UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

TEA

An INFOCOMM Commodity Profile

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Notes

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The profile has not been formally edited.

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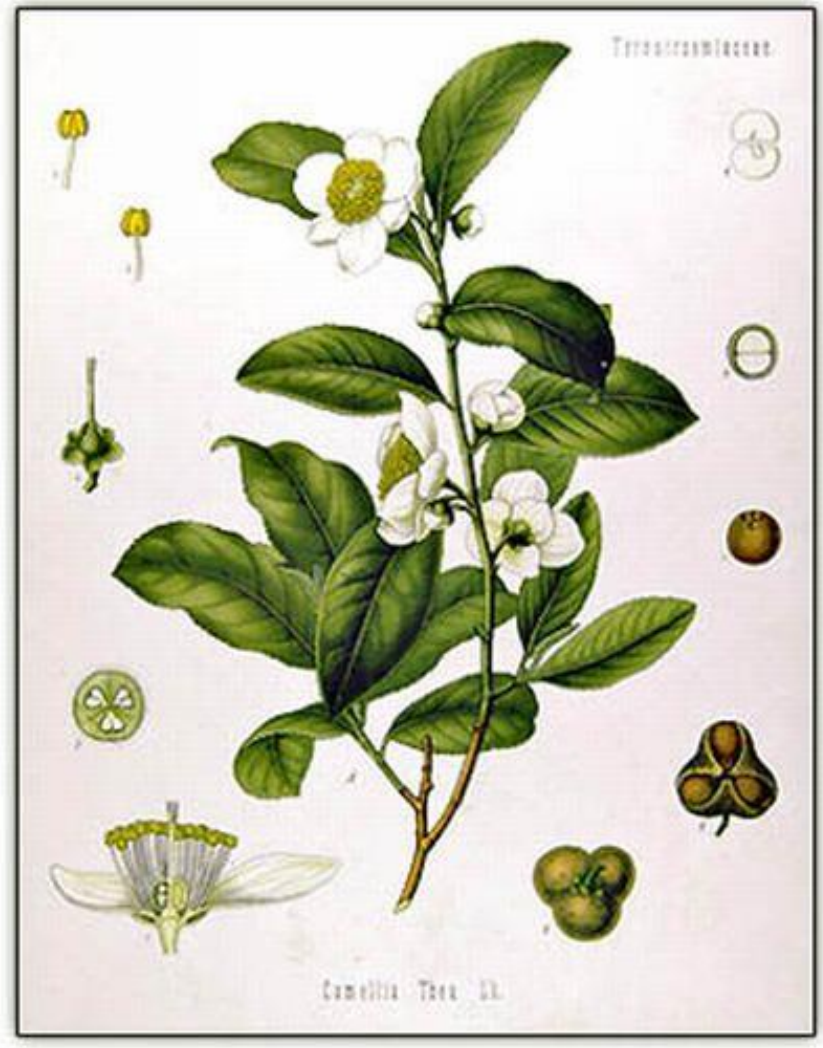
1. Overview

1.1. Description

Figure 1: Tea plant



Scientific name: *Camellia sinensis*

Family: Theaceae

Common name: Tea, tea bush, cha, chai

Leaves: Bright green and shiny

Flowers: Scented, occurring singly or in clusters of two to four.

Fruits: Brownish-green, containing one to four spherical or flattened seeds.

Origin: Native to East, South and Southeast Asia, but it is today cultivated across the world in tropical and subtropical regions.

Source:Camelilia Sinensis, Franz Eugen Köhler, Köhler's Medizinal-Pflanzen, 1897

1.2. Origins; early trade history

The story of tea starts in China in 2737 BC. China is considered to be the source of the indigenous tea plant and the birthplace of the first tea gardens.

According to the legend, the Chinese and renowned herbalist Shen Nung, was sitting under a tree while his servant boiled drinking water, when few leaves from the tree blew into it. The emperor was then attracted by the pleasant fragrance rising from the steaming infusion. The tree was a Camellia Sinensis, and the brew that was accidentally created was the tea beverage.

Tea was one of the commodities that was a part of colonial trading. While the Portuguese were the first to trade tea in the Far East, the Dutch spread the consumption of tea in the West, both in their colony and in their home country. The custom of drinking tea quickly spread to France, Germany and later to Great Britain.

Tea has achieved popularity in other parts of the world only since the middle of the 17th century. Commercial cultivation of tea gradually expanded to India, Indonesia, and Sri Lanka until the middle of the 19th century.

The first record of cultivation of tea in Africa was in 1850; Commercial production in Africa started in former British colonies such as Kenya, Tanzania and Malawi. However, the tea industry developed until the middle of the 20th century.

Now, tea plants are distributed worldwide and grown commercially in tropical, subtropical and temperate climatic regions of Asia, Africa and South America, and in limited areas in North America, Europe and Australia.

1.3. Cultivation; harvesting; processing; transportation to consumer

Tea is a perennial crop. Recently planted tea bushes need at least three years to attain maturity and start yielding green leaves for manufacture. The economic life of the plant is about 40 years, but sometimes the shrubs are kept in production 60 -70, or even 100 years. The life of the tea bush is more than 100 years as its economic age. However, it depends upon the type of tea plant, climatic conditions and the care received from the growers during the lifetime.

The geography and setting of tea plantations worldwide show marked differences in terrain and climate which result in the different qualities displayed from various sources. Tea production is geographically restricted to a few areas around the world and it is highly sensitive to variations in growing conditions. The chemical composition of the tea plant changes in response to the different growing condition, and during processing.

The tea plant has to grow in a broad range of conditions.

- Tea can grow from subtropical climates to tropical climates, but generally requires a fair amount of humidity and rainfall during the growing season.

- Altitude is one of the key influencers of climate. With a higher elevation and temperatures become more variable, rainfall generally becomes higher. Tea soils must be acid.

- The seasonality of precipitation is important in affecting the quality of tea, and tea leaves harvested at different times will produce a finished product with different characteristics.

Growing and harvesting of tea

Throughout history, there have been various methods of tea growing and harvesting. Nowadays, in light of modern scientific evidences and the complexities of tea, its cultivation and harvesting have more or less been standardized across the world.

The growth cycle is from 240 to 365 days, fruits takes from 270 to 360 days to mature and seeds are normally produced after 3 years.

The young plants that have been carefully nurtured in nurseries for up to a year are re-planted in especially prepared fields following the natural reliefs of the land, or sometimes, on specially prepared terraces to help irrigation and to prevent erosion. The plants are planted 3 to 5 feet (1 to 1.5 meters) apart. It takes approximately two to three

years, depending on the elevation and climatic conditions, before these plants are ready to produce tea.

Pruning

When the young plant develops to a height of about half a meter above ground level, it is cut back to within a few inches off the ground to develop it into a flat-topped bush. Once fully developed, a tea bush is approximately 3 ½ feet (1 m) in height, and continues to be pruned in cycles of 1-2 years at low altitude and 3-5 years at higher altitudes. The timing of pruning also dependent on the rainfall, as sufficient moisture in the soil is required.

Plucking or Picking

Plucking consists of harvesting fresh young shoots from the mature tea bushes. Tea shoots are picked, which generally named as "plucking". A tea shoot at the correct maturity for the manufacture of high quality made tea, comprises of an unfurled bud with two or three soft leaves. 10 kg of green shoots (75-80% water) produce about 2.5 kg of dried tea. Optimum yield is about 3.0 t/ha[1].

Quality and biochemical constituents of tea leaves depends on the method of harvesting. Tea-plucking is done manually (hand-plucking) or with machine (automated picking). However, hand-plucking remains the best method of tea harvesting. Automated picking is a non-selective process, which can damage the leaves and affect the quality.

