



Analysis of Tea Industry in India – Focus on Value Chain to suggest a method to improve productivity of tea

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Executive Summary

The primary objective of the research was to study the value chain of the commodity tea in India so as to identify the weak links that need to be strengthened to increase the productivity. Primary research with different stakeholders in the value chain revealed several interesting facts about the supply chain processes involved. Based on analysis of certain tea farms in nilgiris and data obtained from Tea Board of India, attitude-likelihood model was created. Regression was performed on the data to ascertain the relationship between various variables identified during the course of the research. Based on the results, strategic solutions are proposed to strengthen the value chain and increase tea productivity in India.

Introduction

Tea (*Camellia* species) originated in South East Asia and China is the first country to use tea as a beverage. The word “tea” is derived from t’è of the Chinese Fukien dialect and in Cantones, tea is as ch’a. In this form the name has reached India, Iran, Japan and Middle East. At present there are three different varieties of tea

1. Assam Variety
2. China Variety
3. Cambod Variety

More than 45 countries spread over all the continents except North America cultivate tea. The important tea growing countries of the world are India, Srilanka, China, Indonesia, Georgia and Argentina.

Development of Tea in India

Tea was reported to be growing in India in the early 19th century. The search for tea in Assam was started by the East India Company as an alternative source of supply to United Kingdom which until then was mainly dependent on China. With the emphasis on indigenous tea in Assam, the first commercial effort in organized tea cultivation was started by Assam Tea Company in 1839. Tea plants sent from Calcutta botanical gardens were reported to be grown in Nilgiris district in Tamil Nadu in 1839 but was cultivated on a commercial scale by 1853.

From a modest beginning, India became the world's single largest producer of tea and also one of the largest exporters of tea. The total area under tea in the country increased from 0.3 million hectares during 1960-61 to 0.5 million hectares during 2003-04 and the production which was 300 million kgs during 1960-61 had increased to 850.5 million kgs during 2003-04 (economic survey, 2004-2005).

In India, tea is grown in Assam, West Bengal, Tamil Nadu, Kerala, and Karnataka and to some extent in Himachal Pradesh and Tripura. South India accounts for nearly 25% of the total national production.

Objective

The study would comprise of a detailed analysis of the present situation of the Indian Tea Industry, the current market trends and the future outlook for the sector. The report would focus on the Indian Tea Market and the supply chain process of tea in India with the purpose being to identify the links in the value chain which could be improved to enhance the productivity and profitability.

Scope

The research would cover the following aspects in detail.

- Study of trends in area under cultivation, production, productivity, and price movement of tea.
- Identification of different stages in the supply chain- production, value addition and marketing and their functioning in terms of efficiency, viability and sustainability of tea.
- Study and identification of the issues faced in the supply chain at different stages.
- To assess the extent and effectiveness of linkages among different entities in the supply chain system and to suggest alternative strategies if required.
- To assess and explore the possibility of innovations in the tea sector in terms of its competitiveness in the domestic market

Methodology for research

Databases available at IIFT and authorized secondary published online sources were used for the research project. Following a preliminary study on the broad aspects of the sector, a primary research was carried out through depth interviews both telephonic and online. Calculation of indicators, trend analysis and forecasting methods were used on various certified data and statistics to arrive at the results. Once the results were interpreted, the inferences are reported and appropriate and relevant recommendations are proposed.

Tea industry

The global tea industry is largely dominated by India- the second largest producer and the largest consumer of tea. India is succeeded by China and followed by Kenya, Sri Lanka, Vietnam and Indonesia in the production hierarchy of countries.

India accounts for 26% of the world's production. While Sri Lanka, Kenya and Indonesia are the other leading producers, their combined production is lower than that of India. In 2008, world tea production reached over 4.73 million tonnes. Producing 1.16 billion kilos of tea per year, china is the number one source for tea. At 980 million kilos, India stands at number two.

History

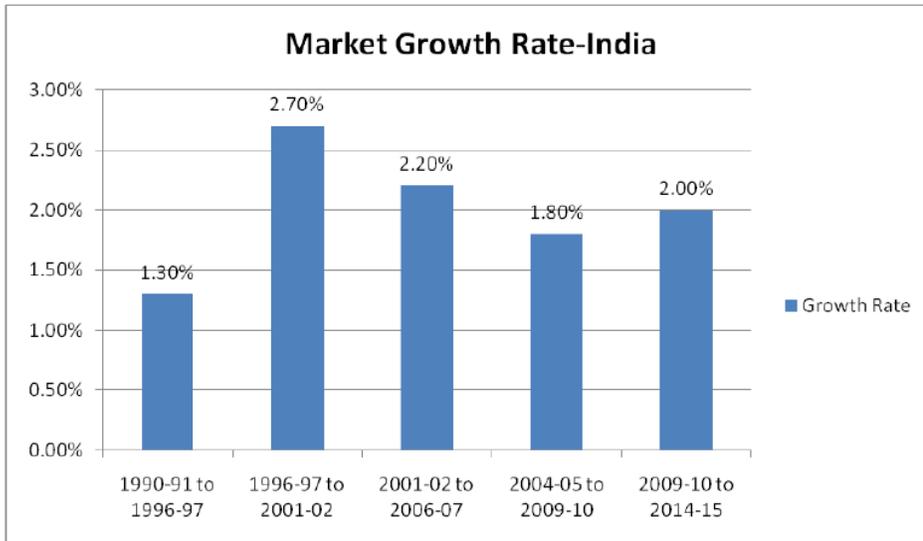
Tea is an essential item of domestic consumption and is the major beverage in India. Tea is also considered as the cheapest beverage amongst the beverages available in India. Tea industry provides gainful direct employment to more than a million workers mainly drawn from the backward and socially weaker sections of the society. It is also a substantial foreign exchange earner and provides sizeable amount of revenue to the state and central exchequer. The total turnover of the Indian tea industry is in the vicinity of Rs 9000 crores.

As of 31.12.2009, Indian tea industry is having

- 1692 registered tea manufacturers
- 2200 registered tea exporters
- 5845 number of registered tea buyers
- Nine tea auction centers

The tea industry in India is about 172 years old. It occupies an important place and plays a very useful part in the national economy. Robert Bruce in 1823 discovered tea plants growing wild in the upper Brahmaputra valley. In 1838 the first Indian tea from Assam was sent to United Kingdom for public sale. Thereafter it was extended to other parts of the country between 50s and 60s of the last century. However owing to certain specific soil and climatic requirements its cultivation was confined to only certain parts of the country.

Market growth rates

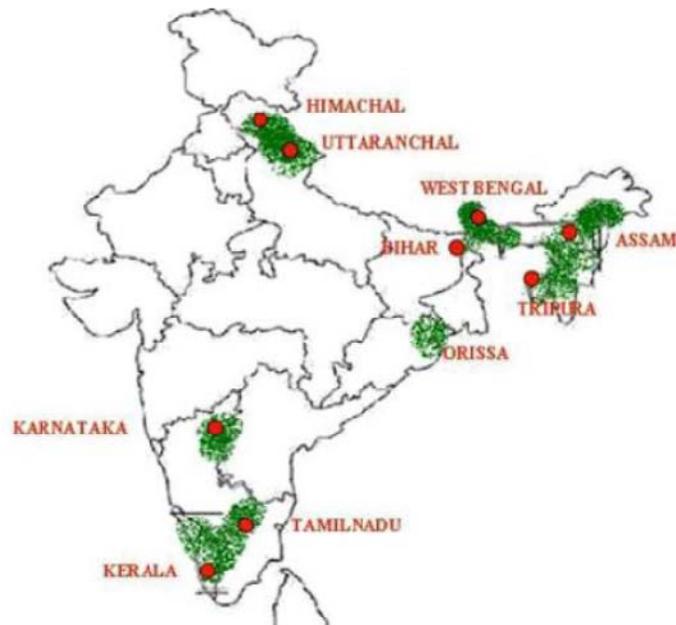


1990-91 to 1996-97	1.30%
1996-97 to 2001-02	2.70%
2001-02 to 2006-07	2.20%
2004-05 to 2009-10	1.80%
2009-10 to 2014-15	2.00%

Major tea growing regions

Tea plantations in India are mainly located in rural hills and backward areas of north eastern and southern states. Major tea growing areas of the country are concentrated in Assam, West Bengal, Tamil Nadu and Kerala. The other areas where tea is grown to a small extent are Karnataka, Tripura, Himachal Pradesh, Uttaranchal, and Arunachal Pradesh. Manipur, Sikkim, Nagaland, Meghalaya, Mizoram, Bihar and Orissa.

