced among large processing units and given that there will be improved access to finance, availability of proven technology and improvement in marketing system; there will be demand for small processing units from all those who have more than 5 ha of tea garden. Such demand is expected to be more in remote area of Ilam and entire tea production pockets of Panchthar district. On the absence of support on entrepreneurship development and creation of enabling environment to establishment, future demand for such type of processing units is less likely.

The above recommendations could be linked within the SNV's four delivery channels as under.

SNV's Delivery channels	Recommended actions
Advisory services	▪ Improve existing household and small processing units, ▪ Design support to establish small processing unit and upgrade household units, ▪ Master plan of growth projection for promoting household units and small processing units, ▪ Support for emergence and growth of small processing units in Panchthar districts, and ▪ Standardization of household units and small processing units.
Local capacity building	▪ Support to ensure compliance with production and processing inspection requirements of the COC, ▪ Support for preparation for certification (CoC, HACCP, JAS and USNOP), ▪ Pilot project on certification (CoC, HACCP, JAS and USNOP) process on cost sharing basis, and ▪ Complete certification requirements.
Advocacy	▪ Awareness campaign on CoC certification process, ▪ Transparency on CoC operationalizing process, ▪ Representation of proprietors/small processors in HOTPA, HIMCOOP, tea alliance and other forum,
Knowledge brokering and networking	▪ Lobbying with Bankers Association of Nepal, Nepal Micro-bankers Association and Microfinance Association of Nepal for access to financial services, ▪ Promoting association of proprietors of small processing units, ▪ Linkages with small processing units in China/Kenya/ Vietnam, ▪ Support to Nepal Small Tea Producers Ltd. (NSTPL)

Findings of costing of above recommended actions and financial analysis done under two scenarios (i) full cost recovery and (ii) provision of technical assistance to motivate additional investment revealed that there is a need to realize significant price increase on made tea which is expected to happen through CoC certification process.

TABLE OF CONTENT

EXECUTIVE SUMMARY i
TABLE OF CONTENT iv
LIST OF TABLES vi
ACRONYMS AND ABBREVIATIONS vii
STUDY TEAM viii
1. INTRODUCTION 1
1.1 Background 1
1.2 Objectives 1
1.3 Scope 2
1.4 Approach of the Study 2
1.5 Methodology of the Study 2
1.5.1. Data Sources 2
1.5.2. Data Collection Methods 3
1.5.3. Data Collection Tools 3
1.5.4. Study Process 3
1.5.5. Information Processing and Analysis 4
1.5.6. Consultation with Key Stakeholders 4
1.6 Report Organization 4
2. CODE OF CONDUCT FOR ORTHODOX TEA PRODUCTION AND PROCESSING 5
2.1 Introduction 5
2.2 Tea Production 6
2.3 Tea Processing 8
2.4 Tea Supply Chain 9
2.5 Tea Value Chain 12
2.6 Four Pillars of CoC in Orthodox Tea in Nepal 13
2.7 Operationalization of Code of Conduct 13
2.8 CoC Compliance Inspection Process 14
2.9 Scope of CoC Inspection 15
2.9.1. Production Inspection 15
2.9.2. Processing Inspection 16
3. STATE OF THE ART ON SMALL SCALE TEA PROCESSING UNIT 17
3.1 Overview of Small Scale Tea Processing 17
3.2 Small Tea Processing Unit 17
3.2.1. Current Status, Capacity and Capacity Utilization 18
3.2.2. Capital Investment and Sources of Capital 19
3.2.3. Operating Cost and Revenue 19
3.2.4. Employment Generation 21
3.2.5. Market and Market Channel 22
3.2.6. Pricing Methods 22
3.2.7. Processing Techniques and Its Improvement 22
3.2.8. Major Constraints/Challenges 22
3.2.9. Awareness on CoC 23
3.2.10. Plan for Expansion 23
3.3 Analysis of Internal Factors 23
3.3.1. Technologies and Their Appropriateness 24
3.3.2. Price Analysis 25
3.3.3. Social Capital 26
3.3.4. Marketing 26
3.4 Analysis of External Environment 27
3.4.1. Policy, Plan and Strategy 27
3.4.2. Legal and Regulatory Framework 27
3.4.3. Quality and International Competitiveness 28
3.4.4. Collaborating Institutions 28
3.4.5. Infrastructure and Access to Market 29
3.4.6. Demand and Market 29

4. FINANCIAL AND ECONOMIC ANALYSIS OF SMALL SCALE TEA PROCESSING UNIT 31
4.1 Key assumptions 31
4.2 Financial analysis 32
4.3 Economic analysis 33
4.4 Sensitivity Analysis 33
5. FEASIBILITY OF MAINSTREAMING AND LINKING (COOPERATIVE) PROCESSING UNITS WITH ONGOING COC STRATEGIC (SUPPLY CHAIN) ACTIVITIES 35
5.1 Context 35
5.2 Constraints 35
5.3 Feasibility of Mainstreaming/Linkages 35
6. OPERATIONAL PLAN FOR MAINSTREAMING AND LINKING SMALL PROCESSING UNITS 37
6.1 Rationale for Further Support 37
6.2 Capacity Building 37
6.3 Technology and Technical Support 37
6.4 Access to Finance 37
6.5 Institution Development and Supporting Institutions 37
6.6 Market Promotion 38
6.7 Legal/Regulatory 38
6.8 Local Value Addition 38
6.9 SNV's Delivery Channels and Recommended Actions 38
7. BUSINESS PLAN OF THE MAINSTREAMING AND LINKING INITIATIVES 40
7.1 Rationale 40
7.2 Costing of Interventions 40
7.3 Rate of Return on Interventions 41
7.3.1. Full Cost Recovery Scenario 41
7.3.2. Subsidized Scenario 42
8. SUMMARY OF MAJOR FINDINGS AND RECOMMENDATIONS 43
8.1 Summary of Major Findings 43
8.2 Recommendations 44
9. REFERENCES 46
ANNEXES 47
ANNEX 1: FIELD VISIT SCHEDULE OF THE ASSIGNMENT 47
ANNEX 2: LIST OF PERSONS' MET 49
ANNEX 3: TEA VALUE CHAIN IN ILAM AND PANCHTHAR DISTRICTS 52
ANNEX 4: LIST OF SMALL TEA PROCESSING PLANTS 53
ANNEX 5: FINANCIAL AND ECONOMIC ANALYSIS OF SMALL PROCESSING UNITS 54

LIST OF TABLES

Table 1: Total Tea Production and Tea Plantation Area Tea Plantation area in hectares Tea production in Kg's 6
Table 2: Type of tea produced 2005/06 6
Table 3: Geographical Distribution of Production 7
Table 4: Overview of Tea Value Chain in Ilam and Panchthar Districts..... 12
Table 5: Business Service and Enabling Environment Services in Tea Value Chain in Ilam and Panchthar Districts..... 12
Table 6: Four Pillars of CoC in Orthodox Tea in Nepal..... 13
Table 7: Name, Proprietor, Location and Capacity of Small Processing Units in Ilam District 17
Table 8: Capacity Utilisation in the Small Processing Units in Ilam District 18
Table 9: Capital Investment and Sources of Capital for Small Processing Units in Ilam District 19
Table 10: Annual Fixed Cost for Operating Small Processing Units in Ilam District 20
Table 11: Annual Variable Cost for Operating Small Processing Units in Ilam District ... 20
Table 12: Gross Revenue of the Small Processing Units in Ilam District 21
Table 13: Results of Financial Analysis of Small Processing Unit in Ilam Districts 33
Table 14: Results of Economic Analysis of Small Processing Unit in Ilam Districts 33
Table 15: Results of Sensitivity Analysis of Small Processing Unit in Ilam Districts..... 34
Table 16: SNV's Delivery Channels and Recommended Actions 38
Table 17: Cost Estimates for Upgrading Small Processing Units..... 40
Table 18: Results of Financial Analysis and Minimum Factory Gate Price..... 41
Table 19: Results of Financial Analysis and Minimum Factory Gate Price..... 42

ACRONYMS AND ABBREVIATIONS

ADBL	Agriculture Development Bank Ltd.
AEC	Agro-enterprise Center
BCR	Benefit Cost Ratio
CAA	Commercial Agricultural Alliance
CCI	Chamber of Commerce and Industries
CED/N	Centre for Empowerment and Development, Nepal
CoC	Code of Conduct
CoP	Cost of Production
CTC	Cut, Tear and Curl
DDC	District Development Committee
EIRR	Economic Internal Rate of Return
FIRR	Financial Internal Rate of Return
FNCCI	Federation of Nepal Chamber of Commerce and Industries
GAP	Good Agricultural Practices
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
HIMCOOP	Himalayan Tea Producers Cooperative Ltd.
HOTPA	Himalayan Orthodox Tea Producers' Association
IEDI	Industrial Enterprise Development Institute
JAS	Japanese Agricultural Standard
LCB	Local Capacity Building
MDB	Microfinance Development Bank
MOA	Ministry of Agriculture
MPC	Multi-purpose Cooperatives
MRL	Maximum Residue Levels
MT	Metric Ton
NASAA	National Association of Sustainable Agriculture of Australia
NGOs	Non Government Organization
NPV	Net Present Value
NTA	Nepal Tea Association
NTCDB	National Tea and Coffee Development Board
NTDC	National Tea Development Corporation
NSTPL	Nepal Small Tea Producers' Limited
PRSP	Poverty Reduction Strategy Paper
REAP	Rural Enterprise Assistance Programme
SHCC	Small Holders Cash Crops
SFDP	Small Farmers Development Project
SNV	Netherlands Development Agency
SWOT	Strengths, Weaknesses, Opportunities and Threats
TESEC	Tea Sector Service Centre
TPC	Tea Producer's Cooperatives
USNOP	United States National Organic Programme
VDC	Village Development Committee
WDS	Women Development Section

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1. INTRODUCTION

1.1 Background

Orthodox tea is one of the cash crops in the Ilam and Panchthar districts contributing to rural and national economics and to alleviating poverty through income and employment generation. In respect of trends and opportunities for the already selected value chains, there exist a huge market potential for Nepali Orthodox Tea and Nepali Orthodox tea is recognized as high quality "Specialty Tea" and has a superior quality comparing to the Darjeeling tea. Furthermore, concern of the potential consumers on environmental and social issues has urged Nepal to develop standards for environmental and social responsibility, which are bundled into a Codes of Conduct (COC). This COC label is not only a market tool but also a tool to ensure social justice wherein it will ensure that through developing the tea sector small holder farmers will benefit.

At present processing of the tea has been done at three levels: household level using indigenous technology, small processing units and large factories. SNV is supporting the tea producers in these districts to identify and strengthen the value chain and link them with international market for better price. It is only the tea produced by large factories that are linked with the existing tea value chain and linked with the international market and tea produced at household level and by small processing units are yet to be mainstream in the tea value chain and link to external markets. In cognizance to this, currently SNV is interested in developing strategy to explore the feasibility of mainstreaming and linking (cooperative) processing units of Ilam and Panchthar districts in the tea sector in ongoing COC strategic (supply chain) activities.

There are several issues in the tea sector such as price, pricing and quality issue, quantity (& quality), availability of equipments, technology, infrastructure/access to market, finance and marketing. In order to gradually sort-out the existing issues in tea sector, SNV is willing to procure the services of the microenterprise expert specialised on business plan preparation and value chain finance to undertake this assignment and procured the services of Centre for Empowerment and Development (CED) Nepal[1] for this responsibility. This is the draft final report prepared by CED Nepal. The report has been prepared through desk studies, collection of studies and research and documentation of SNV's learning's through field studies and in-depth field level investigation.

1.2 Objectives

This assignment is aimed at conducting feasibility study of mainstreaming and linking small (cooperative) processing units in the tea sector with the ongoing COC strategic (supply chain) activities in Ilam and Panchthar districts. The specific objectives of this study are to:

- assess current situation (external and internal) on small scale tea processing covering aspects such as technologies and their appropriateness, existing supply chain, demand and marketing of processed tea, legal/regulatory and institutional framework, infrastructure (road, communication, etc.) situation, prices and sales system, state of the social capital of the processors, etc.
- undertake financial and economic analysis of small processing units currently operating in these districts;
- plan for the type of capacity building, technical support, access to finance etc. required to link small processing units with the CoC strategic activities along with assessing cost and benefits associated with mainstreaming and linking initiatives and

[1]CED Nepal is a new national NGO based in Lalitpur, Nepal and related detail about CED Nepal is provided in Annex 1.

- recommend on feasibility of mainstreaming and linking (cooperative) processing units in the tea sector with the ongoing COC strategic (supply chain) activities.

1.3 Scope

Scope of this study, among other, is the following.

- Analyse the scope to link, mainstream existing (and new) farmers/processing units with the actors (like TEASEC, HOTPA and HIMCOOP) in the ongoing CoC value chain (supply) interventions.
- Explore if it will be cost effective and economically viable to mainstream and/or include processing units within the CoC objectives, standards and certification so that the supply chain might increase, factories might get more competition and farmers might get better market options that might lead to a better price and increased income and employment.
- Explore the feasibility of establishing new processing units and increase the efficiency / effectiveness of current units after having assessed current situation in the districts.
- Analyse current value chain of processing units, collect data and significance of issues onn quantity, quality levels such as (i) real demand, (ii) key actors currently involved in processing, (iii) constraints and opportunities, (iv) support to processing units, (v) knowledge about best technology and (vi) a systematic and efficient systems approach for providing the highly demanded services by farmers, etc.
- Assess the (potential) demand, especially in remote areas where people have difficulties to access factories timely, on strengthening supply chain through the promotion and strengthening of (cooperative) processing units including the demand of farmers to get training on hand made tea processing and equipments.
- Undertake financial and economic analysis of small processing units currently operating in these districts;
- Identify the capacity building, technical support, access to finance etc. required to link the local processing units with the CoC.
- Estimate the cost and benefits associated with mainstreaming and linking processing units in ongoing COC strategic (supply chain) activities.

1.4 Approach of the Study

Combination of desk study and field study has been done in this study in order to have through understanding and analysis of the tea sector and its value chain. First available literatures were reviewed to gather information on current situation and state of the art on small tea processing units. Second, the information on number, location and contact person of the small processing units were obtained from key stakeholders, informants and farmer's group and federations in both districts. Third, all the small processing units that exist in both districts were visited to gather/generate information required for financial and economic cost benefit analysis (fixed investment, operating (fixed and variable cost), gross income, net income, prices, quantities, etc. Forth, quantity and quality of tea produced by these small processing units were estimated and existing marketing channels analyzed. Fifth, constraints/challenges to mainstream and link (cooperative) processing units in the tea sector in ongoing COC strategic (supply chain) activities were explored and analyzed. Finally, possible value addition through such transformation was analyzed.

1.5 Methodology of the Study

Key aspects of methodology adopted in this study are outlined hereunder.

1.5.1. Data Sources

The data required for conducting this study were obtained both from secondary and primary sources. The secondary sources includes the review of relevant documents,

progress reports and other published and unpublished documents related to the tea sector development in Ilam and Panchthar districts. The primary information were gathered by visiting all the small processing units and review of the state of the art on households level processing by gathering the information required to developing the strategy to explore feasibility of mainstreaming and linking (cooperative) processing units in tea sector in ongoing COC strategic (supply chain) activities in both districts.

1.5.2. Data Collection Methods

Review of relevant documents: The available documents related to tea sector, value chain and small processing units were reviewed and such a review supported further investigation process and helped to accomplish the objectives of this study.

Focus group discussions: Focus group discussion were arranged with the members of with tea alliance comprising of HIMCOOP, HOTPA, TEASEC, IED, Winrock, GTZ, SNV, NTCDB, FNCCI/AEC, JICA, BSP, selected farmers' groups and their federations both at central and district level.

Individual interviews: Individual interview were conducted with some selected household level tea processors, all the small tea processors, HIMCOOP, HOTPA, TEASEC, IED, Winrock, GTZ, SNV, NTCDB, FNCCI/AEC, JICA, BSP, selected farmers' groups and their federations at central and district level to gather information on their opinion and concern on small scale tea processing and possibility of mainstreaming and linking (cooperative) processing units in the tea sector in ongoing COC strategic (supply chain) activities in both districts.

Key informant interviews: Interview schedule were organised with selected officials of different organisations including VDC officials, SNV staffs, financial service providers and others civil society organization who are directly or indirectly associated on further growth of the tea sector.

Field studies: Field studies were conducted for 15 days visiting all the small scale tea processing units that operate in these two districts to collect information on fixed investment, operating (fixed and variable) cost, gross income, net income, prices, quantities, quantity and quality of the tea produced, etc. by these processing units alongwith existing marketing channels. Further, information were also collected on their future plan of action.

Case studies: Relevant and representative case studies were prepared to demonstrate the best practices (if any) on technology use, processing, quality assurance, marketing and linkages with ongoing COC strategic (supply chain) activities in both districts

1.5.3. Data Collection Tools

Information were collected using a mix of data collection tools encompassing both quantitative and qualitative tools in order to compare the information collected and find out qualitative justification of quantitative findings. In order to enable proper collection of information required for this study, three set of checklists were prepared and administered to the different actors/stakeholders involved on households and small scale tea processing activities.

1.5.4. Study Process

This study were conducted by a enterprise development expert specialised on business plan preparation and value chain finance with the assistance of one research assistant who is very well acquainted on various aspects related field level data collection as well as operation and management of scale tea processing initiatives. Findings of the study

were de-briefed with field team of TEASEC and other stakeholders to discuss operational issues related to mainstreaming and linking cooperative/small processing units in the tea sector in the ongoing COC strategic supply chain activities.

1.5.5. Information Processing and Analysis

The information collected from different sources were compiled, consolidated and analyzed. Analysis was done under both quantitative and qualitative assessment framework. Financial and economic cost benefit analysis of small processing units, quantity and quality of tea produced, marketing arrangement, price, market linkages, etc. were assessed and analyzed along with an assessment of cost and benefit associate with the mainstreaming and linking of the cooperative/small processing units in the tea sector in the ongoing COC strategic supply chain activities.

1.5.6. Consultation with Key Stakeholders

Findings of this assessment along with the recommendations in the form of draft report were presented to all the stakeholders/actors including key staff of SNV to obtain their feedback on the findings and recommendation. Such an consultation was highly invaluable to validate study findings and recommendations as well as building ownership on study findings. The report has been finalized incorporating comments and suggestions from this consultative meeting with key stakeholders.

1.6 Report Organization

This report is organized into eight sections. After this introductory section, section two provides an overview of CoC for orthodox tea production and processing along with an overview of tea sector in these districts, while section three provides a description on state of art on households and small scale tea processing initiatives in these districts. Section four undertake the financial and economic analysis of the small scale tea processing unit while section five assess the feasibility of mainstreaming and linking cooperative/small processing units with ongoing COC strategic supply chain activities. Section six provides an overview of operational plan for mainstreaming and linking small processing units while section seven provided business plan of the mainstreaming and linkages initiatives. The report concludes with summary of major findings and recommendations in section eight.

2. CODE OF CONDUCT FOR ORTHODOX TEA PRODUCTION AND PROCESSING

2.1 Introduction

Despite that the orthodox tea grown in the Eastern Hills of Nepal has a distinct image of its own, a huge chunk (almost 837 tons totaling 93% of annual production) of this tea has been sold off in international market as 'Darjeeling Tea' (GTZ, 2003). This way, farmers do not receive good prices for their farm products and distinct identity of Nepali orthodox tea is being lost in the process. Even though the international demand for orthodox tea seems ever increasing, due to constraints in quality and market access, among others, Nepali small-holder tea farmers along with labourers are unable to reap much benefit from the tea industry. Apart from that the farming system is still traditional where tea farming is done in a vacuum of information on appropriate modern farming techniques. Banned chemical fertilizers and pesticides are being applied on the tea plants. Though this has increased tea production and productivity, but the demand from the conscious European buyers have heavily decreased citing the presence of residues of banned pesticides in Nepalese orthodox tea.

Himalayan Orthodox Tea Producer's Association (HOTPA 2006) has identified three major constraints of orthodox tea such as (i) non-compliance of international standards in producing quality oriented product, (ii) problems in accessing the international market and (iii) lack of competitiveness of Nepali tea amongst other tea brands in the global market and identified a industry owned Code of Conduct (CoC) in orthodox tea as one of the prelude to address these constraints. Majority of the farmers are still practicing traditional farming technology and due to absence of modern technical knowledge, the quality of the green leaf is poor leading to the unsatisfactory quality of the finished product. Most of the pesticides being used by the farmers are already banned in the major trading countries. The lack of awareness of international rules and regulations on food and beverage items has been proved to be a big hurdle in exporting Nepali tea to the global markets.

Tea Development Alliance has been formed which aims to develop this sub sector and ultimately contribute towards increasing the incomes of the small-holder farmers by overcoming these constraints. The Alliance works towards improving the quality of the tea and providing a premium price tea by selling it at the international markets. In line with this, HOTPA developed the CoC which is considered as a directive generated from the mutual agreement between the tea producers and the processors. The CoC sets out a standard for the production, processing and marketing of Nepali orthodox tea with due consideration for environmental, social and economic aspects at different stages of the value chain (SNV, 2007).

The main objective of the CoC is to make the quality of the Nepalese orthodox tea up to par with the international standards and the behavioral approach that producer, processor and all other parties affiliated in this profession will have to take to bring about necessary quality change (HOTPA, 2006). The Tea Development Alliance has already initiated some work regarding CoC in the tea producing areas and has started implementing the CoC standards in various tea processing factories and several green leaf tea producers groups in Nepal.

Several smallholder farmers' groups and tea processing factories have committed themselves to the CoC in orthodox tea production. The CoC was signed in 2006 and the implementation process was already initiated (AEC, 2007; SNV, 2007). In general CoC focuses on social responsibilities too for the community including ending of child labour; ending of caste and social discrimination; salary and wages payable based on labour laws; women empowerment, child education and human development; clean and secured workplace; cultural development and information and recognition of CSR by the factories.