Tea Processing

As soon as the newly picked leaves reach the factory, processing begins. Tea processing is the method in which the leaves from the tea plant are transformed into the dried leaves for brewing tea. The categories of tea are distinguished by the processing they undergo. Tea processing involves different manners and degree of oxidation of the leaves, ending the oxidation, forming the tea and drying it.

Tea processing for all tea types consists of very similar traditional methods with only minor variations. They main different steps are the following:

The whitering: Tea leaves begin to wilt soon after plucking, with a gradual beginning of enzymatic oxidation. This process is called withering, and is used to eliminate excess water from the leaves and allow slight oxidation. Cold or warm air is blown through the leaf for 12 to 18 hours.

Maceration: Teas are bruised or torn in order to promote and accelerate oxidation. The bruising breaks down the structures inside and outside of the leaf cells and allows, from the co-mingling of oxidative enzymes with various substrates, which allows the beginning of oxidation.

Fermentation: Macerated leaf is held in a climate-controlled room (warm, humid) for up to few hours.

Fixation: This step is done to stop the tea leaf oxidation at a desired level. This process is accomplished by moderately heating tea leaves, therefore deactivating their oxidative enzymes and removing undesirable scents in the leaves, without damaging the flavour of the tea.

Rolling or Shaping: Damp tea leaves are rolled to be formed into wrinkled strips, by hand or using a rolling machine, which causes the tea to wrap around itself. This rolling action gives the leaves a curled appearance and further improves the taste of the tea.

Drying: Fermented leaf is dried in a current of hot air, which stops the fermentation and reduces the moisture content.

Curing or Aging: Secondary fermentation, or baking, is done to reach the drinking potential. Flavoured teas are manufactured in this stage by spraying the tea with aromas and flavours or by storing them with flavourings.

Grading: The dry leaves are size graded and separated, large from small and broken from unbroken leaves. This classification gives grades to tea leaves.

Transport to consumer

[1] Source: Fao Ecocrop,(code 599)

The main means of transport are: shipping, road transport (truck), railroad and air aircraft.

The graded tea is packed in containers for shipment. It is transported in various containing as wooden tea chests, paper laminate sacks, polythene bags in gunny sacks or in cardboard cartons[2].

Shipping period starts approximately six weeks after harvest, with the tea shipped at the beginning of a season being the most valuable. Later varieties of tea are mostly of lower quality. Tea reaches retailers between 20 to 30 weeks after it has been plucked on the estate or smallholding[3].

1.4. Varieties; quality standards; classification

Varieties

All the varieties of tea and their related traditions and activities have their source in one plant: ***Camellia sinensis***, native to southeastern Asia. Tea refers to the beverage produced with leaves of this plant. There are around 1,500 cultivars derived from two main varieties.

Those varieties are the following:

- *Camellia sinensis var. sinensis*, the Chinese multiple-stem shrub with small leaves, which is long-lived and can withstand cold weather.
- *Camellia sinensis var. assamica*, the Indian single-stem plant with larger, softer leaves, which is more delicate, shorter-lived, and best grown in subtropical and rainy regions.

A third variety named *Camellia sinensis cambodiensis*. This variety has been crossbred to achieve certain traits in other cultivars; however, this variety is not typically used in commercial tea production.

After the harvesting, difference in colour and shape of tea leaves is due to the manufacturing process and the varying levels of oxidation to which they are exposed. We may distinguish between the following type of tea:

Green Tea

Green tea leaves are not oxidized and are unfermented. It has the largest number of varieties, each with its own unique flavour and aroma.

Black Tea

Black tea is a fully oxidized tea. It is generally stronger in flavour than the less oxidized ones. Black tea retains its flavour for several years and is the most widely produced and drunk tea in the world.

White Tea

White tea is uncured and unoxidized or only slightly oxidized. Traditionally, only top buds and young leaves, not fully opened, are used.

Oolong Tea

Oolong, is a traditional Chinese tea produced through a unique process including withering the plant under strong sun and oxidation before curling and twisting. It combines green tea's finishing techniques and black tea's oxidation.

Pu-erh Tea

Pu-erh or Pu'er is a variety of aged dark tea. Fermentation is a tea production style in which the tealeaves undergo microbial fermentation and oxidation after they are dried and rolled. This tea improves with age.

Cut-tear-curl (CTC)

The processing has three stages (crush or cut, tear, curl). The tea leaves may be either hand plucked or harvested by machinery. The leaves are then processed through the CTC machine, have a palletised appearance and are always broken sizes. The method is less costly to produce and made a less bulky tea that would brew more quickly and with an even, robust flavour.

[2] Compendium of Guidelines for Tea (Camellia Sinensis)- Tea&Herbal infusions Europe
[3] UKTea&Infusion- www.tea.co.uk-

Tea grading

At the end of the manufacturing process, tea consists of a mixture of different sized pieces of leaf. The harvesting and manufacturing of tea has a great impact on the finished size of the leaf, thus the tea grade. In order to ensure an even brew, these particles must be sorted into different grades (or sizes). These grades are not standardised worldwide and may vary according to origin.

Most black teas are graded and sold according to leaf or particle size.

Black tea grading

The classification is done by hand or by passing the leaves though sifters with graduated mesh sizes to separate them out. The resulting piles of tea are then classified according to size, type and appearance.

The method given by the International Standard Organization provides a classification of tea according to their particle size distributions; **ISO 11286:2004 :** Classification of grades by particle size analysis[4]

Bellow, an overview of the various grades:

Whole leaf tea

Whole leaf tea refers to tea that has not been broken or torn during production. The size and shape of the leaf varies widely, according to the types of leaves used, and how it is processed.

Table 1: Designation for whole leaf tea

Designation	Abbreviation
Pekoe	P
Flowery Pekoe	FP
Orange Pekoe	OP
Flowery Orange Pekoe	FOP
Golden Flowery Orange Pekoe	GFOP
Tippy Golden Flowery Orange Pekoe	TGFOP
Fine Tippy Golden Flowery Orange Pekoe	FTGFOP
Special Finest Tippy Golden Flowery Orange	SFTGFOP
Souchong	S

Broken leaf tea

Broken-leaf tea is tea that has been torn or broken, but is still in large enough pieces to be recognizable as pieces of leaf.

Table 2: Designation for the broken leaf tea

Designation	Abbreviation
Broken Pekoe	BP
Broken Orange Pekoe	BOP
Flowery Broken Orange Pekoe	FBOP
Golden Broken Orange Pekoe	GBOP
Golden Flowery Broken Orange Pekoe	GFBOP
Tippy Golden Broken Orange Pekoe	TGBOP

Dust and Fanning

Extremely small pieces of tea, sometimes called dusts, are left over after higher quality grades of tea. Fannings, which are traditionally treated as the rejects of the manufacturing process have in the last century experienced a huge demand in developing countries, mainly because they are low-priced and produce a very strong brew.

Fannings

They are finely-broken pieces of tea leaf. They have a recognizable coarse texture and are the grade of tea used in most tea bags.

Table 3: Designation for tea faninings

Designation	Abbreviation
Golden Orange Fannings	GOF
Flowery Orange Fannings	FOF
Broken Orange Pekoe Fannings	BOPF
Flowery Broken Orange Pekoe Fanning	FBOPF

Dust

Tea made by pulverizing larger pieces of leaf. Dust is a much finer powder than fannings.

[4] Source: www.iso.org

Table 4: Designation for tea dust

Designation	Abbreviation
Orange Pekoe Dust	OPD
Broken Orange Pekoe Dust	BOPD
Broken Orange Pekoe Fine Dust	BOPFD
Fine Dust	FD
Dust A	D-A
Orthodox Dust	OD
Orange Pekoe Dust	OPD
Special Dust	Spl. D
Golden Dust	GD

The grading of green and oolong teas is a little subtler and less structured than the black teas ones. Unlike black tea, the grading of green tea is related to the quality and the flavour.