Unlike most other tea producing and exporting countries India has dual manufacturing base. India produces CTC-Crush, Tear, Curl and orthodox teas in addition to green tea. The weightage lies with the former due to domestic consumer's preference. Orthodox tea production is balanced basically with the export demand. Production of green tea in India is small. The competitors to India in tea export are Sri Lanka, Kenya, China, Indonesia and Vietnam.



Consumption trends

There has been a dramatic tilt in favour of domestic market since fifties. At the time of independence only 79 m.kgs or 31% of total production of tea was retained for internal consumption. In 2009 as much as 812m.kgs or about 82% of total production went for domestic consumption.

Such a massive increase in domestic consumption has been due to increase in population, greater urbanization, increase in income and standard of living etc.

Characteristics of Indian Tea

Industry

1) Productivity and quality

The art of plucking fine tuned over the last 200 years, requires two fresh leaves and a bud to be plucked manually. Tea productivity can be measured as per unit of labor (man year) and per unit of land (hectare). Mechanized plucking (when labor is in short supply or expensive) enhances productivity but with compromise on quality as coarse leaves also gets plucked. When tea is in short supply some producers increase productivity by allowing plucking of coarse leaves with fresh ones. When premium for quality raises producers improve quality by compromising on productivity. The productivity also depends on the age of tea bushes, genetic material, irrigation, fertilizer, cultivation techniques etc. Replantation, typically 2% of crop pa, to replace old bushes is done to improve productivity.

2) Labor intensity

This industry is very labour intensive. Labor cost is generally fixed and therefore lower production would result in higher unit of cost of production. The proportion of variable elements in labor cost depends on labour legislation and extent of casual and temporary workers employed. If the production suffers on account of bad weather or pests, the per unit cost of production goes up significantly.

3) Long gestation

Tea bushes mature for commercial exploitation in 5-7 years and remain productive for an average 50-60 years. Major part of capital expenditure is to be incurred in first five years which then yields returns over the next 100 years.

4) Commodity nature

Tea prices fluctuate widely with demand supply imbalances. The commodity is perishable and demand is relatively inelastic to price. While demand has a secular growth rate, supply can vary depending on climatic conditions in the major tea growing countries. Unlike other commodities tea price cycles have no linkage with the general economic cycles but with agro-climatic conditions.

5) Healthy Drink

Tea besides having properties of fatigue amelioration has chemicals which help in maintaining cholesterol levels and in preventing cancer. However research on this subject is not conclusive.

6) Organized industry

Tea industry is an organized agro-industry. This implies that labour laws exist and since the dominant mode of tea trade is through auctions a large number of small producers get fair prices.

7) Domestic competition

The major share of tea market is dominated by unorganized players. There are about 1000 of tea brands in India out of which 90% are represented by regional players while the balance 10% is dominated by Tata Tea, HUL, Wag Bakri chai, Godrej, Sapat International and others. With the growing shift from loose to branded tea, regional players are now expanding their reach and also getting a premium with their offerings.

Special features of Indian tea industry

- Production dependent on agro-climatic conditions
- Same plant and same agro practices give variations in quality in different regions
- Product life is limited

- Labour intensive
- High cost due to high input costs
- No priority for scientific cost management
- Low investment in development programmes

SWOT Analysis

Strengths

- Demand for tea has been growing at some 2% per annum and should accelerate further
- Technical and manpower skill – due to a huge population base in India, technical and manpower skill is available in abundance
- Good research support by tea growers will help the industry grow further

Weaknesses

- Labour intensive industry- the second generation labourers are reluctant to join this industry hence it could pose a problem of skilled labour in the near future
- No effective cost management system adopted by companies and other regulatory bodies
- Supply from more efficient players like Kenya, China, Sri Lanka
- Declining exports of India over the years

Opportunities

- Export potential is high if India can increase its production capacity
- To make tea more acceptable and fashionable like coffee
- To come up with new flavours /formulation of the tea, tea houses etc to popularize the concept of tea in India
- Large and untapped rural market for branded tea companies like HUL and Tata Tea

Threats

- Global competition
- Low cost of production in some countries like China,Sri Lanka and Kenya
- Import of tea from other countries

- Cost escalation on account of increase in the cost of production

Porter's five forces analysis

Industry rivalry (High)

- There are approximately 700 tea companies in India hence there is intense rivalry amongst them
- Market is dominated by large number of unorganized players
- Industry growth is slow
- There are low switching costs

Bargaining power of buyers

- There a large number of buyers for purchasing the product
- The buyers have many options available
- Low product differentiation in terms of taste
- Low switching costs
- Buyers purchase a large proportion of the industry's total output

Bargaining power of suppliers

- There are a large number of producers of tea in India
- There are substitutes like coffee available
- Supplier's product creates low switching cost

Threat of substitutes (moderate)

- There are many substitutes such as coffee, cold drinks, juice
- The young generation maybe not very accustomed to tea
- Existing customers are loyal
- Substitute's price may be lower. With so many players in the industry a price war is unavoidable
- The substitute's product quality and performance may be better

Threat of new entrants (high)

- Large untapped rural markets for branded tea segment in rural India and Indian tea in global markets
- Encouraging government policies like food and beverages act

Present market scenario

The tea industry occupies a place of considerable importance in the Indian economy producing fourth of the world's annual tea output. Among them some gardens produce high quality tea and employ around 1.26 million people at tea plantations and ten million persons derive their livelihood from tea.

With domestic demand at an estimated 825 million kgs as of 2009, India is one of the largest consumers of tea globally. However as domestic demand accounts for over 86% of the country's tea output and since tea imports are permitted only for re-export, India's share of the global tea trade is on the lower side. Nevertheless, exports have a critical role to play in maintaining the demand-supply balance in the domestic market. Although tea is produced in 14 states in India, five of them- Assam, West Bengal in north India and Tamil Nadu, Kerala and Karnataka in South India account for over 98% of tea production. Within that North India alone accounts for around 75% of India's total tea production of which 85-90% is consumed in the domestic market.

The buoyancy in tea prices which started from 2006 has come as a relief for bulk tea players who had to cope with depressed prices for almost a decade since 1999. Tea prices after reaching a peak in 1998 went into a steady decline thereafter, with average domestic prices dwindling from around Rs 76.43 per kg in 1998 to a low of around Rs 58.05 per kg in 2005. Although global tea prices also declined 1999 onwards driven primarily by oversupply, the decline in average prices was sharper and of longer duration for Indian teas vis-a-vis the teas from Kenya and Sri Lanka, India's two main rivals in the exports market.