2.2 Tea Production

A large number of small holder farmers are engaged in growing tea in Ilam and Panchthar districts and their contribution in total production is increasing over the years as more small farmers are being attracted towards tea cultivation due to higher profitability in tea production compared to other substituting crops. Both the total area and production of tea have a significantly increasing trend over the years. Both tea production/cultivation has been grown considerably by both smallholder farmers and larger gardens/plantations in recent years. The Nepal Tea Development Corporation (NTDC) was privatized in 2000 and due to reporting area and production under NTDC into private sector category, there has been a sudden jump in area and production under private category in 2000/01.

Table 1: Total Tea Production and Tea Plantation Area Tea Plantation area in hectares Tea production in Kg's

Fiscal year	Tea Plantation area in hectares					Tea production in Kg's			
	Private	NTDC[2]	Small Holders		Total	Private	NTDC	Small holders	Total
			No. of small farmers	Plantation area					
1992/93						75,400	860,000		935,400
1993/94			1,191	493		687,000	982,000	75,000	1,744,000
1994/95			1,788	644		837,000	1,009,403	10,000	1,856,403
1995/96			2,243	828		1,500,000	1,112,329	125,000	2,737,329
1996/97	1,685	938	2,390	879	3,502	1,800,000	925,942	18,000	2,743,942
1997/98	2,192	938	2,591	1,385	4,515	194,655	603,136	468,980	1,266,771
1998/99	6,073	938	4,915	3,239	10,250	3,577,857	496,881	418,242	4,492,980
1999/00	6,073	938	4,915	3,239	10,250	3,577,857	496,881	1,010,499	5,085,237
2000/01	8,179		5,310	3,818	11,997	5,089,579		1,548,503	6,638,082
2001/02	8,179		5,575	4,186	12,365	5,864,720		1,653,855	7,518,575
2002/03	8,321		5,760	4,314	12,635	6,478,000		1,720,000	8,198,000
2003/04	8,869		6,252	6,143	15,012	7,714,669		3,956,535	11,671,204
2004/05	8,312		6,845	6,989	15,301	7,789,893		4,816,188	12,606,081
2005/06	8,912		7,154	7,100	16,012	8,443,907		5,244,320	13,688,227
2006/07	9,011		7,593	7,409	16,420	9,340,656		5,826,989	15,167,743

Source: National Tea and Coffee Development Board

Although the government's plan was to have 28,000 ha under tea cultivation by year 2010 and further projected to 62,000 ha by 2020, the expansion has been much lower and estimates have been revised to have 18,000 ha under tea cultivation by 2010. Nonetheless, growth has been impressive. There are reportedly a total of 12,200[3] smallholder plots, 134 medium sized gardens and 38 large plantations. Combined, these produce a total 15.2 million kgs of made tea of which 1.6 million kgs is orthodox type.

Table 2: Type of tea produced 2005/06

Particulars	Orthodox		CTC		Total	
	Area (ha)	Production (kg)	Area (ha)	Production (kg)	Area (ha)[4]	Production (kg)
Garden	2,805	542,090	6,107	7,901,817	8,912	8,443,907
Small holders	4,231	1,113,060	2,869	4,131,270	7,100	5,244,330
Total	7,036	1,655,150	8,976	12,033,087	16,012	13,688,237

Source: National Tea and Coffee Development Board

The smallholder farmers account for 67 and 34 percent of orthodox and CTC tea production respectively[5]. Focus group discussion conducted in the field revealed that the

[2]Nepal Tea Development Corporation (NTDC) was established in 1966 by Government of Nepal, which was divested to enable private sector to be the engine of growth in Tea sector.
[3]Data collected from associations/chambers/and INGO/NGO's suggests that a total of 12,200 smallholder farmers are active in areas concerned.
[4]Please note that other data sources suggest a total of 15,700 ha in 2005/2006
[5]These data should be taken with care though, as more than 11 plantations and 45 gardens (mostly non-small

average yield per plant per annum is 1.55 kg and the density of plants is 14,000 per ha. Compared to farmers in the CTC areas who are able to get a fair price for their leaf, almost double their cost of production (COP) during better times, orthodox tea farmer suffers very often obtain a price about 10-15% lower than their COP. Further, in orthodox areas, the yields are about 25% lower than India and 30% below Sri Lanka while in CTC areas the yields are lower than in Kenya. Considering the very competitive international tea market, relative low yield is a cause of concern for trading in international market.

At the factory level, there seem to be no fixed method of calculation to arrive at the green leaf price. Farmers have to accept price levels fixed by the factories. In the CTC areas, the Siliguri auction prices are used as a guideline and are reviewed every week whereas in the orthodox regions they has completely rely to the prices provided by the factory. Owing to this, there are cases where tea growers in Ilam district sale tea leaves to CTC factories in Jhapa district as well as orthodox factory in Dhankuta. Further, farmers sometimes get paid almost after six months from date of direct delivery to the factories. They prefer to sell to middlemen or tea dealers as most often money is paid immediately on delivery despite that they are beaten down on price by about 10-20%. In the recent years tea cooperatives are playing a role of intermediary between tea producers and tea factories. Those who follow the CoC or produce tea under organic environment are able to get a premium of nearly 20% for their green leaf sale. The farmers are unable to get an accurate calculation of their COP and very often the financial costs are not taken into account. Even fertilizer and pest control inputs seem to be inaccurately compiled. This is due to lack of knowledge of simple costing methods.

There are three categories of tea farmers namely smallholder farmers and medium sized garden and big plantations[6]. The smallholder farms are generally well maintained with plant population being adequate, although in some instance overcrowding of tea plants was observed. In the Panchthar and Ilam the plant population in the plots observed were less and more scanty. The incidence of pests, insects and fungi was more as this region is damp and is more conducive for them to thrive. Medium sized gardens and big plantations refer to tea gardens in excess of 40 ha and with many having their own processing factories. The larger estates has on an average lower yields/ha than the smallholder farmers. Their yields are lower being around 14,500 to 16,000 per ha. Coarse plucking and haphazard use of chemicals are quite common. As far as tea plantation and production is concerned, bulk of the tea is grown in Jhapa where only CTC tea is grown and accounts for approximately 88% of the total tea production in Nepal. This is followed by Ilam (9.5%) and Panchthar (1.5%).

Table 3: Geographical Distribution of Production

S.N.	Districts	Garden		Small Farmers			Total		
		Area	Production (kg)	Area	Production (kg)	Farmers (No)	Area	Production (kg)	% of Total
1	Jhapa	6,107	7,901,817	2,869	4,131,270	857	8,976	12,033,087	87.9
2	Ilam	1,347	406,220	3,469	889,350	4,647	4,816	1,295,570	9.5
3	Panchthar	382	80,220	141	119,114	297	523	199,334	1.5
4	Dhankuta	219	45,990	425	36,334	789	644	82,324	0.6
5	Terhathum	23	4,830	123	36,344	247	146	41,164	0.3
6	Other	834	4,830	72	31,928	317	907	36,758	0.3
	Total	8,912	8,443,907	7,100	5,244,330	7,154	16,012	13,688,237	100.0

Source: National Tea and Coffee Development Board

farmers) have not yet been registered with NTCDB. Also, other data suggests that smallholder farmers account for 26.5 % of the CTC produce.

[6]Smallholders are those with tea garden less than 40 ha. that of medium sized garden are those between 40-100 ha and big plantations are more than 100 ha. with processing plants of their own.

Inter-cropping is not common on the tea orchard due to maximum land usage and close planting of bushes, however during the initial years most farmers grow short term mixed cash crops such as vegetables and corn to supplement their income making maximum use of available space. There is a need to encourage such type of mixed integrated farming that causes minimum damage to the ecological system to create the self-sustainable units and bring additional income. They should not only have mixed crops but also livestock rearing cattle, buffalo, goats, poultry and ducks. to obtain diary products for consumption and sales but also poultry including ducks. The tea plantation is very much integrated with livestock farming and the animal waste is being used for getting biomass/organic manure and discourages the use of chemicals.

There are two main types from the same botanical plant species, Camelia sinensis developed at the Indian Tea Research Station and used extensively in Indian tea gardens are introduced in Nepal for planting in two different growing areas. The **clone varieties** developed from cuttings from mother bushes are used in the tea gardens in Tarai regions of Jhapa and Morang districts. These are ideally suited for the processing of CTC variety where the leaf is more succulent. In the hilly areas **varieties from seed stock** are used to propagate nursery plants. These too have been experimented and developed in India at their Tea Research Station for the Darjeeling region and introduced into Nepal. Their leaf is more leathery and during changing climatic cycles, concentration of juices varies thus giving aroma and flavor for limited periods.

2.3 Tea Processing

With mainly two types (orthodox and CTC) of tea being processed, the factories and machinery used are dissimilar. The basic process, however, is the same being withering, rolling, fermentation, and drying with adjustments on time frames and using different method to obtain final products. In Ilam and Panchthar districts tea processing is done at three levels: basic household units, small processing units and larger factories.

Household units and small processing units[7] are small cottage level workshops. Under household units very crude method of processing has been followed and entire-process is done manually. Almost all the small tea growers process tea as a household units and tea thus produced used either for home consumption or providing gifts to relatives living in outside tea producing areas and very small fraction is exchanged with household consumption items or sold at the small township in a busy day. The population in the mountainous areas may be obtaining this type of hand made tea as regular marketing channels are unable to reach them. The process adopted for tea processing by the small processing units is fairly scientific where withering is done on crudely turned out troughs and withered leaves are hand rolled in wooden pans. The product is a green tea of about 5 grades ranging from the full leaf (two leaves and one bud) to smaller grade. The output per day is about 8-10 kg. It is likely that small holders having bigger plots of around 5 or more ha are engaged in this type of processing, doing their own direct marketing at the small townships on a busy day or nearby markets in Taria and even in Kathmandu. It is likely that there are such units processing a type of green tea from their own leaf for marketing in localized areas. Farmers wish to form into cooperative units and run their own small factories of output of 100 to 150 MT per annum in some instances more as a measure to spite the existing factories who do not service them adequately whilst in certain areas it is a necessity due to availability of large quantities of green leaf.

The orthodox tea factories are located in the hilly areas of Ilam, Panchthar and Dhankuta and are styled along the lines of the Indian Darjeeling factories. Their capacities range from 100 MT per annum to 500 MT. These factories have green leaves collection centre at several places to receive raw material and large withering troughs. Each factory

[7]These are different and outputs are also different.

possesses between 4-6 rollers of the Indian type with different tables and battens to the ones used for conventional orthodox tea processing with 2-3 driers of UK or Indian manufacture and a sufficiently well equipped sorting and packing room. In these factories, there is separation of leaf supplied into the 2 categories of COC certified farmers and others. Nearly 90% of the product goes into the Indian market, with about 7% to EU, 3% consumed locally mainly in the big cities, marketed to expatriates/tourists and about 1% in special gift wrapped units.

2.4 Tea Supply Chain

Tea is a cash crop that has potential to provide an increased income to all the actors in the tea supply/value chain. As opposed to a production channel of Tea estates or private entrepreneurs (having both farms and processing factories), the actors in supply chain of smallholder farmers' category consists of farm labourers, smallholder farmers, producers' groups, and processing factories.

Labourers

Work on tea farms, especially plucking, is labour-intensive, and often done by women. The main activities of tea workers are harvesting, manuring and fertilizing, weeding, pruning, soil conservation, control of pests and diseases and other sundry activities. The Labourers consist of the bottom most tiers in production chain. Nonetheless, their contribution to the tea industry is very crucial. However, there is no clear distinction between a small holder farmer and a labourer. For the purpose of this study labourer is defined as that individual who works in somebody else's farm for a given time period and is paid according to a pre-determined wage rate. This definition needs to be articulated clearly because, most often farmers are involved in their farms in the following two modes: a) work in their own farm and perform most of the task that the hired labourers would do; b) follow the *parma* system which entitles the farmers to help out their neighbours and relatives in their farms, and likewise, the neighbours and relatives will come and help out the farmer who had helped them. This basically means paying back the assistance and support in kind. The other mode of performing the farm tasks is to hire labour. Those farmers having large areas of land or those who are unable to perform the tasks themselves (or through their family) hire the labourers. Labour required in tea farming can be broadly classified into two categories such as semi-skilled labour and skilled labour and can further be classified according to the nature of the job.

Semi-skilled labour: The semi skilled labourers are involved as pluckers. Number of absentee plucker is very low and there are at least four categories of pluckers in Ilam and Panchthar districts.

- Who also have own tea farm but also work as labour exchange for others;
- Who also have own tea farm but also work as wage labour for others;
- Who do not have tea farm but work regularly for particular farmers as neighbours; and
- Who do not have tea farm and not stay the area for long time.

Plucking is an activity where leaves from growing tips of the tea bushes are plucked and collected into baskets which the pluckers, often women, carry on their back. The full baskets are taken to a collection centre, where they are weighed and then transported to the processing factory via porters or vehicles. As plucking is done for almost 7 months a year (from mid April till mid November) and this activity warrants maximum number of labourers. Even though pictures of tea farms portray only young plucker women with bamboo baskets on their backs, in Ilam it was observed that both men and women are involved in the plucking of green leaves. However, there seems to be a slight tendency to regard plucking as a "woman's job". During field study conducted in this study, both men and women were encountered and even school-going children were also found to be involved in plucking.

In general, there is a tendency among tea growers to regard plucking one of the easy task that does not require much effort and skill, however, tea technicians and experts on tea farming mentioned that the quality of made tea is the function of careful plucking of tea leaves. Fine plucking always lead to better quality of made tea. Fine plucking is referred to the plucking of the 'two leaves and a bud' of a tea plant. If this rule of thumb is not maintained and if mixing of other leaves and branches are mixed with 'two leaves and a bud', this will result in a degraded quality of made tea. Therefore, if the plucker is not careful, then the overall quality of made tea may not improve. However, there seems to be less or no such efforts from the side of farmers to train labourers on good plucking methods or pluckers are not fully aware on the need to take sufficient care of the green leaves. More often, labourers in one field are not always the same, and even though the farmers direct the labourers to pluck only '2 leaves and a bud', lack of awareness on its importance, labourers do not to follow this instruction carefully.

Other types of semi skilled labour are manuring and weeding which require more manual labour than any other activity which is done by both men and women. Manuring is an activity whereby fertilizers, pesticides and manures are applied in tea garden. On the other had, weeding is done either through bare hands or using sickles or other tools. In general the weeded plants are used for mulching in the tea orchard.

Skilled labour: Activities such as pruning and skiffing are done according to the pruning cycle by the skilled labour. Pruning and skiffing are both considered as skilled work and generally done by men. Even though there is no discrimination on the basis of gender and others, these skilled labours require more physical effort and are generally not performed by women. However, key informants and lead farmers hinted that there are exceptions where women are also involved in performing the 'heavy jobs'.

The labourers are hired by farmers in two ways: a) they are hired on a daily wage basis whereby wages are determined according to the prevailing market rate; b) specific activity is contracted (leased) out to some groups of people or individuals for a negotiated price. Regarding the wage rates for the labourers, the low price of tea offered by the factories (to the farmers) is clearly reflected in the wages of tea labourers. Since labour costs constitute 55-60% of the overall tea farming costs, wages are the first item to be sacrificed when low tea prices affect the farm. The wage paid to labor ranges between Rs. 80 and Rs. 120 per day for pruning and skiffing while it ranges between Rs. 50 and Rs. 70 for plucking, manuring and weeding.

Smallholder Farmers and Tea Producers' Groups

Unlike the Tea Estates (having both tea plantation and processing factories), the smallholder farmers are involved in tea farming as a household level enterprise. Tea farming among such smallholder farmers may be in the form of owning several bushes in the backyard to having a farm as big as 5 hectares and more. The last decade has seen a phenomenal increase in the number of small holder farmers entering the tea farming business in terms of area and production. The cultivation of tea is attractive to small farmers because tea provides work and income throughout the year, it also requires relatively little investment, and the risk of complete crop failure is very low. In terms of their involvement in sales and production, small farmers can be broadly grouped into three categories as under.

- Have own mini-plant for final processing;
- More for green leaf sales but have own semi-processing facility (e.g. dryer) and
- Only for green leaves sales with no processing facility.

Small farmers are organized into their respective groups through which they sell their leaves to the bought-leaf factories. There groups are federated into Tea Producers Cooperatives with 27 such cooperatives in Ilam and 3 in Panchthar districts. On the

basis of operation of these cooperatives / groups, they can be broadly grouped into three as under.

- Well functioning with prospects to access wholesale loans (external finance);
- Well functioning within their own finance flow (to small to get scale merit); and
- Not functioning.

Prices paid for the green leaves are in general low leading to lower value addition and profit margin. Tea supplied by small farmers bears reputation of being low in quality due to problems in transportation and associated costs, which often depresses the price paid for the green leaves. Small farmers generally lack the necessary knowledge of picking and storing tea leaves, and maintaining tea garden which encompasses activities such as soil treatment, pests and diseases management, and tea plant maintenance. Mostly tea is grown in areas with poor transport facilities requiring too long time for the tea to arrive at the bought-leaf factories.

Even though the nature of tea farming is very complex and needs constant supervision and monitoring in the field and guidance by skilled technicians, farmers are often not able to accord this required level of care and effort due to absence of knowledge and the lack of access to it.

But with the small farmers getting organized and associated into groups, it is hoped that this will help them to get better organized and share knowledge, resources, funds etc. and could also contribute in collective bargaining and even establishing factories for the processing of green leaves.

Tea Processing Factories

There are three bought leaf factories or tea processing factories (Gurese, Himalayan Shangri-La and Mist Valley) without their own Tea plantations and depend on the small farmers for the green leaves to run their factories. In terms of investment structure and ownership, these factories are (i) share-holding by factories and other local residents plus other sources; and (ii) more investment by private sectors outside.

Irrespective of their ownership structure, the tea processing factories purchase the tea leaves from the tea farmers, then process it in their factory, package it and then sell the made tea under their own brand. The farmers bring their green leaves to the collection center where the leaves are weighed and graded according to the quality (90% two leaves and a bud, 80 % two leaves and a bud, 70 % two leaves and a bud with several *banjhi* leaves etc.). The leaves are then transported to the factory where it is immediately put into the withering trough.

There are labourers working in the tea processing factories, In terms of their involvements, these labourers can be broadly categorized into four as under.

- Skilled and formal labour (salary based)
- Skilled but informal labour (daily wage)
- Unskilled but formal labour and
- Unskilled but informal labour

The two tea processing factories (Himalaya Shangri-La Tea Industry (P) Ltd. and Small Farmers Tea Industry (P) Ltd. in Doctorkhola, Fikkle) in Ilam that are signatories to the CoC in orthodox tea program have agreed to purchase all the green leaves supplied by the CoC signatory farmers. On top of that, the factories have also agreed to pay a premium of Rupees 2 per Kg of green leaves to the CoC farmers. Apart from that, the factories are required to have a different set of processing system whereby the green leaves under the CoC agreement is not mixed with the ordinary tea. Special care is also given to maintain the quality of tea throughout the entire production process.

The rates for the green leaves are determined single-handedly by the factories before the onset of the First flush (March, April). The rates are given according to the quality/ grade of the green leaves delivered by the farmers. The price rates are often revised according to the growers' pressure and the quality of the green leaves received during the monsoon and the autumn flush. The bought leaf factories pay the farmers in quarterly installments (in March, June and December every year).

Farmers are often not satisfied with the price rates offered by the factories. Complain that the rates for green leaves provided by tea factories are far lower than their COP and complain that revenue from tea farming is insufficient to cover the labour and transportation costs, while the factories claim that they are unable to pay higher rates to farmers due to sluggish demand of Nepali tea in the International market and thus low sales of their products.

2.5 Tea Value Chain

Schematic diagram showing the orthodox tea value chain in Ilam and Panchthar districts are provided in Annex 3. Key features of the tea value chain in both districts are summarized in Table 4.

Table 4: Overview of Tea Value Chain in Ilam and Panchthar Districts

Level of Value Chain	Key Actors at Value Chain	
	Ilam	Panchthar
Input supply	▪ Tea nursery ▪ NTCDB ▪ Agro-traders ▪ Tea state ▪ Sunworks Kathmandu	▪ Tea nursery ▪ NTCDB ▪ Agro-traders ▪ Tea state
Production/cultivation	▪ Tea farmers (4,647) ▪ Tea State (7)	▪ Tea farmers (523) ▪ Tea State (1)
Processing	▪ Hand processing (households and small plants) ▪ Tea Factory	▪ Hand processing (households) ▪ Tea Factory
Wholesalers/Retail	▪ HIMCOOP ▪ Broker/Packers/ Wholesalers/Exporters	▪ HIMCOOP ▪ Broker/Packers/ Wholesalers/Exporters
End market	▪ Domestic (5%) ▪ International (95%)	▪ Domestic (5%) ▪ International (95%)

Source: SNV Nepal, 2008

The value chain in both districts is almost identical. It consists of five layers namely input suppliers, producers/cultivators, processors, wholesalers/retailers and end market. There are support services to promote the tea sector which can be broadly grouped into two: business services and enabling environment. Information on support services providers in both districts are provided in Table 5.