Green tea is priced according to the variety of the tea, the province and estate where grown and the flush or picking.

Oolong tea grading refers to the quality of the resulting tea. The scale range from "Common," which is the worst to "Extra Fine" which is the best.

Crush-tear-curl Tea (CTC) grading

Because the CTC process breaks the leaf, there is no whole-leaf CTC tea and thus CTC tea is divided into broken-leaf, Fannings, and Dust.

A tea's grade does not necessarily indicate flavour or quality. They are rather determined by many different factors including: the country of origin, the variety of the tea, the garden or estate, the elevation, the particular flush and the manufacturing after harvesting.

Other grading systems

Grading by region

Each tea-growing region yields teas with flavour profiles and characteristics unique to that part of the country. The region-of-origin gives buyers an indication of what to expect in terms of flavour.

Darjeeling tea offers distinctive characteristics of quality and flavour, and also a global reputation for more than a century. Those characteristics are due to the cultivation and production area in tea gardens in the Darjeeling district.

Grading by elevation

Because altitude affects the growth, chemistry and flavour of the leaf, altitude can also be an indicator of taste and quality and can be distinguished by the altitudes at which it is grown.

Grading by appearance and style

Tea from China is sold under creative names describing their appearance and style.

Silver Needle, the highest grade of white tea, is named for its long, flat, needle-like shape covered in a silver-white down. Japan follows a similar grading system, categorizing teas based on their style, leaf shape and production method, such as Sencha, a steamed fresh green tea with a rich, thick and grassy flavour.

Quality standards

There are no internationally harmonized regulations on tea, but there are guidelines (CODEX), regional regulations (European Union), as well as national regulations. ISO standard was broadly accepted, with countries accounting for about 80 % of exports of black tea, having adopted national standards that were either identical or only slightly different[5].

Quality standards imposed by major private companies in key markets have important implications for export of tea products from developing countries. In order to export tea, companies have to comply with local and foreign standards and regulations pertaining to food quality and safety. In this regard the International Standard **ISO 3720** has been widely accepted by national standards institutions, it should be noted that such standards are voluntary and optional.

[5] FAO Intergovernmental group (IGG) on tea, Quality improvement of tea: application of ISO standards 3720 in world tea trade. 2008

Requirements for Black and Green tea (ISO 3720)

The objective is to specify the plant source from which black tea is to be manufactured, to set requirements for certain chemical characteristics (indication that the tea has been subjected to recognized good production practice)

Account may be taken of characteristics such as:

- Appearance of the tea before preparation of a liquor
- Appearance of the infused leaf
- Appearance, odour and taste of the liquor.

An expert tea taster can assess whether a tea would be unlikely to comply with the chemical requirements.

The ability of the countries that currently do not follow this standard to adjust would determine their competitiveness and continued presence in the world tea market.

Maximum Residue Limits (MRL)

As one of the food safety standards, MRLs set maximum levels of pesticide residue that can be traced in food products to ensure food safety[6]. MRL incidents for tea are quite low[7]. However, as in the case of many other food safety issues, these incidents are increasing.

The adoption of MRLs could lead to loss of market shares, particularly in Asia, while African exporters might benefit. The cost of is a major concern, particularly for small traders. Larger and often more integrated tea traders have a bigger capacity to absorb, this cost.

6 CODEX maximum limit for pesticide: www.codexalimentarius.org

7 FAO IGG, Implications of Maximum Residue Levels (MRLs) on tea trade. 2015

1.5. Uses

The tea extracts are used in several areas of beverage industry. However, besides its main function as a beverage, tea has various special uses. Some of these uses include non-food products.

Tea extracts uses in beverages

The use of tea extracts in general foods gives a healthier appeal to consumers. The market potential for these foods may be improved by the presence of natural antioxidants.

- Tea extract is used as a flavour in alcoholic beverages, with Fruit combinations in soft drinks, functional drinks and flavoured waters.

- Speciality and herbal Teas:

Fine varieties: The raw material is taken from the plants which are well grown in an excellent habitat with advantageous ecological conditions and are made with delicate flush buds and leaves of the tea.

Herbal teas: they are made by processing teas together, with medicinal herbs. They are used for their curative properties.

Uses in the general food industry

The use of tea extracts in foods gives a healthier appeal to consumers. The market potential for these foods may be improved by the presence of natural antioxidants. Tea extracts are used for breads and baked goods, frozen dairy desserts, candy and seasonings.

Refined tea seed oil makes oil suitable for use in manufacture of oil for burning purposes, and in is considered a favourable substitute for rapeseed, olive, or lard oils.

Uses in non-food industry

- Cosmetics industry

Tea-derived cosmetic ingredients function mostly as antioxidants and skin-conditioning agents: flower extract, leaf oil, leaf powder, leaf water, root extract, seedcoat powder, seed extract or powder, are

reported to be used in different cosmetics products (shampoo, rinse-off, bath cosmetic etc.)[8]

- Nutraceuticals, Functional Foods and Dietary Supplements

Nutraceutical properties of polyphenols in tea have stimulated the food and supplement industries to develop and promote polyphenol-rich products. The antioxidative activity makes them a potential candidate as functional ingredients for a number of foods and beverages. The health care market is promoting the use of green tea extracts in tablets, capsules, and health drinks.

- Tea is also a potential source of food colours (black, green, orange, yellow, etc.)

- The tea oil is a non-drying oil and is not subject to oxidation changes, thus making it very suitable for use in the textile industry.

Tea by-products

Tea factories and tea plantations produce a number of by-products and waste materials. Value added utilization of by-products for the recovery of bioactive compounds has been widely recognized as an important area of research due to economic and environmental considerations. The research and development is making efforts to utilize these by-products, for extraction of caffeine, extraction of pigments and polyphenols, chemical substitutes, source of organic fertilizer, bio-manure and livestock feeding.

1.6. Pests, Diseases

Horse-hair blight, and twig dieback/stem canker are very destructive diseases found in major tea-producing regions. Blister blight is a serious disease affecting shoots of tea and is capable of causing enormous crop loss.

Figure 2: Blister blight

Common Name: Blister blight

Pathogen: *Exobasidium vexans*

Geographic distribution: Most tea-growing areas of Asia but is not known to occur in Africa or the Americas.

Symptoms: First, pale yellow translucent spots, and then circular blisters on leaf underside, then white velvety and later circular brown spot

Blister blight is the most serious disease affecting shoots of tea and is capable of causing enormous crop loss.

Source: Agricultural Research Service, United States Department of Agriculture)

More than one thousand species of pests and are known to attack tea all over the world. Mites are serious pests of tea and they damage the green tissues of leaves, thereby decreasing the photosynthetic efficiency, resulting in yield reduction. Infestation leads to discoloration of tea leaves.

Example of mites:

Figure 3: Yellow tea mite

Common Name: yellow tea mite

Scientific Name: *Polyphagotarsonemus latus*

Geographic distribution: World-wide

Part of plant attacked: Flush leaves

Symptoms:

-Flush leaves are cupped or otherwise distorted.

-Corky brown area between main veins on leaf underside.

-Browning of flushes

Source: Agricultural Research Service, United States Department of Agriculture)

[8] Source : Camellia sinensis, Cosmetic Ingredient Review, 2014

Pressure of diseases and pests on tea depends also on the control strategy of the plantation and the agro-ecological and climatic environment, which is different in specific tea growing regions and varies at different altitudinal levels within the regions.