This was on account of a number of factors like lack of marketing initiative by the Indian players to look for export markets beyond the CIS countries; proliferation of small growers and bought out leaf factories which led to a decline in the quality of tea produced and failure to check spurious varieties of tea from being traded as premium tea (which affected the image of Indian

teas in the export market), higher cost of production of tea in India on account of the higher social costs here; and existence of certain non-tariff barriers like residual-pesticide specifications imposed by a number of importing countries.

All these factors led to the loss of key export markets, which in turn increased supplies in the domestic market, thereby bringing a downward pressure on prices. This apart, tea prices also came to be affected by the quality factor which came into play during the early part of the current decade when the delay of re-plantation activities in the latter half of the 1990s began to tell on quality and hence on prices.

Most players had deferred re-plantation during the latter half of the 1990s to cash in on the buoyancy in tea prices during 1997-98 but when the sharp price decline happened subsequently their financial position got so weakened that they were unable to make the required investments in their tea estates.

Increasing domestic consumption and exports to an extent is behind the current buoyancy in prices

The gradual depletion in pipeline stock since 2003 following a secular increase in domestic consumption on the one hand and muted increase in production on the other has been the main factor supporting the increase in tea prices from 2006 onwards. According to ICRA's estimates while the average growth in production during the period 2003-08 was just 2.0% or so, domestic consumption would have increased annually at around 3.5% during the same period. The steady increase in domestic demand, range-bound export volumes and low growth in production absorbed the pipeline stock over the years and left virtually no carry-forward stock at the end of the 2008 season.

Areas of Concern

Despite India's historical success with the tea industry, in recent years the industry has faced serious competition in the international and national market which has led to the present crisis. Many factors have been cited as causing the crisis in the Indian tea sector since the late 1990s.

Analysts agree that the dramatic fall in prices is one of the most significant causes of the crisis. The worst affected are plantation workers and small growers; many estates failed to withstand

the downward slide of price and hence moved out of business leading to closure of tea estates that employ thousands of workers and of factories to which small growers might sell their products.

Tea prices in India are being driven down by many factors

- a) Decline in demand for Indian tea in the global market
- b) Defects in auction system
- c) Poor price realization
- d) Defective market structure
- e) Increase in cost of production

Defects of auction system

India 's tea market is facing yet another paradox which could be explained in terms of glaring gulf between the price charged by dealers and retailers. The widening gap between consumer and auction is cutting into margins realized by the tea producers but is not being passed onto the consumer in the form of lowered prices.

The margins of intermediaries are too high. Price paid to plantation and small tea growers has fallen since 1998. Retail prices for tea have increased. Average prices for medium quality tea sold in Indian market increased from Rs 85-90 per kg in 1999 to Rs 123.05 in 2009.

The auction houses are very important constituent of tea marketing structure. The important feature of tea auction sale is that the producers/growers do not take part in the selling process directly. The brokers in the market sell tea on behalf of producers. Brokers generally do not accept bid from unknown buyers.

The large buying companies use their market power as they have their own network of sales and marketing all over the country and export tea after blending to push down their prices and take the advantage of depressed market to pay low prices. They are clearly benefiting from the current situation. These big companies which are in monopolistic competition in consuming countries always try to stabilize prices. The longer transaction time and higher transaction cost like warehousing charges, transportation cost and brokerage charges etc are some other problems with the auction system. It takes about 35 days for the entire transaction process to complete.

Poor price realizations

The price of tea has been on a long term decline while production costs have been rising putting immense pressure on tea growers. The decline in prices has been mainly due to growth in production in the face of sluggish demand. Major causes of poor price realization are due to the following reasons:

- Competition between producing countries for a share of the world market was one of the major causes of falling price of Indian tea. Presently 36 countries of the world produce tea and many of them are big producers. They prevent the establishment of a monopolistic leader in the world tea market to ultimately allow fair and free competition in the market.
- Demand for tea is rising very slowly(1.5-2%),therefore the only way to increase market share of export by a country is at the expense of the competitors
- Because of the dominance of auction system as a day-to-day intermediary between producers and buyers the actual producers have been unable to maintain direct contact with the ultimate customer of tea.
- Tea is a perishable product. Its quality and flavour deteriorates very quickly. Therefore it is frequently necessary to cut prices to clear stocks.
- Tea producers have to stay in market despite cut in prices of their produces as they have invested a huge sum of money.
- There is a major shift in the consumption and thereby composition of demand for tea in the developed (importing) countries. The increasing use of tea bags and soluble instant tea effectively reduces the quantity of tea needed per cup and also raise the demand for plain cheaper tea.

Defective market structure

The tea value chain comprises all the stages from green leaf production from the bushes to finished product and sale to the customers. Value is added to the leaves at each stages of the supply chain each with an associated cost. This includes the cost of plucking and sorting, factory packing, internal transportation, ware housing ,sales changes (auction/direct sale), freight, insurance, interest, blending, packaging and retailers sales cost etc. In general most of the agricultural produces ,value addition is done at the downstream in the higher processing and retail stages of supply chain and this is also true with tea.

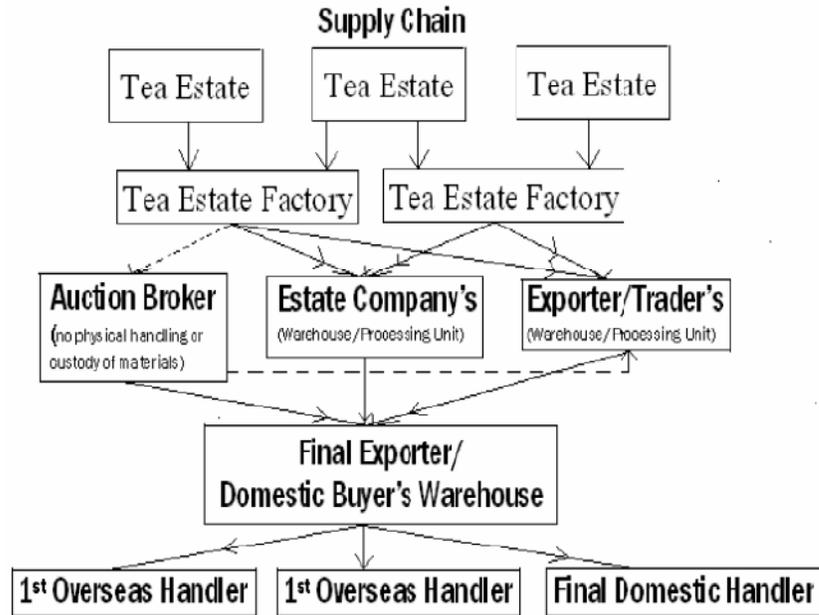
While tea is ready to drink item, the downstream stages such as blending, packing and ultimate marketing are the most profitable one. This part of the value chain is controlled by a handful multinational tea packers and brokers. As a result these MNCs can considerably influence world retail price. These are the indications that big companies have been influential in keeping world market price low, which affect the sustainability of tea industry.