Table 5: Business Service and Enabling Environment Services in Tea Value Chain in Ilam and Panchthar Districts

Level of services	Type of services	Key Actors	
		Ilam	Panchthar
Micro	Business Services	▪ Labour/Pluckers, ▪ VDC ▪ Tea farmers' Groups, ▪ Farmer's Federation,	▪ Labour/Pluckers, ▪ VDC ▪ Tea farmers' Groups, ▪ Farmer's Federation,
Meso		▪ DDC ▪ Tea Producers' Committee, ▪ District Cooperative Federation for Tea, ▪ NTCDB, Outreach and Regional Office, ▪ ADBL, ▪ SBB, FORWARD and financial cooperatives	▪ DDC ▪ Tea Producers' Committee, ▪ NTCDB, Outreach and Regional Office, ▪ ADBL, ▪ SBB, FORWARD and financial cooperatives
Macro	Enabling	▪ ICIMOD	▪ ICIMOD

Level of services	Type of services	Key Actors	
		Ilam	Panchthar
	Environment	▪ Members of Tea Alliance (SNV, JICA, NTCDB, WINROK, GTZ, TEASEC, HOTPA), ▪ ADB ▪ MOA ▪ MOTL ▪ ADBL ▪ NRB	▪ Members of Tea Alliance (SNV, JICA, NTCDB, WINROK, GTZ, TEASEC, HOTPA), ▪ ADB ▪ MOA ▪ MOTL ▪ ADBL ▪ NRB

Source: SNV Nepal, 2008

2.6 Four Pillars of CoC in Orthodox Tea in Nepal

There are four pillars of CoC in orthodox tea and these four pillars constitute the main guiding principles of the CoC. These pillars and their requisite characteristics are provided in Table 6.

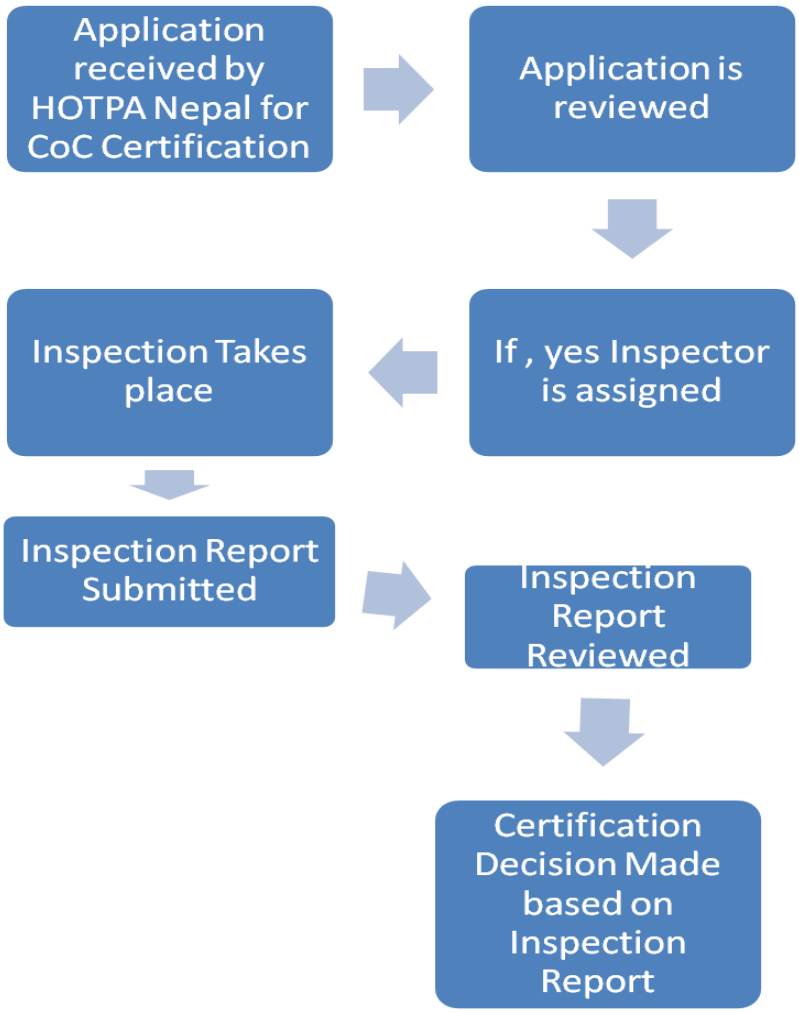
Table 6: Four Pillars of CoC in Orthodox Tea in Nepal

Pillars	Requisite characteristics
Respect towards Nature	▪ Conservation of Bio Diversity ▪ Conservation & Management of Soil Fertility ▪ Environment friendly Agriculture System ▪ Implementation of National & International Environmental Policy
Human Respect	▪ End of Child Labor System ▪ End of Caste, Gender and Social discrimination ▪ Salary and wage prescribed by Labor Law and Rules ▪ Women Empowerment, Child Education & Human Development. ▪ Clean & secured work place ▪ Trader's social responsibility ▪ Cultural and Social Development
Respect towards Production System	▪ Implementation of National & International standard recognized production and processing process ▪ Transparency in production, processing process. ▪ Identifying the natural form of the products to the extent possible and maintaining integrity ▪ Record of each stages ▪ Monitoring ▪ Internal Inspection Process ▪ Provision of Product Recall System
Commitment to maintain High Standards	▪ Policy to maintain reliable and specific quality ▪ Clean & pure commercial practice ▪ Respect to the agreement with the Buyers ▪ Commitment to other related subject

Source: Extracted from paper on CoC

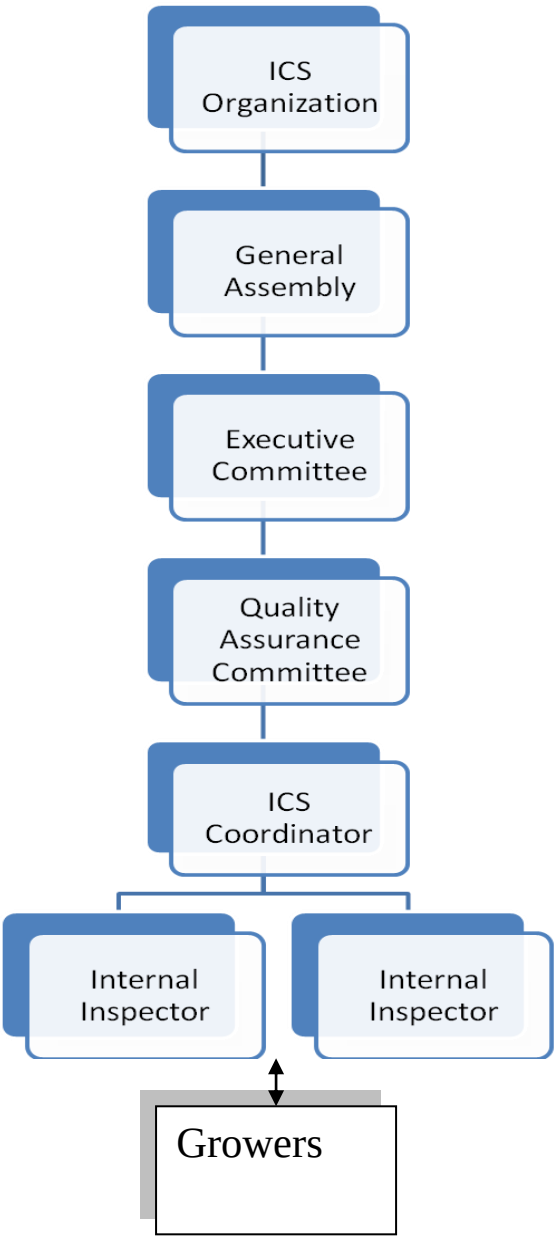
2.7 Operationalization of Code of Conduct

The CoC is being gradually operationalized and in order to facilitate operationalization process, HOTPA Nepal has prepared 'Code of Conduct Standards and Quality Management Manual' to inform everybody affiliated to HOTPA Nepal's CoC Programme about the objective, structure and working procedure of 'Code of Conduct Compliance Committee' and the services provided, requirement and procedure of certification, production/processing standards that should be followed by signatories and conditions and likely benefits. Services provided by HOTPA Nepal and CoC Compliance Committee such as inspection, evaluation and certification of production, processing and transportation of orthodox tea has been outlined in this manual. The proposed certification process encompasses several steps that are outlined in following schematic diagram.



2.8 CoC Compliance Inspection Process

The CoC registered small farmers groups will have to assure processing centre that CoC have been practiced at farm level and its standards are followed. The implementation of such programme is monitored, inspected and evaluated both, internally well as externally. Schematic diagram outlining the internal control system (ICS) is provided in following chart.



2.9 Scope of CoC Inspection

Scope of CoC inspection comprises of activities such as inspection of production and processing. A discussion on scope of these activities follows hereunder.

2.9.1. Production Inspection

Production inspection comprises of gathering information on producer, processor, and transportation; place of production and processing; method of land use in production site; source of plants; level of soil's fertility; management of minerals in soil; crops / soil conservation; irrigation facility; machinery and tools; weeds management; leaves plucking; information of green leaves collection center; transportation to processing center; time/period at collection centre before taking it to processing center; time (duration) green tea leaves remains in any collection center prior to transportation to processing unit; means of transport of green tea (labourers, vehicles, mules etc.); total time taken to transport green tea leaves, etc. Only those producers meeting minimum threshold standards on above can maintain their CoC certification status.

2.9.2. Processing Inspection

Information regarding processor, such as means of transportation, time and other information if s/he transports green tea leaves; inspection and quality check before green leaves enters into the processing center; weighing method of tea leaves in processing center; description of processing like withering, rolling, fermentation, drying, sorting, etc.; grading after processing; system of record keeping on grading; tea packaging and market; management of waste after processing; source of energy used for processing; plan for conservation of surroundings of processing; source of water used at processing center; staff and labourers appointment system; salary, wages and other benefits for staff and labourers; suggestions and directives for health and security of staff and labourers; partnership with local groups; meeting with organization and meeting; and internal inspection and audit. Only those processing units meeting threshold standards on above can maintain their CoC certification status.

3. STATE OF THE ART ON SMALL SCALE TEA PROCESSING UNIT

3.1 Overview of Small Scale Tea Processing

In Ilam and Panchthar districts tea processing is done at three levels: basic household units, small processing units and larger factories. In this report, state of art of basic household units and small processing units has been documented.

Household units are essentially small cottage level workshops wherein fresh tea leaves are processed using the very crude method and entire processing is done manually. Almost all the small tea growers' process fresh tea leaves as household units adopting all the processes such as withering on shed using mat, rolling by hand, fermentation in heap arranged in mat and drying in sun using mats. Tea thus prepared are neither graded nor properly packed. Tea produced by household units are either consumed in home or provided gifts to relatives living in outside tea producing areas or exchanged with household consumption items or sold at the small township in a busy day. The thus processed hardly enter into the tea value/supply chain. In general, the population in the mountainous areas is obtaining this type of hand made tea as regular marketing channels are unable to reach them. There are instance where tea is manually processed under household units by farmers in inaccessible areas of both Ilam and Panchthar districts. Bringing the tea processed under household units within the ongoing CoC strategic supply chain activities is one of the serious challenges in the tea sector.

The process adopted for tea processing by the small processing units is fairly scientific where withering is done on crudely turned out troughs and withered leaves are hand rolled in wooden pans. They are the new entrant in the tea value chain and/or supply chain and latest initiatives started either in 2007 or 2008. This is the voluntary evolution and their emergence and growth is the reflections of compulsion rather than luxury for enterprising tea producers in their attempt to break monopoly of large tea processing factories in the tea value/supply chain.

3.2 Small Tea Processing Unit

As of November 2008, there are 13 small processing units either in operation or closed at the time of field survey or under construction phase. There are no such small processing units in Panchthar district. Close scrutiny of these processing units revealed that their locations are clustered in three geographical areas: Sakhajung/Shantidanda, Jasbire (Maipokhari and Solubung) and Panchakanya/Kanyam/Sriantu. Further, these are the areas where large scale tea processing units also exist.

Table 7: Name, Proprietor, Location and Capacity of Small Processing Units in Ilam District

S.N.	Name of small-processing units	Proprietor	Location	Current capacity (kg/day)
1	Handmade Tea Processing Udyog	Mr. Binod Kumar Khatiwada	Solubung-5, Talgoun	30
2	Kanchanjunga Handmade Tea Processing Centre	Mr. Damber B. Khatri and Mrs. Milan Khatri	Sakhajung-5, Baisaka Tole	100
3	Pathivara Handmade Tea Processing Udyog	Mr. Moti Ram Dahal	Sakhujung-5, Baisakha Tole	150
4	Light Hill CoC Hand Rolled Tea Industry	Mr. Mohan Dahal	Sakhajung-4 Dahalgoun	100
5	G. T. Handmade Tea Processing Udyog	Mr. Gopal Dahal and Tanka Dahal	Sakhajung-4 Dahalgoun	150
6	Jhulke Gham Tea Microenterprise	Mr. Kaji Man Cagate	Kanyam-2	300
7	Suryoudaya Organic Handmade Tea Udyog	Mr. Surya B. Khadka, Mr. Kamal Khadka and Mr. Kamal Poudel	Kanyam-2	200
8	Dipam Handmade Tea Udyog	Mr. Dilip Kumar Subha	Kanyam-1	25
9	Maipokhari Handmade Tea	Mr. Sharad Subba	Maipokheri -2	50

S.N.	Name of small-processing units	Proprietor	Location	Current capacity (kg/day)
	Processing Udyog		Jasbire	
	Total			1105
	Mean			123
10	-	Mr. Jyoti Adhikari	Panchakanya	100 (closed)
11	-	Mr. Man Kumar Lapcha	Kanyam-5	200 (closed)
12	Sri Antu Handmade Tea Udyog	Mr. Raju Banjan Mr. Kamal Rai	Sri-Antu	150 (under construction)
13	-	Support from WDS	Shanti-danda	200 (under construction)

Source: Field Survey, October 2008

3.2.1. Current Status, Capacity and Capacity Utilization

Of the 13 small processing units in Ilam districts, only nine were in operating conditions as of the survey time while two were non-operational (i.e. closed) in 2008 due to (i) lack of sufficient green leaves nearby to provide full employment to minimum numbers of workers and (ii) emerging opportunity to sale green leaves in relatively better price in CTC factories in Jhapa and remaining two units were under construction. Thus, in this study detail assessment of nine small processing units that were currently in operation has been made.

The current processing capacity of the nine small processing units is 1105 kg per day. The capacity of these processing units ranges between processing of 25 kg green leaves and 300 kg with an average of 123 kg green leaves per plant per day.

Table 8 provide information on status of capacity utilisation of these processing units.

Table 8: Capacity Utilisation in the Small Processing Units in Ilam District

S.N.	Name of small-processing units	Potential capacity (kg/year)	Amount Processed currently (kg/year)	Capacity Utilization Rate (%)
1	Handmade Tea Processing Udyog	5,250	2,800	53
2	Kanchanjunga Handmade Tea Processing Centre	17,500	9,600	55
3	Pathivara Handmade Tea Processing Udyog	26,250	10,000	38
4	Light Hill CoC Hand Rolled Tea Industry	17,500	6,000	34
5	G. T. Handmade Tea Processing Udyog	26,250	10,000	38
6	Jhulke Gham Tea Microenterprise	52,500	32,500	62
7	Suryoudaya Organic Handmade Tea Udyog	35,000	22,500	64
8	Dipam Handmade Tea Udyog	4,375	3,750	86
9	Maipokhari Handmade Tea Processing Udyog	8,750	4,950	57
	Total	193,375	102,100	53
	Mean	21,486	11,344	

Source: Field Survey, October 2008

The potential capacity of these small processing units is 193 mt. per year which range between 4,375 kg per year to 52,500 kg per year with an average of 21,486 kg per year per plant. On the other hand, total amount of green leaves processed by these units is estimated at 102.1 mt. The amount of green leaves currently processed by these units is estimated to range between 2,800 kg per year and 32,500 kg per year with an average of 11,344 kg per year per processing unit. The current capacity utilisation rate of these processing units is estimated at 53% which ranges between 38% and 86%. This implies that capacity of these plants are not fully utilised. This is mainly due to lack of financial capacity to manage the green leaves supply and lack of linkages with existing supply chain and eventually assured market for their products.

3.2.2. Capital Investment and Sources of Capital

Total investment of the small processing units ranges between Rs. 99,960 and Rs. 1,606,900 with an average of Rs. 585,040 per unit. Like other investment enterprises, the investment has two components: equity and loans. Proportion of loan to total investment ranges between 36% and 87% with an average of 64%.

Table 9: Capital Investment and Sources of Capital for Small Processing Units in Ilam District

S.N.	Name of small-processing units	Total investment (Rs)	Equity (Rs.)	Loan (Rs)	Sources of Borrowing	Proportion of loan on total investment
1	Handmade Tea Processing Udyog	99,960	30,000	69,960	Informal sector	70
2	Kanchanjunga Handmade Tea Processing Centre	839,000	239,000	600,000	Informal source	72
3	Pathivara Handmade Tea Processing Udyog	750,000	100,000	650,000	Excel bank	87
4	Light Hill CoC Hand Rolled Tea Industry	337,500	216,820	120,680	Informal source	36
5	G. T. Handmade Tea Processing Udyog	572,000	200,000	372,000	Excel bank	65
6	Jhulke Gham Tea Microenterprise	1,606,900	706,900	900,000	ADBL	56
7	Suryoudaya Organic Handmade Tea Udyog	800,000	300,000	500,000	ADBL	63
8	Dipam Handmade Tea Udyog	125,000	50,000	75,000	Informal source	60
9	Maipokhari Handmade Tea Processing Udyog	135,000	55,000	80,000	Informal source	59
	Total	5,265,360	1,897,720	3,367,640		64
	Mean	585,040	210,858	374,182		

Source: Field Survey, October 2008

The proprietor of the small processing units has borrowed both from formal and informal sources. While informal sources include money lenders and friends/relatives, the formal sector includes Agriculture Development Bank Limited (ADBL) and Excel Development Bank. Of the nine small processing units, four have borrowed from formal sector. Access to finance is one of the constraints for the growth and development of the small processing units. Sustainable growth and development of these processing units requires access to finance for fixed investment and working capital as well as short term and medium term finance[8].

3.2.3. Operating Cost and Revenue

The annual operating cost of small processing units comprises of annual fixed cost and annual variable cost.

Annual fixed cost comprises of cost for indirect labour, depreciation, interest on loan, utilities, repair and maintenance and other cost[9]. Total annual fixed cost of these units ranges between Rs. 70,655 and Rs. 1,044,714 per year with an average of Rs. 382,173 per year.

[8]For details see the report on "Strategy for Access to Finance in Tea Sector in Ilam and Panchthar Districts" conducted for SNV by Centre for Empowerment and Development in December 2008.

[9]Cost for indirect labour includes the cost of managers, accountants and other labor engaged in factory, depreciation is computed at the rate of 0.07% considering 15 years live of the processing units, interest on loan is computed @ 15% per annum, utilities comprises of cost of electricity and other amenities, repair and maintenance cost is estimated at 3% of the total investment cost and other cost payments for any unforeseen expenses (if any).

Table 10: Annual Fixed Cost for Operating Small Processing Units in Ilam District

S.N.	Name of small-processing units	Indirect labour	Depreciation	Interest	Utilities	R&M	Other	Total
1	Handmade Tea Processing Udyog	36,000	6,664	14,994	5,000	2,999	4,998	70,655
2	Kanchanjunga Handmade Tea Processing Centre	72,000	55,933	125,850	15,000	25,170	41,950	335,903
3	Pathivara Handmade Tea Processing Udyog	156,000	50,000	112,500	15,000	22,500	37,500	393,500
4	Light Hill CoC Hand Rolled Tea Industry	120,000	22,500	50,625	15,000	10,125	16,875	235,125
5	G. T. Handmade Tea Processing Udyog	234,000	38,144	85,824	15,000	17,165	28,608	418,741
6	Jhulke Gham Tea Microenterprise	468,000	107,127	241,035	100,000	48,207	80,345	1,044,714
7	Suryoudaya Organic Handmade Tea Udyog	390,000	54,333	122,250	100,000	22,450	40,750	729,783
8	Dipam Handmade Tea Udyog	36,000	8,333	18,750	10,000	3,750	6,250	83,083
9	Maipokhari Handmade Tea Processing Udyog	78,000	9,000	20,250	10,000	4,050	6,750	128,050
	Total	1,590,000	352,034	792,078	285,000	156,416	264,026	3,439,554
	Mean	176,667	39,115	88,009	31,667	17,380	29,336	382,173

Source: Field Survey, October 2008

Annual variable cost comprises of cost for green leaves (imputed cost assuming the value if it is to be purchased), direct labour, utilities and other costs[10]. Total annual variable cost of these units ranges between Rs. 103,000 and Rs. 1,415,000 per year with an average of Rs. 450,467 per year.

Table 11: Annual Variable Cost for Operating Small Processing Units in Ilam District

S.N.	Name of small-processing units	Green Leaves	Direct Labour	Utilities	Other	Total
1	Handmade Tea Processing Udyog	56,000	30,000	5,000	12,000	103,000
2	Kanchanjunga Handmade Tea Processing Centre	192,000	96,000	15,000	38,400	341,400
3	Pathivara Handmade Tea Processing Udyog	200,000	72,000	15,000	28,800	315,800
4	Light Hill CoC Hand Rolled Tea Industry	120,000	40,000	15,000	16,000	191,000
5	G. T. Handmade Tea Processing Udyog	200,000	100,000	9,000	28,000	337,000
6	Jhulke Gham Tea Microenterprise	650,000	600,000	75,000	90,000	1,415,000
7	Suryoudaya Organic Handmade Tea Udyog	450,000	450,000	36,000	90,000	1,026,000
8	Dipam Handmade Tea Udyog	75,000	45,000	5,000	18,000	143,000
9	Maipokhari Handmade Tea Processing Udyog	99,000	60,000	5,000	18,000	182,000
	Total	2,042,000	1,493,000	180,000	339,200	4,054,200
	Mean	226,889	165,889	20,000	37,689	450,467

Source: Field Survey, October 2008

[10]Cost for green leaves has been computed @ Rs. 20 per kg, direct labor includes cost for labour directly involved on processing activities such as withering, rolling, fermentation, drying, grading, etc. utilities comprises of cost of electricity and other amenities, and other cost relates to payments for any unforeseen expenses such as packaging, promotion, etc.