Reducing pesticides may be possible by reducing pressure of diseases and/or pests through cultivation in less disease and less pest prone environments (altitude), in selecting disease or pest tolerant clonal tea-varieties, by choosing pesticides with low interference on natural enemies of pests & diseases and by applying pesticides according to economic threshold[9].

1.7. Environmental and social impacts

Several social and environmental issues combined with restricted natural resources and rapidly growing populations, are a growing concern. There are several social issues that influence the overall quality of the tea produced and the productivity in general. Although traditionally tea is produced on estates, smallholders are on the increase. Poor yields and Quality have led to high vulnerability of smallholders' livelihoods.

Environmental impacts

Tea cultivation has multiple environmental effects. There is significant biodiversity loss when high biodiversity areas such as forests are transformed to tea plantations. Large areas of biodiversity replaced by monoculture, logging for firewood to process tea and habitat conversion have cause extensive deforestation. Land clearance has harmful environmental impacts and provides ideal conditions for a number of pests. Thus, the Hazardous application of harmful pesticides is negatively affecting the local and wider environment. It reduces soil biodiversity and generates water pollution, harming aquatic life, animals and people who depend on the biodiversity.

As the impact of climate change is expected to increase, socio-economic effects will also grow as tea production declines because of this climate change, and pressure to boost crop yields under the potential shortage of available land and agro-climatic resources, increase[10].

Social impacts

Table 5: Social impacts

Estate and Factory workers	Small-scale farmers
Working conditions :	**Working conditions :**
Poor working and living conditions	- High dependence on tea for livelihood
- Wages for workers on large plantations are at minimum-wage levels	- Workers are often paid less than those on large estates
- High casualization of labour	- Child labour
- Low wages	- Low wages
- Few social benefits (medical care, housing, education, pension)	- Inadequate access to basic facilities such as drinking water, sanitation and electricity
- Independent trade unions are non-existent or ineffective	- Pesticides are often applied without appropriate protection
- High discrimination, gender inequality	- Poor yields and quality have led to high vulnerability of smallholders' livelihoods
Housing: overcrowded houses, deplorable conditions	
Health issues: diseases, malnutrition	

1.8. Nutritional properties

The major interest in tea and health come from the high level of antioxidant tea polyphenols in green tea and black tea.

Tea includes polyphenols, alkaloids, amino acids, carbohydrates, proteins, chlorophyll, volatile organic compounds, fluorides, aluminium, minerals and trace elements.

One group of chemicals thought to be responsible for the beneficial health effect of tea are the

[9] Diseases and Pests of Tea: Overview and Possibilities of Integrated Pest and Disease Management, de H Lehmann-Danzinger, ٢٠٠٠

[10] Socio-economic implications of climate change for tea producing countries. Kaison Chang – Secretary and Margarita Brattlof

polyphenol, which include a group of plant chemicals named Catechins. This type of antioxidant may protect cells in the body from oxidative damage that may lead to cancers. Increasing interest in the health benefits of tea has led to the addition of tea extracts in dietary supplements and functional foods.

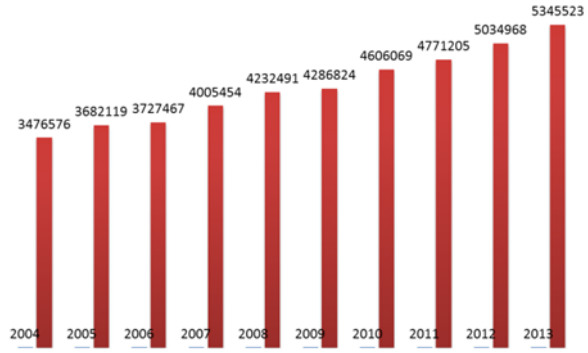
2. Supply

The tea supply chain implies many actors: producers, collectors, traders/brokers and packers involved. In this value chain a broad range of stakeholders and activities are involved in transforming the leaves on a tea bush to the beverage.

2.1. Production

From 2004, global tea production increased by nearly 54% to reach 5.35 million tonnes in 2013. This significant growth over the past ten years in tea output was mainly driven by improvement in yields, and production skills improvement.

Figure 4: World tea production, tonnes, 2004-2013



Source: FAOSTAT, 2015

2.2. Top 10 producers

China is the largest tea producing country, accounting for 36% of the world total with an output of 1.9 million tonnes in 2013. For other major tea producing countries, see table below.

Table 6: Top 10 producers in 2013, tonnes

Country	Production (tonnes)
China, mainland	1,924,457.00
India	1,208,780.00
Kenya	432,400.00
Sri Lanka	340,230.00
Viet Nam	214,300.00
Turkey	212,400.00
Iran (Islamic Republic of)	160,000.00
Indonesia	148,100.00
Argentina	105,000.00

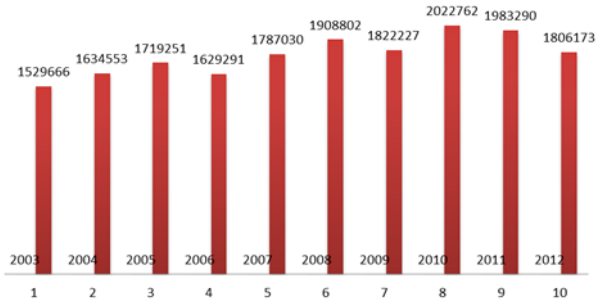
Source: FAOSTAT, 2015

2.3. Exports

Tea export is vital for exporting countries in terms of earnings for governments (foreign currencies and taxes), revenues and employment for rural households. In the global tea market, the two most important types of tea traded are black tea and green tea. black tea is predominantly produced and exported by Kenya and Sri Lanka. green tea is mainly grown, and consumed by China.

World tea exports reached 1.8 million tonnes in 2012; an increase of 18% compared to 2003, mainly driven by record shipments from producing countries such as Kenya and Sri Lanka.

Figure 5: Tea export quantities, tonnes, 2003-2012



Source: FAOSTAT, 2015

2.4. Factors affecting supply

Tea companies have taken up the challenge to identify good practices in sustainable agriculture that may enhance productivity, market value, and environmental and social performance.

The key factors are the following:

Agricultural practices, Labour development of mechanization and processing techniques.

- Weeding, tillage, fertility management, irrigation, plant protection, leaf maturity and season of harvesting

- Mechanisation, modernization, of tea harvesting

- Use of cultivars: the selection of specific plant characteristics that can be maintained by propagation. The fermentation ability, chemical components and agronomic characters vary with cultivars

- Impact of social cost such as welfare, health, food, housing, water etc.

Rising costs and low productivity can lead to sustainability issues and have negative consequences on social and environmental aspects of production

- Advances in agronomy and chemical inputs resulted in significant increases in tea yields per hectare.

- Labour and material productivity

Resource restrictions

- Tea processing is energy intensive. Withering, drying, grading and packing tea requires 4 to 18 kWh energy/kg of made tea[11]. A number of tea-producing countries (India and many in Africa) experience frequent outages and unreliable power supplies.

On a global scale, the resource restrictions (availability of water, energy and vital nutrients) are potentially led to higher prices and more competition for resources.

Land competition

Growing populations coupled with urbanisation, pressure on all available agricultural land. Tea has to compete with other food crops to access land for production. The competition for land will stress the importance of improving yields per hectare.

Climate change

As temperatures have risen worldwide, extreme weather and a lack of predictable patterns have also become evident. Climate change may cause fluctuating yields including several wild swings. It affects tea yield and the location where tea can be effectively grown. Higher than usual precipitation actually changes the volume of aromatics and metabolites in the tea plant which affect tea flavour.

Climate Change has impact on tea yields and is contributing to longer monsoon seasons, which could have a harmful effect on the tea, and the price farmers can command in the long term.

