



Food and Agriculture
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World tea production and trade

Current and future development



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by

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FAO Intergovernmental Group on Tea

*A Subsidiary Body of the FAO Committee on
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PREAMBLE

This document constitutes an overview of the current production and trade situation for tea, as well as medium term projections to 2023. Before looking at the specific factors impacting production and trade I would like to provide you with a brief overview of the Intergovernmental Group on Tea: its role and functions, as it is important to understand the context for which I am writing this paper.

The Intergovernmental Group (IGG) on Tea was established by the Committee on Commodity Problems (CCP) at its Forty-fourth Session in 1969 as the Consultative Committee on Tea. The title of this Body was changed in 1971 to the IGG on Tea and it provides a forum for consultations on and studies of all problems connected with tea. In particular:

- to conduct a continuing review of short and long term developments in tea production, consumption, trade and prices;
- to study market structure and the promotion of tea consumption, and to consider international action and prepare proposals for submission to Governments.

Membership of the Group is open to all Member Nations and Associate Members of the Food and Agriculture Organization that are substantially interested in the production or consumption of, and trade in, tea. To get members more involved with the work of the IGG, and to have more effective analyses of emerging issues that impact the world tea economy, the IGG created working groups with specific terms of reference. Currently, there are seven Working Groups (WGs) of the IGG/Tea:

- WG on Maximum Residue Levels (MRLs)
- WG on MRLs in the Brew
- Tea Trade and Quality
- WG on Organic Tea
- WG on Climate Change
- WG on Smallholders
- Task Force on Statistics

The most relevant to this symposium are perhaps the **WG on MRLs** which was established in 2005 and the **WG on MRLs in the Brew** which was established in 2008.

Harmonization of MRLs in tea is recognized by the IGG on Tea as an issue requiring urgent attention to address concerns on residue levels in tea, their possible effects on consumption and to ensure that tea consumption continues to be safe. The IGG therefore prioritised an initiative where a much closer cooperation among tea producers, importers, traders, boards, associations and other organizations is achieved. It is a well known fact that the complexity in international regulations on pesticides is creating difficulties in legislative compliance in some countries and on the world tea trade. Global harmonization of legislation on MRLs in tea would resolve these difficulties. There is also general recognition that whilst tea is consumed as an infusion, regulations are set on the form in which it is traded, i.e. dried leaves.

As Co-chairs of the WG on MRLs in the Brew, China and India, through Professor Chen Zongmao and Dr. Barooah, made submissions to the 43rd and 44th Sessions of the Joint FAO/WHO Food Standards Programme of the Codex Committee on Pesticide Residue (CCPR) that tea, with a few exceptions, was used to make an infusion in water, which is then drunk by consumers. Of primary food safety concern is the amount of agrochemicals in the tea infusion that are taken in via tea drinking, not the amounts of agrochemicals in tea leaf. Following the presentation of a policy document entitled “Assessment of MRLs for Pesticides in Tea” to the 44th Session of the CCPR in 2012, the CCPR concluded that it “...supported the current procedure of JMPR in the establishment of MRLs for pesticides in tea and encouraged countries to submit relevant data / information on brewing factors and standard methods to JMPR for consideration in estimation of MRLs for pesticides in tea.”

The recognition of the brew factor has a great significance as it will pave the way for setting realistic MRLs in tea as risk assessment on dry tea alone would have eliminated a number of useful products.

INTRODUCTION

Tea (*Camellia sinensis*) is the manufactured drink most consumed in the world. Discovered about 2700BC, it is one of the oldest beverages in the world. Today it is available for consumption in six main varieties, based on the oxidation and fermentation technique applied. The tea crop has rather specific agro-climatic requirements that are only available in tropical and sub-tropical climates, while some varieties can tolerate marine climates of British mainland and Washington area of the United States. The tea plant needs a hot, moist climate. Its specific requirements are: temperatures ranging from 10-30°C (zone 8 climate or warmer), minimum annual precipitation of 1250 mm, preferably acidic soils, ideally 0.5-10 degree slopes and elevations up to 2000 meters. Tea production therefore is geographically limited to a few areas around the world and it is highly sensitive to changes in growing conditions. Importantly, its ideal growing conditions are at high risk and expected to significantly change under climate change.

The main determinant for the growth of the global tea economy is demand for the commodity. The analysis of demand for tea carried out by the Secretariat of the IGG on Tea in selected markets indicates that both black and green tea are price inelastic¹.

Price elasticities for black tea vary between -0.32 and -0.80, which means that a 10 percent increase in black tea retail prices will lead to a decline in demand for black tea between 3.2 percent and 8 percent. Estimates for price elasticities for green tea range between -0.69 and -0.98. Similarly, a 10 percent increase in green tea retail prices will lead to a decline in the demand for green tea of 6.9 percent to about 10 percent.

¹ As most of the audience at this symposium are scientists, I offer the following note by way of an explanation.

In general, the demand for a good is said to be *inelastic* (or *relatively inelastic*) when the price elasticity of demand is less than one (in absolute value): that is, changes in price have a relatively small effect on the quantity of the good demanded.

The demand for a good is said to be *elastic* (or *relatively elastic*) when its price elasticity of demand is greater than one (in absolute value): that is, changes in price have a relatively large effect on the quantity of a good demanded.

Price elasticities are almost always negative.

Several factors influence the demand for tea, including the traditional price and income variables, demographics such as age, education, occupation, and cultural background. In addition, health has a great influence on tea consumption which led the IGG to recommend strengthening consumer awareness of the health benefits of tea consumption through an international generic promotion programme. Finally, apart from consumption, other main drivers of international tea prices are trends and changes in per capita consumption, market access, the potential effects of pests and diseases on production, and changing dynamics between retailers, wholesalers and multinationals.