Gross revenue comprises of the made tea. Like large processing units, small processing units also produces tea of different grades such as super fine (i.e. silver tips, golden tips); Tea Golden Floory Orange Piggio (TGFOP), Broken Orange Piggo (BOP), Tea Golden Broken Orange Piggo (TGBOP) etc.) and by-product (dust tea). Green leaf to made tea ratio is 18% and that of by-product (dust) is 2% in these processing units. Weighted average price of made tea ranges between Rs. 400/- and Rs. 450/- per kg and that of by-product (dust) range between Rs. Rs. 40/- and Rs. 60/- per kg.

Table 12: Gross Revenue of the Small Processing Units in Ilam District

S.N.	Name of small-processing units	Made Tea	By-product	Total
1	Handmade Tea Processing Udyog	203,636	2,240	205,876
2	Kanchanjunga Handmade Tea Processing Centre	785,455	9,600	795,055
3	Pathivara Handmade Tea Processing Udyog	818,182	10,000	828,182
4	Light Hill CoC Hand Rolled Tea Industry	490,909	6,000	496,909
5	G. T. Handmade Tea Processing Udyog	818,182	10,000	828,182
6	Jhulke Gham Tea Microenterprise	2,659,091	32,500	2,691,591
7	Suryoudaya Organic Handmade Tea Udyog	1,840,909	22,500	1,863,409
8	Dipam Handmade Tea Udyog	306,818	3,750	310,568
9	Maipokhari Handmade Tea Processing Udyog	405,000	4,950	409,950
	Total	8,328,181	101,540	8,429,721
	Mean	925,353	11,282	936,636

Source: Field Survey, October 2008

Gross revenue of the small processing units ranges between Rs. 205,876/- and Rs. 2,691,591/- per year with an average of Rs. 936,636 per year per unit. Currently gross revenue of all the nine small processing units is sufficient to recover their operating expenses and hence, running at at breakeven level.

3.2.4. Employment Generation

The nine small processing units currently operating in Ilam district have been quite instrumental to generate employment at local level. They had been able to generate both regular and seasonal employment opportunities to the labour force in the areas. Table 13 provides information on employment generated by these processing units.

Table 13: Employment Generated by Small Processing Units

S.N.	Name of Industry	Human Resources Employed (Regular)			Human Resources Employed (Seasonal)		
		Skilled	Semi-skilled	Skilled	Semi-skilled	Skilled	Semi-skilled
1	Handmade Tea Processing Udyog	2	2	5	-	15	5
2	Kanchanjunga Handmade Tea Processing Centre	3	5	10	3	10	-
3	Pathivara Handmade Tea Processing Udyog	2	2	-	2	2	15
4	Light Hill CoC Hand Rolled Tea Industry	1	2	-	-	6	-
5	G. T. Handmade Tea Processing Udyog	2	-	5	2	5	5
6	Jhulke Gham Tea Microenterprise	2	10	-	2	12	-
7	Suryoudaya Organic Handmade Tea Udyog	3	2	2	3	3	6
8	Dipam Handmade Tea Udyog	1	-	-	1	-	2
9	Maipokhari Handmade Tea Processing Udyog	1	-	-	5	-	-
	Total	17	23	22	13	58	33

Survey information revealed that these small processing units have been able to generate employment to skilled, semi-skilled and un-skilled labour force living in their communities. These small processing units are able to generate 62 person days of regular employment and 114 person year of seasonal employment to the existing labour force in different activities.

3.2.5. Market and Market Channel

Market and market channel for the made tea and the by-product produced by the small processing units are not very well established. Support to develop the market channel is one of the biggest challenges for strengthening small processing units in orthodox tea sector. Most of the tea produced by these processing units is sold to visitors in the processing units, local market in Fikkle, Ilam Bazar or Pashupatinagar Bazar, retailers in Birtamod bazar and Kathmandu. The dust tea is sold in hilly district namely Panchthar and Taplejung district or exchanges with goods with local people. Except one processing factory in Kanyam (Jhulke Gham) none of the small processing units have sold made tea even in Indian market.

3.2.6. Pricing Methods

Approaches adopted by small processing units for the purchase of raw materials (green leaves) and sale of finished product (made tea of different grades and by-product) is rather ad-hoc. Mostly small processing units use the green leaves from their own tea garden and hardly purchase the green leaves from their neighbours' tea garden. Their primary concern lies at selling of their products by any way rather than setting basis for pricing of the products. All the small processing units are price taker and they set the price using the information of selling price of the big factories and prevailing price in the destination market in Birtamod and Kathmandu.

3.2.7. Processing Techniques and Its Improvement

Like the typical large processing units, processing techniques adopted by the small processing units comprises of steps such as (i) withering, (ii) rolling, (iii) fermentation, (iv) drying, (v) grading and (vi) packaging. Only differences are that rolling is manually done in the small processing units. Manual techniques adopted for rolling is the matter of great concern as far as health and hygiene of finished tea produced by small processing units are concerned. The study team witnessed the cases where all the proprietors are highly concerned on overall processing technique and are in search of improved technology for processing, especially rolling, drying, grading and packaging. In fact these are the areas requiring external intervention.

3.2.8. Major Constraints/Challenges

The major constraints/challenges experienced by the small processing units are related to capacity utilisation, raw materials, finance, technology, human resources, market linkages, certification and quality assurance. They are confident of processing high standard tea but because of these problems they could not be able to scale up their operation upto their potentials. Because of financial constraints (working capital loan) they are not able to purchase green leaves upto required amount and even suppliers are not confident on reliability and stability of their operation, hence, reluctant to supply green leaves. Further, they are experiencing marketing problems as there is lack of established value/supply chain. As a result they are not been able to utilise their capacity to the full potential. Certification, quality assurance and lack of quality human resources are the associated constraints to promote small scale processing unit in the district.

3.2.9. Awareness on CoC

All the proprietors of the small processing units are aware about the CoC and expressed their willingness to be integrated into CoC. Despite their interest to be part of the CoC certification, due to lack of awareness and lack of transparency on process and associated cost involved on CoC certification, almost all of them have not received CoC certification. Some of the small processing units are CoC certified through their respective tea producer's cooperatives (Ucha Pahadi and Green Hill) under the assistance of the large processing unit nearby. But they are not been able to realize the significance and benefits of CoC certified through cooperatives.

3.2.10. Plan for Expansion

All the proprietors of the nine small processing units mentioned that they have a plan to expand their enterprise in the days to come. The type of barriers for expansion in terms of priority includes finance, technology and technical capacity, certification, quality assurance and control, and marketing. They anticipate that there should be technical support packages with all the support coming in the tea sector channeled from one window system that eventually addresses the issues related to processing of green leaves.

3.3 Analysis of Internal Factors

Small scale processing factories, owned and managed by farmers who also manage the tea garden are relatively satisfied with the achievement and are busy with the value addition activities by themselves, without depending on owner of the big factories. Farmers lack (sufficient) financial capacity to establish a full scale processing factories. Considering that tea is produced in accessible as well as remote areas and there is lack of sufficient numbers of large processing units, there is scope for expansion of small processing units in Ilam and Panchthar districts. Series of one to one consultations and focus group discussion conducted during field studies uncovered that there are variety of processing units in operation in Ilam district which implies that establishment of an appropriate (technical and commercial) processing factory at farmers' level seems inevitable. There is a huge need and demand for strengthening current processing units (institutional and technical) and support the establishment of new processing units. If appropriate technology and access to finance is ensured, those farmers having tea garden in inaccessible area and facing difficulties in transporting fresh tea in nearby large processing units in Panchthar and Ilam districts have expressed their willingness to establish/initiate/invest in small processing units. Such number of is estimated to be ..... Ilam and ..... Panchthar districts. Most of the tea producers cooperatives consulted during field visits also expressed their willingness to start small processing units on cooperative norms and principles. In general, establishment of these units are driven by dispute between tea producers and the factory owners in fixing the price of green leave as well as problems of transporting the green leaves from remote areas to the factory.

Support to the small processing units need to be viewed from two perspective. First, upgrading the scale of operation of existing nine processing units and second, creating enabling environment for emergence, growth and development of new small processing units in inaccessible areas where transportation of green leaves into the large processing factory is a problem.

Who are willing to establish/ initiate/ invest in such new processing units? How many people (small holders) are we talking about? How many jobs are we talking about and how much additional production and sales are we talking about?

If establishment of these small-factories is the outcome due to dispute between the tea producers and the factory owners in fixing the price of green leave is only/ major reason

why these units exists then I am afraid that these units are not driven by market trends and demands. (More discussion is required).

We need to discuss this more seriously. Is it worthwhile investing in these 9 processing unties? Does it justify? Is there a scope of expansion and what will be the outreach? How this support helps in making tea sub sector more competitive and help reach added value reach to the lower end of Orthodox tea value chain?

3.3.1.Technologies and Their Appropriateness

The basic process adopted by small processing unit is same as large processing units involving steps such as withering, rolling, fermentation and drying with adjustments on time frames and using different method to obtain final products. Unlike in large processing units, in these units rolling is done by hand in a wooden plank. In general, these units are small cottage level workshops where withering is done on crudely turned out troughs and withered leaves are hand rolled in wooden panks. After hand rolling, fermentation is done and after fermentation, it is dried either using electrical power or heat generated out of the firewood. The product is a green tea of about 5 grades ranging from the full leaf to smaller grade. The output per day is about 10 to 60 Kg depending on the capacity of the processing units. In general owner of small processing plants are small holders having tea in bigger plots of around 5 ha or more and they are involved in direct marketing of their own products at small townships on a busy day.

Though the very process of small tea processing is identical, there is lack of uniform structure as they vary across entrepreneurs. There is a lack of appropriate technology, knowledge and awareness among entrepreneurs on technological solutions that is most beneficial and suitable in the areas. This technology is locally emerged as a result of the compulsion rather than a luxury to minimize or reduce their dependence to sale of green leaves in the large processing units where they were always price taker.

Mr. Sharad Subba is an innovative young personality who has conceptualized the idea of small processing plants and designed the plants under the financial support of the Rural Enterprise Assistance Programme (REAP) implemented in Ilam Districts by the Industrial Enterprise Development Institute (IEDI) in early 2006. Mr. Subba in cooperation with SNV and REAP collaborating with Ms. Sunworks, based in Kuleshowor, Kathmandu introduced improvements on drying process. Mr. Subba is also involved as a resource person to impart skill on homestead tea processing or small-tea processing units in different parts of the district under the financial support of REAP and Women Development Section. Further, inspired by innovative works done by Mr. Subba, other enterprising farmers in Kanyam, Sakhajung and Jasbire areas have constructed small processing units by themselves. They are receiving the technical advises from Mr. Subba.

It is too early to assess the appropriateness of the small processing plants. These units producess tea of various grades and taste, but have not undergone quality assurance process. As a matter of fact, it is less likely that these units will comply with standards acceptable at the international level and hence challenges lies at assuring that made tea produced by these processing units are more quality oriented, have easy access to the world market and these products are highly competitive. Considering available resources, technical knowledge and skill of these entrepreneurs and availability of the physical infrastructure in processing location, achieving such standard is a daunting task for these small processing units. Further, lack of knowledge on market signals, market information and confidence on return on further investment on value addition deters these units to invest further on their small processing units especially on aspects like quality certification and compliance of conditions set in CoC.

3.3.2. Price Analysis

Establishment of these small-factories is the outcome due to dispute between the tea producers and the factory owners in fixing the price of green leave. Both the actors perceive that they are loosing money and farmers feel that they are cheated by selling green tea leaves in a very nominal price to tea processing units which are selling finish product at a very high profit margin. The voice raised by the tea farmers that there should be more margins on green leaves from the final sales margin of made tea, has motivated some sensitive and self motivated farmer entrepreneurs to set-up small processing units. The tea stakeholders till now only know that small factories are available in China and Calcutta, India. There is lack of detailed feasibility study, including a business plan, to justify the viability of small processing units for Nepal.

Small tea farmers are not receiving remunerative prices for their green leaf which is often lower than its COP. Payment made by the factory on green leaf purchase is always late often exceeding a period of four months or more. Although, some of the factories are paying very high prices for premium quality first and second flush green leaves (buds only or one leaf and a bud harvested within 4 days of plucking round), actual value of such a harvest is three to four folds higher than that the farmer receives[11]. On an individual level outside the CoC group, those farmers producing quality and ethical teas within the standards of CoC are not receiving prices higher or better than those not within CoC groups. This factor requires immediate attention concern for institutionalizing the CoC among tea growers. Farmers are now diverting their attention towards low quality high volume production of green leaves meant for inferior (i.e. low priced) markets in the CTC factories in Terai. Although, some of the factories (CoC) are keen to look into possibility of providing remunerative prices for farmers producing high quality green leaves, possibility of such an initiative to be successful largely depends on price level of green leaves than the level of CoC premiums[12]. Factory lacks consistency on higher and sustainable payments as the prices of green leaves as well as manufactured teas are heavily influenced by market prices in India. Some of the enterprising farmers are piloting on manual processing of their green leaf on learning by doing basis. Markets for such manually processed teas are limited to local markets due to lack of quality levels required for international markets on such teas. Farmers are completely unaware of the quality and types of hand crafted teas that is in demand in the International markets.

Exiting market of specialty tea is growing and the market is in short supply of high quality specialty teas. Farmers have a very high potentiality to produce such teas but unfortunately they lack knowledge base and market linkages. In the past, SNV took initiatives (through REAP) to introduce dryers but due to unhygienic field conditions, the produced tea was not of good quality and was not liked by conscious national and international buyers. This lesson was learned by tea farmers in Ilam district and are now trying to upgrade the processing standards and looking into sanitation aspects.

Increasing the quality and quantity of supply of CoC tea and support to increase access to markets and increase market competition on longer term are important issues in developing entrepreneurship among rural communities. At present, least is known on quantity of made tea that these small processing unit are able to process and supply. However, based on the information gathered while conducting this study from 9 processing units it has been estimated that some 5000 and 8000 kg of green tea of different grades can be produced over a period of 7 months. Gross day production is approximately 100 kg green leaves from which around 20 kg of made tea can be produced. Nepali experts have tested the tea produced by these processing units and

[11] These relates to white tea prices during first flush season which ex-factory price is more than Rs. 3500 per Kg.
[12] SNV is working with their partner HIMCOOP on the development of a marketing plan)

found that these are very high quality tea and they are not quite sure and little is known though if the quality level of hand made tea can be maintained during the season.

Quality issue is the most vital issue on market prices and plays pivotal role on Branding Nepal Tea as a quality product. Therefore, it is assumed that once the farmers turn into processors themselves, they will learn or acquire practical knowledge on the importance of quality production. (This is a nice hypothesis however, what will happen if this fails? or what will happen to the big tea factories if all the farmers turn into processors?), let us discussed? This in turn will help over all farmers about the value to quality production. Except one or two, all the processing units visited are producing good quality of tea that matches CoC quality however farmers don't necessarily receive better price. It is known though that they don't match the CoC certification standards i.e. applicable rules and regulation and/or are also not fully aware of this. The units need a variety of capacity strengthening support to improve quality/processing in addition to assessing the best technology needed as well as collection, documentation and learning from the lessons from other countries.

3.3.3. Social Capital

Social capital in these districts comprises of farmers groups, farmers federations and cooperatives. In Panchthar, there are 13 farmers groups of 1500 farmers and there are three farmers' cooperatives. In Ilam, there are over 75 farmers' groups of 4500 members and there are 27 tea producer's cooperatives. Farmers wish to form into cooperative units and run their own small factories of output of 100 to 150 MT per annum in some instances more as a measure to spite the existing ones who do not service them adequately whilst in certain areas it is a necessity due to availability of large quantities of green leaf and inability of large processing unit to purchase green teas from these areas. Of the 13 tea producers cooperatives contacted during field studies, seven of them expressed their willingness to to set-up mini/small processing units to serve the interest of their shareholders. (How many of these groups/cooperatives are interested/ willing to have their own processing units?) TEASEC, as an active member of Tea Development Alliance of Nepal, comprises of major stakeholders in the tea sector, is very well positioned to serve the interests of small holder farmers.

3.3.4. Marketing

The tea produced by the small processing units is marketed locally while some portions are sold in nearby market in Birtamod. Some energetic processors are also selling their products in larger market in Kathmandu. Road damaged due to flood in Koshi river has been affecting marketing of made tea produced by these entrepreneurs in Kathmandu market. In general, market chain of their products is not properly established. They are at times compelled to sale it in mountainous district to the north. The population in the mountainous areas may be obtaining this type of hand made tea as regular marketing channels are unable to reach them. It is likely that there are such units processing a type of green tea from their own leaf for marketing in localized areas.

Supporting the processing units could benefit the marketing/sales partner in the tea value chain (e.g. HIMCOOP)[13] (We need to see the total sales volume of HIMCOOP and the total production volume of these processing units) that can increase working with different supply chains in addition to enabling them to reduce their dependence on the current supply chains. It is also not known what the current level of (institutional) capacity of the units is before they can comply with the CoC standards and/or what the involved costs are and if the units are able to pay the fees to get certified from HOTPA or compliance committee.

[13]HIMCOP in the past tried to sale the tea produced by these processing units, but it faced problems such as uniform quality, volume and standardisation of the products. Owing to these they stop selling their products.

3.4 Analysis of External Environment

3.4.1. Policy, Plan and Strategy

Government of Nepal in its 10th Five Year Plan (2003-2007), Poverty Reduction Strategy Paper (PRSP) and Interim Pan (2008-2010) emphasizes the importance of the private sector in promoting broad based economic growth and states the urgency to create an enabling environment for private sectors to grow. This implies that focuses should be diverted on enhancing competitiveness and local value addition in order to generate income and employment by promoting orthodox tea sub sector.

Since, small tea processing units are the latest development in Nepalese tea sector, there is no specific policy, plan and strategy governing their establishment, operation and management. They should operate within the framework of the general provision made in Nepal Tea Policy 2000. (We need to see the possibility of indorsing some issues in the upcoming review of tea sub sector policy, SNV is in the process of reviewing the tea sub sector policy, needs to discuss what can be done) The policy states that Government of Nepal shall give priority for infrastructure development like road, irrigation, electricity, communication, education and health in the commercial tea plantation areas. Further, an arrangement shall be made to avail the fuel wood required for the operation of tea industry directly from the concerned Forest supply Committee fixing the periodic quantity to entrepreneurs in a way not adversely affecting the local supply, and the trees planted within the tea estate may be used by the tea estate itself. The policy insist on establishment of a Tea Development Fund from the revenue received from tea entrepreneurs, grant from Government of Nepal, support received from International Non-Governmental Organization and foreign grants or assistance and utilize such funds in the development and extension of tea with the participation of private sector.

In cognizance to above, Government of Nepal is in process to review tea sub sector policy under the technical and financial support of SNV and some of the issues related to tea processing by household and small processing units on creating enabling environment should be incorporated in the policy document.

3.4.2. Legal and Regulatory Framework

There is no separate legal and regulatory framework specifically for small-scale tea processing units. The small processing units are registered in District Cottage and Small Industries Office in Ilam. As a matter of fact, since the final products of these industries are the edible food items, they must meet the standards set for essential food items, however this has been happened in practice. In general Department of Food Technology and Quality Control (DFTQC) has not provided any attention on quality assurance and control of tea prepared by these units.

There are no Codex standards set for Nepal tea as yet although some preliminary work has been conducted. It is the intention of the DFTQC to give this aspect priority in the preparation of manuals based on Codex/ISO in making original listings. Nepal tea standard has been set with some variations in its components, i.e. having a lesser percentage of fiber content, and including caffeine parameter. The overall limiting factors are stricter than the Indian standard. The Nepal Government tea standard complies with ISO 3720 internationally accepted parameters for made tea.

If one wants to compete in the international market, growers and exporters are required to meet internationally accepted standards that have been set, or are being introduced, related to radiation levels, pesticide maximum residue levels (MRL), heavy metal content, etc. Buyers increasingly ask for a pesticide MRL certificate, a regulation imposed by many importing countries. This exercise takes about 3 weeks and if the test proves

positive, there is no end user available for the producer. Therefore like all goods, what is unsold has no value. There is no laboratory equipped to carry out all these required tests nor is there any accredited international survey company available in Nepal. Due to this, samples must be sent to Indian or other foreign laboratories, which are costly and time consuming.

Within this context, adherence to good agricultural practices (GAP) and good manufacturing practices (GMP) are very essential for small processing units as they are not fully aware of this requirement. The CoC drawn up by the Tea Alliance is a step in the right direction to achieve this goal and these units should be supported to establish linkages and mainstream with CoC strategic supply chain activites. Furthermore with Nepal striving to become a major supplier of bio-organic tea, which is a fast growing segment, adherence to all aspects to obtain the necessary certifications are imperative and small processing units should not be treated separately if they are to enable to realize the benefits to the full potentials.

3.4.3. Quality and International Competitiveness

Since small processing units are started lately as a solution of last resort for the emerging problems, they have paid little attention on quality control including GAP, GMP, MRL etc. In fact most of them lack sufficient knowledge on these aspects of tea processing. It is rather far for these processing units to seeking ISO and HACCP certifications. They, however, strive to achieve standards set down by COC and some of them are playing the role of Internal Control Officers to monitor the progress and record each farmer's details of inputs and outputs. The NASAA based in Kathmandu records the reports.

In the context that even the quality of orthodox tea produced by large processing units is not consistent due to differences in classified grade in leaf and liquor properties making it difficult for orthodox teas to be sold in big parcels unless there are blending facilities available. The problem is more serious in case of small processing units. In view of this, there is a need to assist both small and large processing units to work-out more to ensure quality and maintain international competitiveness.

In addition to usual orthodox grades, some small processing units are also processing in small quantities types such as silver tips, golden tips and super fine which are too small in quantity to make an impact in the markets that seek these types of products. Buyers in North America who may look at these specialty teas are also unlikely to pay good prices as such teas are available at cheaper prices from China and Vietnam who are big producers.