The impacts of climate change on tea production are the following[12]:

• Drying of the soils causing reduced water content in the tea, decreasing yields and negative impacts on quality

• Appearance of new pests and diseases

• Changes in the suitability of existing tea growing areas (In extreme cases, as temperatures become too high for tea cultivation, new suitable land areas need to be found.

• Reduced biodiversity and ecosystem function as the result of habitat conversion, high-energy consumption (logged timber)

• Sun scorch damage decreasing yields and lowering tea quality

• Reduced resilience of tea crops

• Uncertainty with application of fertilizers, High application of pesticides in some countries.

• Increase in extreme weather events such as droughts, hail storms, floods, frosts, extreme rainfall and landslides

[11] Sustainability Issues in the Tea Sector. A Comparative analysis of six leading producing Countries, Sanne van der Wal, 2008

[12] Mitigating Climate Change in Tea Sector, International Trade Centre 2014

• Increased financial vulnerability of tea farmers

New technology

The apparition of new technology and new markets such as online-based trading system may make a different system for trading tea more viable[13].

Infrastructure, Transport, delivery services

Logistics improvement such as roads leading to the buying centres etc.

Monopolisation and strategies of large tea company

Large tea company come up with competitive strategies such as product differentiation, cost leadership, niche marketing, branding and customer focus, fair trade, environment sustainability, strategic partnerships, outreach, market diversification and quick delivery for protecting their monopole in the tea business. These strategies ensure that the companies can always access tea at affordable prices without allowing other companies to venture into the market.

Government policies

Government policies such as input credit, infrastructure management, market research and training, land tenure, subsidies for the small scale tea suppliers, regulatory and support services.

Sustainability leadership in emerging economies

Emerging economies taking a greater leadership role in sustainability that could have a considerable impact on sustainability within tea production.

Investment

Investment attraction: If profitability is low within the sector, a lack of investment could mean higher interest rates for loans, a lack of investment in yields, an inability to replant and the growth of smallholders as a 'cheaper' way to produce tea[14].

2.5. Outlook

Tea production is geographically limited to a few areas around the world and it is highly sensitive to changes in growing conditions. They are at high risk and expected to significantly change under climate change.

Tea producing areas would have to be evaluated against climate projections, area of tea plantations, tea crop varieties, comparative studies of agro-climatic conditions, improved planting material, breeding of tea hybrids that cope better with climate change, tea production adaptability with climate zones and advanced technology should be considered.

Production outlook (ten years projections, from 2013 to 2023)[15]

- Black Tea

According to FAO, the 10 years projections from 2013 to 2023 indicate that world black tea production will grow at a slightly higher rate compared to the previous decade. Black tea production is projected to grow at 2.9 % annually to reach 4.17 million tonnes by 2023.

- Green Tea:

World green tea production is expected to grow at a faster rate than black tea, 8.2 % compared to 2.9 %, reflecting the growth in China where production of green tea is expected to reach 2.97 million tonnes by 2023 (FAO), mostly through increased productivity rather than an expansion in area.

Export outlook (ten years projections from 2013 to 2023)

- Black Tea

Black tea exports are projected to reach 1.67 million tonnes in 2023 (FAO), Export volumes for Asia are

13 The future of tea: A hero crop for 2030 | Forum for the Future- Steps towards a sustainable future for the tea industry

14 The future of tea: A hero crop for 2030 | Forum for the Future- Steps towards a sustainable future for the tea industry

15 FAO IGG, World tea production and trade Current and future development. 2015

projected to reach 820 921 tonnes compared to 743 384 tonnes for Africa. Major exporting countries are expected to remain the same with Kenya being the largest exporter followed by Sri Lanka, India, Vietnam, Indonesia, Malawi, Uganda and Tanzania.

- Green Tea

World green tea exports are projected to grow at 7.1 % annually to reach 750 981 tonnes by 2023. China is expected to continue to dominate with an export volume of 458 579 tonnes, followed by Vietnam at a distant second with 251 024 tonnes, Indonesia with 18 500 tonnes, and Japan at 7 631 tonnes.

3. Demand

Tea demand is increasing for high-quality, and high-value products.

3.1. Consumption

Tea is world's most popular and lowest cost beverage drinks after water. A wide range of tea varieties is consumed around the world but black tea is the most consumed.

Tea consumption is gaining popularity because of its health properties. There is also an increased demand for teas with specific health benefits (weigh loss functions, antioxidant) and new flavours (innovative ingredients).

Tea demand is headed in two directions:

- In tea-dominant markets, bagged black tea should see sustained development among regular drinkers, particularly in emerging markets.
- In non-tea markets, fruit and/or herbal tea has potential among consumers looking to avoid coffee or caffeine, as well as those looking for occasional health benefits. This latter group presents a high value proposition.

China, however, illustrates a different trend, as in other tea-growing regions; consumers retain a strong preference for local products and flavours.

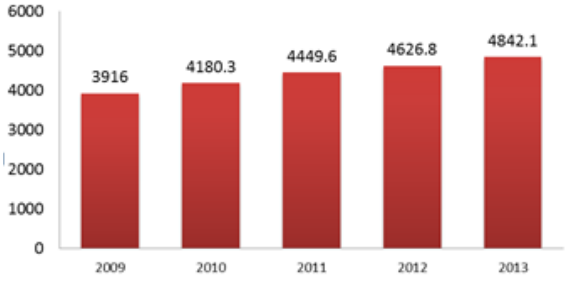
This creates a market for value-added tea culture comparable to instant coffee's global dominance.

There is a global revolution in tea culture. Consumers and operators appear ready to foment a global revolution in tea culture that echoes that of coffee:

- Beverage-based foodservice concepts (global tea-themed restaurant space)
- New eating occasions (healthier soft drink alternative)
- The rise of "out-of-home" consumption through the opening of major coffee retail outlets, and the impact of generic promotion through improved visibility, and retailing.

From 2009 to 2013, tea consumption increased by nearly 24% to reach 4.8 million tonnes in 2013. This increase was reinforced by the rapid growth in per capita income levels, particularly in China, India and other emerging economies, which have made a remarkable rise in consumption. Increasing numbers entering the middle class in those countries who lead to greater tea purchases.

Figure 6: Tea consumption, thousand tonnes, 2009-2013



Source: FAOSTAT, 2015

3.2. Top 10 consumers

Table 7: 10 biggest tea drinking countries in the world 2014 - Average annual tea consumption of each country (in pounds per person)

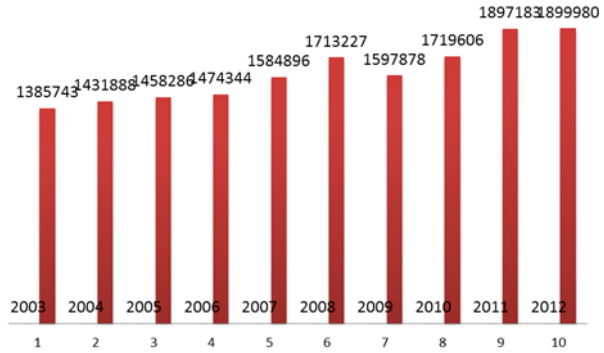
1	**Turkey**	**6.961**
2	Ireland	4.831
3	United Kingdom	4.281
4	Russia	3.051
5	Morocco	2.682
6	New Zealand	2.629
7	Egypt	2.231
8	Poland	2.204
9	Japan	2.133
10	Saudi Arabia	1.983

Source: FAOSTAT, 2014

3.3. Imports

There is a slight difference in trade flows between tea importing and exporting countries, however, it reflects preferences for kinds of teas, quality, prices and origins.

Figure 7: Tea imported quantities 2003-2012 (tonnes)



Source: FAOSTAT, 2015

3.4. Factors affecting demand

Tea demand is affected by the following key factors:

Prices

They have relatively smaller impact on the consumption of tea. However, 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. These changes in the consumption patterns of tea have also significantly contributed to the decline in tea prices.