HIGHLIGHTS

International tea prices, as measured by the FAO Tea Composite price, increased consistently until 2012. In 2013 the average price declined by 2.5 percent to 2.79 USD per kg and further declined by 5.3 percent in 2014 to 2.65 USD per kg. The decline in 2013 and in 2014 was exclusively due to the weakening of CTC prices, as Orthodox prices continued to increase firmly, underpinned by a strong growth in demand in traditional orthodox tea markets of the Near East and the Russian Federation. Hence, the fall in the FAO Tea Composite price has been moderated by the strength of orthodox tea prices.

At its recent session, the IGG on Tea cautioned producers not to overreact to the buoyant prices and advised that greater effort be directed at expanding demand, particularly in producing countries where per capita consumption was low compared to traditional import markets. The IGG also encouraged diversification into other segments of the market, such as organic and value added teas, and greater support to the tea smallholder sub-sector.

After long periods of sustained growth, black tea production actually declined in 2008/09 before recovering in 2010/11. However, prices remained firm and although they declined in 2013 and in 2014, they remained much higher than the historical average over the previous two decades, both in nominal and real terms.

Production

World tea production (Black, Green and Instant) increased significantly by 6 percent to 5.07 million tonnes in 2013. Black tea output increased by 5.4 percent in response to continued firm prices while green tea output increased by 5.1 percent (Table 1).

Growth in world output was due to major increases in the major tea producing countries. China remained the largest tea producing country with an output of 1.9 million tonnes, accounting for more than 38 percent of the world total, while production in India, the second largest producer, also increased to reach 1.2 million tonnes in 2013. Output also increased in the two largest exporting countries where production reached 436 300 tonnes in Kenya and 343 100 tonnes in Sri Lanka. Apart from the 7.5 percent decline in Vietnam to 185 000 tonnes, production in other major producing countries increased: Indonesia to 152 700 tonnes; Bangladesh to 66 200 tonnes; Uganda to 58 300 tonnes; Malawi to 46 500 tonnes; Tanzania to 32 400 tonnes; and Rwanda to 25 200 tonnes. Other producers in Africa recorded slight increases: Burundi to 8 800 tonnes; Zimbabwe to 8 500 tonnes; and South Africa to 2 500 tonnes.

Table 1. World tea production (thousand tonnes)

	2006-08	2009	2010	2011	2012	2013
WORLD	3891.2	4040.0	4364.7	4627.0	4784.5	5063.9
Far East	2892.3	3089.7	3280.3	3579.1	3753.3	3965.6
Bangladesh	56.8	60.0	60.0	59.6	62.5	66.2
China (Mainland)	1150.5	1344.4	1475.1	1623.2	1789.8	1924.5
India	986.4	982.1	970.3	1119.7	1129.0	1200.4
Indonesia	150.3	156.9	156.6	150.8	150.9	152.7
Sri Lanka	311.3	291.2	331.4	327.5	328.4	343.1
VietNam	158.0	177.3	192.0	202.1	200.0	185.0
Others	78.9	77.8	94.8	96.2	92.7	93.8
Africa	535.9	520.5	616.1	591.7	580.2	649.5
Burundi	6.6	6.7	6.9	7.0	8.7	8.8
Kenya	345.2	318.3	403.3	383.1	373.1	436.3
Malawi	44.9	52.6	51.6	47.1	42.5	46.5
Rwanda	19.1	20.5	22.2	24.1	24.7	25.2
South Africa	3.5	2.0	2.1	2.2	2.2	2.5
Tanzania United Rep	32.6	32.1	31.6	33.0	32.3	32.4
Uganda	42.4	51.0	59.4	56.3	57.9	58.3
Zimbabwe	12.4	7.3	8.6	8.4	8.5	8.5
Others	29.0	30.0	30.2	30.6	30.4	30.9
Latin America and Caribbean	97.7	89.8	107.4	107.8	98.3	95.0
Argentina	79.6	73.4	90.7	91.2	81.3	78.9
Brazil	8.5	7.6	7.7	7.7	7.8	7.0
Others	9.7	8.8	8.9	8.8	9.2	9.1
Near East	255.2	238.2	262.0	251.1	251.5	253.5
Iran, Islamic Rep. of	41.4	39.6	27.0	29.5	26.5	26.5
Turkey	213.7	198.6	235.0	221.6	225.0	227.0
Oceania	7.1	7.2	7.2	6.6	6.4	6.5
Japan	94.7	86.0	83.0	82.1	85.9	84.7
CIS	8.3	8.4	8.4	8.5	8.6	8.9
Developed	113.7	103.8	101.0	99.5	103.3	102.9
Developing	3777.5	3936.2	4263.6	4527.5	4681.2	4961.0

Source: FAO IGG Secretariat

Exports

World tea exports reached 1.77 million tonnes in 2013 a 5 percent increase compared to 2012. Volumes of black tea were up by 5.8 percent in 2013 and export earnings increased by 10 percent to USD 5.7 billion (Table 2).