Maintaining uniform quality, production of marketable quantity and certification are the main issues to be resolved for ensuring quality and increasing the international competitiveness of the tea processed by small processing units thereby ensuring sustainability of their existence in the market space.

3.4.4. Collaborating Institutions

There are many institutions such as Chamber of Commerce and Industries (CCI), Women Development Section (WDS), local NGOs like Sungava, NCDC, MIM, etc., national NGO like TEASEC and IEDI implemented project like REAP that are directly or indirectly collaborating with small processing units for technical and managerial support in areas such as skill/technology, market networking and linkages and social mobilisation (i.e. social capital formation).

Some entrepreneurs have collaborated with financial institutions such as Agricultural Development Bank Limited (ADBL) Nepal and Excel Development Bank Ltd. for the

access to financial services for the establishment and operation of their small processing units. Both financial institutions have expressed their interest to finance for viable small processing units.

3.4.5. Infrastructure and Access to Market

All the 13 small processing units are located in accessible areas connected with fair weather road with communication (mobile phone) facilities and they can be reached either by road and/or contacted by phone.

Entrepreneurs managing the small processing units are selling their tea to Nepali brokers coming to their houses/units and/or they sell to Darjeeling and to brokers in Birtamod and Kathmandu. They have established some linkages with Kathmandu based brokers but due to lack of proven quality assurance system, they lack linkages with the brokers in international markets. Those entrepreneurs who started micro-processing in 2007 has been able to sale all their products in local, regional and Kathmandu based market. For example, Mr. Moti Ram Dahal, proprietor of Pathivara Organic Handmade Tea Processing Industry in Sakhajung-7, Baisakhe Tole has been able to process 60 quintal of green leaves in 2007 to procued 11 quintals of made tea and sold it to wholesalers in Kathmandu market [Thamel (Jyatha), organic house, Koteshwor, Baneshwor, New Road and Jamal]. He has already processed 80 quintals of green leaves and sold 13 quintals of made tea this year in above market.

Small processors are able to sell their hand made teas indicating that the "Hand Made" tea processing concept is feasible, especially in rural areas where there is no access with big tea factories. However, ironically almost all these small processing units are located in areas where large processing units exist nearby and are some feel to be victims of large processing units. There might be opportunities to produce "specialty tea" with the customized processing and care, which the big factory may lack if the technical know-how is available. Farmers lack knowledge on quality standards and other rules and regulations demanded including marketing skills. There is a need of transferring knowledge on required standards of (international) buyers (markets), of available markets, potential linkages with big traders and exposure in big expos and trade fares.

3.4.6. Demand and Market

There is high demand for small processing units by farmers growing tea in remote areas with poor access and infrastructure. Although they are able to produce the leaf in quantities, transport is affected by using methods such as animal back, bicycles, backload, etc. that causes damage to the leaf in transit and proved to be unsatisfactory. The bags used for plucking also does not comply with recommend standard as they are not designed to keep the leaf intact as well as allowing it to "breathe' without causing fermentation before it arrives at the factory premises. Access to the farmer's premises quickly and in vehicles that are suitable should be made available to the providers of ancillary services. So in such areas, farmers expressed a demand to purchase processing units and a most conservative estimates predicted the demand for such processing units at 35 (25 in Ilam and 10 in Panchthar) and 450 (350 in Ilam and 100 in Panchthar) households units. Such processing is expected to process at least 25-30% of the tea produced in these districts. (How many in numbers or what % in total?) However, they expect start-up support in the form of trainin on hand made and small processing intiiatives. Because of these issues a lot of tea is not processed at all and/or sold, and/or leaves are sold to Darjeeling (case of Pashupatinagar, Sri Antu and Samalbung areas). The technology is very much suitable in areas where farmers face constraints in delivering green leave on time to factories due to lack of infrastructure, transport and remoteness problems which results that a lot of tea is locally of used, and/or not at all processed.

Ensuring uniform products of required quantity and certification is the major challenges related to household and small processing units. There could be scope to link / mainstream existing and new small processing units with the actors such as TEASEC, HOTPA and HIMCOOP in the ongoing CoC value/supply chain interventions. This will be instrumental to increase the supply chain, ensure more competition among factories and provide better market options to farmers that might lead to a better price and increased income and employment.

There are possibilities to achieve impact at farmers (groups and cooperatives) level to support establishment of new processing units and increase the efficiency / effectiveness of current units and addressing the issues that these processing plants are facing. There is a (potential) demand expressed, especially in the remote areas where people have difficulties to access factories timely, on strengthening the supply chain through promoting and strengthening (cooperative) processing units. A lot of farmers are also still not aware of the possible (technological) solution but there is a trend observed due increase demand of farmers to get training hand made tea processing and equipments. In order to raise the farmers from their conventional farming system to commercial farming system or to raise the farmers from being a conventional farmer to a farming business (entrepreneur), it is imperative that farmers can be trained to become a processor and might even become a trader/exporter on the long term.

Sales and markets are the crucial element for the success of the household and small processing units. There is a market for tea produced from small processing units at local, regional and national level as evidenced by the fact that none of household and small processing units contacted in this study provided a cases of inability to sale their products. As discussed already they have sold their products in local, regional and national market. Except one small processor (Jhulke Gham) none of the small processing units are able to sale their products in Indian market. (I do not know if there is a market local, regional even national as per your report in the earlier section you have mentioned constrain related to marketing). Section below prevails that small processing units are more sensitive to decrease in sales revenue than increase in total variable cost of the small processing units. This means sales and market plays a crucial role in making these units feasible Almost all the household and small processing units lack capacity to sale their products in the international market unless they are linked and mainstreamed with CoC strategic supply chain activities in addition to their initiatives to get their product Hazard Analysis Critical Control Point (HACCP), Japanese Agricultural Standard (JAS) and United States National Organic Programme (USNOP) certified.

4. FINANCIAL AND ECONOMIC ANALYSIS OF SMALL SCALE TEA PROCESSING UNIT

In general household units are operating with virtually no fixed cost utilising unsold fresh green tea leaves for household consumption, provide as gift to relatives living in non-tea producing areas and very few (< 20%) are sold in local markets. There is no fixed investment and annual operating cost comprises of wage for seasonal labours and opportunity cost of the unsold leaves. Annual income comprises of imputed value of processed tea. In general they operate at break-even and their operation and management is not market driven and profit orientation. On the other hand, operation of small processing units includes fixed investment, annual fixed cost and annual variable cost as well as production of main products and by-product. In general, their operation is guided by market force and profit motives. In view of this, in this study financial and economic cost benefit analysis of only small scale tea processing units was undertaken to assess whether investment in such processing units is financially viable, economically attractive, socially acceptable, technically sound and environment friendly and that of household units were not undertaken.

4.1 Key assumptions

The followings are the underlying assumptions for conducting the financial analysis of different income generating activities/enterprises promoted under this Project.

- The life of the enterprise has been assumed to be 15 years.

- Costs and benefits are measured as incremental values defined as benefits and costs with project less benefits and costs without Project, wherever applicable considering resource use opportunities.

- Analysis has been conducted in constant FY2008 prices. For valuing small scale processing related inputs and outputs, an annual inflation rate of 5% has been assumed to the 2007/08 prices.

There are three sub-project related cost: investment cost, annual fixed cost, and annual variable costs.

- Investment cost: Three main sources of funds are used for investment in small scale tea processing units: loans from financial institutions; equity of the entrepreneurs and technical support cost (social preparation and training costs). The sum of the costs under these three sources is assumed to be total investment cost.

- Annual fixed cost: Annual fixed costs include the interest cost, depreciation of fixed assets, salary of indirect labor, etc.

- Annual variable cost: Annual variable cost includes cost for green leaves, direct labor, utilities, communication, marketing, etc.

Benefits of small scale micro-processing units are both main and bi-products. Total Project benefits are defined as sum of values of incremental return considering whether entrepreneurs have foregone opportunity by involving in enterprises.

- All production costs and return has been estimated as incremental values from with-project and without project accounts. Farm gate prices prevailing in FY2007 were used to value all costs and returns.

- A 12% discount rate[14] is used to obtain present value of costs and returns to make it consistent with the appraisal report.

- Financing model of small processing unit is designed to produce net cash flows before and after debt services and measures of project worth.

- Three measures of project worth viz. FIRR, Benefit Cost Ratio (BCR) and NPV are computed using discounted net benefits using 12% discount rate.

- Sensitivity analysis is carried out assuming 10% reduction in benefits and 10% increase in operating costs and 10% increase in investment cost.

An economic model was prepared for financing in small processing units. Financial prices (and values) were adjusted as follows in order to derive economic prices (and values) and undertake economic analysis.

- Economic value of total materials cost was obtained by applying a standard conversion factor (SCF) of 0.9.[15]

- Unskilled labor is shadow priced. Considering that no firm estimates of shadow wage rate (SWR) are available for Nepal, consistent to the most appraisal reports prepared by donors such as the World Bank and the ADB that assume a SWR of about 80% of market wage rate[16], am 80% SWR is assumed in this report mainly for three main reasons: (i) there is no firm estimate of the SWR, (ii) it is highly unlikely that labor has an opportunity value of zero in Nepal and (iii) it is same as the SWR assumed by major donors and therefore facilitates comparison of this result with theirs.

- Economic price of made tea are valued at their farm gate parity prices. For non-traded inputs like green leaves, SCF of 0.9 was applied to financial prices to obtain their economic prices.

- A 12% discount rate is assumed for calculating present value of economic costs and returns. This rate was consistently used in all major appraisal reports, and its use in this report so as to ensure greater comparability of these results with those reports.

Using the above assumptions, economic analysis was done for all seven agriculture based micro enterprises managed by women clients. Tables 1 to 10 in Annex 6 present economic analysis results of these seven sub-projects promoted under this Project.

4.2 Financial analysis

Financial analysis of the small processing units has been done under above assumptions and the results are presented on Table 14. Findings of the financial analysis indicated that under present conditions, all the small processing units were financially attractive. Their estimated average net present value (NPV) ranges from NRs 250,848 to NRs 2,048,739. Even after debt service, net revenue of all small processing units is positive. The average revenue is relatively higher even under prevailing prices and even without mainstreaming them with CoC strategic supply chain activities.

[14]Because 12% discount rate is the interest rate charged by banks for the prime clients and is the rate commonly used for most project appraisal.
[15]In this report, all economic values were converted to border priced equivalent by using a SCF of 0.9. Most analysts consistently assume this value of SCF for Nepal.
[16]Theoretically, SWR can range from 0% and 100% of market wage rate, depending upon opportunity cost of labor.

Table 14: Results of Financial Analysis of Small Processing Unit in Ilam Districts

S.N.	Name of Processing Unit	Financial Indicators		
		NPV at 12% DF	IRR (%)	BCR at 12% DF
1	Handmade Tea Processing Udyog	250,848	60%	1.16
2	Kanchanjunga Handmade Tea Processing Centre	697,349	26%	1.11
3	Pathivara Handmade Tea Processing Udyog	747,319	29%	1.11
4	Light Hill CoC Hand Rolled Tea Industry	506,360	38%	1.13
5	G. T. Handmade Tea Processing Udyog	415,697	24%	1.06
6	Jhulke Gham Tea Microenterprise	2,048,739	34%	1.09
7	Suryoudaya Organic Handmade Tea Udyog	1,319,724	41%	1.09
8	Dipam Handmade Tea Udyog	306,729	56%	1.13
9	Maipokhari Handmade Tea Processing Udyog	260,596	46%	1.10

Source: Table in Annex 5.

Among the small processing units, FIRRs range from 24% to 60%. The benefit cost ratios are also favorable which ranges between 1.06 and 1.16. The results indicate quite attractive returns to small processors from tea processing on their total cost and under most conservatively assumed price of the made-tea.

4.3 Economic analysis

Economic analysis of the small processing units has been done under above assumptions and the results are presented in Table 15.

Table 15: Results of Economic Analysis of Small Processing Unit in Ilam Districts

S.N.	Name of Processing Unit	Economic Indicators		
		NPV at 12% DF	EIRR (%)	BCR at 12% DF
1	Handmade Tea Processing Udyog	245,763	53%	1.14
2	Kanchanjunga Handmade Tea Processing Centre	607,613	23%	1.09
3	Pathivara Handmade Tea Processing Udyog	652,587	22%	1.10
4	Light Hill CoC Hand Rolled Tea Industry	485,723	30%	1.11
5	G. T. Handmade Tea Processing Udyog	344,127	19%	1.04
6	Jhulke Gham Tea Microenterprise	1,803,864	27%	1.07
7	Suryoudaya Organic Handmade Tea Udyog	1,217,751	29%	1.07
8	Dipam Handmade Tea Udyog	266,056	44%	1.11
9	Maipokhari Handmade Tea Processing Udyog	214,536	40%	1.08

Source: Table in Annex 5.

The EIRR of the small processing units range from 19% and 53%, suggesting that investment on these processing units are economically justifiable. The low EIRRs in some small processing units may be acceptable because this computation does not include other non-quantifiable benefits or secondary benefits like training or alternative employments resulting from small processing initiatives. Both NPV and BCR at 12% discount rates are favorable implying positive economic returns of these enterprises.

4.4 Sensitivity Analysis

Sensitivity analysis of the small processing units was done in three scenarios: 10% increase in fixed investment, 10% increase in annual variable cost and 10% decrease in sales revenue. Sensitivity analysis results are summarised in Table 16. The summary of

the results indicates that small processing units are more sensitive to decrease in sales revenue than increase in total variable cost of the small processing units. Given the very small size of investment, it is less sensitive on 10% increase in investment cost.

Table 16: Results of Sensitivity Analysis of Small Processing Unit in Ilam Districts

S.N.	Name of small processing units	Financial indicators	Scenario for sensitivity analysis		
			10% increase in fixed investment	10% increase in variable cost	10% decrease on sales revenue
1	Handmade Tea Processing Udyog	EIRR (%)	50	40	23
		NPV at 12% DF (Rs.)	227,173	159,592	68,446
		BCR at 12% DF	1.14	1.10	1.04
2	Kanchanjunga Handmade Tea Processing Centre	EIRR (%)	20	20	12
		NPV at 12% DF (Rs.)	439,161	394,874	-7,056
		BCR at 12% DF	1.07	1.06	1.00
3	Pathivara Handmade Tea Processing Udyog	EIRR (%)	23	22	12
		NPV at 12% DF (Rs.)	516,519	467,526	13,565
		BCR at 12% DF	1.08	1.07	1.00
4	Light Hill CoC Hand Rolled Tea Industry	EIRR (%)	30	29	15
		NPV at 12% DF (Rs.)	402,500	337,137	66,107
		BCR at 12% DF	1.10	1.08	1.02
5	G. T. Handmade Tea Processing Udyog	EIRR (%)	18	15	2
		NPV at 12% DF (Rs.)	239,625	117,121	-318,057
		BCR at 12% DF	1.03	1.02	0.95
6	Jhulke Gham Tea Microenterprise	EIRR (%)	27	20	8
		NPV at 12% DF (Rs.)	1,554,242	795,074	-335,963
		BCR at 12% DF	1.07	1.03	0.98
7	Suryoudaya Organic Handmade Tea Udyog	EIRR (%)	32	20	5
		NPV at 12% DF (Rs.)	1,068,921	410,706	-331,224
		BCR at 12% DF	1.07	1.03	0.98
8	Dipam Handmade Tea Udyog	EIRR (%)	45	35	16
		NPV at 12% DF (Rs.)	268,262	180,034	31,571
		BCR at 12% DF	1.11	1.07	1.01
9	Maipokhari Handmade Tea Processing Udyog	EIRR (%)	37	26	9
		NPV at 12% DF (Rs.)	219,052	117,953	-25,568
		BCR at 12% DF	1.08	1.04	0.99

Source: Table in Annex 5.

The information summarized in above table indicates that at the small processing units are very much sensitive on reduction on sales revenue implying that the currently selling price is the minimum threshold price that these processors must effectively realize on managing these processing units. Further, whenever any market problems, these processing units are at the verge of collapse.

5. FEASIBILITY OF MAINSTREAMING AND LINKING (COOPERATIVE) PROCESSING UNITS WITH ONGOING COC STRATEGIC (SUPPLY CHAIN) ACTIVITIES

5.1 Context

Small processing units are the outcome/result of compulsion rather than luxury basically to prevent against uncertainty on sale of green leaves due to lack of transport, strike, bands, etc. and insurance against forced sale or uncertainty against low sale or no purchase from factory. These factories are the latest innovation and these are cases where such unit stopped processing tea as a reflection to better price they received from CTC factories in Jhapa. All these processing units are at infancy stage and they are still operating on trial and errors. They lack competitiveness. There is a need to enhance the competitiveness of these units by providing them better and continuing access to credit facilities, establishing new market linkages between producers and international markets, and adjusting production according to quality demanded in the target market with regard to taste, residue values, appearance, etc. The HOTPA and HIMCOOP are the two main intermediaries for promoting orthodox tea and one way or other these processing units must be linked with them for their growth and development.

5.2 Constraints

There are several constraints that prevent the small processing units to realize their full potential on orthodox tea subsector. In this study feasibility to mainstream and link (cooperative) processing units with on-going CoC strategic (supply chain) activities has been explored through a survey of nine small processing units operating Ilam district in October 2008. The result revealed that the state of this sub sector in terms of quality certification, training and capacity building of employees, supply side, R&D, market promotion, access to finance and other services, technology, customer satisfaction, legal / regulatory framework, cooperation, supporting associations, labor productivity and value addition. Financial and economic cost benefit analysis of these processing units uncovered that investment on such unit is financially viable, economically attractive, socially acceptable, technically sound and environment friendly.

At present these small processing units lack competitiveness and their competitiveness could be enhanced by developing a ready access to knowledge, skilled workforce, capital and infrastructure, maintaining sustainable integrity of natural and social environment, developing a strong domestic market, providing access to international markets and market intelligence, developing an industry operating environment that encourages investment and responsiveness to markets, developing a business culture that encourages entrepreneurship, collaboration and innovation, and building stronger integration and cost efficiencies with operations of complementary industries.

Quality of made tea varies across different small-processing units surveyed during the study process. This is attributable to the use of traditional, domestically designed technology and equipments for tea processing. The introduction of modern machinery with new processing management systems will ensure product consistency in the long run and these measures can contribute to enhance the quality aspect of tea processed by these units.

5.3 Feasibility of Mainstreaming/Linkages

In general there exist feasibility of mainstreaming and linking (cooperative) processing units with on ongoing CoC strategic (supply chain) activities. There is a need to institute for HACCP by these small processing units and they need to be assisted to obtain HACCP certification (can they offered it??) even in the demonstration basis. HIMCOOP should act as a consolidating agency for Tea Sales and to handle inquiries from international buyers

on a single platform which need to be very well communicated to small processing units. There should be rapid understanding of technological progress in the process of tea processing which need to be observed and accepted by these processing entrepreneurs.

Despite the fact that investment on small processing units is financially viable, economically attractive, socially acceptable, technically sound and environment friendly and there is growing interest for the growth and development of small processing units, their stability and continuity is often questionable. This has been further reinforced due to the fact that two small processing units that operated last year stopped their operation due to (i) lack of sufficient green leaves nearby to provide full employment to workers involved and (ii) emerging opportunity to sale green leaves in relatively better price in CTC factories in Jhapa. As most of these units are located in areas where there are already large processing units in operation, they have not meet the need and demand of farmers growing tea in areas with poor infrastructure where they are been able to produce the leaf in quantities, transportation of fresh green leaves is tedious. There is a need to expand the frontier of small tea processing units further out in remote areas where demand for such processing units is high.

Further, there is a need of a master plan on growth projection with right balance of market absorption and green leaves supply. There is already inconsistency on the processing capacity of existing factories and supply of green leaves. Some areas have less supply than processing capacity while others have more green leaves than processing capacity. As far as possible, a right balance on potential supply of green leaves and existing supplies should be maintained.

Further in this era of globalization, the buzzword is competition and the bottom line is competitiveness. In view of this, the key strategy should be to enhance competitive strength of small processing units in the value chain, production, processing and marketing. Effective strategies have to be developed to create awareness, impart training, and give entrepreneur sector-specific information, legislative compliance support, on-the-job technical advice and above all on mainstreaming CoC strategic supply chain. At the same time, these strategies should be inexpensive, user-friendly and acceptable within the limitations of these processing units. Role of the financial support should not be undermined.

6. OPERATIONAL PLAN FOR MAINSTREAMING AND LINKING SMALL PROCESSING UNITS

6.1 Rationale for Further Support

In view of lack of stability of small processing units and questions as to their continuity, there is a need to build a consensus among key stakeholders involved on promoting small holders tea production in relatively remote areas and strengthening operational mechanism and capacity of small processing units that are already in existence and create enabling environment for their emergence, growth and development in relatively remote areas. Clearly if properly handled and managed in cognizance to their compliance on technical requirements, promotion of small processing units in remote areas add value by reducing volume to be transported in addition to benefits emerging due to subsequent value addition based on quality and market access.

The operational plan for mainstreaming and linking small processing units with COC supply chain activities has been prepared considering above realities into account that will eventually lead to further value addition. The operational plan are broadly grouped into five such as capacity building, technical support, access to finance, institutional development and linkages to CoC strategic (supply chain) activities.

6.2 Capacity Building

Ensuring stability and continuity of small processing units requires developing entrepreneurial as well as technological capacity of persons involved on this business. This requires investment on human development. They should be imparted with skills on appropriate time for tea plucking, tea processing, grading, packaging, marketing etc. Each owner of small processing unit must attract and retain quality professional knowledge for processing management.

6.3 Technology and Technical Support

The technology adopted by small processing units is very simple. The need to upgrade the existing technology has been felt to enhance their competitiveness both in domestic and international market. Level of awareness of these staff must be increased so as to realize potential gains achievable from improved efficiency.