Living standard

Incomes have relatively small impact on the consumption of tea. However, improvement in the living standard of people in several developed countries increase the demand of tea.

Demography

Growth of global cities and the domestic tea consumption in producer and large population countries, such as India and China affect the pattern of the demand.

New tastes, preferences

There is an emergence of a class of consumers who are health conscious and interested in healthy products.

Competing drinks

The alternative to coffee is tea. A reduction in the price of tea might result in the consumption of more tea and less coffee.

Innovative technologies

Creation and investment of innovative technologies, especially at the consumer level, as demonstrated by the coffee industry.

Seasonal demand

More tea is sold in winter for warmth during the cold season

3.5. Outlook

The global tea demand in the coming years is expected to be driven by a number of several factors.

There is a global revolution in tea culture; consumers and operators appear ready to stimulate a global revolution in tea culture such as the coffee one.

There is an an increasing demand from a growing segment of the population for new ingredients and new types of flavours such as spices (cinnamon, cardamom etc.), fruit and flavour combinations, flower and herbs (jasmine, mint etc.) and other substances into tea blends. Addition and diversification for a wide range of tea products need to be developed for balancing the supply demand chain.

Health is also a great influence on tea consumption. Emergence of a class of consumers who are health conscious are interested in health benefits that tea may provide as well as functional enhancements such as weight management or relaxation. Organic certification (pesticide-free products) and social enhancement, such as Fairtrade certification, is often an additional feature.

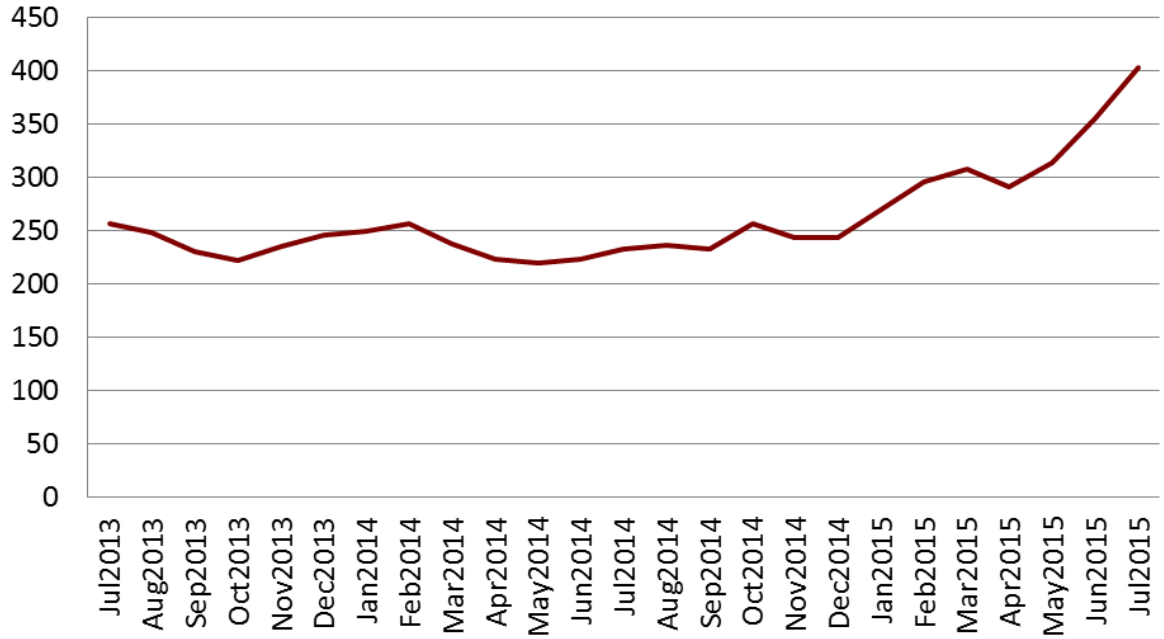
The perceived health benefits of tea among health-conscious consumers are often at the expense of other hot drinks. Strengthening consumer awareness of the health benefits of tea consumption through promotion program is a leverage.

4. Prices

4.1. Historical prices

In tea market, Mombasa black tea price (then benchmark of black tea market) averaged 403 US cents/kg in July 2015, an increase of 57% compared to July 2013. However, over this period, the prices showed short-term fluctuations led mainly by imbalances between supply and demand as well as weather conditions.

Figure 8: Tea, Kenya, BPF 1, Mombasa auction prices (¢/kg) , July 2013-July 2015)



Source: UNCTADSTAT, 2015)

4.2. Price outlook

The increase prices have also been spurred by an increase in demand, which can be attributed to market specific factors, such as supply shocks, which explained most of the movements in tea prices[16].

Droughts and pests that restrain production had larger effects on prices. Any over-reaction to the improvements in tea prices by expending output

[16] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011

uncontrollably, particularly in terms of bringing new areas under tea, would lead to a significant reduction in prices. A large positive shift in supply could favour an increase in exports and alter the supply/demand balance at the world level, which in turn would depress tea prices.

The continued conversion of rising emerging market consumers to the packaged tea category will ensure volume growth, but the industry must look to premium formats and innovation to command higher prices and generate value growth.

5. Markets

5.1. Market structure

Tea chain can be characterised as a vertically integrated production chain. 85% of total tea production is sold by a limited number of multinationals[17].

Within the chain, links between manufacturers and producers are common. Only a small number of companies controlling various production stages upstream and downstream, from processing to consumer branding.

The supply chain is organised as follow:

Global tea production

Global tea production is sold by multinationals, three of which control 1/5 of the market.

The market leaders are fighting to preserve market share and stimulate demand through innovation and advertising. They operate on the basis of their high degree of flexibility, their buffer stocks and their speculative transactions.

The major players are Unilever, Tata Tea and Twinings.

Production players:

Large estates

They can be larger than 8,000 hectares and are often part of a chain of plantations owned by large corporations. By focussing exclusively on the production of tea, these corporations can benefit from economies of scale. They buy tea directly from smallholders for primary processing in their factories.

Small-holder

Cultivation of tea is attractive to small farmers because tea provides work and income throughout the year. It requires relatively little investment, and the risk of complete crop failure is small. Small farmers may trade their green leaves to collectors, plantations or processors.

- Plucking and primary processing:

Activities such as withering, rolling, drying, grading and bulk packaging is carried out in producing countries. The largest proportion of the profits therefore does not accrue to the tea-producing countries, but are made abroad.

- Processing, blending and packing:

Tea manufacturing takes places either in estate-based or leaf factories (private or collectively owned factories which buy up green tea, process it and sell it). These activities are moved to producing countries in a strategic shift by several large packers in consuming countries.

Storage:

Tea is a perishable goods and cannot be stored for indefinite period without affecting the quality. Tea growers have to regulate the marketing of tea within six to eight months from the date of manufacture to look for maximum price.

The general intention of tea growers is to market their teas within four to six weeks from the time of its manufacture in order to recoup the liability towards cost involved in the tea field, estate factory or in trading factory.

Only financially sound tea producer/manufacturer is able to take risk of delayed marketing of their produce and can advantage any possible opportunity arising out of upward price movement in the tea market.

[17] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011

Downstream of the supply chain, concentration is extremely high: 90 % of Western tea trade is controlled by multinationals companies[18];

Packers, blenders

Tea companies dominate the trade; have a strong influence on transport companies, and source part of their supplies from their own plantations.

Although the processed tea is (technically) a finished product, downstream stages such as blending, packing and marketing are the most lucrative part of the tea trade. It is mostly carried out by the tea companies in buyer countries.