Table 2. World tea exports (thousand tonnes)

	2006-08	2009	2010	2011	2012	2013
WORLD	1570.7	1544.7	1683.0	1674.8	1684.0	1768.5
Far East	1014.0	1008.8	1036.4	1051.9	1064.8	1077.9
Bangladesh	7.9	2.1	0.9	1.5	0.6	0.5
Sri Lanka	303.5	279.9	305.8	303.2	306.1	311.0
China (Mainland)	291.0	303.0	302.4	322.6	321.8	329.7
India	200.2	180.5	182.7	205.3	199.1	209.2
Indonesia	91.7	92.3	87.1	75.5	70.1	70.8
VietNam	108.2	134.1	138.4	122.6	145.0	133.5
Others	11.5	17.0	19.1	21.4	22.1	23.1
Africa	462.8	449.1	542.9	519.4	525.7	596.4
Kenya	301.0	281.1	362.3	347.5	349.9	415.9
Malawi	42.9	46.8	48.9	44.9	41.8	40.5
Zimbabwe	9.1	4.5	5.1	5.7	5.9	5.9
Rwanda	17.4	18.8	21.5	23.2	23.0	23.5
South Africa	5.6	5.3	5.0	2.7	2.8	5.2
Tanzania United Rep	26.4	24.4	26.1	27.1	27.8	26.2
Uganda	39.6	47.9	53.7	47.9	52.3	56.7
Others	20.8	20.3	20.3	20.3	22.3	22.5
Latin America and Caribbean	79.7	72.7	89.2	89.0	79.3	76.2
Oceania	7.0	7.8	7.4	6.7	6.1	6.6
Developed	16.7	17.5	17.2	14.5	13.7	18.1
Developing	1554.0	1527.2	1665.7	1660.2	1670.3	1750.4

Source: FAO IGG Secretariat

Consumption

World tea consumption continued to increase in 2013. Total tea consumption increased by nearly 5 percent in 2013 to 4.84 million tonnes, which was underpinned by the rapid growth in per capita income levels, particularly in China, India and other emerging economies. Growth in demand was particularly marked in China. After a spectacular rise in consumption in recent years exceeding 8 percent annually, total consumption increased by 9 percent in 2013, on a year to year basis, to reach 1.61 million tonnes, the largest in the world. In India, consumption expanded by 2.4 percent in 2009 and 6.6 percent in 2013 to reach 1 million tonnes (Table 3).

Table 3. World tea consumption (thousand tonnes)

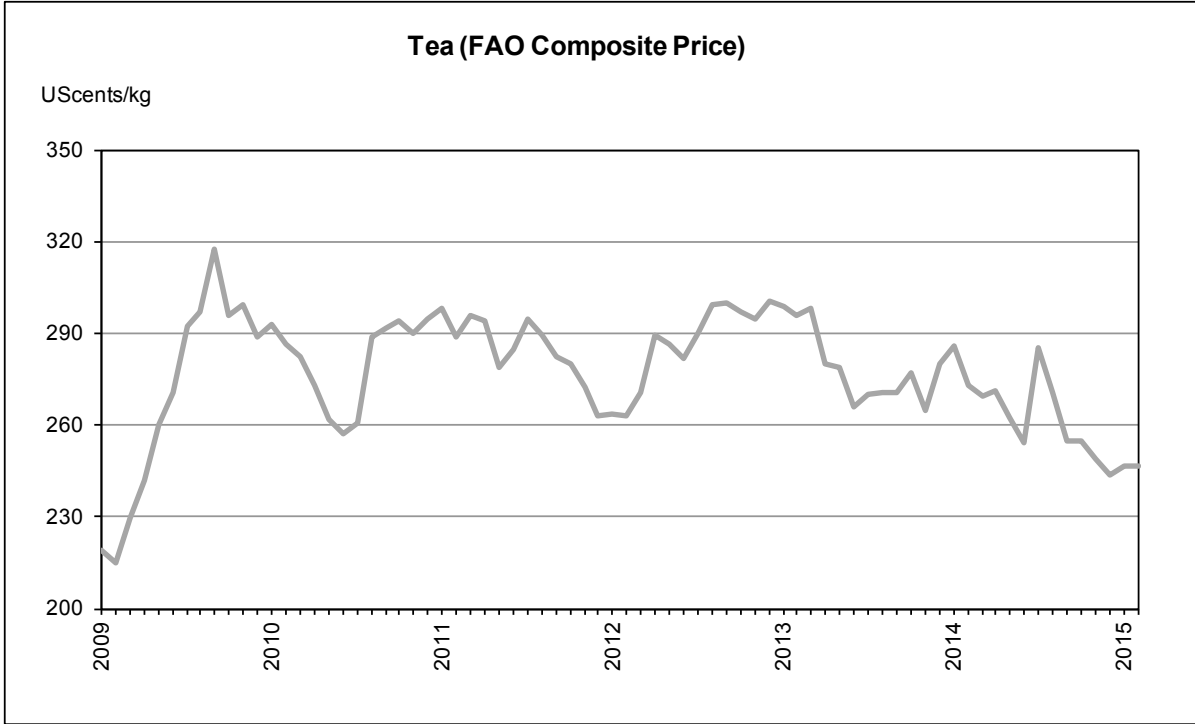
	2006-08	2009	2010	2011	2012	2013
WORLD	3714.9	3916.0	4180.3	4449.6	4626.8	4842.1
DEVELOPED	826.0	792.1	818.8	834.4	827.8	814.8
South Africa	18.8	24.0	25.1	23.5	23.5	22.8
EU	259.7	228.5	230.3	246.6	238.0	242.0
France	14.6	13.9	15.3	14.9	15.1	15.2
Germany	23.2	19.0	24.9	25.9	29.9	28.9
Ireland	9.2	10.7	10.2	8.6	6.7	7.0
Netherlands	13.8	11.8	10.9	14.2	7.0	12.2
Poland	23.7	15.8	17.2	19.8	19.9	15.0
UK	134.0	121.0	119.8	129.3	125.2	116.2
Other EU	41.2	36.2	31.9	33.9	34.2	47.5
Japan	139.4	124.1	124.0	121.9	121.9	119.1
United States	109.6	108.2	123.8	124.6	122.7	127.4
Russian Federation	172.4	176.2	177.8	182.2	173.3	159.1
Others	114.7	107.1	112.7	112.1	125.0	121.6
DEVELOPING	2889.0	3123.9	3361.5	3615.1	3798.9	4027.3
China (Mainland)	867.0	1045.3	1188.5	1314.5	1481.7	1614.2
India	786.9	822.1	818.3	922.2	939.2	1001.4
Turkey	214.6	202.4	241.9	227.4	227.2	228.0
Egypt	81.1	82.3	68.5	95.7	95.4	99.0
Pakistan	107.3	85.7	120.3	126.2	131.3	126.6
Iran, Islamic Rep. of	76.8	86.1	89.6	80.2	80.3	83.4
Indonesia	56.1	56.8	59.9	61.1	63.3	64.9
Bangladesh	46.4	53.7	57.3	59.3	59.5	61.9
VietNam	25.5	27.5	27.9	29.3	30.3	31.7
Morocco	51.4	54.8	53.9	65.0	54.1	56.7
Kenya	17.3	18.1	18.7	20.0	23.0	26.6
Others	558.6	589.0	616.6	614.2	613.7	632.9