Many innovations involve incremental improvements in technical performance, product quality or product design or simply learning how to process existing product in a better way. All the small processing units surveyed under this assignment were interested to invest on improved technology.

6.4 Access to Finance

Access to credit and equity capital is important element for all small processing units. Financial service providers has yet to realize that small processing units are credit worthy and access to financial services should be ensured. There are cases where some small processing units have received financial support from Excel Development Bank and Agriculture Development Bank Limited.

6.5 Institution Development and Supporting Institutions

There is a need of a framework of proactive policies designed to expand demand for a broad range of support services that enterprises use. Entities most commonly providing such services might be business associations established by groups of enterprises, government agencies and international organizations. Orthodox tea sector has many associations providing support services however agencies like Himalayan Tea Producers

Association (HOTPA), Himalayan Tea Producers Cooperative (HIMCOOP) and Nepal Tea Association (NTA) has yet to realize the potentials of such processing units and bring them under their ambit. However, some of them are member of FNCCI and NTCDB. There is also a need to assist them on developing association of entrepreneurs involved on small processing process and link with supporting institutions.

6.6 Market Promotion

Market promotion is one of the critical aspects that small processing units should be supported. There are some small processing units that have participated in domestic trade fair last year wherein they were able to obtain new orders for their products. The small processing units must be supported for to get their product certified for HACCP, JAS and USNOP besides their mainstreaming with CoC supply chain. Further, they should be supported to produce uniform quality product and facilitated to supply bulk products assisting them to standardize their products.

6.7 Legal/Regulatory

The creation of an enabling environment for entrepreneurship and enterprise activity is one of the most important roles of public policy intervention, including government measures. Enterprise development requires a transparent, predictable and supportive commercial and legal framework. Many problems are caused by lack of clarity in laws and regulations and unpredictability and inconsistency in their implementation. Often times policies and regulations are made without advice and knowledge of the private sector. Household and small processing units are yet to be recognized as one of the key actors in tea value chain and their concerned need to be accommodated in the legal and regulatory environment governing growth and development of tea sector. Small processing units complained about public services delays, corruption, implementation of the import regime, the tax regime, and the labor law, poor public infrastructure, etc.

6.8 Local Value Addition

In order to stimulate value addition at the local level, there is a need to implement both demand side and supply side interventions. Activities must be directed towards directly promoting value-addition partnerships among local suppliers, exporters and input suppliers along with building capacities for new export, to contribute on international competitiveness of both the individual small processing units and the sub sector as a whole. Increasing awareness on quality product and consumer behaviors in destination maket to small processors are keys to local value-addition.

6.9 SNV's Delivery Channels and Recommended Actions

The foregoing discussion implies that there is a need to upgrade the current state of operation of the small processing units in order to make them eligible for mainstreaming and linking into CoC strategic supply chain activities. Hence, various aspects of the operational plan discussed above are transformed into recommended actions and grouped into SNV's four delivery channels in Table 17.

Table 17: SNV's Delivery Channels and Recommended Actions

SNV's Delivery channels	Recommended actions
Advisory services	▪ Improve existing household and small processing units, ▪ Design support to establish small processing unit and upgrade household units, ▪ Master plan of growth projection for promoting household units and small processing units, ▪ Support for emergence and growth of small processing units in Panchthar districts, and ▪ Standardization of household and small processing units.

SNV's Delivery channels	Recommended actions
Local capacity building	▪ Support to ensure compliance with production and processing inspection requirements of the COC, ▪ Support for preparation for certification (CoC, HACCP, JAS and USNOP), ▪ Pilot project on certification (CoC, HACCP, JAS and USNOP) process on cost sharing basis, and ▪ Complete certification requirements.
Advocacy	▪ Awareness campaign on CoC certification process, ▪ Transparency on CoC operationalizing process, and ▪ Representation of proprietors/small processors in HOTPA, HIMCOOP, tea alliance and other forum,
Knowledge brokering and networking	▪ Lobbying with Bankers Association of Nepal, Nepal Micro-bankers Association and Microfinance Association of Nepal for access to financial services, ▪ Promoting association of proprietors of small processing units, ▪ Linkages with small processing units in China/Kenya/ Vietnam, and ▪ Support to Nepal Small Tea Producers Ltd. (NSTPL).

7. BUSINESS PLAN OF THE MAINSTREAMING AND LINKING INITIATIVES

7.1 Rationale

In the international tea markets demand for teas produced through eco-friendly measures complying with social justice is increasing and all the actors in tea value chain are aware that the tea produced complying CoC requirements may fetch higher price in international markets. In this context, the current challenges to small processing units are related to (i) ensuring uniformity on quality of the product, (ii) ensure marketable volume of the made tea and (iii) quality assurance and complying with certification requirements. Thus, complying with CoC requirements in production, processing and marketing is one step forward in this direction. In order to outline business viability of this process, costing of the various initiatives to be started by small processing units has been done and their financial viability are assessed.

7.2 Costing of Interventions

Costing of the series of interventions outlined in above section under recommended actions are done to prepare basis for assessing the viability of these interventions from business perspective.

Table 18: Cost Estimates for Upgrading Small Processing Units

S.N.	Activities	Unit	Cost per unit (Rs. '000)	Quantity	Amount (Rs. '000)	Cost Sharing	
						Local Contribution	Grant
1	**Advisory services**				**16,430**	**13,500**	**2,930**
	Support to improve existing processing units	No.	1700	9	15,300	13,500	1,800
	Design support to establish small processing unit	No.	20	9	180	0	180
	Master plan of growth projection for promoting small processing units	No.	1	500	500	0	500
	Support for emergence and growth of small processing units in Panchthar districts	No.	5	50	250	0	250
	Standardization of small processing units	No.	1	200	200	0	200
2	**Local capacity building**				**3,030**	**1,800**	**1,230**
	Support to ensure compliance with production and processing inspection requirements of the COC	No.	10	9	90	0	90
	Support for preparation for certification (CoC, HACCP, JAS and USNOP)	No.	10	9	90	0	90
	Pilot project on certification (CoC, HACCP, JAS and USNOP) process	No.	300	2	600	0	600
	Complete all certification requirements	No.	250	9	2,250	1,800	450
3	**Advocacy**				**110**	**0**	**110**
	Awareness campaign on CoC certification process	No.	5	9	45	0	45
	Transparency on CoC operationalizing process	No.	5	9	45	0	45

S.N.	Activities	Unit	Cost per unit (Rs. '000)	Quantity	Amount (Rs. '000)	Cost Sharing	
						Local Contribution	Grant
	Representation of proprietors / small processors in HOTPA, HIMCOOP, tea alliance and other forum	No.	1	20	20	0	20
4	**Knowledge brokering and networking**				**2,350**	**0**	**2,350**
	Lobbying with Bankers Association of Nepal, Nepal Micro-bankers Association and Microfinance Association of Nepal for access to financial services	No.	2	100	200	0	200
	Promoting association of proprietors of small processing units	No.	1	50	50	0	50
	Exposure visit to observe operation of small processing units in China/Kenya/Vietnam	No.	1	2,000	2,000	0	2,000
	Support to Nepal Small Tea Producers Ltd. (NSTPL)	No.	1	100	100	0	100
	Total				**21,920**	**15,300**	**6,620**
	Cost per unit				**2,436**	**1,700**	**736**

Total cost of above interventions is estimated at Rs. 21.92 millions. The estimated cost of interventions is further divided into two: local contribution and grant. Local contribution for these interventions is estimated at Rs. 15.30 million and that of grant at Rs. 6.62 million. The average cost of intervention per small processing unit is Rs. 2.436 million (Rs. 1.70 million local contributions and Rs. 0.74 million grants).

7.3 Rate of Return on Interventions

Rate of return on investment on above interventions are computed under two scenarios: full cost recovery and subsidized scenario. The price of made tea per kg in order to realize the financially attractive rate of return under both scenarios are computed.

7.3.1. Full Cost Recovery Scenario

Results of the financial analysis done under full cost recovery scenario and estimates on the minimum factory gate price required to realize FIRR of 15% revealed that the minimum factory gate price varies across small processing units and it should range between Rs. 670/- and Rs. 1075/- per Kg. This indicates that there is a need to have significant price increase in order to operate these small processing units to cover full cost of these interventions.

Table 19: Results of Financial Analysis and Minimum Factory Gate Price

S.N.	Name of Processing Unit	Financial Indicators			Minimum Factory Gate Price (Rs./Kg)
		NPV at 12% DF	FIRR (%)	BCR at 12% DF	
1	Handmade Tea Processing Udyog	104,492	15%	1.04	680
2	Kanchanjunga Handmade Tea Processing Centre	545,726	15%	1.04	835
3	Pathivara Handmade Tea Processing Udyog	610,095	15%	1.04	1010
4	Light Hill CoC Hand Rolled Tea Industry	441,725	15%	1.04	1075
5	G. T. Handmade Tea Processing Udyog	520,104	15%	1.03	1025
6	Jhulke Gham Tea Microenterprise	1,273,968	15%	1.03	785

S.N.	Name of Processing Unit	Financial Indicators			Minimum Factory Gate Price (Rs./Kg)
		NPV at 12% DF	FIRR (%)	BCR at 12% DF	
7	Suryoudaya Organic Handmade Tea Udyog	891,492	15%	1.03	775
8	Dipam Handmade Tea Udyog	109,347	15%	1.03	670
9	Maipokhari Handmade Tea Processing Udyog	192,034	15%	1.03	925

The above findings implies that covering all the financial cost of the interventions for mainstreaming and linking (cooperative) processing units into ongoing CoC strategic (supply chain) activities under full cost recovery scenario is not a feasible preposition. This is not happening on the absence of some subsidy as an incentive to attract further investment in promoting small processing units.

7.3.2. Subsidized Scenario

Results of the financial analysis done under subsidized cost recovery scenario and estimates on the minimum factory gate price required to realize the FIRR of 15% revealed that the minimum factory gate price varies across small processing units and it should range between Rs. 580/- and Rs. 875/- per Kg, implying the need to have significant price increase in order to operate these small processing units on viable level. This is more likely and realistic if tea produced by these processing units could be linked to international markets.

Table 20: Results of Financial Analysis and Minimum Factory Gate Price

S.N.	Name of Processing Unit	Financial Indicators			Minimum Factory Gate Price (Rs./Kg)
		NPV at 12% DF	FIRR (%)	BCR at 12% DF	
1	Handmade Tea Processing Udyog	79,784	15%	1.03	580
2	Kanchanjunga Handmade Tea Processing Centre	378,673	15%	1.04	705
3	Pathivara Handmade Tea Processing Udyog	477,036	15%	1.04	830
4	Light Hill CoC Hand Rolled Tea Industry	351,993	15%	1.04	875
5	G. T. Handmade Tea Processing Udyog	467,590	15%	1.04	850
6	Jhulke Gham Tea Microenterprise	1,045,046	15%	1.03	675
7	Suryoudaya Organic Handmade Tea Udyog	591,213	15%	1.02	665
8	Dipam Handmade Tea Udyog	87,683	15%	1.02	590
9	Maipokhari Handmade Tea Processing Udyog	141,458	15%	1.03	770

The above findings implies that there is a need to subsidize some of interventions proposed above for mainstreaming and linking (cooperative) small processing units in the tea sector in the ongoing CoC strategic supply chain activities and this is a feasible preposition only under subsidised scenario.

8. SUMMARY OF MAJOR FINDINGS AND RECOMMENDATIONS

In this study, feasibility of mainstreaming and linking small (cooperative) processing units in tea sector in ongoing COC strategic (supply chain) activities in Ilam and Panchthar districts were assessed. Summary of major findings and recommendations of the study follows hereunder.

8.1 Summary of Major Findings

Small processing units are latest innovations in tea sector as a safety net against the possible hassles on supplying the green leaves to the factories nearby and exploitations by the large processing units to tea growers on the prices of these leaves. The small processing units follow the tea processing process similar to the large factories except that rolling is done by hand in small procesisng units while it is done by machine in large factories.

Homestead tea processing is traditionally done in both districts in a small scale to meet household level requirements on tea and to provide gift to relatives nearby or outside or sale in local market as a cottage industry is quite common in both districts. There are only a few cases where such processing is in more organised manner by establishing the small processing units. There are 13 small processing units in Ilam district and such a small processing unit does not exist in Panchthar district. Of the 13 small processing units, two are currently closed, two are under construction and only 9 were operating at the time of field survey conducted for this study. The two small processing units stopped operation due to lack of sufficient green leaves nearby to provide full employment to workers involved and (ii) emerging opportunity to sale green leaves in relatively better price in CTC factories in Jhapa.

The small processing units are very simple structure, registered in District Cottage and Small Industries Office with an average daily processing capacity of about 123 kg of green leaves and producing 23 kg of made tea and about 2 kg of dust tea. None of these small processing units are operating at full capacity owing to lack of facilities such as working capital finance, technology, marketing channels, certification and quality assurance and control mechanism and packaging. Average total capital investment in these processing unit is estimated at Rs. 585,040 per unit of which on an average 64% was financed out of loans from formal and informal sources. Four out of 9 small processing units has been able to access finance from formal sources.

Average total annual fixed cost of these small processing units is estimated at Rs. 382,173 per year and that of average annual variable cost at Rs. 450,467 per year. Average gross revenue of these small processing units was estimated at Rs. 936,636 per year. This implies that currently all the nine small processing units are operating at breakeven level, given that the tea processed by these units is sold at the current price of Rs. 450/- per Kg.

Market and market channel for the made tea and by-product produced by small processing units are not very well established. Support to develop the market channel is one of the biggest challenges for strengthening small processing unit in orthodox tea sector. These processing units do not follow the scientific method on pricing of their products. They are always price taker and set the price using information of selling price of big factories. Like the typical large processing units, processing techniques adopted by these units comprises of steps such as (i) withering, (ii) rolling, (iii) fermentation, (iv) drying, (v) grading and (vi) packaging. Only differences are that rolling is manually done in the small processing units.

The major constraints/challenges experienced by the small processing units are related to capacity utilization, raw materials, finance, technology, human resources, market

linkages, certification and quality assurance. They are confident of processing high standard tea but because of financial constraints (working capital loan) coupled with technology and assured market, they are not been able to utilize their capacity to the full potential. All the proprietors of the small processing units are aware about the CoC and all of them are willing to be integrated into the CoC process. They are willing to expand their enterprise in the days to come if they see the favorable policy environment for their business promotion.

The small processing units are the outcome due to compulsion rather than luxury to prevent against uncertainty on sale of green leaves due to lack of transport, strike, bands, etc. and insurance against forced sale or uncertainty against low sale or no purchase from factory. All these processing units are at infancy stage, still operating on trial and errors and lack competitiveness. There is a need to enhance competitiveness of these units by providing them better and continuing access to credit facilities, establishing new market linkages between producers and international markets, and adjusting production according to quality demanded by target market with regard to taste, residue values, appearance etc. The HOTPA and HIMCOOP are the two main intermediaries for promoting orthodox tea and one way or other small processing units must be linked with HOTPA and HIMCOOP for their growth and development.

Financial and economic cost benefit analysis of these processing units uncovered that investment on such units is financially viable, economically attractive, socially acceptable, technically sound and environment friendly but despite growing interest for their growth and development, their stability and continuity is often questionable. As most of these units are located in areas where large processing units already exist, they have not met the demand of the farmers growing tea in areas with poor infrastructure.

In general mainstreaming and linking small (cooperative) processing units in tea sector in ongoing COC strategic supply chain activities are feasible. This requires COC certification process to be transparent and simple.

8.2 Recommendations

Proprietors involved in managing small processing units have willingness and interest to mainstreaming and linking with on ongoing CoC strategic supply chain activities. This requires that there should not be any barrier to entry on CoC strategic supply chain activities and simplify certification process by ensuring transparency on entire process. There is a need to institute for HACCP in case of small processing units and these units must obtain HACCP certification. HIMCOOP should really operate on cooperative principles and facilitate small processing units to be part of their marketing initiatives. There should be rapid understanding of technological progress in the process of small scale tea processing which need to be observed and accepted by these processing entrepreneurs.

In order to provide stability to small processing units and ensure continuity on their operation, support should be geared on creating enabling environment so as to ensure their stability and continuity. There should be external support in areas such as access to fixed investment and working capital finance, upgrading current status including technology of the processing units, market linkages, quality assurance and certification.

As most of these units are located in areas where large processing units already exist, in general they are not meeting the demand of the farmers growing tea in areas with poor infrastructure where they are been able to produce leaf in quantities and transportation is a problem. There is a need to expand the frontier of small tea processing units further out in remote areas where demand for such processing units is high. In general, there is already inconsistency on processing capacity of existing factories and supply of green leaves. Some areas have less supply than processing capacity while reverse is the case

in other areas. As far as possible, a right balance on potential supply of green leaves and existing processing facility should be maintained. Therefore, there is a need to prepare a master plan on growth projection with right balance of market absorption and green leaves supply. For instance, emergence and growth of such processing units should be supported in Panchthar district.

The above recommendations were transformed in the form of interventions and grouped into SNV's four delivery channels. Findings of estimates on additional investment required for implementing these interventions and financial analysis done under two scenarios (i) full cost recovery and (ii) provision of technical assistance revealed that there is a need to significantly increase the price of made tea. This is expected to happen through CoC mainstreaming and linkages and other certification process.

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ANNEXES

ANNEX 1: FIELD VISIT SCHEDULE OF THE ASSIGNMENT

Date	Place	Activities
October 13,2008	Fikkle	• Meeting with the team of FORWARD Fikkle Branch and SBB Fikkle Branch
October 14,2008	Jasbire ,Ilam	• Meeting with Mr. Bijay Gurung and prepared field visit plan. • Interaction with Tea Producers' Cooperatives in Mai Pokheri • Meeting with Sharad Subba and Binod Kumar Khatiwada
October 15,2008	Ilam	• Meeting with Rabin Rai and Govenda Dahal and other representatives of Tea Cooperative Federation. • Meeting with FNCCI (Lok Shrestha) and discussion on REAP project • Meeting with Punya Shivakoti, Chairperson of Farmers' Federation
October 16,2008	Sakhajung	• Interaction with Uchapahadi Tea Producers Cooperative (Mr. Thir Bahadur Raut) • Survey of Kanchanjanja Handmade Tea Processing Udyog (Mrs Milan Khatri) • Survey of Kanchanjanja Handmade Tea Processing Udyog (Mrs Milan Khatri), Pathivara Organic Handmade Tea Processing Udyog (Mr. Moti Ram Dahal), Light Hill CoC Rolled Tea Industry (Mr. Mohan Dahal) and G. T. Organic Handmade Tea Processing Unit (Mr. Gopal Dahal and Mr. Tanka Dahal), • Interaction with Green Hill Tea Producers Cooperative (Mr. Kamal Basnet) • Meeting in Himalaya Shangrila Tea Processing Industry (P) Ltd (Mr. R.C. Nepal)
October 17,2008	Ilam	• Meeting with Mr. Madan Gajmer, Jeetpur • Interaction with Ajambare Tea Producers Cooperatives (Mr. Harka B. Tamang, Mr. Dilli Kumar Tamang and Ganga Kumari Tamang)
October 18,2008	Tinjure And Phidim	• Visit to Tinjure Tea Cooperative and interaction with Board members of Cooperative. • Moved toward Panchthar and Stayed at Phidim.
October 19,2008	Phidim	• Interaction meeting with BODs of District Tea Federation Panchthar in Phidim. • Meeting wth Mr. Rajesh Saru Magar (Advisor of SNV) and prepared field visit plan. • Meeting with Branch Manager of CAA, Panchthar Branch to gather information on working areas of CAA. • Visit to Women Development Office, Phidim to gather the information on the cooperative promoted by the office in Panchthar District. • Meeting with FNCCI Phidim (Mr. Suba Raj Thapa, Mr. Nava Raj Ghimire, Mr. Mitra P. Kaphle) • Meeting with REAP (Mr. Padam Subedi and Mr. Prayag Raj Subedi) • Meeting in Mercycorps (Mr. Siris Pun)
October 20,2008	Jor Pokhari and Gopetar	• Interaction with the team of Himali Tea Producers cooperative Ltd. Subang, Panchthar • Meeting with Namuna Organic Tea Producers' Cooperatives Ltd. Panchami-1, Gopetar
October 21,2008	Phidim and Sumnima Chock	• Visit to Tajelung Tea Producers Cooperative • Interaction with manager of Kanchanjanga Tea Estate. • Meeting with the team of Alternative Energy Cooperative Ltd. Phidim 1, Panchthar • Meeting with local NGOs and CSP/DFID manager
October 22,2208	Fikkle	• Traveled from Phidim to Fikkle via Ilam and collected missing information from Division Cooperative office, District Development Office • Interaction with the team of Mahila Jagaran Manch and NCDC.
October 23,2008	Kanyam and Kolbung	• Prepared Field visit plan With Mr. Madhav Niraula • Visit to Jhalke Gham Micro Tea Industry and Interaction with Mr. Kaji man Kagate

Date	Place	Activities
		• Interaction with Proprietor of Suryodaya Tea Processing Udyoug (Mr. Kamal Khadka, Mr. Surya B. Khadka and Mr. Kamal Poudyal) • Interaction with Dipam Handmade Tea Processing Unit (Mr. Dilip K. Subba) • Interaction with the team of Kanyam Tea Producer Cooperative Ltd. Kanyam-2, Ilam • Visit to Eco Tea Producers cooperative, Kolbung -9, Ilam
October 24,2008	Shree Antu and Samalbung	• Interaction with Manager of Small Farmar Cooperative Ltd. Shree Antu • Meeting with the Staff of Small Farmer Cooperative Ltd, Somalbung
October 25,2008	Panchakanya, Fikkle and Pashupatinagar	• Visit to Tea Processing Unit in Panchakanya (Mr. Jyoti Adhikari) • Meeting with Proprietor of Punam Chhirin Lapcha Small tea Processing unit (Mr. Man Kumar Lapcha) • Consultation with the Officer of Tea Board • Consultation with Tea Producers Groups
October 26,2008	Fikkle and Aitabare	• Meeting with the Branch manager of CAA, Fikkle Branch • Sharing meeting With Mr. Tara Nath Sharma, TEASEC • Meeting with Board members of Ilameli Tea Producers' Cooperatives,
October 27,2008	Charpane, Jhapa	• Meeting with Shara in Charpane, Jhapa on their survey findings on Tea Cooperatives Survey • Departure to Kathmandu.