Direct links between buyers and tea packers often established

Trade

Trade between producers and buyers usually take place at auctions, facilitated by brokers. 70% of the global tea production is sold through auctions and 30% through private sales[19].

Brokers communicate information regarding supply and demand, and indirectly determine the price of tea.

A few firms dominate the sales in each auction centre.

The largest tea brokers are:

- J. Thomas & Co. Pvt. Ltd., handles one-third of all tea auctioned in India

- Carritt Moran and Co. Ltd., the world's second largest tea broker, handles 24% of auctioned teas in India[20]

Eleven brokers are registered with the Tea Board of Kenya

Four brokers are registered at Calcutta:

-J. Thomas & Co., Carritt Moran & Co, Contemporary Targett, Paramount Tea Marketing

The main auction centres are in India (Kolkata and Kochi), Sri Lanka (Colombo) and Kenya (Mombasa). Which is the auction centre for many other African tea-producing countries. Some other important tea-producing countries, such as China, Argentina and Turkey, do not have an auction system.

Retail

Retailers generally seem to add small margins on the tea but make their money from these promotional margin allowances from the packers. The concentration is high in the retail market at the national level[21].

Consumers

3/5 of the world production is consumed locally, in the producing countries. Only 2/5 is consumed in non-producing countries[22].

6. Public/private standards

Major standards active in the tea sector are the following: Fairtrade International, Organic (International Federation of Organic Agriculture Movements, IFOAM), Rainforest Alliance, UTZ Certified and the Ethical Tea Partnership (ETP). These initiatives certified 12 % of global production from 2011 to 2012[23]. Approximately one-third of production is actually sold compliant with voluntary sustainability standards on the international market (or 4 % of global tea production and 9 % of exports).

6.1. Contractual arrangements

Contractual arrangements for standard compliances are driven by the private sector (large-scale companies) and by public actors (governments, National tea boards).

[18] Sustainability Issues in the Tea Sector. A Comparative analysis of six leading producing Countries, Sanne van der Wal, 2008
[19] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011
[20] Carritt Moran and Co. Ltd. website
[21] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011
[22] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011
[23] The State of Sustainability Initiatives Review ,Tea Market, 2014

Industry partnerships

Recent development in standard-compliant tea production and sales is almost entirely driven by large-scale corporate commitments to sustainable sourcing. Implementation of these agreements involves a commitment to source tea applying sustainable practices and investment in capacity building.

Table 8: Industry commitment to sustainability standards

Company	Brand	Degree (percentage) of commitment	Standard	Implementation
Tata tea	Tetley	100% of Tetley branded tea	Rainforest	2016
Unilever	Lipton	100% of Lipton tea bags	Rainforest	2015
Unilever		100% of all tea	"Sustainably sourced"	2020
Master Blender	Pickwick	45%	UTZ certified	2012
		100%	Ethical Tea Partnership	
Twinings	Twinnings	100%	Rainforest	2015
Yorkshire Tea		100%	Rainforest	2015

Sources: Tetley, 2015; Twinings, 2015; Unilever, 2015. The State of Sustainability Initiatives Review ,Tea Market, 2014

Public partnerships

Public initiatives with private structures have allowed a select number of tea producing countries to gain exceptional access to the growing market for sustainable tea. Government investment can be expected to continue to play a significant role in enabling the conversion of tea production to standard-compliant practices.

- Kenya : The Kenya Tea Development Agency (KTDA) has played a major role in building local capacity for serving the growing sustainability market. The KTDA teamed up with Unilever, UK's Department for International Development for its Farmer Field School project, Rainforest Alliance and IDH to transform the Kenyan tea sector through training and certification of 560,000 smallholders toward sustainable production. The program aim to implanting sustainability standards across the country in organizational structures by providing training to maximize impact and to have a self-sustainable tea economy in Kenya after 2015, including strong market access through Rainforest Alliance .

The success of certification in Kenya was largely due to the implication of local partners that were able to quickly and effectively reach out to a large base of smallholders and engage them in the certification process. Moreover, smallholders in Kenya are well organized through the KTDA (Kenyan Tea Development Agency).

Engaging smallholders in countries where they operate on a one-to-one basis (not as a group) with factories, and where there are no strong smallholder associations such as the KTDA is challenging[24].

- India: the UK's Department for International Development has promoted the sustainable livelihoods for Indian smallholder tea growers and tea workers to achieve fairer terms of trade in their industry in response to a state of oversupply in the tea market and resulting low prices.

[24] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011

Realisation: Better understanding of the national and international forces influencing the sustainability of the Indian tea industry.

- Indonesia: with the The National Reference Group (NRG), an informal forum consist of key stakeholders of the national tea industry who are committed to work together to strengthen responsibility and credibility of various international and national standards applied in the tea sector finished product.

Realisation: The Lestari Standard, developed by the IDH Solidaridad and local partner Business Watch, and based on the UTZ standard. It targets tea production destined for domestic Indonesian consumption and helping producers to comply to international standards like Rainforest Alliance, UTZ or Fairtrade.

- Vietnam: the Ministry of Agriculture and Rural Development has signed an agreement with Unilever to create a public-private partnership named the Vietnam Tea Initiative, that aims to promote and accelerate sustainable tea production in the country.

6.2. Niche markets

There is a growing public awareness in the West of the social poverties associated with tea cultivation. Various standards systems seek to address these concerns. Codes of conduct require suppliers to meet standards on food safety, working conditions and environmentally friendly production practices. Global manufacturers are competing to maintain market share, and the emphasis is on the supply of relatively low quality bulk tea for blending and on niche market with premium priced, high quality products and standard compliant tea which increase the value of the product. The certified niche products, often sold as a specialty, are most popular in north and west EU countries[25].

One of the advantages of the highly concentrated structure of the market is the ability of major companies to transition supply to standard-compliant sources relatively quickly. Sustainability challenges in the tea sector have driven the development and adoption of various tea-specific standards by Fairtrade, Rainforest Alliance, UTZ, ETP and Organic standards bodies.

However, Tea market leaders certify most of their tea lands under the Rainforest Alliance sustainability program. As of 2015 14% of the world's tea was Rainforest Alliance certified, according to the Rainforest Alliance.

Kenya, India and Malawi were the biggest producers of standard-compliant tea by volume in 2011-2012[26]. Below, the standard-compliant production share of total national production for selected tea producers (major standard-compliant countries)

Table 9: Standard-compliant production as a percentage of total national production

Country	Fairtrade International	Organic	Rainforest Alliance	UTZ Certified
China	-	0,3%	-	-
India	4,9%	0,4%	6,2%	0,7%
Kenya	23,1%	0,2%	40,4%	8,4%
Sri Lanka	7,1%	-	3,4%	0,4%
Indonesia	-	0,8%	29,4%	5,6%
Argentina	-	-	29,8%	0,8%
Japan	-	2,4%	-	-
Thailand	-	0,1%	-	-
Bangladesh	-	0,4%	-	-
Malawi	-	-	58,9%	21,0%
Uganda	45,7%	-	37,0%	-
Tanzania)	46.9%	0,8%	-	-

Source: Tea Market, SSI review 2014. www.lisd.org, FLO 2012, FAO 2014, UTZ. (Dashes represent negligible or no standard-compliant production relative to national production; they may also reflect an absence of data).