Source: FAO IGG Secretariat

Prices

The FAO Tea Composite Price, which is an indicative price for black tea, increased significantly from 2006 to 2012 and reached a record USD 3.18 per kg in September 2009. Since then it has declined to USD 2.65 per kg averaged in 2014, which is still considerably higher than prices averaged in the previous two decades to 2012 (Figure 1)

Fig.1 - FAO Tea Composite Price



Source: FAO IGG Secretariat

There are several reasons for the strong growth. Firstly, improved supply and demand balance of black tea, and therefore market fundamentals – for the first time black tea consumption exceeded production in 2009 and since then has remained in balance through to 2013; the weak USD; and high transportation cost due to high oil prices.

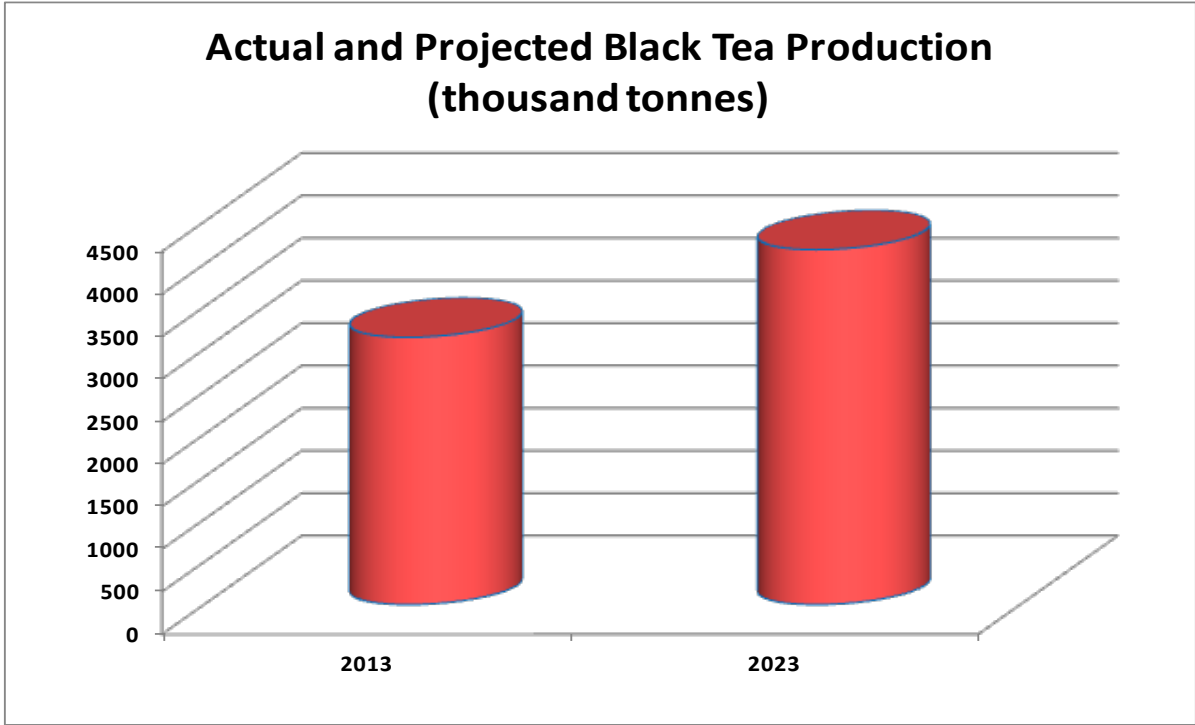
Medium Term Outlook to 2023

Production

The 10 years projections 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 percent annually to reach 4.17 million tonnes by 2023 (Figure 2).