Increase in cost of production

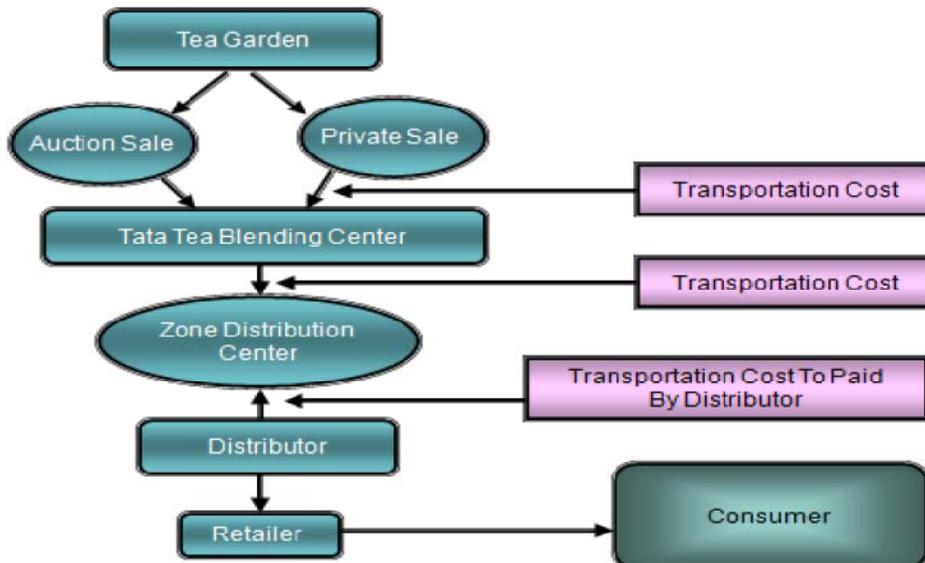
While market prices for tea have been falling the cost of production has been on the rise in India, putting downward pressure on profitability and income. One factor which is closely related to the cost of production is of course productivity in terms of volume per hectare which is affected by change in climate, soil fertility, age of the tea bush, high over head cost, poor agricultural practices etc. The stagnation in productivity in many big estates is compounded by high land labour ratio. Productivity declined from 1996 to 2008 in the large gardens.

Labour costs account for around 60% of the unit cost of production and approximately 55 to 75 percent of that labour cost is on plucking. High fuel cost, dilapidated infrastructure including transportation and unstable law and order situation in and around garden area etc which result in high cost of production. Field and factory worker's productivity is also considered low in India.

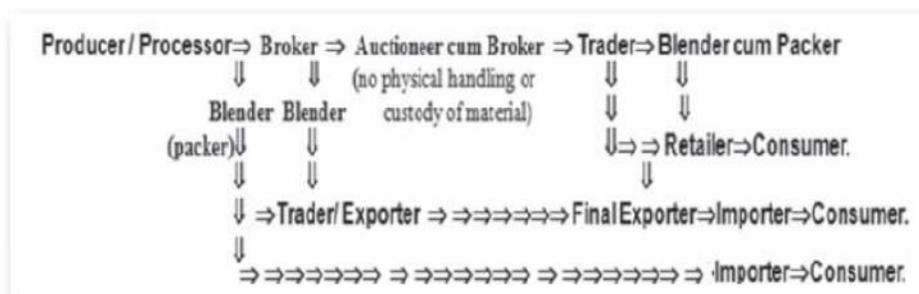
Supply chain of Tea



Distribution channel



Stakeholders in the supply chain



The supply chain from production to marketing i.e. from primary producer to ultimate wholesaler, final exporter and first overseas handler is illustrated in the diagram.

Primary Marketing Options

- Private sale in the form of loose tea in bulk packages directly to the primary buyers
- Private sale in the form of consumer packs (tea content not exceeding 1 kg in one pack) directly to the primary buyers
- Direct export in the form of loose tea in bulk packages and/or in consumer packs to overseas buyers
- Dispatch of loose tea and/or packet tea to consignee or commission agent or as stock transfer (non auction route)
- Dispatch of tea in loose form in bulk packages for sale through public tea auction

Holistic sustainability assessment of tea farms in Southern India

The parameters used to calculate the degree of sustainability were

- State(S) – measured/estimated value for individual indicators
- Driving force(D) – Estimation of the pressure on the state

Using these two factors the degree of sustainability was calculated.

The degree of sustainability (DS) = Difference between State and Driving force

Sustainable agriculture can be defined as one that adopts productive, competitive and efficient production practices while protecting and improving the natural environment and the global ecosystem as well as the socio-economic conditions of local communities in conformity with human dignity.

The 3 aspects considered broadly were

1. Economy
2. Socio cultural aspects
3. Ecology

These factors were further subdivided into the 12 variables /indicators

Natural resources

- Energy
- Water
- Soil

Management

- Bio-diversity
- N&P emission potential
- Plant protection
- Waste

Economy

- Economic stability
- Economic efficiency

Social situation

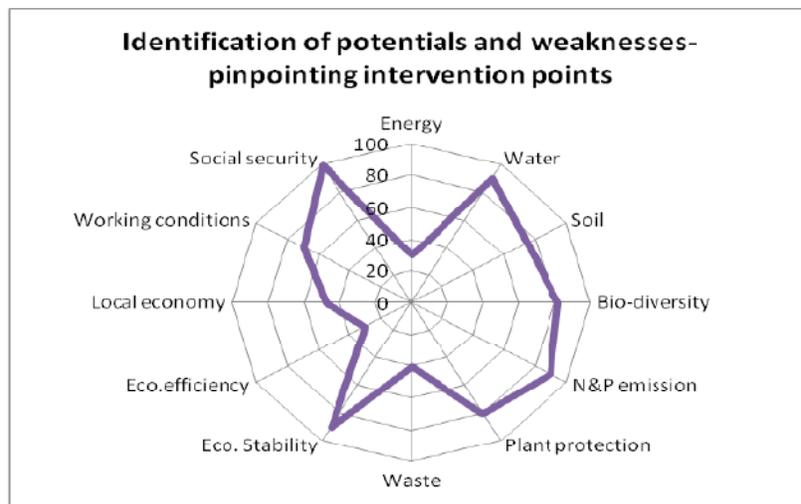
- Local economy
- Working conditions
- Social security

Illustration for the indicator biodiversity

Parameter	Name	Value
State parameter 1	Farming system	16
Driving parameter 1	Proportion of intensely used farmland	58
Driving parameter 2	Plot size	52
Driving parameter 3	Weed control	10

Using the above values the degree of sustainability was calculated as

$$DS = S - D = 16 - 40 = -24$$



The study region: The Nilgiris, Tamil Nadu

The sustainability evaluation was done on selected tea farms in the Nilgiris, Tamil Nadu, India.

Observations

Social security

- Salaries are below the minimum living wage
- No legal protection: big estates have to provide accommodation / epf (employee provident fund) is compulsory / the minimum wage for employees is high
- Big farms (more than 10 ha) need to provide all this social standards, therefore farmers divide their property among relatives and register the farm under different names
- Family network is strong in but due to the low salaries paid to the workers, we assume that also their private solution (family network) is insufficient
- Lack of insurances
- Limited legal protection of workers
 - Big estates have to fulfil social standards
 - Property division of bigger farms
- Private solutions to compensate for lacking insurances are insufficient
- Substantial difference in the income of the farm managers and the employees

Working conditions

- Tea requires work of 52 weeks a year
- Unpaid holidays
- Some companies require leaves on Sunday's → Sunday work
- Further education is not practiced

- Regular load for the women of around 20 kg / occasionally more than 50 kg heavy weight

For the male workers to carry

- Work is no pleasure to them / compensation for the work is not judged as adequate by the workers / the formation of union is not really possible
- For plucking further education doesn't make sense
- There is education needed in application of pesticides

Economic efficiency

- Economy of scale / to compensate risk aversion is done (milk other fruits, etc.) by farmers
- High value for tea is taken (market value)
- Cross financing the tea production through the supply business
- High interest on the owners' equity considerably influences the profit

Economic stability

- Debts: some farms do not have debts / other have restricted access to debts, but if they have debts and they make a loss it results in a bad parameter
- Low number assets. (Shed for tea leaves / irrigation equipment / vehicles). Permanent crop is also seen as assets -> state for tea good /for coffee mainly medium
- Low price will have a negative impact on the state of the tea plantation