ANNEX 2: LIST OF PERSONS' MET

Date	Place	Name of the Person	Designation	Name of Institution	Contact No.
Sept 15, 2008	Kathmandu	Diana Brandes	ID/OS Advisor	SNV East	9841310668
Sept 16, 2008		Araceli Lloret	Portfolio Coordinator	SNV, Kathmandu	+977 1 5523444
Sept 16, 2008		Ujwal Pokhrel	Senior Value Chain Advisor	SNV East	
Sept. 19, 2008		Mr. Sunil Rai	Chairperson	TEASEC	9851001936
Sept. 20, 2008		Mr. Dilli Baskota	Sectary	HOTPA	9851014421
Sept. 20, 2008			Marketing Officer	HIMCOOP	
Sept. 26, 2008		Mr. Bhusan Subba	Consultant	WINROCK	9851079978
Sept. 26, 2008		Mr. Maheshwor Ghimire	Consultant	SNV	
Sept. 16, 2008		Mr. Khagendra Jabegu	Portfolio Coordinator	SNV Dharan	9842661583
Sept. 25, 2008		Dr. Dev Bhakta Shakaya	Executive Director	AEC/FNCCI	9851066062
October 13, 2008	Fikkle	Ms. Sova Baral	Branch Manager	Forward	027-690308
		Mr. Tanka Prasad Adhikari	Branch Manager	SBB	027-540446
October 14, 2008	Jasbire, Suwang	Mr. Bijaya Gurung	Tea Sector Coordinator	TEASEC	9842645700 9742614232
		Mr. Sarad Subba	-	Entrepreneur	9842646800 027-521029
		Mr. Binod Kumar Khatiwada	-	Tea Farmers	NA
October 15, 2008	Ilam	Staff Team	Act. Officer	Division Cooperative, Ilam	027-520097
		Mr. Robin Rai	Secretary	Tea Cooperative Federation	9741084886
		Mr. Punya Shivakoti	Chairperson	Tea Producer's Federation in Ilam	027-520236 9742600169
		Mr. Govinda Dahal	President	Tea Cooperative Federation	9852680492
		Ms. Sunita Basnet	Enterprise Development Facilitator (EDF)	Ilam Cooperation Council (REAP)	027-521201 9842636859
		Mr. Lok Shrestha	Secretary	CCI, Ilam	
October 16, 2008	Sakhajung	Mr. Thir B. Raut	President	Ucha Pahadi Tea Producers' Cooperative (TPC)	
		Ms. Milan Khatri	Proprietor	Kanchanjanja Handmade Tea Udyog	
		Mr. Moti Ram Dahal	Proprietor	Pathivara Organic Handmade Tea Udyog	
		Mr. Gopal Dahal and Mr. Tanka Dahal	Proprietors	G. T. Organic Handmade Tea Udyog	
		Mr. Mohan Dahal	Proprietor	Light Hill CoC Hand Rolled Tea Udyog	

Date	Place	Name of the Person	Designation	Name of Institution	Contact No.
		Mr. R. C. Nepal	Manager	Himalaya Shangrila Tea Processing Industry (P) Ltd.	
October 17, 2008	Jeetpur	Mr. Madan Gajmeer	Manager	NTCDB, Jasbire Branch	
		Mr. Harka Bahadur Tamang	Chairperson	Ajambare TPC	
		Mr. Dilli K. Tamang	Member	Ajambare TPC	
		Mr. Ganga K. Tamang	Member	Ajambare TPC	
October 18, 2008	Tinjure and Phidim	Mr. Punya Chaulagain	Social Mobiliser	TEASEC	
		Mr. Padam Prasad Paudel	Official Chairperson	Tinjure Tea producer coopertive, Phakphok	
October 19, 2008	Phidim	Mr. Rajendra Jagebu	Chair Person	District Federation, Ilam	9842661583
		Mr. Rajesh Saru Mager	Social Inclusion Advisor	SNV, Phidim	024-520017
		Mr. Krishna Majhi	Intern	SNV	9842023799
		Mr. Dhamendra Bohara	Manager	CAA, Phidim	
		Mr. Suba Raj Thapa and team	President	FNCCI, Phidim	-
		Mr. Chhabi Baskota and team	Chairperson	Hatemalo Agricultural Cooperatives	9741053907
		Ms. Urmila Shrestha and team	Chairperson	Deureli Multipurpose Cooperatives Ltd. Jorsal	-
		Mr. Padam Subedi and Mr. Prayag Raj Subedi	EDF	REAP, Panchthar	
		Staff Team		Women Development office, Panchthar, Phidim	024-520145
		Mr. Shris Pun	Manager	Mercycrops, Phidim	
October 20, 2008	Gopetar, Panchami	Mrs. Bakhet Lingdin and Durga Yonghang	Team	Agejung Small Tea Producers Group	-
		Mr. Laxmi Suwang	Chairperson	Himali Tea Producer Cooperative ,Suwang	-
October 21, 2008	Phidim, Panchthar	Mr. Rajendra Bhattarai	Planning Officer	DDC, Panchthar	
		Mr. Nirananda Acharya	Manager	Kanchanjanga Tea Estate	-
		Mr. Bishwa Raj Bhatta	Advisor	DACAU (UNICEF) Phidim	-
		Ms. Pabitra Subba	Manager	CSP/DFID	-
		Mr. Ganga Khanal	Executive Director	Rural Community Development Centre, Phidim	-
		Mr. Nanda Nemwang	Programme Manager	AEDC	024-520439
October 22, 2008	Ilam	Mr. Rajesh Parajuli	Socila Mobilizer	Mahila Jagaran Manch, Ilam	027-520445
		Mr. Dinesh Bhattarai	Planning Officr	NCDC, Ilam	027-520411
October 23, 2008	Kanyam and Kolbung	Mr. Madav Niraula		TEASEC	9842635733
		Mr. Kaji Man Kagate	Entrepreneur	Jhulke Gham Micro Tea Industry	-
		Mr. Surya Bahadur Khadka, Mr. Kamal Khadka and Mr.	Entrepreneur	Suryodaya Small Tea Industry	-

Date	Place	Name of the Person	Designation	Name of Institution	Contact No.
		Kamal Poudyal			
		Mr. Dilip K. Subba	Entrepreneur	Dipam Handmade Tea Industry	
		Mr. Ganesh Aryal	Manager	ECO Tea Producer Cooperative, Kolbung	-
October 24, 2008	Shree Antu and Samalbung	Mr. Ichha Ram Pokhrel	Manager	Small farmer Cooperative Limited, Shree Antu	-
		Mr. Bal Gopal Rai/Khaling	Farmer	Sakhajung	
		Mr. Surya Tamang	Office Assistant	Small farmer Cooperative Limited, Somalbung	-
October 25, 2008	Panchakanya	Mr. Man Kumar Lapcha	Entrepreneur	Punam Chhirin Gharelu Tea Udyog	-
		Mr. Jyoti Adhikari	Entrepreneur	Handmade Tea Udyog	-
		Deepak Sharma	Farmer	Panchakanya	-
		-	Manager	NTCDB, Fikkle	-
October 26, 2008	Fikkle and Itabare	Mr.R.B. Karki	Branch Manaer	Commercial Agiculture Alliance (CAA), Fikkle	-
		Mr. Tara Nath Sharma	Manager	TEASEC	027-540014
		Mr. Krishna P. Subedi	Chairperson	Ilameli TPC	-
October 27, 2008	Jhapa	Mr.Sita Ram Bhattarai	Research assistant	Shahara Nepal, Charpane ,Jhapa	023-541198
		Mr.Mahananda Paudel	Research assistant	Shahara Nepal, Charpane ,Jhapa	023-541198

ANNEX 3: TEA VALUE CHAIN IN ILAM AND PANCHTHAR DISTRICTS

ANNEX 4: LIST OF SMALL TEA PROCESSING PLANTS

S.N.	Name of Industry	Proprietor	Location	Current capacity (kg/day)
1	Handmade Tea Processing Udyog	Mr. Binod Kumar Khatiwada	Solubung-5, Talgoun	30
2	Kanchanjunga Handmade Tea Processing Centre	Mr. Damber B. Khatri and Mrs. Milan Khatri	Sakhajung-5, Baisaka Tole	100
3	Pathivara Handmade Tea Processing Udyog	Mr. Moti Ram Dahal	Sakhujung-5, Baisakha Tole	150
4	Light Hill CoC Hand Rolled Tea Industry	Mr. Mohan Dahal	Sakhajung-4 Dahalgoun	100
5	G. T. Handmade Tea Processing Udyog	Mr. Gopal Dahal and Tanka Dahal	Sakhajung-4 Dahalgoun	150
6	Jhulke Gham Tea Microenterprise	Mr. Kaji Man Cagate	Kanyam-2	300
7	Suryoudaya Organic Handmade Tea Udyog	Mr. Surya B. Khadka, Mr. Kamal Khadka and Mr. Kamal Poudel	Kanyam-2	300
8	Dipam Handmade Tea Udyog	Mr. Dilip Kumar Subha	Kanyam-1	20
9	Maipokhari Handmade Tea Processing Udyog	Mr. Sharad Subba	Maipokheri -2 Jasbire	50
10	-	Mr. Jyoti Adhikari	Panchakanya	100 (currently non-operational)
11	-	Mr. Man Kumar Lapcha	Kanyam-5	200 (current non-operation)
12	Sri Antu Handmade Tea Udyog	Mr. Raju Banjan Mr. Kamal Rai	Sri-Antu	150 (under construction)
13	-	Support from WDS	Shanti-danda	200 (under construction)

ANNEX 5: FINANCIAL AND ECONOMIC ANALYSIS OF SMALL PROCESSING UNITS

Table 5.1: Financial Analysis of Handmade Tea Processing Udyog, Solubung-5, Talgoun

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				99960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	400	135	54000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	2	20000	40000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	5960	5960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				173655	181005	188722	196825	205334	214267	223648	233497	243839	254698	266100	278072	290643	303842	317702
B1	Annual fixed cost	Rs.			70655	72855	75164	77590	80136	82810	85618	88566	91661	94911	98324	101907	105670	109621	113769
	Indirect labour	Rs.	1	36000	36000	37800	39690	41675	43758	45946	48243	50656	53188	55848	58640	61572	64651	67883	71278
	Depreciation	Rs.	99960	0.07	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664	6664
	Interest	Rs.	99960	15	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994	14994
	Utilities	Rs.	5000	1	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
	Repair and maintenance	Rs.	99960	0.03	2999	3149	3306	3471	3645	3827	4019	4220	4431	4652	4885	5129	5385	5655	5937
	Other	Rs.	99960	0.05	4998	5248	5510	5786	6075	6379	6698	7033	7384	7754	8141	8548	8976	9424	9896
B2	Annual Variable Cost				103000	108150	113558	119235	125197	131457	138030	144931	152178	159787	167776	176165	184973	194222	203933
	Green leaves	Kg.	2800	20	56000	58800	61740	64827	68068	71472	75045	78798	82738	86874	91218	95779	100568	105596	110876
	Direct labour	LS	-	-	30000	31500	33075	34729	36465	38288	40203	42213	44324	46540	48867	51310	53876	56569	59398
	Utilities	Rs.	-	-	5000	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	8552	8979	9428	9900
	Other	Rs.	-	-	12000	12600	13230	13892	14586	15315	16081	16885	17729	18616	19547	20524	21550	22628	23759
C	Sales Revenue				205876	216170	226979	238328	250244	262756	275894	289689	304173	319382	335351	352118	369724	388211	407621
	Made tea	No	509	400	203636	213818	224509	235735	247521	259897	272892	286537	300864	315907	331702	348287	365702	383987	403186
	By-product	Rs.	56	40	2240	2352	2470	2593	2723	2859	3002	3152	3310	3475	3649	3831	4023	4224	4435
E	Incremental cost	Rs.			273615	181005	188722	196825	205334	214267	223648	233497	243839	254698	266100	278072	290643	303842	317702
F	Incremental revenue	Rs.			205876	216170	226979	238328	250244	262756	275894	289689	304173	319382	335351	352118	369724	388211	407621
G	Net Revenue	Rs.			-67738	35166	38257	41502	44910	48489	52246	56191	60334	64684	69251	74046	79081	84368	89920
H	Incre. net	Rs.			-67738	-32573	5684	47186	92097	140586	192832	249023	309357	374041	443291	517337	596419	680787	770706

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	revenue																		
J	Cash flow analysis																		
1	Cash inflow				305836	216170	226979	238328	250244	262756	275894	289689	304173	319382	335351	352118	369724	388211	407621
	Sales revenue				205876	216170	226979	238328	250244	262756	275894	289689	304173	319382	335351	352118	369724	388211	407621
	Equity				30000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				69960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				226280	131470	136878	119235	125197	131457	138030	144931	152178	159787	167776	176165	184973	194222	203933
	Fixed investment				99960	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				103000	108150	113558	119235	125197	131457	138030	144931	152178	159787	167776	176165	184973	194222	203933
	Repayment of external loans				23320	23320	23320	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				79556	84700	90101	119092	125047	131299	137864	144757	151995	159595	167575	175953	184751	193989	203688
K	Financial Ratios																		
	NPV at 12% discount rate				250,848														
	IRR:				60%														
	BCR				1.16														

Table 5.2: Financial Analysis of Kanchanjunga Handmade Tea Processing Udyog, Sakhajung-5, Rukse

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				839000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	750	900	675000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	3	50000	150000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	14000	14000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				677303	701329	726557	753045	780858	810062	840726	872923	906730	942228	979500	1018636	1059728	1102875	1148180
B1	Annual fixed cost	Rs.			335903	342859	350163	357832	365885	374340	383217	392539	402327	412604	423395	434726	446623	459115	472231
	Indirect labour	Rs.	2	36000	72000	75600	79380	83349	87516	91892	96487	101311	106377	111696	117280	123144	129302	135767	142555

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Depreciation	Rs.	839000	0.07	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933	55933
	Interest	Rs.	839000	15	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850	125850
	Utilities	Rs.	15000	1	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Repair and maintenance	Rs.	839000	0.03	25170	26429	27750	29137	30594	32124	33730	35417	37188	39047	40999	43049	45202	47462	49835
	Other	Rs.	839000	0.05	41950	44048	46250	48562	50990	53540	56217	59028	61979	65078	68332	71749	75336	79103	83058
B2	Annual Variable Cost				341400	358470	376394	395213	414974	435723	457509	480384	504403	529623	556105	583910	613105	643761	675949
	Green leaves	Kg.	9600	20	192000	201600	211680	222264	233377	245046	257298	270163	283671	297855	312748	328385	344804	362045	380147
	Direct labour	LS	-	-	96000	100800	105840	111132	116689	122523	128649	135082	141836	148928	156374	164193	172402	181022	190073
	Utilities	Rs.	-	-	15000	15750	16538	17364	18233	19144	20101	21107	22162	23270	24433	25655	26938	28285	29699
	Other	Rs.	-	-	38400	40320	42336	44453	46675	49009	51460	54033	56734	59571	62550	65677	68961	72409	76029
C	Sales Revenue				795055	834807	876548	920375	966394	1014713	1065449	1118722	1174658	1233391	1295060	1359813	1427804	1499194	1574154
	Made tea	No	1745	450	785455	824727	865964	909262	954725	1002461	1052584	1105213	1160474	1218498	1279423	1343394	1410564	1481092	1555146
	By-product	Rs.	192	50	9600	10080	10584	11113	11669	12252	12865	13508	14184	14893	15637	16419	17240	18102	19007
E	Incremental cost	Rs.			1516303	701329	726557	753045	780858	810062	840726	872923	906730	942228	979500	1018636	1059728	1102875	1148180
F	Incremental revenue	Rs.			795055	834807	876548	920375	966394	1014713	1065449	1118722	1174658	1233391	1295060	1359813	1427804	1499194	1574154
G	Net Revenue	Rs.			-721249	133478	149991	167330	185535	204651	224723	245798	267927	291163	315560	341177	368076	396318	425974
H	Incre. net revenue	Rs.			-721249	-587771	-437780	-270450	-84915	119737	344460	590258	858185	1149348	1464909	1806086	2174162	2570480	2996454
J	Cash flow analysis																		
1	Cash inflow				1634055	834807	876548	920375	966394	1014713	1065449	1118722	1174658	1233391	1295060	1359813	1427804	1499194	1574154
	Sales revenue				795055	834807	876548	920375	966394	1014713	1065449	1118722	1174658	1233391	1295060	1359813	1427804	1499194	1574154
	Equity				239000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				600000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				1380400	558470	576394	395213	414974	435723	457509	480384	504403	529623	556105	583910	613105	643761	675949
	Fixed investment				839000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				341400	358470	376394	395213	414974	435723	457509	480384	504403	529623	556105	583910	613105	643761	675949

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Repayment of external loans				200000	200000	200000	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				253655	276337	300154	525162	551420	578991	607940	638338	670254	703767	738955	775903	814698	855433	898205
K	Financial Ratios																		
	NPV at 12% discount rate				697,349														
	IRR:				26%														
	BCR				1.11														

Table 5.3: Financial Analysis of Pathivara Handmade Tea Processing Udyog, Sakhajung-5, Baisakha Tole

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				750000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	700	835	584500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	3	50000	150000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	15500	15500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				709300	735890	763810	793125	823906	856227	890163	925796	963211	1002496	1043746	1087058	1132536	1180288	1230428
B1	Annual fixed cost	Rs.			393500	404300	415640	427547	440049	453177	466961	481434	496630	512587	529341	546933	565405	584800	605165
	Indirect labour	Rs.	2	78000	156000	163800	171990	180590	189619	199100	209055	219508	230483	242007	254108	266813	280154	294161	308869
	Depreciation	Rs.	750000	0.07	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000
	Interest	Rs.	750000	15	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500
	Utilities	Rs.	15000	1	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Repair and maintenance	Rs.	750000	0.03	22500	23625	24806	26047	27349	28716	30152	31660	33243	34905	36650	38483	40407	42427	44548
	Other	Rs.	750000	0.05	37500	39375	41344	43411	45581	47861	50254	52766	55405	58175	61084	64138	67345	70712	74247
B2	Annual Variable Cost				315800	331590	348170	365578	383857	403050	423202	444362	466580	489909	514405	540125	567131	595488	625262
	Green leaves	Kg.	10000	20	200000	210000	220500	231525	243101	255256	268019	281420	295491	310266	325779	342068	359171	377130	395986
	Direct labour	LS	-	-	72000	75600	79380	83349	87516	91892	96487	101311	106377	111696	117280	123144	129302	135767	142555

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Utilities	Rs.	-	-	15000	15750	16538	17364	18233	19144	20101	21107	22162	23270	24433	25655	26938	28285	29699
	Other	Rs.	-	-	28800	30240	31752	33340	35007	36757	38595	40524	42551	44678	46912	49258	51721	54307	57022
C	Sales Revenue				828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Made tea	No	1818	450	818182	859091	902045	947148	994505	1044230	1096442	1151264	1208827	1269269	1332732	1399369	1469337	1542804	1619944
	By-product	Rs.	200	50	10000	10500	11025	11576	12155	12763	13401	14071	14775	15513	16289	17103	17959	18856	19799
E	Incremental cost	Rs.			1459300	735890	763810	793125	823906	856227	890163	925796	963211	1002496	1043746	1087058	1132536	1180288	1230428
F	Incremental revenue	Rs.			828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
G	Net Revenue	Rs.			-631118	133701	149261	165599	182754	200767	219680	239539	260391	282285	305275	329413	354759	381372	409316
H	Incre. net revenue	Rs.			-631118	-497417	-348156	-182557	197	200963	420643	660182	920573	1202859	1508133	1837547	2192306	2573678	2982994
J	Cash flow analysis																		
1	Cash inflow				1578182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Sales revenue				828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Equity				100000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				650000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				1282467	548257	564836	365578	383857	403050	423202	444362	466580	489909	514405	540125	567131	595488	625262
	Fixed investment				750000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				315800	331590	348170	365578	383857	403050	423202	444362	466580	489909	514405	540125	567131	595488	625262
	Repayment of external loans				216667	216667	216667	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				295715	321334	348234	593146	622803	653943	686641	720973	757021	794872	834616	876347	920164	966172	1014481
K	Financial Ratios																		
	NPV at 12% discount rate				747,319														
	IRR:				29%														
	BCR				1.11														