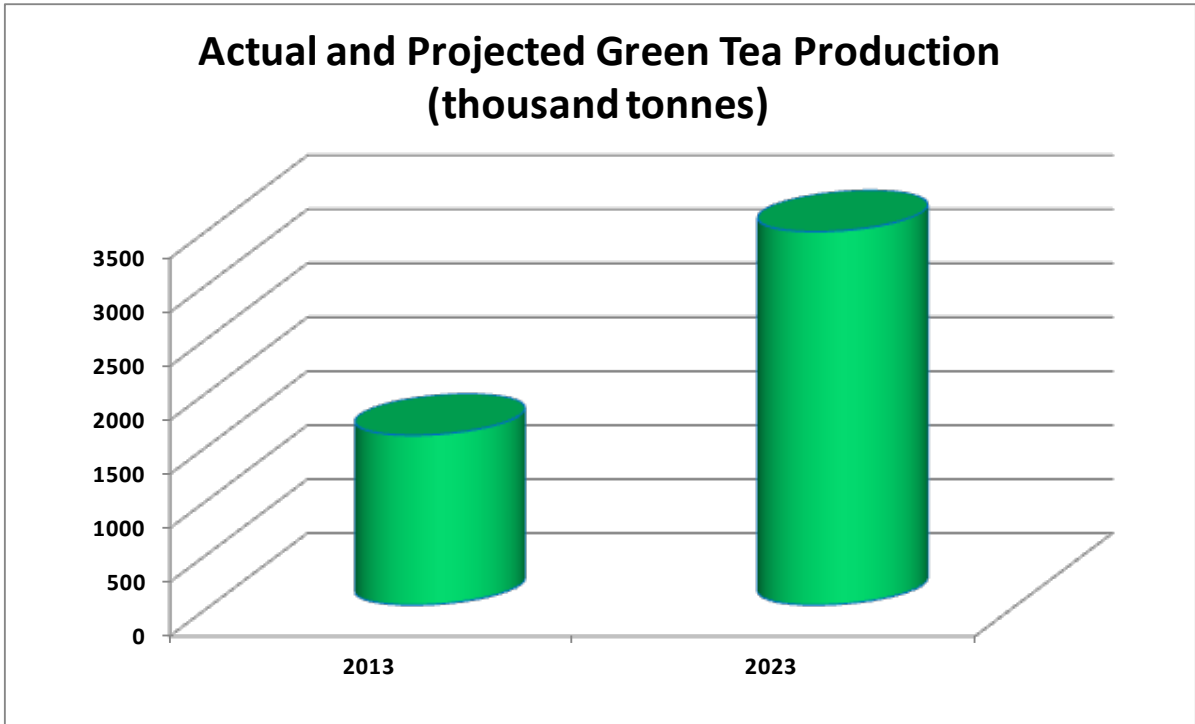
Figure 2 – Actual and projected production of black tea



Source: FAO IGG Secretariat

World green tea production is expected to grow at a faster rate than black tea, 8.2 percent, reflecting the growth in China where production of green tea is expected to reach 2.97 million tonnes by 2023 (Figure 3).

Figure 3 – Actual and projected production of green tea



Source: FAO IGG Secretariat

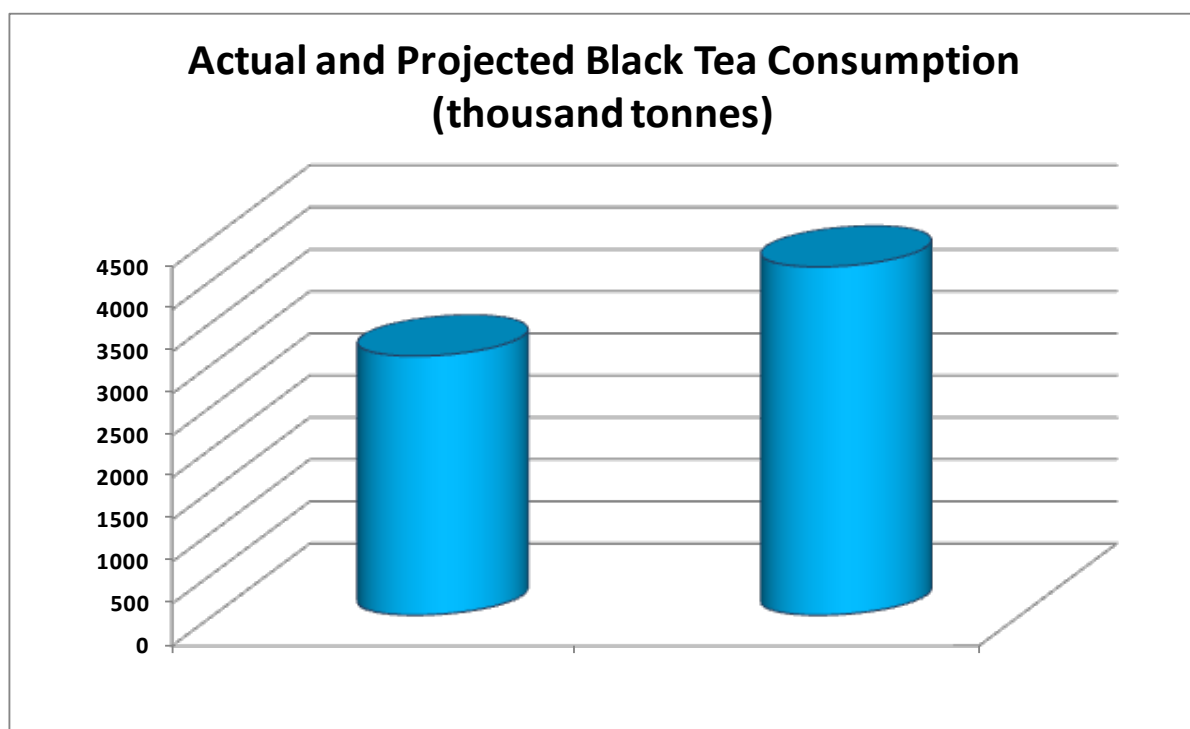
Black Tea Consumption

For non-tea producing countries: net imports were used as a proxy for consumption; and for producing countries: actual domestic consumption.

Data on green tea consumption are not complete and therefore difficult to make a meaningful projection.

Black tea consumption will grow at 3.0 percent p.a. to reach 4.14 million tonnes in 2023 (Figure 4). Stronger growth in consumption in producing countries is unlikely to offset declines in traditional import markets in the next 10 years.