Bio-diversity

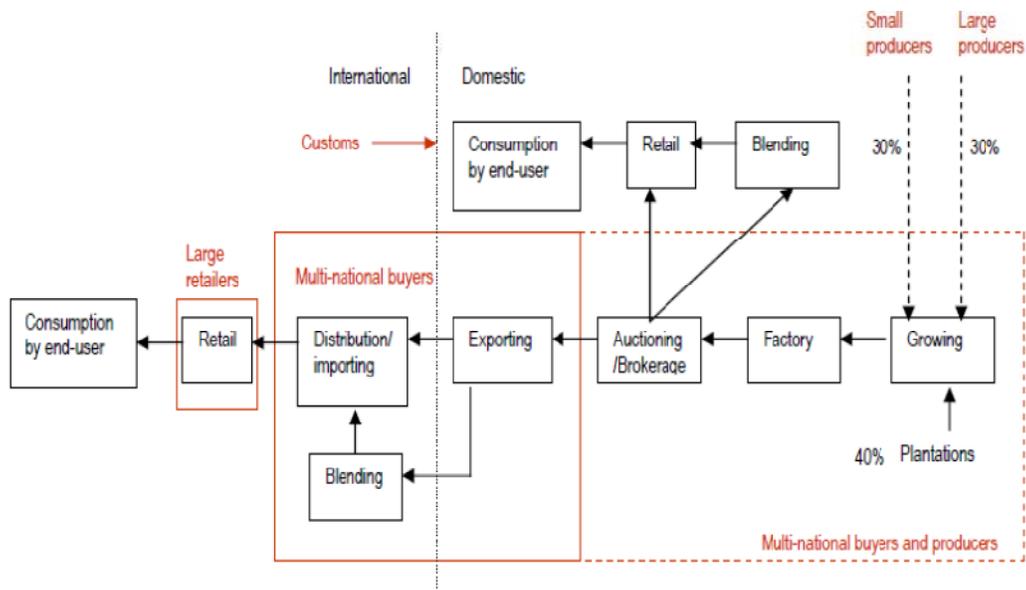
- The (inter-) cropping system is very similar among the farms
- As a general trend: The smaller a farm is the more diverse crops are grown on the same plot

- Low awareness of the importance of ecological compensation zones and buffer zones
- Management influences Biodiversity: e.g. the use of herbicides, fertilization

Plant protection

- Due to a high disease pressure in tea, pesticides need to be applied regularly
- Application techniques of pesticides are deficient
- IPM is not practiced on several tea farms
- Copper-based fungicides are sometimes used instead of an available substitute product
- Disposal of pesticide containers is a problem

Value chain analysis



The objective of mapping the tea value chain is to demystify and quantify the associated risks and costs of the supply chain of this commodity. In doing so the transaction point risks and

opportunities are exposed and this will also help financial institutions that are keen on lending for agriculture to assess the low risk transaction points for lending for this commodity.

Methodology

To perform the value chain analysis the cost of production and cost of processing data needs to be collected from a field survey with a sample of tea growers. The cost of borrowing will be based on lending costs and average commercial loan costs for farmers and processors. Other costs such as transport, handling, processing, and packaging are reflective of what the factory that provides these services incurs under the circumstances of the value chain described. The analysis follows the chain to the tea auction marketing point to provide a complete picture of the value chain.

Tea Value Chain Map						
	Category of Transaction	Value	Value added	Return on Investment	Months	Annual Return on Investment
1	Input Retail					
	Fertilizer-NPK					
	Herbicide- Glaphosate					
	Commercial Finance					
	Total Cost of Inventory					
	Input price to farmer					
2	Production					
	Fertilizer application					
	Labor					

	Herbicide application labour					
	Pruning labour					
	Harvesting labour					
	Purchased inputs					
	Sub-total(production costs before financing)					
	Commercial finance					
	Total costs of production					
	Collection shade price					
3	Factory					
	Procurement of green leaf					
	Transport					
	Handling					
	Total cost of procurement					
	Processing costs					
	Manufacturing costs					
	Factory overheads					
	Packing materials					
	Transport(inputs-factory to farmers)					
	Transport					
	Marketing & Warehousing costs					

	Total cost of processing					
	Total cost to factory(before financing costs)					
	Trade finance					
	Total cost to factory					
	Price to factory					

Transaction points, Risks & Opportunities

Tea growing and processing and marketing like many other commodities is by nature a risky investment. There are several conditions which once met mitigate the risks associated with tea commodity to a reasonable degree. These conditions include

- Guaranteed market
- Reliable access to inputs and labour
- Short production and marketing cycles
- Quality maintenance through timely picking, transportation and processing

The value chain for the crop is both short in numbers of actors and in time duration of completing the transactions. This creates both positive and negative factors in comparison to other crops. The scope of control is much tighter is the inputs supplier, the transporter and the green leaf buyer and the processed tea marketer is identified and is the same strong body. However the negative aspect here would be limited opportunities to finance along this value chain with the exception of growers and processor.

Transaction Point	Risks
Input Supply	Late and inadequacy of inputs delivered
Production	<p>High storage & Distribution costs</p> <p>Gestation period longer than loan period</p> <p>Decline in green leaf price</p> <p>Non-availability of labour</p> <p>Loan term is longer than production and marketing cycle</p> <p>Yield is lower than expected</p> <p>Sales proceeds diverted other than for repaying the loan</p> <p>Delayed receipt of sales proceeds</p> <p>No transport to pick the green leaf</p>
Processing & Marketing	<p>Transport is inadequate</p> <p>Price is below cost of procurement and processing</p> <p>Growers not delivering green leaf</p> <p>Processor may default</p>

International Value Chain of the Indian Tea Industry

The concept of value chain is understood as an organized system of exchange from production to consumption, with the purpose of increasing value, changing the margin of price and profit and transforming inputs and competitiveness. The value chain concept can be defined as the combination of design, product development, marketing, production and retailing by which products progress from conception to the final consumer. The tea value chain is acquainted with

the role of various stakeholders who control and who add value along the chain. The tea industry in India is a buyer-driven commodity chain, despite the fact that marketers dominate the tea industry by concentrating on marketing.

The pre and post-auction value chain for tea is long and complicated and involves a number of stakeholders. This includes producers including small tea holders, workers, BLF owners, brokers, buyers, blenders and national and international buyers and retailers. The buyers include buying agents (at the auction centre's), sub-agents (in the upcountry markets), wholesalers and semi-wholesalers (in the smaller upcountry markets and international level). Other major stakeholders include retailers and consumers.

The value chain is also organized in many different ways mainly as a producer-driven commodity chain and buyer-driven commodity chain. Generally, buyer-driven commodity chains refer to those industries in which large retailers, marketers and branded manufacturers play pivotal roles in setting up decentralized production networks in a variety of exporting countries, typically located in the third world. The distinction between buyer driven and producer-driven value chains highlights the role of retailers and brand name companies (the buyers) in structuring global trade in labour intensive products and the role of producers in structuring global production in capital and technology intensive industries.

Stakeholders of Value chain of Indian Tea

(a) **Tea producers cum sellers**, who are either estate factories or BLFs or cooperative factories who manufacture tea from tea leaves. These producers are considered as sellers in tea auctions.

(b) **Auction organizers**, who are designated as Tea Auction Committees or Tea Trading Associations. An auction centre provides the producer with an opportunity to have his product inspected, tasted, graded, valued, catalogued and exhibited, so to speak, by specialists; the brokers, who know the particular need of buyers and countries, choose and bid, depending on the marketing conditions and the tea on offer.

(c) **Tea brokers**, who are auctioneers of tea, and sell tea on behalf of sellers at the auction centres.