Tea sustainability standards show the strongest presence in countries with significant tea exports. High penetration levels of voluntary sustainability standards across countries like Kenya, Sri Lanka, Vietnam, Indonesia, Malawi and Uganda, where approximately 60 to 95 % of production is exported abroad[27]. Other countries with

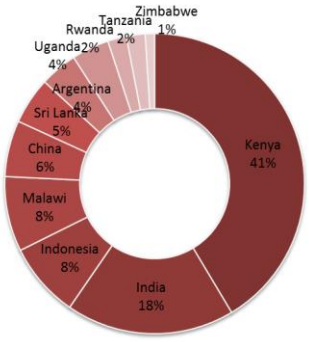
[25] CBI, Ministry of foreign affairs, www.cbi.eu

[26] IDH. The sustainable Initiative. Sector overview, Tea, Michael Groosman, 2011

[27] The State of Sustainability Initiatives Review ,Tea Market, 2014

important production, such as China, Turkey, export less than 20 % of their production and have a lower penetration of standard-compliant tea

Figure 9: Standard-compliant tea production by country in 2011



Source: SSI 2014, FLO 2014

Pricing and premiums

There is a growing market for speciality and higher-quality teas such as organic and fair trade teas, single country blends, white and green teas and special pyramidal packaging. Consumers in countries such as Japan and Germany are traditionally interested in loose high-quality tea or origin teas.

Organic tea

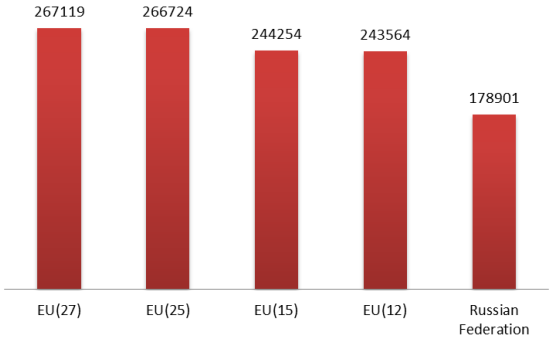
Export opportunities exists in niche markets where organic food labels are required for product certification and differentiation, in mainstream markets. Example: Organic Darjeeling

In order to benefit from organic farming of tea, market diversification into other products such as herb tea, eco-tourism, and other products are required.

7. Regional/International trade

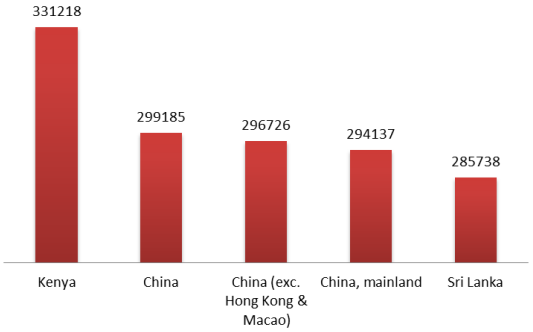
7.1. Top 10 exporters and importers

Figure 10: Top 10 importing countries, tonnes, 2003-2012



Source: FAOSTATS, 2015

Figure 11: Top 10 exporting countries, tonnes, 2003-2012 ,



Source: FAOSTATS, 2015

7.2. Biggest trading companies

Along tea global value chain, there is limited number of players. Some of them, such as Unilever and Tata Tea are integrated vertically (see table below).

Table 10: Biggest trading companies

Producing& Processing Major players	Trade Major players	Blending & Packaging Major players
Unilever	Unilever	Unilever
Finlays	Finlays	Tata Tea
Tata Tea	Van Rees	Twining
Mcleod Russel	Tata tea	Van Rees
James Finlay	Van Rees	
John Keells	James Finley	
McLeod Russel		

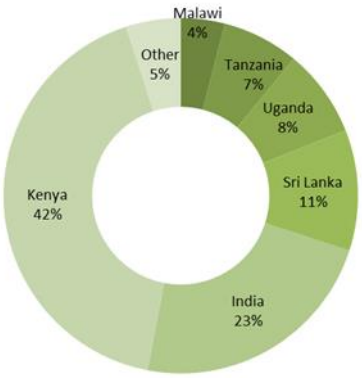
7.3. Fair trade initiatives

While the production of standard-compliant tea continues to climb globally, averaging 33% per year during the period 2009-2012, Fair Trade certified sales lag at 2% of total volume[28].

Only 6% of total Fairtrade production was sold as Fairtrade tea on the international market in 2012, according to the International Institute for Environment and Development.

Fair trade is also attractive to companies wanting to strengthen their commitment to tea supply chains and looking beyond certification to climate adaptation and mitigation[29], which are key issues in tea production.

Figure 12: Fairtrade production tea by country, (2012)



Source: FLO, 2012

7.4. Trade issues (dispute; negotiation; agreements)

Geographical Indication (GI) - Darjeeling tea

Due to the unique and complex combination of agro-climatic conditions, the quality reputation and characteristics of the tea is attributable to its geographical origin and cannot be replicated elsewhere which confer to him the Geographical Indication. Producers had to be protected from 'copycats'. India enacted its Geographical Indication of Goods (Registration and Protection) Act in 1999 in compliance with Article 24 of the TRIPs Agreement in order to protect indications connected with geographical origin.

[28] The State of Sustainability Initiatives Review, Tea Market, 2014
[29] The State of Sustainability Initiatives Review ,Tea Market, 2014

8. Useful links

8.1. Statistics

FAOSTAT	www.faostat3.fao.org
ITC Market analysis tools	www.trademap.org
UNCTADSTAT	www.unctadstat.unctad.org

8.2. International organisations, tea boards, tea associations

Table 1: International organisations

Trusttea:	**www.trustea.org**
TCC:	teacofeecocoa.org
World Tea News	www.worldteanews.com
Ethical Tea Partnership	www. Ethicalteapartnership.org
International Tea commitment	www. Inttea.com

Table 2: Tea boards et associations

Tea boards	**Association**
National Tea & Coffee Development Board	Japan Tea Association
United Planter's Association of South India	Tea Association of Malawi
Guangzhou International Tea Trading Centre	Vietnam Tea Association
Bangladesh Tea Board	Tea Association of the USA
Tea Board of India	Tea Association of Canada
Sri Lanka Tea Board	East African Tea Trade Association
Tea Board of Kenya	Indian Tea Association
Bangladesh Tea Board	Tea Research Association India
Tea Board of Tanzania	China Tea Marketing Association
National Tea & Coffee Development Board Nepal	World Green Tea Association
Indonesia Tea Board	Japan Tea Central Association
Tea Association of Canada	Vietnam Tea Association
Indian Tea Association-	ADeMaThe's - Tea Association of Italy
	Russian Association of Tea & Coffee
	Pakistan Tea Association
	Korea Black Tea Association
	Tea Association of Tanzania
	United Planter's Association of South India
	Irish Tea Trade Association
	Korea Black Tea Association
	Irish Tea Trade Association
	Japan Tea Association
	Uganda Tea Association
	Japan Tea Central Association
	World Green Tea Association
	ADeMaThè Italia - Tea Association of Italy
	East African Tea Trade

	Association
	Tea Association of Tanzania
	Pakistan Tea Association
	Tea Association of Malawi
	Kenyan Tea Development Agency
	Assam Branch Indian Tea Association
	The Tea Association of Sri Lanka
	The Planters Association of Ceylon
	The Private Tea Factory Owners Association
	The Colombo Brokers Association
	The Colombo Tea Traders Association
	Deutscher Teeverband (German Tea Association)
Other	
The Tea Research Institute	
Tea Research Foundation of Kenya	
United Kingdom Tea Council-	
TeaUSA.org	

Organisations:

FAO Intergovernmental Group on Tea	**http://www.fao.org/economic/est/est-commodities/tea/tea-meetings/en/**
OECD	www.oecd.org
World Weatlth Organization	www.who.org
International Standard Organization	www.iso.org
World Trade Organization	www.wto.org
IDH	www.idhsustainabletrade.com

8.3. Latest news

- Congress on Cocoa Coffee and Tea http://www.cocotea2015.com

- World Tea Expo http://www.worldteaexpo.com