Figure 4 – Actual and projected consumption of black tea

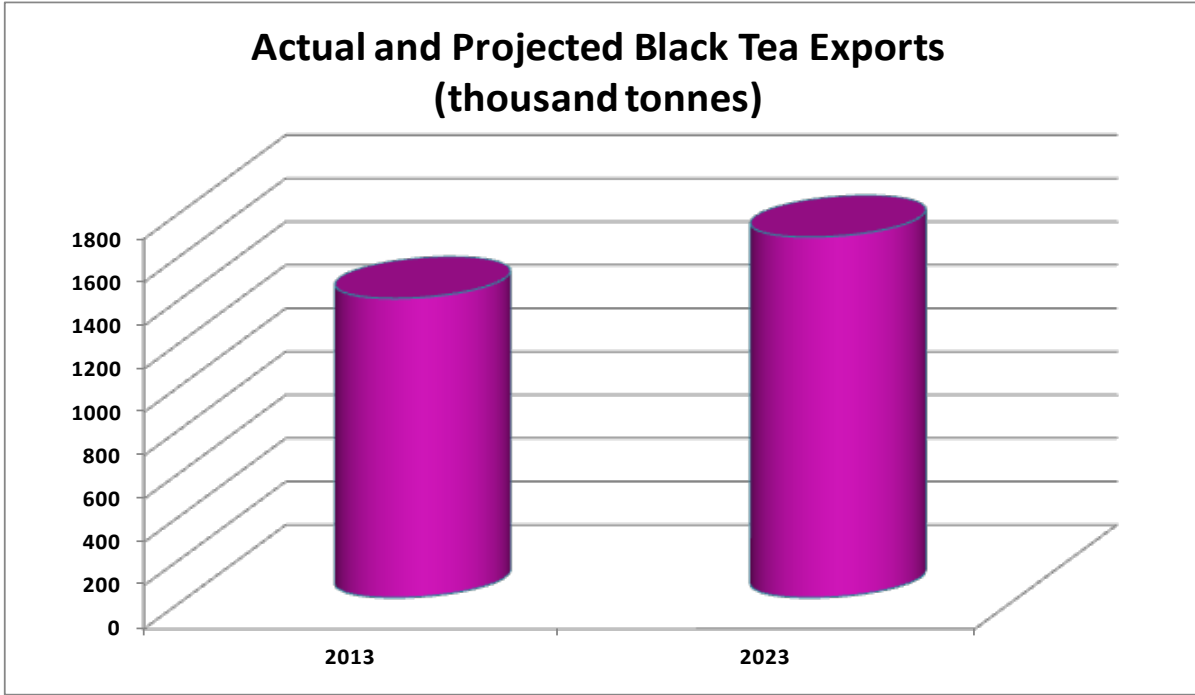


Source: FAO IGG Secretariat

Black Tea Exports

Black tea exports are projected to reach 1.67 million tonnes in 2023 (Figure 5), with similar growth rates projected for both Africa and Asia. However, by 2023, export volumes for Asia are 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.

Figure 5 – Actual and projected exports of black tea

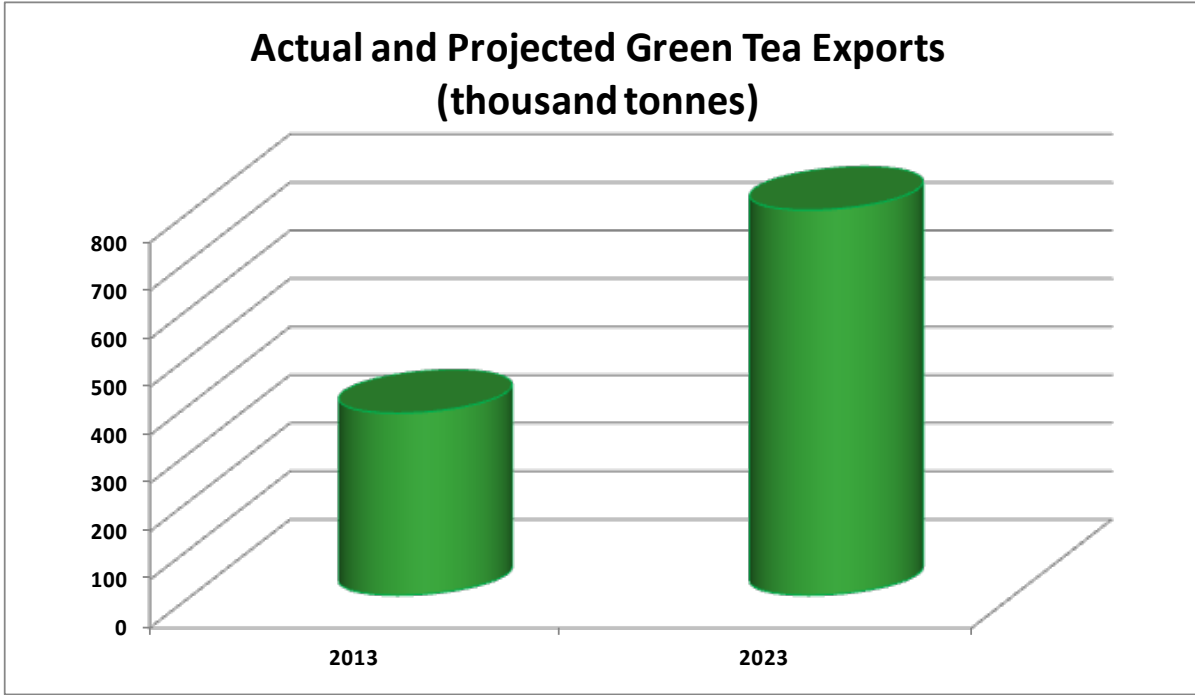


Source: FAO IGG Secretariat

Green Tea Exports

World green tea exports are projected to grow at 7.1 percent annually to reach 750 981 tonnes by 2023 (Figure 6). 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.