(d) **Tea buyers**, who are purchasers of tea in the auction centres. These buyers are not necessarily the bidders for tea in the auction centres all the time. They could be packeters/blenders who buy for their own brands or packets. Buyers are also agents who buy tea at auctions on behalf of other tea dealers.

(e) **Warehouse keepers** are those who store tea to be sold in the auction in warehouses. Producers-cum-sellers can also store their teas meant for auctioning in their own warehouses. There are no restrictions on the location of such warehouses for storing teas at present. The details of role and functions of major stakeholders are described separately below.

Dynamism of Buyers

'Buyer' means any person, firm, company, corporate body or cooperative society including a consignee or commission agent with a place of business in tea in India who receives tea by way of stock transfer from the manufacturer. They can be engaged in purchasing or procuring tea either from public tea auctions or directly from manufacturers of tea, but the term 'buyer' excludes those who buy only instant tea and other value added products of tea i.e. tea bags, packet teas, flavored tea, quick brewing black tea etc., and also excludes the secondary buyers who do not source their tea either from auctions or from manufacturers.

Indian buyers at auction centres are more fragmented compared to some of the international auction centres. Many of the buyers are registered in more than one auction centre in India. For example, Tata Tea itself has a number of registered buyers and they are registered in various auction centres. It is also the same in companies such as Hindustan Lever and Wagh Bakri. The high fragmentation rate of buyers may not be severe due to this multi registration system with the various auction centres.

Tea buyers are also buying agents who buy tea at auctions on behalf of other tea dealers or companies. The details about whom each buyer is bidding in auction are not transparent. Buyers also keep secret as to whether they buy tea from auction to sell in the same state or to upcountry buyers.

Small and Regional Buyers

Among the scattered buyers, the small buyers are a majority. Since small buyers focus on regional level, it would be an advantage to the regional/local marketers. It would further help to get tea at local/village level at a reasonable price. The small buyers play a major role in the domestic loose tea market, where loose tea has the major share (60 per cent). In addition, they focus on the regional level and maintain a low price, which is widely focussed on the majority of the people. The loose tea traders at the regional level mainly procure their requirements from auction centres and none of them have their own plantations. Most of the packagers are dominated by big players and come under the roof of one or two companies. The scattered and fragmented small buyers have less power to hold the price realisation, but it takes place only if big buyers are dominant.

Packeters and Marketers

Marketers include picketers/blenders and a majority of them are national brand companies. Large retailers or marketers only supply the specifications for the branded products they order. These companies design and/or market but do not form part of the production field. They form a new breed of manufacturers that do not have factories. This separates the physical production of goods from the design and marketing. For instance, Wagh Bakri, a large regional player focused in Gujarat will not integrate its operations backward by acquiring tea estates. They meet their requirements from auction centres.

Retailers

They determine when and what products are to be made available as well as their characteristics (quality, appearance, packaging and so on). This involves interpreting market trends and specifying what products should be produced to meet these trends. It may also involve specifying the processes to make the product.

Role of Major and Big Companies

Current trends show that big companies are withdrawing from production and concentrating only on brand business. Big companies are becoming increasingly reluctant to operate in the old estate system of production because it is highly labour intensive and the bulk of costs for producing tea

goes towards labour wages. MNCs are no longer as keen on production processes as they are on organizing and managing commodities and diversifying the production with various other agricultural and other commercial crops i.e., garments, footwear, consumer electronics or big brands of tea. Big companies capture the value of the product at various stages of the value chain. Among Indian tea companies, the two biggest multinationals are Hindustan Lever with over 45 per cent of the retail market share followed by Tata Tea with an estimated market share of 28 per cent in the packet tea segment. Goodricke Group Ltd. is the third most important multinational tea company in India. These major companies also control the small tea growers by controlling the packet tea segments in various producing countries.

Role of Small Growers

The role of small growers is marginal in the whole value chain process of the tea industry. At present, their role is only in production sector and as we have seen, only up to the level of supply of green leaves to BLFs. They share 21.2 per cent of the total production of tea in India. Many of them are not aware of the different processes of tea value chain and role of the key stakeholders of industry. Small tea growers as reported above share only a marginal benefit and the larger profits go into value added processes and into the final products.

Position and Role of Consumers

Historical factors and agents have influence over the preference of consumers and these preferences have evolved over a period of time. Consumer preferences are heterogeneous and they have a decisive role in the value chain of tea in the domestic market. The agents and actors in the buyers' chain make tea dependent upon the nature of the consumers at various levels and strata of society.

Tea Board of India

The Tea Board plays a key role in the industry as a regulatory and promoting body. It is a statutory body set up under the Tea Act, 1953 to promote all round development of the tea industry and comes under the administrative control of the Ministry of Commerce and Industry, Department of Commerce.

Major functions of Tea Board of India

- Development and promotion of the tea industry.
- Extension of tea cultivated areas and increase production
- Improvement in the quality of green leaves and made tea through quality upgradation programmes
- Undertaking promotional campaigns for increasing exports of tea and domestic promotion
- Promotion of co-operative efforts of growers
- Implementing developmental schemes and productivity and develop marketability
- Implementing self-help groups to enhance high quality in green leaves.
- Research and development initiatives.
- Initiated price sharing formula for small growers and price subsidy schemes.

Direct Sale vs Auction Sale

There are mainly two types of sale practices in the industry; one is through the auction centres and the other through direct marketing from the tea estates. The function of the auction systems is the same in all regions within India. The nature of direct sale may vary from region to region. It is basically the choice of the producers and the rule of sale practice, which depends on the interactions with sellers and buyers. Despite the various benefits of selling tea through the auction system, private sales have been on the rise in all the regions in India. Direct sale is increasing and most of the producers prefer direct sale to the auction system.

The increase in direct sale has become dominant in North India where there are more big growers than in South India. It is also due to the high possibilities of the direct marketing of organic tea and orthodox tea to foreign market countries where tea is sold at much higher prices as compared to the auction price.

Data Analysis

District	Area under hectares	Production in 2007(Kgs)
Darrang	41710	84976
Goalpura	4451	6847
Kamrup	3953	3982
Lakhimpur	6756	9165
Dibrugarh	122514	225321
Nowgong	8758	12429
Sibsagar	94611	118622
Cachar	32312	44131
Karbi Anlong	2185	1677
North Cachar	4069	4735
Darjeeling	17818	10007
Terai	24359	87502
Dooars	72918	138835
Tripura	8962	7856
Bihar	2000	1098
Uttaranchal	1585	231
Himachal pradesh	2348	769
Manipur	1319	110
Sikkim	194	82
Arunachal pradesh	2570	5842
Nagaland	1898	191
Meghalaya	564	259
Mizoram	650	75
Kanyakumari	310	70
Tirunelveli	818	1360

Madurai	550	2129
Coimbatore	12628	32189
Nilgiris	66156	124783
Palghat	860	2012
Trichur	530	1594
Trivandrum	433	220
Quilon	1149	166
Kottayam	827	177
Idukki	27692	38484
Wynaad	5470	13313
Chikmagalur	1459	3541
Coorg	296	652
Hassan	386	995

Regression analysis of area under tea and production levels

<i>Regression Statistics</i>					
Multiple R	0.969723				
R Square	0.940362				
Adjusted R Square	0.938706				
Standard Error	12488.85				
Observations	38				
<i>ANOVA</i>					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	88536346119	88536346119	567.6446324	1.23818E-23
Residual	36	5614971548	155971431.9		
Total	37	94151317667			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	-261.213521	2305.562678	-0.113297081	0.910424498	

X Variable 1	1.723591539	0.072342929	23.82529396	1.23818E-23
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Relationship between production and area under tea

The regression model is as follows

$$Y = -261.213 + 1.7235X_1$$

This part concentrates on area under tea in different geographical parts of India and their relationship with tea production

- The highly adjusted R^2 value(0.938) reflects the significance of the model
- The value of coefficient β is 1.72 which indicates that changing the area under tea by one unit will change the level of production by 1.72 kgs
- Now to further analyze how to improve productivity one needs to analyze whether the different geographical areas have tea bushes that are young/mature/old.
- Using this data a multiple regression can be performed to determine which type significantly increases the yield of tea.