Table 5.4: Light Hill CoC Handmade Tea Processing Udyog, Sakhajung-4, Dahalgoun

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year													
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				337500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	450	500	225000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	2	50000	100000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	12500	12500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				426125	443025	460770	479402	498966	519508	541077	563725	587505	612474	638691	666220	695124	725474	757342
B1	Annual fixed cost	Rs.			235125	242475	250193	258296	266804	275738	285119	294969	305311	316170	327573	339545	352116	365315	379175
	Indirect labour	Rs.	2	60000	120000	126000	132300	138915	145861	153154	160811	168852	177295	186159	195467	205241	215503	226278	237592
	Depreciation	Rs.	337500	0.07	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500	22500
	Interest	Rs.	337500	15	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625	50625
	Utilities	Rs.	15000	1	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Repair and maintenance	Rs.	337500	0.03	10125	10631	11163	11721	12307	12922	13568	14247	14959	15707	16493	17317	18183	19092	20047
	Other	Rs.	337500	0.05	16875	17719	18605	19535	20512	21537	22614	23745	24932	26179	27488	28862	30305	31820	33411
B2	Annual Variable Cost				191000	200550	210578	221106	232162	243770	255958	268756	282194	296304	311119	326675	343009	360159	378167
	Green leaves	Kg.	6000	20	120000	126000	132300	138915	145861	153154	160811	168852	177295	186159	195467	205241	215503	226278	237592
	Direct labour	LS	-	-	40000	42000	44100	46305	48620	51051	53604	56284	59098	62053	65156	68414	71834	75426	79197
	Utilities	Rs.	-	-	15000	15750	16538	17364	18233	19144	20101	21107	22162	23270	24433	25655	26938	28285	29699
	Other	Rs.	-	-	16000	16800	17640	18522	19448	20421	21442	22514	23639	24821	26062	27365	28734	30170	31679
C	Sales Revenue				496909	521755	547842	575234	603996	634196	665906	699201	734161	770869	809413	849883	892377	936996	983846
	Made tea	No	1091	450	490909	515455	541227	568289	596703	626538	657865	690758	725296	761561	799639	839621	881602	925682	971966
	By-product	Rs.	120	50	6000	6300	6615	6946	7293	7658	8041	8443	8865	9308	9773	10262	10775	11314	11880
E	Incremental cost	Rs.			763625	443025	460770	479402	498966	519508	541077	563725	587505	612474	638691	666220	695124	725474	757342
F	Incremental revenue	Rs.			496909	521755	547842	575234	603996	634196	665906	699201	734161	770869	809413	849883	892377	936996	983846
G	Net Revenue	Rs.			-266716	78730	87072	95832	105030	114688	124828	135476	146656	158395	170721	183663	197253	211522	226504

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
H	Incre. net revenue	Rs.			-266716	-187986	-100914	-5082	99948	214636	339464	474940	621596	779991	950713	1134376	1331629	1543151	1769655
J	Cash flow analysis																		
1	Cash inflow				834409	521755	547842	575234	603996	634196	665906	699201	734161	770869	809413	849883	892377	936996	983846
	Sales revenue				496909	521755	547842	575234	603996	634196	665906	699201	734161	770869	809413	849883	892377	936996	983846
	Equity				216820	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				120680	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				568727	240777	250804	221106	232162	243770	255958	268756	282194	296304	311119	326675	343009	360159	378167
	Fixed investment				337500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				191000	200550	210578	221106	232162	243770	255958	268756	282194	296304	311119	326675	343009	360159	378167
	Repayment of external loans				40227	40227	40227	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				265682	280978	297038	354128	371834	390426	409947	430445	451967	474565	498294	523208	549369	576837	605679
K	Financial Ratios																		
	NPV at 12% discount rate				506,360														
	IRR:				38%														
	BCR				1.13														

Table 5.5: G. T. Handmade Tea Processing Udyog, Sakhajung-4, Dahalgoun

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				572160	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	610	750	457500	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	2	50000	100000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	14660	14660	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				755741	786579	818960	852960	888659	926144	965503	1006829	1050222	1095785	1143626	1193859	1246603	1301985	1360136
B1	Annual fixed cost	Rs.			418741	432729	447418	462840	479034	496037	513890	532636	552320	572987	594688	617474	641400	666521	692899

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Indirect labour	Rs.	3	78000	234000	245700	257985	270884	284428	298650	313582	329261	345725	363011	381161	400219	420230	441242	463304
	Depreciation	Rs.	572160	0.07	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144	38144
	Interest	Rs.	572160	15	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824	85824
	Utilities	Rs.	15000	1	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Repair and maintenance	Rs.	572160	0.03	17165	18023	18924	19870	20864	21907	23002	24153	25360	26628	27960	29358	30826	32367	33985
	Other	Rs.	572160	0.05	28608	30038	31540	33117	34773	36512	38337	40254	42267	44380	46599	48929	51376	53945	56642
B2	Annual Variable Cost				337000	353850	371543	390120	409626	430107	451612	474193	497902	522798	548937	576384	605204	635464	667237
	Green leaves	Kg.	10000	20	200000	210000	220500	231525	243101	255256	268019	281420	295491	310266	325779	342068	359171	377130	395986
	Direct labour	LS	-	-	100000	105000	110250	115763	121551	127628	134010	140710	147746	155133	162889	171034	179586	188565	197993
	Utilities	Rs.	-	-	9000	9450	9923	10419	10940	11487	12061	12664	13297	13962	14660	15393	16163	16971	17819
	Other	Rs.	-	-	28000	29400	30870	32414	34034	35736	37523	39399	41369	43437	45609	47890	50284	52798	55438
C	Sales Revenue				828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Made tea	No	1818	450	818182	859091	902045	947148	994505	1044230	1096442	1151264	1208827	1269269	1332732	1399369	1469337	1542804	1619944
	By-product	Rs.	200	50	10000	10500	11025	11576	12155	12763	13401	14071	14775	15513	16289	17103	17959	18856	19799
E	Incremental cost	Rs.			1327901	786579	818960	852960	888659	926144	965503	1006829	1050222	1095785	1143626	1193859	1246603	1301985	1360136
F	Incremental revenue	Rs.			828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
G	Net Revenue	Rs.			-499719	83011	94110	105764	118001	130849	144340	158506	173379	188997	205395	222613	240692	259675	279607
H	Incre. net revenue	Rs.			-499719	-416708	-322597	-216833	-98832	32018	176358	334864	508243	697240	902635	1125248	1365940	1625616	1905223
J	Cash flow analysis																		
1	Cash inflow				1400182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Sales revenue				828182	869591	913070	958724	1006660	1056993	1109843	1165335	1223602	1284782	1349021	1416472	1487296	1561660	1639743
	Equity				200000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				372000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				1033160	477850	495543	390120	409626	430107	451612	474193	497902	522798	548937	576384	605204	635464	667237
	Fixed investment				572160	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				337000	353850	371543	390120	409626	430107	451612	474193	497902	522798	548937	576384	605204	635464	667237

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Repayment of external loans				124000	124000	124000	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				367022	391741	417528	568604	597035	626886	658231	691142	725699	761984	800083	840088	882092	926197	972506
K	Financial Ratios																		
	NPV at 12% discount rate				415,697														
	IRR:				24%														
	BCR				1.06														

Table 5.6: Jhulke Gham Handmade Tea Processing Udyog, Kanyam-2

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				1606900	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	1500	800	1200000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	4	1E+05	400000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	6900	6900	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				2384714	2485291	2590898	2701785	2818216	2940468	3068834	3203617	3345140	3493739	3649768	3813598	3985620	4166243	4355897
B1	Annual fixed cost	Rs.			969714	999541	1030860	1063745	1098274	1134530	1172598	1212570	1254541	1298610	1344882	1393468	1444483	1498049	1554294
	Indirect labour	Rs.	6	78000	468000	491400	515970	541769	568857	597300	627165	658523	691449	726022	762323	800439	840461	882484	926608
	Depreciation	Rs.	1606900	0.07	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127	107127
	Interest	Rs.	1606900	15	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035	241035
	Utilities	Rs.	100000	1	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000
	Repair and maintenance	Rs.	1606900	0.03	48207	50617	53148	55806	58596	61526	64602	67832	71224	74785	78524	82450	86573	90901	95447
	Other	Rs.	1606900	0.05	80345	84362	88580	93009	97660	102543	107670	113053	118706	124641	130874	137417	144288	151502	159078
B2	Annual Variable Cost				1415000	1485750	1560038	1638039	1719941	1805938	1896235	1991047	2090599	2195129	2304886	2420130	2541137	2668194	2801603
	Green leaves	Kg.	32500	20	650000	682500	716625	752456	790079	829583	871062	914615	960346	1008363	1058782	1111721	1167307	1225672	1286956
	Direct labour	LS	-	-	600000	630000	661500	694575	729304	765769	804057	844260	886473	930797	977337	1026204	1077514	1131389	1187959

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Utilities	Rs.	-	-	75000	78750	82688	86822	91163	95721	100507	105533	110809	116350	122167	128275	134689	141424	148495
	Other	Rs.	-	-	90000	94500	99225	104186	109396	114865	120609	126639	132971	139620	146601	153931	161627	169708	178194
C	Sales Revenue				2691591	2826170	2967479	3115853	3271646	3435228	3606989	3787339	3976706	4175541	4384318	4603534	4833711	5075396	5329166
	Made tea	No	5909	450	2659091	2792045	2931648	3078230	3232142	3393749	3563436	3741608	3928688	4125123	4331379	4547948	4775345	5014112	5264818
	By-product	Rs.	650	50	32500	34125	35831	37623	39504	41479	43553	45731	48017	50418	52939	55586	58365	61284	64348
E	Incremental cost	Rs.			3991614	2485291	2590898	2701785	2818216	2940468	3068834	3203617	3345140	3493739	3649768	3813598	3985620	4166243	4355897
F	Incremental revenue	Rs.			2691591	2826170	2967479	3115853	3271646	3435228	3606989	3787339	3976706	4175541	4384318	4603534	4833711	5075396	5329166
G	Net Revenue	Rs.			-1300023	340879	376581	414068	453430	494759	538156	583721	631566	681802	734550	789936	848091	909153	973269
H	Incre. net revenue	Rs.			-1300023	-959144	-582562	-168494	284936	779695	1317851	1901572	2533138	3214940	3949490	4739425	5587516	6496669	7469938
J	Cash flow analysis																		
1	Cash inflow				4298491	2826170	2967479	3115853	3271646	3435228	3606989	3787339	3976706	4175541	4384318	4603534	4833711	5075396	5329166
	Sales revenue				2691591	2826170	2967479	3115853	3271646	3435228	3606989	3787339	3976706	4175541	4384318	4603534	4833711	5075396	5329166
	Equity				706900	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				900000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				3321900	1785750	1860038	1638039	1719941	1805938	1896235	1991047	2090599	2195129	2304886	2420130	2541137	2668194	2801603
	Fixed investment				1606900	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				1415000	1485750	1560038	1638039	1719941	1805938	1896235	1991047	2090599	2195129	2304886	2420130	2541137	2668194	2801603
	Repayment of external loans				300000	300000	300000	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				976591	1040420	1107441	1477814	1551704	1629289	1710754	1796292	1886106	1980411	2079432	2183404	2292574	2407203	2527563
K	Financial Ratios																		
	NPV at 12% discount rate				2,048,739														
	IRR:				34%														
	BCR				1.09														

Table 5.7: Suryodaya Handmade Tea Processing Udyog, Kanyam-2

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				815000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	1000	600	600000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	2	1E+05	200000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	15000	15000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				1677783	1751843	1829606	1911257	1996991	2087012	2181533	2280780	2384990	2494411	2609302	2729938	2856606	2989607	3129258
B1	Annual fixed cost	Rs.			651783	674543	698441	723534	749882	777547	806595	837095	869121	902748	938056	975130	1014057	1054931	1097848
	Indirect labour	Rs.	5	78000	390000	409500	429975	451474	474047	497750	522637	548769	576208	605018	635269	667032	700384	735403	772173
	Depreciation	Rs.	815000	0.07	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333	54333
	Interest	Rs.	815000	15	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250	122250
	Utilities	Rs.	100000	1	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
	Repair and maintenance	Rs.	815000	0.03	24450	25673	26956	28304	29719	31205	32765	34404	36124	37930	39826	41818	43909	46104	48409
	Other	Rs.	815000	0.05	40750	42788	44927	47173	49532	52008	54609	57339	60206	63217	66377	69696	73181	76840	80682
B2	Annual Variable Cost				1026000	1077300	1131165	1187723	1247109	1309465	1374938	1443685	1515869	1591663	1671246	1754808	1842549	1934676	2031410
	Green leaves	Kg.	22500	20	450000	472500	496125	520931	546978	574327	603043	633195	664855	698098	733003	769653	808135	848542	890969
	Direct labour	LS	-	-	450000	472500	496125	520931	546978	574327	603043	633195	664855	698098	733003	769653	808135	848542	890969
	Utilities	Rs.	-	-	36000	37800	39690	41675	43758	45946	48243	50656	53188	55848	58640	61572	64651	67883	71278
	Other	Rs.	-	-	90000	94500	99225	104186	109396	114865	120609	126639	132971	139620	146601	153931	161627	169708	178194
C	Sales Revenue				1863409	1956580	2054409	2157129	2264985	2378235	2497146	2622004	2753104	2890759	3035297	3187062	3346415	3513736	3689423
	Made tea	No	4091	450	1840909	1932955	2029602	2131082	2237637	2349518	2466994	2590344	2719861	2855854	2998647	3148579	3306008	3471309	3644874
	By-product	Rs.	450	50	22500	23625	24806	26047	27349	28716	30152	31660	33243	34905	36650	38483	40407	42427	44548
E	Incremental cost	Rs.			2492783	1751843	1829606	1911257	1996991	2087012	2181533	2280780	2384990	2494411	2609302	2729938	2856606	2989607	3129258
F	Incremental revenue	Rs.			1863409	1956580	2054409	2157129	2264985	2378235	2497146	2622004	2753104	2890759	3035297	3187062	3346415	3513736	3689423
G	Net Revenue	Rs.			-629374	204736	224802	245871	267994	291223	315613	341223	368114	396348	425995	457124	489809	524129	560165
H	Incre. net revenue	Rs.			-629374	-424638	-199836	46036	314030	605253	920866	1262090	1630203	2026552	2452547	2909670	3399480	3923609	4483773

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
J	Cash flow analysis																		
1	Cash inflow				2663409	1956580	2054409	2157129	2264985	2378235	2497146	2622004	2753104	2890759	3035297	3187062	3346415	3513736	3689423
	Sales revenue				1863409	1956580	2054409	2157129	2264985	2378235	2497146	2622004	2753104	2890759	3035297	3187062	3346415	3513736	3689423
	Equity				300000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				500000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				2007667	1243967	1297832	1187723	1247109	1309465	1374938	1443685	1515869	1591663	1671246	1754808	1842549	1934676	2031410
	Fixed investment				815000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				1026000	1077300	1131165	1187723	1247109	1309465	1374938	1443685	1515869	1591663	1671246	1754808	1842549	1934676	2031410
	Repayment of external loans				166667	166667	166667	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				655742	712613	756577	969406	1017876	1068770	1122208	1178319	1237235	1299096	1364051	1432254	1503866	1579060	1658013
K	Financial Ratios																		
	NPV at 12% discount rate				1,319,724														
	IRR:				41%														
	BCR				1.09														

Table 5.8: Dipam Handmade Tea Processing Udyog, Kanyam-2

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				125000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	400	200	80000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	1	40000	40000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	5000	5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				273083	284633	296761	309495	322865	336904	351645	367124	383376	400440	418358	437172	456926	477668	499448
B1	Annual fixed cost	Rs.			130083	134483	139103	143954	149048	154396	160012	165908	172099	178600	185426	192593	200119	208020	216317
	Indirect labour	Rs.	1	78000	78000	81900	85995	90295	94809	99550	104527	109754	115242	121004	127054	133406	140077	147081	154435

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Depreciation	Rs.	125000	0.07	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333	8333
	Interest	Rs.	125000	15	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750	18750
	Utilities	Rs.	100000	1	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
	Repair and maintenance	Rs.	125000	0.03	3750	3938	4134	4341	4558	4786	5025	5277	5540	5817	6108	6414	6734	7071	7425
	Other	Rs.	125000	0.05	6250	6563	6891	7235	7597	7977	8376	8794	9234	9696	10181	10690	11224	11785	12375
B2	Annual Variable Cost				143000	150150	157658	165540	173817	182508	191634	201215	211276	221840	232932	244579	256807	269648	283130
	Green leaves	Kg.	3750	20	75000	78750	82688	86822	91163	95721	100507	105533	110809	116350	122167	128275	134689	141424	148495
	Direct labour	LS	-	-	45000	47250	49613	52093	54698	57433	60304	63320	66485	69810	73300	76965	80814	84854	89097
	Utilities	Rs.	-	-	5000	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	8552	8979	9428	9900
	Other	Rs.	-	-	18000	18900	19845	20837	21879	22973	24122	25328	26594	27924	29320	30786	32325	33942	35639
C	Sales Revenue				310568	326097	342401	359521	377498	396372	416191	437001	458851	481793	505883	531177	557736	585623	614904
	Made tea	No	682	450	306818	322159	338267	355180	372939	391586	411166	431724	453310	475976	499774	524763	551001	578551	607479
	By-product	Rs.	75	50	3750	3938	4134	4341	4558	4786	5025	5277	5540	5817	6108	6414	6734	7071	7425
E	Incremental cost	Rs.			398083	284633	296761	309495	322865	336904	351645	367124	383376	400440	418358	437172	456926	477668	499448
F	Incremental revenue	Rs.			310568	326097	342401	359521	377498	396372	416191	437001	458851	481793	505883	531177	557736	585623	614904
G	Net Revenue	Rs.			-87515	41463	45641	50027	54632	59468	64546	69877	75475	81353	87525	94005	100810	107954	115456
H	Incre. net revenue	Rs.			-87515	-46052	-411	49615	104248	163716	228261	298139	373614	454967	542492	636497	737307	845261	960717
J	Cash flow analysis																		
1	Cash inflow				435568	326097	342401	359521	377498	396372	416191	437001	458851	481793	505883	531177	557736	585623	614904
	Sales revenue				310568	326097	342401	359521	377498	396372	416191	437001	458851	481793	505883	531177	557736	585623	614904
	Equity				50000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				75000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				293000	175150	182658	165540	173817	182508	191634	201215	211276	221840	232932	244579	256807	269648	283130
	Fixed investment				125000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				143000	150150	157658	165540	173817	182508	191634	201215	211276	221840	232932	244579	256807	269648	283130

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Repayment of external loans				25000	25000	25000	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				142568	150947	159744	193981	203680	213864	224557	235785	247575	259953	272951	286598	300928	315975	331774
K	Financial Ratios																		
	NPV at 12% discount rate				306,729														
	IRR:				56%														
	BCR				1.13														

Table 5.9: Maipokhari Handmade Tea Processing Udyog, Maipokhari-2, Jasbire

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Fixed Investment				135000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Building	Sq. ft.	300	300	90000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Machine	Set	1	40000	40000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	LS	1	5000	5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Annual Operating Cost				289050	301540	314655	328425	342883	358065	374006	390744	408318	426772	446148	466493	487855	510285	533837
B1	Annual fixed cost	Rs.			128050	132490	137152	142047	147187	152584	158250	164201	170448	177008	183896	191128	198722	206696	215068
	Indirect labour	Rs.	1	78000	78000	81900	85995	90295	94809	99550	104527	109754	115242	121004	127054	133406	140077	147081	154435
	Depreciation	Rs.	135000	0.07	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
	Interest	Rs.	135000	15	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250
	Utilities	Rs.	100000	1	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
	Repair and maintenance	Rs.	135000	0.03	4050	4253	4465	4688	4923	5169	5427	5699	5984	6283	6597	6927	7273	7637	8019
	Other	Rs.	135000	0.05	6750	7088	7442	7814	8205	8615	9046	9498	9973	10471	10995	11545	12122	12728	13365
B2	Annual Variable Cost				161000	169050	177503	186378	195697	205481	215755	226543	237870	249764	262252	275365	289133	303590	318769
	Green leaves	Kg.	3900	20	78000	81900	85995	90295	94809	99550	104527	109754	115242	121004	127054	133406	140077	147081	154435
	Direct labour	LS	-	-	60000	63000	66150	69458	72930	76577	80406	84426	88647	93080	97734	102620	107751	113139	118796

S.N.	Particulars	Unit	Quantity	Price/Unit	Value by Year														
					2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Utilities	Rs.	-	-	5000	5250	5513	5788	6078	6381	6700	7036	7387	7757	8144	8552	8979	9428	9900
	Other	Rs.	-	-	18000	18900	19845	20837	21879	22973	24122	25328	26594	27924	29320	30786	32325	33942	35639
C	Sales Revenue				322991	339140	356097	373902	392597	412227	432839	454481	477205	501065	526118	552424	580045	609048	639500
	Made tea	No	709	450	319091	335045	351798	369388	387857	407250	427612	448993	471443	495015	519765	545754	573041	601693	631778
	By-product	Rs.	78	50	3900	4095	4300	4515	4740	4977	5226	5488	5762	6050	6353	6670	7004	7354	7722
E	Incremental cost	Rs.			424050	301540	314655	328425	342883	358065	374006	390744	408318	426772	446148	466493	487855	510285	533837
F	Incremental revenue	Rs.			322991	339140	356097	373902	392597	412227	432839	454481	477205	501065	526118	552424	580045	609048	639500
G	Net Revenue	Rs.			-101059	37600	41443	45478	49714	54162	58833	63737	68886	74293	79970	85931	92190	98762	105663
H	Incre. net revenue	Rs.			-101059	-63459	-22016	23462	73176	127338	186171	249908	318794	393087	473058	558989	651179	749942	855605
J	Cash flow analysis																		
1	Cash inflow				447991	339140	356097	373902	392597	412227	432839	454481	477205	501065	526118	552424	580045	609048	639500
	Sales revenue				322991	339140	356097	373902	392597	412227	432839	454481	477205	501065	526118	552424	580045	609048	639500
	Equity				55000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	External borrowing				70000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Cash outflow				319333	192383	200836	186378	195697	205481	215755	226543	237870	249764	262252	275365	289133	303590	318769
	Fixed investment				135000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Operating cost				161000	169050	177503	186378	195697	205481	215755	226543	237870	249764	262252	275365	289133	303590	318769
	Repayment of external loans				23333	23333	23333	0	0	0	0	0	0	0	0	0	0	0	0
3	Net cash flow				128658	146757	155262	187525	196901	206746	217083	227937	239334	251301	263866	277059	290912	305458	320731
K	Financial Ratios																		
	NPV at 12% discount rate				260,596														
	IRR:				46%														
	BCR				1.10														