Figure 6 – Actual and projected exports of green tea



Source: FAO IGG Secretariat

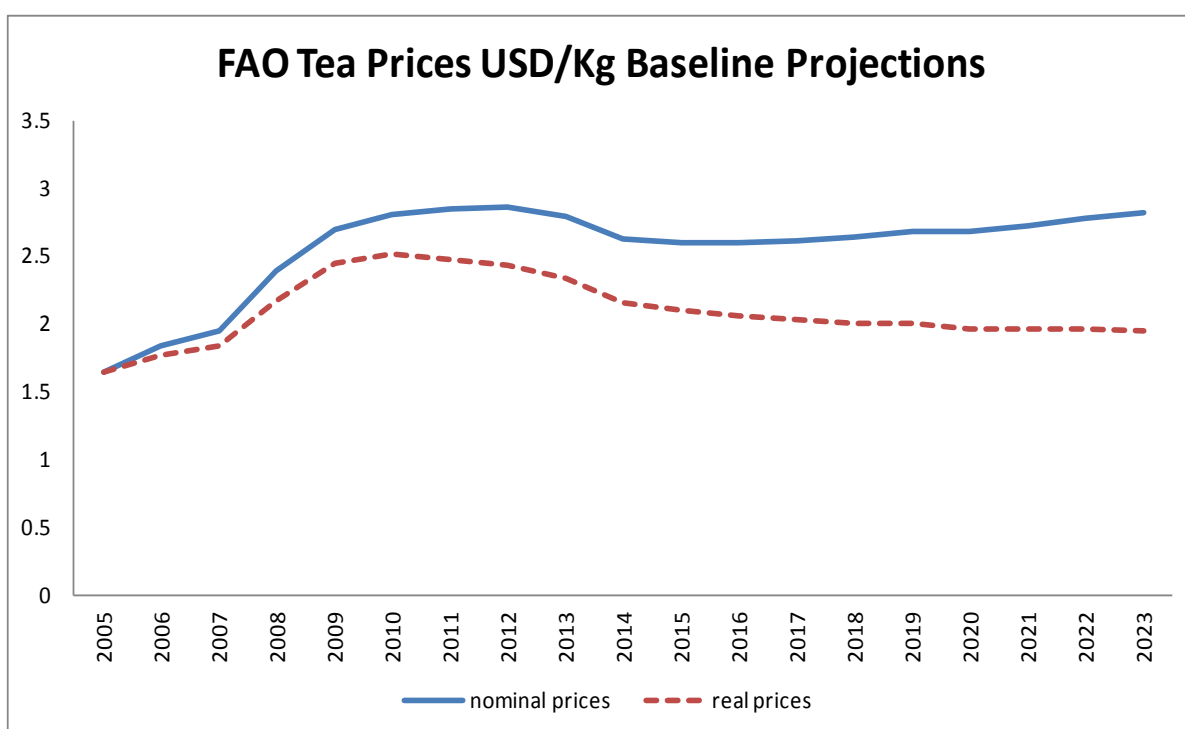
CONCLUDING REMARKS

The review of the world tea market indicates an improvement in the fundamental oversupply situation which persisted until 2008 underpinning current firm prices.

The increase in tea prices resulted in an estimated 10 percent increase in export earnings in 2013 to USD 5.7 billion at the global level, significantly affecting rural incomes and household food security in tea producing countries.

In the medium term, the projections suggest that supply and demand of black tea will be in equilibrium in 2023 at a price of USD 2.81 per Kg, if there is no supply over-reaction to the current firm prices (Figure 7).

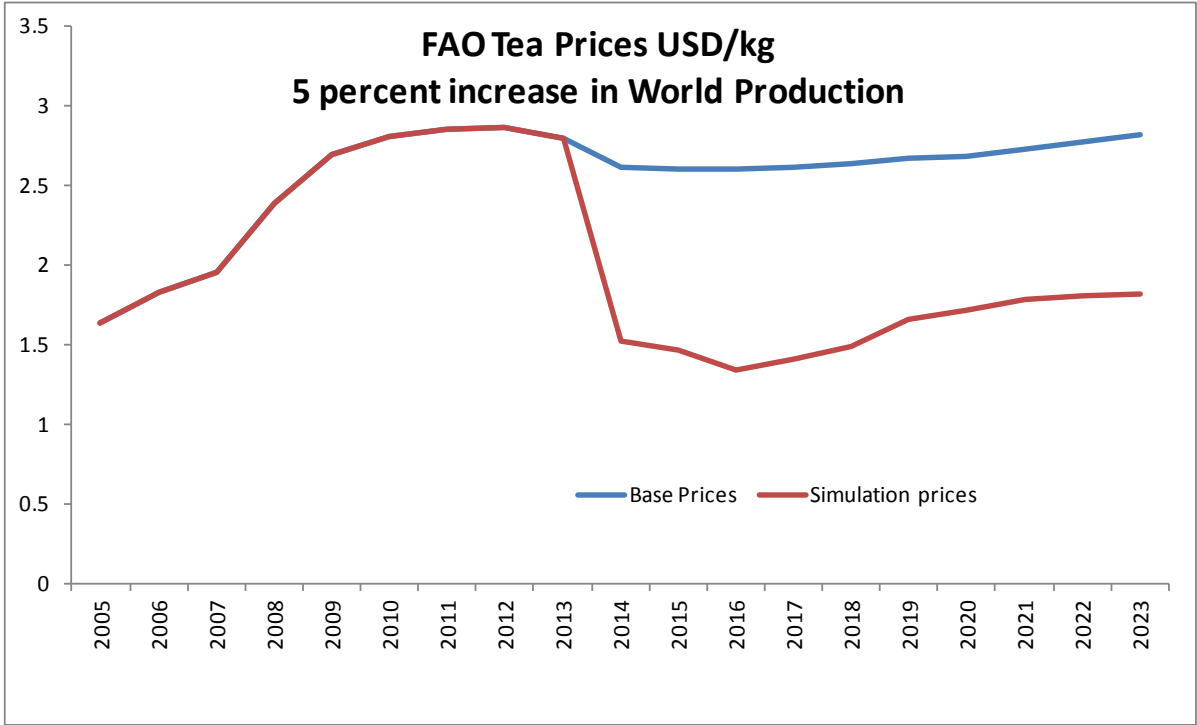
Figure 7 –Baseline projections to 2023



Source: FAO IGG Secretariat

However, if there is no correction in supply response and assuming that this, for example, would result in a 5 percent increase in production, the results can be quite different: a 40 percent decline over the next ten years reaching USD 1.82 per kg in 2023 or an average of USD 1.60 per kg for the decade (Figure 8).