Recommendations

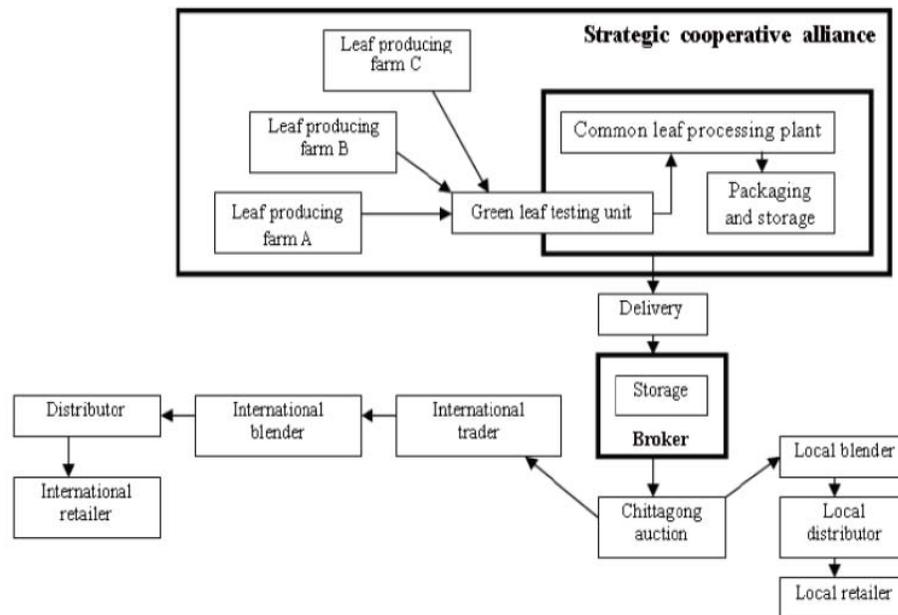
Strategic decisions and value chain modification

Strategic decisions are needed for certain areas to increase their level of production. Strategic alliance of the poorly managed gardens can be an option to improve the yield, production and quality of leaves.

In this case small gardens can operate as leaf growers and there exists a central leaf buying unit which is operated by the government. The responsibility of the central leaf buying unit is to buy leaves from the growers and sell them to the central leaf processing unit. The two stage handling of green leaves actually reduces the quality of made tea and this in turn reduces the price of tea in the auction market.

Through the strategic alliance model, a two stage handling process for the green leaves is proposed. In this model, central leaf manufacturing facility will have a buying place equipped with quality measurement device. Leaf producers will carry the green leaves until central leaf processing plant. That machine measures the quality of green leaf before buying from the strategic growers and set the price accordingly depending on the grades of the leaves. As the quality of green leaves deteriorate very fast, proper handling is necessary for maintaining quality.

This model if adopted would improve the situation which may maintain the quality of green leaves due to one level handling and at the same time encourage the high performing tea gardens to receive elevated price. The model uses a common leaf processing facility established by strategic cooperative alliance farms. It can also reduce fixed cost related to the establishment of multiple factories. Tea gardens can either use existing machineries for establishment of a manufacturing unit or can share their common fund for this purpose. Besides cooperative alliance model can use their common fund for land development and maintenance of tea bush which may solve scarcity of resources. In the proposed value chain plucking and leaf carrying type of primary activity cost is shifted to leaf producing company.



In this manner the strategic alliance firms can concentrate more on production and producing better quality leaves by nurturing and maintaining the tea bushes. Currently tea estates are reluctant to uproot their old tea plants due to the risk of lowering the production of tea. The proposed model reduces this type of risk as few gardens will supply the green leaves without hampering production. The cooperative alliance model can keep the production level to an optimum level.

This model can be applicable to both large and small gardens that have the intention of increasing production and making good quality tea with low cost and risk. As the alliance would use a common production facility, manufacturing cost should be lower. The focus should be on identifying small tea gardens (below 200 hectares) situated in close proximity with low yield as uprooting and maintaining of tea bushes will be easier in these gardens.

Tea gardens identified for adopting the policy of strategic alliance (from analyzing research data)

(Based on those areas that have a yield less than 0.5 kgs /hectare)

- Uttaranchal
- Manipur
- Himachal Pradesh
- Sikkim
- Nagaland
- Meghalaya
- Mizoram
- Kanyakumari
- Quilon
- Kottayam

It is understood that strategic cooperative alliances could be started from these depending on the close location amongst them.

Method to assess financial implication of this model

Input variables

- Production
- Land utilization
- Data related to costs and prices
- Five years is considered for simulation

Cost analysis of Strategic Cooperative Alliance Tea gardens – Approach to be followed

	Target costing approach for SCA gardens	Variable costing approach for SCA gardens	Non SCA gardens
Young bush area(hectare)			
Production change/Hectare			
Sales price			
Unit cost			
Unit variable cost			
Total sales			
Total variable cost			
Total fixed cost			
Depreciation cost for re-plantation			

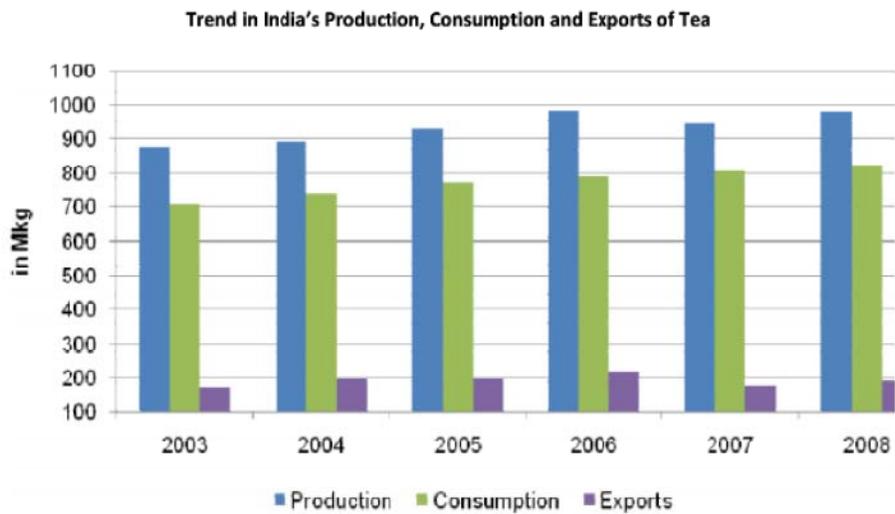
Total cost			
Profit/loss			

Annexure 1(Data collected from secondary sources)

The following table shows the amount of tea production (tones) by leading countries in recent years. Data is generated by the food and agriculture organization (FAO) of the United Nations as of January 2010.

Country	2006	2007	2008
China	1047345	1183001	1257384
India	928000	949220	805180
Kenya	310580	369600	345800
Sri lanka	310800	305220	318470
Turkey	201866	206160	1100257
Vietnam	151000	164000	174900
Indonesia	146858	150224	150851
Japan	91800	94100	94100
Argentina	72129	76000	76000

Iran	59180	60000	60000
Bangladesh	58000	58500	59000
Malawi	45009	46000	46000
Uganda	34334	44923	42808
Other countries	189551	193782	205211
Total	3646452	3887308	4735961



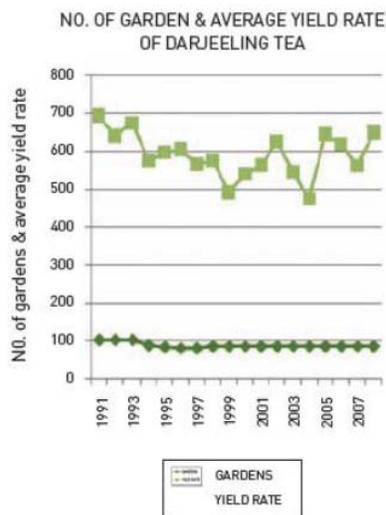
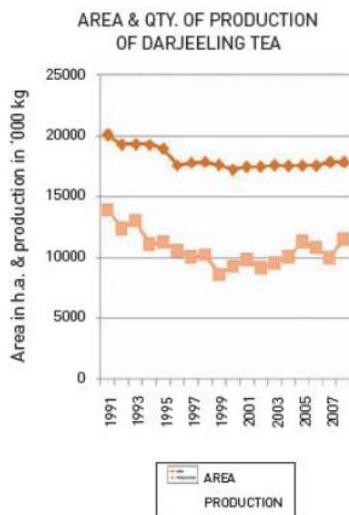
Source: ICRA research

Tea estates, area, production and average yield of Darjeeling Tea, 1991-2008

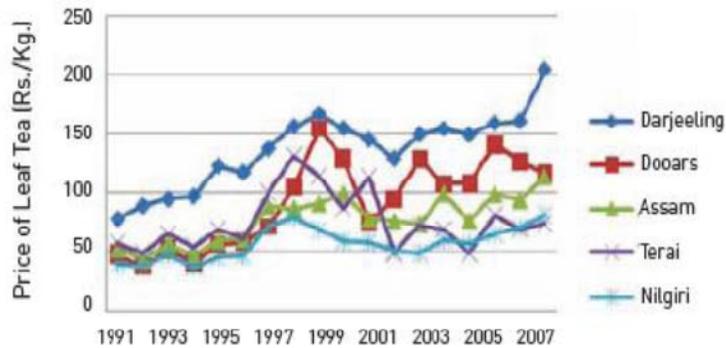
Year	Number of tea estates	Area under production (ha)	Total production (thousand kg)	Average yield (kg per ha)
1991	102	20 085	13 932	694
1992	102	19 309	12 355	640
1993	102	19 324	13 026	674
1994	88	19 280	11 092	575
1995	83	18 932	11 298	597
1996	80	17 551	10 614	605
1997	80	17 760	10 054	566
1998	85	17 830	10 253	575
1999	85	17 604	8 653	492
2000	85	17 228	9 281	539
2001	85	17 453	9 841	564
2002	85	17 463	9 180	526
2003	85	17 580	9 582	545
2004	85	17 522	10 065	574
2005	85	17 539	11 312	645
2006	85	17 542	10 854	619
2007	85	17 818	10 007	562
2008	85	17 818	11 586	650

Source: Tea Board of India

Evolution of the area, quantity of production, number of estates and average yield rate of Darjeeling tea (between 1991 and 2008)



Auction price of orthodox leaf tea of various origins in India



Annexure 2

Organizations, Companies and Individuals spoken to during primary research

Organizations

- Upasi Tea Research Foundation(United Planters Association of Southern India)
- Tea board of India
- Tamil Nadu Tea Plantation Corporation Ltd

Companies

- Wagh Bakri Tea Group

Individuals (details will be shared in my presentation based on consent from the parties involved)

The questions were structured to cover details about markets, marketing, farming, pricing and so on as detailed below

Questions to farmers

Markets

Whom do you sell your products to?

- Local consumers
- Traders
- Exporters

Where do you sell your products?

- Within the district: Markets/Collecting centers
- Outside the district: Markets/Collecting centers

Marketing

How do you market your products?

- By yourself
- Collectors/ traders comes to buy

How do you transport your products to local consumers/traders/exporters?

Do you know what purpose it is being bought for?

- For fresh consumption
- For use in processing plants as raw materials
- For export

Prices

How do you set prices with buyers?

- Starting price
- End price

Are you satisfied with the price?

What are the factors governing the price in your area?

- Seasonality
- Availability of product
- Bargaining/negotiating strength
- Availability of processing unit in the area
- Availability of markets
- Road/transport system
- Market information

Who are the major players in determining the price in your area?

- Collectors/Traders
- Processors
- Exporters

Factors affecting success of the product

- Availability of planting materials and inputs
- Quality of planting materials and inputs
- Technical knowhow and technical support services
- Land
- Other

What are the major problems and constraints?

- Availability of planting materials & inputs
- Quality of planting materials & inputs

- Technical know-how & technical support services
- Supporting infrastructure- processing units, road & transport, collection centers, credit land, quality control units
- Information on price and market
- Good relationship with buyer

What could be possible solutions and areas of intervention?

- Availability of planting materials & inputs
- Quality of planting materials & inputs
- Technical know-how & technical support services
- Supporting infrastructure- processing units, road & transport, collection centers, credit land, quality control units
- Information on price and market
- Good relationship with buyer

If the possibility is there, would you be willing to produce the product in larger quantities?

- No (under conditions)
- Yes ,but with some conditions
- Yes and even if there are some bad years
- Undecided

Questions to Processors

- Which category of processor?
 - Garden owner
 - Bought out leaves

- Mixed
- What is the area coverage and number of farmers and producers
- Whom do you sell your products to?
 - Local consumers
 - Traders(national)
 - Traders(international)
 - Exporters
- Where do you sell your products?
- How do you market your products?
 - Oneself
 - Through traders
 - Through packagers
- What is the purpose for which your product is being bought?
 - For fresh consumption
 - Value addition(packaging)
 - Export
 - Others(oil extraction)

How do you fix raw material price?

- By negotiation
- Association fixes the price
- Starting price

- End price

What are the factors governing the price in your area?

- Seasonality
- Availability of the product
- Bargaining /negotiating strength
- Availability of processing unit in the area
- Availability of markets
- Road/transport system
- Market information

Who are the major players in determining the price in your area?

- Collectors/traders
- Processors
- Exporters

Quality check

Who sets the criteria?

Who checks for quality?

Where is the inspection done?

Cost involvement for accreditation?

What are the areas for improvements?

References

- 1) ISI Emerging Markets(EMIS)
- 2) Sector Analysis Reports – IBEF(Indian Brand Equity Foundation),
- 3) Tea Board of India
- 4) Tea in the BRIC (Brazil, Russia, India, China) Countries Market Overview and Forecasts to 2014" Published
- 5) Sector study on Tea ,International Trade Centre, UNCTAD/WTO
- 6) Independent equity research, Plantation Products: Tea
- 7) E-auction of tea in India, Basudeb Banerjee , Chairman, Tea Board of India
- 8) Product chain study, orthodox tea , Government of Nepal, Ministry of agriculture and cooperatives
- 9) Sustainability issues in the tea sector, A comparative analysis of six leading producing countries, SOMO
- 10) Strategic cost management of tea industry, adoption of Japanese tea model in developing country based on value chain analysis
- 11) Quality attributes and hedonic price analysis of tea, Satish Y deodar & Vijay Intodia
- 12) Supply chain management for competitive advantage ,By Rangaraj
- 13) Tea,a popular beverage, Journey to a sustainable future,Unilever
- 14) Creating value for competitive advantage in supply chain relationships: the case of the Sri-Lankan Tea industry
- 15) Tea in Tamil Nadu, A commodity study in nilgiris and Coimbatore district