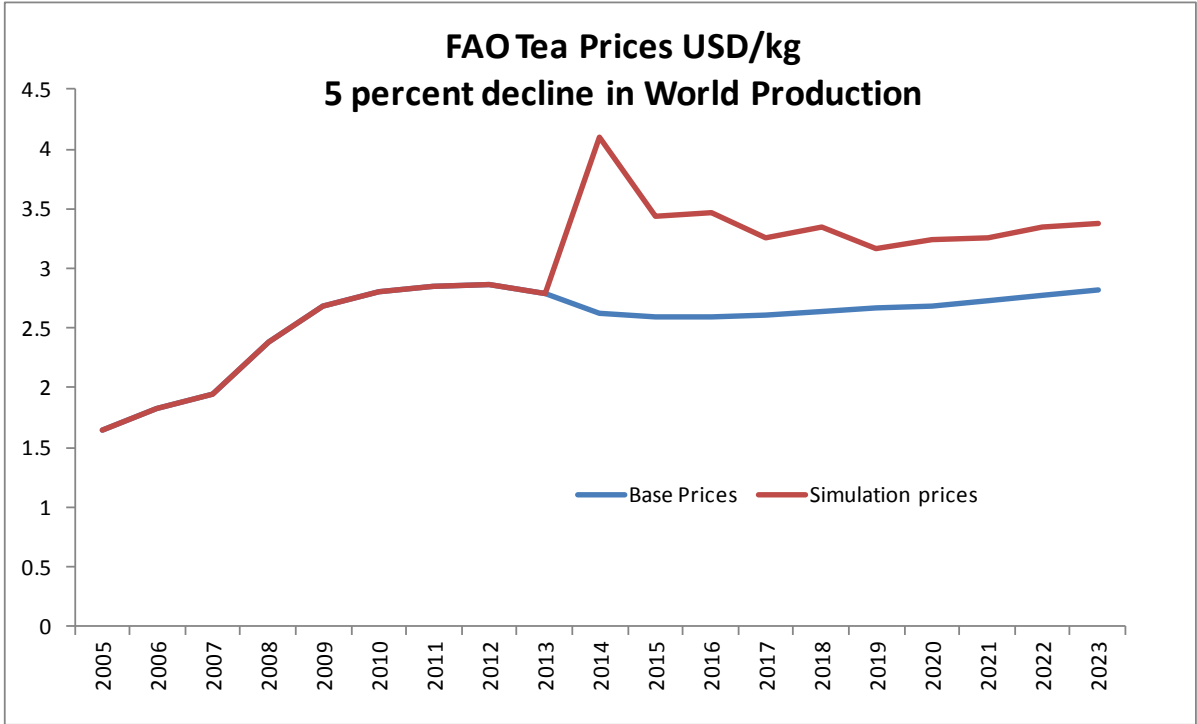
Figure 8 – Production increases by 5 percent over the baseline



Source: FAO IGG Secretariat

If the reaction to the declining prices were to cut back on production, say by 5 percent less than the baseline, then prices could be 27 percent higher for the decade reaching USD 3.4 per kg in 2023 (Figure 9)

Figure 9 – Production decreases by 5 percent over the baseline



Source: FAO IGG Secretariat

Therefore, caution needs to be exercised. Greater efforts should be directed at expanding demand. For example, there is scope for increasing per capita consumption in producing countries as they are low compared to traditional import markets. The IGG on Tea has also encouraged diversification into other segments of the market, such as organic tea, and the health benefits of tea consumption should be used more extensively in promoting consumption in both producing and importing countries. However, in targeting potential growth markets, recognition of and compliance with food safety and quality standards is essential.

Regarding the scientific consideration that could possibly affect tea production in the long run, while the Secretariat's analysis of possible implications of climate change can only be considered initial at this stage and several follow-up studies would be essential to fully understand the likely impacts, several policy recommendations can be made. These include: the need for developing agricultural and socio-economic adaptation strategies; tea producing areas would have to be evaluated against climate projections; comparative studies of agro-climatic conditions, tea crop varieties and their requirements must be carried out; breeding of tea hybrids that cope better with climate change should be considered; and that the focus on tea production be in marine climate zones.

Finally, major shifts in demand has occurred in recent years, as some tea blending and packaging activities were moved to producing countries in a strategic shift by several large packers in consuming countries. For the higher cost producers the cost/price squeeze has had a negative impact on production. Supply chain costs have also increased with the rise in processing and distribution costs, mainly due to rising fuel costs. In its efforts to improve longer-term structural conditions in the world tea market, the FAO IGG on Tea has been instrumental in the development of action-orientation programmes. In determining the persistent problems of oversupply in the world tea market and the consequent downward pressure on world prices, the Group agreed that the response must involve an expansion in demand and a reduction in supply to achieve market balance. Given the already high consumption levels in traditional tea markets, demand for tea in producing countries should be looked at more closely. In particular, in producing countries with relatively low per capita tea consumption and relatively strong economic growth. This initiative will be supported by internationally co-ordinated actions aimed at promoting and expanding the demand for tea.

